

**AMBIENT AIR MONITORING MONTHLY DATA REPORT
PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
RENO STATION**

JOB #: 196-2016-10-93-C

October 2016

Prepared for:

**PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
402 19 ST NW
CALGARY, ALBERTA
T2N 2J1**

Attention: MIKE BISAGA

DATE: January 31, 2017

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

Prepared by:



Wunmi Adekanmbi, M.Sc., EPT
Project Manager, Customer Service, Air Services

Reviewed by:



Cheri Sinclair, B.Sc.
Supervisor, Customer Service, Air Services

SUMMARY

In October 2016, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Reno Station, near Peace River Oil Sands Area 1, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for non-compliance parameters, as requested by the PRAMP Committee.

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

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

THC/CH₄/NMHC: One hour of downtime was recorded on October 13, at hour 13:00, as the analyzer was in recovery mode following a brief power outage.

Wind System: Twenty-two hours of data, collected between October 25 and October 26, were invalidated due to an ice build-up that affected the functionality of the wind system.

Barometric Pressure: Two hours of downtime were recorded on October 13 due to anomalous data that was considered suspect.

Ambient Temperature: Two hours of downtime were recorded on October 13 due to an interference with the sensor while the wind system was being calibrated.

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, Reno Station.

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

Monthly Continuous Data Summary

Peace River Area Monitoring Program Committee Reno Station						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	1-HOUR			24-HOUR		
	1-hr	24-hr	1-hr	24-hr				HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
SO ₂ (ppb)	172	48	0	0	0.0	1.1	24	13	7.2	SE	0.1	VAR	100.0
TRS (ppb)	-	-	-	-	0.2	0.7	2, 3	VAR	VAR	VAR	0.3	VAR	100.0
THC (ppm)	-	-	-	-	1.98	2.67	2	22	3.1	S	2.09	3	99.9
CH ₄ (ppm)	-	-	-	-	1.98	2.67	2	22	3.1	S	2.09	3	99.9
NMHC (ppm)	-	-	-	-	0.00	0.00	ALL	ALL	VAR	VAR	0.00	ALL	99.9
RELATIVE HUMIDITY (%)	-	-	-	-	85	96	VAR	VAR	VAR	VAR	95	23, 30	100.0
BAROMETRIC PRESSURE (inHg)	-	-	-	-	27.68	28.04	10	12	2.2	S	28.00	10	99.7
AMBIENT TEMPERATURE (°C)	-	-	-	-	-0.2	10.2	3, 3	13, 14	5.0 5.7	W NW	3.6	21	99.7
STATION TEMPERATURE (°C)	-	-	-	-	21.0	22.6	3	15	8.7	NNW	21.5	6	100.0
VECTOR WS (kph)	-	-	-	-	2.5	20.5	1	7	-	ENE	12.4	1	97.0
VECTOR WD (sec)	-	-	-	-	76 (ENE)	-	-	-	-	-	-	-	97.0

NA-NOT AVAILABLE VAR-VARIOUS

**SOUR GAS PROCESSING INDUSTRY
MONTHLY REPORT SUMMARY**

Reno Station

Peace River Area Monitoring Program Committee

Plant Name / Location

Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2016	October

CONTINUOUS AMBIENT MONITORING

PARAMETER	STN No.	% TIME OPERATIONAL	ONE - HOUR AVERAGE		24 - HOUR AVERAGE	
			MAXIMUM VALUE	NO. READINGS > REGULATION	MAXIMUM VALUE	NO. READINGS > REGULATION
SO ₂	1	100.0	0.0011 ppm	0	0.0001 ppm	0
TRS	1	100.0	0.0007 ppm	-	0.0003 ppm	-
THC	1	99.9	2.67 ppm	-	2.09 ppm	-
CH ₄	1	99.9	2.67 ppm	-	2.09 ppm	-
NMHC	1	99.9	0.00 ppm	-	0.00 ppm	-
RH	1	100.0	96 %	-	95 %	-
BP	1	99.7	28.04 inHg	-	28.00 inHg	-
Ambient TPX	1	99.7	10.2 °C	-	3.6 °C	-
Station TPX	1	100.0	22.6 °C	-	21.5 °C	-
Wind Speed	1	97.0	20.5 kph	-	12.4 kph	-
Wind Direction	1	97.0	-	-	-	-

SIGNATURE OF COMPANY REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY

Exceedance Summary Report

SO₂ 1-Hour Exceedances

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

SO₂ 24-Hour Exceedances

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

In accordance with EPEA and the Substance Release Regulation.

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary.

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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 (August 3, 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.

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)

The routine monthly calibration was performed on October 13. No operational issues were identified this month. One hour of instantaneous maximum data was discarded on October 24, at hour 13:00, due to a brief power failure.

TOTAL REDUCED SULPHUR (TRS)

The routine monthly calibration was performed on October 13. No operational issues were identified this month. One hour of instantaneous maximum data was discarded on October 24, at hour 13:00, due to a brief power failure.

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

The routine monthly calibration was performed on October 13. One hour of instantaneous maximum data was discarded on October 24, at hour 13:00, due to a brief power failure. Consequently, one hour of downtime was recorded at this hour, as the analyzer was in recovery mode.

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)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was blowing from.

The wind system was calibrated on October 13. Twenty-two hours of data, collected between October 25 and October 26, were invalidated due to an ice build-up that affected the functionality of the wind system. One hour of instantaneous maximum data was discarded on October 24, at hour 13:00, due to a brief power failure.

RELATIVE HUMIDITY (RH)

No operational issues were identified this month.

BAROMETRIC PRESSURE (BP)

Two hours of data, collected on October 13 at hour 12:00 and 13:00, were invalidated due to anomalous measurements. Data collected at hour 13:00 met the 75% data completeness criteria; however, there were similar, albeit fewer, suspect measurements that lowered the hourly average, prompting the need to invalidate data at this hour.

AMBIENT TEMPERATURE (AmbTPX)

Two hours of downtime were recorded on October 13 due to an interference with the sensor while the wind system was being calibrated.

STATION TEMPERATURE (StnTPX)

No operational issues were identified this month.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

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

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

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-00210: 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 UV Fluorescent Analyzer
Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
Wind System - RM Young Unit
Relative Humidity - Met One Unit
Barometric Pressure - Met One Unit
Ambient Temperature - Met One 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

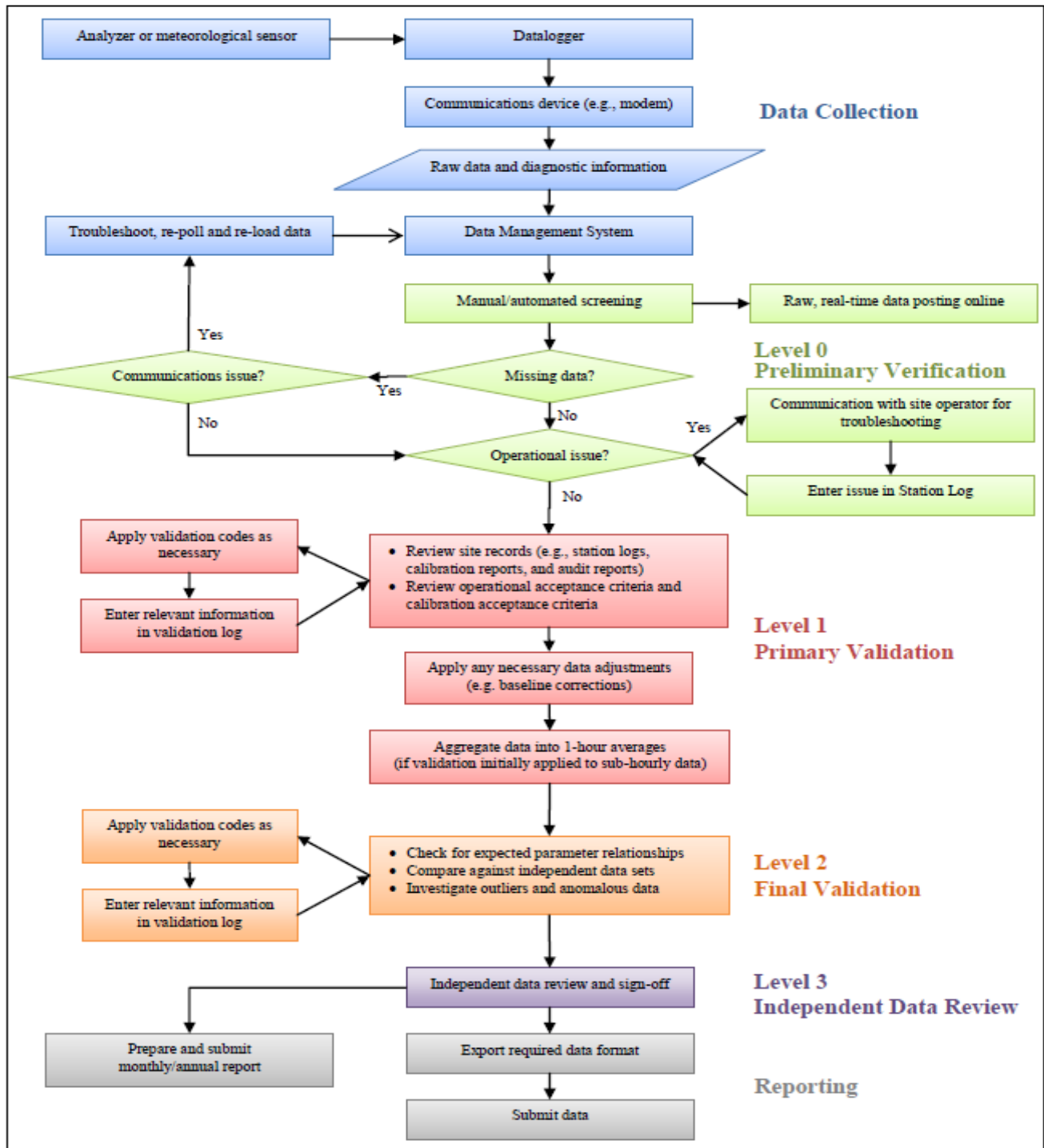
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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.

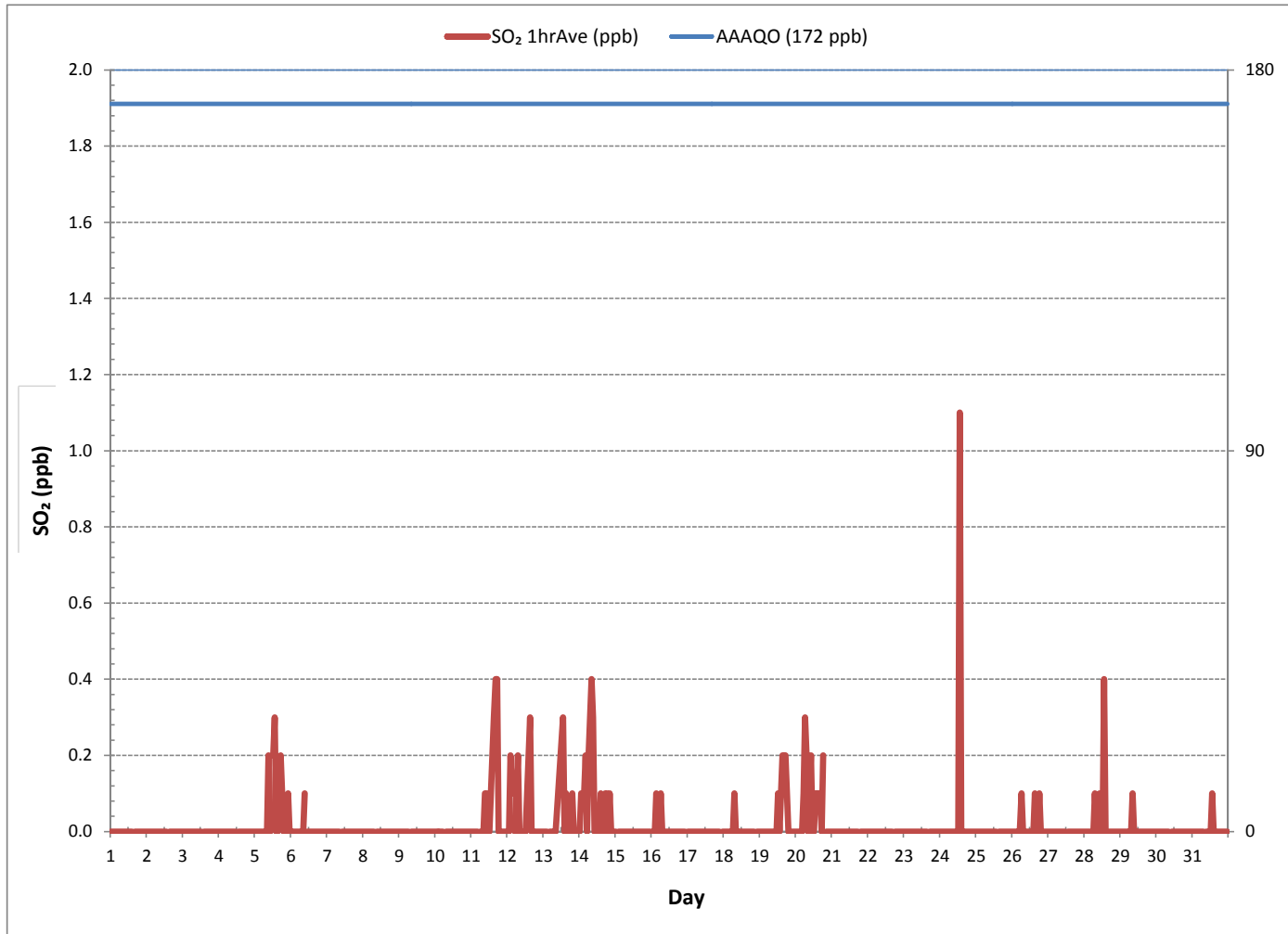


Source: Air Monitoring Directive (Aug 3, 2016), Chapter 6, Ambient Data Quality; Figure 1 Data Collection and Management Process Flow Chart

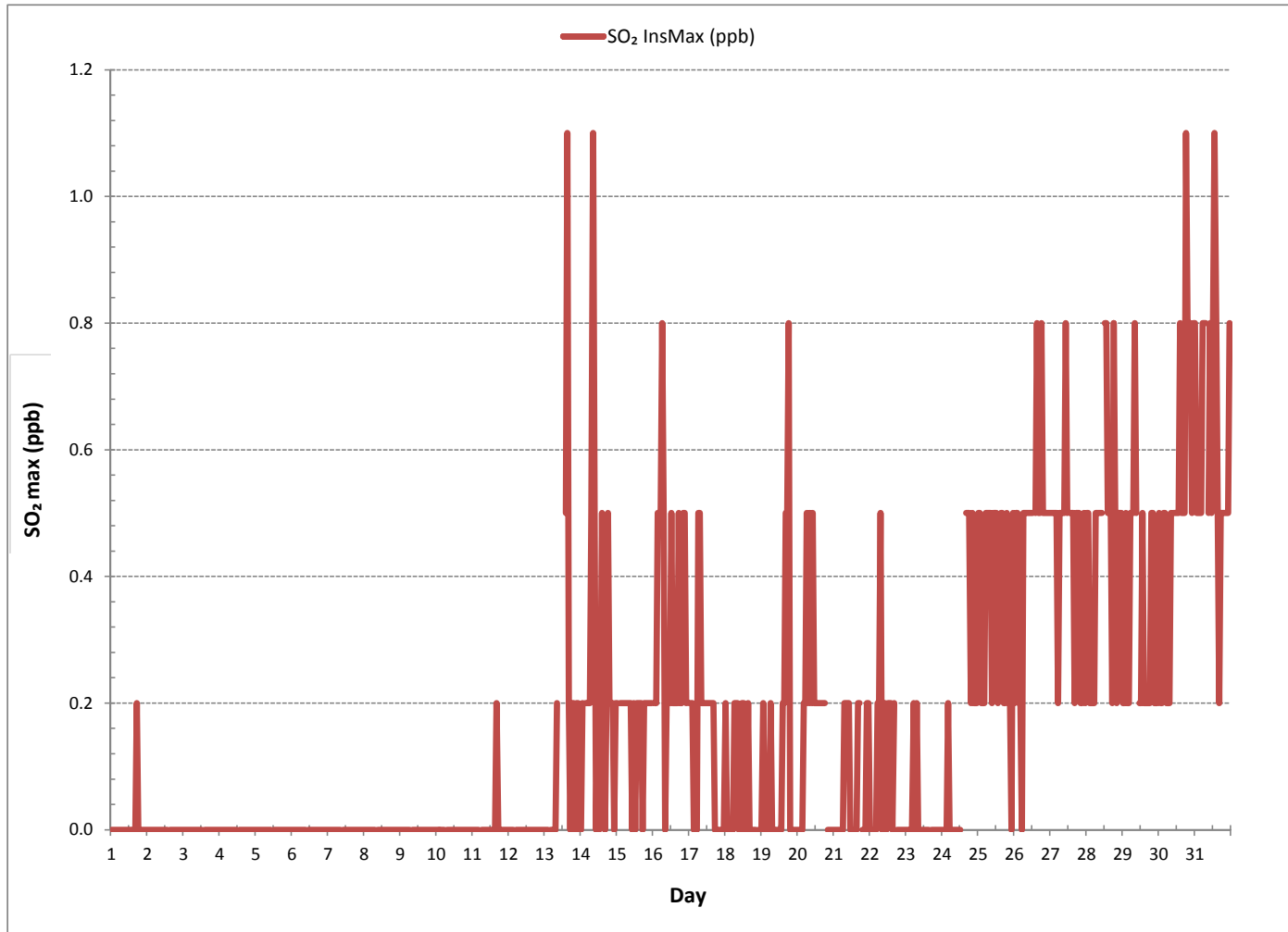
APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

