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

JOB #: 8449-2018-07-67-C

July 2018

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: **August 28, 2018**

Prepared by:

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SUMMARY

In July 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.

Station Upgrade: A station upgrade was implemented between July 30 and July 31. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Downtime ranging from seventeen to thirty-nine hours were recorded across parameters, in the July monitoring period, due to activities surrounding the upgrade.

Power Failure: Seven hours of downtime were recorded for all parameters on July 20, at hours 16:00-22:00, due to a power failure. An additional downtime was recorded at hour 23:00 for THC/CH₄/NMHC as the analyzer was recovering from the power failure.

TRS: Two hours of downtime were recorded between July 29 and July 30 due to additional quality checks performed to assess a biased low drift in span response.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0, Discussion. On this basis, Maxxam Analytics is issuing this completed report to 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	3	29	17	2	W	1	4	93.8
TRS (ppb)	-	-	-	-	0.43	2.34	15	5	4.9	ESE	0.72	15	93.5
THC (ppm)	-	-	-	-	1.98	2.51	4	2	2.4	NNW	2.09	4	93.7
CH ₄ (ppm)	-	-	-	-	1.98	2.51	4	2	2.4	NNW	2.09	4	93.7
NMHC (ppm)	-	-	-	-	0.00	0.01	29	19	0.5	W	0.00	1	93.7
RELATIVE HUMIDITY (%)	-	-	-	-	73	100	1	22	7.6	NW	96	31	96.8
BAROMETRIC PRESSURE (millibar)	-	-	-	-	945	956	23	4	3	N	956	23	96.8
AMBIENT TEMPERATURE (°C)	-	-	-	-	16.6	28.9	28	16	7.3	SW	21.9	28	96.8
STATION TEMPERATURE (°C)	-	-	-	-	21.9	23.1	5	11	15.5	SSE	22.2	7	96.8
VECTOR WS (kph)	-	-	-	-	1.9	21.8	14	11	-	WNW	10.5	2	96.8
VECTOR WD (sec)	-	-	-	-	276 (W)	-	-	-	-	-	-	-	96.8

**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	July

CONTINUOUS AMBIENT MONITORING						
PARAMETER	% TIME OPERATIONAL	ONE - HOUR AVERAGE			24 - HOUR AVERAGE	
		MAXIMUM VALUES	NO. READINGS > REGULATION	MAXIMUM VALUES	NO. READINGS > REGULATION	
SO ₂	93.8	0.003 ppm	0	0.001 ppm	0	
TRS	93.5	0.002 ppm	-	0.001 ppm	-	
THC	93.7	2.51 ppm	-	2.09 ppm	-	
CH ₄	93.7	2.51 ppm	-	2.09 ppm	-	
NMHC	93.7	0.01 ppm	-	0.00 ppm	-	
RH	96.8	100 %	-	96 %	-	
BP	96.8	956 mb	-	956 mb	-	
Ambient TPX	96.8	28.9 °C	-	21.9 °C	-	
Station TPX	96.8	23.1 °C	-	22.2 °C	-	
Wind Speed	96.8	21.8 kph	-	10.5 kph	-	
Wind Direction	96.8	-	-	-	-	

SIGNATURE OF COMPANY REPRESENTATIVE

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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.

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1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO₂), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), 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 the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality (December, 2016). The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

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

SULPHUR DIOXIDE (SO₂)

- Operational time for the monitoring period was 93.8%, equivalent to forty-six hours of downtime.
- The routine monthly calibration was performed on July 5.
- Seven hours of downtime were recorded on July 20, at hours 16:00-22:00, due to a power failure.
- Following a successful shut-down calibration on July 30, a station upgrade was implemented. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2, following a successful installation calibration. Thirty-nine hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.

TOTAL REDUCED SULPHUR (TRS)

- Operational time for the monitoring period was 93.5%, equivalent to forty-eight hours of downtime.
- The routine monthly calibration was performed on July 5.
- Seven hours of downtime were recorded on July 20, at hours 16:00-22:00, due to a power failure.
- The analyzer spanned outside the lower acceptance limit on July 29. Two subsequent repeat zero-span checks, at hour 19:00 on June 29 and hour 06:00 on June 30, yielded similar results. This prompted a site visit where a shut-down calibration was successfully completed. As the shut-down calibration met all AMD requirements, no data was discarded due to this event. Two hours of downtime were, however, incurred due to the additional quality checks.
- Following a successful shut-down calibration on July 30, a station upgrade was implemented. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2, following a successful installation calibration. Thirty-nine hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.

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

- Operational time for the monitoring period was 93.7%, equivalent to forty-seven hours of downtime.
- The routine monthly calibration was performed on July 5. The carrier gas (N₂) cylinder was replaced during this site visit.
- Eight hours of downtime were recorded on July 20, at hours 16:00-23:00, due to a power failure and the subsequent analyzer recovery period.
- Following a successful shut-down calibration on July 30, a station upgrade was implemented. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2, following a successful installation calibration. Thirty-nine hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.
- 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 July 5 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 96.8%, equivalent to twenty-four hours of downtime.
- An anemometer sensor check was conducted on July 5. The result was satisfactory.
- Seven hours of downtime were recorded on July 20, at hours 16:00-22:00, due to a power failure.
- A station upgrade was implemented this month. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2. Seventeen hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.
- One instance of maximum instantaneous data was discarded at hour 02:00 on July 20 due to a brief power interruption.
- 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 96.8%, equivalent to twenty-four hours of downtime.
- A humidity sensor check was conducted on July 5. The result was satisfactory.
- Seven hours of downtime were recorded on July 20, at hours 16:00-22:00, due to a power failure.
- A station upgrade was implemented this month. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2. Seventeen hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.

BAROMETRIC PRESSURE (BP)

- Operational time for the monitoring period was 96.8%, equivalent to twenty-four hours of downtime.
- A pressure sensor check was conducted on July 5. The result was satisfactory.
- Seven hours of downtime were recorded on July 20, at hours 16:00-22:00, due to a power failure.
- A station upgrade was implemented this month. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2. Seventeen hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 96.8%, equivalent to twenty-four hours of downtime.
- A temperature sensor check was conducted on July 5. The result was satisfactory.
- Seven hours of downtime were recorded on July 20, at hours 16:00-22:00, due to a power failure.
- A station upgrade was implemented this month. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2. Seventeen hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.

STATION TEMPERATURE (StnTPX)

- Operational time for the monitoring period was 96.8%, equivalent to twenty-four hours of downtime.
- Seven hours of downtime were recorded on July 20, at hours 16:00-22:00, due to a power failure.
- A station upgrade was implemented this month. The trailer was replaced and the Ultimate data logger was installed to replace the resident ESC 8832. Monitoring activity resumed on August 2. Seventeen hours of data were lost in the July monitoring period as a result of activities surrounding this upgrade.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

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

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

4.0 Calculations and Results

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

5.0 Methods and Procedures

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

Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring

Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration

Maxxam AIR SOP-00209: Ambient Sulphur Monitoring

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - Thermo 43C UV Fluorescent Analyzer

Total Reduced Sulphur - Thermo 43i - TLE UV Fluorescent Analyzer

Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer

Wind System - RM Young Unit

Relative Humidity - RM Young Unit

Barometric Pressure - Met One Unit

Ambient Temperature - RM Young Unit

Datalogger - ESC 8832

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

Level 0 Preliminary Verification

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

Level 1 Primary Validation

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

Level 2 Final Validation

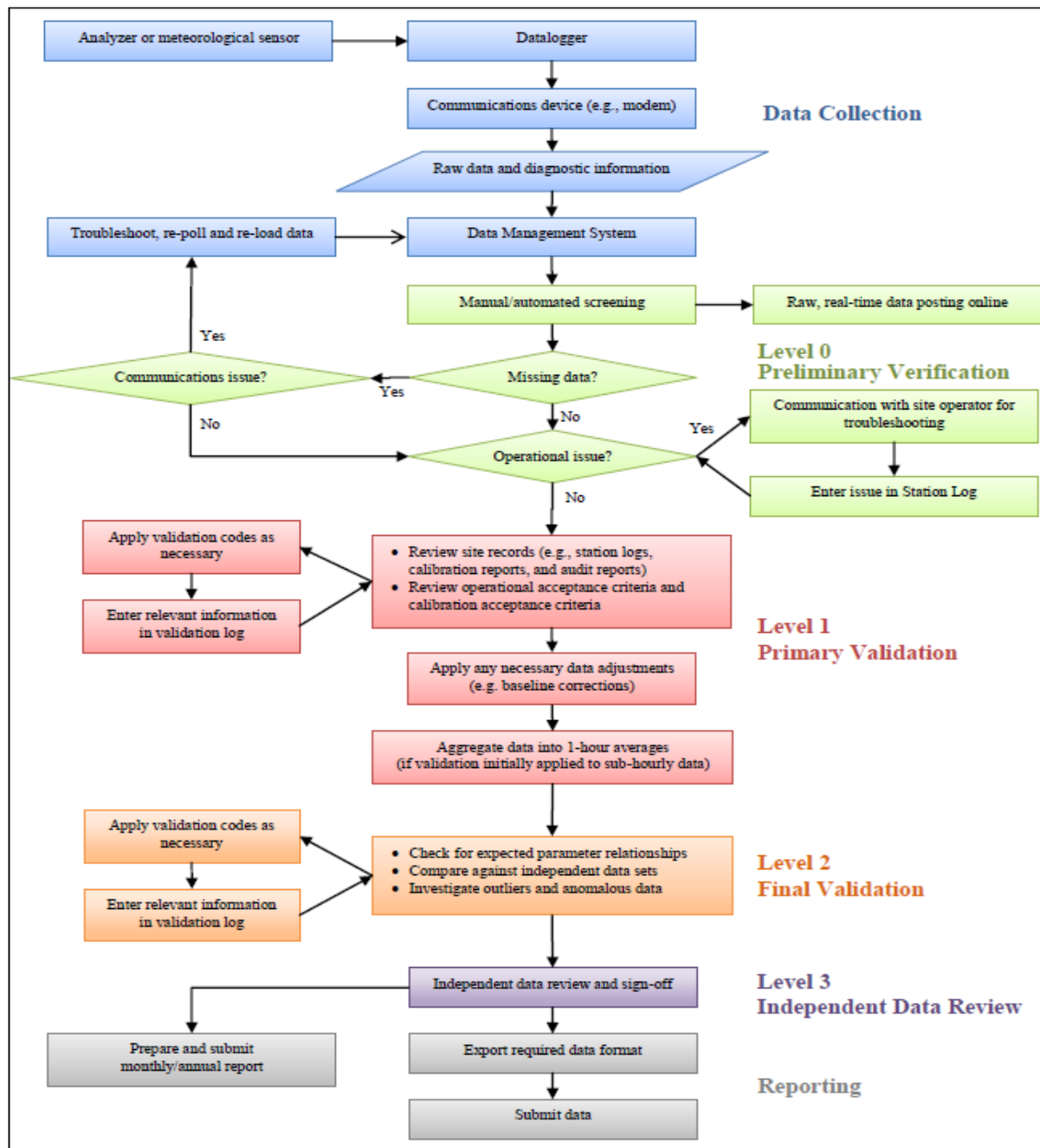
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

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

Post-Final Validation

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



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

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

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

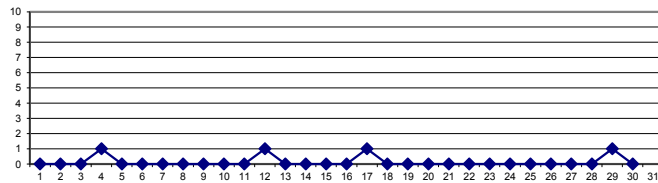
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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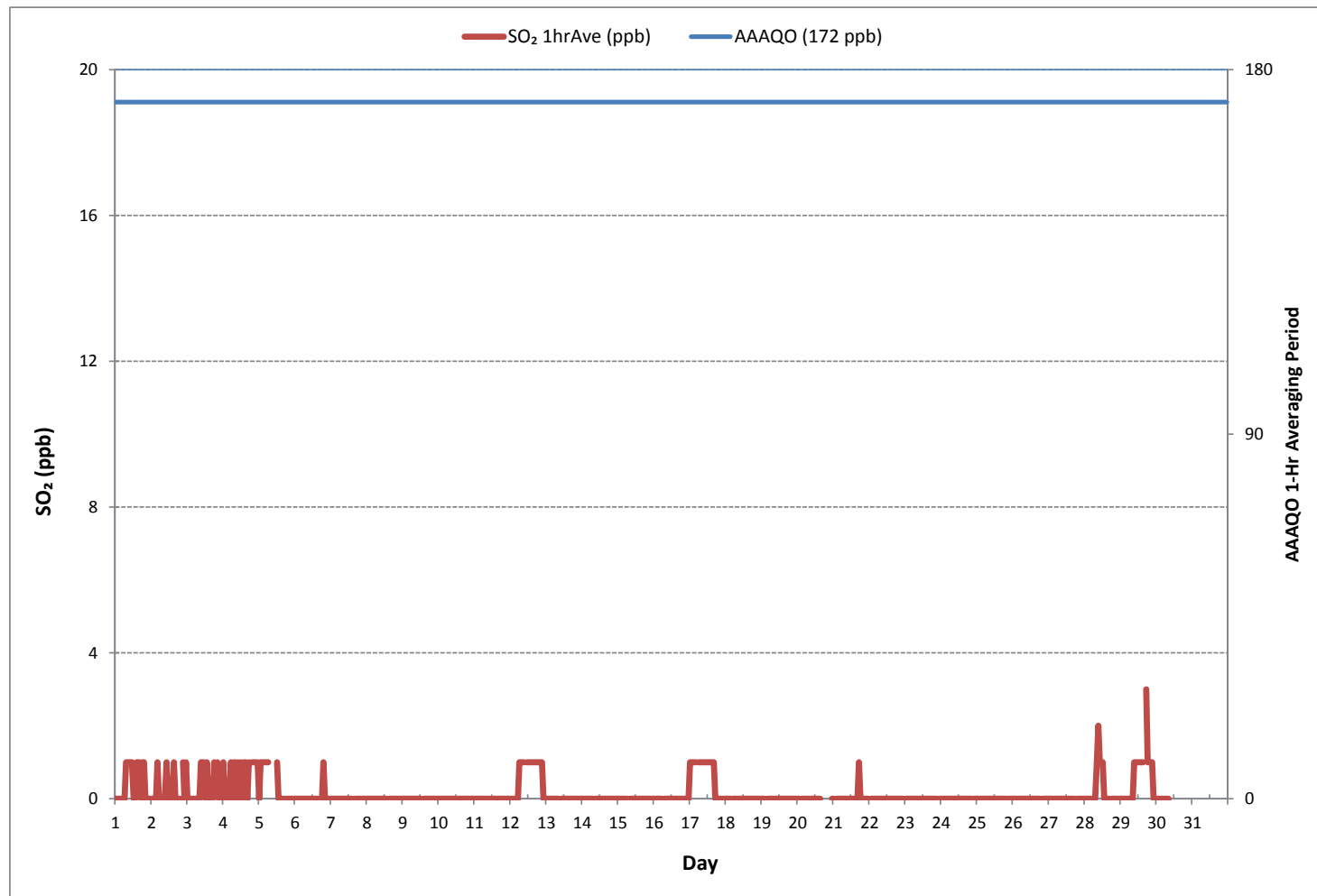
24 HR AVERAGES July 2018



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	92
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR ON DAY 1
MAXIMUM 1-HR AVERAGE:	3 ppb @ HOUR 17 ON DAY 29
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 4
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	698 hrs
AMD OPERATION UPTIME:	93.8 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



Wind: PRAMP_986
 Poll.: PRAMP_986-SO₂ [ppb]
 Monthly: 18/07
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 8.30%

Calm Avg: 0.20 [ppb]

Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	14.5	0.0	0.0	0.0	0.0	14.5
NE	1.8	0.0	0.0	0.0	0.0	1.8
E	3.6	0.0	0.0	0.0	0.0	3.6
SE	13.4	0.0	0.0	0.0	0.0	13.4
S	12.4	0.0	0.0	0.0	0.0	12.4
SW	18.4	0.0	0.0	0.0	0.0	18.4
W	9.2	0.2	0.0	0.0	0.0	9.4
NW	18.3	0.0	0.0	0.0	0.0	18.3
Summary	91.6	0.2	0.0	0.0	0.0	91.7

% Icon Classes (ppb)

92



0-3

0



3-10

0



10-85

0



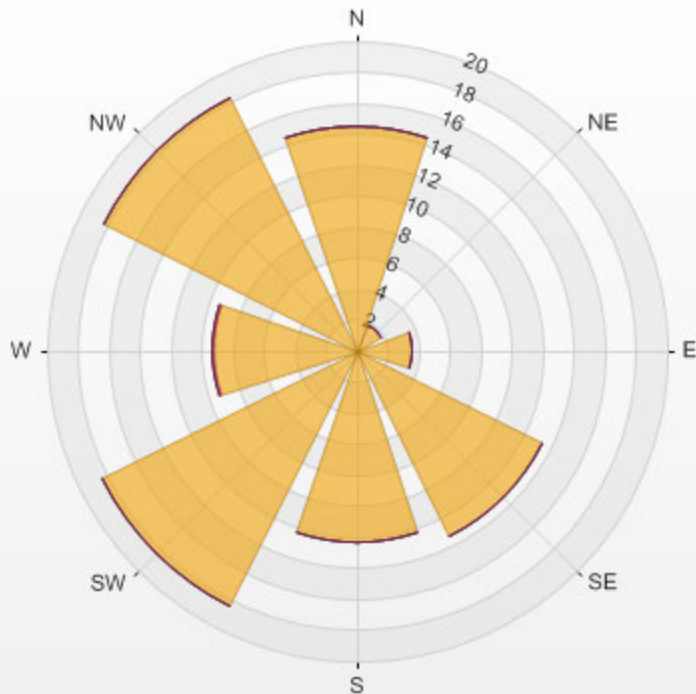
85-170

0



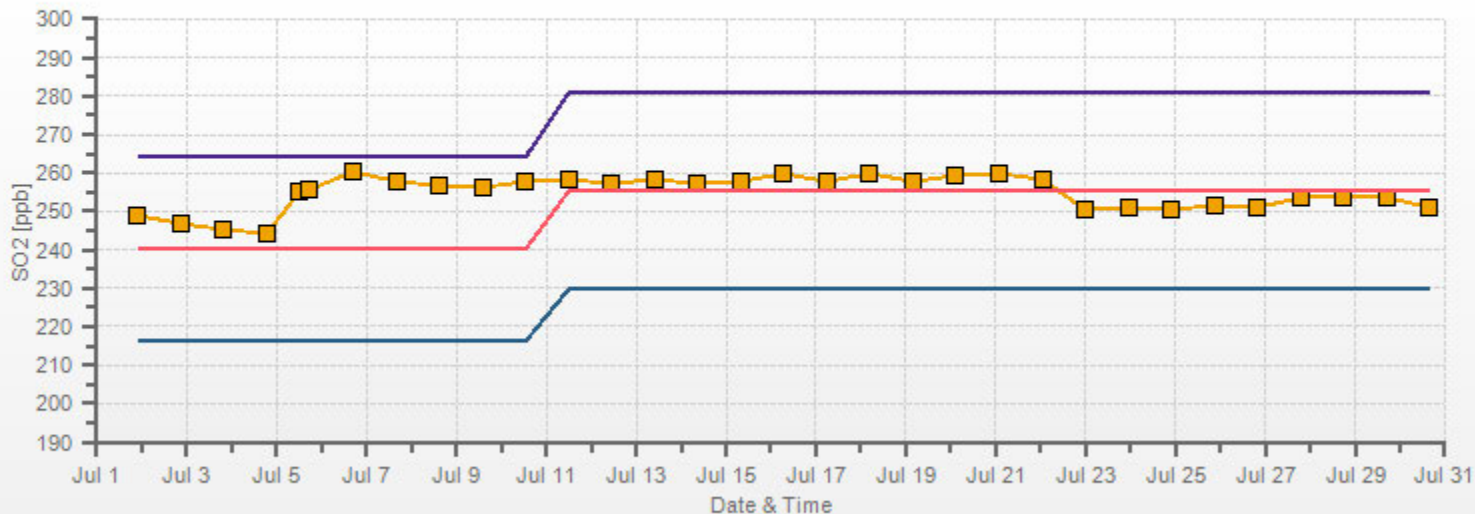
>170.0

PRAMP_986 Poll.: PRAMP_986-SO2[ppb] 2018/07/01 00:00 - 2018/07/31 23:00 Calm: 8.30% Calm Poll Avg: 0.20[ppb]



SO2[ppb] Calibration: PRAMP_986b Monthly: 18/07 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL REDUCED SULPHUR



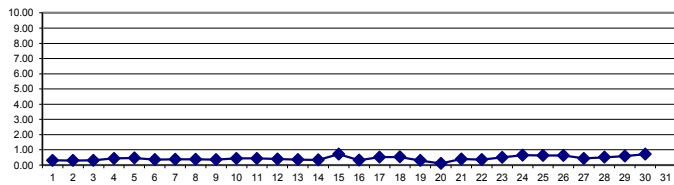
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	0.29	0.35	0.34	0.40	0.43	0.30	0.32	0.34	0.30	0.29	0.28	0.27	0.26	0.27	0.25	0.27	0.35	0.28	0.25	0.26	0.25	S	0.35	0.34	0.25	0.43	0.31	24	
2	0.33	0.31	0.30	0.31	0.33	0.38	0.37	0.33	0.31	0.29	0.28	0.28	0.28	0.27	0.27	0.28	0.27	0.27	0.27	0.28	S	0.33	0.30	0.32	0.27	0.38	0.30	24	
3	0.31	0.33	0.31	0.31	0.30	0.32	0.33	0.33	0.30	0.28	0.28	0.27	0.26	0.26	0.26	0.27	0.25	0.26	0.25	S	0.33	0.35	0.50	0.52	0.25	0.52	0.31	24	
4	0.75	0.69	0.81	0.64	0.68	0.67	0.41	0.45	0.38	0.34	0.32	0.29	0.29	0.30	0.27	0.28	0.27	0.28	S	0.32	0.32	0.35	0.42	0.46	0.27	0.81	0.43	24	
5	0.46	0.47	0.55	0.63	0.64	0.79	0.70	C	C	C	C	C	0.38	0.23	0.22	0.23	0.25	S	0.31	0.28	0.42	0.60	0.56	0.48	0.22	0.79	0.46	24	
6	0.48	0.54	0.53	0.61	0.46	0.34	0.45	0.37	0.34	0.30	0.30	0.28	0.24	0.26	0.25	0.26	S	0.31	0.29	0.26	0.27	0.35	0.35	0.34	0.24	0.61	0.36	24	
7	0.34	0.38	0.50	0.46	0.35	0.33	0.36	0.51	0.49	0.41	0.38	0.37	0.32	0.30	0.29	S	0.30	0.28	0.26	0.25	0.30	0.40	0.39	0.50	0.25	0.51	0.37	24	
8	0.55	0.53	0.41	0.60	0.77	0.53	0.44	0.33	0.25	0.24	0.24	0.25	0.26	0.23	S	0.27	0.24	0.23	0.23	0.23	0.28	0.30	0.48	0.51	0.23	0.77	0.37	24	
9	0.47	0.42	0.40	0.45	0.45	0.44	0.37	0.30	0.27	0.26	0.25	0.25	0.25	S	0.29	0.27	0.26	0.25	0.24	0.25	0.35	0.40	0.52	0.59	0.24	0.59	0.35	24	
10	0.58	0.55	0.57	0.57	0.63	0.67	0.56	0.41	0.36	0.34	0.34	0.32	S	0.36	0.30	0.31	0.30	0.30	0.27	0.27	0.27	0.28	0.36	0.53	0.64	0.27	0.67	0.43	24
11	0.75	0.78	0.75	0.96	0.72	0.60	0.47	0.37	0.33	0.33	0.31	S	0.34	0.32	0.29	0.28	0.27	0.27	0.26	0.26	0.29	0.36	0.30	0.33	0.26	0.96	0.43	24	
12	0.32	0.33	0.34	0.45	0.50	0.62	0.47	0.38	0.41	0.41	S	0.40	0.34	0.33	0.32	0.29	0.30	0.28	0.30	0.32	0.31	0.40	0.54	0.69	0.28	0.69	0.39	24	
13	0.76	0.46	0.54	0.42	0.45	0.59	0.43	0.37	0.29	S	0.32	0.27	0.25	0.24	0.25	0.24	0.24	0.28	0.26	0.27	0.26	0.26	0.27	0.28	0.24	0.76	0.35	24	
14	0.29	0.31	0.34	0.30	0.27	0.43	0.38	0.40	S	0.31	0.26	0.25	0.25	0.26	0.24	0.25	0.24	0.25	0.26	0.26	0.36	0.40	0.54	0.61	0.72	0.24	0.72	0.34	24
15	0.98	1.39	1.14	1.32	1.55	2.34	1.37	S	0.65	0.53	0.53	0.41	0.30	0.29	0.29	0.27	0.24	0.24	0.25	0.28	0.50	0.68	0.53	0.50	0.24	2.34	0.72	24	
16	0.45	0.40	0.38	0.38	0.42	0.45	S	0.43	0.33	0.32	0.30	0.27	0.25	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.28	0.27	0.29	0.35	0.25	0.45	0.32	24	
17	0.39	0.50	0.48	0.65	1.41	S	1.78	0.46	0.35	0.33	0.31	0.29	0.29	0.29	0.32	0.29	0.29	0.27	0.28	0.28	0.37	0.71	0.83	0.77	0.27	1.78	0.52	24	
18	1.15	1.15	0.79	0.96	S	0.69	0.97	0.66	0.46	0.38	0.35	0.34	0.33	0.30	0.28	0.26	0.27	0.28	0.28	0.36	0.35	0.39	0.46	0.64	0.26	1.15	0.53	24	
19	0.69	0.76	0.90	S	1.56	1.58	0.52	0.32	0.20	0.15	0.09	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	0.30	24
20	0.00	0.00	S	0.46	0.75	0.14	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	P	P	P	P	P	P	P	P	0.30	0.00	0.75	0.11	17
21	0.32	S	0.51	0.45	0.42	0.56	0.58	0.47	0.50	0.42	0.38	0.35	0.32	0.33	0.33	0.36	0.35	0.34	0.31	0.31	0.33	0.34	0.36	0.36	0.31	0.58	0.39	24	
22	S	0.39	0.40	0.37	0.42	0.47	0.42	0.37	0.36	0.34	0.32	0.32	0.31	0.29	0.29	0.29	0.29	0.28	0.30	0.32	0.34	0.45	0.47	S	0.28	0.47	0.36	24	
23	0.92	0.87	0.98	0.70	1.53	0.88	0.72	0.35	0.29	0.26	0.27	0.28	0.26	0.26	0.26	0.26	0.24	0.27	0.26	0.26	0.34	0.36	S	0.71	0.24	1.53	0.50	24	
24	1.04	1.08	0.93	0.96	0.83	1.36	2.00	1.34	0.54	0.34	0.28	0.27	0.28	0.26	0.26	0.27	0.27	0.27	0.27	0.28	0.33	S	0.67	0.68	0.26	2.00	0.64	24	
25	0.85	1.07	0.99	1.10	0.92	1.49	1.44	0.84	0.42	0.30	0.27	0.26	0.25	0.24	0.25	0.27	0.28	0.26	0.26	0.36	S	0.67	0.68	0.76	0.24	1.49	0.62	24	
26	0.83	1.21	1.38	1.34	1.20	1.40	1.00	0.53	0.34	0.30	0.27	0.31	0.28	0.27	0.25	0.27	0.26	0.27	0.25	S	0.54	0.61	0.57	0.55	0.25	1.40	0.62	24	
27	0.54	0.48	0.50	0.52	0.60	0.62	0.47	0.43	0.39	0.35	0.31	0.27	0.29	0.30	0.28	0.27	0.25	0.27	S	0.35	0.48	0.72	0.57	0.52	0.25	0.72	0.43	24	
28	0.79	0.61	0.70	0.61	0.83	0.85	0.73	0.61	0.37	0.31	0.32	0.30	0.30	0.28	0.29	0.30	0.31	S	0.38	0.42	0.51	0.57	0.68	0.59	0.28	0.85	0.51	24	
29	0.60	0.65	0.78	1.03	0.82	0.55	0.43	0.41	0.38	0.35	0.34	0.36	0.33	0.31	0.32	0.32	S	0.50	0.38	S1	0.66	1.35	1.01	1.01	0.31	1.35	0.59	23	
30	1.28	1.18	0.40	0.47	0.55	0.56	S1	0.88	0.43	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.40	1.28	0.72	8	
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0	
HOURLY MAX	1.28	1.39	1.38	1.34	1.56	2.34	2.00	1.34	0.65	0.53	0.53	0.41	0.38	0.36	0.33	0.36	0.35	0.50	0.38	0.42	0.66	1.35	1.01	1.01					
HOURLY AVG	0.60	0.63	0.62	0.64	0.72	0.72	0.66	0.46	0.36	0.31	0.29	0.28	0.27	0.26	0.26	0.26	0.26	0.27	0.27	0.28	0.35	0.47	0.49	0.52					

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

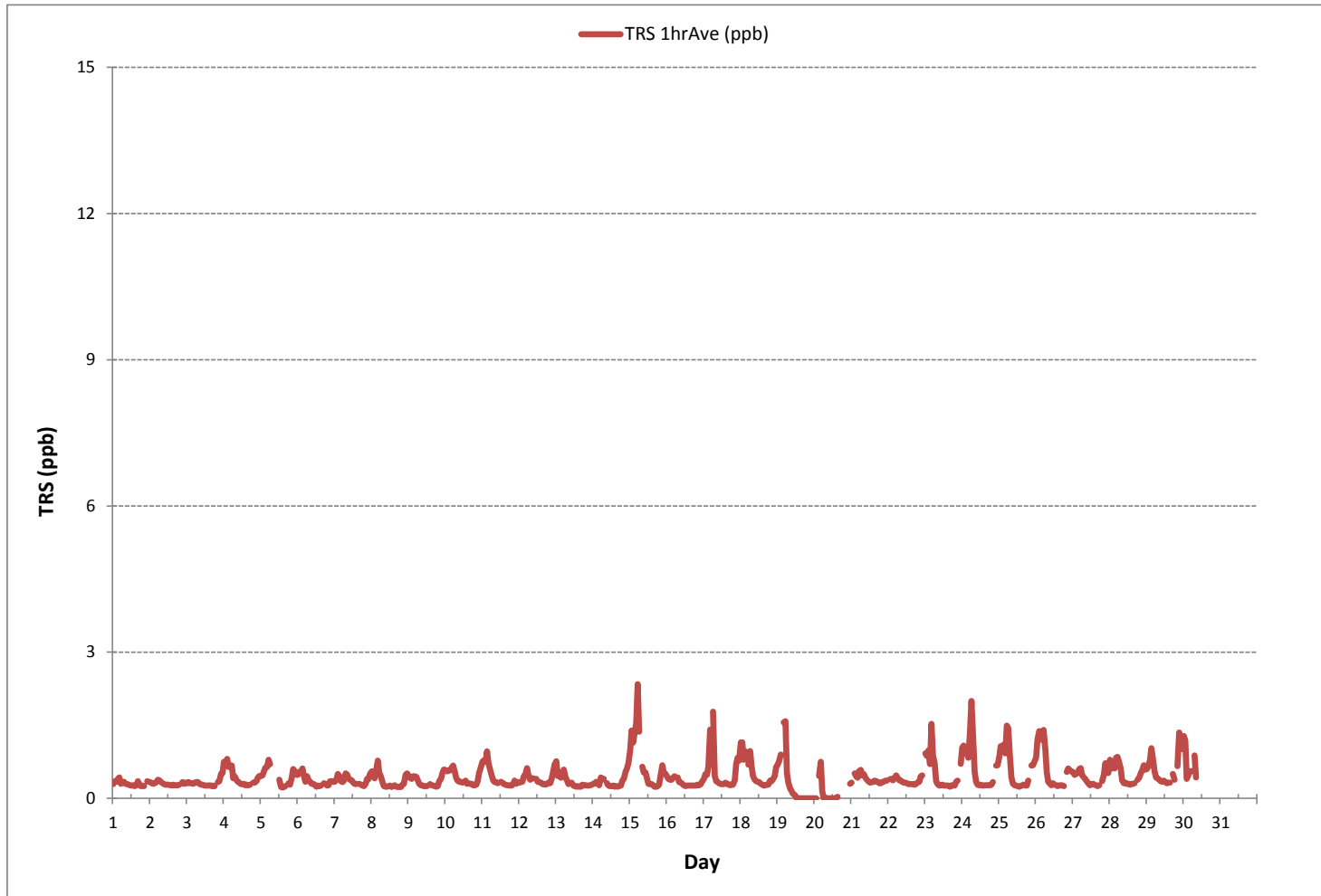
24 HR AVERAGES July 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	640		
MINIMUM 1-HR AVERAGE:	0.00 ppb	@ HOUR	13 ON DAY 19
MAXIMUM 1-HR AVERAGE:	2.34 ppb	@ HOUR	5 ON DAY 15
MAXIMUM 24-HR AVERAGE:	0.72 ppb		ON DAY 15
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	696 hrs
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	93.5 %
STANDARD DEVIATION:	0.28	MONTHLY AVERAGE:	0.43 ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



