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AMBIENT AIR MONITORING MONTHLY DATA REPORT
PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
THREE CREEKS 842B STATION

JOB #: 8449-2017-08-80-C

August 2017

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: **September 20, 2017**

Prepared by:

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Reviewed by:

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SUMMARY

In August 2017, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Three Creeks 842b Station, near Peace River Oil Sands Area 2, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for compliance parameters, as requested by the PRAMP Committee.

All data collected this month, with the exception of Wind Speed and Wind Direction, 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.

Non-Conformance: Following the power failure on August 24, the wind system malfunctioned. Due to equipment availability, it was not possible to install an AMD compliant wind system (Model 05305), based on the regulation that came into effect on July 30, 2017. Instead, an older system (Model 05103) was installed as a temporary measure, in an effort to protect operational uptime. This contravention was reported to AEP under reference number 329922.

Power Failure: Downtime ranging from nine to thirteen hours were recorded on gas analyzers and meteorological systems due to power failures that occurred on August 2, August 24 and August 25, and the subsequent recovery periods.

THC/CH₄/NMHC: The channels were placed in "maintenance" mode on August 10 at hour 10:00, while the sample manifold was being cleaned. One hour of downtime was recorded.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0, Discussion. On this basis, Maxxam Analytics is issuing this completed report to Peace River Area Monitoring Program Committee, Three Creeks 842b Station.

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

Monthly Continuous Data Summary

Peace River Area Monitoring Program Committee						MAXIMUM VALUES							OPERATIONAL TIME (%)
Three Creeks 842b Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	1	11	19	12.2	SE	0	1	98.5
TRS (ppb)	-	-	-	-	0.21	0.89	16	3	3.7	SSE	0.34	13	98.7
THC (ppm)	-	-	-	-	1.96	2.65	5	6	0	WSW	2.06	5	98.1
CH ₄ (ppm)	-	-	-	-	1.96	2.65	5	6	0	WSW	2.06	5	98.1
NMHC (ppm)	-	-	-	-	0.00	0.00	1	0	3.8	NNW	0.00	1	98.1
RELATIVE HUMIDITY (%)	-	-	-	-	64	95	1	7	2.8	W	85	24	98.8
BAROMETRIC PRESSURE (millibar)	-	-	-	-	943	958	1	6	4.5	WSW	957	1	98.8
AMBIENT TEMPERATURE (°C)	-	-	-	-	16.2	31.0	10	16	7	NW	21.8	12	98.8
STATION TEMPERATURE (°C)	-	-	-	-	22.7	24.0	15	23	4.2	SE	23.2	20	98.8
VECTOR WS (kph)	-	-	-	-	5.6	31.6	18	15	-	WSW	17.5	18	95.8
VECTOR WD (sec)	-	-	-	-	221 (SW)	-	-	-	-	-	-	-	95.8

SOUR GAS PROCESSING INDUSTRY
MONTHLY REPORT SUMMARY

Three Creeks 842b Station

Peace River Area Monitoring Program Committee

Plant Name / Location

Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2017	August

CONTINUOUS AMBIENT MONITORING								
PARAMETER	STN No.	% TIME OPERATIONAL	ONE - HOUR AVERAGE			24 - HOUR AVERAGE		
			MAXIMUM VALUES	NO. READINGS > REGULATION		MAXIMUM VALUES	NO. READINGS > REGULATION	
SO ₂	1	98.5	0.001 ppm	0		0.0000 ppm	0	
TRS	1	98.7	0.001 ppm	-		0.0003 ppm	-	
THC	1	98.1	2.65 ppm	-		2.06 ppm	-	
CH ₄	1	98.1	2.65 ppm	-		2.06 ppm	-	
NMHC	1	98.1	0.00 ppm	-		0.00 ppm	-	
RH	1	98.8	95 %	-		85 %	-	
BP	1	98.8	958 mb	-		957 mb	-	
Ambient TPX	1	98.8	31.0 °C	-		21.8 °C	-	
Station TPX	1	98.8	24.0 °C	-		23.2 °C	-	
Wind Speed	1	95.8	31.6 kph	-		17.5 kph	-	
Wind Direction	1	95.8	-	-		-	-	

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).

Sample filters for all continuous air monitors are changed 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 98.5%, equivalent to eleven hours of downtime. These were incurred on August 2 and August 24, due to power failures and the subsequent recovery period of the analyzer.
- The routine monthly calibration was performed on August 10.
- One instance of maximum instantaneous data was discarded on August 18 at 00:00 as it was considered an anomalous spike.
- One instance of maximum instantaneous data was discarded on August 25 at 15:00, due to a brief power failure.

TOTAL REDUCED SULPHUR (TRS)

- Operational time, for the monitoring period was 98.7%, equivalent to ten hours of downtime. These were incurred on August 2 and August 24, due to power failures and the subsequent recovery period of the analyzer.
- The routine monthly calibration was performed on August 10.
- One instance of maximum instantaneous data was discarded on August 25 at 15:00, due to a brief power failure.

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

- Operational time, for the monitoring period was 98.1%, equivalent to fourteen hours of downtime.
- The routine monthly calibration was performed on August 30.
- The channels were placed in "maintenance" mode on August 10 at hour 10:00, while the sample manifold was being cleaned. One hour of downtime was recorded.
- Thirteen hours of downtime were incurred on August 2, August 24 and August 25, due to power failures and the subsequent recovery period of the analyzer.
- The canister sampler is programmed to draw in a whole air sample when the 5-minute average concentration of NMHC is above 0.30 ppm. A representative sample of ambient air is collected over a one-hour period when the canister event is triggered. No canister event was recorded this month.

WIND SPEED (WS) and WIND DIRECTION (WD)

- Operational time, for the monitoring period was 95.8%, equivalent to thirty-one hours of downtime.
- Nine hours of downtime were incurred on August 2 and August 24, due to power failures.
- The wind system malfunctioned after the power failure on August 24. Twenty-two hours of downtime were recorded. Due to equipment availability, it was not possible to install an AMD compliant wind system (Model 05305). Instead, an older system (Model 05103) was installed as a temporary measure, in an effort to protect operational uptime. While this is a technical deviation from the AMD (Chapter 4, Section 2.5, Table 2), there is minimal effect on data quality except under calm conditions. The starting threshold for wind speed and direction is the only difference between the two wind systems; the starting threshold for Model 05305 is 0.5 mS⁻¹ versus 1.0 mS⁻¹ for Model 05103. Under all other conditions, the two wind systems generate equivalent data. Data collected with Model 05103 was from August 25, at hour 18:00 to August 30, at hour 09:00 and the calm percentage for this time frame was 13.4%. The hours of data below the starting threshold of 3.6 kph are identified below and should be considered less reliable as they were recorded with a wind sensor resolution of 1.0 mS⁻¹. This contravention was reported to AEP under reference number 329922.

WIND SPEED (WS) and WIND DIRECTION (WD)

Date	Time	WSP kph	WDR degwdr
2017/08/28	03:00	2.8	222
2017/08/28	05:00	1.1	229
2017/08/28	06:00	0.5	210
2017/08/28	07:00	1.5	173
2017/08/28	19:00	2.6	225
2017/08/28	20:00	1.3	64
2017/08/28	21:00	1.2	105
2017/08/28	22:00	2.5	116
2017/08/28	23:00	2.6	106
2017/08/29	00:00	3.0	76
2017/08/29	02:00	3.3	66
2017/08/29	03:00	0.7	71
2017/08/29	04:00	1.7	72
2017/08/29	05:00	1.5	73
2017/08/29	06:00	3.2	67

- 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 98.8%, equivalent to nine hours of downtime. These were incurred on August 2 and August 24, due to power failures.

BAROMETRIC PRESSURE (BP)

- Operational time, for the monitoring period was 98.8%, equivalent to nine hours of downtime. These were incurred on August 2 and August 24, due to power failures.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time, for the monitoring period was 98.8%, equivalent to nine hours of downtime. These were incurred on August 2 and August 24, due to power failures.

STATION TEMPERATURE (StnTPX)

- Operational time, for the monitoring period was 98.8%, equivalent to nine hours of downtime. These were incurred on August 2 and August 24, due to power failures.

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, with the exception of Wind Speed and Wind Direction, was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

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

4.0 Calculations and Results

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

5.0 Methods and Procedures

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

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

Maxxam AIR SOP-00208: RM Young Wind Monitor Calibration

Maxxam AIR SOP-00209: Ambient Sulphur Monitoring

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - API 100A 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 - RM Young 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

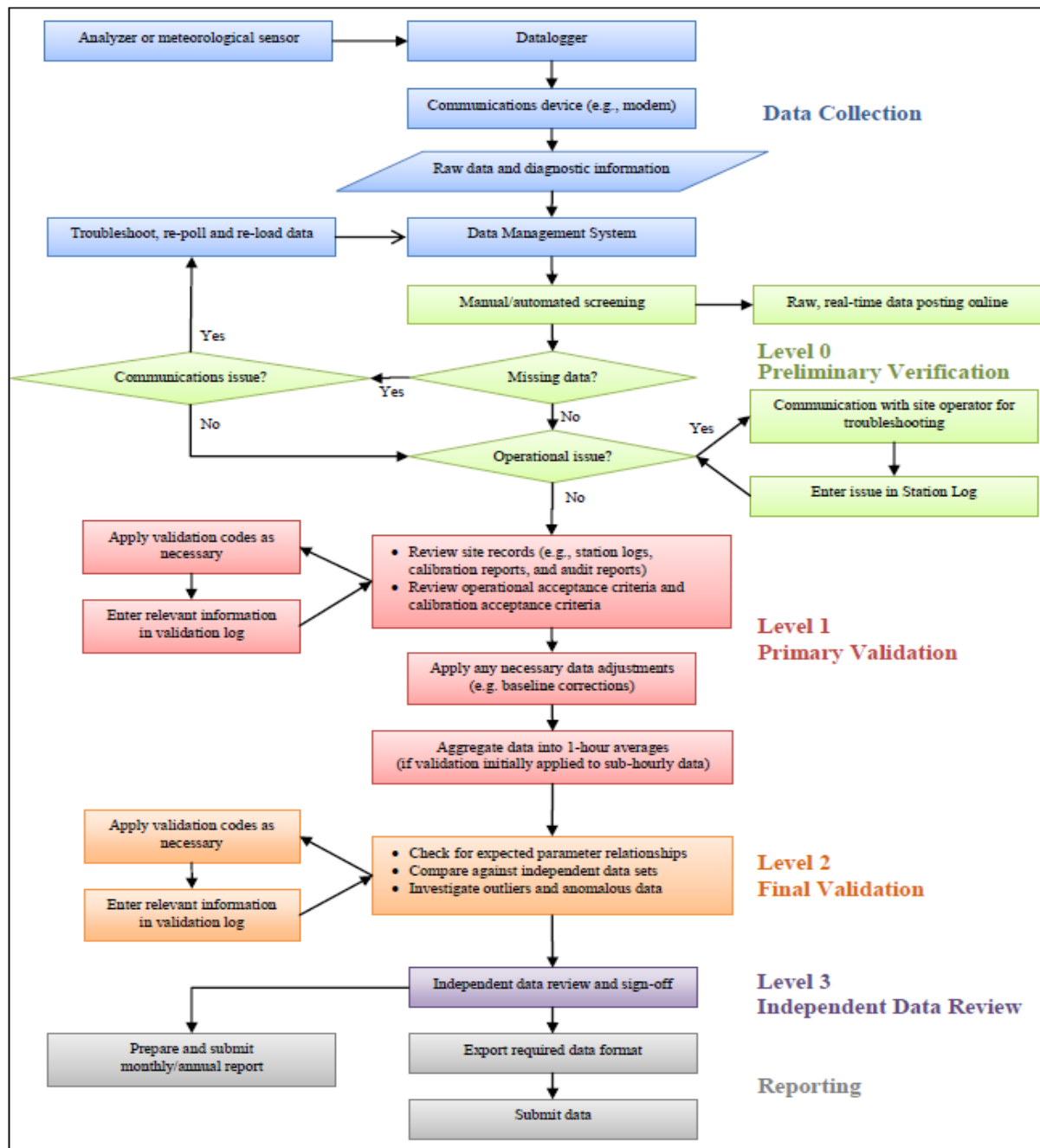
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
2	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	P	P	P	R	0	0	0	0	0	0	20
3	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	
4	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	
5	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
6	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
7	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
8	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
9	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
10	0	0	0	0	0	S	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
11	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	24	
12	0	0	0	0	0	S	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	24	
13	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	
14	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	
15	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	
16	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	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	
18	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	
19	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	
20	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	
21	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	
22	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
23	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	
24	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	P	P	P	P	P	P	R	0	0	0	0	0	0	17	
25	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	
26	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	
27	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	
28	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	
29	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	
30	0	0	0	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	24	
31	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	
HOURLY MAX	0	0	0	0	0	NA	0	0	1	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0					
HOURLY AVG	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

STATUS FLAG CODES

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

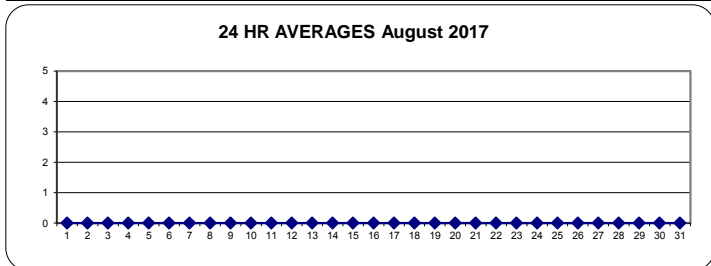
OBJECTIVE LIMIT:

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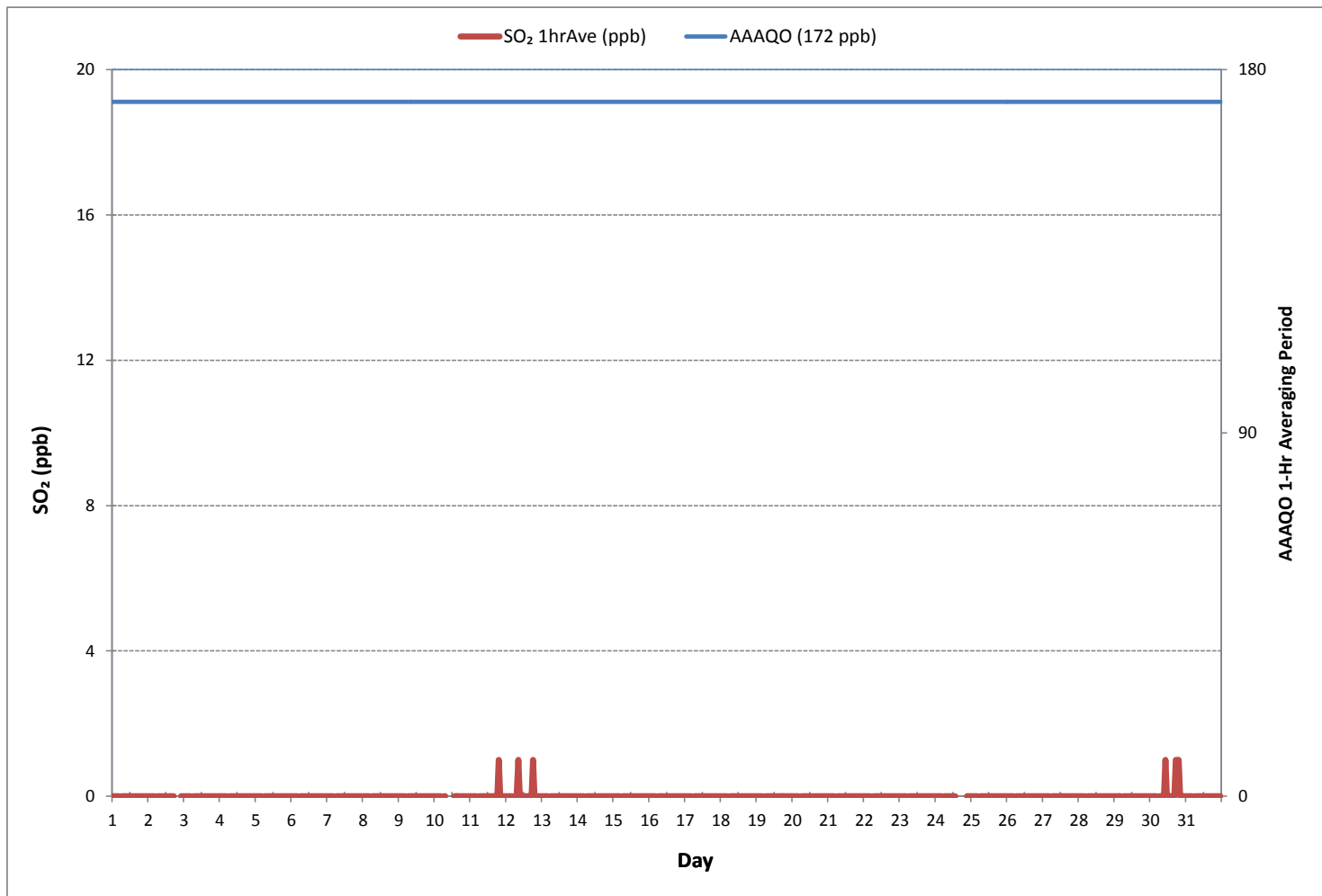
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0					
NUMBER OF 24-HR EXCEEDANCES:	0					
NUMBER OF NON-ZERO READINGS:	7					
MINIMUM 1-HR AVERAGE:	0	ppb	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	1	ppb	@ HOUR	19	ON DAY	11
MAXIMUM 24-HR AVERAGE:	0	ppb			ON DAY	1
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	733	hrs	
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	98.5	%	
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb	

24 HR AVERAGES August 2017



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b Station - August 2017

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

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

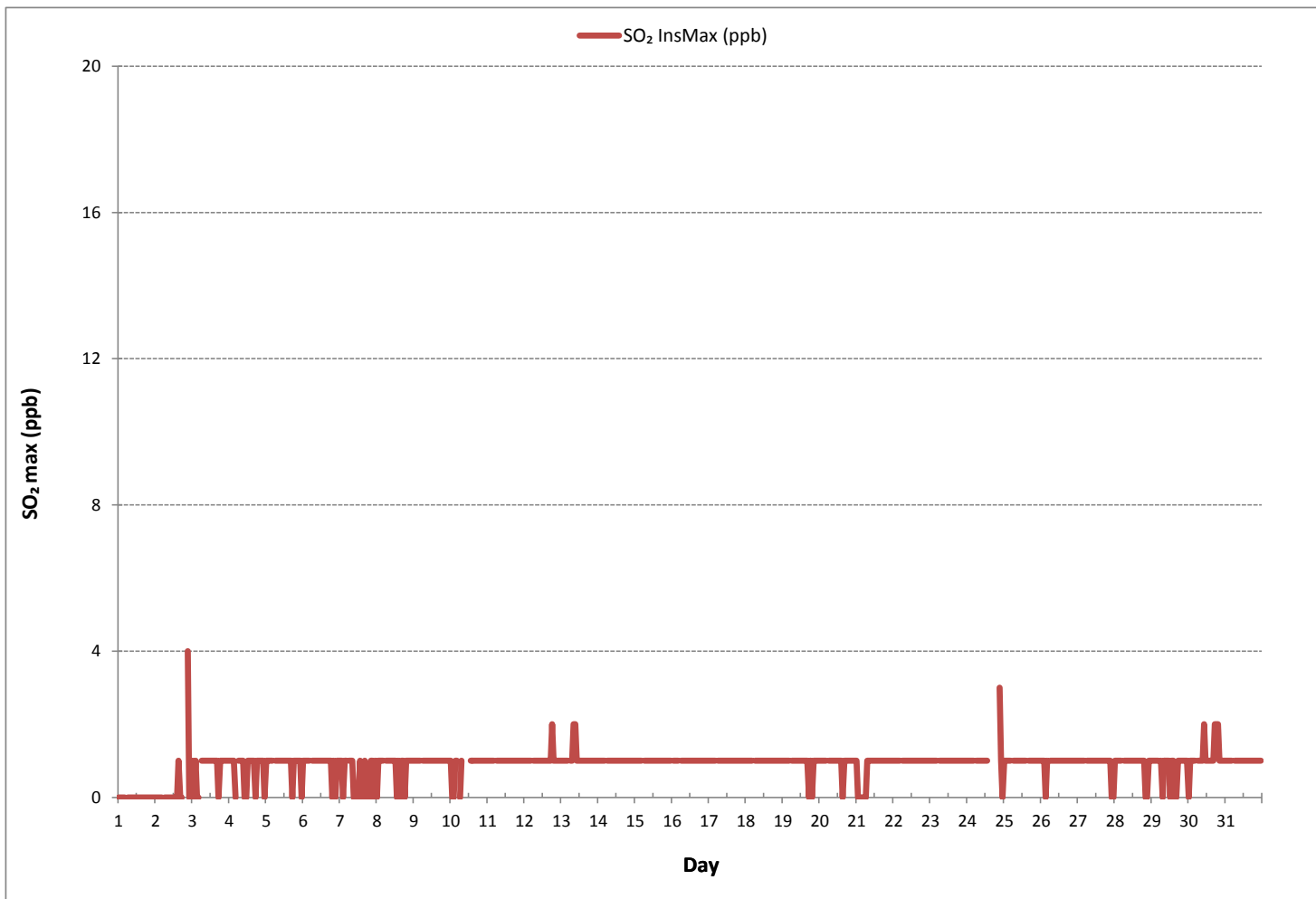
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	605
MAXIMUM INSTANTANEOUS VALUE:	4 ppb @ HOUR 21 ON DAY 2
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	732 hrs
STANDARD DEVIATION:	0

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)



Wind: PRAMP_842
 Poll.: PRAMP_842-SO2[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