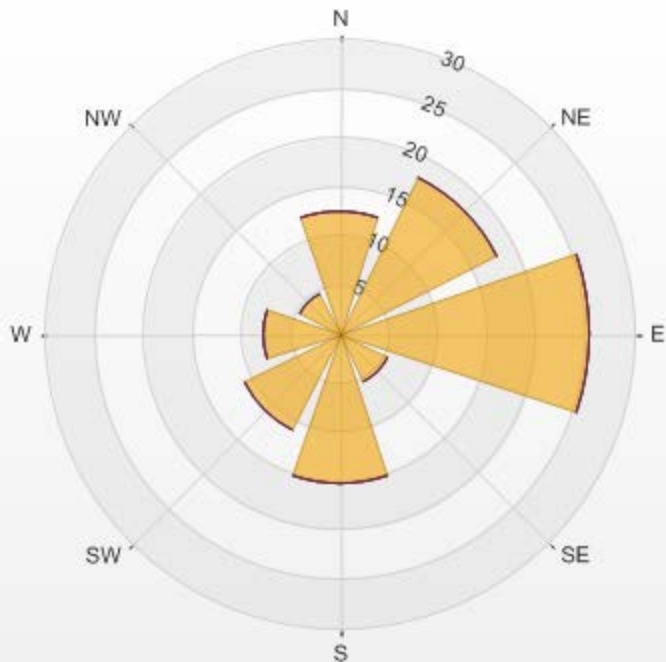


SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)



Wind: PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-SO2[ppb] Monthly: 2016/10 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.80% Calm Avg: 0.00 ppb

Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	12.45	0	0	0	0	12.45
NE	17.86	0	0	0	0	17.86
E	25.48	0	0	0	0	25.48
SE	5.56	0	0	0	0	5.56
S	15.23	0	0	0	0	15.23
SW	10.98	0	0	0	0	10.98
W	7.91	0	0	0	0	7.91
NW	4.54	0	0	0	0	4.54
Summary	100	0	0	0	0	100



% Icon Classes (ppb)

100 0-3

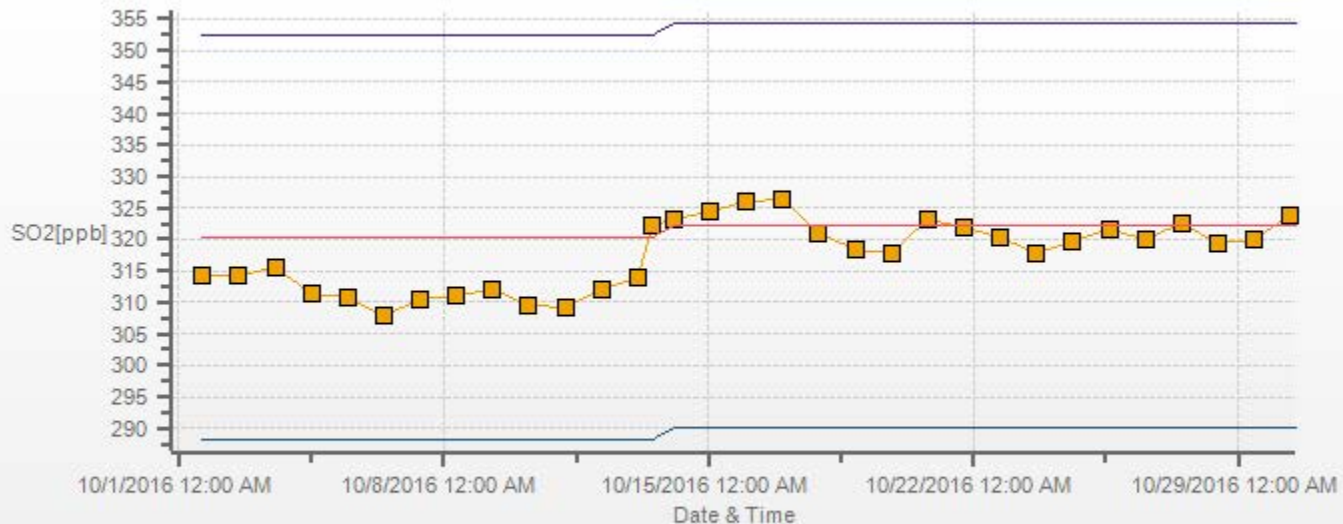
0 3-10

0 10-85

0 85-170

0 >170.0

SO2[ppb] Calibration: PRAMP RENO TRAILER Monthly: 2016/10 Type: Span



Span Meas Span Ref Span Low Span High

TOTAL REDUCED SULPHUR

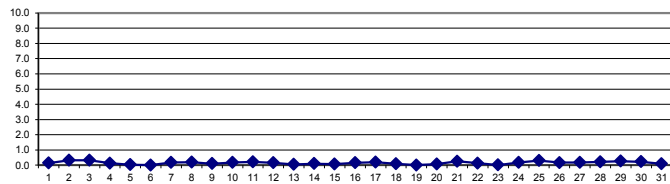
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

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-HOUR AVG.	RDGS.	
DAY	HR	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					
1		0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	S	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.0	0.3	0.1	24	
2		0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	S	0.2	0.3	0.2	0.3	0.7	0.7	0.6	0.7	0.5	0.2	0.7	0.3	24	
3		0.4	0.7	0.7	0.6	0.6	0.7	0.5	0.4	0.5	0.4	0.1	0.1	0.1	S	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.7	0.3	24
4		0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	S	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.2	0.1	24
5		0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
6		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
7		0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	S	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.0	0.3	0.2	24
8		0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	S	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.3	0.2	24
9		0.1	0.1	0.0	0.1	0.0	0.0	0.0	S	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.0	0.2	0.1	24
10		0.2	0.2	0.2	0.2	0.3	0.2	S	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.2	24
11		0.2	0.2	0.1	0.2	0.3	S	0.4	0.4	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.3	0.2	0.1	0.4	0.2	24
12		0.5	0.3	0.3	0.3	S	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.5	0.2	24
13		0.1	0.1	0.1	S	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	24
14		0.1	0.1	S	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.1	24
15		0.1	S	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	24
16		S	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	S	0.1	0.1	0.2	0.2	24
17		0.2	0.1	0.0	0.0	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3	S	0.4	0.0	0.4	0.2	24
18		0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.2	0.1	0.1	24
19		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.1	0.0	0.0	24
20		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.2	S	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	24
21		0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	S	0.4	0.4	0.2	0.4	0.3	0.1	0.4	0.3	0.3	24
22		0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.1	24
23		0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	24
24		0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	S	0.2	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.3	0.2	0.2	24
25		0.2	0.2	0.4	0.3	0.2	0.2	0.3	0.4	0.4	0.3	0.4	0.3	0.3	S	0.2	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.5	0.3	0.3	24
26		0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	S	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.3	0.0	0.3	0.2	24
27		0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2	S	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.3	0.2	24
28		0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.3	S	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.2	24
29		0.2	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.0	0.0	0.0	0.4	0.3	0.3	24
30		0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	S	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.4	0.2	0.2	24
31		0.3	0.2	0.2	0.1	0.2	0.2	0.2	S	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.3	0.1	0.1	24
HOURLY MAX		0.5	0.7	0.7	0.6	0.6	0.7	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.5	0.3	0.7	0.7	0.6	0.7	0.5					
HOURLY AVG		0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2					

STATUS FLAG CODES

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

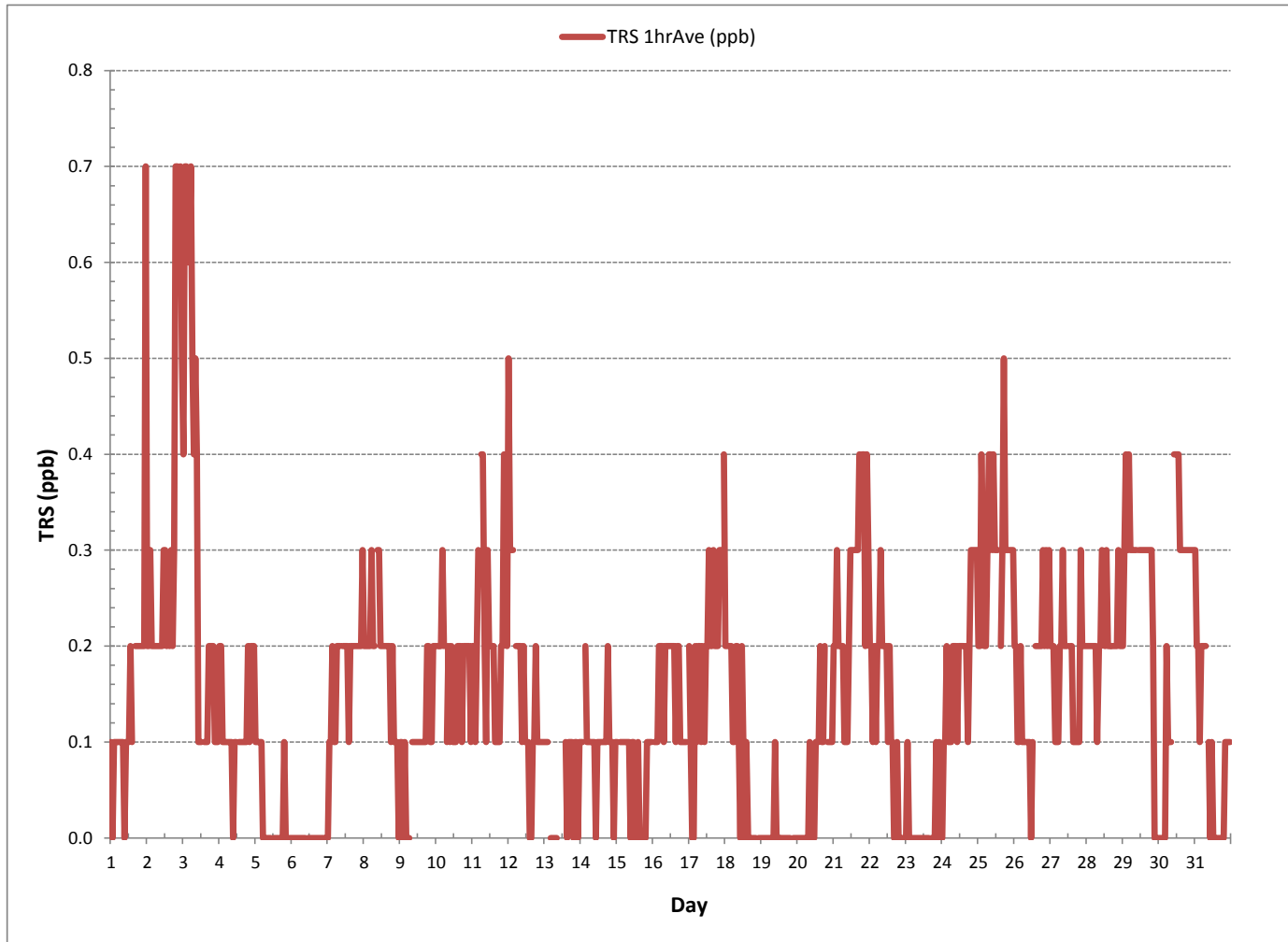
24 HOUR AVERAGES FOR October 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	548				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	0.7	PPB @ HOUR(S)	VAR	ON DAY(S)	2, 3
MAXIMUM 24-HR AVERAGE:	0.3	PPB		ON DAY(S)	VAR
				VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	744	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.12		MONTHLY AVERAGE:	0.2	PPB

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)





TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

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-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.3	0.1	0.3	0.2	0.2	0.3	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.4	0.3	S	0.3	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.1	0.4	0.3	24	
2	0.2	0.4	0.3	0.2	0.3	0.1	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.4	S	0.4	0.4	0.3	0.3	0.8	0.8	0.8	0.8	0.6	0.1	0.8	0.4	24		
3	0.5	0.9	0.9	0.8	0.6	0.8	0.7	0.5	0.5	0.5	0.3	0.2	0.1	S	0.4	0.3	0.4	0.5	0.3	0.3	0.4	0.2	0.4	0.4	0.1	0.9	0.5	24		
4	0.4	0.3	0.3	0.3	0.4	0.2	0.4	0.3	0.2	0.4	0.4	0.3	S	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.4	0.3	24	
5	0.4	0.2	0.3	0.4	0.6	0.2	0.4	0.4	0.2	0.2	0.2	S	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.4	0.3	0.3	0.3	0.4	0.1	0.6	0.3	24		
6	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.3	0.3	S	0.3	0.3	0.2	0.5	0.4	0.2	0.4	0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.5	0.3	24		
7	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.4	S	0.4	0.3	0.4	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.5	0.2	0.5	0.3	24	
8	0.2	0.4	0.3	0.3	0.3	0.7	0.4	0.3	S	0.4	0.5	0.3	0.4	0.2	0.6	0.3	0.4	0.4	0.3	0.4	0.3	0.4	0.3	0.1	0.1	0.7	0.4	24		
9	0.3	0.3	0.2	0.3	0.2	0.2	S	0.4	0.3	0.3	0.4	0.2	0.3	0.5	0.2	0.3	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.2	0.5	0.3	24	
10	0.3	0.3	0.3	0.3	0.3	0.6	S	0.3	0.4	0.3	0.3	0.3	0.3	0.6	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.3	0.3	0.4	0.3	0.6	0.3	24		
11	0.3	0.3	0.2	0.3	0.4	S	0.6	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.5	0.2	0.3	0.4	0.3	0.3	0.4	0.5	0.6	0.3	0.2	0.6	0.4	24		
12	0.8	0.4	0.5	0.6	S	0.5	0.4	0.4	0.4	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.2	0.3	0.4	0.3	0.3	0.2	0.3	0.2	0.8	0.4	24		
13	0.5	0.2	0.3	S	0.3	0.4	0.4	0.2	0.3	C	C	C	C	C	C	0.5	0.4	0.4	0.6	0.4	0.5	0.6	0.6	0.4	0.4	0.2	0.6	0.4	24	
14	0.4	0.5	S	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.6	0.5	0.4	0.6	0.4	0.4	0.5	0.3	0.6	0.4	24		
15	0.4	S	0.5	0.4	0.4	0.6	0.5	0.6	0.4	0.5	0.4	0.5	0.6	0.3	0.4	0.3	0.4	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.6	0.4	24	
16	S	0.3	0.5	0.4	0.5	0.6	0.4	0.5	0.4	0.6	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.6	0.3	0.3	0.5	0.4	0.4	S	0.3	0.6	0.4	24		
17	0.5	0.3	0.3	0.2	0.5	0.4	0.4	0.7	0.4	0.5	0.4	0.4	0.4	0.7	0.5	0.4	0.5	0.5	0.4	0.6	0.5	0.4	0.6	0.5	S	0.7	0.2	0.7	0.5	24
18	0.5	0.4	0.5	0.5	0.6	0.6	0.4	0.6	0.6	0.6	0.3	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.4	S	0.4	0.4	0.3	0.6	0.5	24
19	0.4	0.4	0.5	0.6	0.3	0.6	0.5	0.5	0.4	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.4	S	0.6	0.6	0.4	0.3	0.7	0.5	0.5	24	
20	0.4	0.6	0.4	0.5	0.4	0.5	0.6	0.6	0.4	0.4	0.6	0.4	0.5	0.5	0.5	0.6	0.4	0.5	0.8	S	0.4	0.5	0.3	0.5	0.3	0.8	0.5	0.5	24	
21	0.5	0.4	0.5	0.5	0.4	0.5	0.6	0.2	0.3	0.3	0.4	0.4	0.5	0.3	0.5	0.4	0.5	0.5	S	0.4	0.5	0.5	0.5	0.4	0.2	0.6	0.4	0.4	24	
22	0.4	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.4	0.4	0.4	0.6	0.7	0.4	0.6	0.5	0.4	S	0.5	0.3	0.4	0.5	0.5	0.4	0.3	0.7	0.4	0.4	24	
23	0.5	0.6	0.4	0.3	0.3	0.5	0.4	0.5	0.5	0.3	0.4	0.5	0.4	0.5	0.4	0.5	0.2	S	0.7	0.5	0.5	0.5	0.5	0.4	0.6	0.2	0.7	0.5	24	
24	0.4	0.4	0.5	0.6	0.6	0.4	0.5	0.6	0.4	0.4	0.4	0.4	0.4	P	0.4	S	0.5	0.2	0.4	0.5	0.4	0.5	0.5	0.3	0.2	0.6	0.4	23		
25	0.4	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.2	0.3	S	0.2	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.3	0.2	0.5	0.4	0.4	24	
26	0.4	0.3	0.2	0.3	0.5	0.2	0.3	0.4	0.4	0.3	0.4	0.3	0.3	S	0.5	0.4	0.6	0.4	0.5	0.5	0.5	0.6	0.4	0.5	0.2	0.6	0.4	0.4	24	
27	0.5	0.4	0.4	0.4	0.3	0.4	0.6	0.3	0.5	0.3	0.5	0.2	S	0.4	0.4	0.3	0.3	0.3	0.2	0.4	0.6	0.4	0.4	0.7	0.2	0.7	0.4	0.4	24	
28	0.5	0.4	0.4	0.4	0.6	0.4	0.5	0.5	0.5	0.5	0.7	S	0.6	0.5	0.5	0.5	0.7	0.4	0.6	0.6	0.5	0.5	0.5	0.6	0.4	0.7	0.5	0.5	24	
29	0.6	0.6	0.5	0.5	0.7	0.5	0.8	0.6	0.4	0.5	S	0.5	0.5	0.4	0.3	0.4	0.4	0.6	0.4	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.8	0.5	24	
30	0.0	0.2	0.1	0.1	0.2	0.2	0.3	0.2	0.2	S	0.4	0.5	0.6	0.5	0.4	0.4	0.6	0.4	0.4	0.5	0.4	0.5	0.4	0.5	0.4	0.0	0.6	0.3	24	
31	0.5	0.3	0.4	0.4	0.4	0.3	0.5	0.3	S	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.2	0.1	0.0	0.3	0.5	0.5	0.6	0.5	0.0	0.6	0.4	24		
HOURLY MAX	0.8	0.9	0.9	0.8	0.7	0.8	0.8	0.7	0.6	0.7	0.7	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7						
HOURLY AVG	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4						