Wind: PRAMP_986
Poll.: PRAMP_986-TRS [ppb]
Monthly: 18/07
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.17% Calm Avg: 0.74 [ppb]

Direction	0-1	1-3	3-10	>10.0	Total
N	14.4	0.2	0.0	0.0	14.5
NE	1.8	0.0	0.0	0.0	1.8
E	2.3	1.2	0.0	0.0	3.5
SE	11.5	2.0	0.0	0.0	13.5
S	12.4	0.0	0.0	0.0	12.4
SW	18.3	0.2	0.0	0.0	18.5
W	9.4	0.0	0.0	0.0	9.4
NW	18.3	0.0	0.0	0.0	18.3
Summary	88.4	3.5	0.0	0.0	91.9

% Icon Classes (ppb)

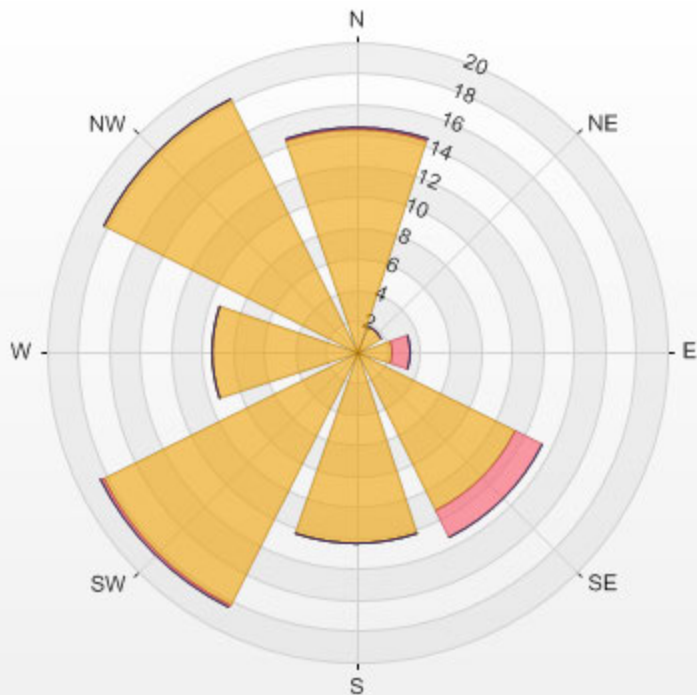
88 0-1

3 1-3

0 3-10

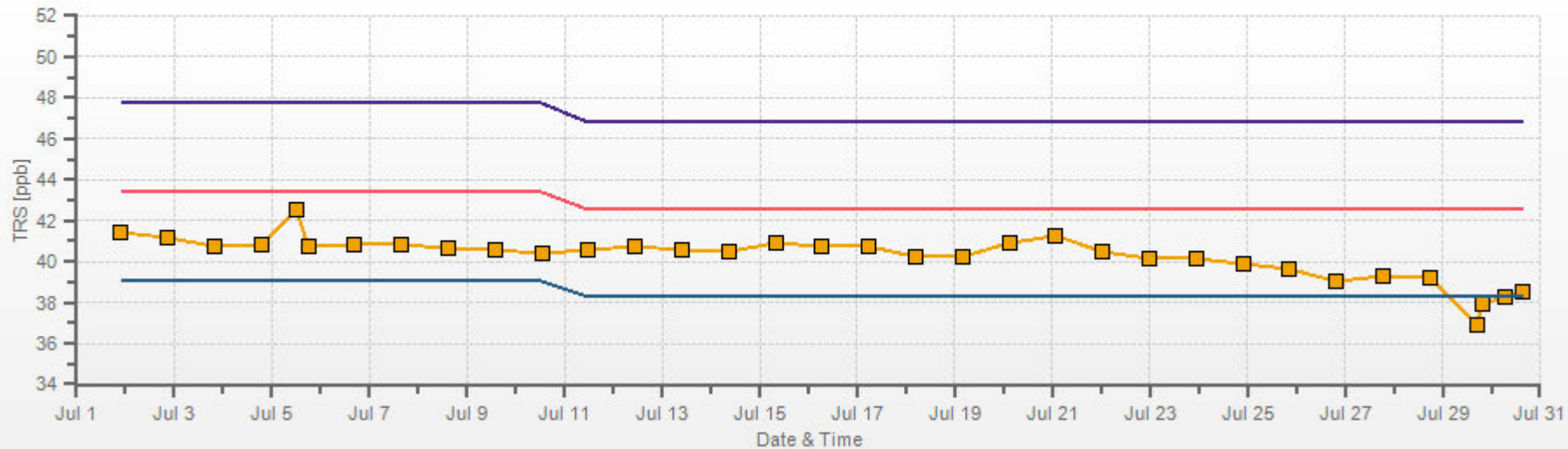
0 >10.0

PRAMP_986 Poll.: PRAMP_986-TRS[ppb] 2018/07/01 00:00 - 2018/07/31 23:00 Calm: 8.17% Calm Poll Avg: 0.74[ppb]



TRS [ppb] Calibration: PRAMP_986b Monthly: 18/07 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL HYDROCARBON



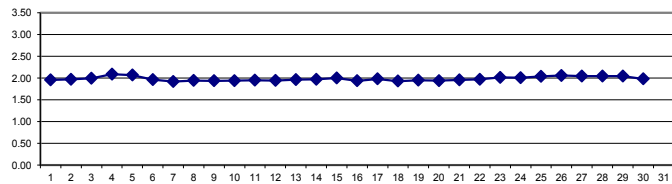
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	1.94	1.94	1.95	1.97	1.95	1.95	1.96	1.96	1.94	1.94	1.95	1.94	1.94	1.94	1.94	1.95	1.96	1.98	1.99	1.97	1.99	S	2.00	1.99	1.94	2.00	1.96	24	
2	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	1.97	1.97	1.97	1.97	1.98	S	1.98	1.99	1.99	1.96	1.99	1.97	24	
3	1.98	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.97	1.97	1.97	S	1.98	2.03	2.26	2.14	1.96	2.26	1.99	24	
4	2.48	2.47	2.51	2.21	2.23	2.23	2.01	1.98	1.98	1.98	1.98	1.99	1.98	2.00	1.98	1.98	1.97	1.96	S	1.96	1.96	2.04	2.05	2.06	1.96	2.51	2.09	24	
5	2.08	2.13	2.15	2.18	2.13	2.13	2.08	2.02	1.99	1.99	C	C	C	C	1.96	1.95	1.95	S	1.94	1.95	2.17	2.27	2.16	2.07	1.94	2.27	2.07	24	
6	2.07	2.20	2.22	2.19	2.05	1.93	1.95	1.95	1.96	1.94	1.94	1.93	1.92	1.90	1.89	1.89	S	1.88	1.88	1.88	1.88	1.90	1.90	1.90	1.88	2.22	1.96	24	
7	1.88	1.88	1.89	1.89	1.89	1.89	1.92	1.98	1.96	1.92	1.92	1.92	1.93	1.93	1.94	S	1.93	1.92	1.92	1.91	1.91	1.94	1.92	1.93	1.88	1.98	1.92	24	
8	1.95	1.96	1.94	1.98	1.99	1.96	1.96	1.94	1.94	1.93	1.92	1.92	1.92	1.92	1.92	S	1.91	1.91	1.91	1.91	1.90	1.97	1.96	2.03	2.00	1.90	2.03	1.94	24
9	1.97	1.97	1.96	1.97	1.96	1.99	1.93	1.93	1.92	1.92	1.91	1.91	1.91	S	1.90	1.90	1.89	1.89	1.89	1.90	1.96	1.99	2.01	1.97	1.89	2.01	1.94	24	
10	1.94	1.96	1.95	1.97	1.96	1.97	1.96	1.92	1.92	1.92	1.91	1.92	S	1.90	1.89	1.89	1.90	1.89	1.89	1.89	1.90	1.97	2.05	2.15	1.89	2.15	1.94	24	
11	2.31	2.21	2.12	2.02	1.99	1.93	1.92	1.91	1.90	1.91	1.91	S	1.91	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.91	1.90	1.91	1.89	2.31	1.95	24	
12	1.91	1.91	1.91	1.93	1.95	1.95	1.93	1.93	1.94	1.95	S	1.94	1.92	1.92	1.91	1.90	1.90	1.92	1.91	1.92	1.91	1.99	2.16	2.13	1.90	2.16	1.95	24	
13	2.04	2.00	1.96	1.94	2.00	2.05	1.95	1.93	1.94	S	1.93	1.94	1.94	1.93	1.94	1.95	1.94	1.93	1.93	1.98	1.96	2.01	2.01	2.01	1.93	2.05	1.97	24	
14	1.97	1.96	1.95	1.94	1.95	1.94	1.93	1.93	S	1.94	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.97	1.96	1.95	1.95	2.10	2.10	2.07	2.05	1.93	2.10	1.97	24
15	2.08	2.10	2.08	2.08	2.08	2.08	2.06	S	1.98	1.96	1.96	1.95	1.94	1.94	1.94	1.93	1.92	1.92	1.92	1.95	2.08	2.05	2.00	2.04	1.92	2.10	2.00	24	
16	2.00	2.01	2.00	1.98	1.97	1.99	S	1.96	1.95	1.94	1.93	1.91	1.91	1.91	1.91	1.91	1.90	1.90	1.90	1.90	1.91	1.92	1.92	1.93	1.90	2.01	1.94	24	
17	1.92	1.92	1.92	1.97	2.42	S	2.12	1.95	1.92	1.92	1.93	1.92	1.91	1.92	1.91	1.91	1.90	1.89	1.89	1.89	1.89	2.03	2.07	2.22	2.12	1.89	2.42	1.98	24
18	2.21	2.12	2.00	1.94	S	1.89	1.91	1.91	1.90	1.89	1.89	1.88	1.88	1.87	1.87	1.88	1.87	1.88	1.89	1.92	1.90	1.93	1.99	1.98	1.87	2.21	1.93	24	
19	1.92	2.00	2.01	S	2.14	2.28	1.94	1.92	1.91	1.92	1.91	1.91	1.91	1.91	1.91	1.90	1.91	1.91	1.91	1.92	1.92	1.94	1.96	1.97	1.90	2.28	1.95	24	
20	1.93	1.93	S	1.96	1.96	1.95	1.94	1.94	1.95	1.96	1.95	1.95	1.94	1.93	1.92	1.92	P	P	P	P	P	P	P	R	1.92	1.96	1.94	16	
21	1.92	S	1.92	1.92	1.92	1.92	1.94	1.94	1.94	1.93	1.94	1.97	1.98	1.95	1.96	1.96	1.96	1.96	1.97	1.95	1.95	1.99	2.04	2.05	1.92	2.05	1.96	24	
22	S	1.98	1.97	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.96	1.96	2.12	2.19	S	1.94	2.19	1.97	24	
23	2.06	1.98	1.97	2.02	2.03	2.19	1.96	1.99	1.97	1.98	1.96	1.96	1.96	1.96	1.96	1.95	1.96	1.96	2.01	2.07	2.15	2.24	S	2.03	1.95	2.24	2.01	24	
24	2.09	2.06	2.11	2.06	2.05	2.06	2.08	2.07	1.96	1.96	1.95	1.95	1.94	1.94	1.95	1.95	1.94	1.94	1.95	1.96	2.01	S	2.07	2.09	1.94	2.11	2.01	24	
25	2.08	2.12	2.12	2.11	2.32	2.14	2.13	2.07	2.00	1.95	1.93	1.94	1.94	1.94	1.95	1.94	1.92	1.92	1.93	2.06	S	2.07	2.14	2.19	1.92	2.32	2.04	24	
26	2.11	2.19	2.21	2.26	2.49	2.18	2.15	2.02	1.95	1.94	1.92	1.93	1.93	1.92	1.93	1.95	1.94	1.93	S	2.00	2.14	2.27	2.09	1.92	2.49	2.06	24		
27	2.04	2.21	2.18	2.15	2.09	2.10	2.05	2.04	2.02	2.00	1.97	1.97	1.97	1.96	1.94	1.94	1.94	S	1.95	2.04	2.10	2.30	2.15	1.94	2.30	2.05	24		
28	2.25	2.15	2.07	2.33	2.09	2.11	2.14	2.07	1.98	1.95	1.95	1.94	1.93	1.94	1.94	1.95	1.95	S	1.97	2.03	2.11	1.99	2.13	2.06	1.93	2.33	2.04	24	
29	2.11	2.08	2.24	2.25	2.25	2.03	1.97	1.95	1.95	1.96	1.94	1.94	1.95	1.95	1.95	1.95	S	1.93	1.94	2.06	2.14	2.18	2.11	2.16	1.93	2.25	2.04	24	
30	2.28	2.17	1.92	1.89	1.93	1.92	1.90	1.93	1.89	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.89	2.28	1.98	9	
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0	
HOURLY MAX	2.48	2.47	2.51	2.33	2.49	2.28	2.15	2.07	2.02	2.00	1.98	1.99	1.98	2.00	1.98	1.98	1.97	1.98	2.01	2.07	2.17	2.27	2.30	2.19					
HOURLY AVG	2.05	2.05	2.04	2.04	2.06	2.02	1.99	1.97	1.95	1.95	1.94	1.94	1.94	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.95	1.99	2.03	2.07	2.04				

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

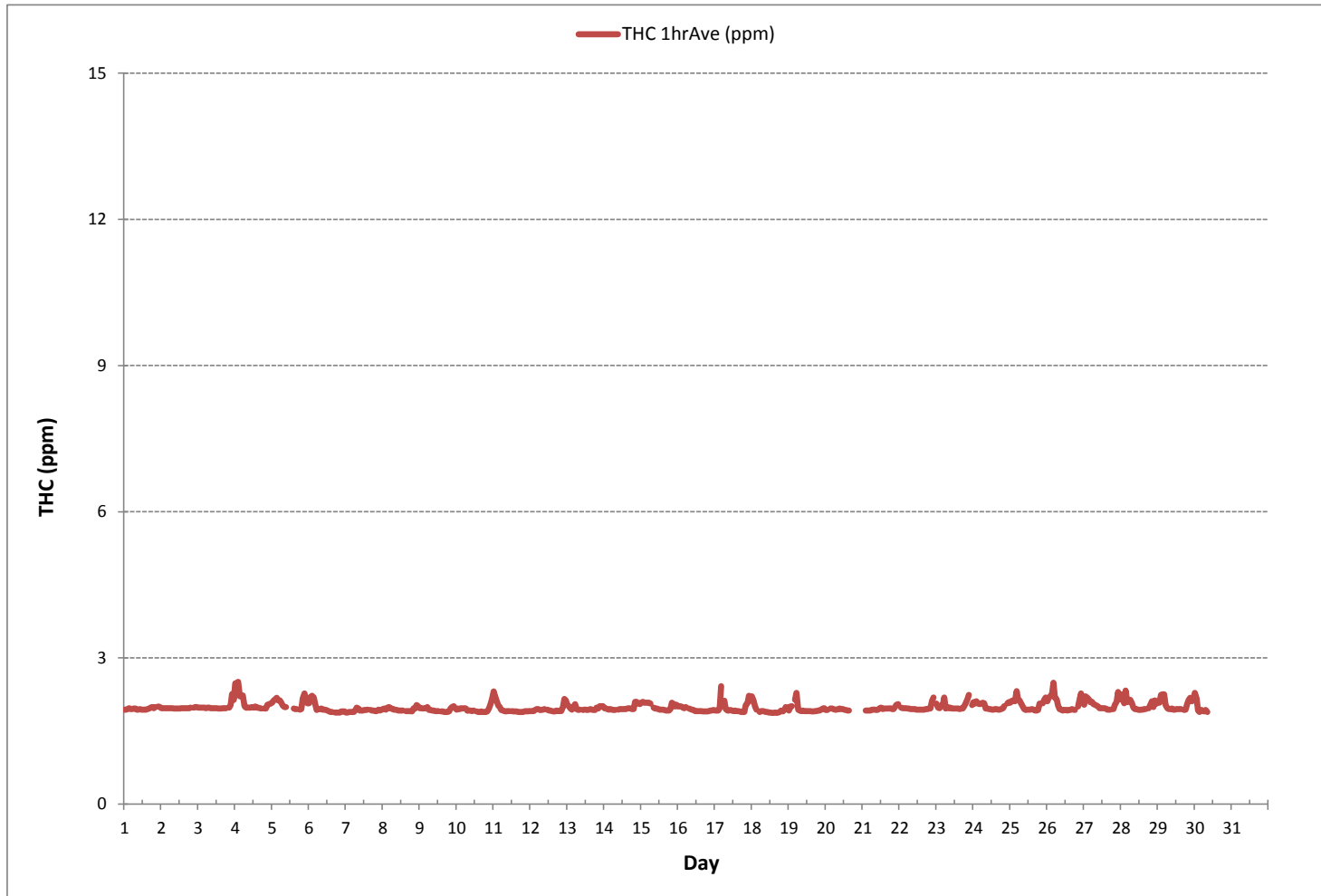
24 HR AVERAGES July 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	663			
MINIMUM 1-HR AVERAGE:	1.87 ppm	@ HOUR	13	ON DAY 18
MAXIMUM 1-HR AVERAGE:	2.51 ppm	@ HOUR	2	ON DAY 4
MAXIMUM 24-HR AVERAGE:	2.09 ppm			ON DAY 4
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	697	hrs
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	93.7	%
STANDARD DEVIATION:	0.10	MONTHLY AVERAGE:	1.98	ppm

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



Wind: PRAMP_986
 Poll.: PRAMP_986-THC55 [ppm]
 Monthly: 18/07
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 8.30%

Calm Avg: 2.10 [ppm]

Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	13.4	1.1	0.0	0.0	0.0	14.5
NE	1.7	0.0	0.0	0.0	0.0	1.7
E	0.9	2.7	0.0	0.0	0.0	3.6
SE	2.9	10.6	0.0	0.0	0.0	13.4
S	10.6	2.0	0.0	0.0	0.0	12.5
SW	18.0	0.5	0.0	0.0	0.0	18.4
W	9.1	0.3	0.0	0.0	0.0	9.4
NW	15.4	2.9	0.0	0.0	0.0	18.3
Summary	71.8	19.9	0.0	0.0	0.0	91.7

% Icon Classes (ppm)

72 0-2

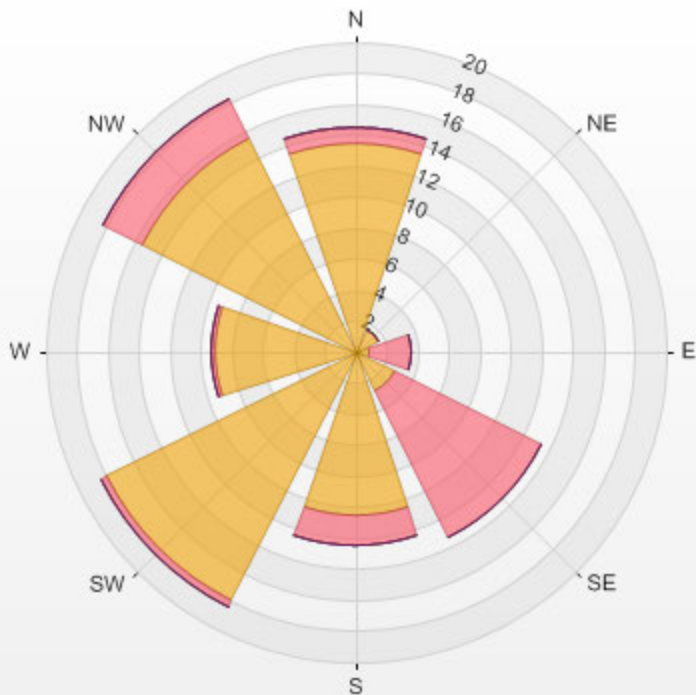
20 2-3

0 3-5

0 5-10

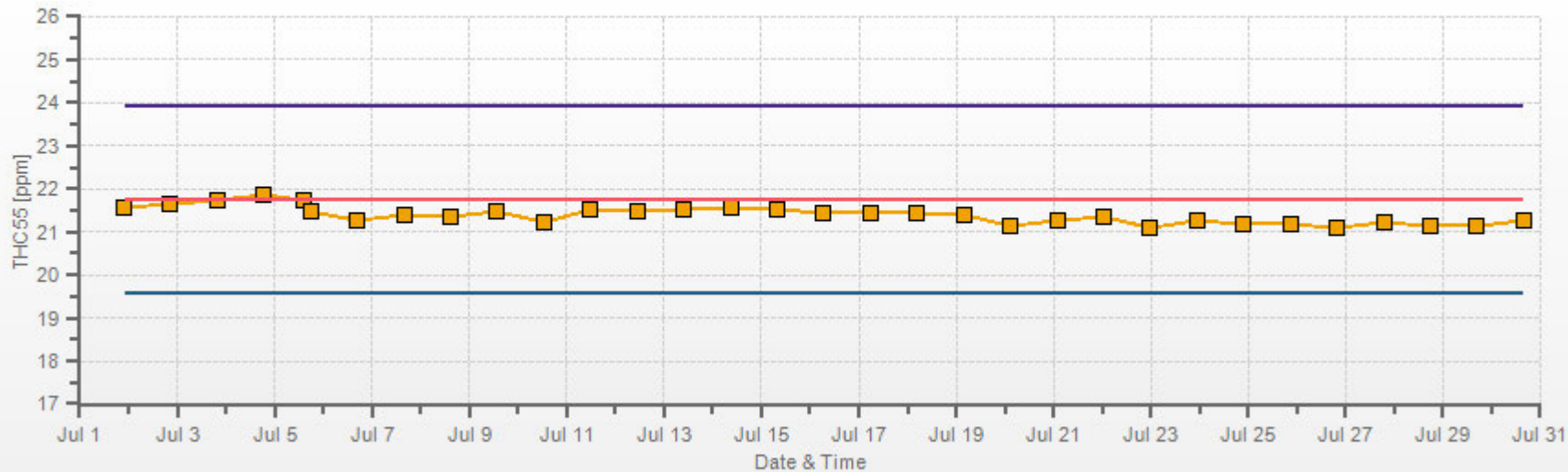
0 >10.0

PRAMP_986 Poll.: PRAMP_986-THC55[ppm] 2018/07/01 00:00 - 2018/07/31 23:00 Calm: 8.30% Calm Poll Avg: 2.10[ppm]



THC55 [ppm] Calibration: PRAMP_986b Monthly: 18/07 Type: Span

Span Meas Span Ref Span Low Span High



METHANE



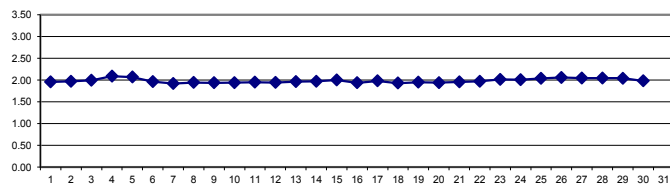
METHANE Hourly Averages (CH₄ ppm)

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	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	1.94	1.95	1.97	1.95	1.95	1.96	1.96	1.94	1.94	1.95	1.94	1.94	1.94	1.94	1.95	1.96	1.98	1.99	1.97	1.99	S	2.00	1.99	1.94	2.00	1.96	24	
2	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	1.97	1.97	1.97	1.97	1.98	S	1.98	1.99	1.99	1.96	1.99	1.97	24	
3	1.98	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.97	1.97	1.97	S	1.98	2.03	2.26	2.14	1.96	2.26	1.99	24	
4	2.48	2.47	2.51	2.21	2.23	2.23	2.01	1.98	1.98	1.98	1.98	1.99	1.98	2.00	1.98	1.98	1.97	1.96	S	1.96	1.96	2.04	2.05	2.06	1.96	2.51	2.09	24	
5	2.08	2.13	2.15	2.18	2.13	2.13	2.08	2.02	1.99	1.99	C	C	C	C	1.96	1.95	1.95	S	1.94	1.95	2.17	2.27	2.16	2.07	1.94	2.27	2.07	24	
6	2.07	2.20	2.22	2.19	2.05	1.93	1.95	1.95	1.96	1.94	1.94	1.93	1.92	1.90	1.89	1.89	S	1.88	1.88	1.88	1.88	1.90	1.90	1.90	1.88	2.22	1.96	24	
7	1.88	1.88	1.89	1.89	1.89	1.89	1.92	1.98	1.96	1.92	1.92	1.92	1.93	1.93	1.94	S	1.93	1.92	1.92	1.91	1.91	1.94	1.92	1.93	1.88	1.98	1.92	24	
8	1.95	1.96	1.94	1.98	1.99	1.96	1.96	1.94	1.94	1.93	1.92	1.92	1.92	1.92	1.92	S	1.91	1.91	1.91	1.91	1.90	1.97	1.96	2.03	2.00	1.90	2.03	1.94	24
9	1.97	1.97	1.96	1.97	1.96	1.99	1.93	1.93	1.92	1.92	1.91	1.91	1.91	S	1.90	1.90	1.89	1.89	1.89	1.90	1.96	1.99	2.01	1.97	1.89	2.01	1.94	24	
10	1.94	1.96	1.95	1.97	1.96	1.97	1.96	1.92	1.92	1.92	1.91	1.92	S	1.90	1.89	1.89	1.90	1.89	1.89	1.89	1.89	1.90	1.97	2.05	2.15	1.89	2.15	1.94	24
11	2.31	2.21	2.12	2.02	1.99	1.93	1.92	1.91	1.90	1.91	1.91	S	1.91	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.91	1.90	1.91	1.89	2.31	1.95	24
12	1.91	1.91	1.91	1.93	1.95	1.95	1.93	1.93	1.94	1.95	S	1.94	1.92	1.92	1.91	1.90	1.90	1.92	1.91	1.92	1.91	1.99	2.16	2.13	1.90	2.16	1.95	24	
13	2.04	2.00	1.96	1.94	2.00	2.05	1.95	1.93	1.94	S	1.93	1.94	1.94	1.93	1.94	1.95	1.94	1.93	1.93	1.98	1.96	2.01	2.01	2.01	1.93	2.05	1.97	24	
14	1.97	1.96	1.95	1.94	1.95	1.94	1.93	1.93	S	1.94	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.97	1.96	1.95	1.95	2.10	2.10	2.07	2.05	1.93	2.10	1.97	24
15	2.08	2.10	2.08	2.08	2.08	2.08	2.06	S	1.98	1.96	1.96	1.95	1.94	1.94	1.94	1.93	1.92	1.92	1.92	1.95	2.08	2.05	2.00	2.04	1.92	2.10	2.00	24	
16	2.00	2.01	2.00	1.98	1.97	1.99	S	1.96	1.95	1.94	1.93	1.91	1.91	1.91	1.91	1.91	1.90	1.90	1.90	1.90	1.91	1.92	1.92	1.93	1.90	2.01	1.94	24	
17	1.92	1.92	1.92	1.97	2.42	S	2.12	1.95	1.92	1.92	1.93	1.92	1.91	1.92	1.91	1.91	1.90	1.89	1.89	1.89	1.89	2.03	2.07	2.22	2.12	1.89	2.42	1.98	24
18	2.21	2.12	2.00	1.94	S	1.89	1.91	1.91	1.90	1.89	1.89	1.88	1.88	1.87	1.87	1.88	1.87	1.88	1.89	1.92	1.90	1.93	1.99	1.98	1.87	2.21	1.93	24	
19	1.92	2.00	2.01	S	2.14	2.28	1.94	1.92	1.91	1.92	1.91	1.91	1.91	1.91	1.91	1.90	1.91	1.91	1.91	1.92	1.92	1.94	1.96	1.97	1.90	2.28	1.95	24	
20	1.93	1.93	S	1.96	1.96	1.95	1.94	1.94	1.95	1.96	1.95	1.95	1.94	1.93	1.92	1.92	P	P	P	P	P	P	P	R	1.92	1.96	1.94	16	
21	1.92	S	1.92	1.92	1.92	1.92	1.94	1.94	1.94	1.93	1.94	1.97	1.98	1.95	1.96	1.96	1.96	1.96	1.97	1.95	1.95	1.99	2.04	2.05	1.92	2.05	1.96	24	
22	S	1.98	1.97	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.96	1.96	2.12	2.19	S	1.94	2.19	1.97	24	
23	2.06	1.98	1.97	2.02	2.03	2.19	1.96	1.99	1.97	1.98	1.96	1.96	1.96	1.96	1.96	1.95	1.96	1.96	2.01	2.07	2.15	2.24	S	2.03	1.95	2.24	2.01	24	
24	2.09	2.06	2.11	2.06	2.05	2.06	2.08	2.07	1.96	1.96	1.95	1.95	1.94	1.94	1.95	1.95	1.94	1.94	1.95	1.96	2.01	S	2.07	2.09	1.94	2.11	2.01	24	
25	2.08	2.12	2.12	2.11	2.32	2.14	2.13	2.07	2.00	1.95	1.93	1.94	1.94	1.94	1.95	1.94	1.92	1.92	1.93	2.06	S	2.07	2.14	2.19	1.92	2.32	2.04	24	
26	2.11	2.19	2.21	2.26	2.49	2.18	2.15	2.02	1.95	1.94	1.92	1.93	1.93	1.92	1.93	1.95	1.94	1.93	S	2.00	2.14	2.27	2.09	1.92	2.49	2.06	24		
27	2.04	2.21	2.18	2.15	2.09	2.10	2.05	2.04	2.02	2.00	1.97	1.97	1.97	1.96	1.94	1.94	1.94	S	1.95	2.04	2.10	2.30	2.15	1.94	2.30	2.05	24		
28	2.25	2.15	2.07	2.33	2.09	2.11	2.14	2.07	1.98	1.95	1.95	1.94	1.93	1.94	1.94	1.95	1.95	S	S	1.97	2.03	2.11	1.99	2.13	2.06	1.93	2.33	2.04	24
29	2.11	2.08	2.24	2.25	2.25	2.03	1.97	1.95	1.95	1.96	1.94	1.94	1.95	1.95	1.95	1.95	S	1.93	1.94	2.05	2.13	2.18	2.11	2.16	1.93	2.25	2.04	24	
30	2.28	2.17	1.92	1.89	1.93	1.92	1.90	1.93	1.89	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.89	2.28	1.98	9	
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0	
HOURLY MAX	2.48	2.47	2.51	2.33	2.49	2.28	2.15	2.07	2.02	2.00	1.98	1.99	1.98	2.00	1.98	1.98	1.97	1.98	2.01	2.07	2.17	2.27	2.30	2.19					
HOURLY AVG	2.05	2.05	2.04	2.04	2.06	2.02	1.99	1.97	1.95	1.95	1.94	1.94	1.94	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.95	1.99	2.03	2.07	2.04				