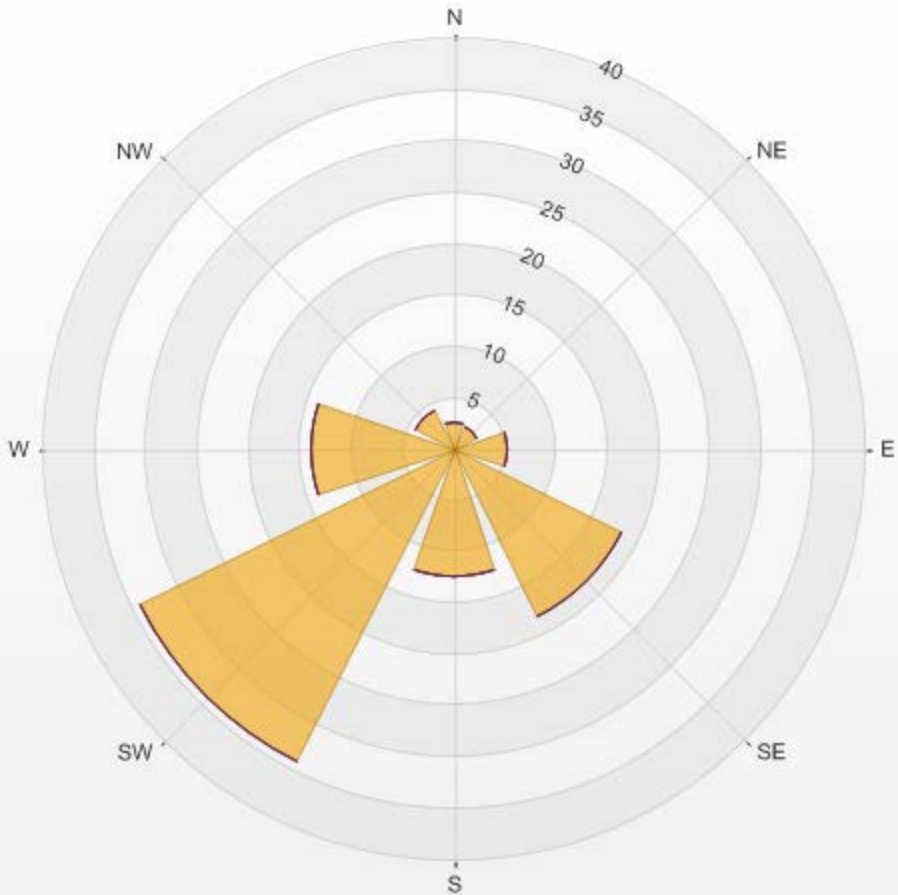
Calm: 6.67%

Calm Avg: 0.02 [ppb]

Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	2.7	0.0	0.0	0.0	0.0	2.7
NE	2.5	0.0	0.0	0.0	0.0	2.5
E	5.2	0.0	0.0	0.0	0.0	5.2
SE	18.4	0.0	0.0	0.0	0.0	18.4
S	12.4	0.0	0.0	0.0	0.0	12.4
SW	34.1	0.0	0.0	0.0	0.0	34.1
W	13.9	0.0	0.0	0.0	0.0	13.9
NW	4.2	0.0	0.0	0.0	0.0	4.2
Summary	93.3	0.0	0.0	0.0	0.0	93.3

% Icon Classes (ppb) 93 0-3 0 3-10 0 10-85 0 85-170 0 >170.0

PRAMP_842 Poll.: PRAMP_842-SO2[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 6.67% Calm Poll Avg: 0.02[ppb]



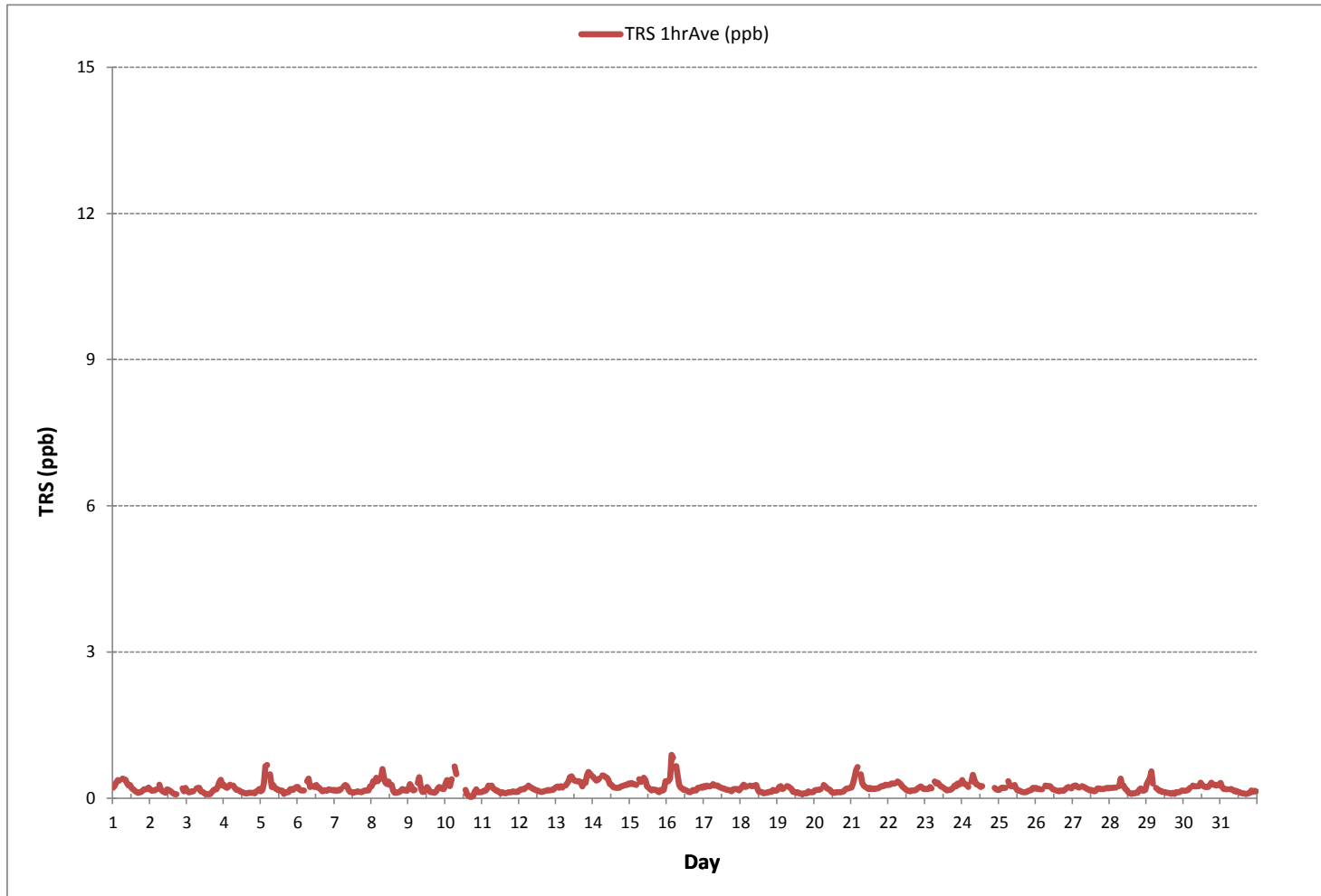
SO2[ppb] Calibration: PRAMP_842 Monthly: 17/08 Type: Span



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

TOTAL REDUCED SULPHUR

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b Station - August 2017

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

Table with columns: HR START (MST), HR END (MST), DAY, and 24 columns of hourly readings (0:00 to 23:00). Includes sub-headers for DAILY MIN., DAILY MAX., 24-HR AVG., and RDGS.

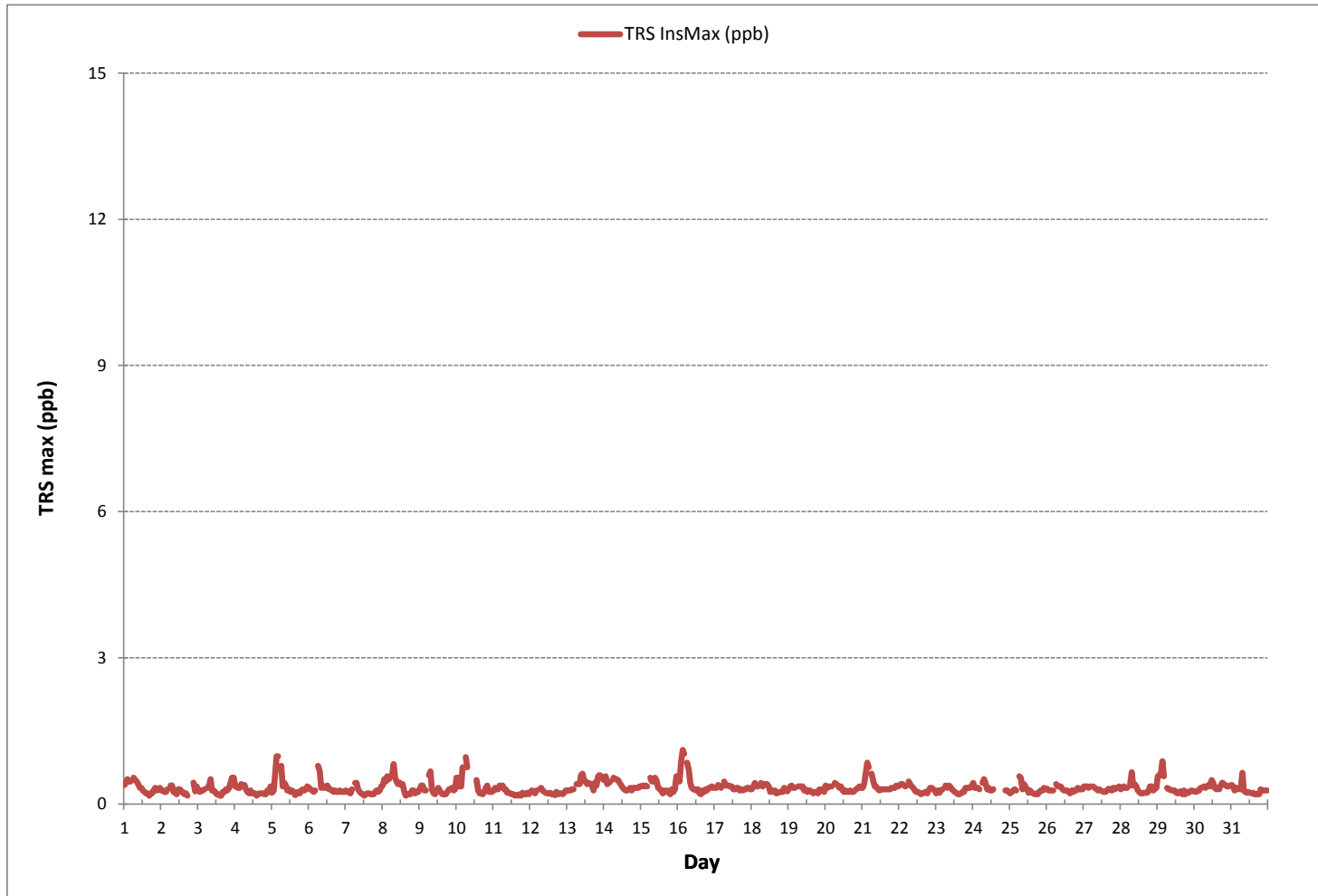
STATUS FLAG CODES

Table mapping status codes (C, C1, Y, S, S1, Q, R, X, G, P) to their respective meanings like 'MONTHLY CALIBRATION', 'REPEAT CALIBRATION', 'RECOVERY', etc.

MONTHLY SUMMARY

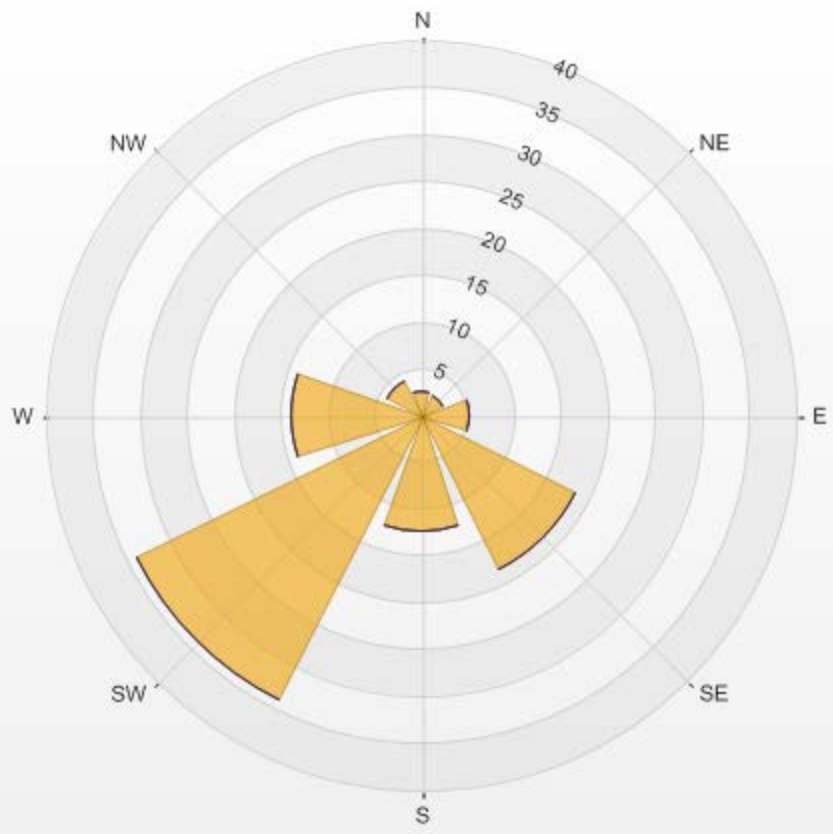
Summary table with key metrics: NUMBER OF NON-ZERO READINGS: 697, MAXIMUM INSTANTANEOUS VALUE: 1.11 ppb @ HOUR 3 ON DAY 16, IZS CALIBRATION TIME: 31 hrs, MONTHLY CALIBRATION TIME: 5 hrs, STANDARD DEVIATION: 0, OPERATIONAL TIME: 733 hrs.

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



% Icon Classes (ppb) 93 0-1 0 1-3 0 3-10 0 >10.0

PRAMP_842 Poll.: PRAMP_842-TRS[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 6.80% Calm Poll Avg: 0.22[ppb]



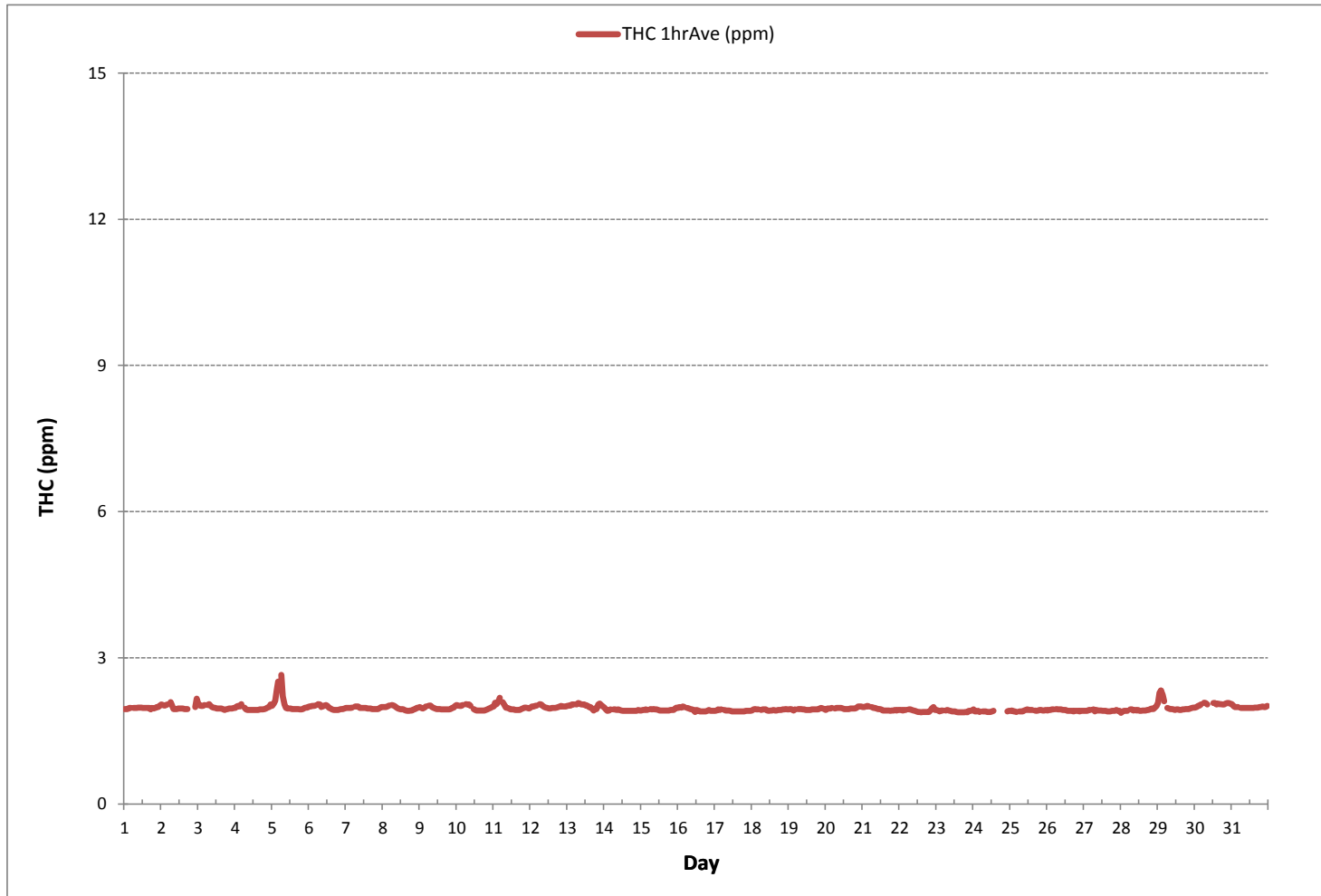
TRS[ppb] Calibration: PRAMP_842 Monthly: 17/08 Type: Span



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

TOTAL HYDROCARBON

TOTAL HYDROCARBONS Hourly Averages (THC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b Station - August 2017