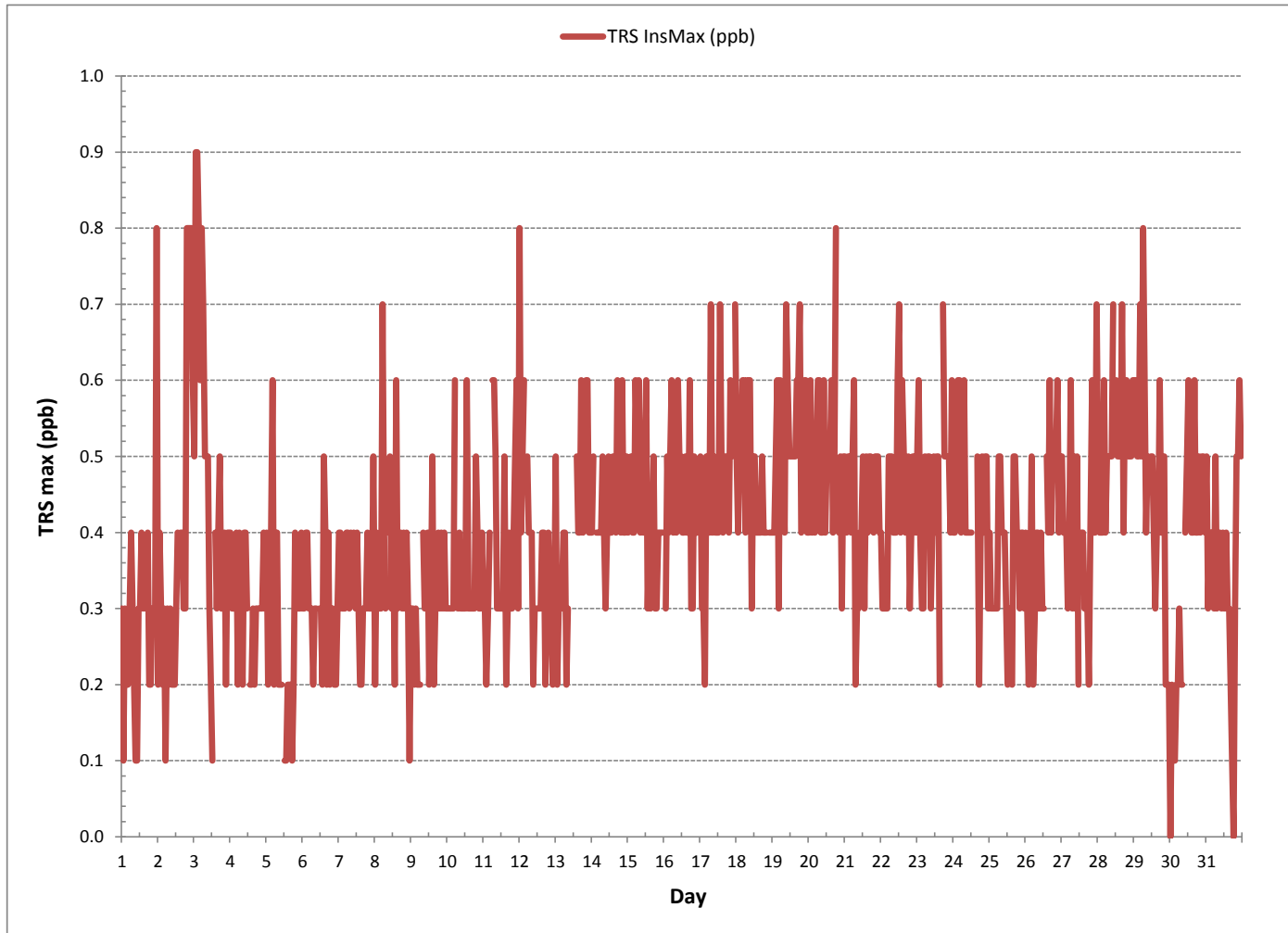
STATUS FLAG CODES

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

MONTHLY SUMMARY

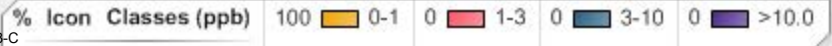
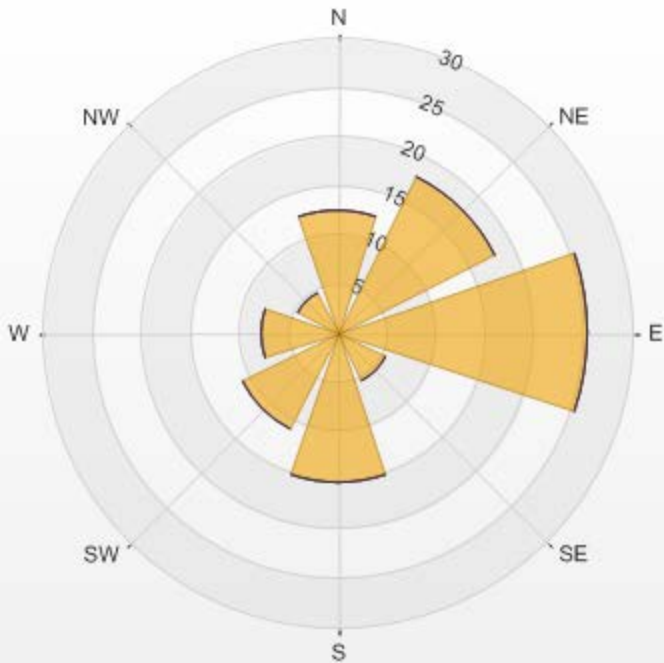
NUMBER OF NON-ZERO READINGS:	704
MAXIMUM INSTANTANEOUS VALUE:	0.9 PPB @ HOUR(S) 1, 2 ON DAY(S) 3, 3
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	743 HRS
STANDARD DEVIATION:	0.14

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

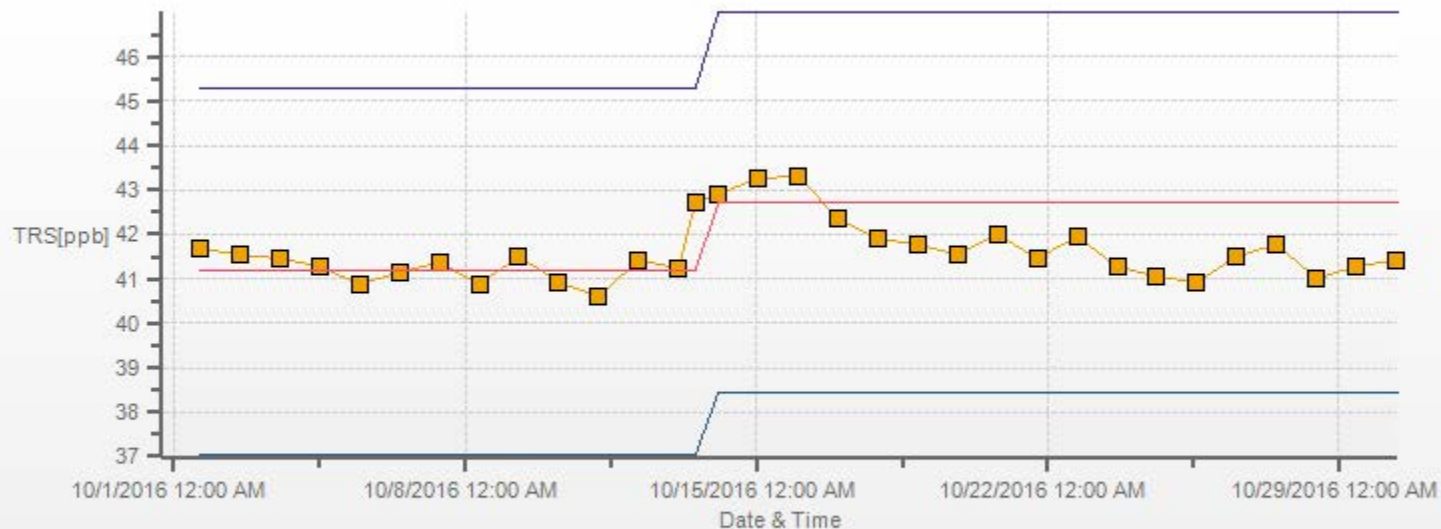


Wind: PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-TRS[ppb] Monthly: 2016/10 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.80% Calm Avg: 0.00 ppb

Direction	0-1	1-3	3-10	>10.0	Total
N	12.45	0	0	0	12.45
NE	17.86	0	0	0	17.86
E	25.48	0	0	0	25.48
SE	5.56	0	0	0	5.56
S	15.23	0	0	0	15.23
SW	10.98	0	0	0	10.98
W	7.91	0	0	0	7.91
NW	4.54	0	0	0	4.54
Summary	100	0	0	0	100



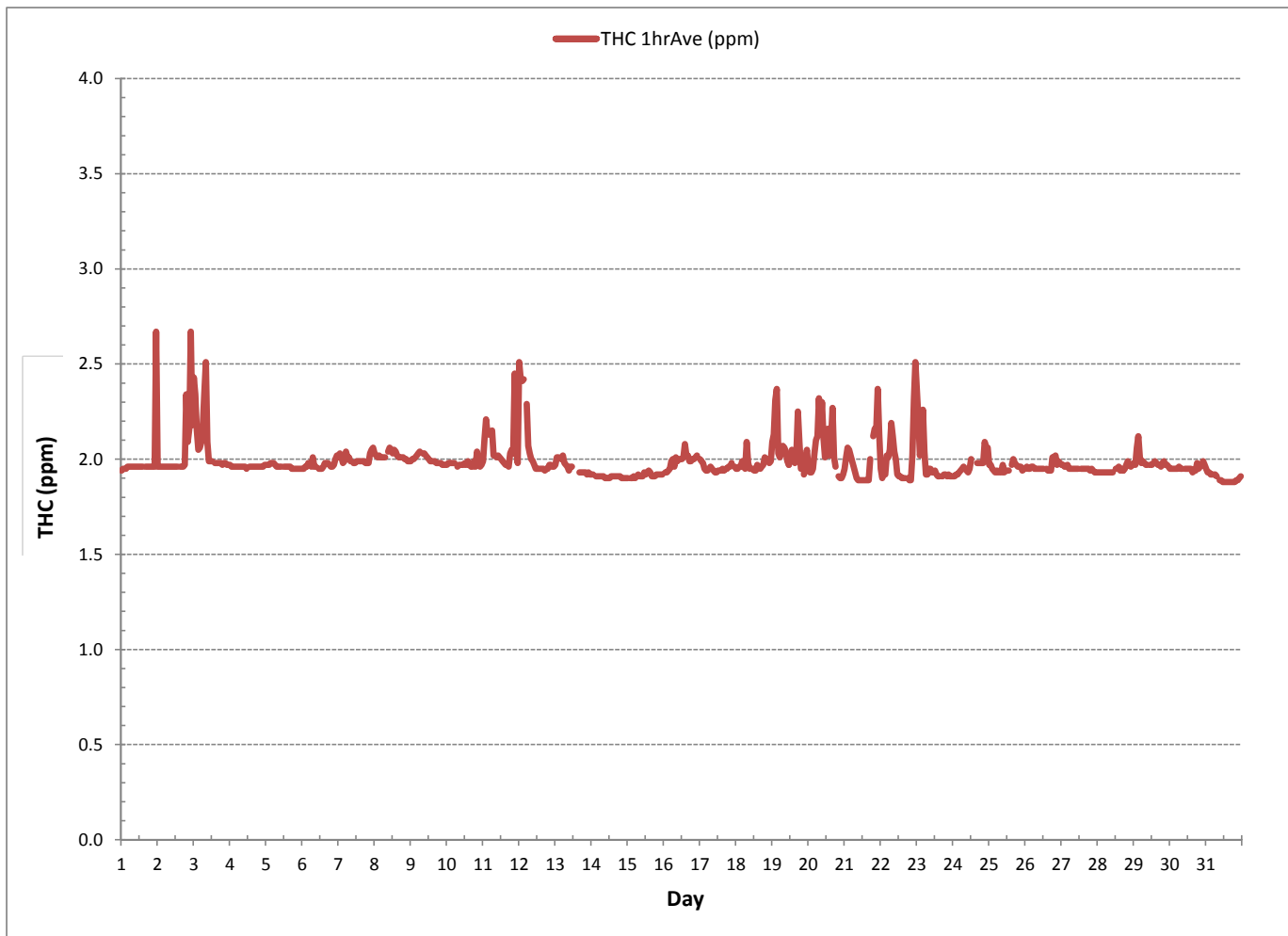
TRS[ppb] Calibration: PRAMP RENO TRAILER Monthly: 2016/10 Type: Span



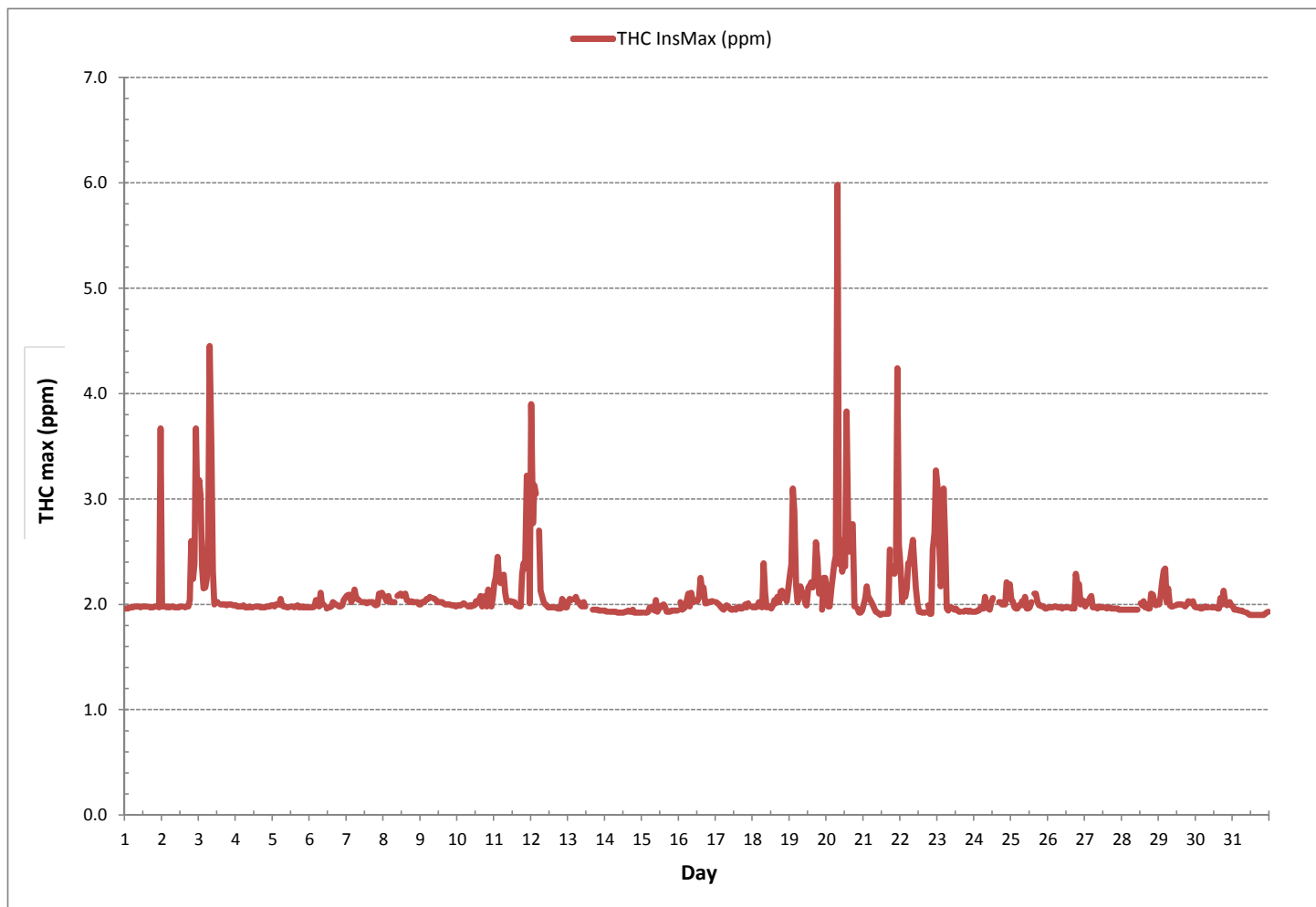
Span Meas Span Ref Span Low Span High

TOTAL HYDROCARBON

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



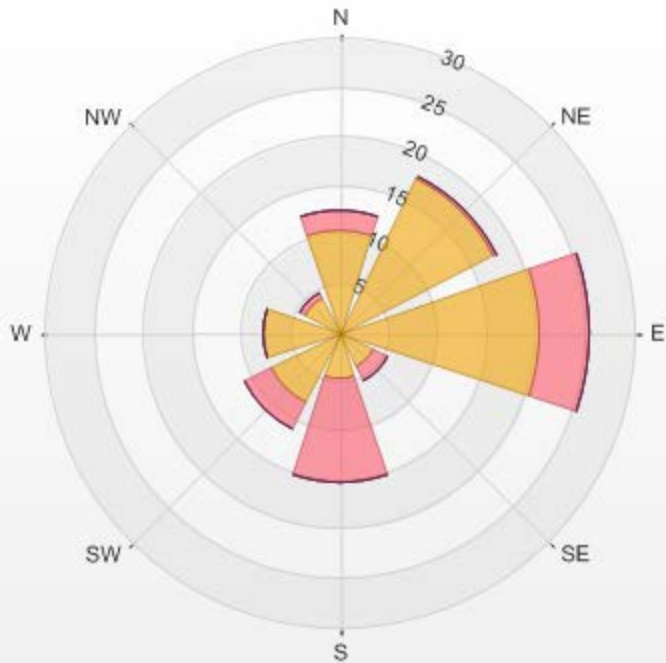
TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



Wind: PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-THC[ppm] Monthly: 2016/10 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.80% Calm Avg: 0.00 ppm