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

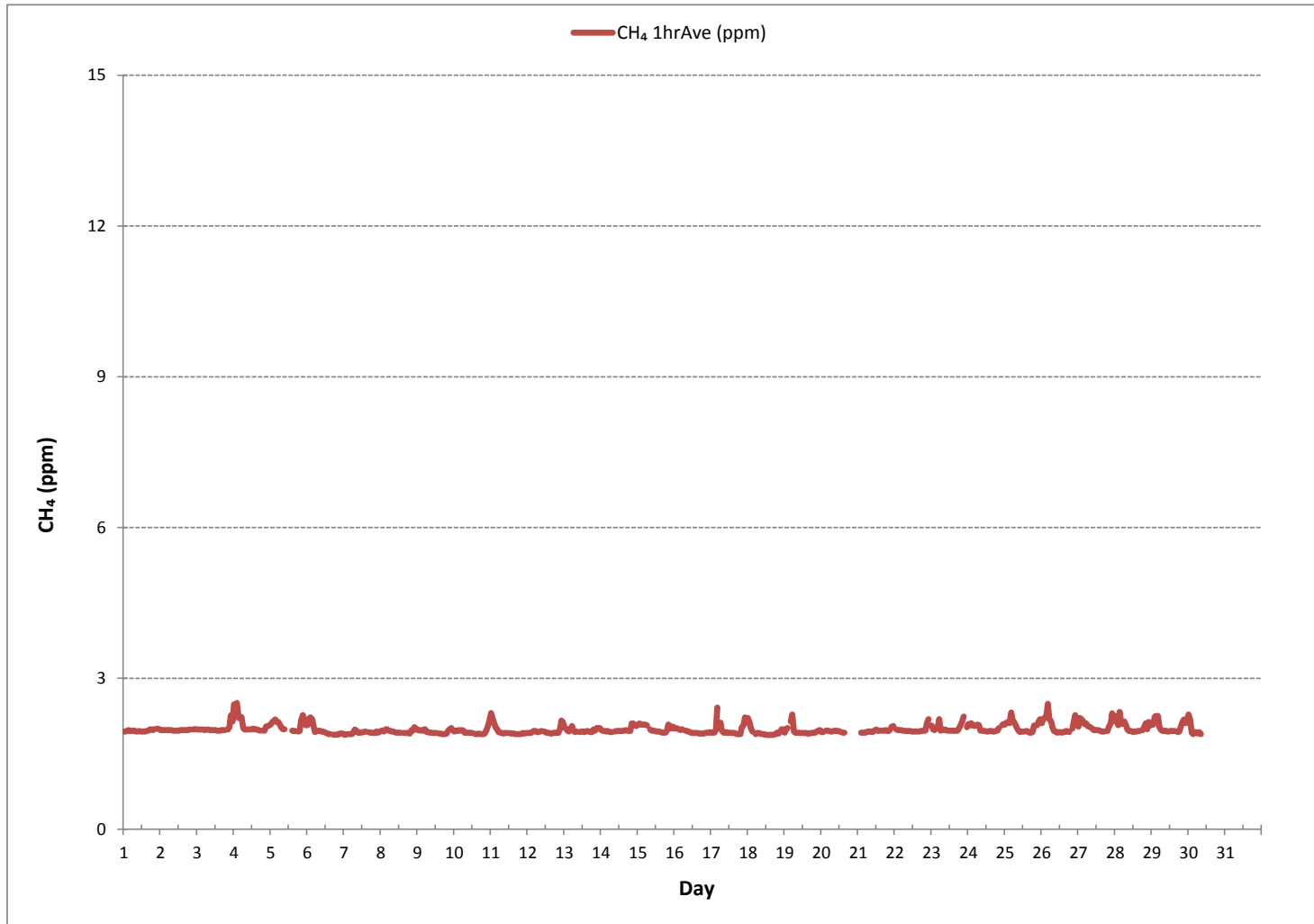
24 HR AVERAGES July 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	663			
MINIMUM 1-HR AVERAGE:	1.87 ppm	@ HOUR	13	ON DAY 18
MAXIMUM 1-HR AVERAGE:	2.51 ppm	@ HOUR	2	ON DAY 4
MAXIMUM 24-HR AVERAGE:	2.09 ppm			ON DAY 4
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	697	hrs
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	93.7	%
STANDARD DEVIATION:	0.10	MONTHLY AVERAGE:	1.98	ppm

METHANE Hourly Averages (CH₄ ppm)



Wind: PRAMP_986
 Poll.: PRAMP_986-CH₄ [ppm]
 Monthly: 18/07
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

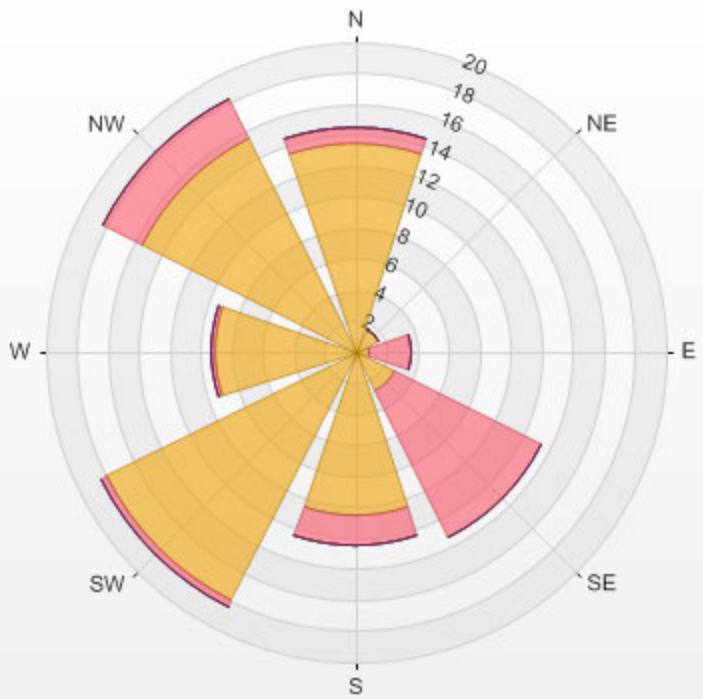
Calm: 8.30%

Calm Avg: 2.10 [ppm]

Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	13.4	1.1	0.0	0.0	0.0	14.5
NE	1.7	0.0	0.0	0.0	0.0	1.7
E	0.9	2.7	0.0	0.0	0.0	3.6
SE	2.9	10.6	0.0	0.0	0.0	13.4
S	10.6	2.0	0.0	0.0	0.0	12.5
SW	18.0	0.5	0.0	0.0	0.0	18.4
W	9.1	0.3	0.0	0.0	0.0	9.4
NW	15.4	2.9	0.0	0.0	0.0	18.3
Summary	71.8	19.9	0.0	0.0	0.0	91.7

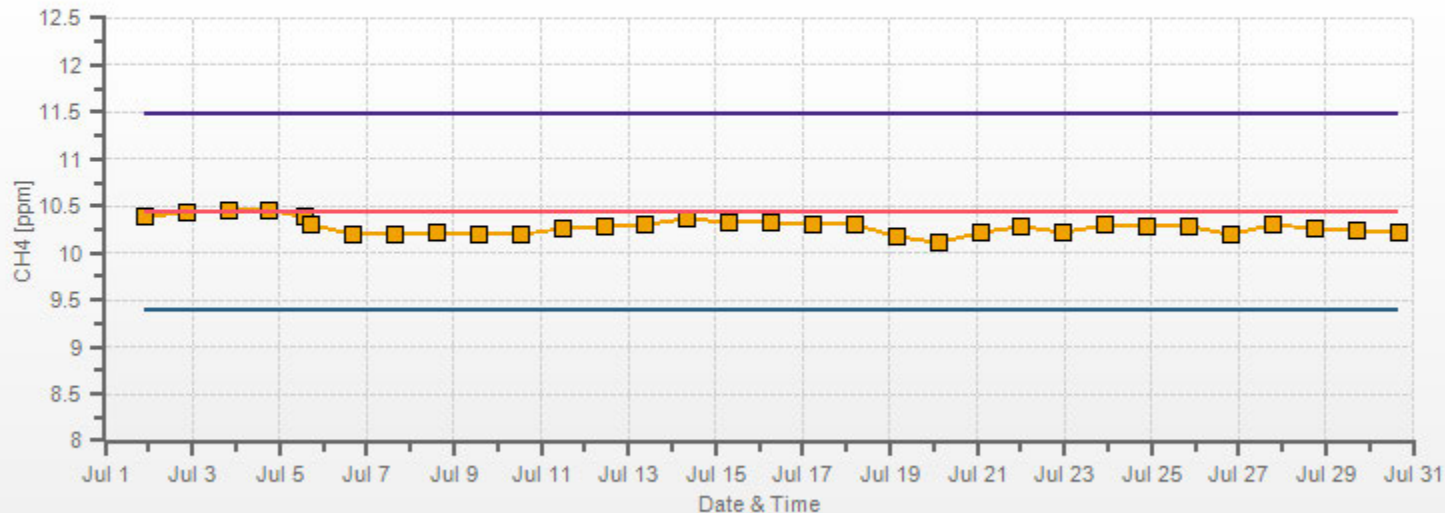
% Icon Classes (ppm)	72	0-2	20	2-3	0	3-5	0	5-10	0	>10.0
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PRAMP_986 Poll.: PRAMP_986-CH4[ppm] 2018/07/01 00:00 - 2018/07/31 23:00 Calm: 8.30% Calm Poll Avg: 2.10[ppm]



CH4 [ppm] Calibration: PRAMP_986b Monthly: 18/07 Type: Span

Span Meas Span Ref Span Low Span High



NON-METHANE HYDROCARBON



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

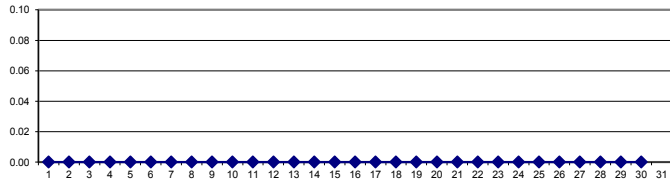
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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
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	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
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
10	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
11	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
12	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
13	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
14	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
15	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
16	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
17	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
18	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
19	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
20	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	P	P	P	P	P	P	P	R	0.00	0.00	0.00	16
21	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
22	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	S	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	0.00	0.00	0.00	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
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.00	0.00	0.00	9
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
HOURLY MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

STATUS FLAG CODES

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

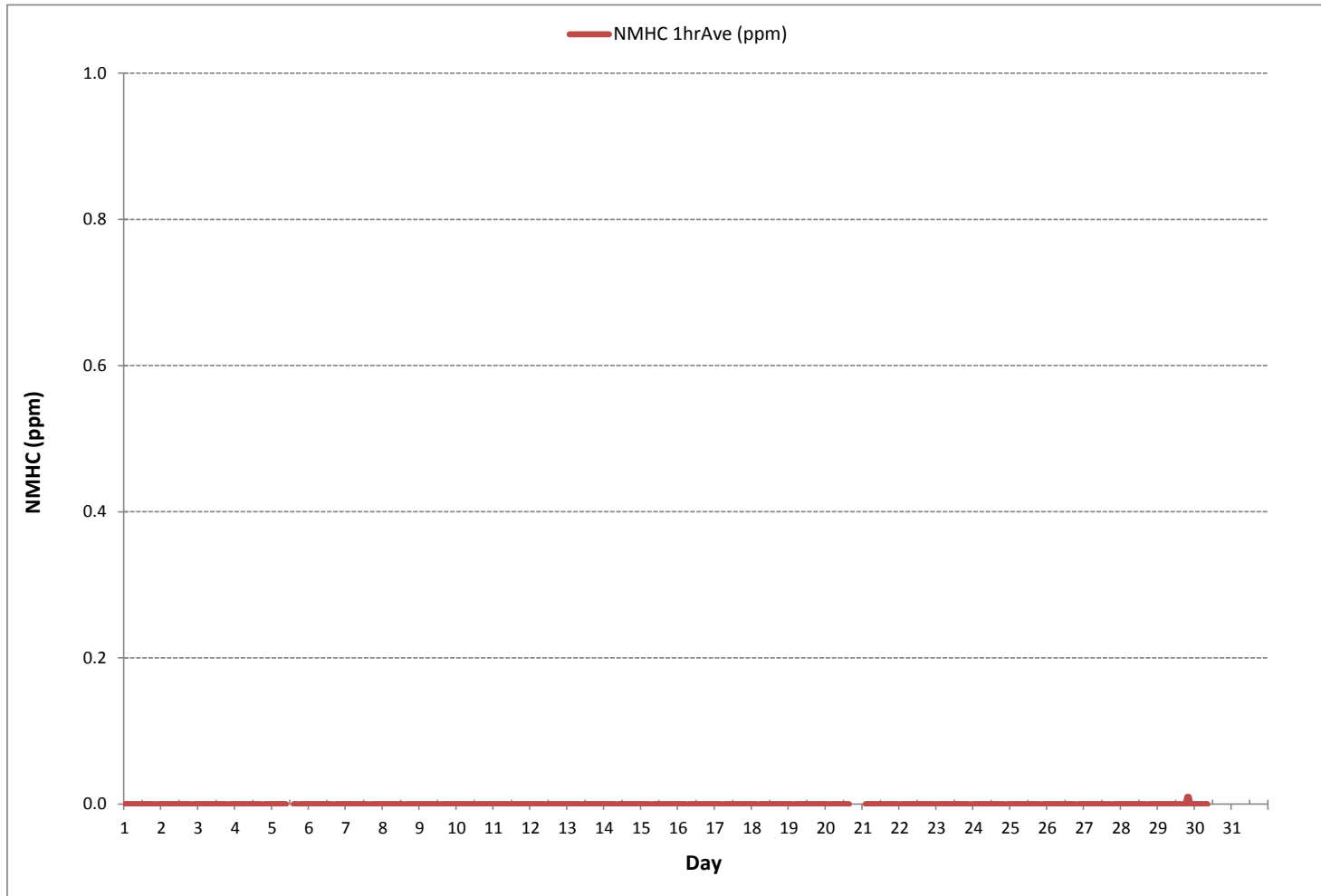
24 HR AVERAGES July 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	2		
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.01 ppm @ HOUR	19	ON DAY 29
MAXIMUM 24-HR AVERAGE:	0.00 ppm		ON DAY 1
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	697 hrs
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	93.7 %
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: 18/07
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

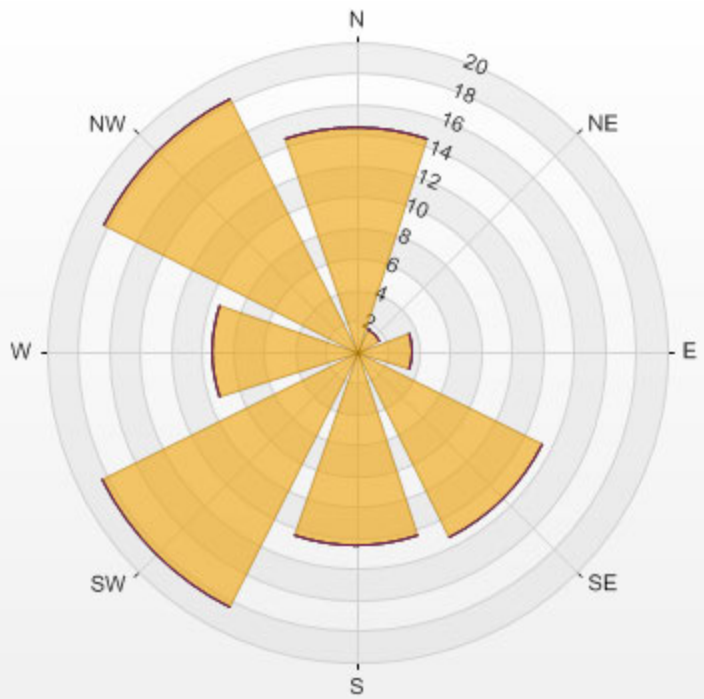
Calm: 8.30%

Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	14.5	0.0	0.0	0.0	0.0	14.5
NE	1.7	0.0	0.0	0.0	0.0	1.7
E	3.6	0.0	0.0	0.0	0.0	3.6
SE	13.4	0.0	0.0	0.0	0.0	13.4
S	12.5	0.0	0.0	0.0	0.0	12.5
SW	18.4	0.0	0.0	0.0	0.0	18.4
W	9.4	0.0	0.0	0.0	0.0	9.4
NW	18.3	0.0	0.0	0.0	0.0	18.3
Summary	91.7	0.0	0.0	0.0	0.0	91.7

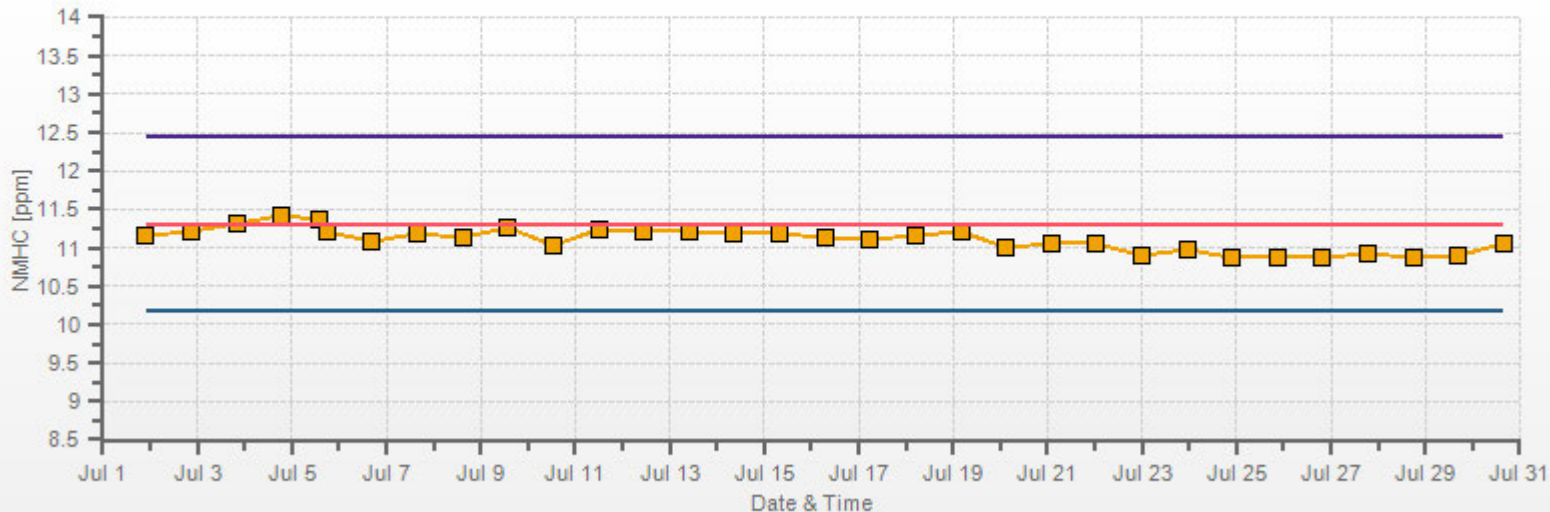
% Icon Classes (ppm) 92 0-0.1 0 0.1-0.3 0 0.3-1 0 1-2 0 >2.0

PRAMP_986 Poll.: PRAMP_986-NMHC[ppm] 2018/07/01 00:00 - 2018/07/31 23:00 Calm: 8.30% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: PRAMP_986b Monthly: 18/07 Type: Span

Span Meas Span Ref Span Low Span High



WIND SPEED



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 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	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	5.3	4.0	3.5	1.5	2.6	3.2	9.1	8.4	5.1	5.3	5.6	5.8	4.9	7.1	7.6	7.8	4.7	10.0	10.9	7.8	6.9	4.9	7.6	6.4	1.5	10.9	5.3	24	
2	7.8	9.3	8.4	8.3	7.7	7.4	8.2	9.9	11.0	11.2	10.0	10.7	9.4	12.5	16.5	13.8	12.1	12.7	12.9	11.8	11.8	10.4	10.1	9.6	7.4	16.5	10.5	24	
3	9.3	7.8	7.8	7.3	8.0	8.7	8.3	8.0	8.8	8.5	8.7	9.0	8.4	6.7	9.2	9.6	11.0	10.6	9.4	7.1	5.5	2.5	3.1	2.4	2.4	11.0	7.6	24	
4	1.1	1.4	2.4	2.0	0.9	1.7	3.3	3.3	2.8	4.6	7.2	8.4	9.0	9.0	8.1	5.4	4.8	3.1	1.9	4.9	6.0	5.6	4.9	4.6	0.9	9.0	2.3	24	
5	3.5	3.3	4.0	3.6	4.9	4.9	6.5	5.5	8.3	12.6	13.7	15.5	15.5	15.0	12.8	11.1	9.3	8.0	9.3	6.8	2.7	1.3	1.3	5.4	1.3	15.5	7.1	24	
6	3.6	2.8	2.1	2.6	6.1	9.6	6.5	6.6	6.7	9.0	7.0	8.0	8.9	9.5	9.9	7.8	8.5	10.0	10.5	9.8	6.8	6.9	4.1	5.3	2.1	10.5	6.2	24	
7	6.0	4.8	3.9	6.0	6.1	6.0	7.6	6.0	12.6	12.2	11.2	10.6	15.0	11.0	12.6	10.0	11.1	6.9	5.5	5.8	6.6	4.6	3.3	2.9	2.9	15.0	5.2	24	
8	2.6	5.0	4.7	4.1	6.0	6.5	9.7	8.0	10.0	9.5	7.9	9.3	8.2	8.5	9.1	7.3	7.7	7.0	6.0	4.8	4.3	5.9	6.0	5.9	2.6	10.0	6.0	24	
9	6.5	4.9	2.3	7.4	5.7	7.1	9.3	7.6	7.5	8.8	9.4	10.3	10.7	10.7	10.0	11.6	8.7	8.1	5.3	3.7	4.3	4.4	5.3	5.4	2.3	11.6	6.1	24	
10	5.9	4.3	4.8	6.5	6.4	3.9	4.4	5.3	6.6	9.1	9.3	11.9	8.5	7.5	8.5	7.7	10.3	6.9	5.3	4.6	3.3	3.1	2.4	2.6	2.4	11.9	5.3	24	
11	2.9	2.6	3.3	3.9	3.4	4.4	3.9	4.4	4.6	3.9	4.2	4.2	5.0	5.7	6.4	8.8	8.2	9.8	7.9	5.2	5.1	6.4	5.6	6.3	2.6	9.8	4.4	24	
12	5.0	3.9	4.7	3.6	4.0	4.5	4.3	5.2	7.4	8.1	6.5	7.6	4.7	6.7	4.1	3.9	5.0	4.3	3.1	6.7	4.2	0.8	0.4	3.2	0.4	8.1	2.3	24	
13	4.4	2.3	2.2	3.6	2.2	4.1	5.2	3.6	6.5	7.1	7.1	10.9	10.8	8.1	8.8	7.4	7.4	5.9	6.5	9.8	9.2	10.3	10.2	9.1	2.2	10.9	5.9	24	
14	10.0	11.1	9.4	12.3	12.0	8.5	6.4	6.4	11.7	15.3	19.4	21.8	21.4	21.2	18.4	13.9	8.9	7.5	2.2	2.1	0.7	0.9	1.6	2.5	0.7	21.8	9.3	24	
15	2.9	3.1	4.7	5.4	5.4	4.9	5.0	7.2	7.7	10.1	9.4	8.1	7.7	8.4	8.5	5.9	7.1	5.8	4.1	2.2	2.3	2.6	4.5	8.0	2.2	10.1	4.0	24	
16	4.4	7.8	4.2	4.7	5.0	4.0	4.6	4.6	6.3	7.1	6.8	8.1	8.5	9.1	9.9	9.7	9.0	10.3	10.0	8.6	5.4	5.0	4.6	7.4	4.0	10.3	5.8	24	
17	6.4	4.1	4.6	1.6	0.5	1.7	4.4	4.5	2.5	2.7	3.4	7.0	5.0	3.9	5.9	5.8	4.5	3.9	2.0	0.5	0.9	3.1	2.1	0.5	7.0	1.3	2.4	24	
18	2.4	3.0	7.5	7.3	6.1	5.9	1.1	4.4	3.9	3.5	6.0	5.8	7.1	8.0	10.9	8.5	5.5	9.6	6.9	2.0	4.6	1.3	1.0	5.1	1.0	10.9	2.8	24	
19	4.2	1.4	1.3	0.5	0.2	1.3	3.4	4.8	6.2	5.9	6.0	4.2	5.5	6.3	6.7	6.5	4.8	6.0	4.8	4.8	5.4	3.7	4.1	3.2	0.2	6.7	3.9	24	
20	3.6	3.2	3.0	3.1	4.6	8.5	6.7	4.4	2.2	3.8	3.4	4.2	6.8	8.4	6.8	4.8	P	P	P	P	P	P	P	10.2	2.2	10.2	4.2	17	
21	8.5	3.8	5.6	8.2	7.3	2.7	2.8	1.7	0.5	2.6	5.3	9.9	12.9	10.0	11.1	12.7	10.6	7.5	11.4	11.7	10.0	6.9	7.4	6.2	0.5	12.9	5.7	24	
22	9.3	10.7	10.1	9.8	9.0	7.5	7.7	9.2	8.9	8.2	8.4	9.3	10.0	11.7	11.0	9.4	9.5	8.1	6.1	5.1	6.2	1.8	2.0	1.2	1.2	11.7	7.7	24	
23	3.2	3.4	1.7	2.1	3.0	2.7	3.7	4.9	5.7	7.6	9.1	8.1	7.4	6.2	5.3	5.0	7.1	5.3	4.5	5.8	1.9	0.1	1.2	0.5	0.1	9.1	4.1	24	
24	1.2	2.8	0.4	1.6	1.0	1.7	2.5	2.7	0.6	1.3	2.3	2.6	3.4	3.0	1.1	2.2	0.3	1.4	1.9	0.7	0.4	1.4	2.3	2.1	0.3	3.4	0.4	24	
25	2.8	3.1	3.3	1.9	0.8	4.3	4.7	4.7	6.4	6.7	4.4	3.9	6.2	4.8	4.4	4.1	7.9	6.7	6.3	0.6	1.0	1.7	2.0	1.7	0.6	7.9	1.6	24	
26	1.9	2.9	3.4	1.7	0.8	3.2	3.7	2.6	5.4	10.4	7.4	7.5	5.8	7.0	6.1	6.1	5.7	5.5	3.9	2.5	3.3	3.1	4.3	5.1	0.8	10.4	3.1	24	
27	4.6	4.2	3.6	4.4	4.7	4.2	5.2	5.1	4.7	4.8	4.9	5.0	5.5	5.8	6.4	6.7	6.0	6.5	3.5	2.5	2.3	2.7	4.1	2.2	2.2	6.7	3.1	24	
28	2.3	4.1	5.1	3.3	5.6	7.3	4.3	4.5	4.2	4.9	5.1	6.1	7.5	8.0	8.0	8.1	7.3	7.7	5.9	5.0	3.8	3.7	3.3	3.4	2.3	8.1	4.2	24	
29	2.6	3.1	2.6	0.6	5.5	7.3	5.2	4.9	3.8	6.2	1.0	2.0	3.1	4.2	3.6	5.6	5.7	2.0	0.4	0.5	0.5	1.6	2.0	2.1	0.4	7.3	1.5	24	
30	1.0	3.2	12.0	4.4	4.8	6.6	3.1	0.9	8.2	8.6	9.0	10.0	8.8	8.1	8.1	7.1	8.9	6.8	4.9	4.0	3.4	1.7	2.4	1.2	0.9	12.0	4.5	24	
31	0.3	1.0	0.9	1.3	1.0	1.4	1.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.3	1.7	1.0	7	
HOURLY MAX	10.0	11.1	12.0	12.3	12.0	9.6	9.7	9.9	12.6	15.3	19.4	21.8	21.4	21.2	18.4	13.9	12.1	12.7	12.9	11.8	11.8	10.4	10.2	10.2					

STATUS FLAG CODES

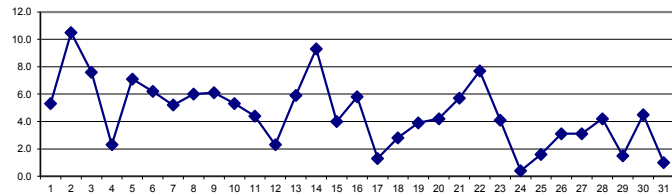
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

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

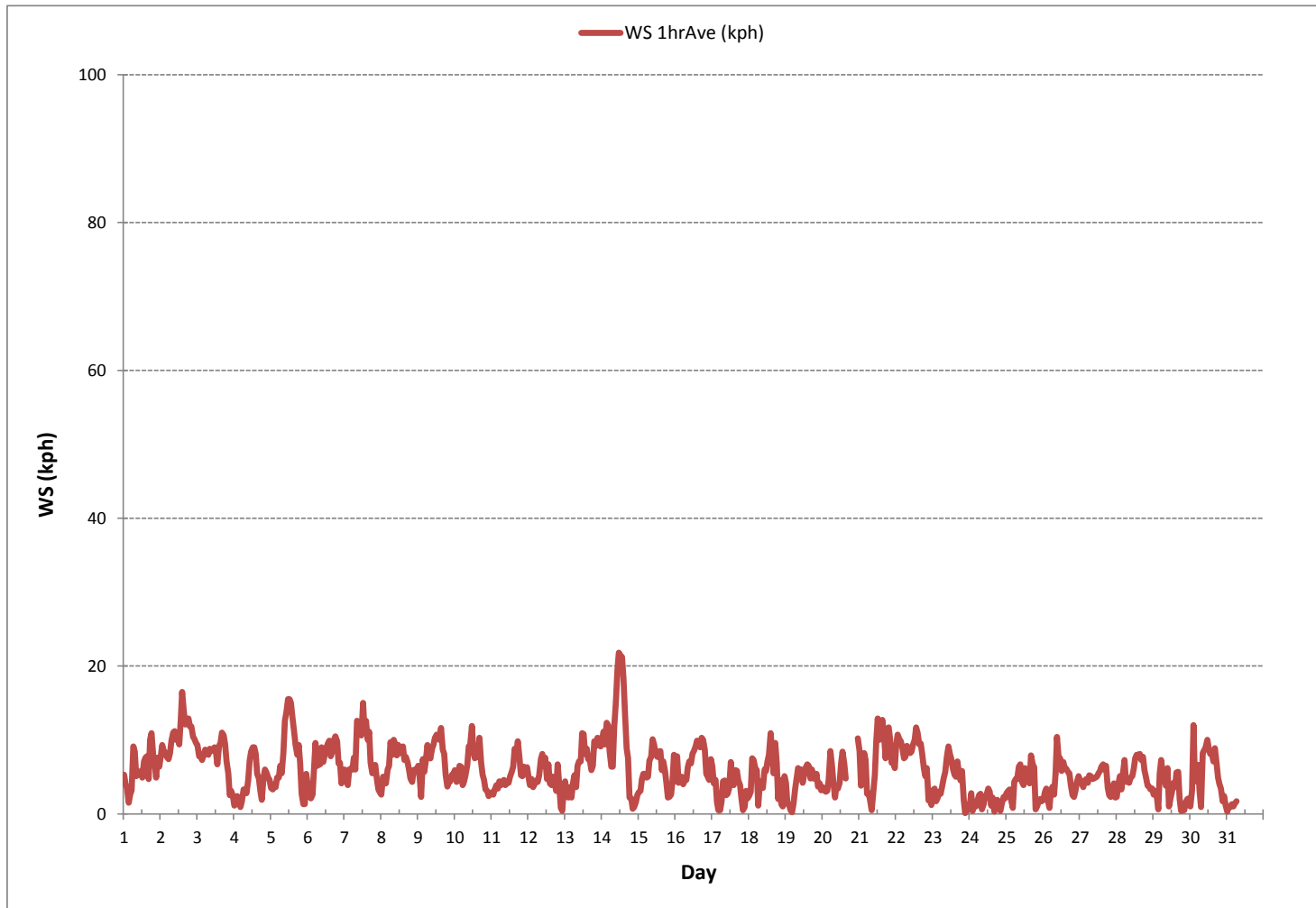
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720
MINIMUM 1-HR AVERAGE:	0.1 kph @ HOUR 21 ON DAY 23
MAXIMUM 1-HR AVERAGE:	21.8 kph @ HOUR 11 ON DAY 14
MAXIMUM 24-HR AVERAGE:	10.5 kph ON DAY 2
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	720 hrs
AMT OPERATION UPTIME:	96.8 %
STANDARD DEVIATION:	3.3
MONTHLY AVERAGE:	1.9 kph