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	1.96	2.00	1.97	1.99	2.00	S	2.02	1.99	1.99	1.99	2.00	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.98	2.00	2.09	2.01	2.04	1.96	2.09	2.00	24	
2	2.08	2.06	2.05	2.09	2.12	S	2.12	2.07	1.98	1.97	1.97	1.98	1.97	1.97	1.98	1.97	1.97	1.97	P	P	P	R	2.06	2.28	1.97	2.28	2.03	20	
3	2.18	2.04	2.04	2.03	2.12	S	2.10	2.08	2.03	2.01	2.00	1.99	1.98	1.97	1.97	1.96	1.94	1.96	1.99	1.99	2.00	1.97	1.98	1.94	2.18	2.01	24		
4	1.98	2.05	2.04	2.06	2.20	S	2.00	1.97	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.95	1.96	1.96	1.96	1.96	1.98	2.04	2.06	2.14	1.93	2.20	1.99	24	
5	2.04	2.20	2.24	2.50	2.73	S	2.78	2.39	2.12	1.99	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.97	2.01	2.02	2.02	1.96	2.78	2.12	24	
6	2.06	2.05	2.05	2.07	2.07	S	2.13	2.11	2.01	2.06	2.04	2.04	2.04	1.99	1.98	1.96	1.94	1.94	1.95	1.95	1.96	1.97	1.97	1.98	1.94	2.13	2.01	24	
7	2.02	1.98	1.99	1.99	2.00	S	2.02	2.03	2.03	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.97	1.96	1.96	1.96	2.01	2.04	2.01	2.02	1.96	2.04	1.99	24
8	2.01	2.01	2.01	2.05	2.04	S	2.05	2.05	2.01	2.00	1.98	1.97	1.96	1.97	1.96	1.94	1.93	1.93	1.94	1.93	1.99	1.99	2.02	2.02	1.93	2.05	1.99	24	
9	2.04	1.99	1.98	2.00	2.03	S	2.05	2.06	2.01	1.99	1.98	1.97	1.97	1.98	1.96	1.96	1.96	1.96	1.96	1.95	1.99	2.01	2.06	2.06	1.95	2.06	2.00	24	
10	2.06	2.04	2.04	2.04	2.07	S	2.07	2.06	2.10	2.04	Y	Y	1.95	1.93	1.93	1.92	1.93	1.93	1.94	2.00	1.98	1.98	2.00	2.01	1.92	2.10	2.00	22	
11	2.03	2.14	2.14	2.19	2.24	S	2.19	2.06	2.02	1.99	1.99	1.96	1.96	1.96	1.95	1.95	1.94	1.95	1.97	1.98	2.00	2.00	1.98	1.97	1.94	2.24	2.02	24	
12	2.00	2.01	2.02	2.02	2.04	S	2.07	2.06	2.03	2.01	2.00	1.99	1.98	1.98	1.99	1.98	1.99	2.00	2.00	2.02	2.03	2.01	2.02	2.02	1.98	2.07	2.01	24	
13	2.03	2.03	2.04	2.06	2.06	S	2.07	2.10	2.09	2.06	2.06	2.06	2.04	2.05	2.01	2.00	1.93	2.00	1.99	2.02	2.17	2.07	2.06	2.02	1.93	2.17	2.05	24	
14	2.01	1.97	1.92	1.93	1.96	S	1.94	1.94	1.93	1.95	1.94	1.92	1.93	1.91	1.91	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.94	1.93	1.91	2.01	1.93	24	
15	1.93	1.93	1.93	1.96	1.94	S	1.97	1.96	1.97	1.96	1.95	1.94	1.92	1.92	1.92	1.92	1.93	1.93	1.93	1.99	1.96	1.99	2.00	1.92	2.00	1.95	24		
16	1.99	2.01	2.00	2.01	2.01	S	1.99	1.98	1.96	1.96	1.94	1.93	1.93	1.91	1.91	1.91	1.91	1.91	1.91	1.92	1.98	1.93	1.92	1.92	1.91	2.01	1.95	24	
17	1.92	1.94	1.98	1.93	1.96	S	1.94	1.93	1.92	1.93	1.92	1.91	1.91	1.90	1.90	1.90	1.90	1.90	1.92	1.92	1.91	1.91	1.91	1.91	1.90	1.98	1.92	24	
18	1.93	1.95	1.96	1.96	1.94	S	1.93	1.94	1.94	1.94	1.93	1.92	1.92	1.92	1.94	1.93	1.94	1.94	1.94	1.94	1.94	1.97	1.97	1.95	1.92	1.97	1.94	24	
19	1.94	1.99	1.97	1.97	1.95	S	1.97	1.97	1.96	1.95	1.94	1.94	1.93	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.99	1.99	1.99	1.96	1.93	1.99	1.96	24	
20	1.97	1.97	1.97	1.97	1.99	S	1.97	1.99	1.99	1.99	1.98	1.97	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.97	2.06	2.09	2.05	2.05	1.96	2.09	1.99	24	
21	2.03	2.01	2.01	2.03	2.01	S	2.01	1.99	1.97	1.97	1.97	1.96	1.95	1.93	1.92	1.93	1.93	1.92	1.92	1.92	1.93	1.96	1.92	1.94	1.92	2.03	1.96	24	
22	1.94	1.95	1.93	1.93	1.94	S	1.97	1.94	1.93	1.92	1.92	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.91	2.01	2.06	2.03	1.96	1.89	2.06	1.93	24	
23	2.01	1.96	1.95	2.04	1.98	S	1.93	1.93	1.92	1.91	1.91	1.90	1.97	1.90	1.89	1.89	1.89	1.89	1.89	1.91	1.95	1.93	1.95	1.97	1.89	2.04	1.93	24	
24	2.01	1.91	1.91	1.92	1.90	S	1.91	1.92	1.90	1.90	1.90	1.90	1.92	1.92	P	P	P	P	P	P	R	R	1.91	1.94	1.90	2.01	1.92	16	
25	1.93	1.95	1.96	1.92	1.90	S	1.91	1.92	1.92	1.94	1.95	1.96	1.95	1.95	1.94	P	P	1.93	1.93	1.94	1.95	1.97	1.94	1.94	1.94	1.94	1.90	23	
26	1.95	1.96	1.95	1.95	1.96	S	1.96	1.96	1.96	1.95	1.95	1.94	1.94	1.93	1.93	1.94	1.91	1.92	1.92	1.94	1.94	1.92	1.92	1.92	1.91	1.96	1.94	24	
27	1.92	1.92	1.93	1.96	1.96	S	1.99	2.01	1.96	1.93	1.93	1.92	1.92	1.92	1.92	1.91	1.91	1.91	1.91	1.91	1.91	1.97	1.93	1.92	1.91	2.01	1.93	24	
28	1.93	1.91	1.92	1.92	1.92	S	1.98	1.96	1.94	1.95	1.93	1.96	1.93	1.93	1.93	1.94	1.94	1.94	1.95	1.98	2.07	1.98	2.06	2.07	1.91	2.07	1.96	24	
29	2.21	2.36	2.37	2.29	2.21	S	2.00	1.99	1.97	1.98	1.96	1.97	1.96	1.98	1.94	1.94	1.97	1.96	1.96	1.97	1.97	1.98	1.99	1.99	1.94	2.37	2.04	24	
30	1.99	2.01	2.03	2.04	2.06	S	2.10	2.08	2.07	C	C	C	C	2.09	2.10	2.08	2.08	2.08	2.07	2.06	2.09	2.09	2.10	2.09	1.99	2.10	2.07	24	
31	2.07	2.07	2.01	2.07	2.01	S	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.99	1.99	1.99	2.00	2.02	2.02	2.02	2.02	2.01	2.04	2.04	1.98	2.07	2.01	24	
HOURLY MAX	2.21	2.36	2.37	2.50	2.73	NA	2.78	2.39	2.12	2.06	2.06	2.06	2.04	2.09	2.10	2.08	2.08	2.08	2.07	2.06	2.17	2.09	2.10	2.28					
HOURLY AVG	2.01	2.01	2.01	2.03	2.04	NA	2.04	2.01	1.99	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.99	1.99	1.99	2.00					

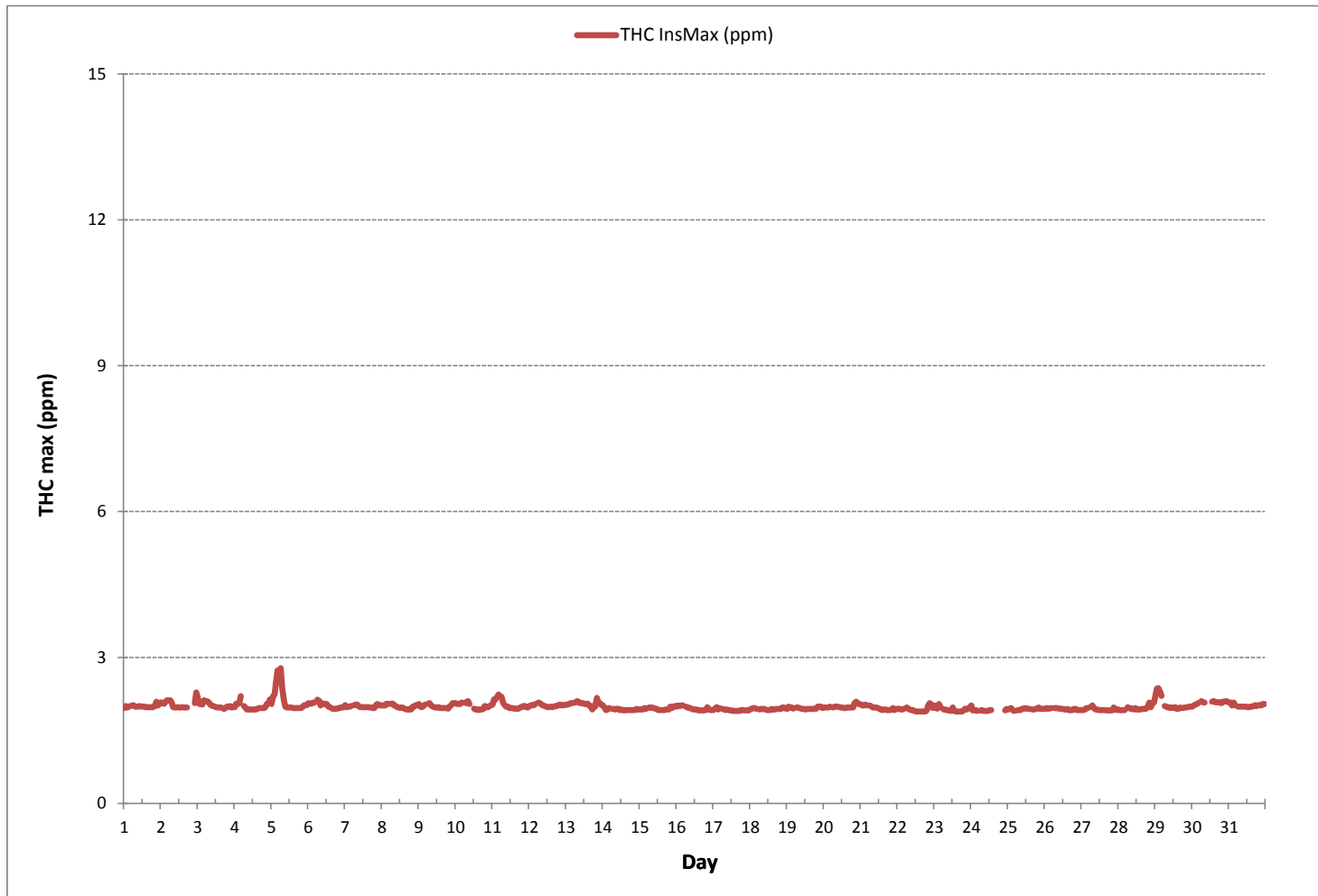
STATUS FLAG CODES

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:	694					
MAXIMUM INSTANTANEOUS VALUE:	2.78	ppm	@ HOUR	6	ON DAY	5
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	729	hrs	
MONTHLY CALIBRATION TIME:	4	hrs				
STANDARD DEVIATION:	0.08					

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



Wind: PRAMP_842
 Poll.: PRAMP_842-THC55[ppm]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

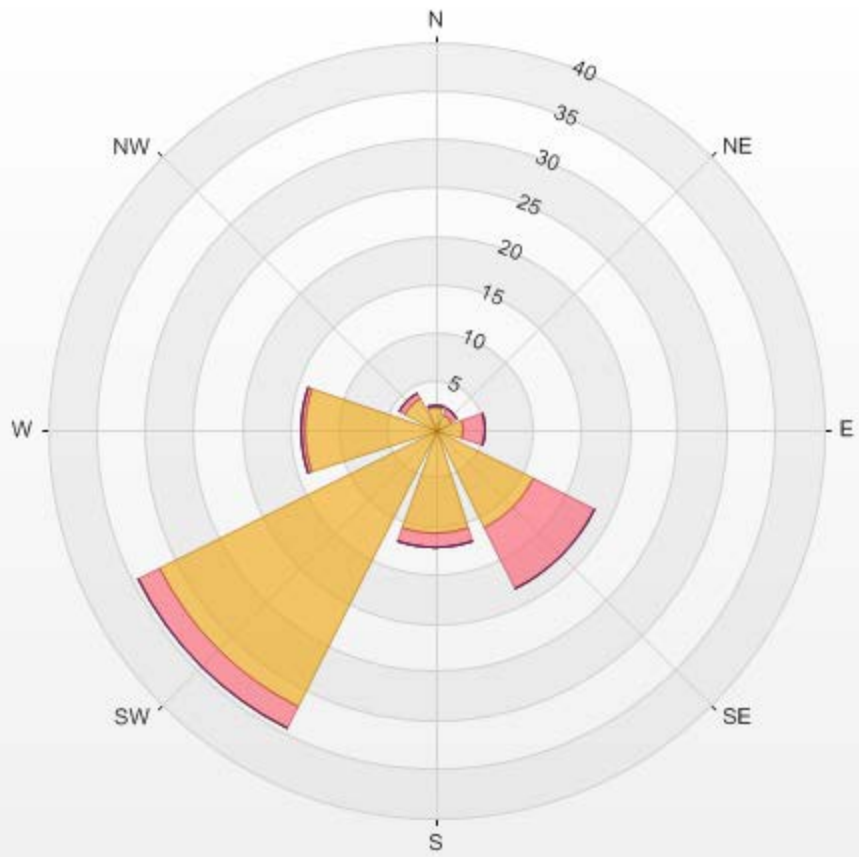
Calm: 6.64%

Calm Avg: 2.01 [ppm]

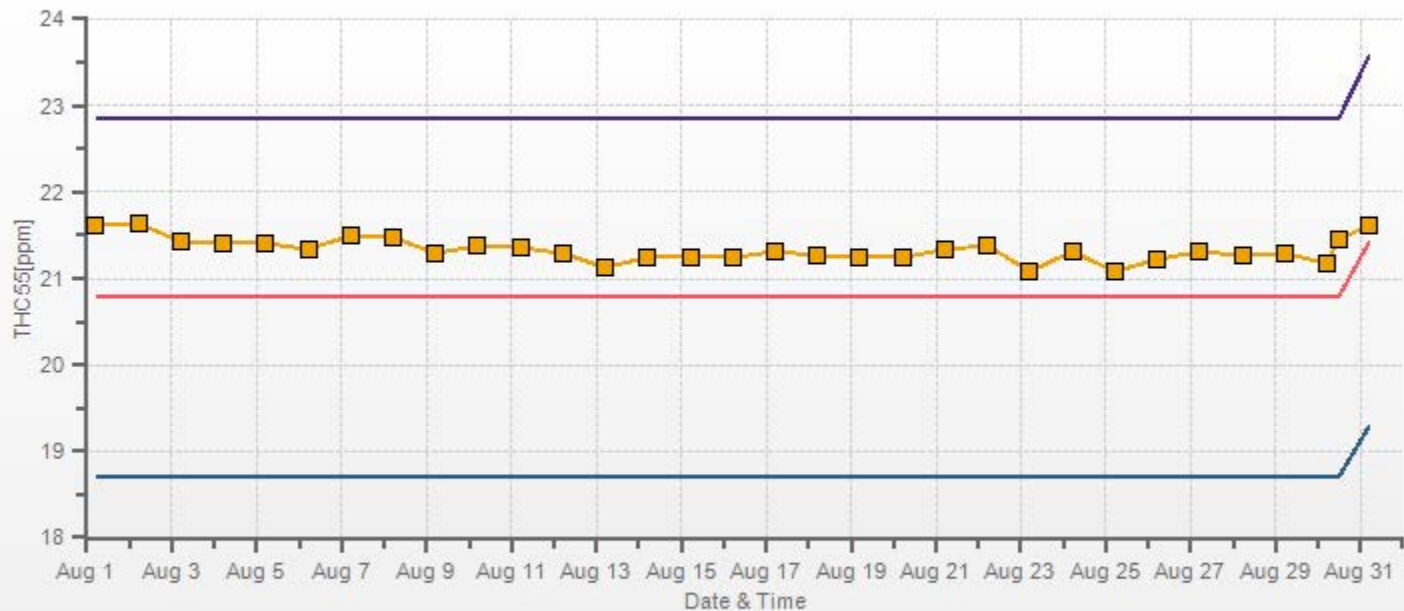
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	2.4	0.3	0.0	0.0	0.0	2.7
NE	1.8	0.7	0.0	0.0	0.0	2.5
E	3.0	2.2	0.0	0.0	0.0	5.2
SE	11.4	6.9	0.0	0.0	0.0	18.3
S	10.8	1.5	0.0	0.0	0.0	12.2
SW	31.9	2.5	0.0	0.0	0.0	34.4
W	13.6	0.4	0.0	0.0	0.0	14.0
NW	3.7	0.4	0.0	0.0	0.0	4.1
Summary	78.3	15.0	0.0	0.0	0.0	93.4

% Icon Classes (ppm) 78 0-2 15 2-3 0 3-5 0 5-10 0 >10.0

PRAMP_842 Poll.: PRAMP_842-THC55[ppm] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 6.64% Calm Poll Avg: 2.01[ppm]



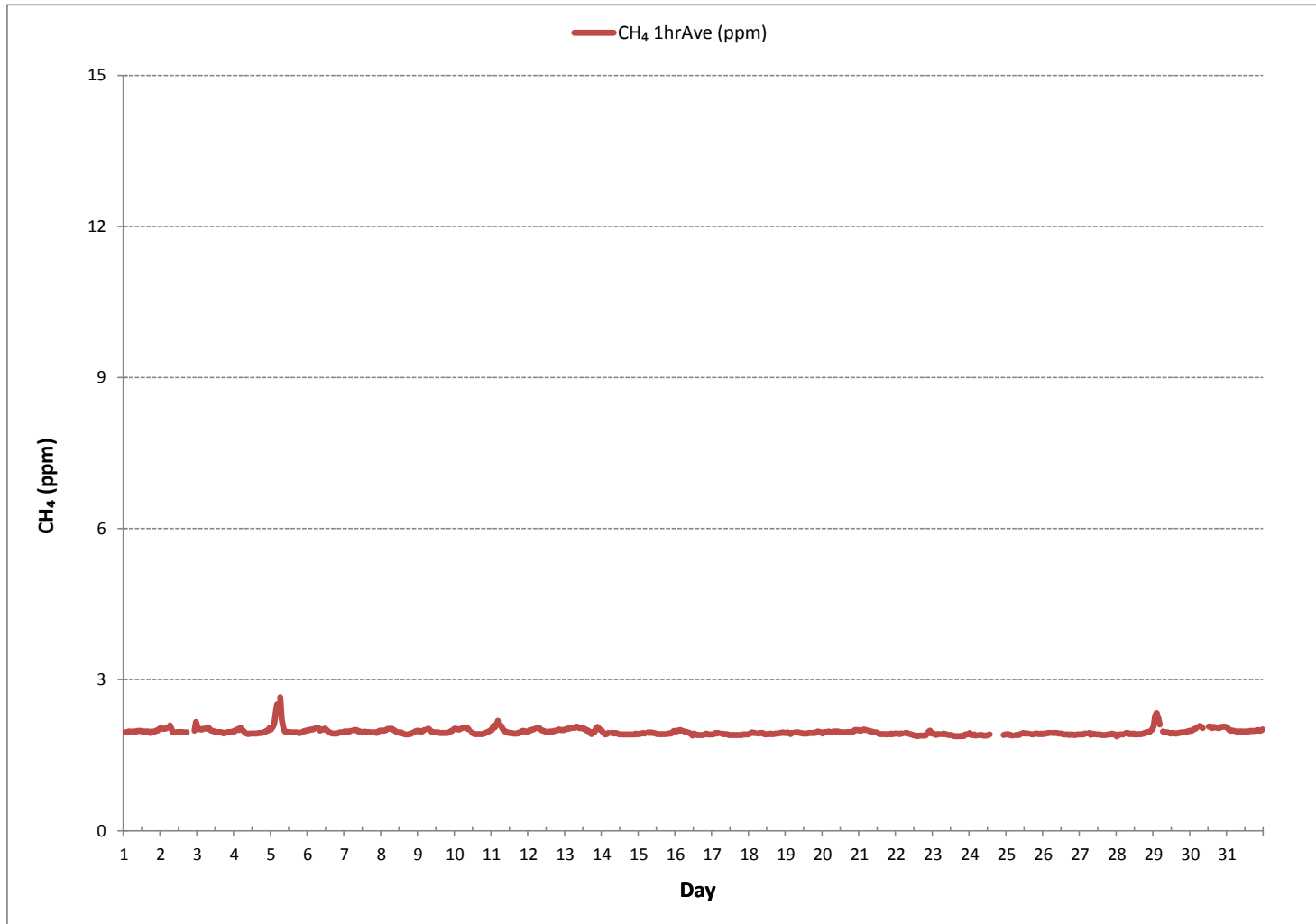
THC55[ppm] Calibration: PRAMP_842 Monthly: 17/08 Type: Span



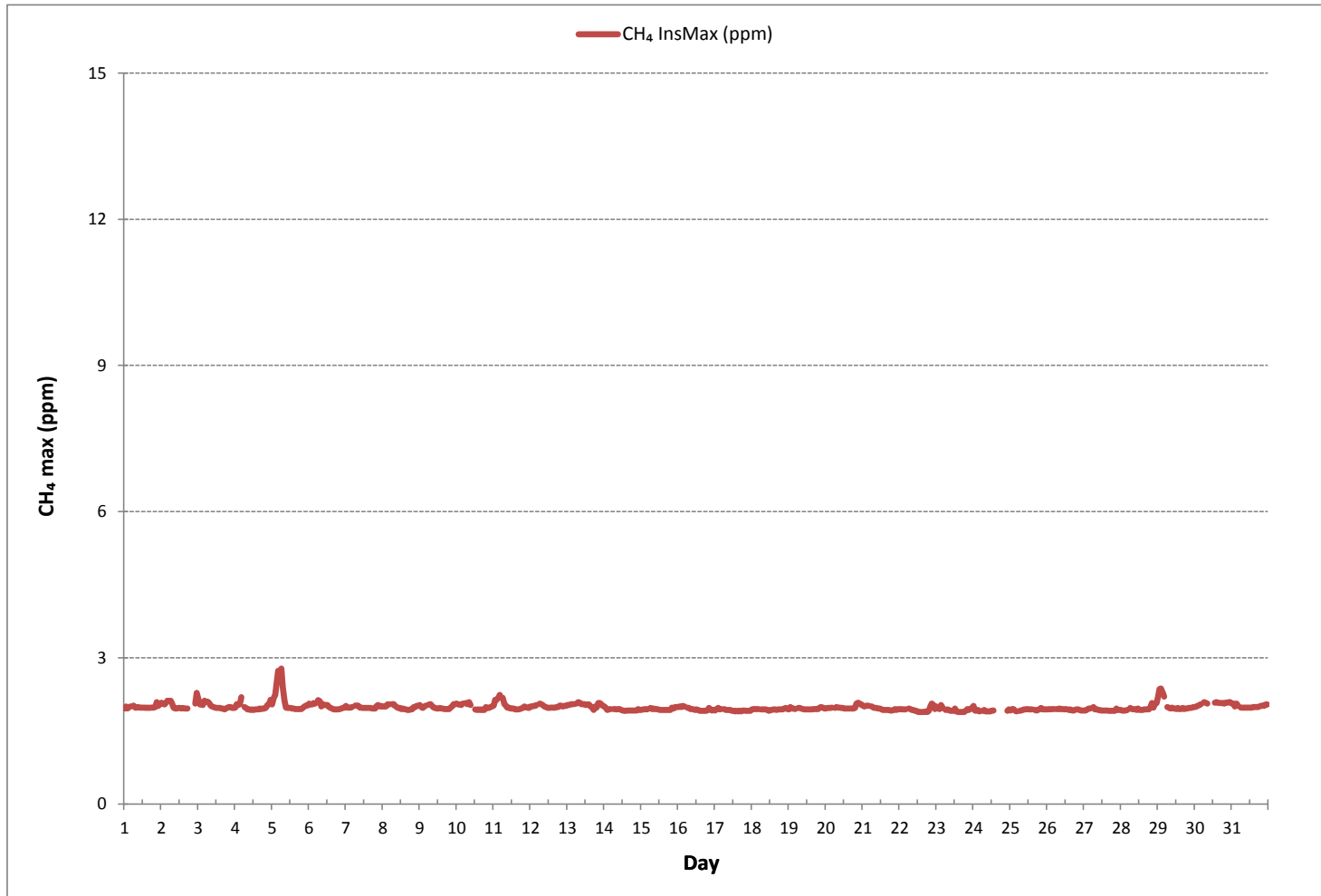
—■— Span Meas — Span Ref — Span Low — Span High

METHANE

METHANE Hourly Averages (CH₄ ppm)



METHANE MAX Instantaneous Maximum (CH₄ ppm)



Wind: PRAMP_842 Poll.:
 PRAMP_842-CH4[ppm]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