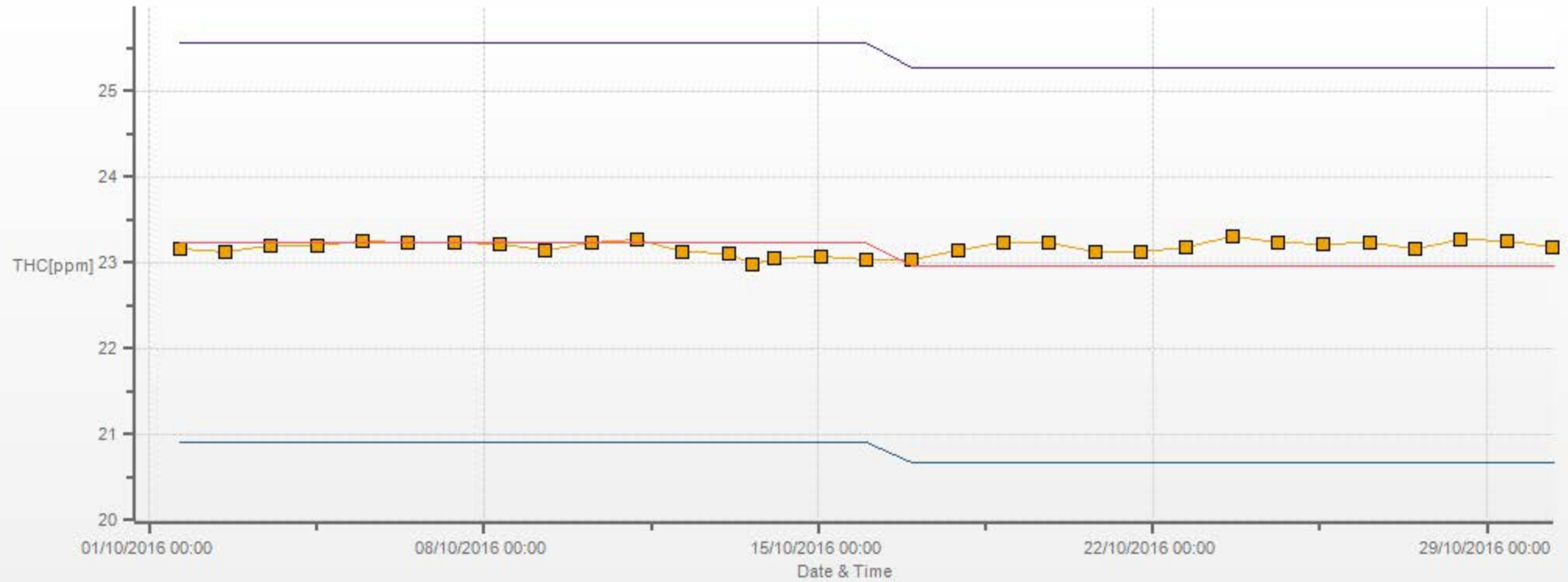
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	10.4	2.05	0	0	0	12.45
NE	17.57	0.29	0	0	0	17.86
E	20.35	5.12	0	0	0	25.47
SE	3.95	1.61	0	0	0	5.56
S	4.69	10.54	0	0	0	15.23
SW	7.91	3.07	0	0	0	10.98
W	7.91	0	0	0	0	7.91
NW	3.95	0.59	0	0	0	4.54
Summary	76.73	23.27	0	0	0	100

PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-THC[ppm] 2016/10/01 00:00 - 2016/10/31 23:00 Calm: 0.00%



%	Icon	Classes (ppm)
77	■	0-2
23	■	2-3
0	■	3-5
0	■	5-10
0	■	>10.0

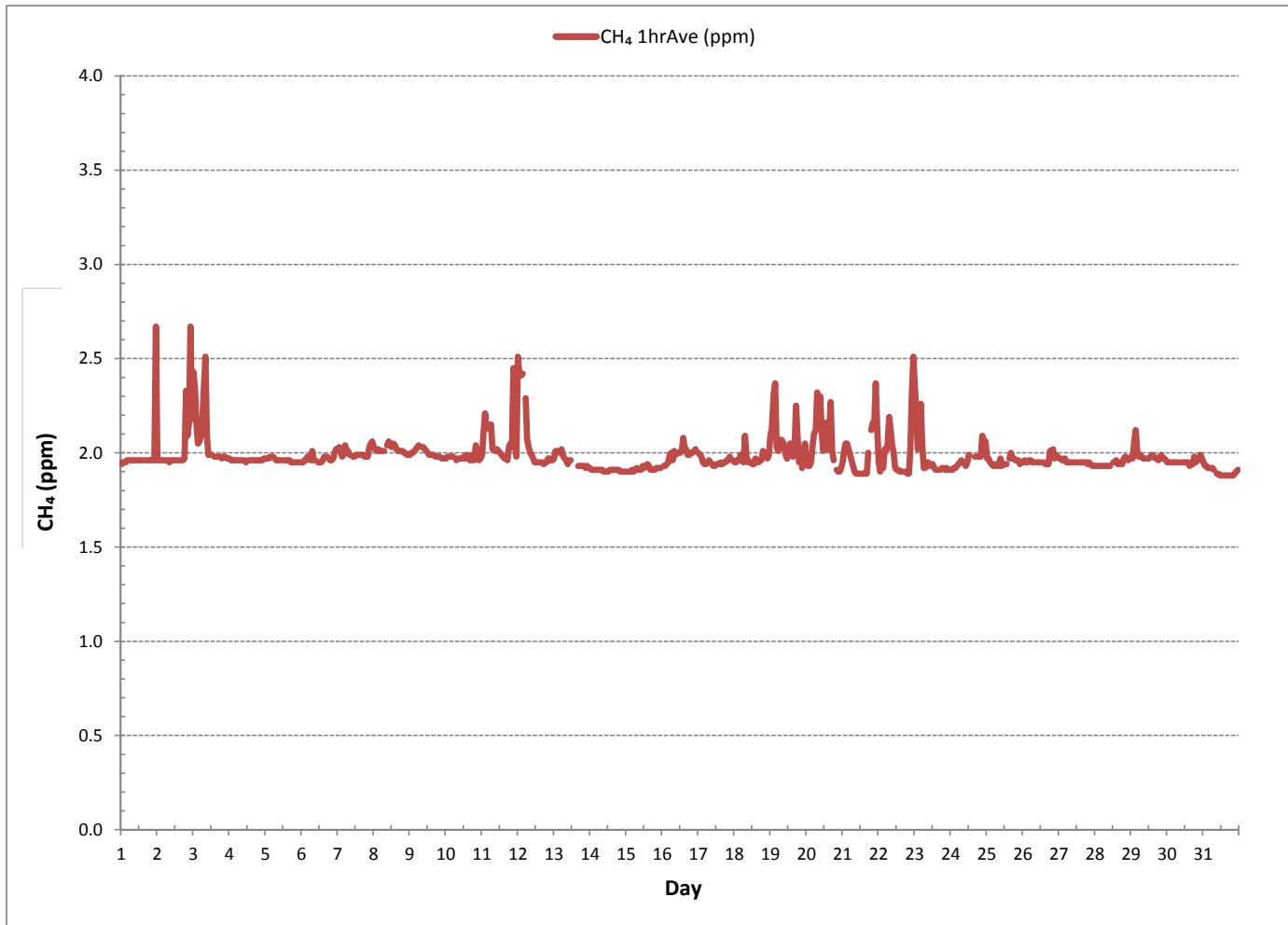
THC[ppm] Calibration: PRAMP RENO TRAILER Monthly: 2016/10 Type: Span



Span Meas Span Ref Span Low Span High

METHANE

METHANE Hourly Averages (CH₄ ppm)





METHANE MAX Instantaneous Maximum (CH₄ ppm)

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-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	1.95	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	S	1.97	1.97	1.97	1.97	1.97	1.97	1.96	1.97	1.95	1.97	1.97	24
2	1.97	1.97	1.98	1.97	1.97	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	S	1.97	1.97	1.97	2.04	2.59	2.23	2.37	3.68	2.89	1.96	3.68	2.14	24
3	3.18	3.02	2.34	2.14	2.15	2.23	2.64	4.43	3.48	2.31	2.00	2.00	2.00	S	2.00	2.00	1.99	1.99	1.99	1.99	1.99	2.00	1.99	1.98	1.98	1.98	4.43	2.34	24
4	1.98	1.97	1.98	1.97	1.97	1.98	1.97	1.97	1.97	1.97	1.97	1.96	S	1.97	1.97	1.97	1.97	1.97	1.97	1.96	1.97	1.97	1.97	1.98	1.96	1.98	1.97	24	
5	1.98	1.98	1.98	1.98	1.99	1.99	1.98	1.97	1.97	1.97	1.96	S	1.98	1.97	1.97	1.98	1.98	1.96	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.99	1.97	24	
6	1.96	1.96	1.97	1.97	2.02	2.00	1.97	2.10	1.99	1.99	S	1.96	1.96	1.96	1.98	2.00	1.99	1.99	1.98	1.97	1.97	1.98	2.03	2.05	1.96	2.10	1.99	24	
7	2.06	2.08	2.08	2.00	2.03	2.13	2.06	2.04	2.02	S	2.01	2.00	2.01	2.00	2.00	2.00	2.01	2.01	1.99	1.99	1.99	2.09	2.09	2.10	1.99	2.13	2.03	24	
8	2.07	2.05	2.02	2.07	2.02	2.02	2.02	2.02	S	2.07	2.08	2.09	2.07	2.08	2.09	2.03	2.02	2.02	2.02	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.09	2.04	24
9	2.00	2.00	2.00	2.03	2.03	2.04	2.06	S	2.05	2.04	2.03	2.02	2.01	2.00	2.00	2.00	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	2.06	2.01	24	
10	1.98	1.99	1.99	1.99	1.99	1.99	S	1.97	1.98	1.98	1.98	1.99	2.03	2.01	2.04	2.07	1.97	1.99	2.07	1.97	2.13	1.99	1.97	2.06	1.97	2.13	2.01	24	
11	2.19	2.25	2.45	2.24	2.19	S	2.27	2.05	2.03	2.02	2.02	2.02	2.01	2.01	1.99	1.98	1.98	1.97	2.28	2.39	2.33	3.21	3.13	2.00	1.97	3.21	2.22	24	
12	3.89	2.76	3.12	2.98	S	2.69	2.12	2.07	2.01	2.00	1.99	1.96	1.96	1.96	1.99	1.96	1.96	1.96	1.96	1.96	1.96	2.03	1.97	1.97	1.96	3.89	2.23	24	
13	2.02	2.04	2.03	S	2.04	2.05	2.01	2.01	1.99	1.98	2.02	1.97	C	C	C	C	1.94	1.95	1.94	1.94	1.93	1.93	1.93	1.93	1.93	2.05	1.98	24	
14	1.93	1.92	S	1.92	1.92	1.92	1.92	1.92	1.91	1.91	1.91	1.91	1.91	1.92	1.92	1.93	1.92	1.92	1.94	1.91	1.91	1.91	1.91	1.91	1.91	1.94	1.92	24	
15	1.91	S	1.91	1.91	1.92	1.97	1.97	1.96	1.93	2.03	1.92	1.95	1.97	1.99	2.00	1.96	1.92	1.92	1.92	1.93	1.93	1.93	1.93	1.93	1.91	2.03	1.94	24	
16	S	2.01	1.94	1.95	1.96	2.03	2.09	1.97	2.09	2.01	2.03	2.03	2.02	2.05	2.24	2.13	2.15	2.01	2.00	2.01	2.02	2.02	2.03	S	1.94	2.24	2.04	24	
17	2.02	2.00	2.00	1.97	1.96	1.95	1.97	1.98	1.97	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.97	1.97	2.00	S	1.98	1.95	2.02	1.97	24	
18	1.97	1.97	1.97	1.98	2.00	1.97	1.96	2.38	2.10	1.96	1.97	1.98	1.95	1.98	2.03	2.00	2.05	2.02	2.12	2.12	2.05	S	2.03	2.13	1.95	2.38	2.03	24	
19	2.25	2.38	3.09	2.88	2.18	2.02	2.06	2.10	2.08	2.08	2.02	1.98	2.15	2.17	2.21	2.15	2.23	2.58	2.42	2.09	S	1.95	2.24	2.25	1.95	3.09	2.24	24	
20	2.11	1.97	1.98	2.14	2.27	2.38	2.46	5.93	2.38	2.60	2.30	2.39	2.35	3.82	2.60	2.49	2.74	2.74	1.97	S	1.96	1.91	1.91	1.93	1.91	5.93	2.49	24	
21	1.98	2.05	2.07	2.06	2.04	2.01	1.98	1.95	1.92	1.90	1.89	1.90	1.90	1.90	1.90	1.90	2.51	S	2.35	2.27	2.37	4.23	2.56	1.89	4.23	2.15	24		
22	2.33	2.01	2.10	2.06	2.14	2.39	2.38	2.50	2.60	2.37	2.15	1.99	1.92	1.92	1.91	1.91	1.91	S	1.98	1.90	1.90	2.51	2.67	3.27	1.90	3.27	2.21	24	
23	3.12	2.71	2.17	2.21	3.09	2.56	1.95	1.94	1.97	1.96	1.95	1.94	1.96	1.93	1.92	1.92	S	1.92	1.93	1.93	1.92	1.93	1.92	1.92	1.92	3.12	2.12	24	
24	1.92	1.92	1.93	1.93	1.96	1.95	1.96	2.06	1.97	1.95	1.95	2.00	2.05	P	2.08	S	2.02	2.01	1.99	1.99	2.00	2.21	2.17	2.19	1.92	2.21	2.01	23	
25	2.03	2.02	1.96	1.96	1.96	1.99	1.98	2.02	1.99	2.06	1.95	1.95	1.96	2.01	S	2.09	2.09	2.01	1.99	1.98	1.98	1.98	1.96	1.96	1.95	2.09	1.99	24	
26	1.96	1.97	1.96	1.96	1.97	1.97	1.96	1.96	1.97	1.96	1.97	1.97	1.96	S	1.96	1.96	1.96	1.96	1.96	2.28	2.17	2.18	1.99	2.03	2.02	1.96	2.28	2.00	24
27	1.98	2.02	2.00	2.05	2.07	1.96	1.96	1.96	1.96	1.97	1.96	1.96	S	1.96	1.96	1.96	1.96	1.96	1.96	1.95	1.96	1.95	1.94	1.94	1.94	2.07	1.97	24	
28	1.94	1.94	1.94	1.94	1.94	1.95	1.94	1.94	1.94	1.94	1.95	S	2.00	1.99	2.02	1.97	1.99	1.95	1.96	2.09	2.08	2.01	1.98	2.02	1.94	2.09	1.97	24	
29	1.99	2.06	2.20	2.31	2.33	2.01	2.14	1.99	1.98	1.98	S	1.98	1.99	2.00	1.99	1.99	1.98	1.98	1.99	2.02	2.01	2.01	2.02	1.98	1.98	2.33	2.04	24	
30	1.96	1.96	1.96	1.96	1.96	1.96	1.98	1.97	1.96	S	1.97	1.96	1.96	1.96	1.96	1.95	2.05	2.00	2.12	2.02	1.98	1.99	2.01	1.99	1.95	2.12	1.98	24	
31	1.97	1.94	1.94	1.94	1.93	1.93	1.93	1.92	S	1.91	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.91	1.91	1.89	1.97	1.91	24
HOURLY MAX	3.89	3.02	3.12	2.98	3.09	2.69	2.64	5.93	3.48	2.60	2.30	2.39	2.35	3.82	2.60	2.49	2.74	2.74	2.42	2.59	2.33	3.21	4.23	3.27					
HOURLY AVG	2.15	2.10	2.10	2.08	2.07	2.07	2.05	2.23	2.07	2.03	1.99	1.99	2.00	2.05	2.02	2.00	2.02	2.04	2.02	2.03	2.02	2.07	2.19	2.09					

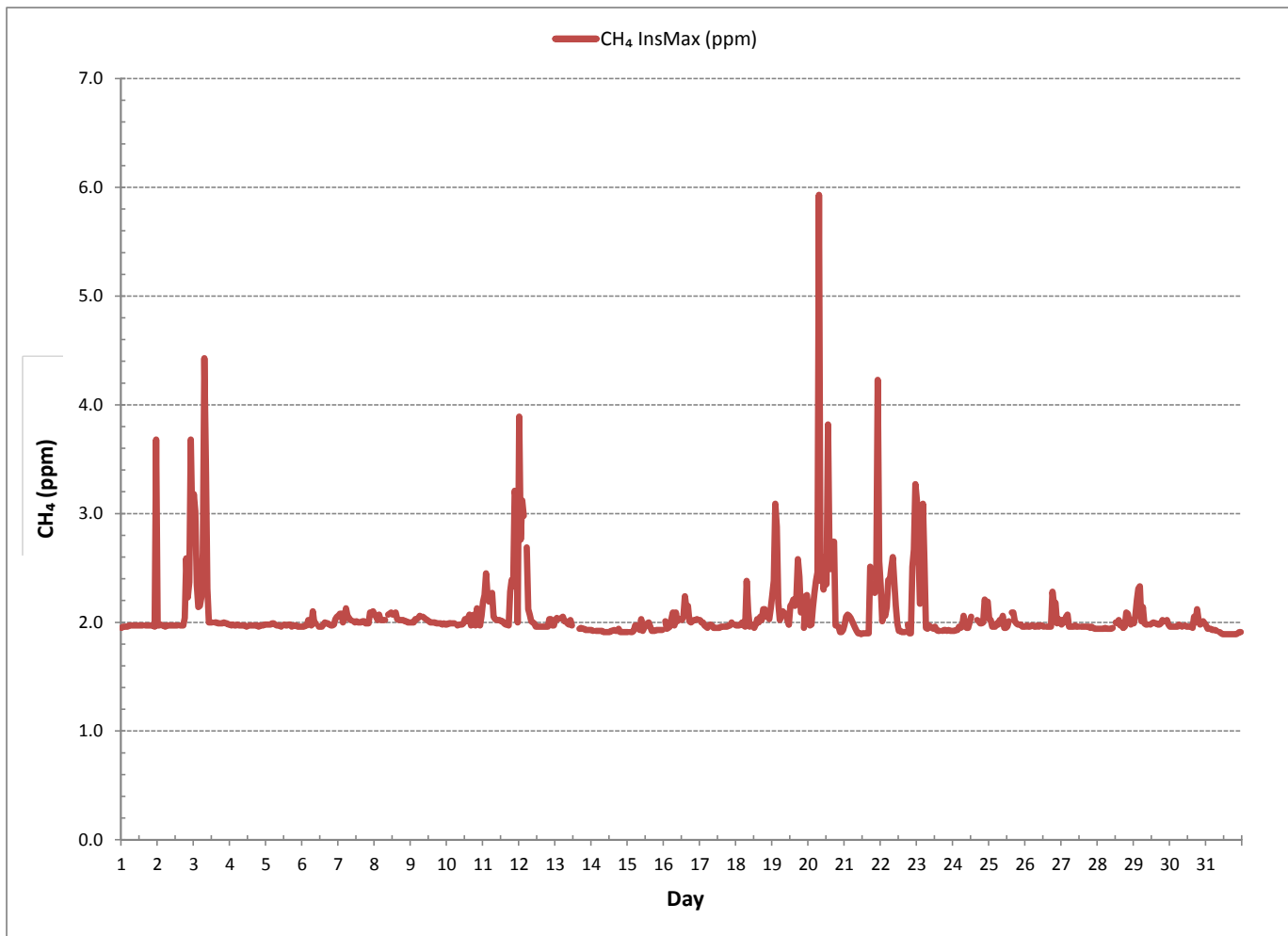
STATUS FLAG CODES

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:	707
MAXIMUM INSTANTANEOUS VALUE:	5.93 PPM @ HOUR(S) 7 ON DAY(S) 20
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	743 HRS
STANDARD DEVIATION:	0.30