24 HR AVERAGES July 2018



WIND SPEED Hourly Averages (WS kph)



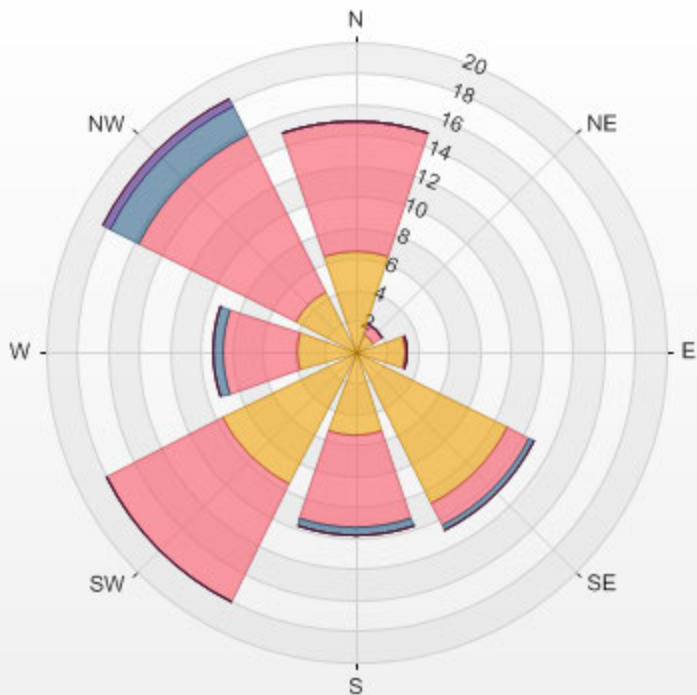
Wind: PRAMP_986
 Monitor: WSP [kph]
 Monthly: 18/07
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 9.72%

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	6.5	8.3	0.0	0.0	0.0	0.0	14.9
NE	1.3	0.7	0.0	0.0	0.0	0.0	1.9
E	3.2	0.1	0.0	0.0	0.0	0.0	3.3
SE	11.0	1.5	0.4	0.0	0.0	0.0	12.9
S	5.4	6.0	0.4	0.0	0.0	0.0	11.8
SW	9.6	8.5	0.0	0.0	0.0	0.0	18.1
W	3.8	4.9	0.6	0.0	0.0	0.0	9.2
NW	4.3	11.4	2.1	0.4	0.0	0.0	18.2
Summary	45.0	41.4	3.5	0.4	0.0	0.0	90.3

% Icon Classes (kph) 45 1.8-6.0 41 6.0-12.0 3 12.0-20.0 0 20.0-29.0 0 29.0-39.0 0 >39.0

PRAMP_986 2018/07/01 00:00 - 2018/07/31 23:00 Calm: 9.72% Calm Wind Avg Speed: 1.04(kph)



WIND DIRECTION



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

WIND DIRECTION Hourly Averages (WD)

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

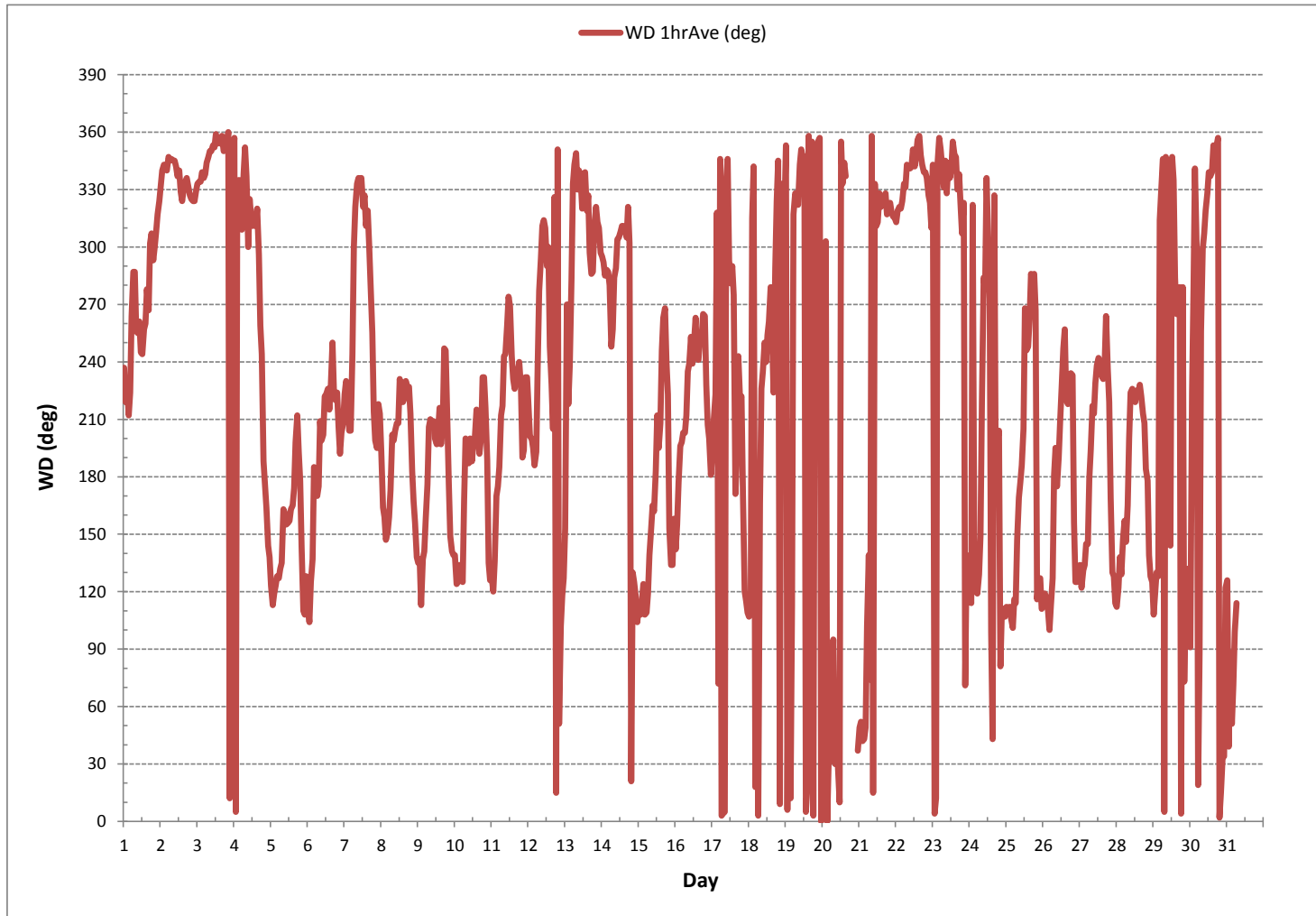
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0 hrs	OPERATIONAL TIME:	720 hrs
STANDARD DEVIATION:	95	AMD OPERATION UPTIME:	96.8 %
		MONTHLY AVERAGE:	276 (W)

WIND DIRECTION Hourly Averages (WD)



RELATIVE HUMIDITY



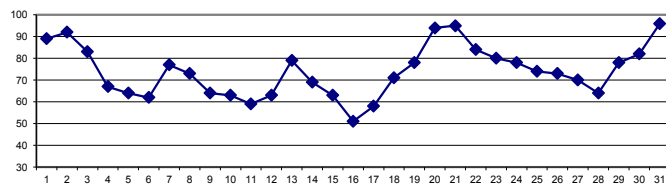
RELATIVE HUMIDITY Hourly Averages (RH %)

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

STATUS FLAG CODES

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

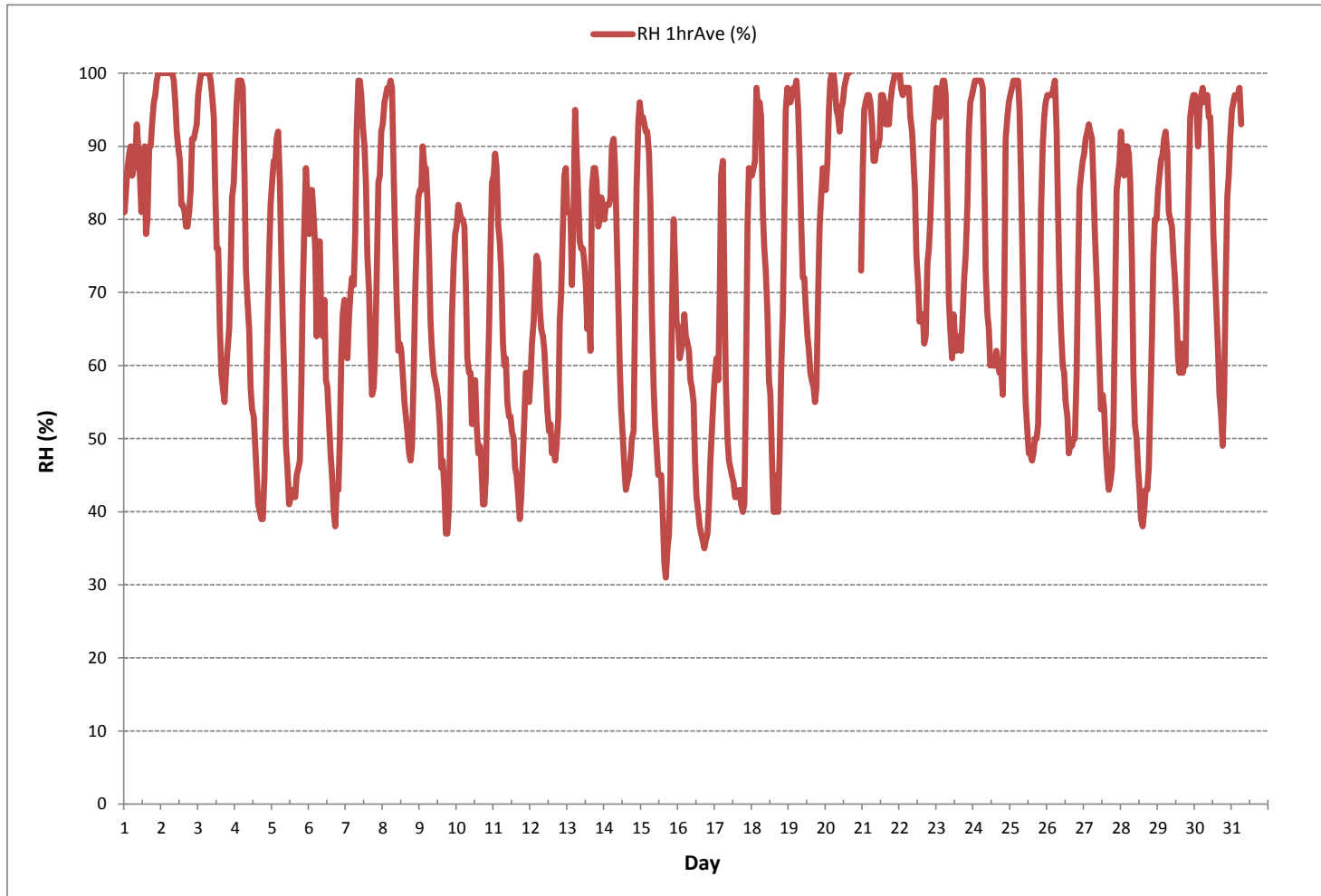
24 HR AVERAGES July 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	31	%	@ HOUR	16	ON DAY	15
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	22	ON DAY	1
MAXIMUM 24-HR AVERAGE:	96	%			ON DAY	31
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						96.8 %
STANDARD DEVIATION:	19					MONTHLY AVERAGE: 73 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



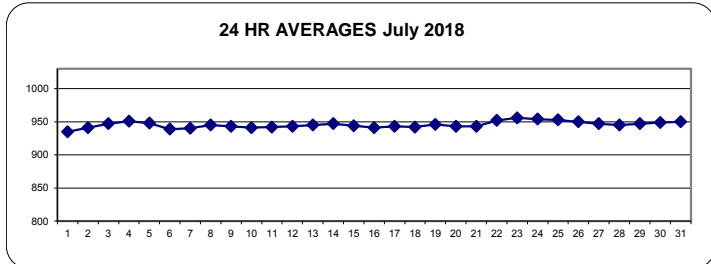
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	934	934	934	934	935	935	935	935	935	935	935	935	935	935	935	935	935	935	936	936	936	936	936	936	936	934	936	935	24
2	936	936	937	937	937	938	938	939	939	940	940	941	941	942	942	943	943	944	944	945	945	945	945	945	945	936	945	941	24
3	945	945	945	945	946	946	946	946	947	947	947	947	947	948	948	948	948	948	948	948	949	950	950	950	945	950	947	24	
4	950	950	950	950	951	952	952	953	953	953	953	952	952	952	952	951	951	951	951	951	951	951	952	951	950	953	951	24	
5	951	951	951	951	951	951	951	951	950	950	949	948	948	948	947	946	946	945	945	945	945	944	944	944	944	944	948	24	
6	943	943	942	942	942	941	941	941	941	941	941	940	940	939	938	937	937	936	936	936	936	936	936	935	935	943	939	24	
7	935	934	934	935	935	935	935	936	936	938	939	940	941	942	942	943	943	943	943	943	944	944	944	944	934	944	940	24	
8	944	944	945	945	945	945	945	946	946	946	946	945	945	945	945	945	944	944	944	944	944	944	944	944	944	946	945	24	
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14	947	947	947	947	947	947	947	947	947	947	947	948	948	948	948	948	948	948	948	948	948	948	947	947	947	948	947	24	
15	947	947	946	946	946	945	945	945	945	945	944	944	944	944	944	943	943	942	942	942	942	942	942	942	942	947	944	24	
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17	941	941	941	942	942	943	943	943	943	944	944	944	944	944	944	943	943	942	942	942	942	942	941	941	941	944	943	24	
18	941	941	942	942	942	940	941	941	941	941	941	941	941	941	941	941	941	941	941	942	943	944	944	944	940	944	942	24	
19	945	945	945	945	946	946	947	947	947	947	947	947	947	947	946	946	946	945	945	945	945	945	944	944	944	947	946	24	
20	944	943	943	943	943	943	942	943	943	943	943	943	942	942	942	941	941	940	940	940	940	940	940	940	940	944	943	17	
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22	947	948	948	949	949	950	951	951	952	952	953	953	954	954	954	954	954	954	954	955	955	955	955	955	947	955	952	24	
23	955	955	955	955	956	956	956	956	956	956	956	956	956	956	956	956	956	956	956	955	955	955	955	954	954	956	956	24	
24	954	954	954	954	954	954	954	954	954	954	954	954	954	954	954	954	954	954	953	953	954	954	953	953	953	954	954	24	
25	953	953	953	953	953	953	953	954	954	954	953	953	953	953	953	952	952	952	952	952	952	952	951	951	951	954	953	24	
26	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	950	949	949	949	949	949	949	949	949	949	951	950	24	
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28	945	945	945	945	945	945	945	946	946	946	946	946	946	946	946	945	945	945	945	945	945	946	946	946	945	946	945	24	
29	946	946	946	946	947	947	948	948	948	948	948	948	948	948	948	948	948	948	947	947	947	947	946	946	946	948	947	24	
30	946	946	947	946	945	947	947	948	949	949	950	950	950	950	950	950	950	950	950	950	950	950	951	951	945	951	949	24	
31	951	950	950	950	950	950	950	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	950	951	950	7	
HOURLY MAX	955	955	955	955	956	956	956	956	956	956	956	956	956	956	956	956	956	956	956	955	955	955	955	955	955	955	955	24	
HOURLY AVG	945	945	945	945	945	945	945	946	946	946	946	946	946	946	946	945	945	945	945	945	946	946	945	945	945	945	945	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

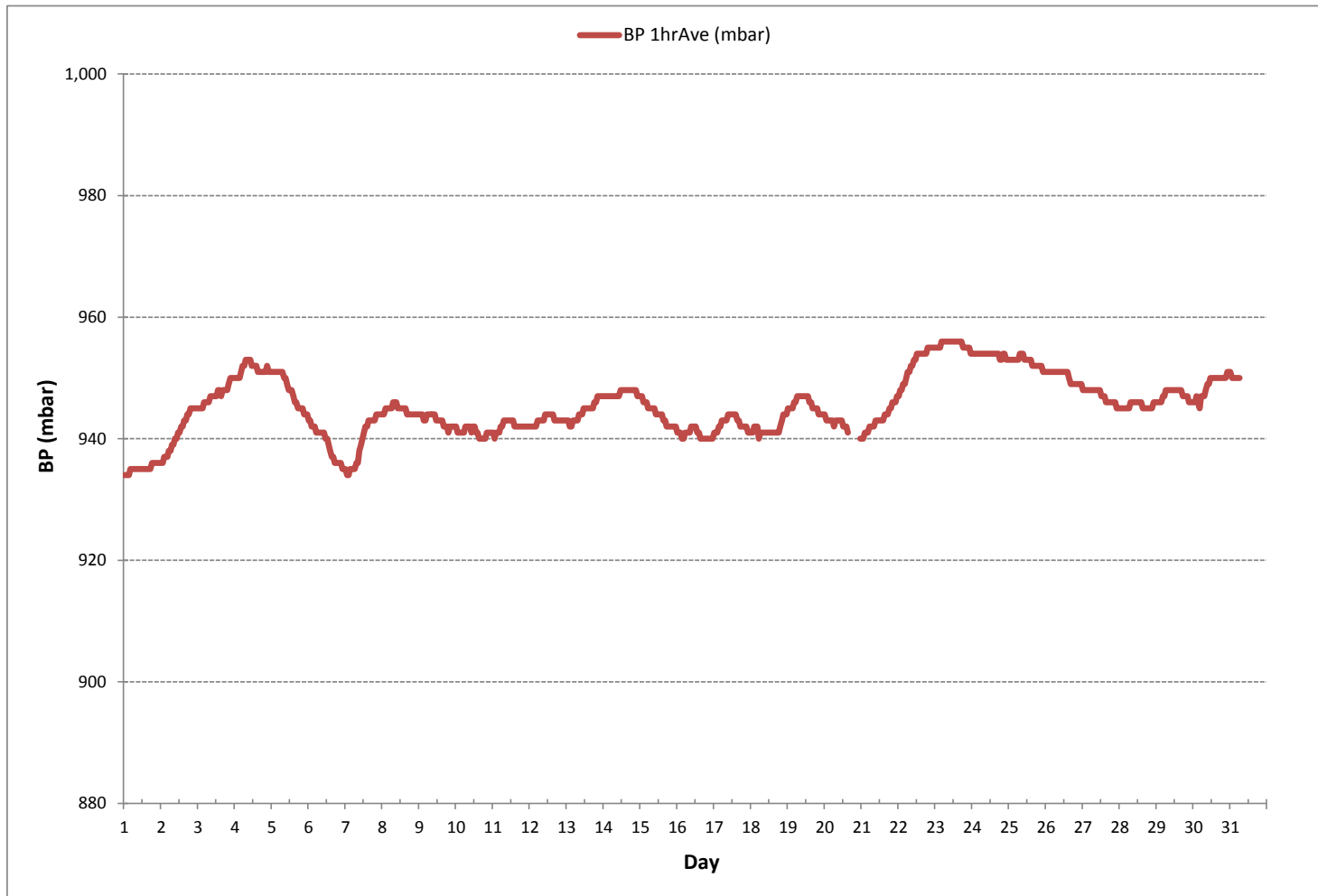
24 HR AVERAGES July 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	934 mbar	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	956 mbar	@ HOUR	4	ON DAY	23
MAXIMUM 24-HR AVERAGE:	956 mbar			ON DAY	23
OPERATIONAL TIME:					720 hrs
AMD OPERATION UPTIME:					96.8 %
STANDARD DEVIATION:	5			MONTHLY AVERAGE:	945 mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



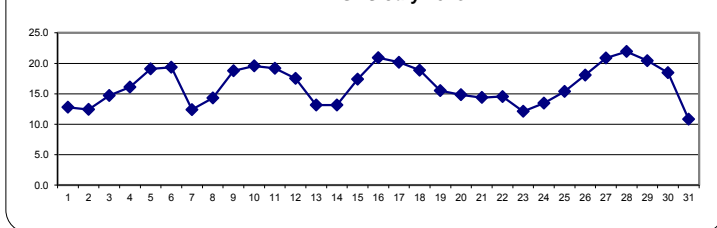
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.					
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.						
DAY																																	
1	12.2	11.6	10.9	10.6	10.6	11.3	11.7	12.0	11.8	12.7	13.5	14.5	14.2	13.7	15.9	15.3	13.7	14.3	13.1	12.6	12.8	12.7	12.5	12.3	10.6	15.9	12.8	24					
2	12.3	12.0	11.8	11.6	11.7	11.8	11.8	11.7	11.9	11.9	12.4	12.7	13.1	14.2	13.4	13.5	13.6	13.5	12.8	12.4	11.9	12.0	12.0	12.0	11.6	14.2	12.4	24					
3	11.7	11.6	11.6	11.6	11.7	11.7	11.8	12.0	12.3	12.9	13.5	15.3	16.2	16.1	18.2	20.1	19.7	19.8	19.4	18.8	17.2	14.6	12.7	12.1	11.6	20.1	14.7	24					
4	10.6	9.0	8.4	7.8	6.9	8.7	12.1	15.1	16.5	17.6	18.7	19.2	19.6	20.2	20.9	21.7	21.8	22.3	22.6	21.8	19.8	17.3	14.6	13.1	6.9	22.6	16.1	24					
5	12.3	11.3	11.0	9.9	10.0	11.6	14.4	17.8	20.6	21.9	22.9	23.9	24.5	24.6	24.8	25.4	25.5	25.2	24.4	22.9	21.1	18.9	16.6	16.6	9.9	25.5	19.1	24					
6	16.6	15.1	14.2	14.5	15.6	18.4	17.3	17.8	20.9	20.5	18.8	21.1	21.3	22.7	23.9	24.0	24.3	24.3	22.8	21.5	19.7	17.3	16.0	15.6	14.2	24.3	19.3	24					
7	15.2	14.8	13.6	13.4	13.3	13.8	13.4	12.8	11.7	10.1	9.8	10.1	10.0	10.0	11.6	12.5	13.6	14.4	14.6	14.4	13.3	11.4	10.3	9.2	9.2	15.2	12.4	24					
8	8.3	7.2	6.6	6.1	5.3	5.7	7.3	10.1	12.1	14.0	15.9	17.0	17.7	19.1	19.9	20.7	21.0	21.3	21.4	21.1	19.2	16.9	15.1	13.8	5.3	21.4	14.3	24					
9	13.5	13.1	11.4	11.7	11.3	12.2	14.0	16.0	17.8	19.2	20.1	21.3	22.4	23.1	23.9	24.3	24.8	25.1	25.2	25.1	22.4	19.3	17.0	16.0	11.3	25.2	18.8	24					
10	15.1	14.0	13.7	13.7	13.1	13.7	17.1	18.9	19.0	19.6	21.4	22.6	21.7	23.2	23.9	24.5	25.3	25.6	25.5	24.6	22.2	19.6	16.9	14.5	13.1	25.6	19.6	24					
11	13.7	12.8	12.5	13.2	13.0	13.6	16.5	17.6	17.7	19.5	21.1	21.9	22.9	23.8	24.6	24.8	25.1	24.6	23.4	21.9	20.7	19.0	18.3	18.0	12.5	25.1	19.2	24					
12	16.6	14.9	14.1	13.1	12.3	12.8	14.8	16.0	17.1	18.1	19.0	20.1	20.6	20.6	21.4	21.4	22.5	22.2	21.9	19.3	17.9	15.7	14.3	13.8	12.3	22.5	17.5	24					
13	14.5	14.2	13.5	13.6	12.0	12.3	12.9	13.4	14.1	14.6	14.4	14.3	14.5	15.3	15.2	16.2	12.3	13.1	12.9	12.8	11.9	10.2	8.8	8.6	8.6	16.2	13.2	24					
14	8.6	8.5	8.5	8.5	8.3	8.0	8.2	9.1	10.2	12.1	14.4	15.7	17.1	18.0	18.9	18.9	18.3	18.1	18.2	18.6	16.7	13.0	10.0	9.0	8.0	18.9	13.1	24					
15	8.5	8.0	7.7	7.6	7.5	8.3	11.1	15.3	17.6	19.4	20.9	22.5	22.4	23.3	24.1	24.5	24.7	24.5	24.5	23.3	19.9	17.2	16.8	18.0	7.5	24.7	17.4	24					
16	17.8	17.8	17.7	17.4	16.5	16.5	16.3	17.2	18.4	19.3	20.4	21.9	22.3	23.4	24.6	25.5	26.2	26.5	26.1	25.3	24.2	21.8	20.1	18.7	16.3	26.5	20.9	24					
17	17.7	17.2	17.9	15.4	12.2	12.0	16.7	19.8	20.7	21.1	22.3	22.9	22.9	23.6	24.0	24.9	24.8	25.3	25.8	25.9	23.5	17.8	15.0	14.5	12.0	25.9	20.2	24					
18	14.5	14.2	15.1	14.7	14.3	14.0	14.9	16.9	18.5	19.8	21.2	22.4	23.3	24.1	24.1	23.6	23.9	24.0	22.5	20.8	18.6	17.0	15.3	14.8	14.0	24.1	18.9	24					
19	13.8	12.4	10.5	9.6	8.6	9.1	11.6	12.8	14.6	16.5	16.8	17.5	18.4	19.3	20.0	20.1	19.6	20.6	20.3	18.1	16.5	15.6	15.1	14.8	8.6	20.6	15.5	24					
20	15.1	14.6	14.1	13.8	13.8	13.6	13.8	14.1	14.7	15.0	14.9	15.2	15.1	15.8	15.6	15.6	P	P	P	P	P	P	P	P	17.4	13.6	17.4	14.8	17				
21	15.7	14.8	14.5	14.0	13.7	13.5	13.9	14.6	14.8	14.9	15.3	15.2	14.3	13.9	14.2	14.4	14.5	14.9	14.7	14.7	14.5	14.2	13.3	12.5	12.5	15.7	14.4	24					
22	12.7	13.1	12.9	12.1	11.7	11.7	12.3	12.9	13.3	14.0	15.1	16.5	16.8	18.1	18.0	17.6	18.6	18.3	16.6	15.9	14.4	12.9	11.9	11.4	11.4	18.6	14.5	24					
23	10.6	10.6	9.7	7.5	7.0	7.1	9.5	11.4	13.9	14.6	15.5	14.0	14.3	14.5	14.6	15.4	15.4	14.5	13.9	13.9	13.3	10.9	9.4	8.8	7.0	15.5	12.1	24					
24	7.9	7.9	7.2	7.2	7.4	8.1	9.5	11.5	13.4	15.0	15.3	16.6	16.8	17.2	18.1	17.8	17.9	18.4	18.9	19.7	17.5	12.7	10.8	10.1	7.2	19.7	13.5	24					
25	9.7	9.4	8.9	8.1	6.9	7.9	9.8	13.1	15.5	17.7	19.7	20.5	20.4	21.1	21.7	22.1	21.4	21.4	20.7	19.9	16.8	13.8	11.8	10.3	6.9	22.1	15.4	24					
26	10.4	10.1	9.8	8.9	8.0	8.9	11.9	16.1	18.4	20.1	21.8	22.7	23.6	23.9	24.3	25.2	25.5	25.5	25.2	23.4	20.0	17.4	16.4	16.1	8.0	25.5	18.1	24					
27	15.4	14.6	14.1	13.6	13.6	13.8	16.0	18.2	20.0	21.9	23.3	24.6	25.7	26.6	27.4	27.7	27.9	27.1	27.3	26.3	23.1	19.0	17.7	16.4	13.6	27.9	20.9	24					
28	15.1	15.5	15.8	14.4	13.9	14.5	16.3	19.3	22.4	23.9	25.1	26.3	27.3	28.1	28.6	28.7	28.9	28.4	27.8	26.1	23.5	20.6	18.5	17.6	13.9	28.9	21.9	24					
29	16.5	16.2	15.9	15.6	15.7	16.5	17.4	18.6	19.1	19.6	21.0	22.5	24.6	25.8	26.4	26.1	24.9	25.3	26.7	23.2	21.4	18.6	16.9	16.0	15.6	26.7	20.4	24					
30	15.1	15.9	17.7	16.4	16.3	16.0	15.8	16.0	16.5	17.6	18.0	19.3	20.7	21.4	22.6	23.3	23.6	23.8	23.9	22.4	18.7	15.7	14.3	12.3	12.3	23.9	18.5	24					
31	11.2	10.5	10.2	11.0	10.2	10.0	12.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10.0	12.7	10.8	7					
HOURLY MAX	17.8	17.8	17.9	17.4	16.5	18.4	17.4	19.8	22.4	23.9	25.1	26.3	27.3	28.1	28.6	28.7	28.9	28.4	27.8	26.3	24.2	21.8	20.1	18.7									
HOURLY AVG	13.2	12.7	12.3	11.8	11.4	11.8	13.3	14.9	16.2	17.2	18.1	19.0	19.5	20.2	20.8	21.2	21.4	21.5	21.1	20.2	18.4	16.0	14.4	13.8									