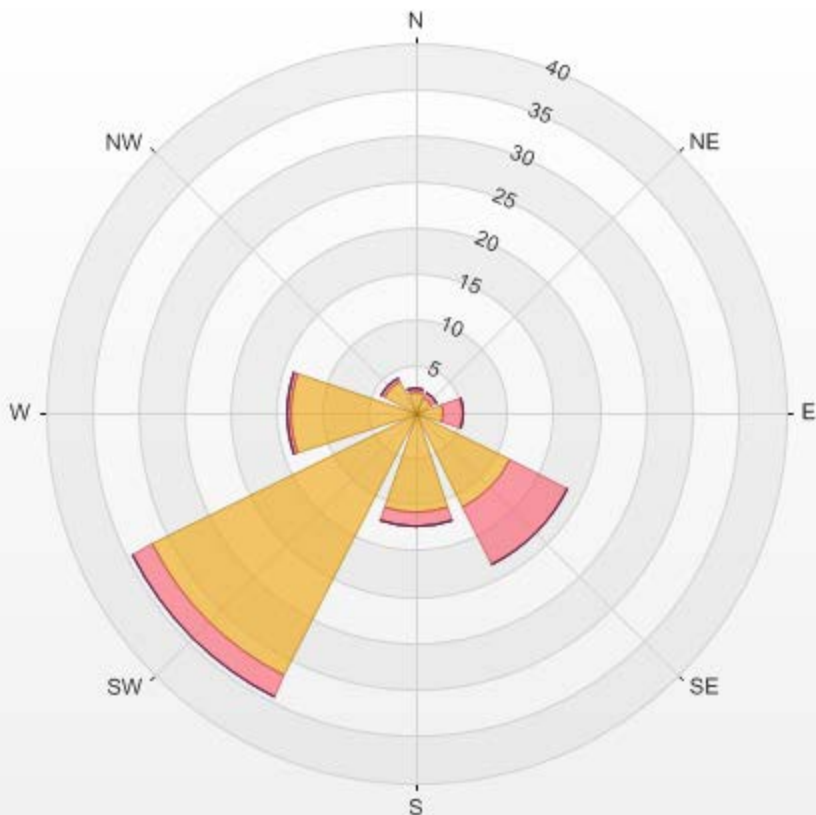
Calm: 6.64%

Calm Avg: 2.01 [ppm]

Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	2.4	0.3	0.0	0.0	0.0	2.7
NE	1.9	0.6	0.0	0.0	0.0	2.5
E	3.0	2.2	0.0	0.0	0.0	5.2
SE	11.5	6.8	0.0	0.0	0.0	18.3
S	10.8	1.5	0.0	0.0	0.0	12.2
SW	31.9	2.5	0.0	0.0	0.0	34.4
W	13.6	0.4	0.0	0.0	0.0	14.0
NW	3.7	0.4	0.0	0.0	0.0	4.1
Summary	78.6	14.7	0.0	0.0	0.0	93.4

% Icon Classes (ppm) 79 0-2 15 2-3 0 3-5 0 5-10 0 >10.0

PRAMP_842 Poll.: PRAMP_842-CH4[ppm] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 6.64% Calm Poll Avg: 2.01[ppm]



CH4[ppm] Calibration: PRAMP_842 Monthly: 17/08 Type: Span

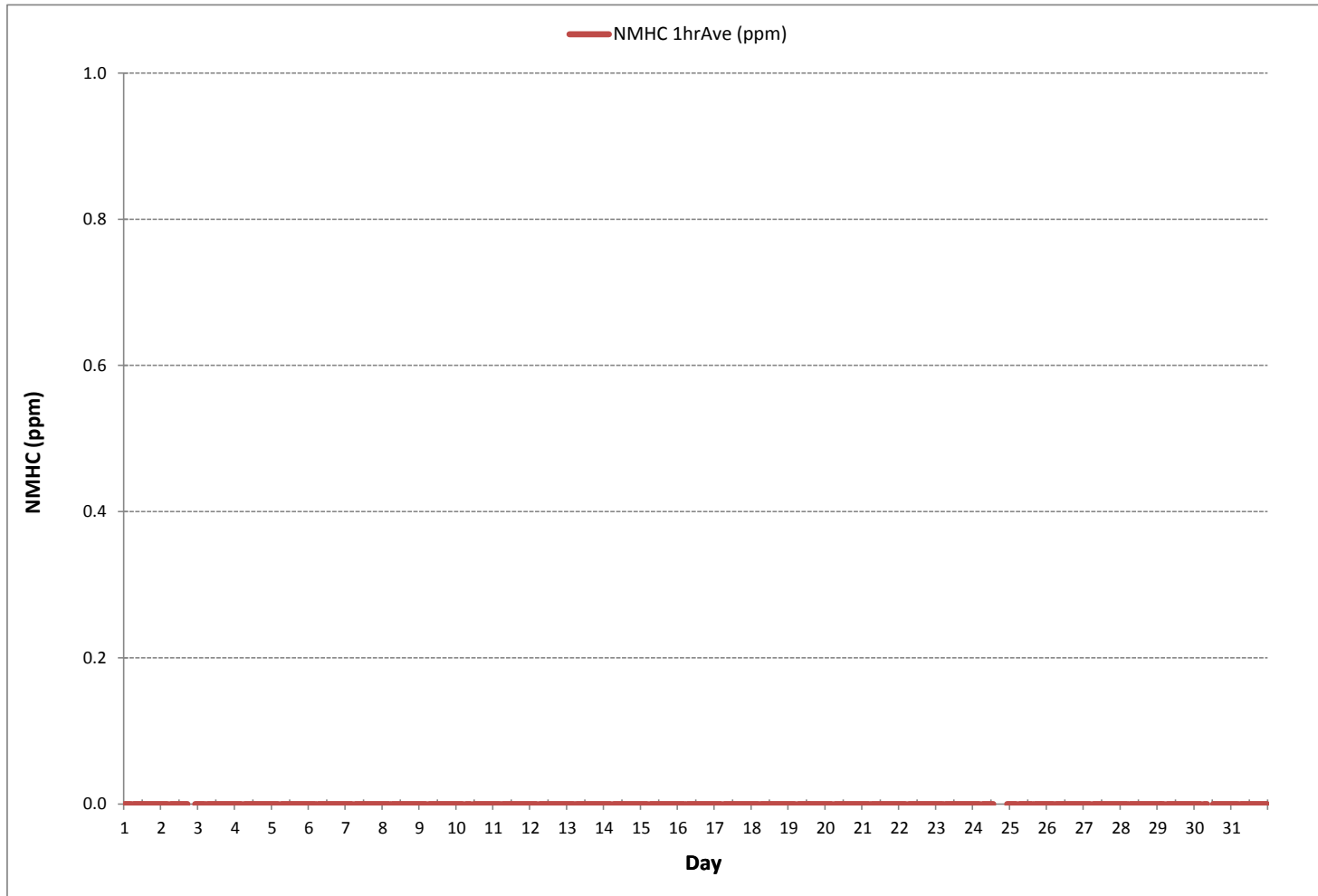


—■— Span Meas — Span Ref — Span Low — Span High

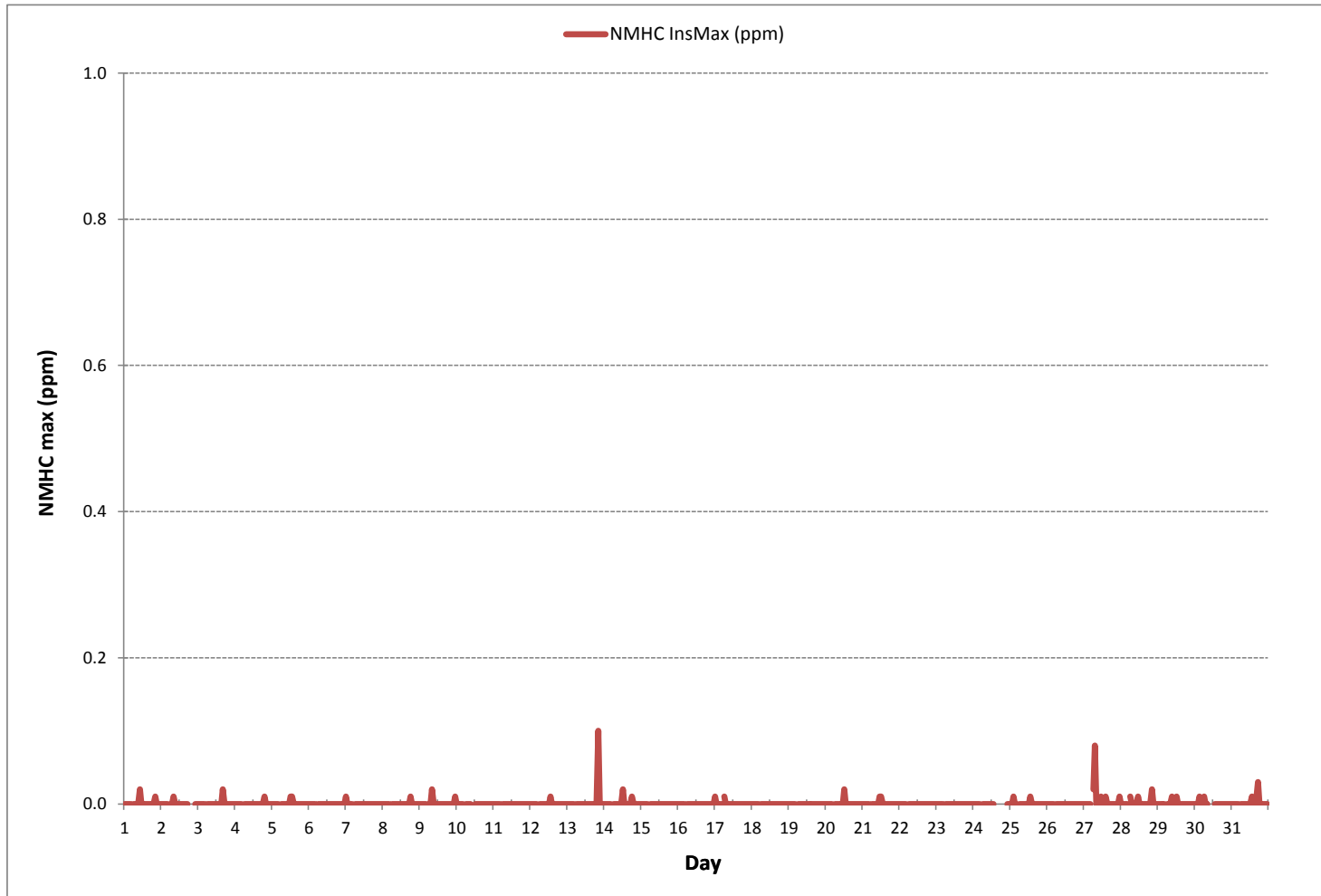
NON-METHANE HYDROCARBON



NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)



Wind: PRAMP_842
 Poll.: PRAMP_842-NMHC[ppm]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

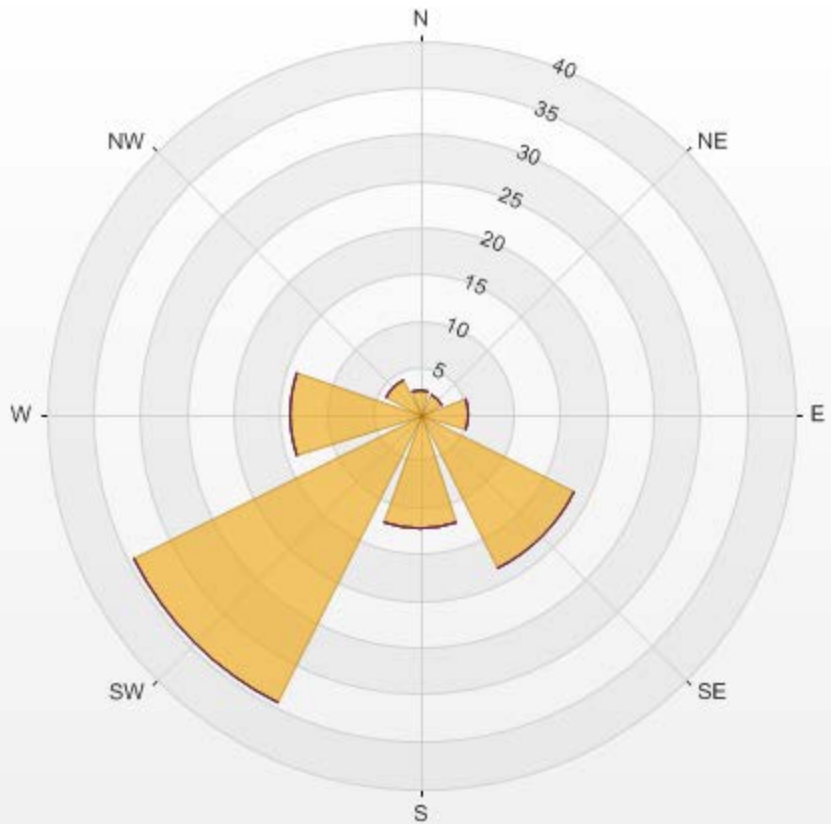
Calm: 6.64%

Calm Avg: 0.00 [ppm]

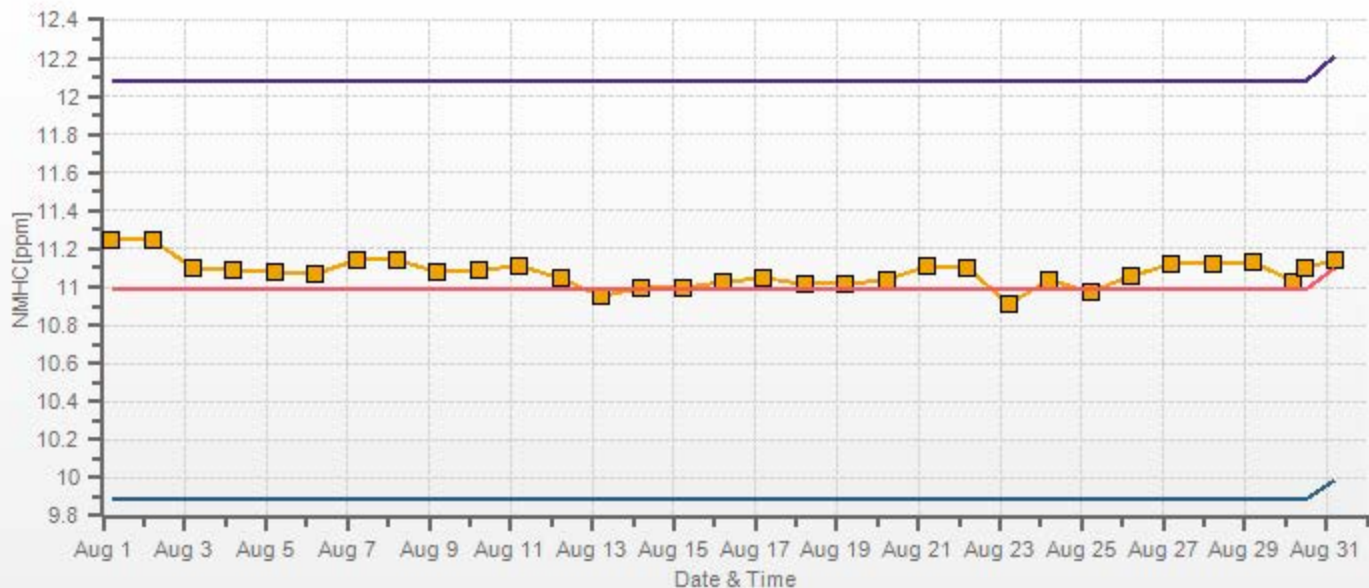
Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	2.7	0.0	0.0	0.0	0.0	2.7
NE	2.5	0.0	0.0	0.0	0.0	2.5
E	5.2	0.0	0.0	0.0	0.0	5.2
SE	18.3	0.0	0.0	0.0	0.0	18.3
S	12.2	0.0	0.0	0.0	0.0	12.2
SW	34.4	0.0	0.0	0.0	0.0	34.4
W	14.0	0.0	0.0	0.0	0.0	14.0
NW	4.1	0.0	0.0	0.0	0.0	4.1
Summary	93.4	0.0	0.0	0.0	0.0	93.4

% Icon	Classes (ppm)	93	0	0	0	0	0	0
		0-0.1	0.1-0.3	0.3-1	1-2	>2.0		

PRAMP_842 Poll.: PRAMP_842-NMHC[ppm] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 6.64% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: PRAMP_842 Monthly: 17/08 Type: Span



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

WIND SPEED



WIND SPEED Hourly Averages (WS kph)

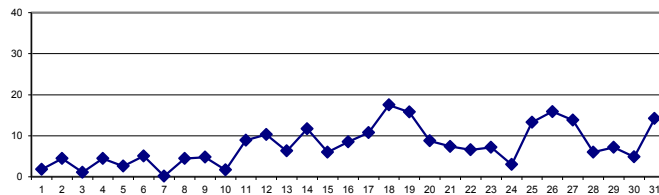
Table with columns for HR START (MST), HR END (MST), and hourly wind speed readings from 0:00 to 23:59. Includes summary rows for HOURLY MAX and HOURLY AVG.

STATUS FLAG CODES

Legend for status flag codes: C - MONTHLY CALIBRATION, C1 - REPEAT CALIBRATION, Y - MAINTENANCE, S - DAILY ZERO/SPAN CHECK, S1 - REPEAT ZERO/SPAN CHECK, Q - QUALITY ASSURANCE, R - RECOVERY, X - MACHINE MALFUNCTION, G - OUT FOR REPAIR, P - POWER FAILURE.

LAST CALIBRATION: August 30, 2017
DECLINATION: MAGNETIC DECLINATION 15 DEGREE EAST

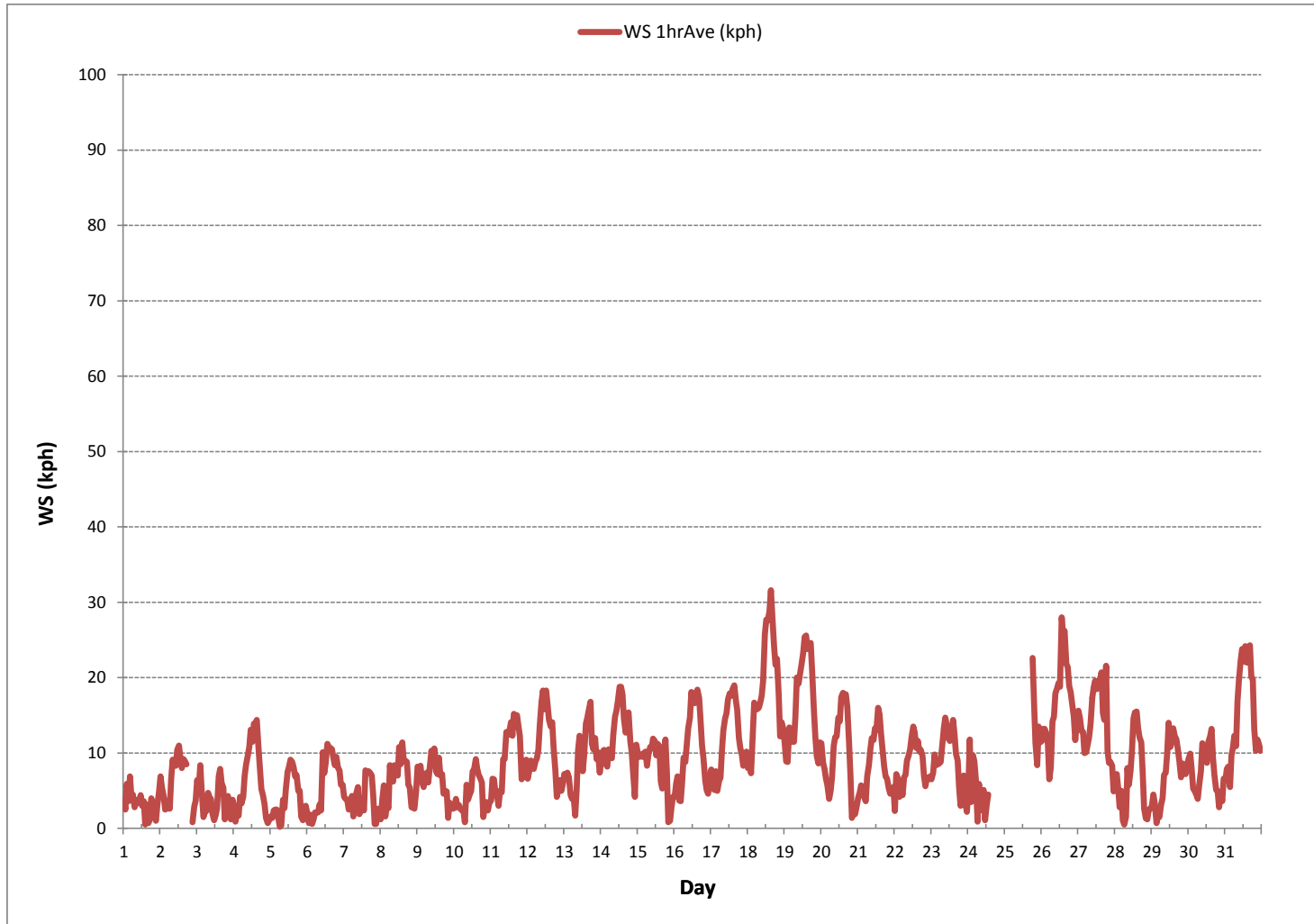
24 HR AVERAGES August 2017



MONTHLY SUMMARY

Summary statistics: NUMBER OF NON-ZERO READINGS: 711; MINIMUM 1-HR AVERAGE: 0.2 kph @ HOUR 6 ON DAY 5; MAXIMUM 1-HR AVERAGE: 31.6 kph @ HOUR 15 ON DAY 18; MAXIMUM 24-HR AVERAGE: 17.5 kph ON DAY 18; MONTHLY CALIBRATION TIME: 2 hrs; OPERATIONAL TIME: 713 hrs; AMD OPERATION UPTIME: 95.8 %; STANDARD DEVIATION: 5.8; MONTHLY AVERAGE: 5.6 kph.