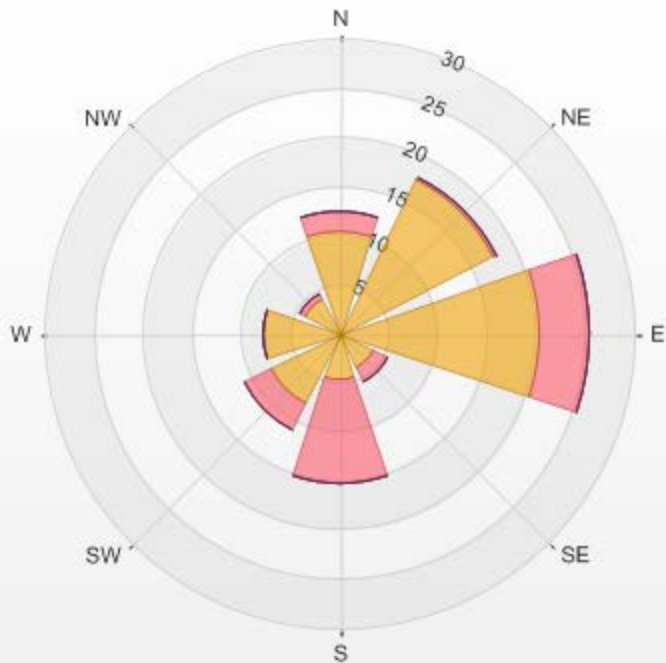
METHANE MAX Instantaneous Maximum (CH₄ ppm)



Wind: PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-CH4[ppm] Monthly: 2016/10 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.80% Calm Avg: 0.00 ppm

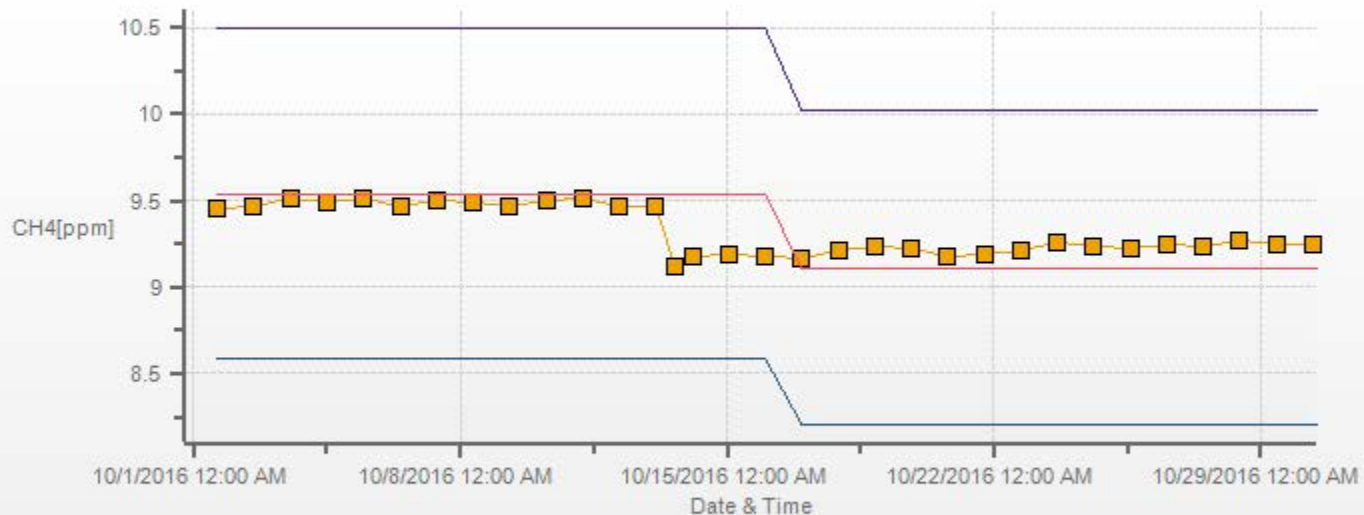
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	10.4	2.05	0	0	0	12.45
NE	17.57	0.29	0	0	0	17.86
E	20.35	5.12	0	0	0	25.47
SE	3.95	1.61	0	0	0	5.56
S	4.69	10.54	0	0	0	15.23
SW	7.91	3.07	0	0	0	10.98
W	7.91	0	0	0	0	7.91
NW	3.95	0.59	0	0	0	4.54
Summary	76.73	23.27	0	0	0	100

PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-CH4[ppm] 2016/10/01 00:00 - 2016/10/31 23:00 Calm: 0.00%



% Icon	Classes (ppm)	77	23	0	0	0
	0-2					
	2-3					
	3-5					
	5-10					
	>10.0					

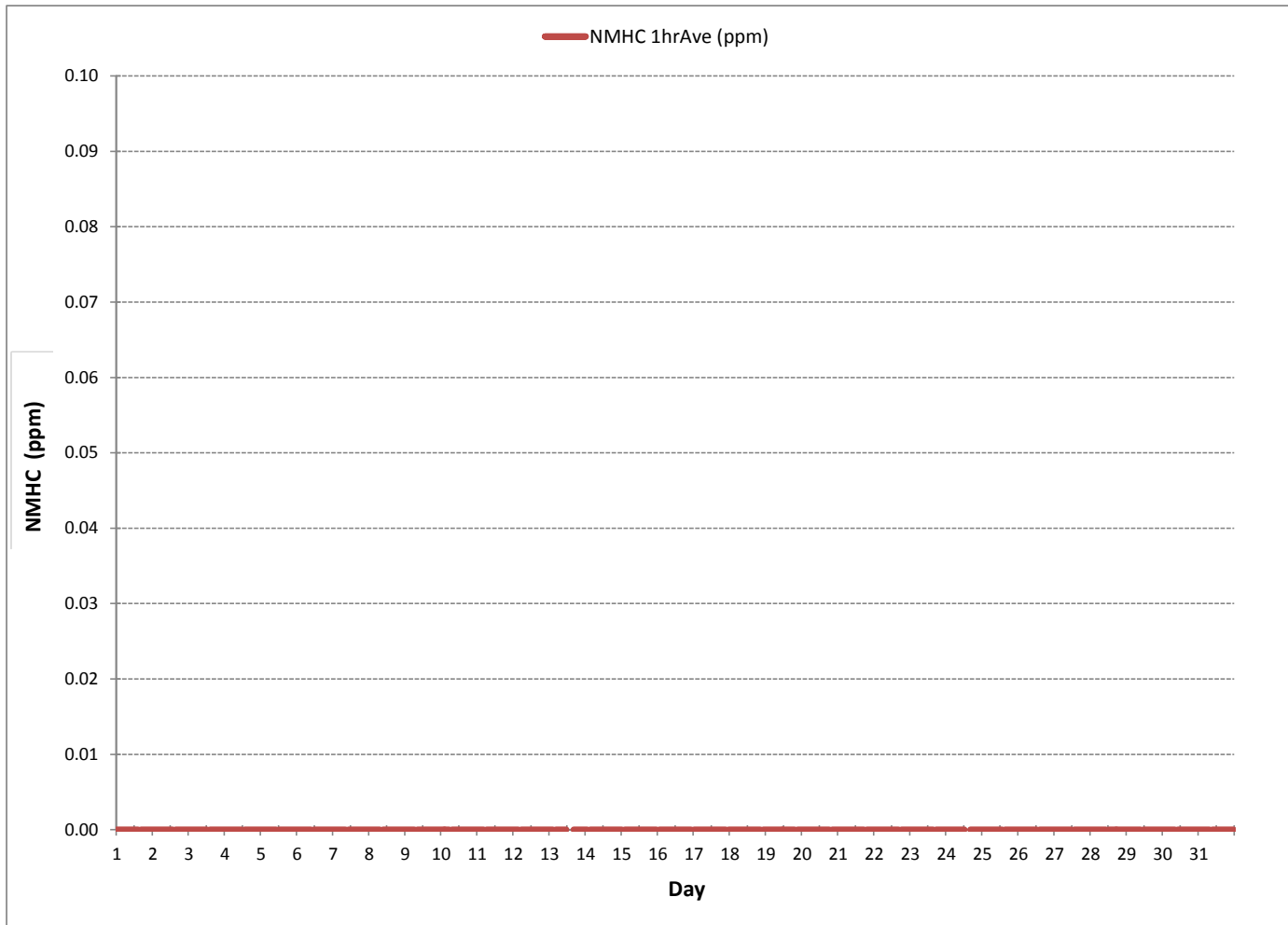
CH4[ppm] Calibration: PRAMP RENO TRAILER Monthly: 2016/10 Type: Span



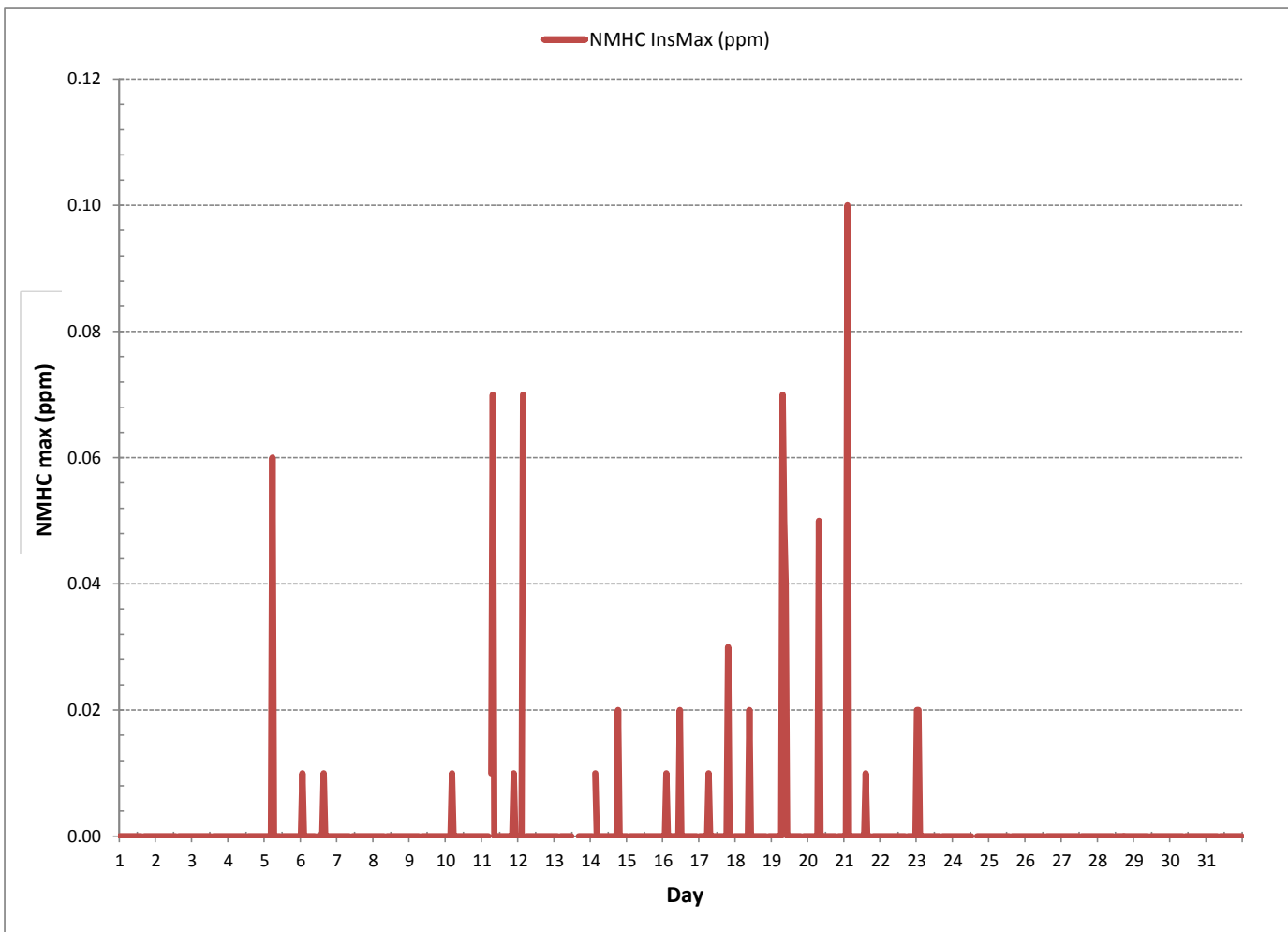
Span Meas Span Ref Span Low Span High

NON-METHANE HYDROCARBON

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



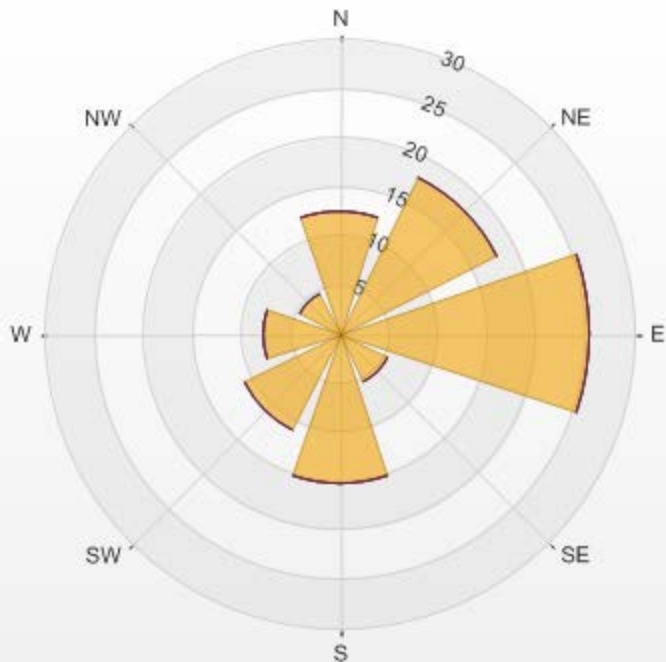
NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)



Wind: PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-NMHC[ppm] Monthly: 2016/10 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.80% Calm Avg: 0.00 ppm

Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	12.45	0	0	0	0	12.45
NE	17.86	0	0	0	0	17.86
E	25.48	0	0	0	0	25.48
SE	5.56	0	0	0	0	5.56
S	15.23	0	0	0	0	15.23
SW	10.98	0	0	0	0	10.98
W	7.91	0	0	0	0	7.91
NW	4.54	0	0	0	0	4.54
Summary	100	0	0	0	0	100

PRAMP RENO TRAILER Poll.: PRAMP RENO TRAILER-NMHC[ppm] 2016/10/01 00:00 - 2016/10/31 23:00 Calm: 0.00%



% Icon Classes (ppm)