STATUS FLAG CODES

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

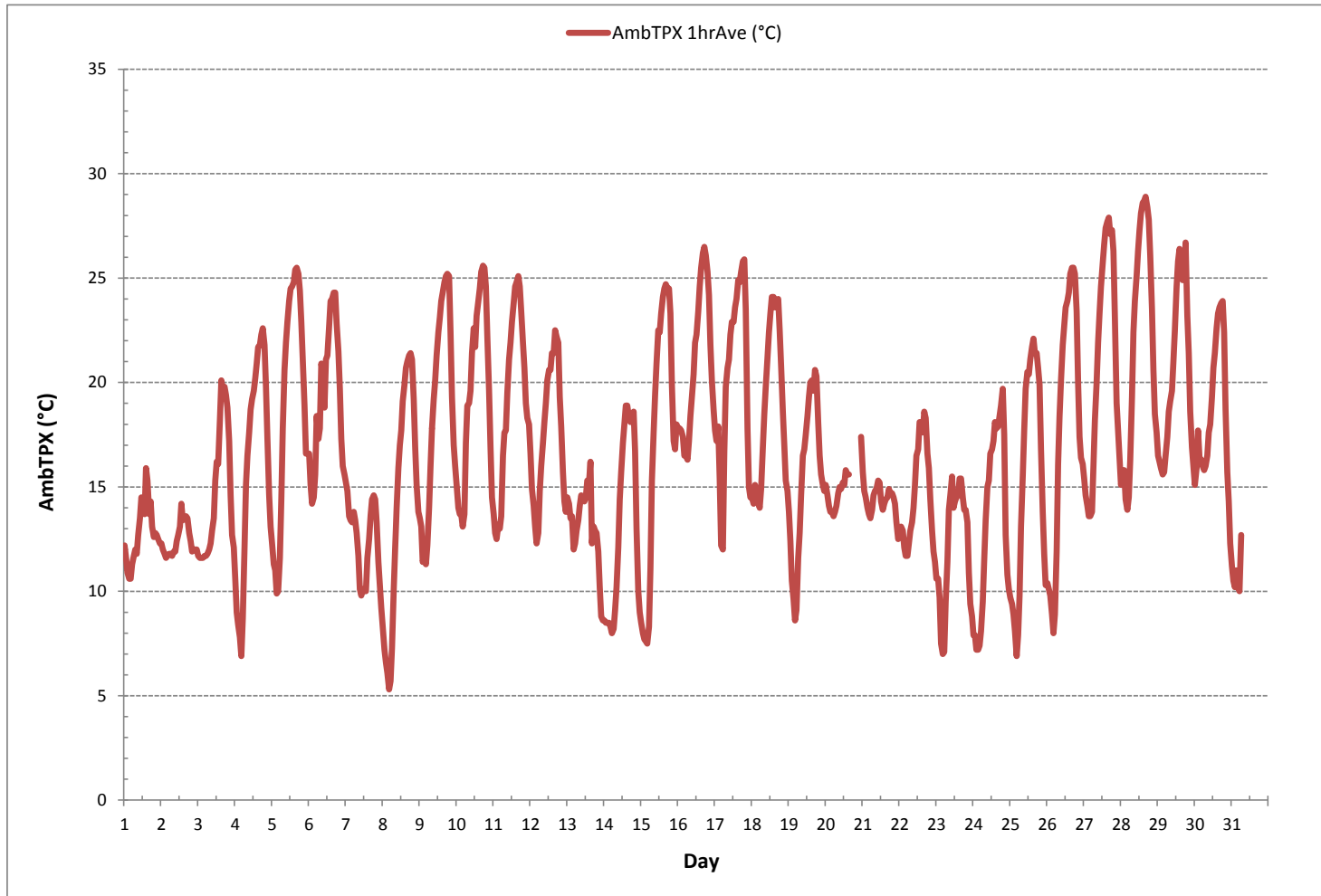
24 HR AVERAGES July 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	5.3	°C	@ HOUR	4	ON DAY	8
MAXIMUM 1-HR AVERAGE:	28.9	°C	@ HOUR	16	ON DAY	28
MAXIMUM 24-HR AVERAGE:	21.9	°C			ON DAY	28
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						96.8 %
STANDARD DEVIATION:	5.1					MONTHLY AVERAGE: 16.6 °C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE



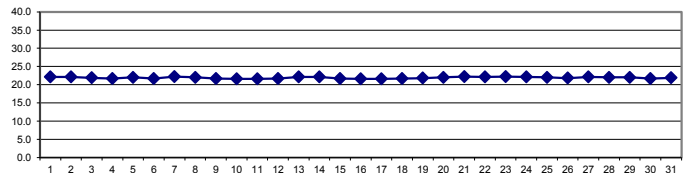
STATION TEMPERATURE Hourly Averages (StnTPX °C)

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	22.1	22.2	22.2	22.2	22.2	22.4	22.2	22.2	22.1	22.1	22.1	22.0	21.9	21.9	21.8	21.8	21.8	22.0	22.0	22.1	22.0	22.0	22.1	22.2	22.2	21.9	22.2	22.1	24
2	22.1	22.2	22.1	22.1	22.1	22.2	22.2	22.2	22.2	22.1	22.1	22.0	21.9	21.9	22.0	22.1	22.0	22.0	22.0	22.0	22.0	22.1	22.2	22.2	21.9	22.2	22.1	24	
3	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.1	22.1	22.1	22.0	22.0	21.9	21.8	21.7	21.7	21.5	21.5	21.5	21.3	21.4	21.6	21.8	21.9	21.3	22.2	21.9	24	
4	22.0	22.1	22.2	22.2	22.3	22.4	22.3	22.3	21.9	21.8	21.7	21.5	21.4	21.4	21.4	21.4	21.3	21.3	21.2	21.1	21.1	21.3	21.5	21.7	21.1	22.4	21.7	24	
5	21.9	22.0	22.1	22.2	22.2	22.2	22.1	21.9	22.4	22.3	22.5	23.1	22.8	22.7	22.0	21.7	21.4	21.2	21.1	21.1	21.2	21.5	21.8	21.9	21.1	23.1	22.0	24	
6	22.0	22.0	22.1	22.2	22.1	22.1	22.1	22.0	21.9	21.6	21.7	21.6	21.5	21.4	21.4	21.4	21.3	21.2	21.3	21.4	21.4	21.6	21.7	21.9	21.2	22.2	21.7	24	
7	22.0	22.1	22.2	22.2	22.2	22.3	22.2	22.1	22.2	22.3	22.4	22.3	22.3	22.5	22.4	22.2	22.2	22.1	22.0	21.8	21.8	21.8	22.0	22.2	21.8	22.5	22.2	24	
8	22.3	22.4	22.3	22.4	22.4	22.4	22.4	22.5	22.4	22.2	22.0	22.0	21.9	21.8	21.8	21.5	21.5	21.4	21.6	21.5	21.4	21.6	21.5	21.7	21.9	21.4	22.5	22.0	24
9	22.0	22.1	22.2	22.2	22.2	22.2	22.2	22.3	22.0	22.0	21.8	21.5	21.5	21.4	21.3	21.3	21.1	21.2	21.0	21.1	21.1	21.3	21.6	21.8	21.0	22.3	21.7	24	
10	21.9	22.0	22.1	22.2	22.2	22.2	22.1	22.0	22.0	21.8	21.7	21.5	21.4	21.4	21.2	21.3	21.2	20.9	21.1	21.1	21.1	21.4	21.6	21.9	20.9	22.2	21.6	24	
11	22.0	21.9	22.1	22.2	22.2	22.2	22.2	22.0	22.0	21.9	21.5	21.4	21.1	21.0	21.0	21.1	21.2	21.0	21.3	21.2	21.3	21.6	21.7	21.8	21.0	22.3	21.6	24	
12	21.9	22.0	22.1	22.2	22.2	22.2	22.2	22.2	21.9	21.8	21.6	21.4	21.4	21.3	21.4	21.4	21.4	21.3	21.2	21.4	21.5	21.6	21.8	22.0	21.2	22.2	21.7	24	
13	22.0	22.1	22.1	22.1	22.2	22.2	22.2	22.2	22.1	21.9	22.0	21.9	21.9	22.0	21.7	22.0	21.8	21.9	22.0	22.1	22.1	22.2	22.3	22.5	21.7	22.5	22.1	24	
14	22.5	22.5	22.5	22.6	22.4	22.6	22.4	22.5	22.5	22.4	22.3	22.2	22.0	21.9	21.8	21.7	21.8	21.7	21.8	21.7	21.7	21.7	21.9	22.1	21.7	22.6	22.1	24	
15	22.2	22.3	22.3	22.3	22.3	22.2	22.4	22.3	22.0	21.9	21.6	21.5	21.3	21.4	21.2	21.0	21.1	21.1	21.3	21.3	21.3	21.5	21.8	21.9	21.0	22.4	21.7	24	
16	21.8	22.0	22.0	21.9	22.0	22.0	22.0	22.1	21.8	21.8	21.5	21.5	21.5	21.3	21.3	21.1	21.5	21.6	21.6	21.4	21.1	21.2	21.5	21.9	21.1	22.1	21.6	24	
17	21.8	21.9	21.9	22.0	22.1	22.2	22.2	22.0	21.7	21.6	21.3	21.2	21.3	21.6	21.6	21.6	21.6	21.3	21.1	20.9	20.9	21.4	21.6	21.8	20.9	22.2	21.6	24	
18	21.9	22.0	22.1	22.0	22.1	22.1	22.1	22.0	21.9	21.7	21.6	21.3	21.3	21.2	21.1	21.3	21.4	21.1	21.1	21.5	21.5	21.8	21.8	21.9	21.1	22.1	21.7	24	
19	22.0	22.1	22.1	22.1	22.2	22.3	22.3	22.4	22.1	22.1	21.9	21.8	21.6	21.5	21.4	21.4	21.4	21.5	21.4	21.4	21.6	21.8	21.8	21.9	21.4	22.4	21.8	24	
20	22.0	22.0	22.0	22.1	22.1	22.0	22.0	22.1	22.0	22.0	22.0	22.0	22.0	22.0	21.9	22.0	P	P	P	P	P	P	P	22.4	21.9	22.4	22.0	17	
21	22.2	22.2	22.2	22.2	22.2	22.3	22.3	22.2	22.2	22.2	22.1	22.2	22.1	22.2	22.2	22.2	22.2	22.2	22.2	22.3	22.3	22.3	22.3	22.3	22.1	22.3	22.2	24	
22	22.4	22.4	22.4	22.4	22.5	22.5	22.4	22.3	22.2	22.2	22.2	22.1	21.9	22.0	21.8	21.7	21.7	21.7	21.7	21.9	22.0	22.0	22.1	22.3	21.7	22.5	22.1	24	
23	22.4	22.4	22.4	22.4	22.5	22.4	22.7	22.5	22.5	22.2	22.2	21.9	22.1	22.1	22.0	22.0	22.0	22.0	22.0	22.0	22.1	22.2	22.2	21.9	22.7	22.2	24		
24	22.3	22.3	22.5	22.4	22.5	22.4	22.5	22.4	22.3	22.2	22.1	21.9	22.0	21.8	21.9	21.7	21.7	21.9	21.7	21.6	21.5	21.7	21.9	22.1	21.5	22.5	22.1	24	
25	22.2	22.3	22.4	22.4	22.4	22.6	22.4	22.5	22.3	22.1	22.1	21.9	21.6	21.6	21.5	21.5	21.3	21.4	21.5	21.5	21.6	21.9	22.0	22.2	21.3	22.6	22.0	24	
26	22.3	22.4	22.3	22.3	22.5	22.5	22.5	22.5	22.1	22.0	21.8	21.6	21.5	21.3	21.1	21.4	21.2	21.1	21.1	21.1	21.3	21.7	21.9	22.0	21.1	22.5	21.8	24	
27	22.0	22.1	22.2	22.2	22.3	22.3	22.3	22.2	22.1	21.7	21.7	21.4	21.7	22.1	22.4	22.6	22.8	22.8	22.7	22.4	21.6	20.9	21.3	21.6	20.9	22.8	22.1	24	
28	21.7	21.8	21.9	21.9	21.8	21.9	21.9	21.9	21.7	21.4	21.1	21.4	21.9	22.3	22.7	22.7	22.7	22.8	22.8	22.8	22.7	22.2	21.3	21.5	21.8	21.1	22.8	22.0	24
29	22.0	22.1	22.2	22.2	22.3	22.3	22.3	22.2	22.0	21.9	21.8	21.6	21.5	21.8	22.4	22.8	22.8	22.4	22.0	21.4	21.2	21.7	21.8	22.0	21.2	22.8	22.0	24	
30	22.1	22.3	22.3	22.2	22.2	22.1	22.2	22.2	22.0	22.5	22.8	22.9	21.6	20.9	20.9	20.9	20.9	20.9	20.9	20.8	21.0	21.1	21.4	21.5	21.7	20.8	22.9	21.7	24
31	21.7	21.9	21.8	21.9	21.9	22.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	21.7	22.0	21.9	7	
HOURLY MAX	22.5	22.5	22.5	22.6	22.5	22.6	22.7	22.5	22.5	22.8	23.1	22.8	22.7	22.7	22.8	22.8	22.8	22.8	22.8	22.8	22.7	22.3	22.3	22.3	22.5				
HOURLY AVG	22.1	22.1	22.2	22.2	22.2	22.3	22.2	22.2	22.1	22.0	21.9	21.8	21.7	21.7	21.7	21.6	21.6	21.6	21.6	21.6	21.5	21.7	21.8	22.0					

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

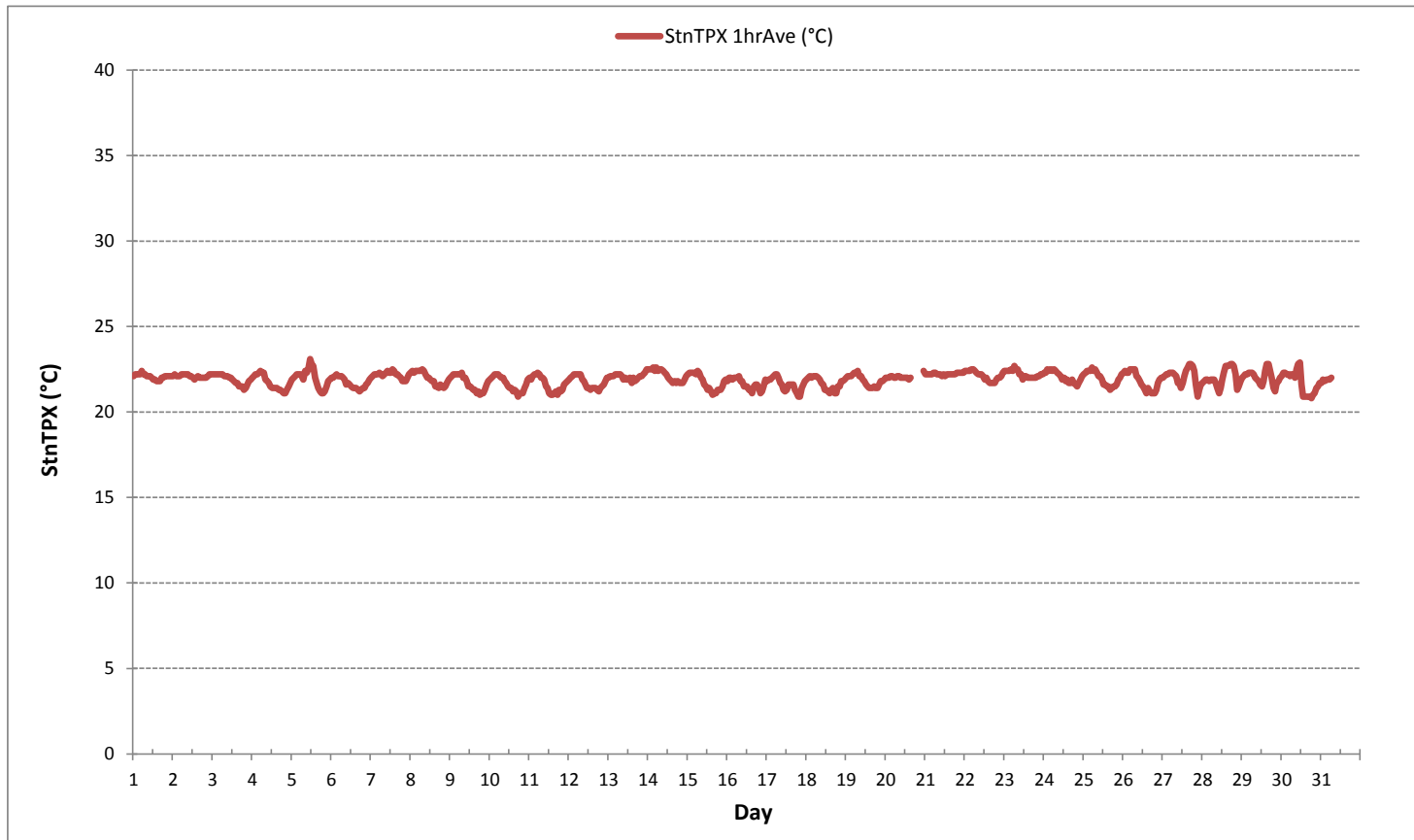
24 HR AVERAGES July 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	20.8 °C	@ HOUR	18	ON DAY	30
MAXIMUM 1-HR AVERAGE:	23.1 °C	@ HOUR	11	ON DAY	5
MAXIMUM 24-HR AVERAGE:	22.2 °C			ON DAY	7
OPERATIONAL TIME:				720	hrs
AMD OPERATION UPTIME:				96.8	%
STANDARD DEVIATION:	0.4	MONTHLY AVERAGE:		21.9	°C

STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 43C Sulphur Dioxide Analyzer Calibration

Date:	July 5, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	28.06	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	20.8	°C
Location/Station Name:	986B	Weather Conditions:	Mainly sunny		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	7:30	Performed By/Reviewer:	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	12:10	Cal Gas Expiry Date:	December 2, 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.:	1.048		
Last Calibration Date:	June 6, 2018	New C.F.:	0.999		
Previous C.F.:	0.999				

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. # : LL119329									
Cal Gas Conc. (ppm): 50.1									

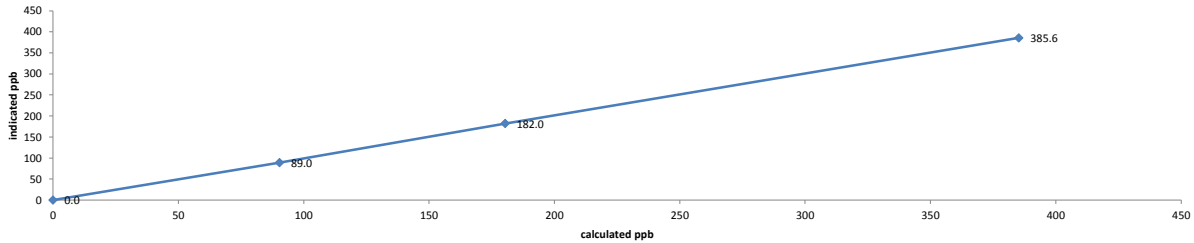
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	6004	0.00	6004	0.0	0.5	n/a
as found high	5936	46.00	5982	385.3	368.0	1.048
adjusted zero	6004	0.00	6004	0.0	0.0	n/a
adjusted high	5936	46.00	5982	385.3	385.6	0.999
mid	5995	21.66	6017	180.4	182.0	0.991
low	6002	10.84	6013	90.3	89.0	1.015
calibrator zero	6013	0.00	6013	0.0	0.0	n/a
Average C.F.=						1.002

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.998		0.95-1.05
b (Intercept as % of full scale)=	0.05%		± 3% F.S.
% change in C.F. from last cal=	-4.94%		± 10%

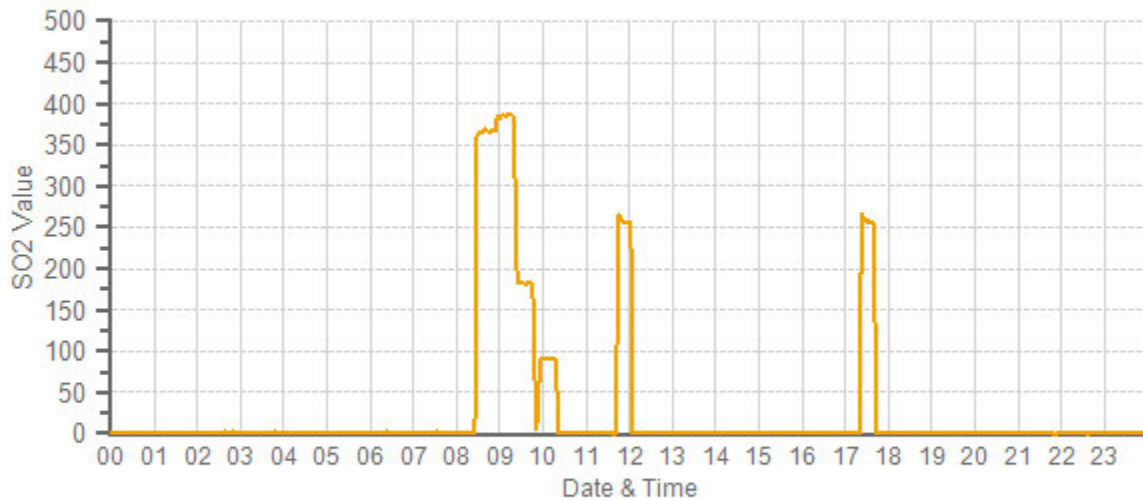
Thermo 43C Sulphur Dioxide Analyzer Calibration



As found:		As left:	
Bkg:	82.2	Bkg:	87.2
Coef:	0.877	Coef:	0.921
Pmt:	-654	Pmt:	-654
0	Lamp=857	0	Lamp=858
Battery:	3.3	Battery:	3.3
Internal:	27.6	Internal:	29.1
Chamber:	45.3	Chamber:	45.4
Pressure:	421.1	Pressure:	420.5
Flow:	0.719	Flow:	0.718
Intensity:	~38202	Intensity:	37750
Expected Value:	240.0	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.

SO2 [ppb] Station: PRAMP_986 Daily: 18/07/05 Type: AVG 1 Min. [1 Min.]



— SO2 [ppb]



Thermo 43C Sulphur Dioxide Analyzer Calibration

Date: July 30, 2018	Barometer/B.P./units: Brunton 05535 expires December 15, 2018	28.01	inHg
Company/Airshed: PRAMP	Thermometer/Station Temp: F.S. 160348895 expires June 19, 2020	21.9	°C
Location/Station Name: 986B	Weather Conditions: Light rain/scattered showers		
Parameter: Sulphur Dioxide	Calibration Purpose: shut down		
Start Time 24 hr. (mst): 9:00	Performed By/Reviewer: Limin Li		Rob Fisher
End Time 24 hr. (mst): 11:14	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.: 0.988		
Last Calibration Date: July 5, 2018	New C.F.: n/a		
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" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">Point</td><td>ppb</td></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: API id# 627 expires January 31, 2019									
Cal Gas Cylinder I.D. #: LL119513									
Cal Gas Conc. (ppm): 50.6									

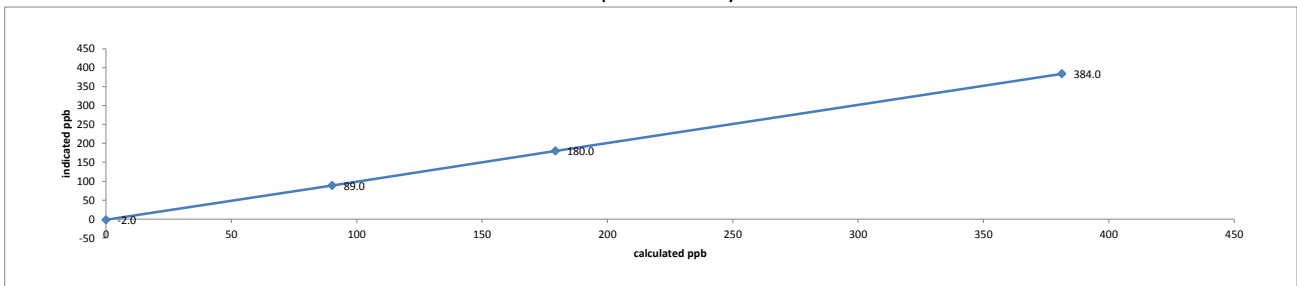
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	6059	0.00	6059	0.0	-2.0	n/a
as found high	5993	45.51	6039	381.3	384.0	0.988
mid	6049	21.51	6071	179.3	180.0	0.985
low	6055	10.81	6066	90.2	89.0	0.991
Average C.F. =						0.988

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>0.988</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.39%</u>	0.90-1.10
% change in C.F. from last cal = <u>1.21%</u>	± 3% F.S.
	± 10%

Thermo 43C Sulphur Dioxide Analyzer Calibration



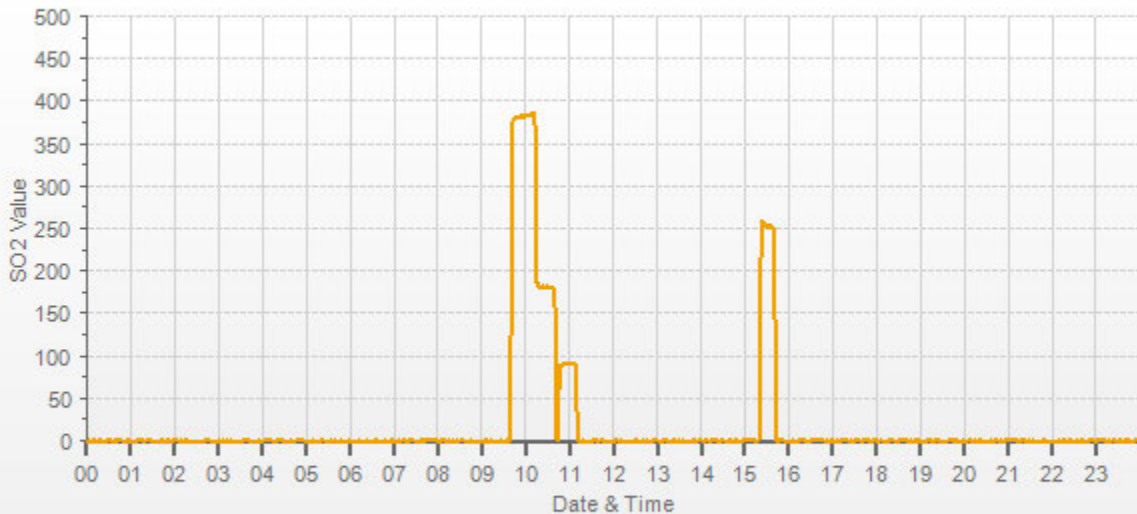
As found:	As left:
Bkg: <u>87.5</u>	Bkg: <u>n/a</u>
Coef: <u>0.921</u>	Coef: <u>n/a</u>
Pmt: <u>-654</u>	Pmt: <u>n/a</u>
0 Lamp=855	0 <u>n/a</u>
Battery: <u>3.2</u>	Battery: <u>n/a</u>
Internal: <u>27.5</u>	Internal: <u>n/a</u>
Chamber: <u>45.3</u>	Chamber: <u>n/a</u>
Pressure: <u>418.2</u>	Pressure: <u>n/a</u>
Flow: <u>0.709</u>	Flow: <u>n/a</u>
Intensity: <u>~37475</u>	Intensity: <u>n/a</u>
Averaging Time: <u>120</u>	Averaging Time: <u>n/a</u>
Expected Value: <u>255.7</u>	Expected Value: <u>n/a</u>

Comments:

The manifold blower was found to be working normally.

A Shutdown calibration was performed to replace the trailer.

SO2 [ppb] Station: PRAMP_986 Daily: 18/07/30 Type: AVG 1 Min. [1 Min.]



— SO2 [ppb]

TOTAL REDUCED SULPHUR



Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

Date:	July 5, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	28.07	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	20.8	°C
Location/Station Name:	986B	Weather Conditions:	Mainly sunny		
Parameter:	Total Reduced Sulphur	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	7:30	Performed By/Reviewer:	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	12:10	Cal Gas Expiry Date:	August 23, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CD-NOVA CDN-101 #516		
Analyzer:					
Serial Number/Owner:	1152940011 Maxxam	Range ppb:	100		
Last Calibration Date:	June 6, 2018	As Found C.F.:	0.993		
Previous C.F.:	1.000	New C.F.:	1.000		

Calibration Standards:	Standard Calibration Points for Ranges	SO2 Scrubber Check (10 minutes):
Low Flow Meter ID/Expiry Date:	Defender Low 156151 expires October 2, 2018	Start/End Time 24 hr.:
High Flow Meter ID/Expiry Date:	Defender High 156312 expires December 13, 2018	SO2 Analyzer Range:
Calibrator ID/Expiry Date:	API id# 627 expires January 31, 2019	Target Concentration (ppb):
Cal Gas Cylinder I.D. #:	LL119500	As Found Zero:
Cal Gas Conc. (ppm):	9.8	Analyzer Response: (ppb):
		Zero Corrected Result (ppb):

Point	ppb
High	78
Mid	38
Low	19

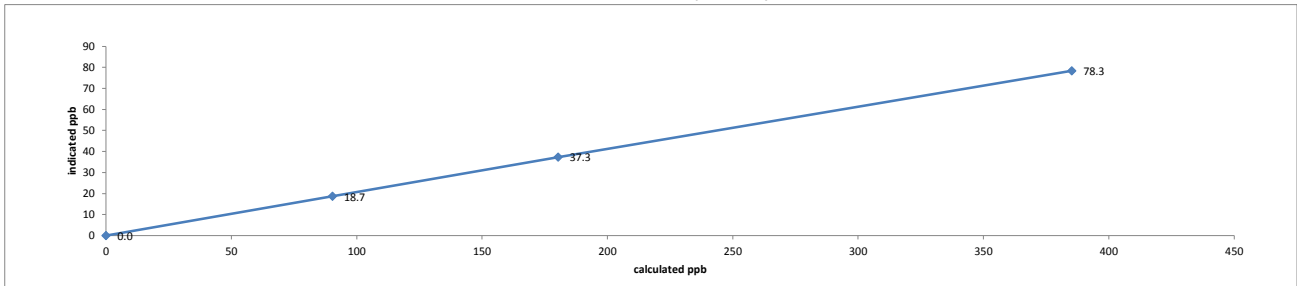
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	7576	0.00	7576	0.0	0.0	n/a
as found high	7502	60.39	7562	78.3	78.8	0.993
adjusted zero	7576	0.00	7576	0.0	0.0	n/a
adjusted high	7502	60.39	7562	78.3	78.3	1.000
mid	7554	29.07	7583	37.6	37.3	1.007
low	7558	14.50	7572	18.8	18.7	1.004
calibrator zero	7572	0.00	7572	0.0	0.1	n/a
Average C.F. =						1.003

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.000		0.95-1.05
b (Intercept as % of full scale) =	0.09%		± 3% F.S.
% change in C.F. from last cal =	0.72%		± 10%

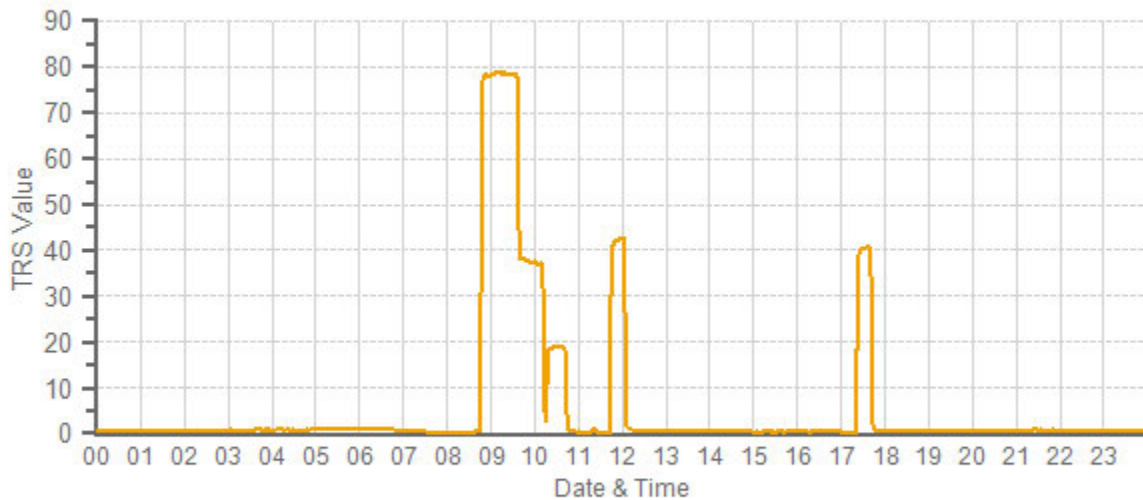
Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration



As found:		As left:	
Bkg:	1.86	Bkg:	1.80
Coef:	0.962	Coef:	0.951
Pmt:	-690.8	Pmt:	-690.8
Flash:	963	Flash:	965
Internal:	29.8	Internal:	31.4
Chamber:	44.9	Chamber:	44.9
Perm Oven Gas:	45.00	Perm Oven Gas:	45.00
Perm Oven Heater:	44.25	Perm Oven Heater:	44.25
Pressure:	659.5	Pressure:	657.4
Sample Flow:	0.482	Sample Flow:	0.481
Lamp Intensity:	90	Lamp Intensity:	91
Converter:	820	Converter:	820
Converter Set:	820	Converter Set:	820
Averaging Time:	120	Averaging Time:	120
Expected Value:	43.4	Expected Value:	42.5

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

TRS [ppb] Station: PRAMP_986 Daily: 18/07/05 Type: AVG 1 Min. [1 Min.]