WIND SPEED Hourly Averages (WS kph)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b Station - August 2017

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	18.7	16.9	20.0	10.5	13.0	8.8	8.8	6.6	7.5	9.6	10.1	12.5	13.8	14.2	12.4	10.9	14.0	8.0	8.5	6.2	5.4	6.3	6.7	11.5	5.4	20.0	10.9	24
2	13.7	13.5	10.5	6.7	7.4	9.6	7.8	15.3	16.2	17.1	19.5	23.7	23.1	20.8	22.7	20.6	17.9	17.8	P	P	P	3.1	7.1	9.5	3.1	23.7	14.5	21
3	11.1	10.5	14.5	12.4	6.1	5.6	6.3	11.3	12.0	10.9	10.4	10.2	10.5	14.0	18.8	23.1	31.4	23.3	10.7	11.2	8.7	7.9	6.6	10.4	5.6	31.4	12.4	24
4	8.0	4.7	5.1	6.9	9.9	5.9	13.8	15.5	18.2	21.5	24.9	26.8	27.0	30.5	31.5	31.8	28.3	27.9	17.9	12.6	13.9	4.6	2.8	3.5	2.8	31.8	16.4	24
5	3.1	4.1	3.9	6.2	5.8	4.9	3.9	5.6	9.4	10.2	14.8	19.7	21.3	22.7	21.5	17.9	16.2	15.0	10.4	9.2	5.3	3.9	7.2	6.5	3.1	22.7	10.4	24
6	5.3	13.5	4.6	11.3	6.4	6.0	16.5	9.5	7.7	8.6	20.7	18.4	21.9	24.4	25.5	28.9	24.1	22.5	21.3	25.1	17.9	16.6	16.9	17.2	4.6	28.9	16.3	24
7	10.6	10.8	8.2	5.9	7.5	8.6	6.4	10.9	13.2	17.1	15.9	19.3	15.4	21.9	16.9	18.6	16.5	16.9	14.5	9.2	4.1	2.4	5.0	6.6	2.4	21.9	11.8	24
8	6.3	10.5	13.1	5.3	7.3	8.1	15.7	11.6	12.7	16.8	16.7	18.4	22.2	26.7	23.6	23.4	18.8	17.1	12.4	10.0	8.7	5.8	6.8	10.5	5.3	26.7	13.7	24
9	17.3	14.0	14.9	13.4	12.0	14.0	14.1	12.1	15.9	17.6	18.4	19.6	16.8	24.6	21.9	17.4	16.4	11.7	8.1	8.2	9.6	7.3	6.3	7.0	6.3	24.6	14.1	24
10	5.6	7.4	7.1	5.7	5.2	4.3	5.7	7.6	10.0	10.5	12.5	17.7	17.7	21.9	21.8	21.0	18.1	18.1	13.8	6.4	15.6	12.1	7.7	9.0	4.3	21.9	11.8	24
11	11.1	12.4	12.4	12.4	11.2	9.6	13.2	12.7	16.7	18.8	26.4	26.4	33.8	30.9	27.2	30.1	29.5	31.8	25.2	26.3	16.2	22.1	19.3	17.6	9.6	33.8	20.6	24
12	13.4	18.8	19.9	18.1	16.7	22.2	21.4	23.1	26.3	33.1	35.6	32.6	33.8	29.7	32.5	28.3	27.3	25.0	24.2	12.4	15.0	17.4	15.5	18.2	12.4	35.6	23.4	24
13	18.7	18.5	20.8	17.4	14.6	12.9	10.8	6.2	17.6	17.8	21.9	22.0	16.5	23.7	25.0	29.1	32.7	36.5	20.7	21.9	26.7	17.6	20.4	18.5	6.2	36.5	20.4	24
14	17.4	21.7	20.9	15.9	14.2	18.4	18.0	15.9	23.3	26.9	26.7	34.4	38.3	39.1	35.1	29.5	24.4	32.2	32.4	25.7	21.4	20.2	8.3	22.0	8.3	39.1	24.3	24
15	20.0	16.2	19.7	17.0	20.0	19.9	13.6	20.3	20.1	23.5	30.2	28.4	29.4	27.3	33.7	33.7	17.5	23.2	27.3	23.8	4.2	4.0	5.5	8.2	4.0	33.7	20.3	24
16	9.1	9.7	10.6	8.4	10.9	12.9	15.9	18.9	23.1	29.7	32.0	34.1	35.3	36.0	38.2	35.4	39.1	28.3	26.8	22.0	16.1	10.0	8.8	12.5	8.4	39.1	21.8	24
17	12.7	11.9	10.1	16.0	9.2	10.9	15.7	19.3	22.4	29.0	28.8	33.9	33.0	34.1	36.1	40.1	43.4	34.1	31.3	19.6	18.2	16.7	17.9	18.6	9.2	43.4	23.5	24
18	15.0	14.6	15.9	22.4	32.5	31.8	29.0	35.8	40.1	32.6	39.5	55.1	52.5	54.0	54.9	61.7	50.9	54.5	44.4	43.9	31.9	23.8	26.0	25.2	14.6	61.7	37.0	24
19	23.0	19.5	24.0	34.9	20.9	19.6	21.3	30.0	33.9	36.8	42.2	52.4	47.4	50.9	51.7	50.8	47.8	48.7	37.9	35.3	27.9	17.7	15.7	20.4	15.7	52.4	33.8	24
20	18.5	16.0	15.6	13.9	11.6	9.3	10.2	14.4	18.9	22.8	24.2	35.1	31.9	34.0	46.8	35.9	34.1	38.1	23.5	16.9	8.0	3.6	4.7	5.9	3.6	46.8	20.6	24
21	7.8	8.7	8.4	10.0	8.1	10.3	14.1	15.5	20.7	22.2	23.2	23.9	28.6	31.3	30.5	24.0	20.0	17.4	12.5	11.7	10.5	11.3	10.9	10.9	7.8	31.3	16.4	24
22	7.0	16.2	12.8	11.1	11.2	9.6	16.3	18.0	16.2	18.4	22.4	24.6	28.4	25.4	30.1	24.0	24.1	22.0	18.7	10.9	11.0	12.5	13.5	13.7	7.0	30.1	17.4	24
23	14.1	15.3	20.5	16.4	16.3	14.6	16.0	19.4	25.4	28.6	25.3	24.0	26.0	25.7	28.6	29.9	18.4	20.3	10.1	7.8	9.5	14.7	10.6	7.1	7.1	29.9	18.5	24
24	23.7	23.8	13.2	22.0	33.5	29.6	31.1	14.7	8.0	9.3	13.4	12.2	14.0	39.9	P	P	P	P	P	P	X	X	X	X	8.0	39.9	20.6	14
25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	47.4	34.6	28.8	18.7	24.3	21.9	18.7	47.4	29.3	6
26	22.8	27.4	25.4	21.2	21.8	15.3	22.8	27.0	25.9	32.4	38.3	37.6	38.9	51.4	46.0	50.6	45.2	47.9	37.6	35.9	35.9	30.4	21.8	28.9	15.3	51.4	32.9	24
27	30.2	26.9	27.2	27.2	19.4	20.1	24.3	22.1	25.9	32.2	33.8	37.0	34.5	40.3	40.6	46.7	34.0	41.9	42.9	24.8	15.4	16.2	14.7	12.0	12.0	46.7	28.8	24
28	15.4	17.1	9.5	9.4	10.5	6.7	4.8	7.0	13.3	12.6	18.2	23.4	35.7	38.6	30.6	29.0	26.9	22.9	14.9	7.0	7.2	3.7	6.5	5.7	3.7	38.6	15.7	24
29	7.8	8.8	8.3	4.6	5.9	7.6	12.2	12.4	20.8	19.2	27.9	30.8	29.1	31.5	30.3	32.1	30.3	29.3	24.7	21.6	24.5	25.4	18.8	21.7	4.6	32.1	20.2	24
30	24.9	28.7	22.1	18.2	12.0	10.1	9.8	18.3	16.8	22.1	C	C	16.9	21.4	21.6	23.0	19.2	14.5	11.0	9.3	7.7	10.0	9.4	17.5	7.7	28.7	16.6	24
31	12.8	19.3	17.0	12.7	16.3	22.9	21.0	19.7	33.0	37.7	45.0	42.6	41.6	43.5	44.7	43.3	50.7	41.9	43.3	30.0	22.3	23.6	25.1	19.1	12.7	50.7	30.4	24
HOURLY MAX	30.2	28.7	27.2	34.9	33.5	31.8	31.1	35.8	40.1	37.7	45.0	55.1	52.5	54.0	54.9	61.7	50.9	54.5	47.4	43.9	35.9	30.4	26.0	28.9				
HOURLY AVG	14.2	15.2	14.5	13.8	13.2	13.0	14.7	15.9	19.0	21.5	24.8	27.5	27.8	31.0	31.1	30.7	28.2	27.2	23.3	18.6	15.4	13.0	12.4	13.9				

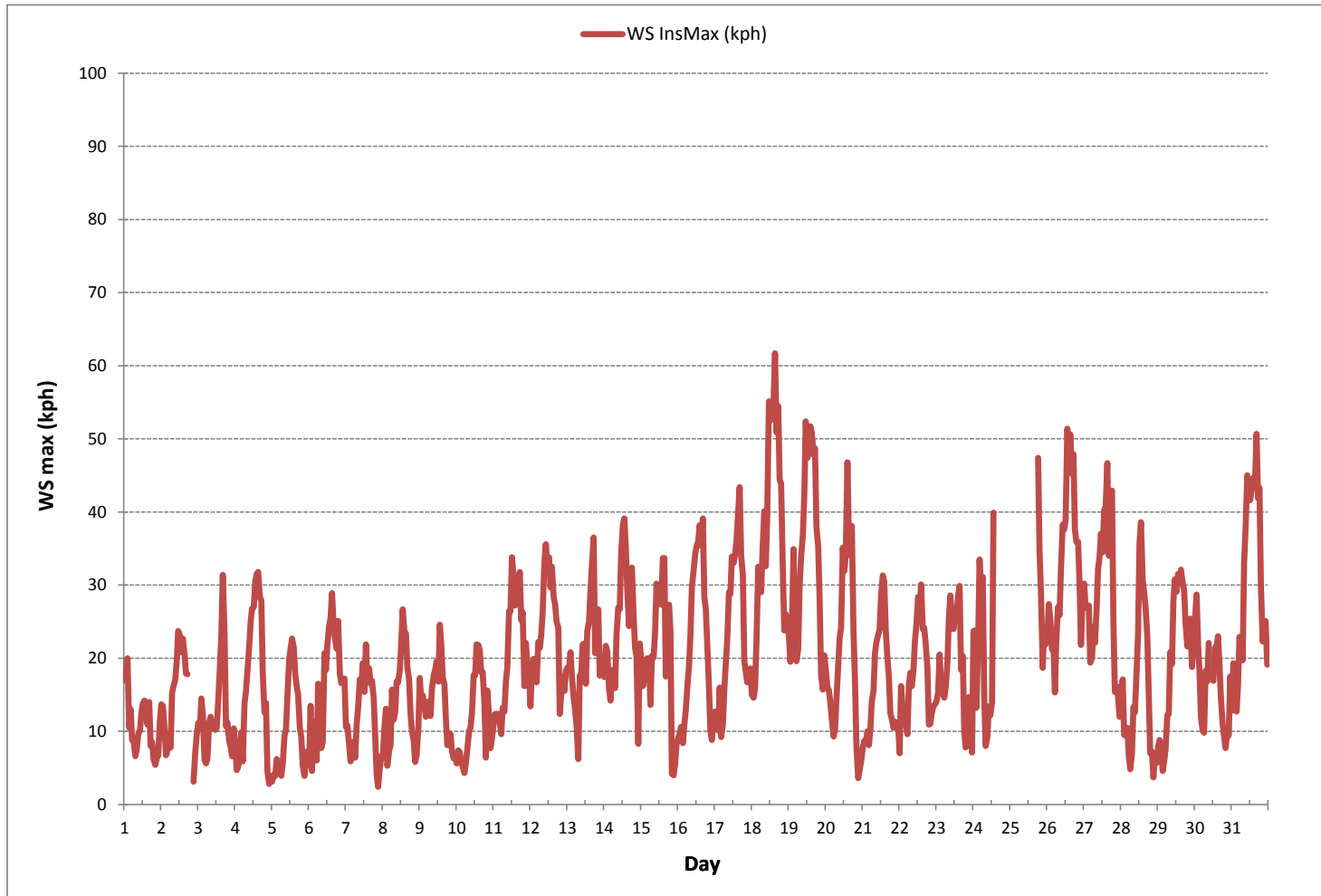
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:				61.7	kph	@ HOUR	15	ON DAY	18
OPERATIONAL TIME:				713	hrs				

WIND SPEED Instantaneous Maximum (WS kph)



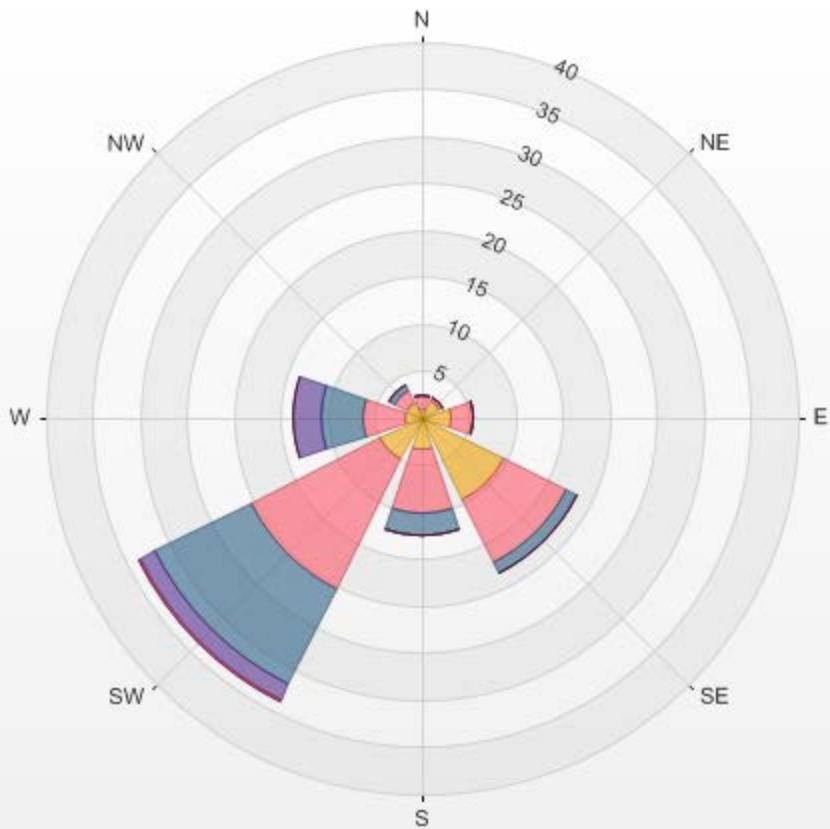
Wind: PRAMP_842
 Monitor: WSP [kph]
 Monthly: 17/08
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 6.89%

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	1.0	1.6	0.0	0.0	0.0	0.0	2.5
NE	2.1	0.4	0.0	0.0	0.0	0.0	2.5
E	3.1	2.4	0.1	0.0	0.0	0.0	5.6
SE	9.9	7.5	1.3	0.0	0.0	0.0	18.6
S	3.4	6.8	2.4	0.0	0.0	0.0	12.5
SW	4.9	15.5	11.4	1.8	0.1	0.0	33.8
W	1.8	4.5	4.4	3.0	0.0	0.0	13.6
NW	1.8	1.6	0.6	0.0	0.0	0.0	3.9
Summary	28.0	40.1	20.1	4.8	0.1	0.0	93.1

% Icon	Classes (kph)	28	1.8-6.0	40	6.0-12.0	20	12.0-20.0	5	20.0-29.0	0	29.0-39.0	0	>39.0
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PRAMP_842 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 6.89% Calm Wind Avg Speed: 1.14(kph)



WIND DIRECTION



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b Station - August 2017

WIND DIRECTION Hourly Averages (WD)

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

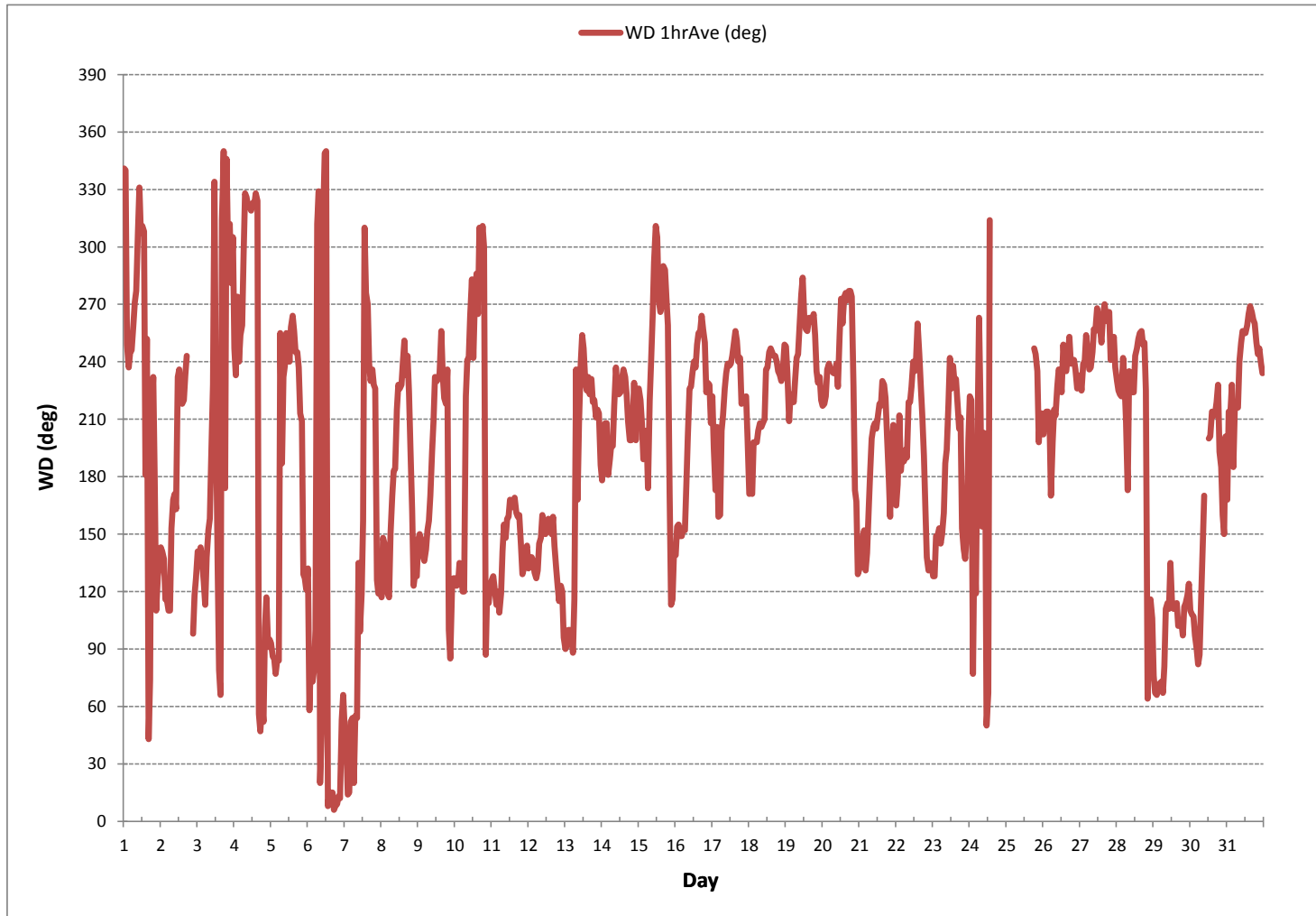
STATUS FLAG CODES

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

LAST CALIBRATION:	August 30, 2017
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	2 hrs	OPERATIONAL TIME:	713 hrs
STANDARD DEVIATION:	69	AMD OPERATION UPTIME:	95.8 %
		MONTHLY AVERAGE:	221 (SW)

WIND DIRECTION Hourly Averages (WD)



RELATIVE HUMIDITY



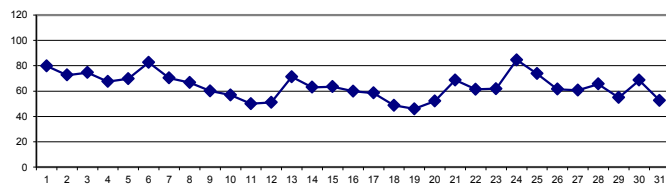
RELATIVE HUMIDITY Hourly Averages (RH %)