100 0-0.1

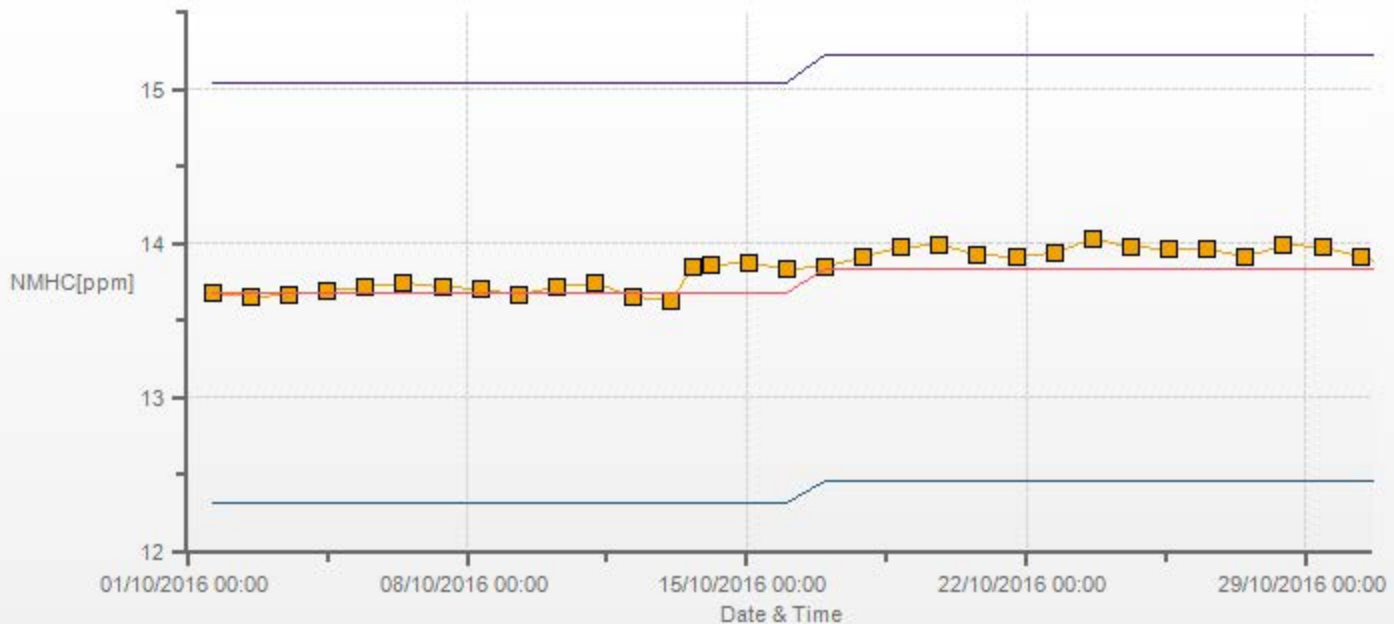
0 0.1-0.3

0 0.3-1

0 1-2

0 >2.0

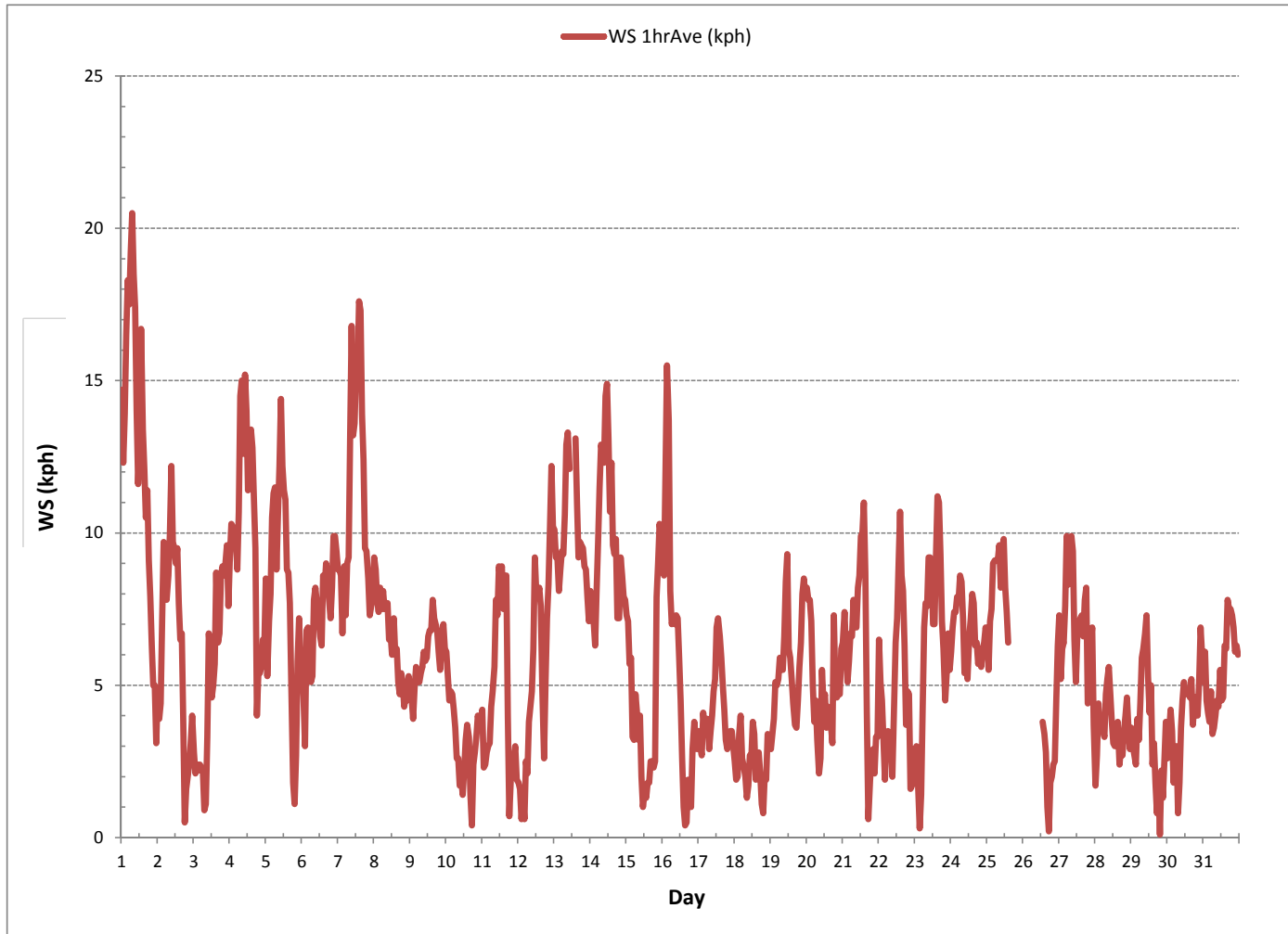
NMHC[ppm] Calibration: PRAMP RENO TRAILER Monthly: 2016/10 Type: Span



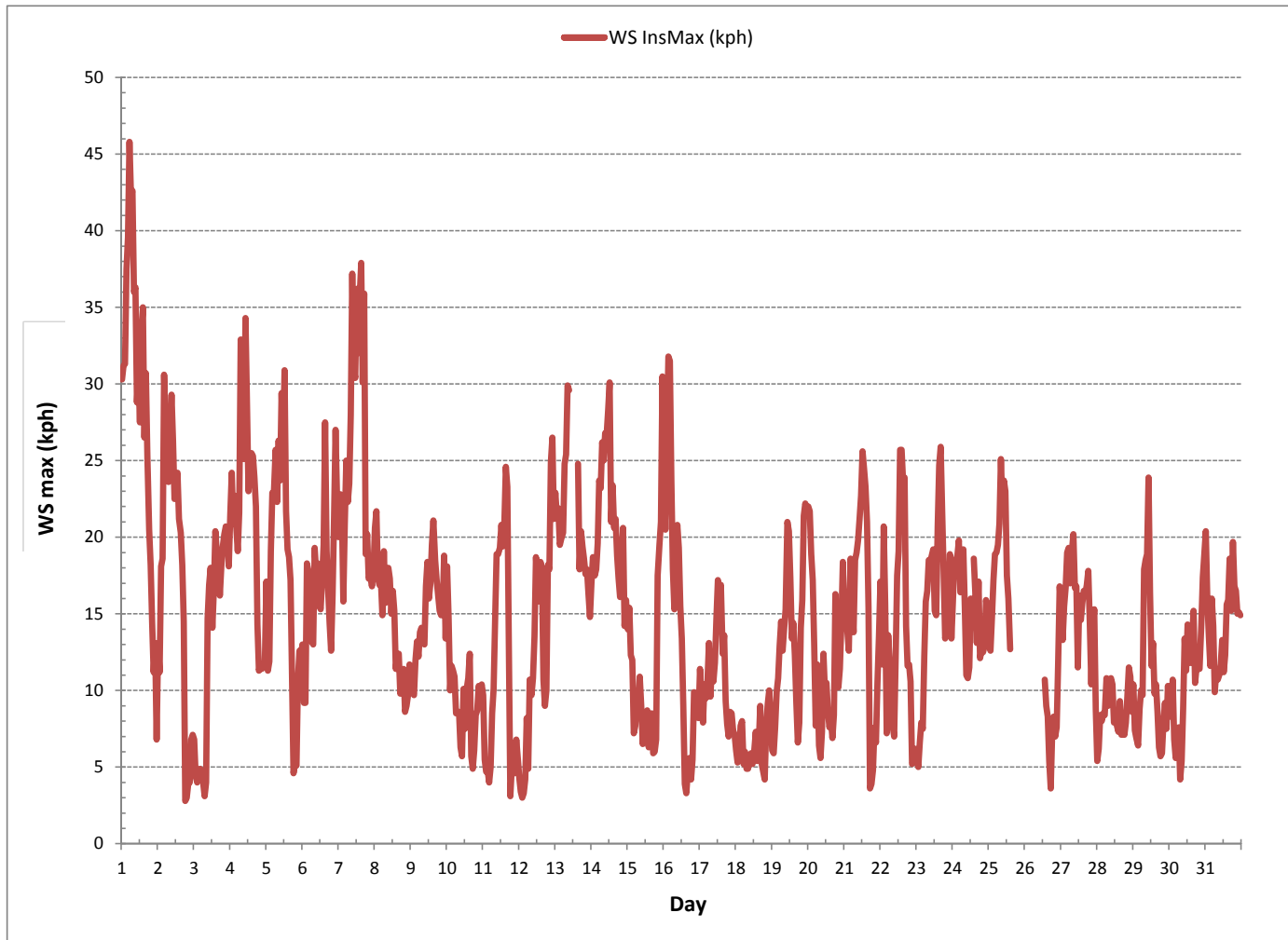
■ Span Meas — Span Ref — Span Low — Span High

WIND SPEED

WIND SPEED Hourly Averages (WS kph)

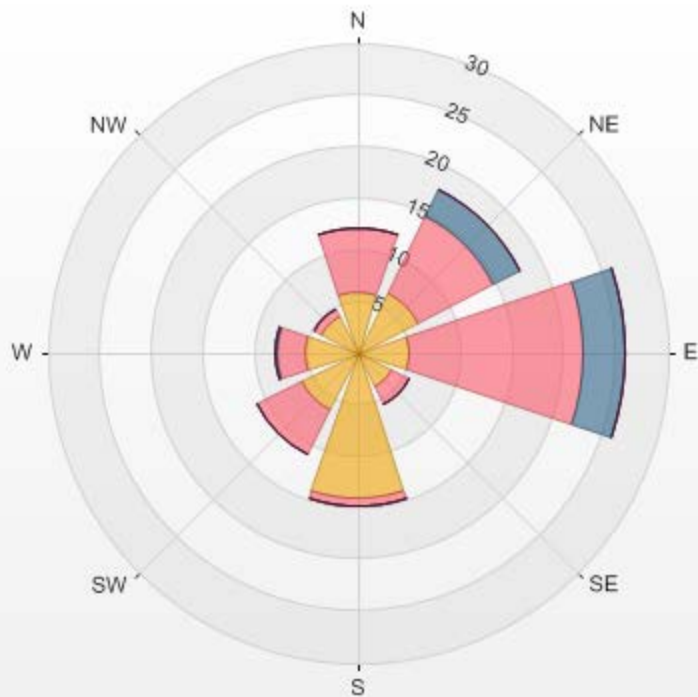


WIND SPEED Instantaneous Maximum (WS kph)



Wind: PRAMP RENO TRAILER Monitor: WSP [kph] Monthly: 2016/10 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 96.64% Calm Avg: 0.00

Direction	0.0-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	5.84	6.26	0	0	0	0	12.1
NE	6.54	8.21	2.92	0	0	0	17.67
E	5.01	16.83	4.03	0.14	0	0	26.01
SE	3.62	1.95	0	0	0	0	5.57
S	14.19	0.7	0	0	0	0	14.89
SW	6.12	4.87	0	0	0	0	10.99
W	5.15	2.78	0.14	0	0	0	8.07
NW	4.03	0.7	0	0	0	0	4.73
Summary	50.5	42.3	7.09	0.14	0	0	100



% Icon Classes (kph)

51 0.0-6.0

42 6.0-12.0

7 12.0-20.0

0 20.0-29.0

0 29.0-39.0

0 >39.0

JOB #: 196-2016-10-93-C

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WIND DIRECTION



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Reno Station - October 2016

WIND DIRECTION Hourly Averages (WD)

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

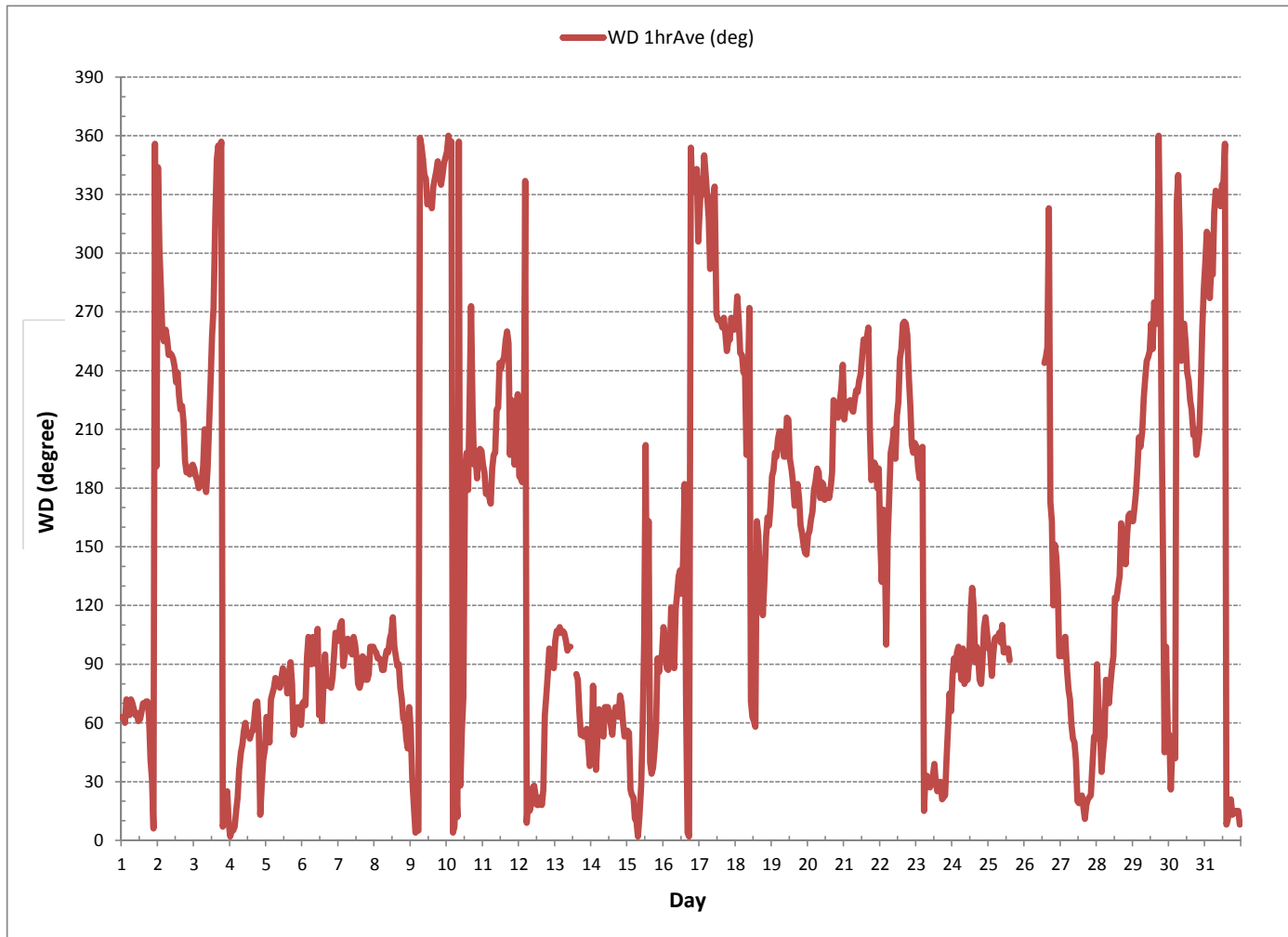
STATUS FLAG CODES

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

LAST CALIBRATION:	October 13, 2016
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	3 HRS	OPERATIONAL TIME:	722 HRS
STANDARD DEVIATION:	96.66	AMD OPERATION UPTIME:	97.0 %
		MONTHLY AVERAGE	76 (ENE)

WIND DIRECTION Hourly Averages (WD)



RELATIVE HUMIDITY



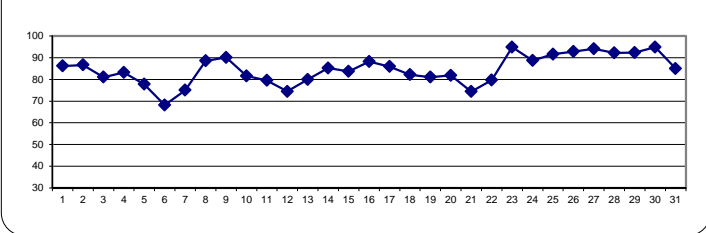
RELATIVE HUMIDITY Hourly Averages (RH %)