— TRS [ppb]



Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

Date:	July 30, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	28.01	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	21.9	°C
Location/Station Name:	986B	Weather Conditions:	Light rain/scattered showers		
Parameter:	Total Reduced Sulphur	Calibration Purpose:	shut down		
Start Time 24 hr. (mst):	9:00	Performed By/Reviewer:	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	11:43	Cal Gas Expiry Date:	August 23, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CD-NOVA CDN-101 #516		
Analyzer:					
Serial Number/Owner:	1152940011 Maxxam	Range ppb:	100		
Last Calibration Date:	July 5, 2018	As Found C.F.:	1.030		
Previous C.F.:	1.000	New C.F.:	n/a		

Calibration Standards:	Standard Calibration Points for Ranges
Low Flow Meter ID/Expiry Date:	Defender Low 156151 expires October 2, 2018
High Flow Meter ID/Expiry Date:	Defender High 156312 expires December 13, 2018
Calibrator ID/Expiry Date:	EnviroNics id# 1991 expires March 15, 2019
Cal Gas Cylinder I.D. #:	LL119500
Cal Gas Conc. (ppm):	9.8

Point	ppb
High	78
Mid	38
Low	19

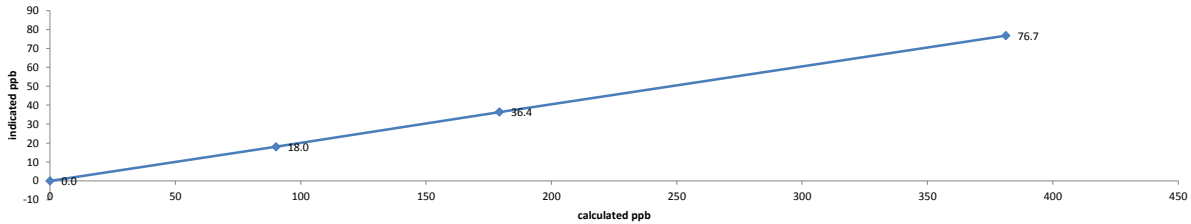
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	7484	0.00	7484	0.0	0.0	n/a
as found high	7423	60.33	7483	79.0	76.7	1.030
mid	7498	29.33	7527	38.2	36.4	1.048
low	7515	14.66	7530	19.1	18.0	1.058
Average C.F. =						1.045

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.028		0.90-1.10
b (Intercept as % of full scale) =	0.38%		± 3% F.S.
% change in C.F. from last cal =	-2.97%		± 10%

Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

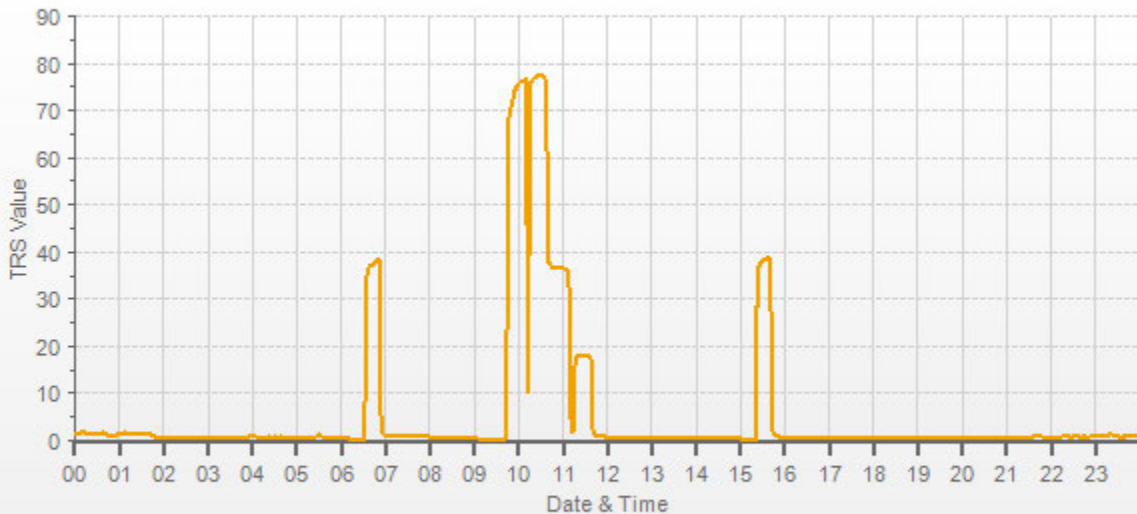


As found:	As left:
Bkg: 1.81	Bkg: n/a
Coef: 0.951	Coef: n/a
Pmt: -691.2	Pmt: n/a
Flash: 961	Flash: n/a
Internal: 30.5	Internal: n/a
Chamber: 44.9	Chamber: n/a
Perm Oven Gas: 45.00	Perm Oven Gas: n/a
Perm Oven Heater: 44.25	Perm Oven Heater: n/a
Pressure: 658.0	Pressure: n/a
Sample Flow: 0.481	Sample Flow: n/a
Lamp Intensity: 91	Lamp Intensity: n/a
Converter: 820	Converter: n/a
Converter Set: 820	Converter Set: n/a
Averaging Time: 120	Averaging Time: n/a
Expected Value: 42.5	Expected Value: n/a

Comments:

The manifold blower was found to be working normally.

A Shutdown calibration was performed to replace the trailer. The calibration gas was repurged during the As Found High point; the As Found High point was restored.



— TRS [ppb]

TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	July 5, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	28.07	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	20.8	°C
Location/Station Name:	986B	Weather Conditions:	Mainly sunny		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	10:28/14:00	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:	944 SCCM	CH ₄ =	0.999	0.992	1.000
Last Calibration Date:	June 6, 2018	NMHC =	1.001	1.000	0.998
Range ppm:	20 CH4/20 NMHC/40 THC	THC =	1.000	0.996	0.999

Calibration Standards:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Low Flow Meter ID/Expiry Date:	Defender Low 156151 expires October 2, 2018	Point	CH4	NMHC	THC
High Flow Meter ID/Expiry Date:	Defender High 156312 expires December 13, 2018	High	13.00	13.00	26.00
Calibrator ID/Expiry Date:	Enviroconics id# 1991 expires March 15, 2019	Mid	7.00	7.00	14.00
Cal Gas Cylinder I.D. #:	LL168404	Low	3.00	3.00	6.00
CH4 Cylinder Conc. =	597.0 206.0 =C ₂ H ₆ Cylinder Conc.				
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	2511	0.00	2511	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2447	60.65	2508	14.44	13.70	28.14	14.56	13.70	28.26	0.992	1.000	0.996
adjusted zero	2511	0.00	2511	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2447	60.65	2508	14.44	13.70	28.14	14.44	13.73	28.17	1.000	0.998	0.999
mid	2474	30.16	2504	7.19	6.82	14.02	7.22	6.86	14.08	0.996	0.995	0.995
low	2489	15.07	2504	3.59	3.41	7.00	3.60	3.42	7.02	0.998	0.997	0.997
calibrator zero	2504	0.00	2504	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F. =										0.998	0.996	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) =	1.000	1.002	1.001	0.95-1.05
% change in C.F. from last cal =	0.04%	0.03%	0.03%	± 3% F.S.
	0.75%	0.10%	0.44%	± 10%

As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-312.1	Calibration History cnt'd:	NM Peak Area:	69338
Temperatures:	Detector Oven:	175	Crucial Settings:	Methane Start:	8
	Filter:	175		Methane End:	16
	Column Oven:	75		Backflush:	18
	Internal:	38.6		NMHV Start:	26
Cylinder Pressures/reg.:	Carrier:	2300 50	Run History>1:	NMHC End:	56
	Fuel:	1000 55		Date:	05Jul18
	Span Gas:	800 26		Time:	09:03
	Zero Air Generator:	46		CH ₄ PK HT:	2591
Internal Pressures:	Carrier:	31.4		CH ₄ RT:	12.6
	Fuel:	40.5		CH ₄ Baseline:	1774
	Air:	32.4		CH ₄ LOD:	7
FID Status:	Status:	LIT		CH ₄ SD:	2
	Counts:	21565		CH ₄ CONC:	1.99
	Flame:	322.3		NM PK HT:	0
	Det Base:	175		NM Peak Area:	0
Flame and Power Stats:	Last Power On:	15Mar18 09:19		NM CONC:	0.00
	Flameouts:	2		NM Base Start:	1752
	Det Oven at Start:	169.3		NM Base End:	1743
	Col Oven at Start:	75.1		NM LOD:	12
Calibration History:	Time:	06Jun18 10:58		NM Start IDX:	5
	Type:	Span		NM End IDX:	55
	Status:	GOOD		NM Max Slope:	3.4e-01
	Check/Adjust:	ADJUST		NM Min Slope:	-5.8e-01
	CH ₄ Span Conc:	14.43	Expected Values:	NM PT Count:	0
	CH ₄ SP Ratio:	0.000768		Previous CH4:	10.44
	CH ₄ RT:	12.6		Previous NMHC:	11.3
	CH ₄ PK IDX:	23		Previous THC:	21.73
	CH ₄ PK HT:	18797		New CH4:	10.44
	NM Span Conc:	13.7		New NMHC:	11.30
	NM SP Ratio:	0.000198		New THC:	21.73

Comments:

The analyzer sample inlet filter was changed. A new nitrogen cylinder was installed.

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

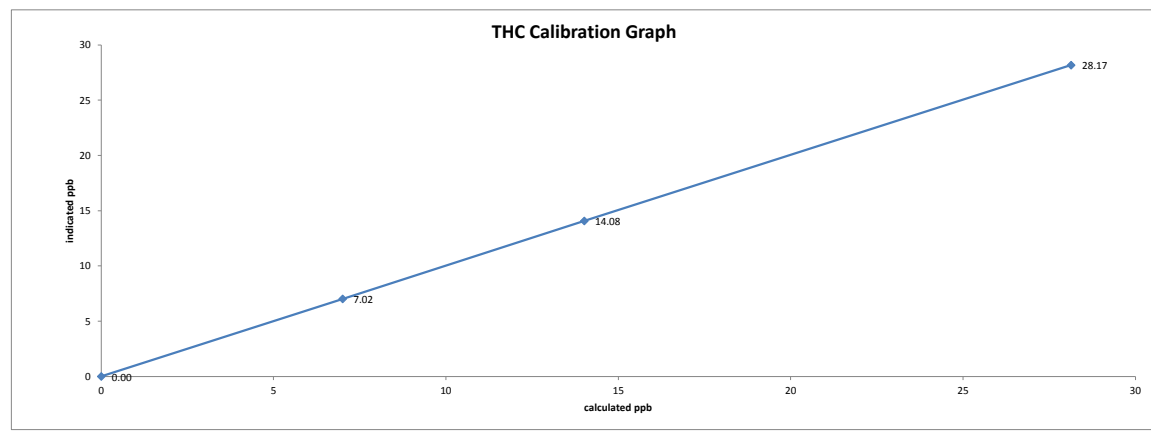
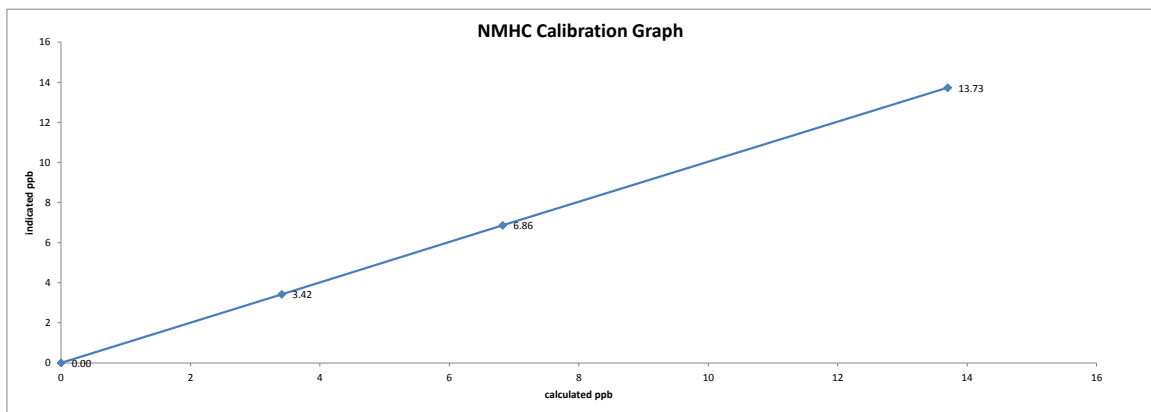
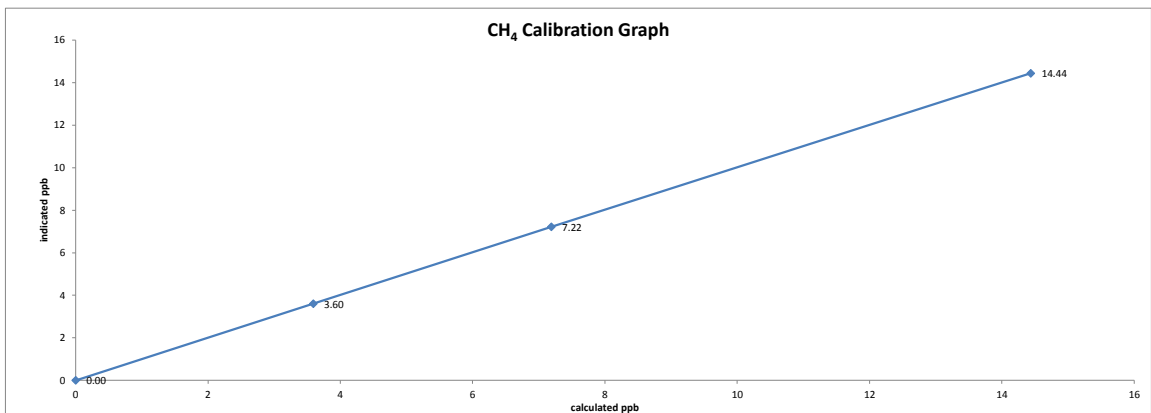
The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

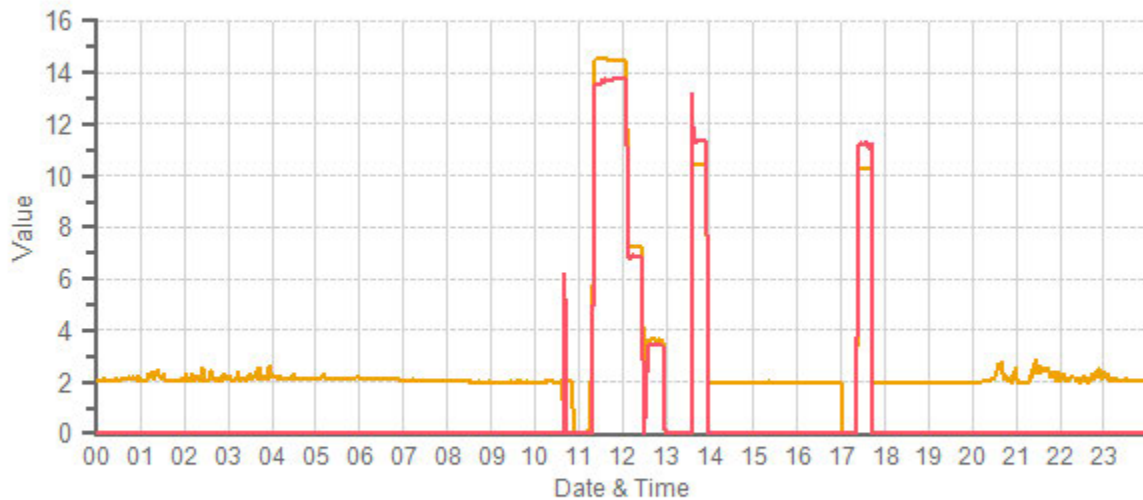
Then N2 gas cylinder was changed before the calibration.

Date: July 5, 2018
Company/Airshed: PRAMP
Location/Station Name: 986B

Start/End Time 24 hr. (mst): 10:28/14:00
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



Station: PRAMP_986 Daily: 18/07/05 Type: AVG 1 Min. [1 Min.]



— CH4 [ppm]

— NMHC [ppm]



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date: July 30, 2018	Barometer/B.P./units: Brunton 05535 expires December 15, 2018	28.01	inHg
Company/Airshed: PRAMP	Thermometer/Station Temp: F.S. 160348895 expires June 19, 2020	21.9	°C
Location/Station Name: 986B	Weather Conditions: Light rain/scattered showers		
Parameter: CH4 / NMHC / THC	Calibration Purpose: shut down		
Start/End Time 24 hr. (mst): 09:00/11:35	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: 944 SCCM	CH ₄ = 1.000	1.027	n/a	
Last Calibration Date: July 5, 2018	NMHC = 0.998	1.007	n/a	
Range ppm: 20 CH4/20 NMHC/40 THC	THC = 0.999	1.017	n/a	

Calibration Standards:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Low Flow Meter ID/Expiry Date: Defender Low 156151 expires October 2, 2018	High Flow Meter ID/Expiry Date: Defender High 156312 expires December 13, 2018	Point	CH4	NMHC	THC
Calibrator ID/Expiry Date: API id# 831 expires March 1, 2019	Cal Gas Cylinder I.D. #: LL168404	High	13.00	13.00	26.00
CH4 Cylinder Conc.: 597.0	206.0 =C ₂ H ₆ Cylinder Conc.	Mid	7.00	7.00	14.00
CH ₄ expressed as C ₂ H ₆ : 566.5	1163.5 =total CH4 equivalent	Low	3.00	3.00	6.00

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

Calibrator Flow Rates (cc/min)				Correction Factors:								
Point	Diluent	Cal Gas	Total Flow	Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	CH ₄	NMHC	THC
as found zero	2518	0.00	2518	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2458	61.26	2519	14.52	13.78	28.30	14.14	13.68	27.82	1.027	1.007	1.017
mid	2497	30.62	2528	7.23	6.86	14.09	7.12	6.84	13.96	1.016	1.003	1.010
low	2513	15.29	2528	3.61	3.43	7.04	3.59	3.44	7.03	1.006	0.996	1.001
Average C.F.=										1.016	1.002	1.009

Linear Regression/Calibration Results:				
Correlation Coefficient =	CH ₄	NMHC	THC	LIMITS > or = 0.995 0.90-1.10 ± 3% F.S. ± 10%
Slope =	0.973	0.992	0.982	
b (Intercept as % of full scale)=	0.22%	0.10%	0.16%	
% change in C.F. from last cal=	-2.68%	-0.91%	-1.81%	

As Left Instrument Diagnostics:			
Interface Board Voltages:	Bias Supply: -312.2	Calibration History cnt'd:	NM Peak Area: n/a
Temperatures:	Detector Oven: 175	Crucial Settings:	Methane Start: 8
	Filter: 175		Methane End: 16
Cylinder Pressures/reg.:	Column Oven: 75.2	Run History>1:	Backflush: 18
	Internal: 38.5		NMHV Start: 26
	Carrier: 1650 50		NMHC End: 56
	Fuel: 250 55		Date: 30Jul18
Internal Pressures:	Span Gas: 400 26	Time: 10:04	CH ₄ PK RT: 18591
	Zero Air Generator: 46	CH ₄ RT: 12.6	CH ₄ Baseline: 1834
	Carrier: 31.4	CH ₄ LOD: 92	CH ₄ SD: 30
FID Status:	Fuel: 40.5	CH ₄ CONC: 14.15	NM PK HT: 2241
	Air: 32.2	NM Peak Area: 68980	NM CONC: 13.67
	Status: LIT	NM Base Start: 2047	NM Base End: 1743
Flame and Power Stats:	Counts: 21309	NM LOD: 454	NM Start IDX: 2
	Flame: 322.3	NM End IDX: 80	NM Max Slope: 1.3e+02
	Det Base: 175	NM Min Slope: -9.1e+01	NM PT Count: 53
Calibration History:	Last Power On: 20Jul18 22:23	Previous CH ₄ : 10.44	Previous NMHC: 11.3
	Flameouts: 2	Previous THC: 21.73	New CH ₄ : n/a
	Det Oven at Start: 31.4	New NMHC: n/a	New THC: n/a
	Col Oven at Start: 31.6	Expected Values:	
	Time: n/a		
	Type: n/a		
	Status: n/a		
	Check/Adjust: n/a		
	CH ₄ Span Conc: n/a		
	CH ₄ SP Ratio: n/a		
	CH ₄ RT: n/a		
	CH ₄ PK IDX: n/a		
	CH ₄ PK HT: n/a		
	NM Span Conc: n/a		
	NM SP Ratio: n/a		

Comments:

The analyzer sample inlet filter was changed. A new nitrogen cylinder was installed.

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

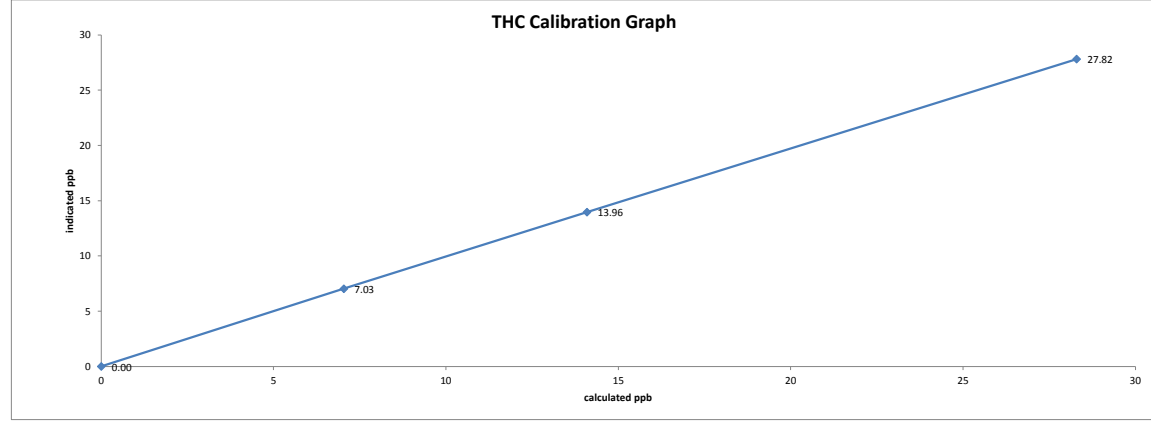
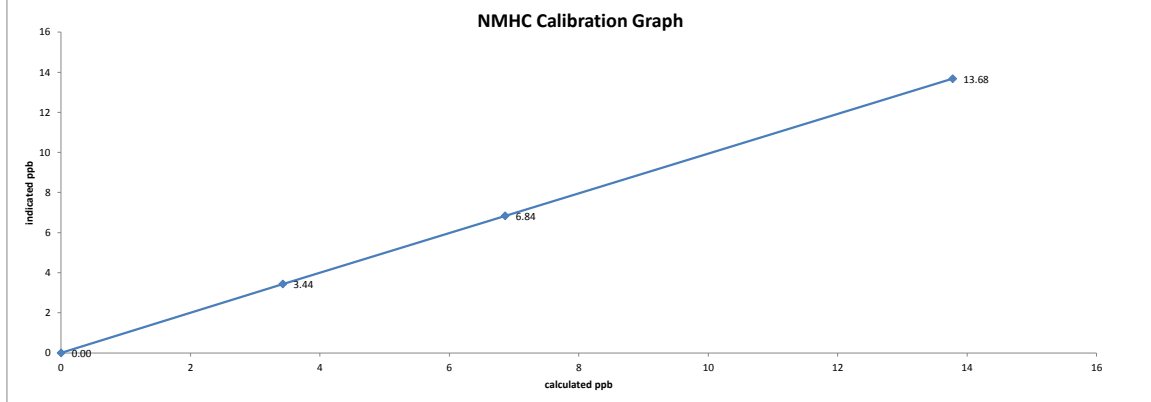
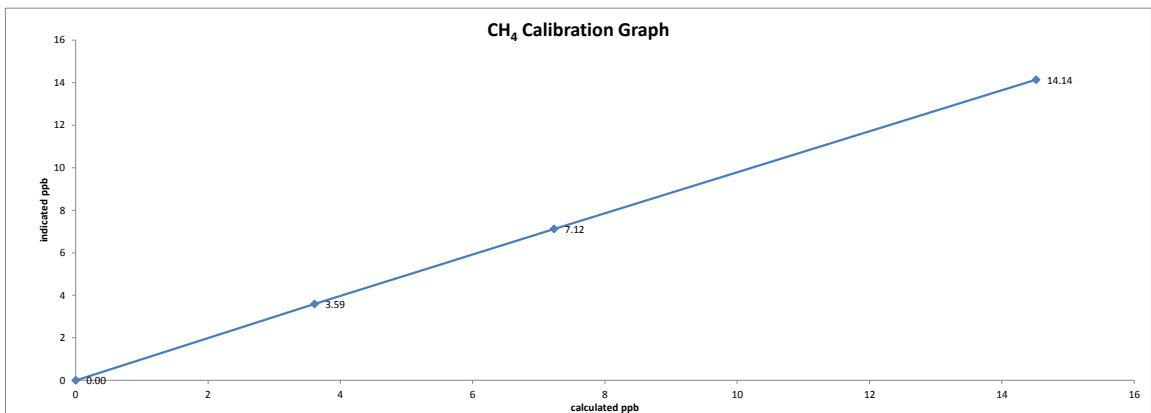
The analyzer cooling fan filter(s) were cleaned.

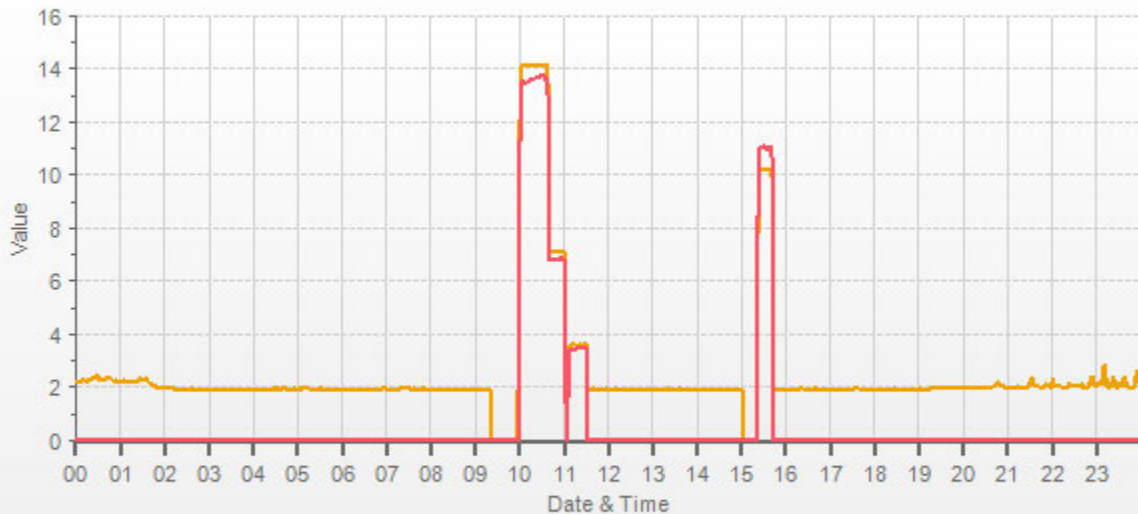
The manifold blower was found to be working normally.

A Shutdown calibration was performed to replace the trailer.

Date: July 30, 2018
Company/Airshed: PRAMP
Location/Station Name: 986B

Start/End Time 24 hr. (mst): 09:00/11:35
Calibration Purpose: shut down
Calibration Method: Gas Dilution





— 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:	July 5, 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:	June 6, 2018		
Parameter:	Temperature @ 2 metres (1 C tolerance)		
Reference Thermometer ID:	F.S. 160348895 expires June 19, 2020		
Reference Temperature (°C):	22.2		
Station - Ambient Temperature (°C):	21.9		
Temperature Difference (°C):	0.3		
BAROMETRIC PRESSURE SENSOR CHECK			
Previous check date:	June 6, 2018		
Reference Barometer ID:	Brunton 05535 expires December 15, 2018		
Reference Pressure - Units/Reading:	mbar	949.3	
Station Pressure - Units/Reading:	mbar	949.8	
Pressure Tolerance +/- 15% of error:	807 - 1092	-0.05%	
RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK			
Previous check date:	June 6, 2018		
Reference Hygrometer ID:	F.S. id# 160348895 expires June 19, 2020		
Reference Hygrometer % RH- Reading:	46.00		
Station Hygrometer % RH- Reading:	53.00		
RH Tolerance +/- 15% of difference:	39.10 - 52.90	-15.2%	
ANEMOMETER - WIND SPEED & WIND DIRECTION SENSOR CHECK			
WIND SPEED		WIND DIRECTION	
Previous check date:	June 6, 2018	Previous check date:	June 6, 2018
Wind Speed Observed (kph):	16	Wind Direction Observed:	S
Wind speed on Data Logger (kph):	16	Wind Direction on Data Logger:	S
Correction Factor: Tolerance +/-2%:	1.000	Wind Direction Pass/Fail?:	Pass

CALIBRATORS

Company: <u>Maxxam</u>		Operator: <u>Chris W</u>	
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)*

NO₂	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: Maxxam Operator: Christopher

Calibrator:				Flow Measurement Device:			
Make/Model	<u>API 700</u>			Make/Model	<u>Mesa 530+</u>		
Serial Number	<u>627</u>			Serial Number	<u>H-156312 L-156151</u>		
Last Verification Date	<u>January 2017</u>			Temperature (°C)	<u>N/A</u>		
NO Cylinder S/N	<u>EY0000715</u>			Barometric Pressure	<u>N/A</u>		
NO [PPM]	<u>50.7</u>	NOx [PPM]	<u>50.8</u>				
Expiry Date	<u>May 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%	
4972	77.0	0.785	0.787	0.782	-0.001	0.781	0%	-1%
4979	37.4	0.381	0.382	0.377	0.000	0.377	-1%	-1%
4970	18.7	0.191	0.191	0.188	0.000		-2%	-100%
Absolute Average Percent Difference							1%	34%

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)=	0.9969	0.90-1.10		m (Slope)=	0.9924
b (Intercept % of FS)=	-0.1435	± 3% F.S.		b (Intercept % of FS)=	-0.0716

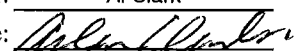
Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4972	0.000	0.000	0.778	-0.001	0.777	NO ₂	% Diff. Limit
4972	0.500	0.492	0.286	0.488	0.774	-1%	± 10%
4972	0.280	0.278	0.500	0.276	0.776	0%	± 10%
4972	0.095	0.092	0.686	0.091	0.777	0%	± 10%
Absolute Average Percent Difference						0%	± 10%

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

NO ₂		LIMITS	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9937	0.90-1.10	
b (Intercept % of FS)=	-0.0647	± 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>January 31, 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:

Auditor: Al Clark
Operator Signature: 

Date: January 31, 2018
Location: McIntyre Center Edmonton

Company: Maxxam **Operator:** Chris W

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Mesa Defender 530</u>
Serial Number	<u>831</u>	Serial Number	<u>L-153351 H-152571</u>
Last Verification Date	<u>February 2017</u>	Temperature (°C)	<u>23.0 C</u>
SO ₂ Cylinder Conc.	<u>47.9</u>	Barometric Pressure	<u>702 mmHg</u>
SO ₂ Cylinder S/N	<u>LL108015</u>		
Expiry Date	<u>October 2020</u>		

Flow Measurements

Pt. No. 1 82.6 **Pt. No. 2** 40.1 **Pt. No. 3** 20.0

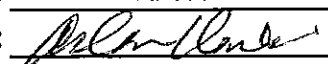
Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
5022	0.788	0.789	0%	± 10%
5018	0.383	0.385	1%	± 10%
5029	0.190	0.191	1%	± 10%
Absolute Average Percent Difference			0%	± 10%

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

SO ₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0011	0.90-1.10
b (Intercept % of FS)=	0.0617	± 3% F.S.