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	93	94	93	91	92	93	94	95	95	94	89	86	71	65	60	56	49	59	51	52	72	89	91	89	49	95	80	24
2	89	91	92	93	94	95	93	83	73	61	60	62	55	47	47	42	40	41	P	P	P	86	90	91	40	95	73	21
3	84	86	85	85	90	94	91	80	73	65	58	45	43	43	42	43	59	86	87	89	89	91	92	91	42	94	75	24
4	93	94	95	95	95	95	92	75	69	65	58	50	44	40	34	32	44	41	43	41	59	82	90	93	32	95	67	24
5	93	93	94	94	94	94	95	83	75	63	56	55	48	43	41	37	37	37	44	59	76	85	88	87	37	95	70	24
6	90	91	93	94	94	95	95	93	80	74	80	77	83	79	79	66	60	66	70	75	85	88	88	86	60	95	83	24
7	85	86	89	91	92	94	94	91	82	71	59	49	42	38	47	46	47	47	52	71	87	90	89	38	94	70	24	
8	91	93	90	92	94	94	93	84	73	62	54	50	44	44	40	35	36	38	39	50	70	81	78	73	35	94	67	24
9	70	75	77	81	85	86	84	76	65	52	45	42	39	37	35	33	33	33	38	48	62	77	84	85	33	86	60	24
10	82	84	88	91	93	94	89	70	70	61	48	34	32	26	25	24	20	20	22	39	54	59	73	66	20	94	57	24
11	68	62	68	81	80	86	79	63	55	45	39	30	28	28	25	23	24	29	33	38	46	52	56	60	23	86	50	24
12	64	70	72	74	76	78	74	64	55	45	40	35	32	31	29	29	29	32	36	43	47	51	57	61	29	78	51	24
13	68	73	74	74	78	82	79	77	68	65	70	66	61	56	56	56	57	59	68	73	85	89	88	88	56	89	71	24
14	89	84	80	81	84	85	81	79	71	64	58	52	47	43	40	43	44	42	47	51	55	58	69	65	40	89	63	24
15	69	68	69	77	74	74	82	71	63	56	52	55	55	49	47	64	52	47	38	41	67	86	87	79	38	87	63	24
16	80	80	81	85	88	87	83	72	61	56	51	48	45	43	37	36	38	39	39	46	56	60	61	66	36	88	60	24
17	69	76	85	82	86	88	83	73	67	59	53	45	42	36	36	36	34	35	38	48	54	61	59	58	34	88	58	24
18	65	70	71	63	61	60	60	58	59	61	58	46	38	32	26	29	28	29	33	35	41	48	48	50	26	71	49	24
19	55	69	75	64	64	64	63	60	55	47	38	32	32	32	29	28	27	28	29	33	39	44	46	48	27	75	46	24
20	56	61	64	68	71	72	72	70	60	52	44	34	31	30	29	28	29	28	30	35	56	72	78	81	28	81	52	24
21	73	76	83	88	92	93	91	82	70	63	61	57	54	48	48	51	53	55	56	63	69	73	72	76	48	93	69	24
22	80	81	78	80	81	82	83	81	72	64	57	47	43	41	38	38	38	37	38	47	62	65	67	71	37	83	61	24
23	72	73	73	74	76	80	82	82	72	66	60	52	45	34	32	34	38	39	48	63	63	64	76	86	32	86	62	24
24	87	79	92	91	88	90	90	92	81	79	77	74	74	85	P	P	P	P	P	P	86	89	84	84	74	92	85	18
25	87	91	94	95	94	94	92	93	94	94	90	82	69	60	53	46	41	41	43	50	59	67	68	72	41	95	74	24
26	74	74	76	77	77	83	81	70	65	59	53	53	52	43	42	43	44	45	49	53	56	64	72	70	42	83	61	24
27	68	74	77	74	76	76	75	70	63	57	51	44	41	41	40	43	47	51	49	57	66	69	71	77	40	77	61	24
28	80	81	84	91	90	91	94	83	80	68	54	47	41	35	33	32	31	32	36	51	79	84	87	89	31	94	66	24
29	91	90	93	94	94	92	80	62	50	44	37	32	31	31	29	28	29	32	35	43	45	47	52	54	28	94	55	24
30	57	60	63	69	75	80	82	73	66	60	60	63	61	59	56	57	58	62	69	76	87	83	86	83	56	87	69	24
31	83	74	70	71	73	69	66	66	59	52	47	43	41	38	36	33	32	32	32	37	45	48	54	58	32	83	52	24
HOURLY MAX	93	94	95	95	95	95	95	95	95	94	90	86	83	85	79	66	60	86	87	89	89	91	92	93				
HOURLY AVG	78	79	81	83	84	85	84	76	69	62	57	51	47	44	40	40	40	42	44	51	63	71	74	75				

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

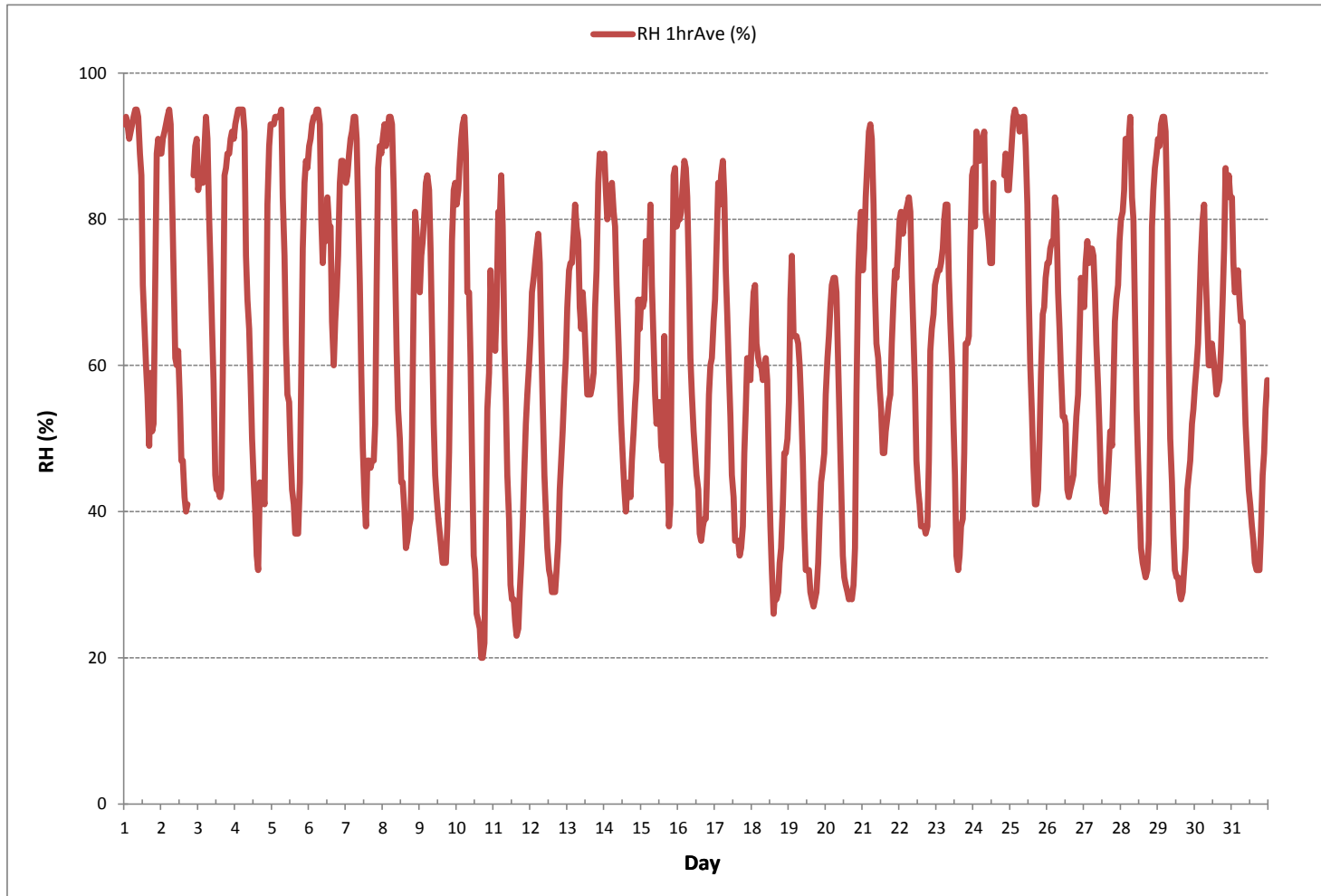
24 HR AVERAGES August 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	20	%	@ HOUR	16	ON DAY	10		
MAXIMUM 1-HR AVERAGE:	95	%	@ HOUR	7	ON DAY	1		
MAXIMUM 24-HR AVERAGE:	85	%			ON DAY	24		
OPERATIONAL TIME:						735	hrs	
AMD OPERATION UPTIME:						98.8	%	
STANDARD DEVIATION:	20					MONTHLY AVERAGE:	64	%

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR		
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.	RDGS.	
DAY																													
1	957	957	957	957	957	957	958	958	958	958	958	958	958	958	957	957	957	957	957	957	957	957	957	957	957	957	958	957	24
2	957	957	957	957	957	957	957	957	956	956	955	955	955	955	954	953	953	952	P	P	P	951	951	951	951	951	951	951	21
3	951	950	950	950	949	949	949	949	948	948	947	947	947	947	946	946	947	947	947	948	948	948	948	948	948	946	951	948	24
4	948	948	948	949	949	949	949	949	949	949	949	948	948	948	947	947	947	947	947	947	947	948	948	948	948	947	949	948	24
5	948	947	947	947	947	947	947	947	947	947	947	947	947	947	946	946	946	946	946	946	946	946	946	946	946	946	948	947	24
6	946	946	946	946	947	947	947	947	947	947	947	948	948	948	949	949	949	949	949	949	950	950	950	951	951	946	951	948	24
7	951	951	952	952	951	952	952	952	953	952	952	952	952	952	952	951	951	951	951	951	951	951	951	951	951	951	951	952	24
8	951	951	951	951	951	951	951	951	951	950	950	950	949	949	949	948	948	948	948	948	947	948	948	948	948	947	951	949	24
9	948	948	948	948	948	948	948	948	948	948	948	948	948	948	947	947	947	947	947	947	948	948	948	948	948	947	948	948	24
10	948	948	948	948	948	948	948	949	948	948	948	948	948	948	947	947	947	946	946	946	946	947	947	947	946	949	947	24	
11	947	947	947	947	947	947	947	946	946	946	946	945	945	944	944	943	943	943	943	942	942	942	942	942	942	942	947	945	24
12	942	941	941	941	940	940	940	939	939	939	938	938	938	937	937	936	936	936	936	935	935	935	935	935	935	935	942	938	24
13	934	933	933	932	932	932	932	932	932	932	932	932	933	933	933	934	934	935	935	935	935	935	935	935	936	932	936	933	24
14	936	935	935	935	935	935	935	936	936	936	936	935	935	935	935	936	936	936	936	936	936	936	936	936	936	935	936	936	24
15	936	937	937	937	937	936	937	937	937	937	937	937	937	937	937	938	937	937	937	937	937	938	938	938	938	936	938	937	24
16	938	938	938	938	938	938	938	938	938	938	937	937	937	937	937	937	937	937	937	937	937	938	938	938	939	937	939	938	24
17	939	939	939	940	940	940	941	941	941	941	941	941	940	940	940	939	939	939	939	939	939	939	939	939	939	939	941	940	24
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23	941	940	940	940	940	940	940	940	940	940	940	940	940	940	940	939	939	939	939	939	939	939	939	938	939	938	941	940	24
24	939	939	938	938	937	937	935	937	936	935	935	934	933	932	P	P	P	P	P	P	P	934	934	934	934	932	939	936	18
25	933	933	933	933	933	934	935	936	937	937	938	938	938	938	938	938	938	939	939	940	940	940	941	941	933	941	937	24	
26	942	942	942	943	943	943	943	944	944	944	944	944	943	943	943	942	942	942	942	942	942	943	943	944	942	944	943	24	
27	944	944	944	944	945	945	945	945	946	946	945	945	945	945	944	944	944	944	944	945	945	945	945	946	944	946	945	24	
28	946	946	946	947	947	947	947	948	948	948	948	948	947	947	947	947	947	947	947	947	948	948	948	948	946	948	947	24	
29	949	949	949	949	949	949	949	950	949	949	949	948	948	947	946	945	945	944	944	944	943	943	943	942	942	950	947	24	
30	941	940	939	939	939	938	938	937	937	937	936	936	936	936	936	936	936	936	936	936	936	936	936	937	936	941	937	24	
31	937	937	937	937	938	938	938	938	939	939	939	939	939	939	939	939	939	939	939	940	940	940	941	941	937	941	939	24	
HOURLY MAX	957	957	957	957	957	957	958	958	958	958	958	958	958	958	957	957	957	957	957	957	957	957	957	957	957				
HOURLY AVG	944	943	943	944	944	944	944	944	944	944	944	943	943	943	943	943	943	943	943	943	943	943	943	943	943				

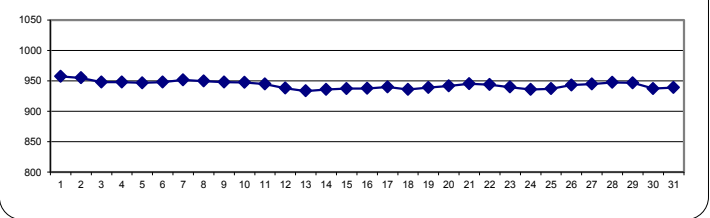
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
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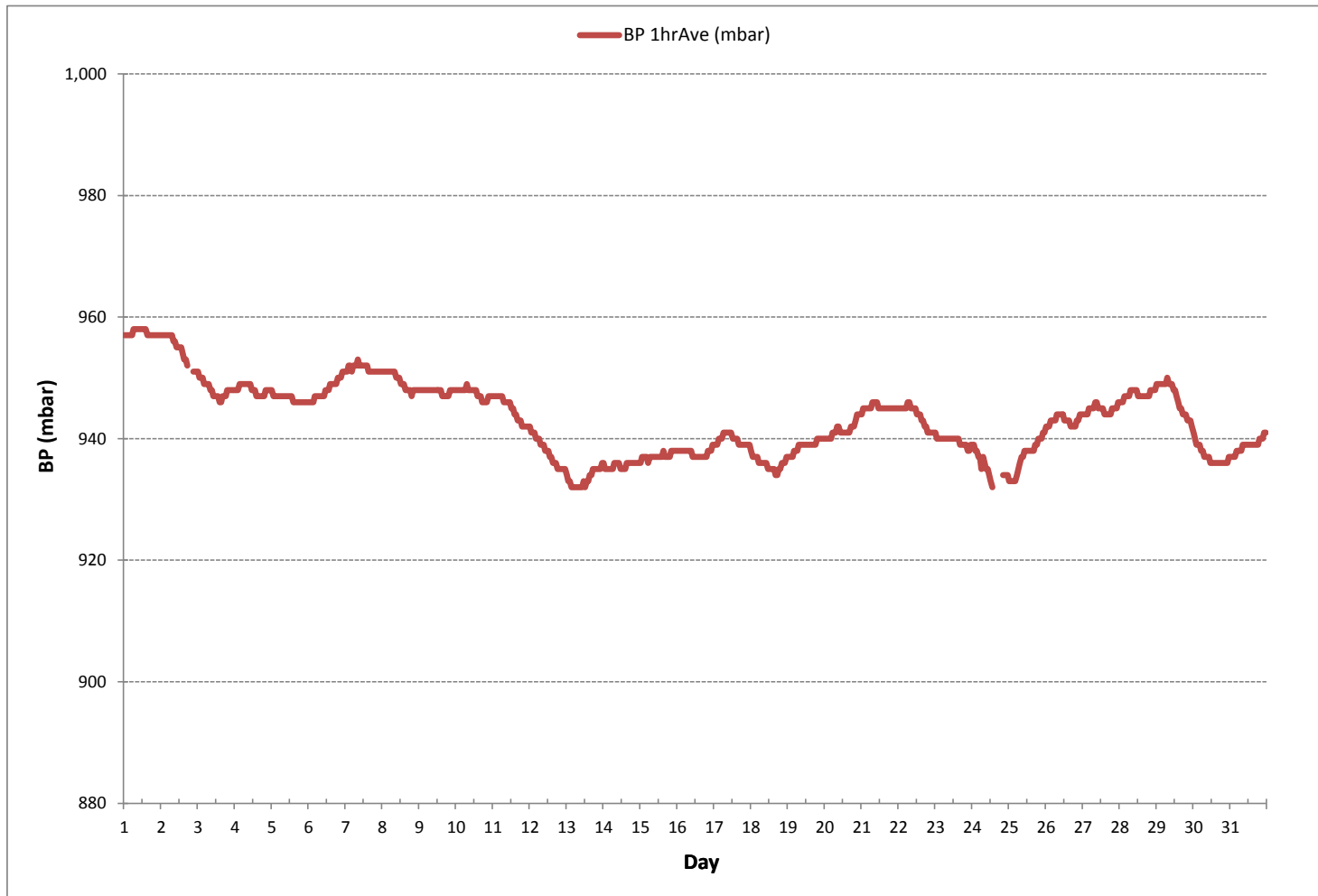
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	932	mbar	@ HOUR	3	ON DAY	13
MAXIMUM 1-HR AVERAGE:	958	mbar	@ HOUR	6	ON DAY	1
MAXIMUM 24-HR AVERAGE:	957	mbar			ON DAY	1
OPERATIONAL TIME:					735	hrs
AMD OPERATION UPTIME:					98.8	%
STANDARD DEVIATION:	6				MONTHLY AVERAGE:	943 mbar

24 HR AVERAGES August 2017

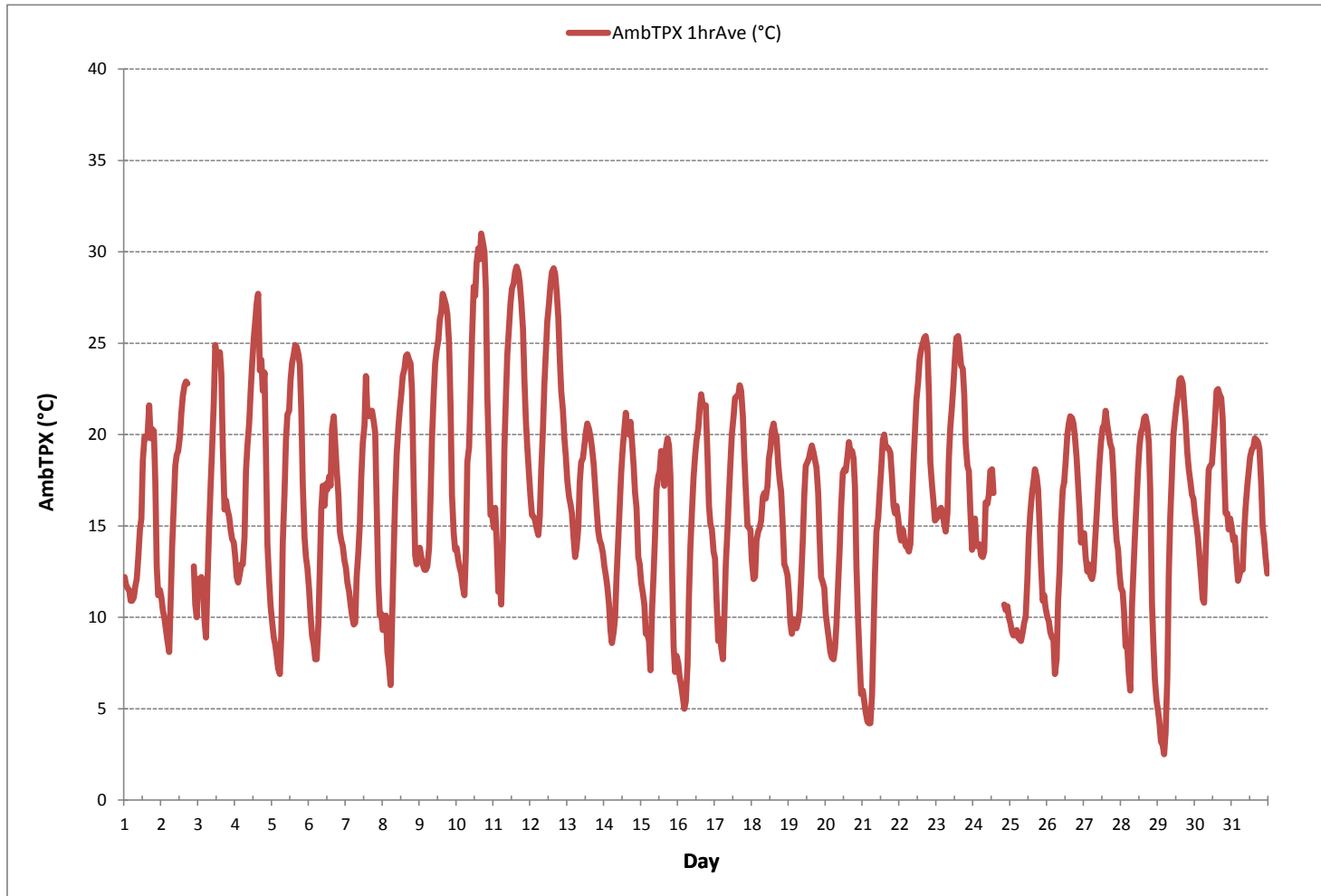


BAROMETRIC PRESSURE Hourly Averages (BP mbar)