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-HOUR AVG.	RDGS.
DAY	HOURLY MAX																												
1	83	80	78	77	76	78	80	82	82	85	88	89	89	88	89	90	90	90	90	91	91	93	94	94	94	76	94	86	24
2	94	94	94	94	95	93	92	90	89	87	85	78	74	70	71	76	77	79	87	91	92	93	93	91	70	95	87	24	
3	90	90	89	89	88	89	92	92	87	78	67	64	60	51	52	57	64	79	93	94	95	95	95	95	51	95	81	24	
4	95	94	93	93	92	92	92	91	90	89	86	79	71	68	67	67	68	70	76	79	81	85	89	90	67	95	83	24	
5	89	89	89	89	90	89	88	87	82	79	75	71	67	62	61	58	60	67	74	79	81	79	80	81	58	90	78	24	
6	83	84	85	84	85	85	86	85	80	76	73	68	56	45	36	34	40	47	56	64	68	69	71	75	34	86	68	24	
7	79	82	85	86	84	83	79	77	74	68	63	57	55	55	55	58	75	88	89	88	88	88	88	88	55	89	75	24	
8	89	86	85	88	89	91	91	91	90	90	90	86	83	84	85	86	86	87	89	92	92	92	91	91	83	92	89	24	
9	90	91	93	93	92	92	93	93	92	91	90	88	85	86	86	87	88	88	88	88	91	92	91	91	91	85	93	90	24
10	92	92	92	92	92	90	87	87	84	81	79	75	72	72	69	69	76	79	81	77	75	76	76	76	69	92	82	24	
11	74	79	83	87	89	90	89	89	84	81	80	73	67	67	64	57	59	69	84	89	88	89	89	88	57	90	80	24	
12	89	90	90	90	90	90	90	88	84	74	63	58	53	49	51	56	63	71	71	70	71	72	74	49	90	74	24		
13	76	79	79	80	80	80	80	81	80	79	76	71	32	60	74	83	91	92	92	91	90	90	89	32	92	80	24		
14	88	87	87	88	88	87	87	86	84	84	84	84	84	84	84	84	83	83	84	84	84	83	85	86	84	83	88	85	24
15	85	86	87	87	88	89	89	88	87	84	83	77	71	73	73	77	80	83	86	87	86	86	88	87	71	89	84	24	
16	87	86	85	86	89	89	89	91	87	86	84	82	81	82	86	86	88	91	92	93	93	94	94	95	81	95	88	24	
17	94	93	93	93	94	92	90	88	86	83	78	76	79	77	76	78	83	85	87	87	86	87	88	88	76	94	86	24	
18	87	86	88	88	87	87	89	90	86	81	80	77	75	72	69	71	73	76	80	84	86	88	87	86	69	90	82	24	
19	89	88	90	91	92	93	92	92	90	86	80	75	68	65	62	62	70	82	84	84	81	79	76	74	62	93	81	24	
20	75	78	79	81	83	84	84	85	85	81	80	79	78	74	73	70	75	78	81	88	93	94	93	93	70	94	82	24	
21	94	93	93	93	91	92	91	88	82	74	67	60	55	51	49	47	50	64	75	77	77	76	74	72	47	94	74	24	
22	64	61	67	72	78	77	81	86	81	70	74	69	72	74	76	83	87	89	87	89	93	94	94	95	61	95	80	24	
23	95	94	94	93	93	94	94	93	94	94	94	94	95	95	96	96	96	96	96	96	96	96	96	96	93	96	95	24	
24	94	94	94	93	92	92	92	93	93	92	91	88	85	84	84	83	84	86	87	87	86	84	84	85	83	94	89	24	
25	87	88	91	91	90	90	91	92	91	90	89	87	89	90	92	94	94	94	95	95	96	96	96	96	87	96	92	24	
26	96	96	96	96	96	95	94	95	94	92	92	91	91	90	87	88	88	92	95	94	93	92	91	92	87	96	93	24	
27	94	95	96	95	95	95	95	95	95	94	94	94	93	94	94	94	93	93	94	94	94	93	92	92	92	96	94	24	
28	93	93	94	95	95	95	92	92	92	92	92	91	89	88	87	88	90	92	93	93	93	94	94	94	87	95	92	24	
29	94	94	94	92	92	93	94	94	92	91	91	90	90	91	91	91	91	90	90	91	93	94	95	96	90	96	92	24	
30	96	96	96	96	96	96	96	96	96	96	96	96	96	96	94	92	91	92	93	94	95	95	94	94	91	96	95	24	
31	93	89	89	88	88	88	89	90	87	84	82	81	78	78	79	79	83	84	88	88	85	84	84	84	78	93	85	24	
HOURLY MAX	96	96	96	96	96	96	96	96	96	96	96	96	96	96	95	96	96	96	96	96	96	96	96	96	96	96	96	96	24
HOURLY AVG	88.0	88.0	88.6	89.0	89.3	89.4	89.4	89.4	87.4	84.7	82.6	79.3	75.5	74.7	74.5	75.2	77.5	81.7	85.6	87.4	87.5	87.7	87.9	87.9					

STATUS FLAG CODES

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

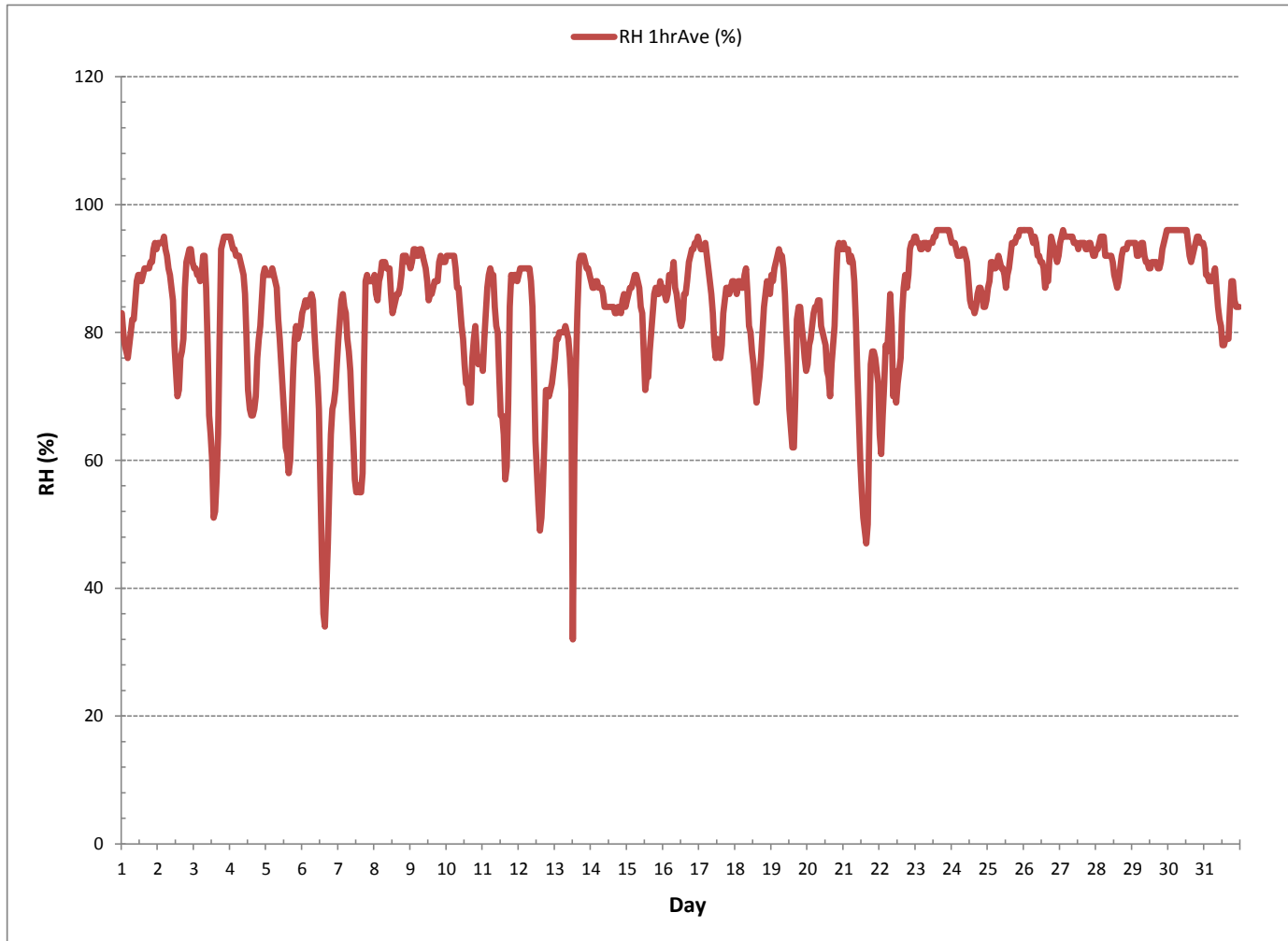
24 HOUR AVERAGES FOR October 2016



MONTHLY SUMMARY

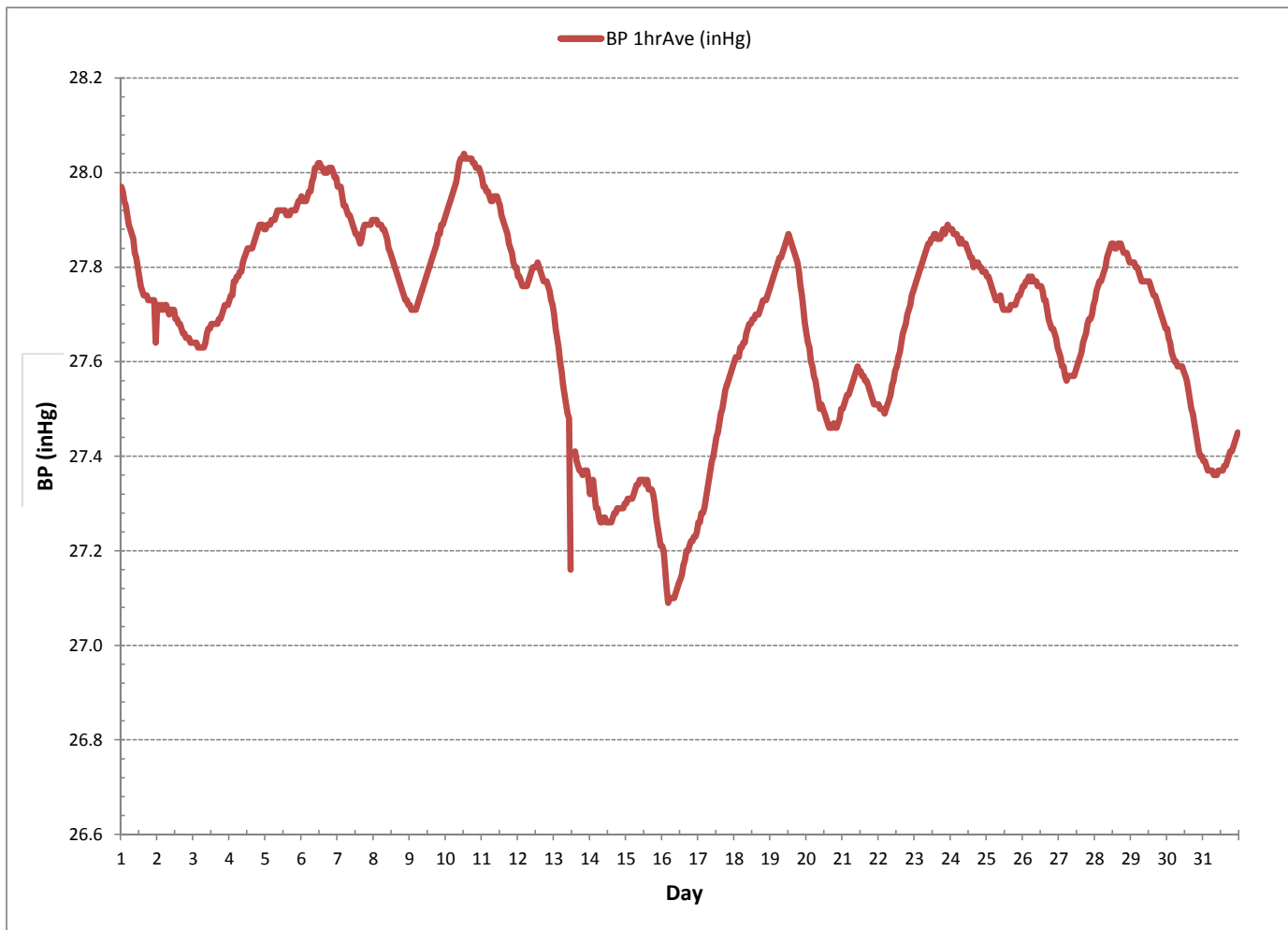
MINIMUM 1-HR AVERAGE:	32	%	@ HOUR(S)	12	ON DAY(S)	13
MAXIMUM 1-HR AVERAGE:	96	%	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	95	%			ON DAY(S)	23, 30
					VAR-VARIOUS	
				OPERATIONAL TIME:	744	HRS
				AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	10.65			MONTHLY AVERAGE:	85	%

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE

BAROMETRIC PRESSURE Hourly Averages (BP inHg)



AMBIENT TEMPERATURE

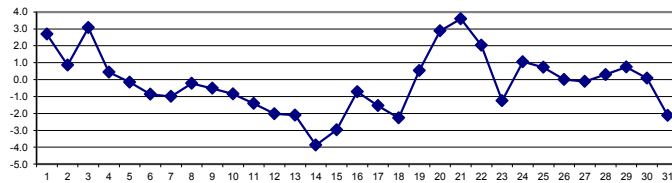
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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-HOUR	RDGS.
DAY	MIN.	MAX.	AVG.																										
1	3.4	3.4	3.4	3.3	3.3	3.2	3.0	2.7	2.7	2.5	2.5	2.8	3.2	3.4	3.3	3.4	3.1	2.5	2.4	2.1	2.0	1.6	0.8	0.7	0.7	0.7	3.4	2.7	24
2	0.5	0.4	0.3	0.4	0.3	0.1	0.0	-0.4	-0.4	-0.4	0.0	1.7	2.7	3.0	3.1	3.5	3.5	3.2	1.7	-0.3	-0.7	-0.8	-1.0	0.1	-1.0	3.5	0.9	24	
3	0.7	0.8	0.9	1.3	1.5	0.9	-0.5	-0.8	1.4	4.2	6.7	7.6	8.9	10.2	10.2	9.0	7.0	3.6	0.1	-0.3	-0.4	0.0	0.7	-0.1	-0.8	10.2	3.1	24	
4	-0.9	-1.6	-2.0	-2.4	-2.4	-2.4	-2.1	-1.7	-0.9	-0.1	1.1	2.0	3.1	3.7	4.2	4.3	4.1	3.5	2.1	1.9	1.2	0.3	-1.5	-3.1	-3.1	4.3	0.4	24	
5	-2.3	-2.4	-2.7	-2.0	-1.7	-1.4	-1.3	-1.3	-0.2	0.8	1.2	1.8	2.4	3.2	3.3	3.5	3.0	1.6	-0.3	-1.4	-1.9	-1.7	-1.8	-2.2	-2.7	3.5	-0.2	24	
6	-2.9	-3.4	-3.7	-3.3	-3.4	-3.8	-4.5	-4.4	-3.0	-1.6	-0.6	0.1	1.5	3.4	4.7	5.2	4.8	2.9	0.0	-1.9	-2.0	-1.4	-1.6	-2.0	-4.5	5.2	-0.9	24	
7	-2.7	-3.2	-3.5	-4.1	-4.0	-3.9	-3.2	-3.1	-2.4	-1.3	-0.3	1.1	1.4	1.9	2.5	2.6	2.1	0.4	-0.6	-0.7	-0.8	-0.7	-0.7	-0.7	-4.1	2.6	-1.0	24	
8	-0.8	-0.8	-0.9	-1.1	-1.2	-1.2	-1.3	-1.3	-1.0	-0.6	0.0	0.8	0.8	0.7	0.8	0.7	0.7	0.4	0.2	0.1	0.1	0.0	-0.1	-0.2	-1.3	0.8	-0.2	24	
9	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7	-0.7	-0.6	-0.4	-0.1	0.1	0.5	0.2	0.1	-0.2	-0.4	-0.7	-0.9	-1.1	-1.2	-1.2	-1.2	-1.2	-1.2	0.5	-0.5	24	
10	-1.4	-1.4	-1.8	-1.8	-1.6	-1.8	-2.4	-3.5	-2.4	-1.4	-1.1	-0.2	0.4	0.5	0.6	0.5	0.6	0.2	-0.2	-0.3	-0.5	-0.4	-0.5	-0.6	-3.5	0.6	-0.9	24	
11	-1.2	-2.7	-3.8	-4.3	-5.1	-5.4	-5.3	-4.8	-3.4	-2.0	-1.1	0.7	2.2	2.6	3.3	4.6	4.0	2.0	-1.3	-2.0	-2.0	-2.9	-3.0	-3.1	-5.4	4.6	-1.4	24	
12	-3.6	-4.1	-3.8	-4.5	-5.2	-5.7	-6.1	-5.3	-4.4	-2.8	-0.7	0.6	1.6	2.5	3.1	2.9	1.9	0.4	-1.8	-2.5	-2.2	-2.6	-3.0	-3.2	-6.1	3.1	-2.0	24	
13	-3.1	-2.9	-2.5	-2.4	-2.4	-2.7	-2.7	-2.2	-1.6	-0.8	-1.7	X	X	0.0	-0.6	-1.2	-1.5	-1.8	-2.0	-2.2	-2.4	-3.1	-3.8	-3.8	0.0	-2.1	22		
14	-4.5	-4.2	-4.0	-4.9	-4.3	-4.1	-4.1	-4.2	-4.0	-3.7	-3.4	-3.2	-3.1	-3.1	-2.9	-3.0	-3.3	-3.7	-3.9	-4.0	-4.3	-4.5	-4.4	-4.9	-4.9	-2.9	-3.9	24	
15	-4.5	-4.6	-4.9	-5.3	-6.3	-5.5	-5.2	-5.3	-5.0	-3.9	-3.3	-1.4	-0.1	-0.4	-0.1	-0.5	-0.9	-1.3	-2.0	-1.8	-1.6	-2.3	-2.8	-2.5	-6.3	-0.1	-3.0	24	
16	-1.7	-1.6	-1.6	-1.5	-1.1	-0.9	-1.0	-1.3	-1.0	-0.9	-0.6	-0.1	0.3	0.5	0.5	0.4	0.4	-0.2	-0.4	-0.6	-0.9	-1.3	-1.4	-1.2	-1.7	0.5	-0.7	24	
17	-1.3	-1.5	-1.6	-1.8	-2.0	-2.1	-2.4	-2.6	-2.4	-1.8	-1.4	-0.9	-1.0	-0.8	-0.3	-0.4	-1.0	-1.2	-1.5	-1.6	-1.7	-1.9	-1.9	-2.1	-2.6	-0.3	-1.6	24	
18	-2.2	-2.2	-3.2	-3.4	-3.5	-3.6	-4.5	-4.9	-3.5	-2.5	-2.5	-2.1	-1.7	-1.2	-0.1	-0.3	-0.6	-0.7	-1.2	-1.6	-1.9	-3.0	-1.9	-2.0	-4.9	-0.1	-2.3	24	
19	-3.7	-2.5	-3.0	-4.0	-4.0	-4.0	-3.8	-3.7	-2.8	-1.0	1.3	2.7	4.5	5.5	6.4	6.7	4.6	1.8	0.9	1.3	1.6	2.2	2.6	3.1	-4.0	6.7	0.5	24	
20	2.9	2.2	2.4	2.1	1.6	1.0	1.5	1.3	1.5	2.3	2.5	3.0	3.2	4.4	4.7	5.4	4.2	4.1	3.9	3.2	2.5	3.0	3.2	2.9	1.0	5.4	2.9	24	
21	2.5	2.6	2.4	2.1	2.0	1.5	1.3	1.4	2.5	4.1	5.4	6.8	7.6	8.4	8.9	9.0	7.8	4.1	1.7	1.1	0.9	0.7	0.5	1.0	0.5	9.0	3.6	24	
22	2.9	3.4	2.5	1.6	-0.1	0.0	-0.6	-1.2	0.0	3.2	2.9	5.1	5.2	5.4	5.1	4.1	3.3	2.8	2.8	2.2	0.8	-0.3	-0.9	-1.5	-1.5	5.4	2.0	24	
23	-1.3	-2.2	-2.1	-3.1	-3.4	-2.8	-2.5	-3.0	-3.0	-2.7	-2.1	-1.9	-1.3	-0.5	0.1	0.7	0.8	0.4	0.0	-0.1	-0.2	0.4	0.3	-0.4	-3.4	0.8	-1.2	24	
24	-0.5	-0.1	0.0	0.7	0.8	0.7	0.8	0.8	0.8	0.9	1.1	1.5	1.9	1.9	2.0	2.1	1.9	1.5	1.2	1.1	1.0	1.0	1.1	1.1	-0.5	2.1	1.1	24	
25	1.0	1.0	0.6	0.5	0.7	0.7	0.7	0.8	0.9	1.0	1.1	1.3	1.7	1.5	1.7	1.0	0.4	0.3	0.2	0.1	0.0	-0.1	-0.1	-0.1	1.7	0.7	24		
26	-0.1	-0.1	-0.3	-0.3	-0.5	-0.6	-0.5	-0.4	-0.5	-0.4	-0.3	0.1	0.3	0.8	1.5	1.4	1.3	-0.4	-0.7	0.0	0.0	0.1	0.1	-0.3	-0.7	1.5	0.0	24	
27	-0.6	-0.6	-0.5	-0.3	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1	0.3	0.5	0.3	0.4	0.4	0.2	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	0.0	-0.6	0.5	-0.1	24	
28	0.0	0.0	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.4	-0.3	-0.2	0.3	0.7	0.9	1.2	1.1	1.1	0.7	0.6	0.5	0.5	0.6	0.6	0.6	-0.4	1.2	0.3	24	
29	0.6	0.6	0.8	1.1	1.3	1.4	1.3	1.3	1.2	1.2	1.1	1.3	1.5	1.3	1.4	1.1	0.8	0.6	0.3	0.1	-0.2	-0.5	-0.8	-1.0	-1.0	1.5	0.7	24	
30	-0.8	-0.7	-0.7	-0.6	-0.5	-0.5	-0.6	-0.6	-0.6	-0.6	-0.8	-0.8	-0.5	-0.1	0.6	1.1	1.0	1.1	1.2	1.1	1.2	1.3	1.1	0.5	-0.8	1.3	0.1	24	
31	0.3	-0.2	-0.8	-0.8	-1.1	-1.4	-2.1	-2.3	-2.3	-2.1	-1.9	-1.9	-1.6	-1.5	-1.8	-2.0	-2.4	-2.8	-3.2	-3.5	-3.6	-3.9	-4.0	-4.1	-4.1	0.3	-2.1	24	
HOURLY MAX	3.4	3.4	3.4	3.3	3.3	3.2	3.0	2.7	2.7	4.2	6.7	7.6	8.9	10.2	10.2	9.0	7.8	4.1	3.9	3.2	2.5	3.0	3.2	3.1					
HOURLY AVG	-0.8	-0.9	-1.1	-1.3	-1.4	-1.5	-1.6	-1.7	-1.2	-0.4	0.2	0.9	1.6	2.0	2.2	2.2	1.7	0.8	0.0	-0.4	-0.5	-0.7	-0.8	-1.0					