AENV Standards		SO ₂ Analyzer	
Audit Calibrator		Make/Model	<u>Teco 43C</u>
Make/Model	<u>Sabio 2010</u>	Serial/AMU Number	<u>AMU 1623</u>
Serial/AMU Number	<u>AMU 2092</u>	Last Calibration Date	<u>March 1, 2018</u>
SO ₂		Full Scale (ppm)	<u>1.0</u>
SRM Gas Cylinder No.	<u>CAL016625</u>	Expiry Date	<u>February 2019</u>
Cylinder Conc. (ppm)	<u>98.07</u>		

COMMENTS: _____

Auditor: Al Clark Date: March 1, 2018
 Operator Signature:  Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-111CGA

Company: Maxxam **Operator's Name:** Chris Wesson
Cylinder #: LL119329 **Concentration PPM:** 50.1 **Tolerance(%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Thermo146i</u>	Make/Model: <u>Bios DC-2</u>
Serial Number: <u>1809</u>	Serial Number: <u>Bios D</u>
Last Verification Date: <u>February 2, 2016</u>	Temp. °C: <u>24.5</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>702mmHg</u>
Cylinder Number: <u>CAL016625</u>	

Reference Analyzer:
 Make/Model: Thermo 43C Serial/AMU Number: 1623
 Instrument Settings: Zero: 8.7 Span: 1.027 Range: 1.0
 Last Calibration: Date: 1-Feb-16 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
4960	0.0	0.000			
4959	79.09	0.791	0.01595	62.701	49.6
4950	39.44	0.394	0.00797	125.507	49.4
4942	19.44	0.194	0.00393	254.218	49.3
Average Cylinder Concentration:					49.5

Previous Stated Concentration PPM: 50.1
 Percent variance from Stated: 1.3

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** SO2/NO blend 50.3ppm NO
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: February 2, 2016
 Operator Signature: Location: McIntyre Center Edmonton



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: <u>R&R MFC 201</u> Serial Number: <u>AMU 1690</u> Last Verification Date: <u>September 22, 2017</u> Gas Type: <u>H2S</u> Conc. <u>20.43</u> Cylinder Number: <u>CAL015272</u> Expiry Date: <u>January 2019</u>	Flow Measurement Device: Make/Model: <u>Mesa Definer 220</u> Serial Number: <u>H-133034 L-132702</u> Temp. °C: <u>23.5 C</u> B.P. <u>705 mmhg</u>
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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 - July 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

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

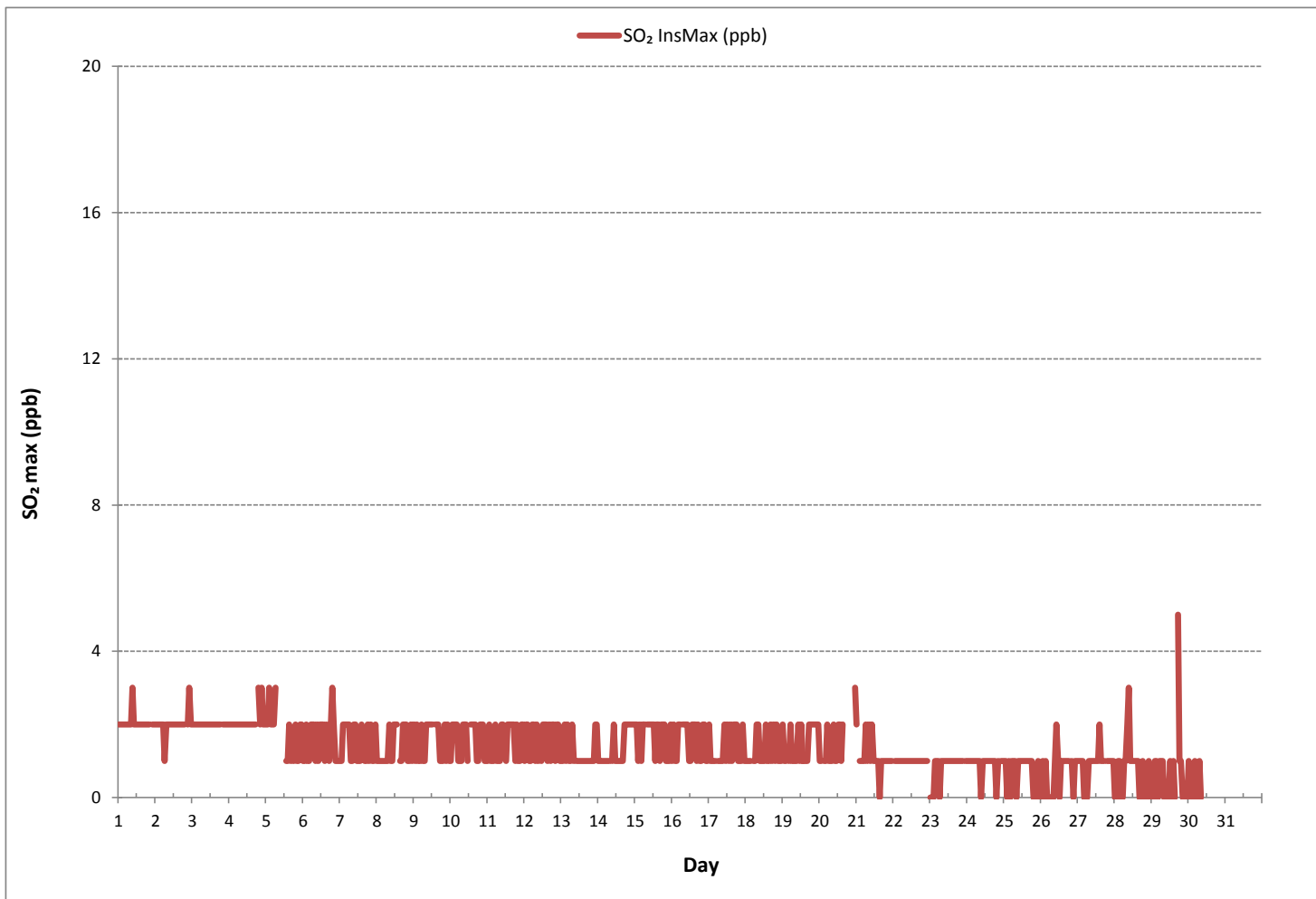
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	609
MAXIMUM INSTANTANEOUS VALUE:	5 ppb @ HOUR 17 ON DAY 29
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	698 hrs
STANDARD DEVIATION:	1

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - July 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	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	0.32	0.37	0.39	0.55	0.55	0.34	0.32	0.39	0.32	0.31	0.34	0.29	0.26	0.31	0.28	0.29	0.39	0.36	0.26	0.28	0.31	S	0.44	0.37	0.26	0.55	0.35	24	
2	0.36	0.39	0.34	0.31	0.34	0.42	0.42	0.34	0.34	0.32	0.32	0.26	0.26	0.28	0.26	0.26	0.28	0.26	0.26	0.26	0.26	S	0.37	0.29	0.32	0.26	0.42	0.32	24
3	0.34	0.32	0.32	0.34	0.31	0.32	0.32	0.34	0.32	0.29	0.31	0.26	0.31	0.29	0.26	0.29	0.26	0.29	0.31	S	0.47	0.46	0.63	0.68	0.26	0.68	0.35	24	
4	0.97	0.78	1.10	0.84	0.89	1.02	0.47	0.50	0.42	0.37	0.36	0.29	0.34	0.31	0.26	0.28	0.29	0.28	S	0.36	0.34	0.42	0.47	0.52	0.26	1.10	0.52	24	
5	0.52	0.60	0.73	0.84	0.79	1.05	0.94	C	C	C	C	C	C	0.39	0.37	0.36	0.34	S	0.42	0.41	0.68	0.91	0.70	0.57	0.34	1.05	0.62	24	
6	0.55	0.65	0.73	0.86	0.65	0.57	0.60	0.42	0.42	0.36	0.37	0.39	0.31	0.29	0.32	0.29	S	0.39	0.37	0.29	0.34	0.42	0.39	0.42	0.29	0.86	0.45	24	
7	0.41	0.52	0.70	0.76	0.44	0.44	0.42	0.73	0.55	0.50	0.44	0.39	0.39	0.37	0.32	S	0.36	0.29	0.31	0.31	0.42	0.50	0.47	0.58	0.29	0.76	0.46	24	
8	0.68	0.76	0.57	0.73	1.00	0.73	0.55	0.44	0.32	0.34	0.29	0.34	0.34	0.32	S	0.37	0.32	0.31	0.29	0.32	0.37	0.39	0.63	0.60	0.29	1.00	0.48	24	
9	0.52	0.55	0.50	0.55	0.57	0.60	0.44	0.42	0.36	0.34	0.31	0.32	0.31	S	0.39	0.34	0.39	0.34	0.31	0.32	0.44	0.55	0.63	0.70	0.31	0.70	0.44	24	
10	0.63	0.63	0.63	0.76	0.68	0.76	0.76	0.50	0.42	0.37	0.39	0.34	S	0.42	0.34	0.32	0.32	0.34	0.31	0.29	0.36	0.42	0.70	1.10	0.29	1.10	0.51	24	
11	1.34	1.21	1.43	1.45	0.97	0.76	0.57	0.47	0.39	0.36	0.36	S	0.42	0.34	0.34	0.39	0.31	0.28	0.29	0.34	0.36	0.39	0.36	0.39	0.28	1.45	0.59	24	
12	0.45	0.39	0.42	0.60	1.02	1.18	0.70	0.44	0.44	0.49	S	0.47	0.39	0.39	0.39	0.34	0.34	0.34	0.36	0.37	0.39	0.54	0.68	1.42	0.34	1.42	0.55	24	
13	1.07	0.60	1.05	0.57	0.73	0.70	0.55	0.47	0.37	S	0.42	0.34	0.31	0.32	0.34	0.31	0.34	0.39	0.34	0.36	0.34	0.36	0.31	0.37	0.31	1.07	0.48	24	
14	0.34	0.42	0.47	0.44	0.36	0.70	0.52	0.50	S	0.44	0.34	0.34	0.34	0.34	0.29	0.34	0.37	0.31	0.34	0.52	0.61	0.71	0.84	1.37	0.29	1.37	0.49	24	
15	1.49	1.70	1.70	1.54	2.21	2.77	2.01	S	0.83	0.63	0.57	0.58	0.34	0.34	0.34	0.34	0.32	0.31	0.31	0.44	0.71	0.86	0.68	0.63	0.31	2.77	0.94	24	
16	0.50	0.47	0.52	0.44	0.50	0.57	S	0.57	0.42	0.37	0.34	0.31	0.29	0.29	0.29	0.31	0.31	0.31	0.32	0.31	0.32	0.31	0.34	0.45	0.29	0.57	0.39	24	
17	0.46	0.65	0.57	1.00	5.07	S	3.52	0.57	0.42	0.42	0.34	0.34	0.36	0.39	0.37	0.34	0.34	0.31	0.31	0.76	1.02	1.42	1.07	0.31	5.07	0.89	24		
18	1.39	1.54	1.26	1.57	S	1.34	1.45	0.86	0.65	0.45	0.39	0.42	0.39	0.34	0.34	0.29	0.29	0.34	0.36	0.68	0.42	0.55	0.71	1.31	0.29	1.57	0.75	24	
19	0.92	0.89	1.23	S	2.92	2.82	1.13	0.65	0.42	0.39	0.37	0.39	0.36	0.34	0.34	0.34	0.36	0.36	0.34	0.36	0.39	0.50	0.60	0.65	0.34	2.92	0.74	24	
20	0.81	0.79	S	1.67	2.05	1.05	0.63	0.65	0.63	0.52	0.52	0.57	0.45	0.37	0.37	0.39	P	P	P	P	P	P	P	0.49	0.37	2.05	0.75	17	
21	0.39	S	0.57	0.52	0.49	0.70	0.73	0.55	0.60	0.52	0.41	0.36	0.36	0.34	0.37	0.37	0.37	0.39	0.34	0.31	0.36	0.39	0.42	0.31	0.42	0.31	0.73	0.44	24
22	S	0.44	0.42	0.44	0.46	0.52	0.47	0.39	0.39	0.36	0.34	0.36	0.34	0.31	0.31	0.34	0.32	0.34	0.34	0.37	0.46	0.60	0.54	S	0.31	0.60	0.40	24	
23	1.96	1.21	1.45	0.84	1.94	1.78	1.05	0.46	0.39	0.34	0.31	0.34	0.31	0.34	0.31	0.31	0.28	0.34	0.31	0.34	0.44	0.67	S	0.94	0.28	1.96	0.72	24	
24	1.31	1.57	1.36	1.42	0.97	1.91	2.80	1.67	0.81	0.44	0.34	0.34	0.36	0.34	0.34	0.34	0.36	0.34	0.34	0.41	0.57	S	0.81	1.13	0.34	2.80	0.88	24	
25	1.09	1.34	1.28	1.45	1.12	1.86	1.70	1.28	0.52	0.37	0.39	0.34	0.34	0.31	0.34	0.36	0.34	0.34	0.31	0.60	S	0.89	0.96	1.17	0.31	1.86	0.81	24	
26	1.02	1.52	2.12	1.57	1.70	1.70	1.52	0.67	0.44	0.39	0.39	0.41	0.39	0.39	0.36	0.39	0.39	0.36	0.36	S	0.73	0.94	0.73	0.68	0.36	2.12	0.83	24	
27	0.68	0.63	0.60	0.65	0.81	0.81	0.76	0.52	0.47	0.45	0.41	0.39	0.36	0.39	0.36	0.36	0.34	0.34	S	0.42	0.78	1.07	0.78	0.68	0.34	1.07	0.57	24	
28	1.15	0.78	1.09	0.70	1.21	1.28	0.97	0.86	0.50	0.39	0.39	0.36	0.39	0.31	0.39	0.36	0.39	S	0.47	0.47	0.63	0.65	0.96	0.68	0.31	1.28	0.67	24	
29	0.65	0.81	1.02	1.62	1.67	0.70	0.52	0.60	0.49	0.42	0.44	0.47	0.47	0.39	0.42	0.42	S	0.60	S1	S1	1.29	1.91	1.47	1.47	0.39	1.91	0.85	22	
30	1.94	1.60	0.68	0.86	0.76	1.34	S1	1.12	0.70	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.68	1.94	1.13	8
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
HOURLY MAX	1.96	1.70	2.12	1.67	5.07	2.82	3.52	1.67	0.83	0.63	0.57	0.58	0.47	0.42	0.42	0.42	0.39	0.60	0.47	0.68	1.29	1.91	1.47	1.47					
HOURLY AVG	0.84	0.83	0.87	0.89	1.14	1.06	0.96	0.62	0.48	0.41	0.38	0.37	0.35	0.34	0.34	0.34	0.34	0.34	0.33	0.38	0.51	0.65	0.66	0.76					

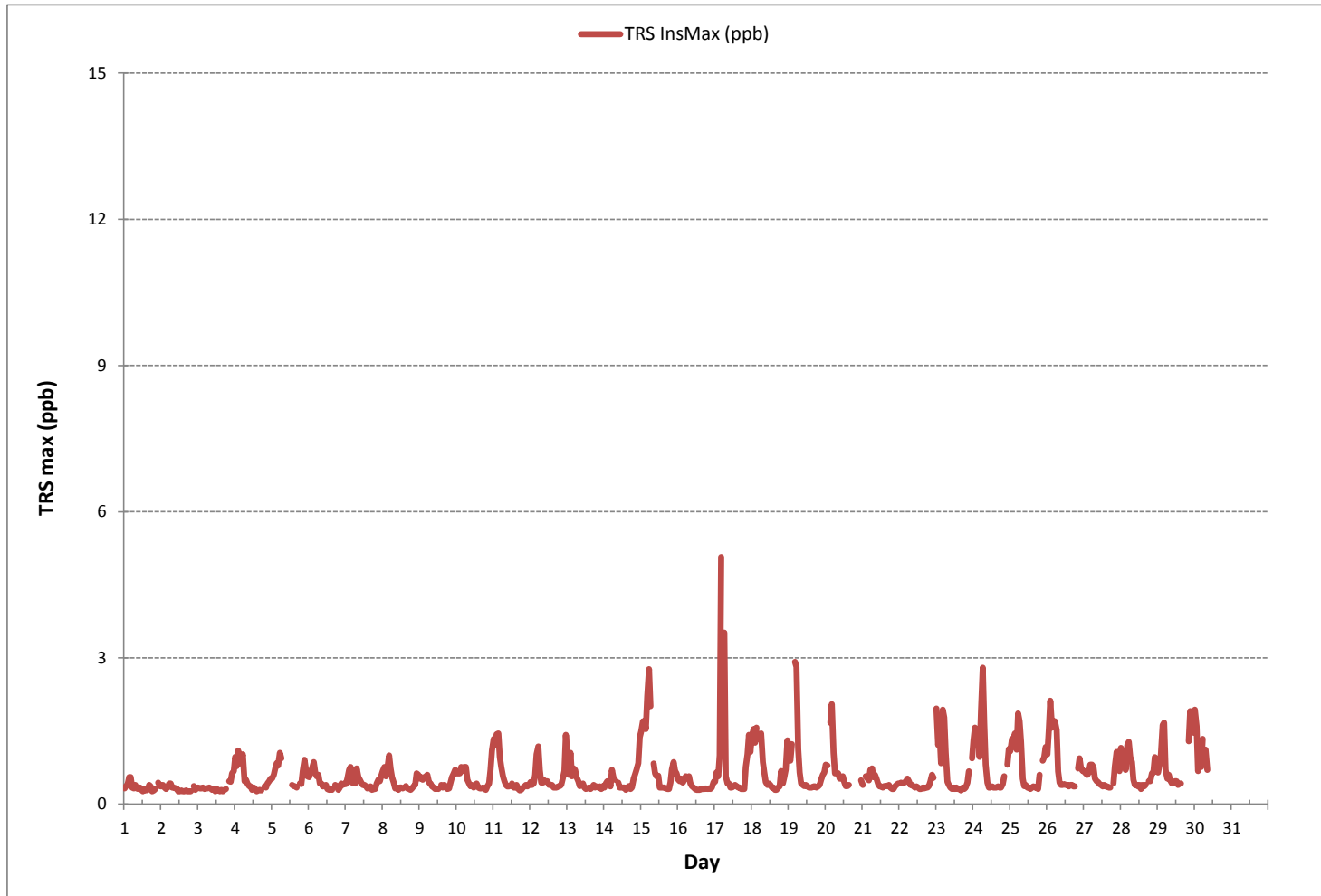
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	659
MAXIMUM INSTANTANEOUS VALUE:	5.07 ppb @ HOUR 4 ON DAY 17
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	695 hrs
STANDARD DEVIATION:	0.46

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)





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

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	1.94	1.94	1.94	2.04	1.95	2.02	2.03	2.03	1.99	1.94	1.99	1.94	1.96	1.97	1.96	2.00	2.03	2.08	2.09	2.19	2.11	S	2.15	2.12	1.94	2.19	2.02	24	
2	2.04	2.06	1.97	1.96	1.97	1.98	1.98	1.97	1.96	1.97	1.97	1.99	2.00	2.03	1.99	2.04	1.98	1.99	2.04	2.06	S	2.04	2.07	2.10	1.96	2.10	2.01	24	
3	2.02	2.00	2.06	1.99	1.99	1.98	1.98	1.99	1.98	1.98	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.98	S	1.99	2.59	3.43	3.35	1.96	3.43	2.13	24		
4	4.25	3.99	4.04	3.11	2.79	2.57	2.25	1.98	2.03	2.12	2.08	2.49	2.11	2.14	2.06	2.11	2.11	2.02	S	1.95	1.97	2.28	3.25	2.40	1.95	4.25	2.53	24	
5	2.28	2.50	2.53	2.67	2.34	2.35	2.16	2.08	2.03	2.10	C	C	C	C	2.00	2.04	1.95	S	1.94	1.95	2.77	2.96	2.52	2.41	1.94	2.96	2.29	24	
6	2.47	2.60	2.84	2.90	2.24	2.48	2.43	2.03	1.97	1.95	1.94	1.94	1.92	1.91	1.89	1.91	S	1.89	1.88	1.89	1.92	1.91	1.90	1.92	1.88	2.90	2.12	24	
7	1.90	1.88	1.90	1.90	1.90	1.92	2.01	2.26	2.21	1.94	1.95	1.96	1.99	1.98	2.03	S	1.99	1.98	2.12	1.93	1.93	2.01	1.96	1.97	1.88	2.26	1.98	24	
8	2.04	2.07	1.96	2.31	2.20	1.99	1.96	1.96	1.95	1.94	1.92	1.93	1.92	1.94	S	1.91	1.93	1.91	1.91	1.91	2.20	2.08	2.23	2.17	1.91	2.31	2.01	24	
9	2.08	2.05	2.05	2.05	2.00	2.20	1.93	1.95	1.92	1.93	1.93	1.91	1.93	S	1.92	1.90	1.91	1.90	1.95	1.91	2.19	2.44	2.53	2.11	1.90	2.53	2.03	24	
10	2.03	2.05	2.00	2.02	2.01	2.08	2.09	1.93	1.94	1.92	1.94	1.93	S	1.91	1.92	1.90	1.91	1.90	1.88	1.91	1.96	2.07	2.51	3.06	1.88	3.06	2.04	24	
11	3.00	2.96	3.27	2.16	2.12	1.95	1.94	1.91	1.92	1.93	1.99	S	1.99	1.99	1.91	1.91	1.89	1.90	1.89	1.90	1.97	1.95	1.92	1.91	1.89	3.27	2.10	24	
12	1.91	1.92	1.93	1.95	2.14	2.03	1.93	2.08	2.01	2.06	S	2.08	2.05	2.05	2.04	1.91	1.91	1.91	1.90	1.95	2.02	1.95	2.15	2.64	2.62	1.91	2.64	2.06	24
13	2.46	2.17	2.08	2.11	2.33	2.41	2.08	2.03	S	1.99	2.01	2.02	2.00	2.02	2.04	2.03	2.02	2.04	2.02	2.04	2.05	2.04	2.15	2.14	2.10	1.99	2.46	2.10	24
14	2.14	2.09	1.98	1.97	1.98	1.96	1.99	1.93	S	2.00	2.03	2.01	1.98	1.97	2.03	2.03	2.06	2.03	2.13	2.01	2.49	2.75	3.15	2.18	1.93	3.15	2.13	24	
15	2.33	2.24	2.13	2.12	2.09	2.09	2.07	S	2.04	2.00	1.97	1.95	1.94	1.94	1.94	1.96	1.94	1.95	1.92	2.09	2.45	2.30	2.47	2.11	1.92	2.47	2.09	24	
16	2.17	2.08	2.04	1.99	1.98	2.08	S	1.97	1.94	1.93	1.96	1.91	1.93	1.94	1.93	1.93	1.94	1.90	1.92	1.92	1.96	1.93	1.98	2.03	1.90	2.17	1.97	24	
17	1.94	1.93	1.92	2.34	3.17	S	2.78	1.96	1.98	1.94	1.97	1.95	1.93	2.06	1.99	2.00	1.91	1.90	1.90	1.90	2.38	2.66	3.71	2.94	1.90	3.71	2.22	24	
18	3.35	2.47	2.29	2.07	S	1.89	1.93	1.99	1.91	1.90	1.91	1.90	1.88	1.92	1.89	1.88	1.87	1.95	1.96	2.00	2.02	2.23	2.27	2.14	1.87	3.35	2.07	24	
19	1.94	2.58	2.33	S	2.55	2.97	2.03	2.01	1.97	1.94	2.03	1.96	1.94	1.92	1.91	1.95	1.91	1.92	1.93	2.01	1.93	1.95	2.00	2.06	1.91	2.97	2.08	24	
20	2.03	1.96	S	2.10	1.99	1.99	1.94	1.95	1.99	1.98	1.96	2.01	1.93	1.99	1.95	1.93	P	P	P	P	P	P	P	R	1.93	2.10	1.98	16	
21	1.92	S	1.92	1.92	1.92	1.94	1.96	2.02	2.01	1.94	2.01	2.08	2.03	2.00	2.05	1.98	2.03	2.03	2.00	1.99	2.04	2.21	2.28	2.52	1.92	2.52	2.03	24	
22	S	2.03	2.01	2.04	1.99	1.99	1.99	1.96	1.94	1.99	1.99	1.96	1.96	1.94	1.94	1.94	1.99	1.99	1.99	2.01	1.98	3.28	2.54	S	1.94	3.28	2.07	24	
23	3.00	2.15	2.11	2.44	2.49	3.20	2.07	2.04	2.01	2.04	1.99	2.01	1.99	1.96	2.01	1.97	2.00	2.01	2.13	2.19	4.08	4.08	S	2.24	1.96	4.08	2.36	24	
24	2.19	2.14	2.48	2.17	2.09	2.09	2.15	2.16	1.98	1.97	1.99	2.01	1.99	1.95	1.95	1.95	1.94	1.94	2.02	2.05	2.17	S	2.18	2.23	1.94	2.48	2.08	24	
25	2.14	2.19	2.17	2.20	2.87	2.18	2.21	2.11	2.01	1.97	1.95	1.95	1.99	1.96	1.97	1.98	1.99	1.97	1.97	2.75	S	2.32	2.28	2.42	1.95	2.87	2.15	24	
26	2.15	2.34	2.36	2.38	3.20	2.33	2.22	2.12	1.99	1.96	1.95	1.96	1.95	1.95	1.99	1.96	1.96	1.94	1.94	S	2.13	2.85	2.92	2.25	1.94	3.20	2.21	24	
27	2.40	2.93	2.75	2.59	2.48	2.19	2.18	2.04	2.03	2.02	1.99	1.97	1.99	1.98	1.96	1.94	1.96	1.95	S	1.96	2.23	2.37	3.14	2.85	1.94	3.14	2.26	24	
28	2.90	2.85	2.92	3.15	2.28	2.30	2.38	2.29	1.99	1.95	1.94	1.94	1.93	1.93	1.94	1.94	1.94	S	1.99	2.09	2.35	2.13	2.64	2.15	1.93	3.15	2.26	24	
29	2.22	2.22	2.75	2.63	3.20	2.11	1.99	1.99	1.99	2.14	1.99	1.97	1.99	1.97	1.96	2.00	S	1.95	1.97	2.61	2.41	2.69	2.20	2.36	1.95	3.20	2.23	24	
30	2.46	2.34	1.99	1.92	2.06	1.97	2.02	2.06	1.93	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.92	2.46	2.08	9
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
HOURLY MAX	4.25	3.99	4.04	3.15	3.20	3.20	2.78	2.29	2.21	2.14	2.08	2.49	2.11	2.14	2.06	2.11	2.11	2.08	2.13	2.75	4.08	4.08	3.71	3.35					
HOURLY AVG	2.33	2.30	2.30	2.25	2.29	2.18	2.09	2.03	1.99	1.98	1.97	1.99	1.97	1.97	1.96	1.96	1.96	1.96	1.98	2.05	2.22	2.40	2.48	2.32					

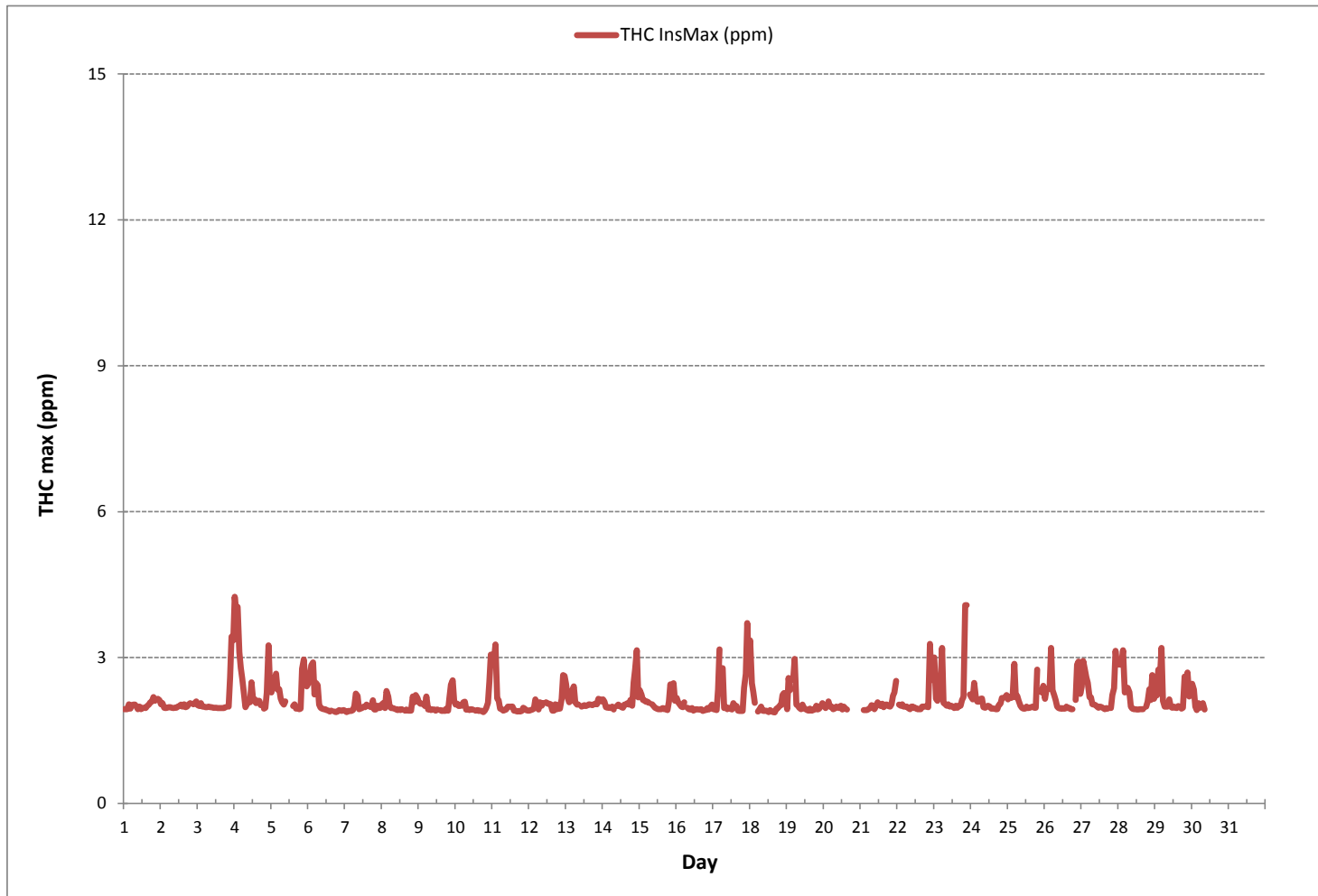
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	663
MAXIMUM INSTANTANEOUS VALUE:	4.25 ppm @ HOUR 0 ON DAY 4
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	697 hrs
STANDARD DEVIATION:	0.33