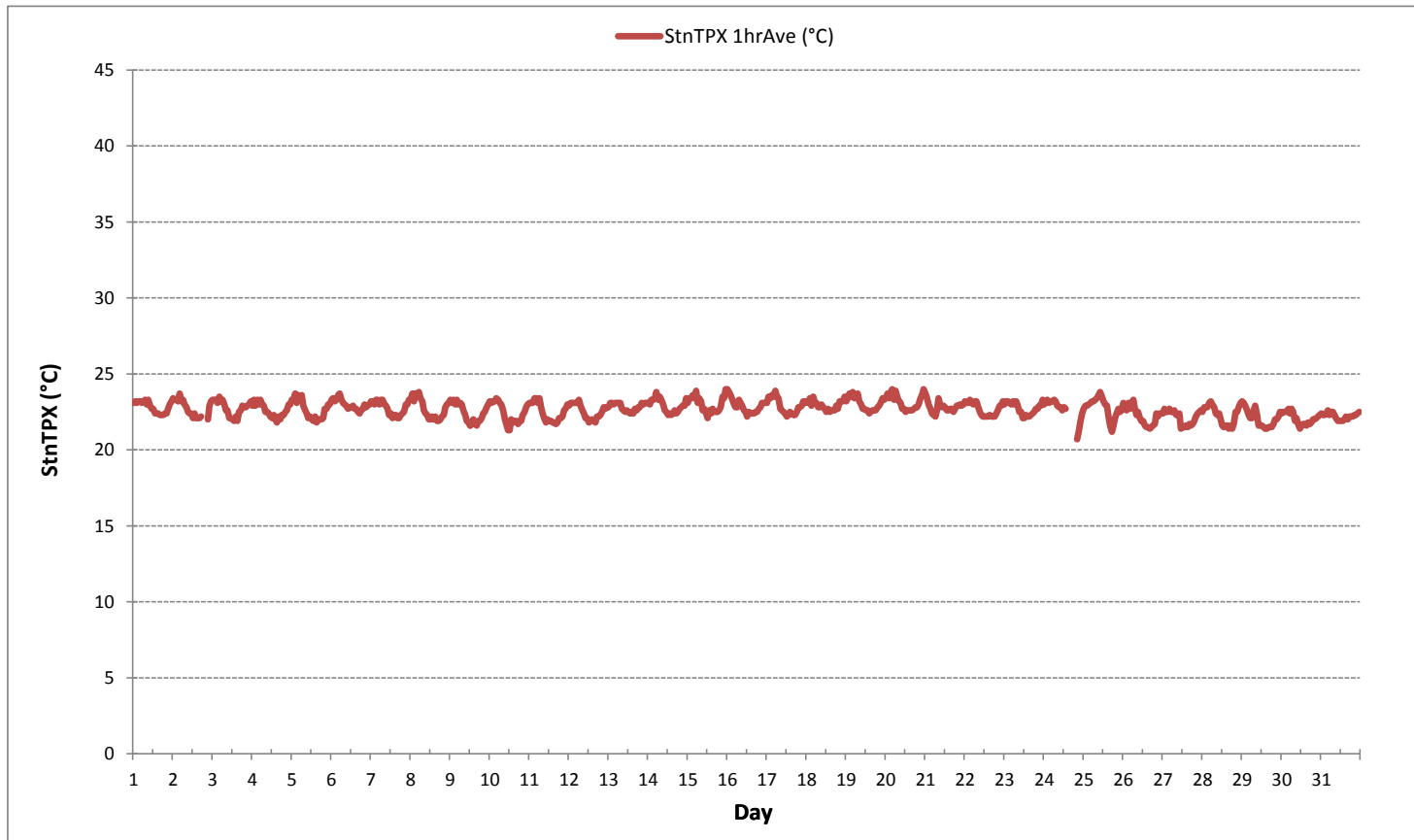
AMBIENT TEMPERATURE

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE

STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100ASulphur Dioxide Analyzer Calibration

Date: <u>August 10, 2017</u>	Barometer/B.P./units: <u>F.S. 05544 expires December 5, 2018</u> <u>27.96</u> <u>inHg</u>	
Company/Airshed: <u>PRAMP</u>	Thermometer/Station Temp: <u>F.S. 160348895 expires April 8, 2018</u> <u>21.73</u> <u>°C</u>	
Location/Station Name: <u>842B</u>	Weather Conditions: <u>Mainly sunny</u>	
Parameter: <u>Sulphur Dioxide</u>	Calibration Purpose: <u>routine monthly</u>	
Start Time 24 hr. (mst): <u>8:40</u>	Performed By/Reviewer: <u>Limin Li</u> <u>Tom Bourque</u>	
End Time 24 hr. (mst): <u>12:25</u>	Cal Gas Expiry Date: <u>December 8, 2019</u>	
Calibration Method: <u>Gas Dilution</u>	Converter Model & s/n (if applicable): <u>n/a</u>	

Analyzer:	ID# or Serial Number: <u>838</u>	Range ppb: <u>500</u>
	Last Calibration Date: <u>July 11, 2017</u>	As Found C.F.: <u>1.005</u>
	Previous C.F.: <u>0.999</u>	New C.F.: <u>1.000</u>

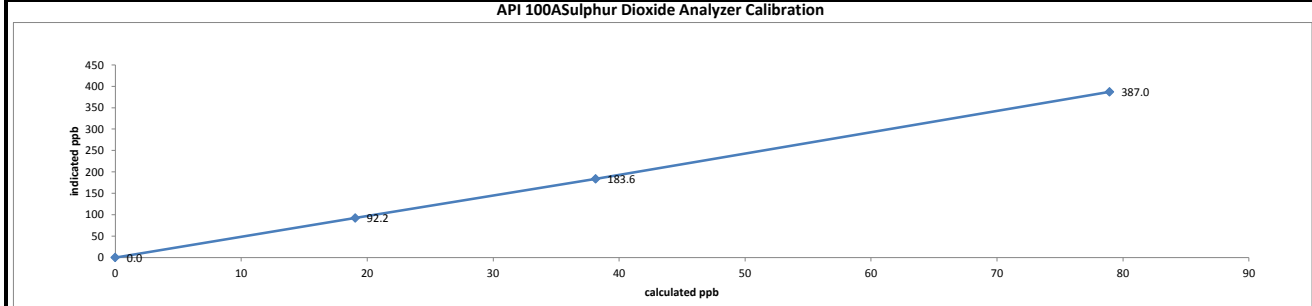
Calibration Standards:	Standard Calibration Points for Ranges								
Low Flow Meter ID/Expiry Date: <u>Defender Low 152019 expires November 21, 2017</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>380</td></tr> <tr><td>Mid</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: <u>Defender High 148944 expires November 21, 2017</u>									
Calibrator ID/Expiry Date: <u>Sabio id# 17200415 expires May 16, 2018</u>									
Cal Gas Cylinder I.D. #: <u>EY0000769</u>									
Cal Gas Conc. (ppm): <u>50.5</u>									

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	5908	0.00	5908	0.0	0.0	n/a
as found high	5845	45.14	5890	387.0	385.2	1.005
adjusted zero	5908	0.00	5908	0.0	0.0	n/a
adjusted high	5845	45.14	5890	387.0	387.0	1.000
mid	5925	21.45	5946	182.2	183.6	0.992
low	5938	10.90	5949	92.5	92.2	1.004
calibrator zero	5908	0.00	5908	0.0	0.5	n/a
Average C.F.=						0.999

Linear Regression/Calibration Results:

	LIMITS
Correlation Coefficient = <u>1.000</u>	> or = 0.995
Slope = <u>0.999</u>	0.95-1.05
b (Intercept as % of full scale) = <u>-0.04%</u>	± 3% F.S.
% change in C.F. from last cal = <u>-0.57%</u>	± 10%

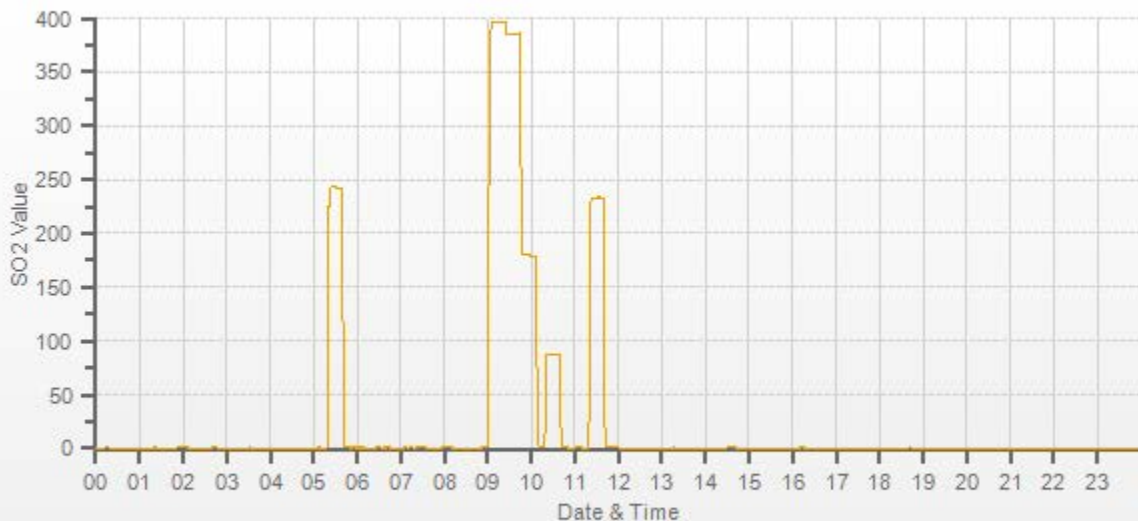


<p style="text-align: center;">As found:</p> Slope: <u>1.022</u> Offset: <u>19.6 MV</u> Hvps: <u>686 VOLTS</u> Dcps: <u>2545 MV</u> Rcell Temp: <u>51.2 °C</u> Box Temp: <u>31.3 °C</u> Pmt Temp: <u>7.0 °C</u> Izs Temp: <u>60.1 °C</u> Pres: <u>26.7 IN-HG-A</u> Samp Fl: <u>646 CC/M</u> Pmt: <u>51.6 MV</u> Uv Lamp: <u>2094 MV</u> Lamp Ratio: <u>84.3 %</u> Str Lgt: <u>10 PPB</u> Drk Pmt: <u>29.3 MV</u> Drk Lmp: <u>-7.1 MV</u> Expected Value: <u>233.0</u>	<p style="text-align: center;">As left:</p> Slope: <u>1.024</u> Offset: <u>19.6 MV</u> Hvps: <u>686 VOLTS</u> Dcps: <u>2536 MV</u> Rcell Temp: <u>49.8 °C</u> Box Temp: <u>31.2 °C</u> Pmt Temp: <u>7.2 °C</u> Izs Temp: <u>60.0 °C</u> Pres: <u>26.2 IN-HG-A</u> Samp Fl: <u>634 CC/M</u> Pmt: <u>51.6 MV</u> Uv Lamp: <u>2028 MV</u> Lamp Ratio: <u>81.6 %</u> Str Lgt: <u>10 PPB</u> Drk Pmt: <u>29.2 MV</u> Drk Lmp: <u>-7.1 MV</u> Expected Value: <u>233.0</u>
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Comments:
The analyzer sample inlet filter was changed. The manifold blower was found to be working normally.

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

Flow measurements after mid-point.



— SO2[ppb]

TOTAL REDUCED SULPHUR



Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

Date: August 10, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	27.96	inHg
Company/Airshed: PRAMP	Thermometer/Station Temp: F.S. 160348895 expires April 8, 2018	21.73	°C
Location/Station Name: 842B	Weather Conditions: Mainly sunny		
Parameter: Total Reduced Sulphur	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 8:40	Performed By/Reviewer: Limin Li	Tom Bourque	
End Time 24 hr. (mst): 12:50	Cal Gas Expiry Date: January 6, 2018		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CD Nova-101 & #534		

Analyzer ID# or Serial Number: 1162460023	Range ppb: 100
Last Calibration Date: July 11, 2017	As Found C.F.: 1.043
Previous C.F.: 1.000	New C.F.: 1.001

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires November 21, 2017 High Flow Meter ID/Expiry Date: Defender High 148944 expires November 21, 2017 Calibrator ID/Expiry Date: EnviroNics id# 1991 expires March 16, 2018 Cal Gas Cylinder I.D. #: BLM002508 Cal Gas Conc. (ppm): 10.2	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>78</td></tr> <tr><td>Mid</td><td>38</td></tr> <tr><td>Low</td><td>19</td></tr> </table>	Point	ppb	High	78	Mid	38	Low	19	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 09:05-09:15 SO2 Analyzer Range: 500 Target Concentration (ppb): 380 As Found Zero: 0.0 Analyzer Response (ppb): 0.0 Zero Corrected Result (ppb): 0.0
Point	ppb									
High	78									
Mid	38									
Low	19									

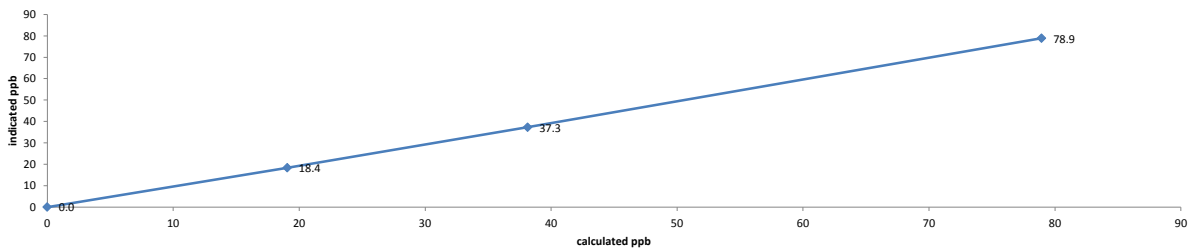
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	7493	0.00	7493	0.0	0.0	n/a
as found high	7431	57.96	7489	78.9	75.7	1.043
adjusted zero	7493	0.00	7493	0.0	0.0	n/a
adjusted high	7431	57.96	7489	78.9	78.9	1.001
mid	7472	28.05	7500	38.1	37.3	1.023
low	7495	14.03	7509	19.1	18.4	1.036
calibrator zero	7493	0.00	7493	0.0	0.1	n/a
Average C.F. =						1.020

Linear Regression/Calibration Results:

LIMITS
Correlation Coefficient = 1.000 > or = 0.995
Slope = 0.999 0.95-1.05
b (Intercept as % of full scale) = 0.44% ± 3% F.S.
% change in C.F. from last cal = -4.28% ± 10%

Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration



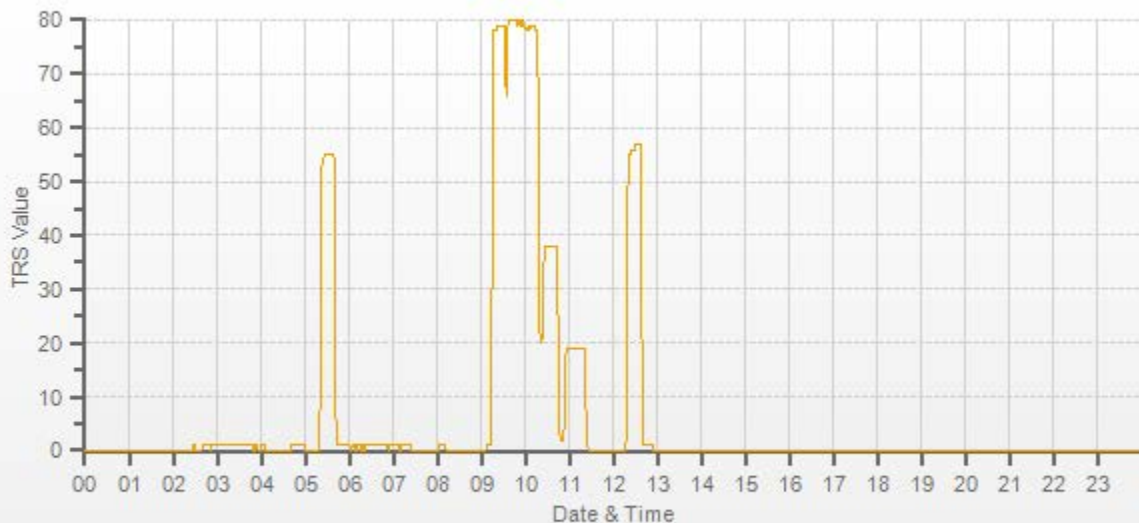
As found: Bkg: 2.42 Coef: 0.841 Pmt: -725.6 V Flash: 978 V Internal: 31.5 °C Chamber: 45 °C Perm Oven Gas: 45.00 °C Perm Oven Heater: 44.11 °C Pressure: 666.3 mmHg Sample Flow: 0.408 L/MIN Lamp Intensity: 89 % Converter: 850 °C Converter Set: 850 °C Averaging Time: 120 Second Expected Value: 57.1	As left: Bkg: 2.50 Coef: 0.872 Pmt: -725.6 V Flash: 978 V Internal: 30.3 °C Chamber: 44.8 °C Perm Oven Gas: 45.00 °C Perm Oven Heater: 44.11 °C Pressure: 666.3 mmHg Sample Flow: 0.408 L/MIN Lamp Intensity: 89 % Converter: 850 °C Converter Set: 850 °C Averaging Time: 120 Second Expected Value: 59.0
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Comments:

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

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

When doing as found high point, stop and change regulator wafer, repeat as found high point.
Flow measurements after mid-point.



— TRS[ppb]

TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	August 30, 2017	Barometer/B.P./units:	Brunton 05535 expires December 5, 2017	935.7	millibars
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160459244 expires May 18, 2018	23	°C
Location/Station Name:	842b	Weather Conditions:	Mainly sunny		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	09:10 / 12:11	Performed By/Reviewer:	Chris Wesson	Tom Bourque	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023		

Analyzer:	ID# or Serial Number:	Measured Flow:	Last Calibration Date:	Range ppm:	Correction Factors:		
					Previous C.F.:	As Found C.F.:	New C.F.:
	1236656188	1.13 L/min	July 11, 2017	20 CH4/20 NMHC/40 THC	CH ₄ = 1.001	1.027	0.999
					NMHC = 1.000	1.010	1.000
					THC = 1.000	1.019	1.000

Low Flow Meter ID/Expiry Date:	Defender Low 153358 expires January 19, 2018	Standard Calibration Points for Analyzer Range of 20/20/40 ppm <table border="1"> <thead> <tr> <th>Point</th> <th>CH4</th> <th>NMHC</th> <th>THC</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>13.00</td> <td>13.00</td> <td>26.00</td> </tr> <tr> <td>Mid</td> <td>7.00</td> <td>7.00</td> <td>14.00</td> </tr> <tr> <td>Low</td> <td>3.00</td> <td>3.00</td> <td>6.00</td> </tr> </tbody> </table>	Point	CH4	NMHC	THC	High	13.00	13.00	26.00	Mid	7.00	7.00	14.00	Low	3.00	3.00	6.00
Point	CH4		NMHC	THC														
High	13.00		13.00	26.00														
Mid	7.00		7.00	14.00														
Low	3.00		3.00	6.00														
High Flow Meter ID/Expiry Date:	Defender High 152571 expires January 19, 2018																	
Calibrator ID/Expiry Date:	Sabio id# 17100415 expires May 16, 2018																	
Cal Gas Cylinder I.D. #:	LL86139																	
CH4 Cylinder Conc. =	599.0 211.0 =C ₂ H ₆ Cylinder Conc.																	
CH ₂ expressed as C ₂ H ₆ =	580.3 1179.3 =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	2499	0.00	2499	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2435	61.05	2496	14.65	14.19	28.84	14.26	14.05	28.31	1.027	1.010	1.019
adjusted zero	2499	0.00	2499	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2435	61.05	2496	14.65	14.19	28.84	14.66	14.19	28.85	0.999	1.000	1.000
mid	2481	30.71	2512	7.32	7.09	14.42	7.38	7.11	14.49	0.992	0.998	0.995
low	2495	15.89	2511	3.79	3.67	7.46	3.81	3.68	7.49	0.995	0.998	0.996
calibrator zero	2499	0.00	2499	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
										Average C.F. =		
										0.996	0.999	0.997

Linear Regression/Calibration Results:

	CH ₄	NMHC	THC	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.001	1.000	1.000	0.95-1.05
b (Intercept as % of full scale) =	0.09%	0.04%	0.06%	± 3% F.S.
% change in C.F. from last cal =	-2.64%	-1.01%	-1.88%	± 10%

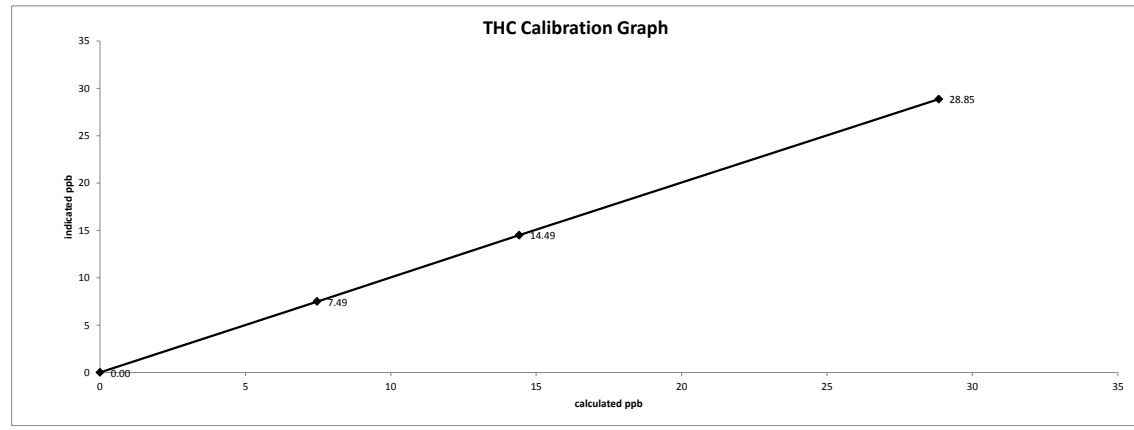
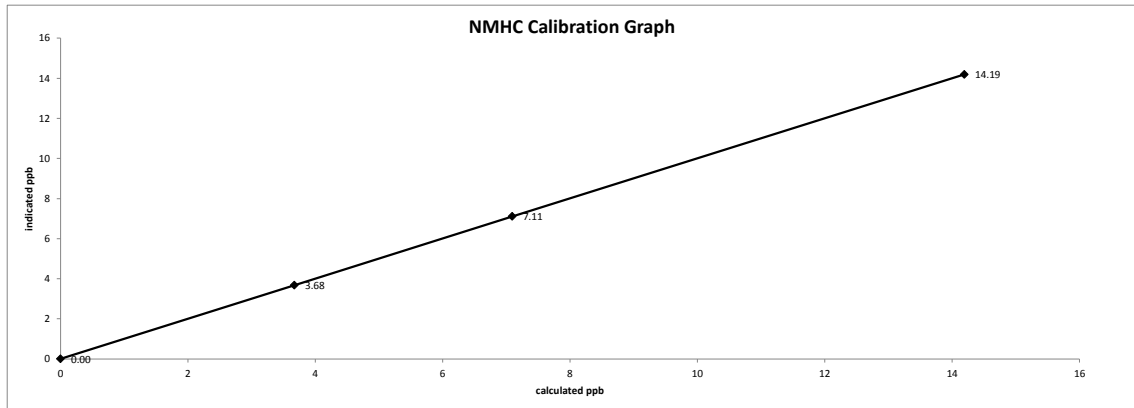
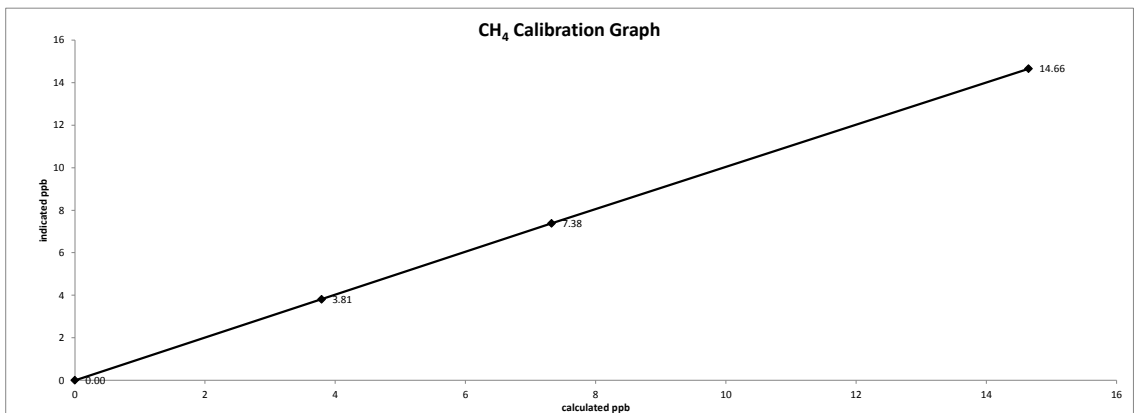
As Left Instrument Diagnostics:

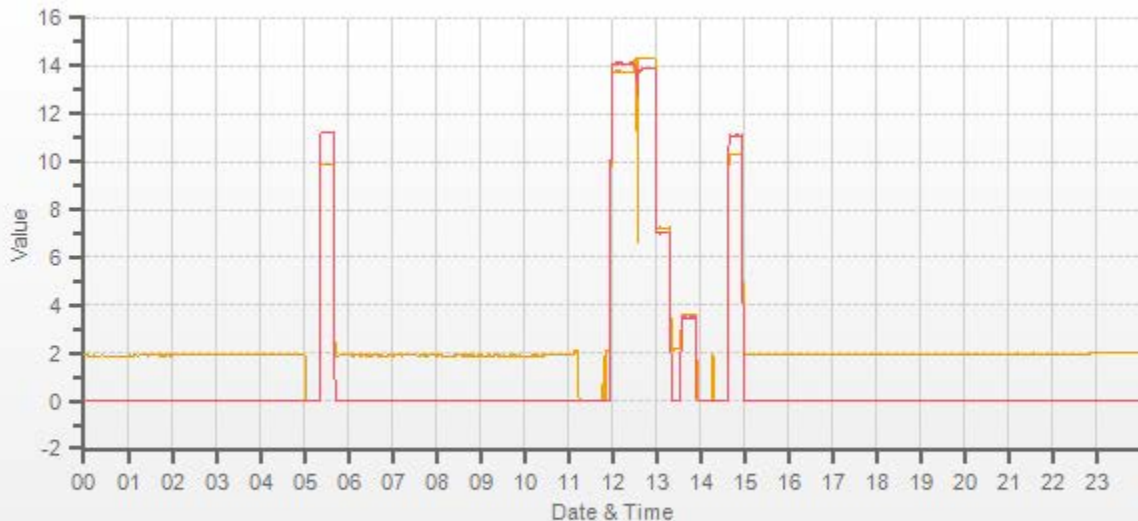
Interface Board Voltages:	Bias Supply:	-288.1	Calibration History cnt'd:	NM Peak Area:	n/a
Temperatures:	Detector Oven:	175.0	Crucial Settings:	Methane Start:	n/a
	Filter:	174.9		Methane End:	n/a
	Column Oven:	75.0		Backflush:	n/a
	Internal:	33.0		NMNV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	1200 50	Run History>1:	NMHC End:	n/a
	Fuel:	1400 50	Date:		30 Aug 2017
	Span Gas:	600 18	Time:		08:48
	Zero Air Generator:	48	CH ₄ PK HT:		0
Internal Pressures:	Carrier:	30.5	CH ₄ RT:		8.0
	Fuel:	40.0	CH ₄ Baseline:		1252
	Air:	24.8	CH ₄ LOD:		30
FID Status:	Status:	LIT	CH ₄ SD:		10
	Counts:	16463	CH ₄ CONC:		0.00
	Flame:	343.4	NM PK HT:		0
	Det Base:	175.1	NM Peak Area:		0
Flame and Power Stats:	Last Power On:	24Aug2017@19:44	NM CONC:		0.00
	Flameouts:	1	NM Base Start:		1231
	Det Oven at Start:	30.2	NM Base End:		1242
	Col Oven at Start:	28.	NM LOD:		13
Calibration History:	Time:	01Jan1970@00:00	NM Start IDX:		16
	Type:	n/a	NM End IDX:		63
	Status:	n/a	NM Max Slope:		3.9e-01
	Check/Adjust:	n/a	NM Min Slope:		-3.4e-01
	CH ₄ Span Conc:	n/a	NM PT Count:		0
	CH ₄ SP Ratio:	n/a	Expected Values:	Previous CH ₄ :	9.76
	CH ₄ RT:	n/a		Previous NMHC:	10.98
	CH ₄ PK IDX:	n/a		Previous THC:	20.77
	CH ₄ PK HT:	n/a		New CH ₄ :	10.32
	NM Span Conc:	n/a		New NMHC:	11.10
	NM SP Ratio:	n/a		New THC:	21.44

Comments:
 The analyzer sample inlet filter was changed.
 No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

Date: August 30, 2017
Company/Airshed: PRAMP
Location/Station Name: 842b

Start/End Time 24 hr. (mst): 09:10 / 12:11
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution





CH4[ppm] NMHC[ppm]

WIND SYSTEM

Meteorological Sensor Audit/Calibration

Location Information

Company:	PRAMP	Performed By:	Chris Wesson
Audit Location:	842b	Reviewed By:	Trina Whitsitt
Audit Date:	July 11, 2017	Start /EndTime (mst):	11:10 / 12:01
Calibration Purpose:	installation	Weather Conditions:	Light rain/scattered showers

Wind Sensor Information

Sensor ID Data:	Sensor Outputs:
Sensor Make: RM Young	Velocity Voltage Output Range: 0-1V
Sensor Model: 05305VK	Velocity Unit Output Range: 0-200kmh
Serial #: 65521	Direction Voltage Output Range: 0-1V
Previous Cal/Audit Date: June 27, 2017	Direction Unit Output Range: 0-360°

Wind Calibrator Information

Calibrator Make/ Model:	RM Young	Serial #:	CA 4039
Maxxam Unit ID #:	n/a	Certification Date:	February 24, 2017

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

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.4	18.4	1.003
2000	36.9	36.8	36.8	1.002
3000	55.3	55.2	55.2	1.002
4000	73.7	73.6	73.6	1.002
5000	92.2	92.0	92.0	1.002
6000	110.6	110.4	110.4	1.002
7000	129.0	128.3	128.7	1.004
8000	147.4	147.1	147.1	1.002
9000	165.9	165.5	165.5	1.002
10000	184.3	183.9	183.9	1.002
The audit meets AMD requirements.			Average Correction Factor=	1.002

Wind Direction Audit Data ****+/- 5° of the absolute average degrees difference for all points is the limit****

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	355	0.3	0.0	0.2
30	330	31	330	-0.5	0.0	0.3
60	300	60	300	0.2	-0.1	0.2
90	270	89	270	0.6	0.2	0.4
120	240	120	240	0.5	0.0	0.3
150	210	151	210	-0.7	0.5	0.6
180	180	180	179	-0.4	0.7	0.5
210	150	210	150	0.1	0.0	0.0
240	120	241	120	-0.5	0.4	0.5
270	90	270	90	-0.3	0.2	0.2
300	60	300	60	0.2	-0.1	0.1
330	30	330	30	-0.2	-0.1	0.2
355	0	354	0	1.0	0.3	0.7
The audit meets AMD requirements.				Average Absolute Degrees Difference=		0.3

Comments:

Meteorological Sensor Audit/Calibration

Location Information

Company: <u>Maxxam</u>	Performed By: <u>Raja Ashraf</u>
Audit Location: <u>Maxxam Shop</u>	Reviewed By: <u>Trina Whitsitt</u>
Audit Date: <u>June 2, 2017</u>	Start /EndTime (mst): <u>17:07-17:37</u>

Wind Sensor Information

Sensor ID Data:	Sensor Outputs:
Sensor Make: <u>RM Young</u>	Velocity Voltage Output Range: <u>0-1 V</u>
Sensor Model: <u>05103VK</u>	Velocity Unit Output Range: <u>0-200 km/hr</u>
Serial #: <u>75379</u>	Direction Voltage Output Range: <u>0-1 V</u>
Previous Cal/Audit Date: <u>April 29, 2016</u>	Direction Unit Output Range: <u>0-360 degrees</u>

Wind Calibrator Information

Calibrator Make/ Model: <u>RM Young</u>	Serial #: <u>CA 03309</u>
Maxxam Unit ID #: <u>n/a</u>	Certification Date: <u>October 6, 2016</u>

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

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.0	0.0	-
1000	17.6	17.8	17.7	0.992
2000	35.3	35.5	35.5	0.994
3000	52.9	53.2	53.2	0.995
4000	70.6	71.0	71.0	0.994
5000	88.2	88.7	88.7	0.994
6000	105.8	106.4	106.4	0.995
7000	123.5	124.1	124.1	0.995
8000	141.1	141.7	141.8	0.996
9000	158.8	159.3	159.4	0.996
10000	176.4	177.2	177.2	0.995
The audit meets AMD requirements.			Average Correction Factor=	0.995

Wind Direction Audit Data ****+/- 5° of the absolute average degrees difference for all points is the limit****

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	354	0.0	1.0	0.5
30	330	27	328	3.0	1.9	2.4
60	300	58	298	2.0	1.8	1.9
90	270	89	268	0.8	1.7	1.2
120	240	119	238	1.0	2.0	1.5
150	210	150	208	0.3	2.2	1.3
180	180	179	179	1.0	1.2	1.1
210	150	209	149	1.1	1.2	1.1
240	120	238	120	1.9	0.0	1.0
270	90	269	90	0.8	-0.3	0.6
300	60	298	60	2.0	0.4	1.2
330	30	327	30	2.6	-0.1	1.3
355	0	354	0	0.9	0.0	0.4
The audit meets AMD requirements.				Average Absolute Degrees Difference=		1.2

Meteorological Sensor Audit/Calibration

Location Information

Company: PRAMP	Performed By: Chris Wesson
Audit Location: 842b	Reviewed By: Tom Bourque
Audit Date: August 30, 2017	Start /EndTime (mst): 10:50 / 11:20
Calibration Purpose: installation	Weather Conditions: Cloudy/Overcast

Wind Sensor Information

Sensor ID Data:	Sensor Outputs:
Sensor Make: RM Young	Velocity Voltage Output Range: 0-1V
Sensor Model: 05305VK	Velocity Unit Output Range: 0-200kmh
Serial #: 124638	Direction Voltage Output Range: 0-1V
Previous Cal/Audit Date: n/a or unknown	Direction Unit Output Range: 0-360°

Wind Calibrator Information

Calibrator Make/ Model: RM Young	Serial #: CA 4039
Maxxam Unit ID #: n/a	Certification Date: February 24, 2017

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

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.4	18.5	1.000
2000	36.9	36.7	36.7	1.004
3000	55.3	55.1	55.1	1.004
4000	73.7	73.4	73.4	1.004
5000	92.2	91.8	91.8	1.004
6000	110.6	110.2	110.2	1.003
7000	129.0	128.6	128.6	1.003
8000	147.4	147.1	147.0	1.003
9000	165.9	165.5	165.5	1.002
10000	184.3	184.2	184.1	1.001
The audit meets AMD requirements.			Average Correction Factor=	1.003

Wind Direction Audit Data ****+/- 5° of the absolute average degrees difference for all points is the limit****

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	1	353	0.5	2.0	1.3
30	330	28	329	2.0	1.0	1.5
60	300	59	299	1.0	1.0	1.0
90	270	89	269	1.0	1.0	1.0
120	240	118	239	2.0	1.0	1.5
150	210	149	209	1.0	1.0	1.0
180	180	178	179	2.0	1.0	1.5
210	150	208	150	2.0	0.0	1.0
240	120	238	119	2.0	1.0	1.5
270	90	268	89	2.0	1.0	1.5
300	60	298	59	2.0	1.0	1.5
330	30	328	29	2.0	1.5	1.8
355	0	353	0	2.0	0.4	1.2
The audit meets AMD requirements.				Average Absolute Degrees Difference=		1.3

Comments:

CALIBRATORS

Company <u>Maxxam</u>		Operator: <u>Micheal Espiritu</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>Mesa Defender 530</u>
Serial Number	<u>17200415</u>	Serial Number	<u>L-152019 H-148944</u>
Last Verification Date	<u>May 2016</u>	Temperature (°C)	<u>25.0 C</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>697 mmhg</u>
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>
Expiry Date	<u>December 2019</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
5028	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4930	78.7	0.783	0.783	0.809	-0.012	0.797	3%	2%
4936	38.6	0.383	0.383	0.396	-0.006	0.390	3%	2%
4935	19.4	0.193	0.193	0.199	-0.003	0.196	3%	2%
Absolute Average Percent Difference							3%	2%

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

NO	LIMITS	NOx
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0334	0.90-1.10	m (Slope)= 1.0181
b (Intercept % of FS)= -0.0105	± 3% F.S.	b (Intercept % of FS)= -0.0148

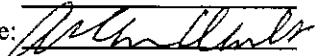
Flow	O ₂ Conc (LC)	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4930	0.000	0.000	0.806	-0.013	0.795	NO ₂	% Diff. Limit
4930	1.425	0.523	0.283	0.511	0.794	0%	± 10%
4930	0.825	0.278	0.528	0.266	0.795	0%	± 10%
4930	0.386	0.095	0.711	0.085	0.796	3%	± 10%
Absolute Average Percent Difference						1%	± 10%

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

NO ₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 0.9998	0.90-1.10
b (Intercept % of FS)= -1.1702	± 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>CAL018101</u>	Last Calibration Date <u>May 16, 2017</u>
Cylinder Conc. (ppm) <u>48.79</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>March 2019</u>

COMMENTS: Contains 50.4 ppm SO₂.

Auditor: Al Clark
Operator Signature: 

Date: May 16, 2017
Location: McIntyre Center Edmonton

Company Maxxam **Operator:** Mike

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Enviroics 2000</u>	Make/Model	<u>Bios Defender 530</u>
Serial Number	<u>1991</u>	Serial Number	<u>HI148944 Lo 152019</u>
Last Verification Date	<u>March 31, 2016</u>	Temperature (°C)	<u>24.5</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>699</u>
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)		
Pt. #1	<u>4902</u>	Pt. #3 <u>4957</u>
Pt. #2	<u>4935</u>	
Gas Flow (sccm)		
Pt. #1	<u>79.3</u>	Pt. #3 <u>19.4</u>
Pt. #2	<u>38.7</u>	

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4976	0.0	0.0000	0.0000	0.0001	0.0000	0.0001	Limit ± 10%	
4981	79.3	0.7801	0.7801	0.7898	0.0000	0.7898	1%	1%
4972	38.7	0.3814	0.3814	0.3841	0.0002	0.3843	1%	1%
4976	19.4	0.1910	0.1910	0.1913	0.0003	0.1916	0%	0%
Absolute Average Percent Difference							1%	1%

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

NO	LIMITS	NOx
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0130	0.90-1.10	m (Slope)= 1.0129
b (Intercept % of FS)= -0.1190	± 3% F.S.	b (Intercept % of FS)= -0.1029

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4981	0.000	0.0000	0.7925	-0.0001	0.7924	NO ₂	% Diff. Limit
4981	0.400	0.5347	0.2578	0.5279	0.7857	-1%	± 10%
4981	0.200	0.2490	0.5435	0.2478	0.7913	0%	± 10%
4981	0.090	0.1090	0.6835	0.1095	0.7927	1%	± 10%
Absolute Average Percent Difference						0%	± 10%

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

NO₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 0.9864	0.90-1.10
b (Intercept % of FS)= 0.1136	± 3% F.S.

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

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton Date: March 16, 2017

Operator Signature: [Signature] Location: McIntyre Center Edmonton

Company <u>Maxxam</u>		Operator: <u>Micheal Espiritu</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sablo 2010</u>	Make/Model	<u>Mesa Defender 530</u>
Serial Number	<u>17100415</u>	Serial Number	<u>L-152019 H-148944</u>
Last Verification Date	<u>May 2016</u>	Temperature (°C)	<u>25.0 C</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>697 mmhg</u>
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>
Expiry Date	<u>December 2019</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
4996	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5029	80.3	0.784	0.783	0.808	-0.013	0.794	3%	1%
5054	38.8	0.376	0.376	0.392	-0.006	0.386	4%	3%
5051	19.5	0.189	0.189	0.196	-0.003	0.193	4%	2%
Absolute Average Percent Difference							4%	2%

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

<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0311	0.90-1.10		m (Slope)=	1.0140
b (Intercept % of FS)=	0.1350	± 3% F.S.		b (Intercept % of FS)=	0.1531

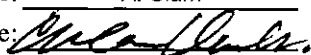
Flow	O ₂ Conc (LC)	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5029	0.000	0.000	0.803	-0.013	0.790	NO ₂	% Diff. Limit
5029	1.508	0.568	0.235	0.552	0.787	-1%	± 10%
5029	0.882	0.312	0.491	0.298	0.789	0%	± 10%
5029	0.390	0.108	0.695	0.095	0.789	0%	± 10%
Absolute Average Percent Difference						0%	± 10%

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

<u>NO₂</u>		<u>LIMITS</u>	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9945	0.90-1.10	
b (Intercept % of FS)=	-1.2646	± 3% F.S.	

AENV Standards		NO_x Analyzer	
Audit Calibrator		Make/Model	<u>Teco 42i</u>
Make/Model	<u>Teco 146i</u>	Serial/AMU Number	<u>AMU 1868</u>
Serial/AMU Number	<u>AMU 1809</u>	Last Calibration Date	<u>May 16, 2017</u>
SRM Gas Cylinder No.	<u>CAL018101</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>48.79</u>	Cylinder Gas Expiry Date	<u>March 2019</u>

COMMENTS: Contains 50.4 ppm SO₂.

Auditor: Al Clark
Operator Signature: 

Date: May 16, 2017
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit Single Component Cylinder Gas

File No. 2016-436CGA

Company: <u>Maxxam</u>	Operator's Name: <u>Chris</u>
Cylinder #: <u>EY0000769</u>	Concentration PPM: <u>50.5</u>
	Tolerance(%) <u>1.6</u>
Expiry Date: <u>December 8, 2019</u>	Certified By: <u>Praxair</u>

Reference Calibrator and Gas:

Make/Model: Thermo 146i

Serial Number: AMU 1809

Last Verification Date: January 26, 2017

Gas Type: SO2 Conc. 98.07

Cylinder Number: CAL016625

Expiry Date: January 5, 2019

Flow Measurement Device:

Make/Model: Bios Befiner 220

Serial Number: AMU1941

Temp. °C: 24.4

B.P. 704.7

Reference Analyzer:

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

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

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

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

Previous Stated Concentration PPM: 50.5

Percent variance from Stated: 0.2

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration _____

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

Auditor: Shea Beaton

Operator Signature: _____

Date: January 26, 2017

Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-338CGA

Company: Maxxam **Operator's Name:** Limin Li
Cylinder #: BLM002508 **Concentration PPM:** 10.2 **Tolerance(%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
 Serial Number: AMU1690
 Last Verification Date: March 31, 2015
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015106

Flow Measurement Device:

Make/Model: Bios DC2
 Serial Number: AMU 1659
 Temp. °C: 23.0 C
 B.P. 689 mmhg

Reference Analyzer:

Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 14.5 Span: 1.035 Range: 0.1
 Last Calibration: Date: Mar 31/15 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	132.984	9.6
5080	38.2	0.0725	0.00752	132.984	9.6
5078	17.9	0.0340	0.00353	283.687	9.6
5066	9.1	0.0170	0.00180	556.703	9.5
Average Cylinder Concentration:					9.6

Previous Stated Concentration PPM: 10.2

Percent variance from Stated: 6.0

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: March 31, 2015
 Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-091CGA

Company: Maxxam Operators name: Chris Wesson
Cylinder #: LL86139 Conc CH4 (PPM) 599/211 Tolerance (%) 0.5 Certified By: Praxair

Reference Calibrator and Gas:

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

Flow Measurement Device:

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

Reference Analyzer:

Make/Model Thermo 55C Serial/AMU Number: 1643
Instrument Settings Zero: NA Span: NA Range: 20.0
Last Calibration: Date: 18-Jan-16 C.F. 1,000 Done By: SB

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

	<u>CH4</u>	<u>C3H8</u>
Previous Stated Concentration PPM:	<u>599</u>	<u>211</u>
Percent variance from Stated:	<u>0.2</u>	<u>1.9</u>

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration C3H8 manufacturers tolerance 1.1%
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: January 19, 2016
Operator Signature: _____ Location: McIntyre Center Edmonton

***APPENDIX III
REPORT CERTIFICATION FORM***

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Peace River Area Monitoring Program Committee	Three Creeks 842b Station
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
NA	NA
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
NA	NA

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



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

September 20, 2017





Report Issued Date (dd-mm-yyyy)

***APPENDIX IV
DATA VALIDATION CERTIFICATION FORM***



Validation Certificate Form

Client: <u>Peace River Area Monitoring Program Committee</u>	Project #: <u>8449-2017-08-80-C</u>
Site: <u>Three Creeks 842b Station</u>	Contact: <u>Karla Reesor</u>

Level 0 Preliminary Verification	<u></u>	Date <u>September 16, 2017</u>
Level 1 Primary Validation	<u></u>	Date <u>September 16, 2017</u>
Level 2 Final Validation	<u></u>	Date <u>September 20, 2017</u>
Level 3 Independent Data Review	<u></u>	Date <u>September 20, 2017</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

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