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 2018

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	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	1.95	1.95	1.95	2.04	1.97	2.03	2.04	2.04	2.00	1.95	1.99	1.96	1.97	1.98	1.97	2.01	2.03	2.10	2.11	2.21	2.12	S	2.16	2.13	1.95	2.21	2.03	24	
2	2.05	2.07	1.97	1.97	1.97	1.99	1.99	1.98	1.97	1.97	1.97	2.00	2.01	2.04	2.00	2.05	1.98	2.01	2.05	2.06	S	2.04	2.08	2.11	1.97	2.11	2.01	24	
3	2.03	2.00	2.06	2.01	2.01	1.99	1.99	2.00	1.99	1.98	1.98	1.98	1.98	1.97	1.97	1.97	1.98	1.98	S	2.00	2.60	3.45	3.37	1.97	3.45	2.14	24		
4	4.26	4.00	4.05	3.12	2.80	2.58	2.27	1.98	2.04	2.13	2.08	2.51	2.12	2.15	2.07	2.12	2.12	2.02	S	1.97	1.98	2.30	3.27	2.41	1.97	4.26	2.54	24	
5	2.30	2.52	2.55	2.68	2.36	2.36	2.17	2.08	2.04	2.11	C	C	C	C	2.01	2.05	1.96	S	1.95	1.96	2.79	2.98	2.54	2.42	1.95	2.98	2.31	24	
6	2.48	2.61	2.86	2.92	2.25	2.49	2.44	2.04	1.97	1.96	1.95	1.95	1.94	1.93	1.91	1.92	S	1.90	1.90	1.90	1.93	1.92	1.91	1.93	1.90	2.92	2.13	24	
7	1.90	1.89	1.91	1.91	1.91	1.93	2.02	2.28	2.22	1.95	1.96	1.97	2.01	1.98	2.04	S	2.00	1.99	2.13	1.94	1.94	2.02	1.97	1.98	1.89	2.28	1.99	24	
8	2.05	2.08	1.97	2.32	2.21	2.00	1.97	1.97	1.96	1.95	1.93	1.94	1.93	1.95	S	1.92	1.94	1.92	1.92	1.92	2.21	2.10	2.25	2.19	1.92	2.32	2.03	24	
9	2.09	2.06	2.06	2.06	2.01	2.21	1.95	1.96	1.94	1.94	1.94	1.92	1.94	S	1.93	1.91	1.92	1.91	1.96	1.92	2.20	2.46	2.55	2.12	1.91	2.55	2.04	24	
10	2.04	2.06	2.01	2.03	2.02	2.09	2.10	1.93	1.95	1.94	1.95	1.94	S	1.92	1.93	1.92	1.93	1.91	1.90	1.92	1.97	2.08	2.52	3.09	1.90	3.09	2.05	24	
11	3.02	2.98	3.30	2.17	2.13	1.96	1.95	1.92	1.93	1.95	2.01	S	1.99	1.99	1.93	1.92	1.91	1.91	1.90	1.91	1.98	1.96	1.94	1.93	1.90	3.30	2.11	24	
12	1.93	1.93	1.95	1.96	2.15	2.04	1.95	2.10	2.02	2.07	S	2.09	2.06	2.06	2.03	1.92	1.92	2.05	1.96	2.03	1.96	2.16	2.65	2.63	1.92	2.65	2.07	24	
13	2.48	2.18	2.09	2.12	2.34	2.43	2.09	2.04	2.03	S	2.01	2.02	2.03	2.01	2.03	2.04	2.03	2.02	2.04	2.06	2.05	2.16	2.15	2.11	2.01	2.48	2.11	24	
14	2.15	2.10	1.98	1.97	1.98	1.98	2.00	1.94	S	2.01	2.04	2.02	1.98	1.98	2.04	2.04	2.06	2.04	2.14	2.02	2.51	2.77	3.16	2.19	1.94	3.16	2.13	24	
15	2.34	2.25	2.14	2.13	2.10	2.11	2.07	S	2.05	2.01	1.99	1.97	1.95	1.95	1.95	1.97	1.95	1.96	1.93	2.10	2.47	2.31	2.49	2.12	1.93	2.49	2.10	24	
16	2.18	2.09	2.05	2.00	1.98	2.09	S	1.97	1.96	1.95	1.97	1.93	1.94	1.95	1.94	1.94	1.95	1.91	1.93	1.93	1.97	1.95	1.98	2.04	1.91	2.18	1.98	24	
17	1.95	1.94	1.94	2.35	3.19	S	2.80	1.97	1.99	1.95	1.98	1.96	1.95	2.06	2.00	2.01	1.93	1.91	1.91	1.92	2.39	2.68	3.74	2.96	1.91	3.74	2.24	24	
18	3.37	2.48	2.31	2.07	S	1.90	1.95	2.01	1.92	1.91	1.92	1.91	1.90	1.93	1.90	1.89	1.88	1.96	1.98	2.00	2.03	2.24	2.29	2.15	1.88	3.37	2.08	24	
19	1.95	2.59	2.35	S	2.56	2.99	2.04	2.01	1.98	1.96	2.04	1.98	1.95	1.94	1.93	1.96	1.92	1.93	1.94	2.02	1.94	1.96	2.00	2.08	1.92	2.99	2.09	24	
20	2.04	1.97	S	2.11	2.00	2.00	1.95	1.96	2.00	1.99	1.97	2.02	1.95	2.00	1.96	1.94	P	P	P	P	P	P	P	P	R	1.94	2.11	1.99	16
21	1.93	S	1.93	1.93	1.93	1.95	1.97	2.03	2.02	1.96	2.02	2.09	2.03	2.01	2.06	2.00	2.04	2.04	2.01	2.00	2.05	2.23	2.30	2.54	1.93	2.54	2.05	24	
22	S	2.04	2.02	2.05	2.01	2.01	2.00	1.97	1.96	2.01	2.01	1.97	1.98	1.95	1.95	1.96	1.99	2.00	2.01	2.01	2.00	3.30	2.56	S	1.95	3.30	2.08	24	
23	3.02	2.16	2.12	2.46	2.50	3.22	2.07	2.05	2.02	2.04	2.00	2.02	2.01	1.98	2.01	1.99	2.02	2.02	2.14	2.20	4.10	4.10	S	2.26	1.98	4.10	2.37	24	
24	2.20	2.15	2.50	2.18	2.10	2.10	2.16	2.17	2.00	1.98	2.01	2.01	2.00	1.97	1.96	1.96	1.96	1.95	2.02	2.06	2.18	S	2.19	2.24	1.95	2.50	2.09	24	
25	2.15	2.20	2.18	2.21	2.88	2.19	2.22	2.12	2.03	1.99	1.96	1.96	2.00	1.97	1.98	2.00	2.00	1.98	1.98	2.77	S	2.33	2.30	2.44	1.96	2.88	2.17	24	
26	2.16	2.36	2.37	2.39	3.22	2.36	2.24	2.14	2.00	1.97	1.96	1.98	1.96	1.96	2.01	1.97	1.97	1.96	1.95	S	2.14	2.87	2.94	2.26	1.95	3.22	2.22	24	
27	2.41	2.95	2.77	2.60	2.50	2.20	2.19	2.04	2.03	2.02	2.00	1.99	2.00	1.99	1.97	1.95	1.97	1.96	S	1.97	2.25	2.39	3.16	2.86	1.95	3.16	2.27	24	
28	2.91	2.86	2.94	3.17	2.30	2.32	2.39	2.31	2.01	1.96	1.96	1.95	1.94	1.94	1.95	1.96	1.96	S	2.00	2.10	2.36	2.14	2.65	2.17	1.94	3.17	2.27	24	
29	2.24	2.24	2.77	2.64	3.21	2.12	2.01	2.01	2.00	2.15	2.00	1.98	2.00	1.98	1.97	1.99	S	1.96	1.97	2.62	2.42	2.71	2.21	2.37	1.96	3.21	2.24	24	
30	2.48	2.35	2.00	1.93	2.07	1.98	2.03	2.07	1.94	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.93	2.48	2.09	9
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
HOURLY MAX	4.26	4.00	4.05	3.17	3.22	3.22	2.80	2.31	2.22	2.15	2.08	2.51	2.12	2.15	2.07	2.12	2.12	2.10	2.14	2.77	4.10	4.10	3.74	3.37					
HOURLY AVG	2.35	2.31	2.31	2.26	2.30	2.19	2.10	2.04	2.00	1.99	1.99	2.00	1.98	1.98	1.98	1.97	1.97	1.97	1.99	2.06	2.23	2.41	2.50	2.34					

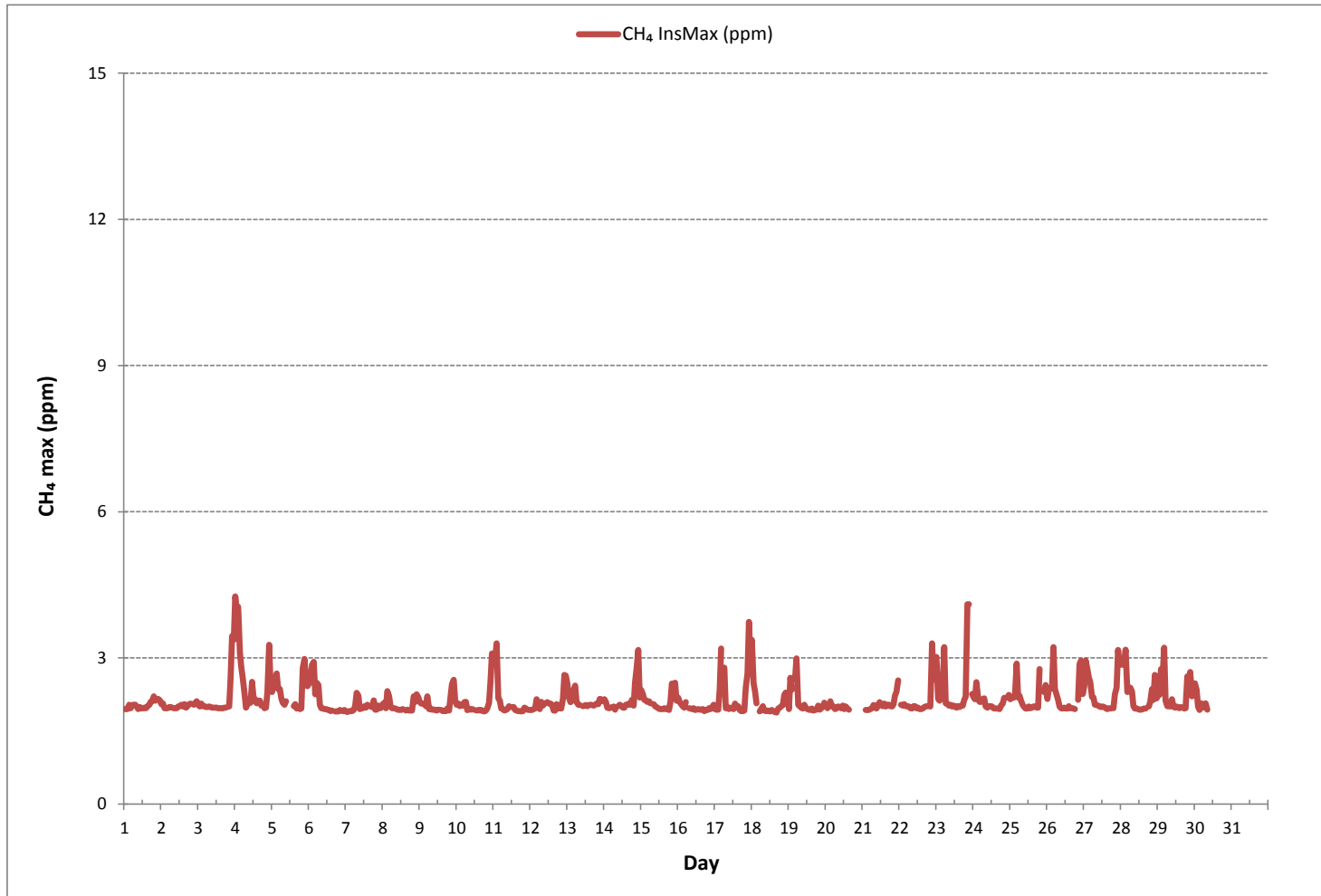
STATUS FLAG CODES

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:	663
MAXIMUM INSTANTANEOUS VALUE:	4.26 ppm @ HOUR 0 ON DAY 4
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.33
OPERATIONAL TIME:	697 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 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	DAILY	24-HR	RDGS.			
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.				
DAY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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			
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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			
3	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	S	0.00	0.00	0.00	0.00	0.00	0.01	24			
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24			
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24			
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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			
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	S	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	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	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		
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
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	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		
11	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		
12	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		
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	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		
15	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		
16	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		
17	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24		
18	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	0.01	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	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		
20	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	P	P	P	P	P	P	P	P	R	0.00	0.00	0.00	16		
21	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		
22	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	0.00	24		
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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		
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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		
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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		
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
27	0.00	0.00	0.00	0.00	0.00	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		
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.07	0.00	24		
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	S	0.00	0.00	0.07	0.07	0.07	0.02	0.02	0.05	0.00	0.07	0.02	0.02	24		
30	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.00	0.05	0.01	9
31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
HOURLY MAX	0.05	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	0.07	0.00	0.01	0.05	0.07	0.07	0.02	0.02	0.05							
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	0.01	0.00	0.00	0.00							

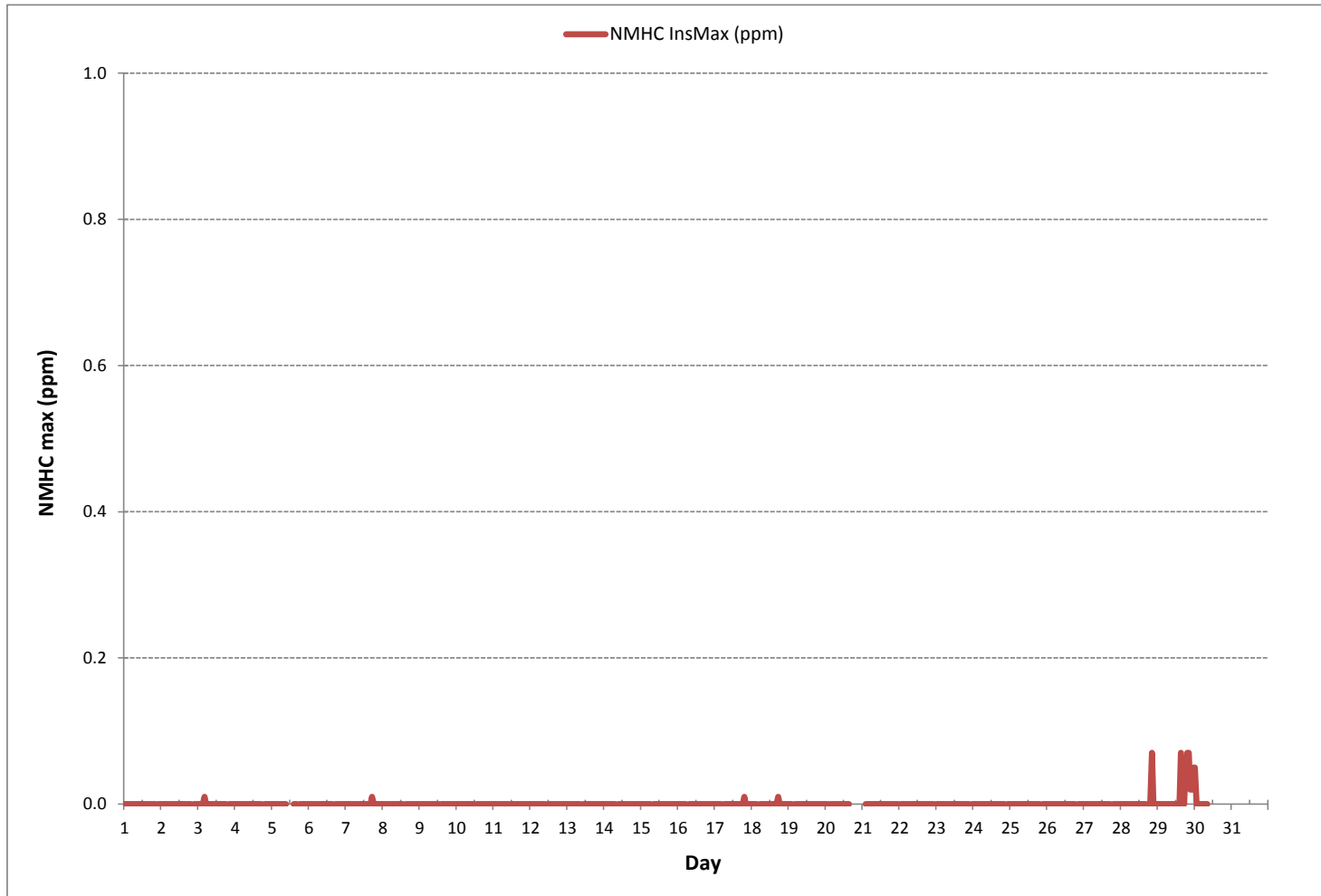
STATUS FLAG CODES

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:	13
MAXIMUM INSTANTANEOUS VALUE:	0.07 ppm @ HOUR 20 ON DAY 28
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	697 hrs
STANDARD DEVIATION:	0.01

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





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

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	17.1	12.2	12.3	8.2	9.8	13.3	18.5	19.0	14.3	15.5	17.5	18.0	16.4	24.0	20.9	24.5	17.9	28.9	23.1	15.4	13.6	11.9	15.4	14.1	8.2	28.9	16.7	24	
2	20.8	25.2	22.0	22.0	20.8	22.3	29.4	33.1	30.5	30.9	30.8	30.4	26.1	35.6	41.0	35.1	32.7	36.0	36.6	35.6	26.4	28.2	24.6	27.6	20.8	41.0	29.3	24	
3	25.1	22.2	19.8	18.9	20.0	27.2	25.3	23.9	25.2	23.1	23.9	33.8	32.4	23.5	32.1	31.2	33.9	33.7	27.8	20.8	16.3	8.5	7.6	5.5	5.5	33.9	23.4	24	
4	7.0	5.7	6.1	7.7	4.2	5.8	9.3	9.9	9.9	19.7	23.2	22.7	22.9	21.9	25.5	21.4	17.3	11.9	9.3	11.8	9.9	8.4	7.3	7.9	4.2	25.5	12.8	24	
5	7.9	8.1	8.3	7.6	11.4	12.6	13.1	11.8	18.5	24.1	28.3	33.9	33.9	31.6	25.5	27.1	29.1	29.2	26.1	15.7	8.6	4.4	4.9	13.9	4.4	33.9	18.2	24	
6	8.6	8.9	7.1	11.8	33.5	55.5	20.5	20.8	25.2	22.8	21.8	23.3	25.6	31.9	33.8	27.4	38.1	35.7	36.8	29.9	23.8	16.4	14.6	17.8	7.1	55.5	24.7	24	
7	20.0	20.3	10.5	17.6	17.6	17.3	18.1	14.6	36.1	33.2	37.3	33.5	36.3	26.0	29.4	29.6	26.3	20.5	17.8	18.9	17.3	10.5	11.8	9.5	9.5	37.3	22.1	24	
8	8.7	8.2	8.0	7.1	10.3	10.5	18.7	21.3	25.1	25.1	25.4	26.6	25.2	27.8	28.6	26.0	24.6	19.9	21.3	13.7	9.4	9.1	9.4	9.6	7.1	28.6	17.5	24	
9	10.5	10.7	11.8	11.8	10.0	15.4	21.3	21.4	20.9	24.3	26.3	29.1	33.4	37.8	31.2	30.8	26.8	27.6	23.2	12.3	9.9	6.9	8.5	9.9	6.9	37.8	19.7	24	
10	10.7	9.2	10.3	10.7	10.2	8.8	11.4	16.6	20.7	21.5	26.6	28.3	22.3	27.4	26.8	20.5	25.2	23.6	17.7	14.6	10.0	7.5	5.1	6.6	5.1	28.3	16.3	24	
11	7.0	5.8	6.2	7.6	7.2	10.1	12.9	15.0	16.4	14.3	18.9	16.9	17.8	17.6	23.2	27.1	26.5	28.5	24.4	17.3	12.6	15.2	16.5	20.5	5.8	28.5	16.1	24	
12	18.0	11.9	14.0	11.6	10.3	10.8	13.2	14.4	14.9	17.3	18.1	24.2	16.5	19.2	14.1	13.7	17.4	25.7	18.3	26.7	15.8	9.0	4.7	10.0	4.7	26.7	15.4	24	
13	10.1	8.6	7.2	27.5	14.4	12.8	15.4	12.9	19.4	18.6	20.5	26.6	27.8	20.4	23.0	24.7	33.0	18.2	20.6	19.4	24.7	18.0	19.6	16.1	7.2	33.0	19.1	24	
14	21.6	24.4	22.6	32.1	27.2	22.7	19.6	21.4	28.1	37.2	38.1	43.3	46.1	41.0	43.2	29.2	19.1	22.4	8.0	7.7	3.9	4.1	3.4	7.6	3.4	46.1	23.9	24	
15	8.0	8.9	8.6	9.8	12.0	11.7	11.9	14.9	14.2	20.4	19.4	21.9	19.5	24.8	28.5	23.7	22.5	20.1	13.8	11.4	5.2	6.2	9.2	14.7	5.2	28.5	15.1	24	
16	12.0	13.1	13.1	15.1	13.4	12.4	12.9	16.4	19.2	21.8	22.4	26.1	29.3	26.2	30.3	34.8	31.6	49.8	41.5	38.0	21.5	15.3	13.7	14.3	12.0	49.8	22.7	24	
17	15.0	12.0	14.9	13.2	4.3	3.2	8.5	13.7	14.2	11.8	11.7	17.9	18.9	18.6	17.8	18.2	17.3	18.8	12.3	10.4	4.9	3.9	6.8	5.9	3.2	18.9	12.3	24	
18	6.5	9.7	35.3	28.6	20.0	25.0	8.7	11.4	13.8	13.7	20.8	19.5	23.9	27.3	34.1	34.5	17.9	25.0	28.7	8.1	14.8	10.7	7.5	13.5	6.5	35.3	19.1	24	
19	10.7	7.8	6.7	5.7	3.0	4.9	8.3	12.6	18.5	16.2	17.3	15.4	17.4	21.0	22.5	20.2	14.7	19.2	19.0	15.6	16.0	9.2	10.8	9.8	3.0	22.5	13.4	24	
20	12.6	11.5	P	10.2	13.9	26.7	25.9	20.4	11.4	14.0	13.3	15.1	18.9	22.4	19.9	17.9		P	P	P	P	P	P	P	29.7	10.2	29.7	17.7	16
21	37.2	11.0	16.7	23.2	20.3	13.4	10.7	7.4	5.7	7.9	13.7	17.9	24.3	27.5	26.3	31.9	24.5	22.5	24.1	27.0	24.8	16.3	14.2	10.7	5.7	37.2	19.1	24	
22	17.6	22.5	23.6	20.4	21.8	19.5	21.0	31.0	27.0	22.9	27.5	26.5	34.2	31.6	31.2	28.3	26.7	24.4	18.8	15.9	14.2	8.7	6.1	3.8	3.8	34.2	21.9	24	
23	8.7	11.2	7.1	5.8	7.4	7.7	11.3	12.7	15.0	21.0	27.8	28.1	19.7	20.0	16.5	13.2	22.6	21.9	12.9	9.9	4.9	2.2	3.0	2.8	2.2	28.1	13.1	24	
24	2.7	8.8	5.9	3.3	3.8	4.4	5.1	6.4	5.7	8.1	9.6	13.0	12.1	13.7	9.4	9.8	6.8	7.2	5.4	5.1	5.1	4.9	5.4	5.2	2.7	13.7	7.0	24	
25	6.3	7.4	6.9	6.9	4.8	8.0	9.8	8.4	10.3	11.9	11.8	14.3	19.5	15.3	15.9	15.6	20.9	15.6	16.8	7.5	5.0	4.5	3.8	5.1	3.8	20.9	10.5	24	
26	4.9	7.9	8.8	7.1	4.4	8.7	9.2	10.9	15.3	17.8	17.0	20.0	20.7	22.2	19.8	17.7	18.0	16.9	14.2	8.9	5.9	6.1	8.5	9.5	4.4	22.2	12.5	24	
27	8.6	7.5	6.9	7.5	8.8	7.4	11.9	13.3	13.5	14.0	14.9	13.8	18.7	20.5	22.0	20.4	22.8	22.9	13.2	12.4	8.2	5.6	7.6	5.7	5.6	22.9	12.8	24	
28	5.1	8.0	8.6	6.7	8.6	9.4	9.1	10.0	12.5	13.6	14.6	16.6	22.7	25.1	22.4	25.1	21.2	22.6	18.6	12.4	9.2	6.0	6.3	6.2	5.1	25.1	13.4	24	
29	5.6	6.3	5.8	4.6	13.9	18.0	19.2	16.8	13.4	21.7	8.4	9.6	15.2	14.0	12.5	14.2	18.1	7.9	4.7	4.1	3.6	5.3	4.6	5.5	3.6	21.7	10.5	24	
30	4.5	21.9	37.2	22.6	26.5	24.8	15.3	21.6	23.6	17.3	19.7	25.3	22.2	25.0	28.8	23.0	29.2	22.9	16.0	11.7	8.6	7.0	7.2	5.9	4.5	37.2	19.5	24	
31	2.3	6.1	5.1	8.4	4.3	5.7	6.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	2.3	8.4	5.5	7	
HOURLY MAX	37.2	25.2	37.2	32.1	33.5	55.5	29.4	33.1	36.1	37.2	38.1	43.3	46.1	41.0	43.2	35.1	38.1	49.8	41.5	38.0	26.4	28.2	24.6	29.7					
HOURLY AVG	11.7	11.7	12.6	12.9	12.8	14.7	14.6	16.1	18.0	19.4	20.9	23.1	24.0	24.7	25.2	23.9	23.5	23.4	19.7	15.8	12.2	9.3	9.2	10.8					

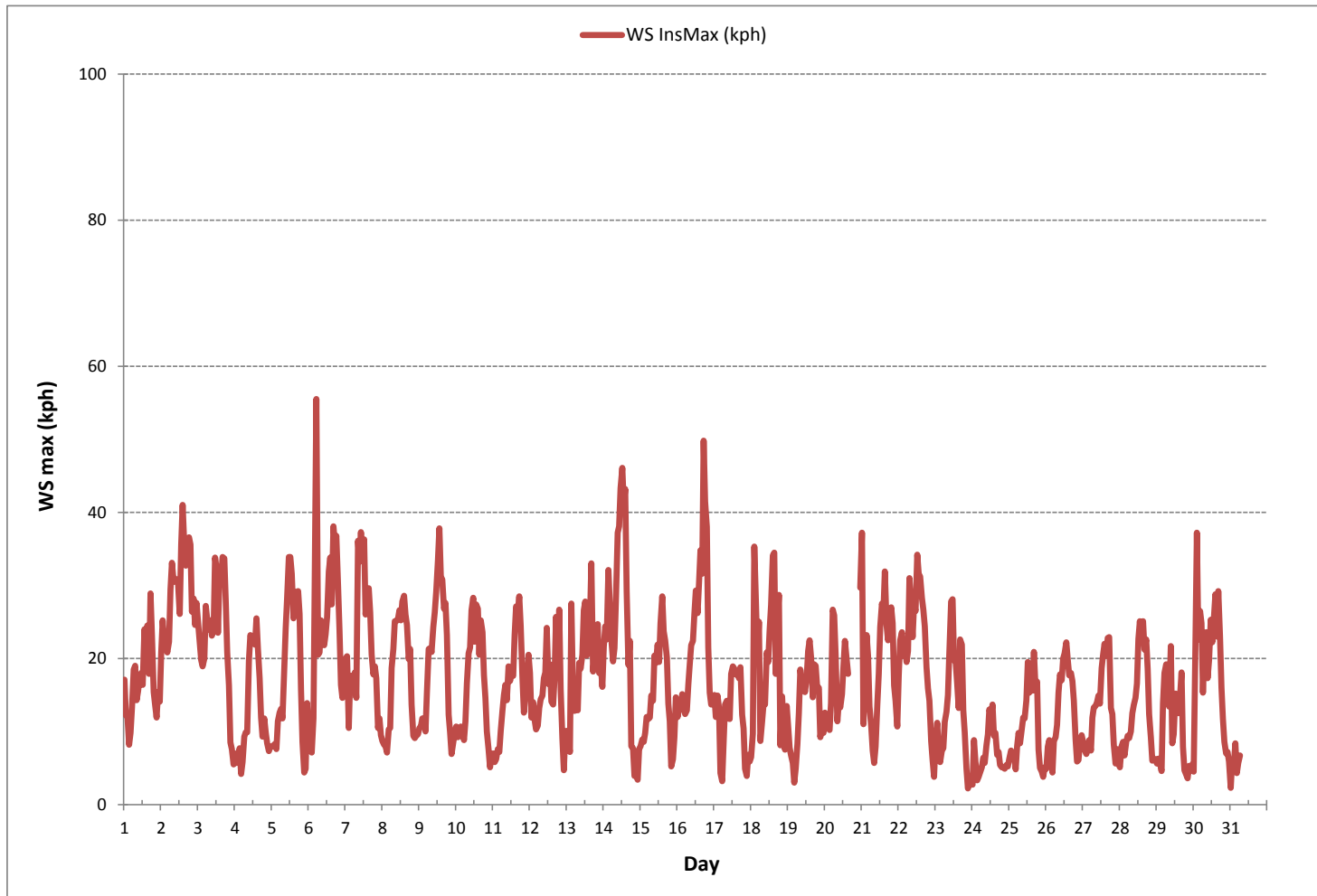
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	55.5 kph	@ HOUR	5	ON DAY	6
OPERATIONAL TIME:			719 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

28-Aug-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>8449-2018-07-67-C</u>
Site: <u>Three Creeks 986b Station</u>	Contact: <u>Karla Reesor</u>

Level 0 Preliminary Verification	<u></u>	Date <u>27-Aug-2018</u>
Level 1 Primary Validation	<u></u>	Date <u>27-Aug-2018</u>
Level 2 Final Validation	<u></u>	Date <u>28-Aug-2018</u>
Level 3 Independent Data Review	<u></u>	Date <u>28-Aug-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.