STATUS FLAG CODES

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

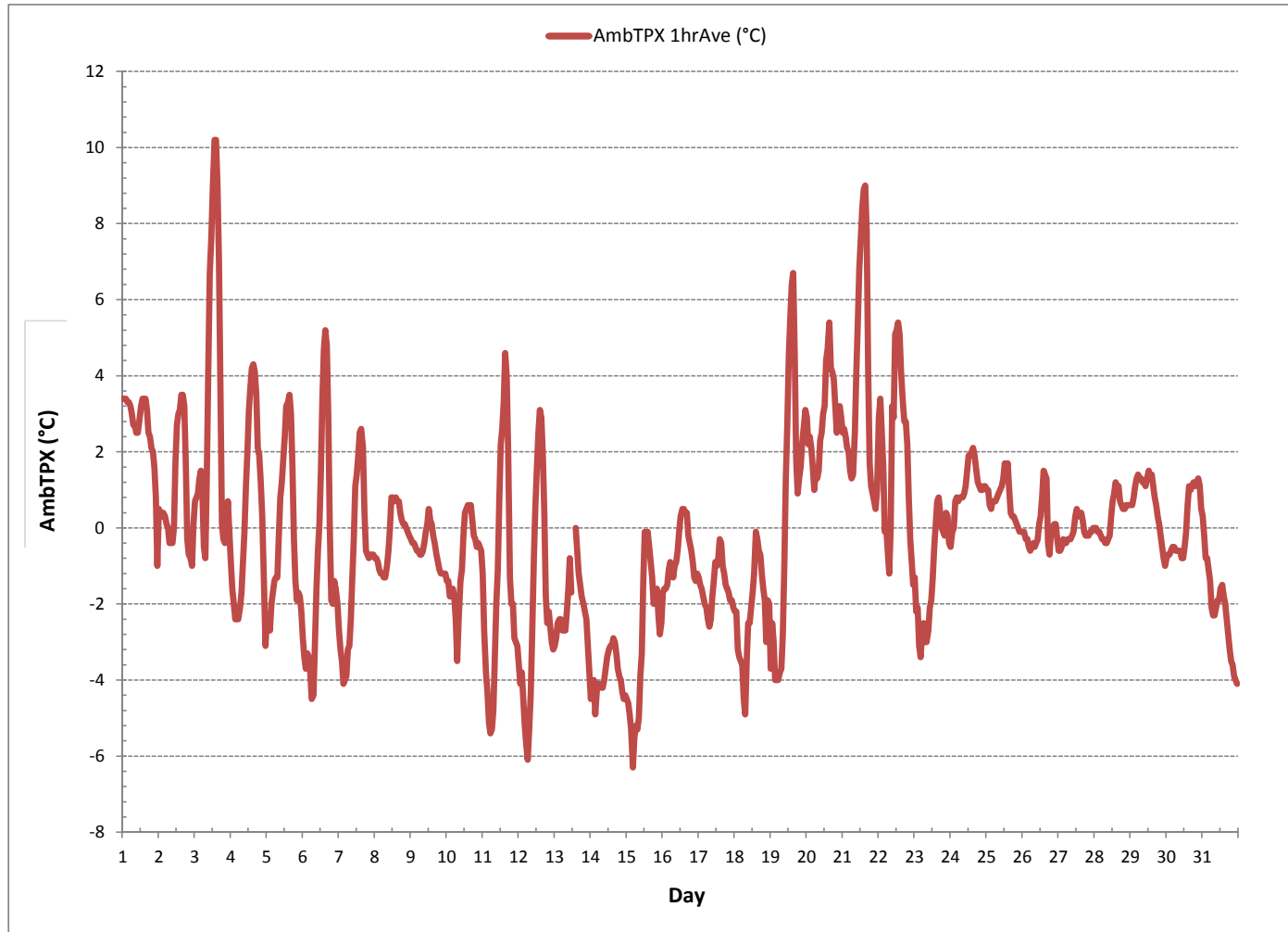
24 HOUR AVERAGES FOR October 2016



MONTHLY SUMMARY

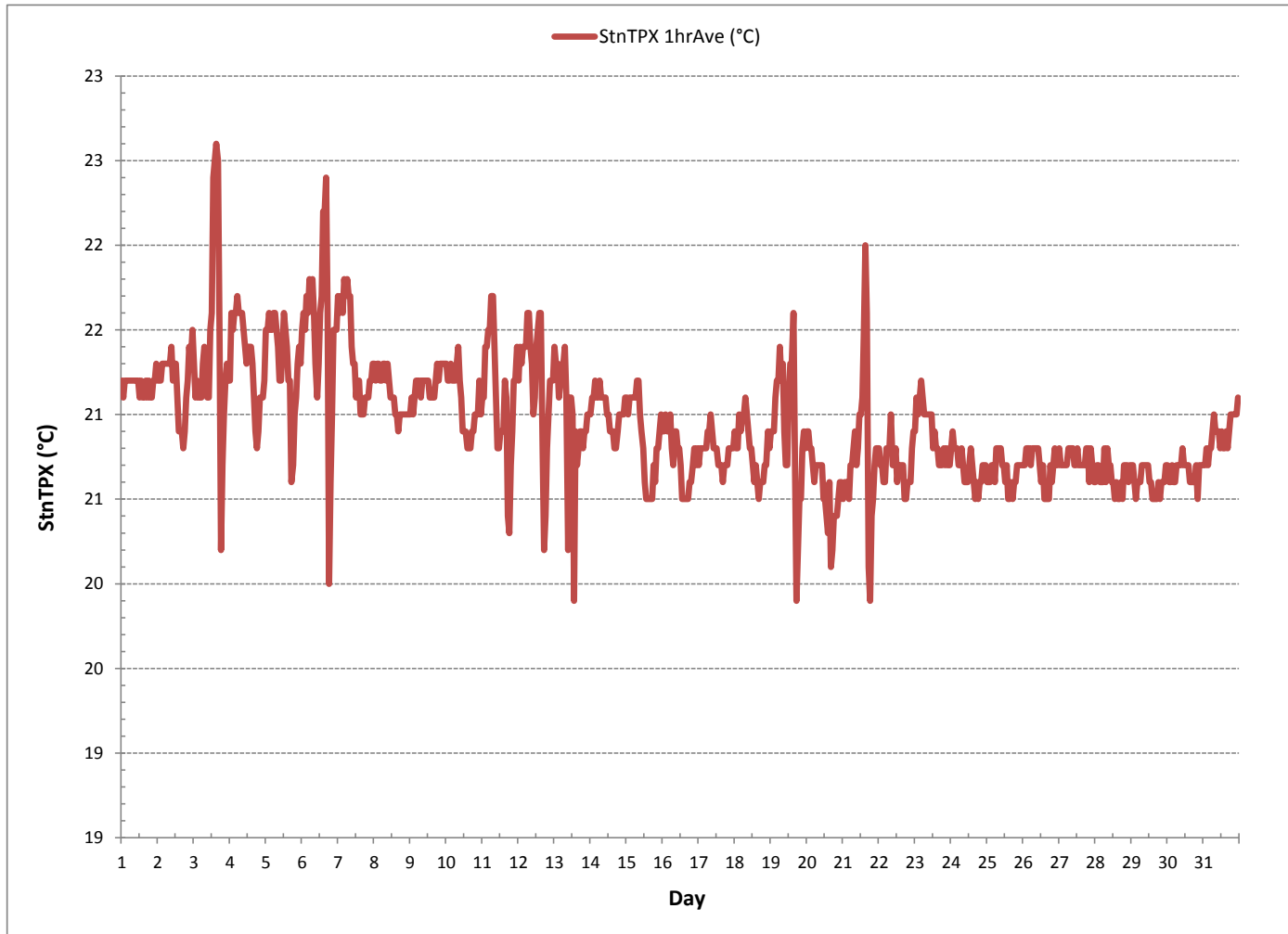
MINIMUM 1-HR AVERAGE:	-6.3 °C	@ HOUR(S)	4	ON DAY(S)	15
MAXIMUM 1-HR AVERAGE:	10.2 °C	@ HOUR(S)	13, 14	ON DAY(S)	3, 3
MAXIMUM 24-HR AVERAGE:	3.6 °C			ON DAY(S)	21
				VAR-VARIOUS	
OPERATIONAL TIME:				742	HRS
AMD OPERATION UPTIME:				99.7	%
STANDARD DEVIATION:	2.51	MONTHLY AVERAGE:		-0.2	°C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)




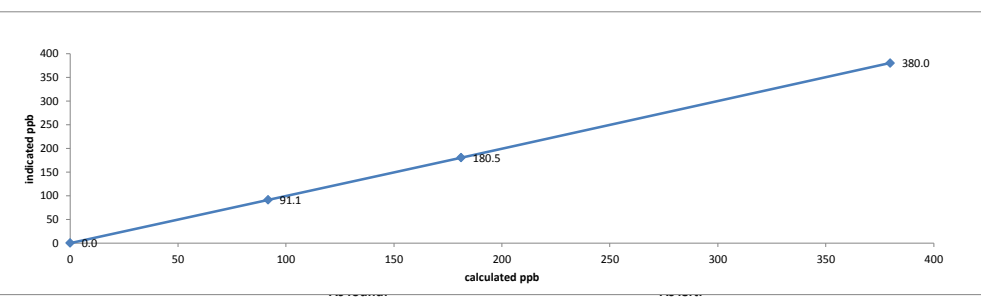
STATION TEMPERATURE

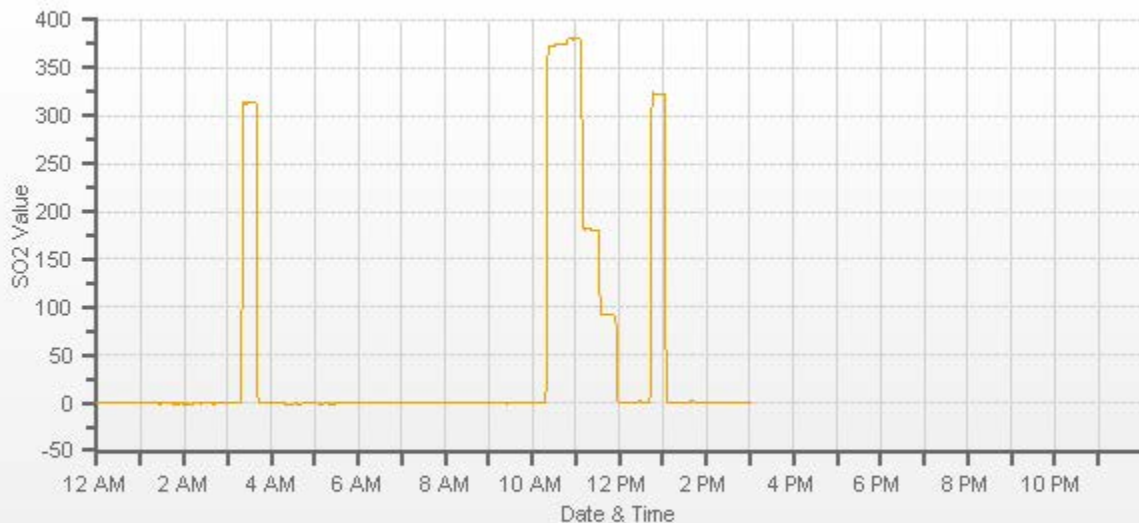
STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

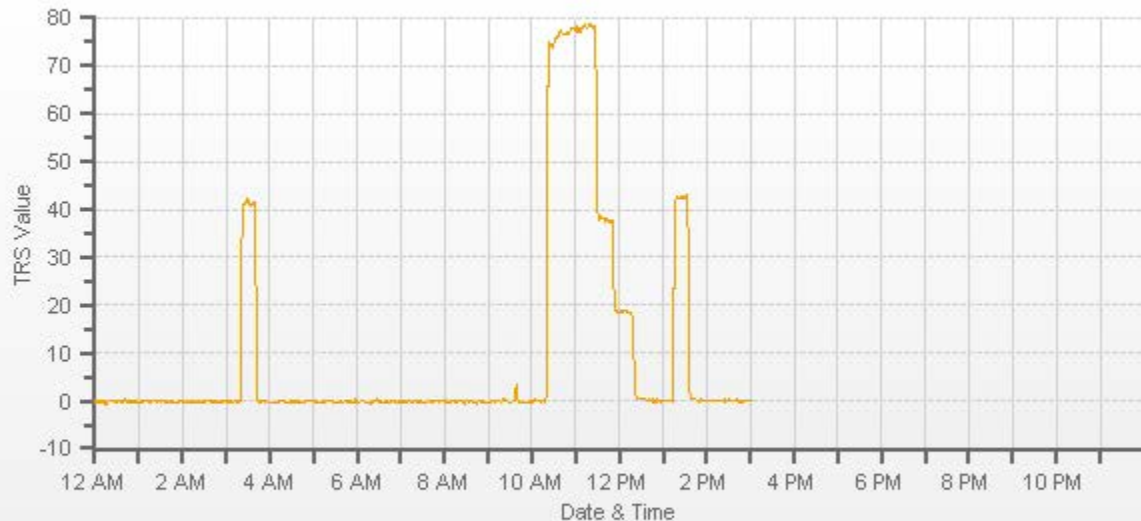
 API 100A Sulphur Dioxide Analyzer Calibration																																																																												
Date: <u>October 13, 2016</u> Company/Airshed: <u>PRAMP</u> Location/Station Name: <u>RENO</u> Parameter: <u>Sulphur Dioxide</u> Start Time 24 hr. (mst): <u>9:30</u> End Time 24 hr. (mst): <u>13:10</u> Calibration Method: <u>Gas Dilution</u>	Barometric Pressure: <u>27.48 inHg</u> Station Temperature °C: <u>21</u> Weather Conditions: <u>Mainly cloudy with clear breaks</u> Calibration Purpose: <u>routine monthly</u> Performed By/Reviewer: <u>Limin Li</u> <u>Trina Whitsitt</u> Cal Gas Expiry Date: <u>December 25, 2018</u> Converter Model & s/n (if applicable): <u>n/a</u>																																																																											
Analyzer: ID# or Serial Number: <u>841</u> Range ppb: <u>500</u> Last Calibration Date: <u>September 7, 2016</u> As Found C.F.: <u>1.013</u> Previous C.F.: <u>1.000</u> New C.F.: <u>0.999</u>																																																																												
Calibrator: Flow Meter ID's: <u>n/a</u> Make & Model: <u>Sabio 2010</u> Serial #: <u>17200415</u> Cal Gas Cylinder I.D. #: <u>BLM002756T</u> Cal Gas Conc. (ppm): <u>49.9</u>	Standard Calibration Points for Ranges <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>ppb</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>380</td> </tr> <tr> <td>Mid</td> <td>180</td> </tr> <tr> <td>Low</td> <td>90</td> </tr> </tbody> </table>	Point	ppb	High	380	Mid	180	Low	90																																																																			
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— SO2[ppb]

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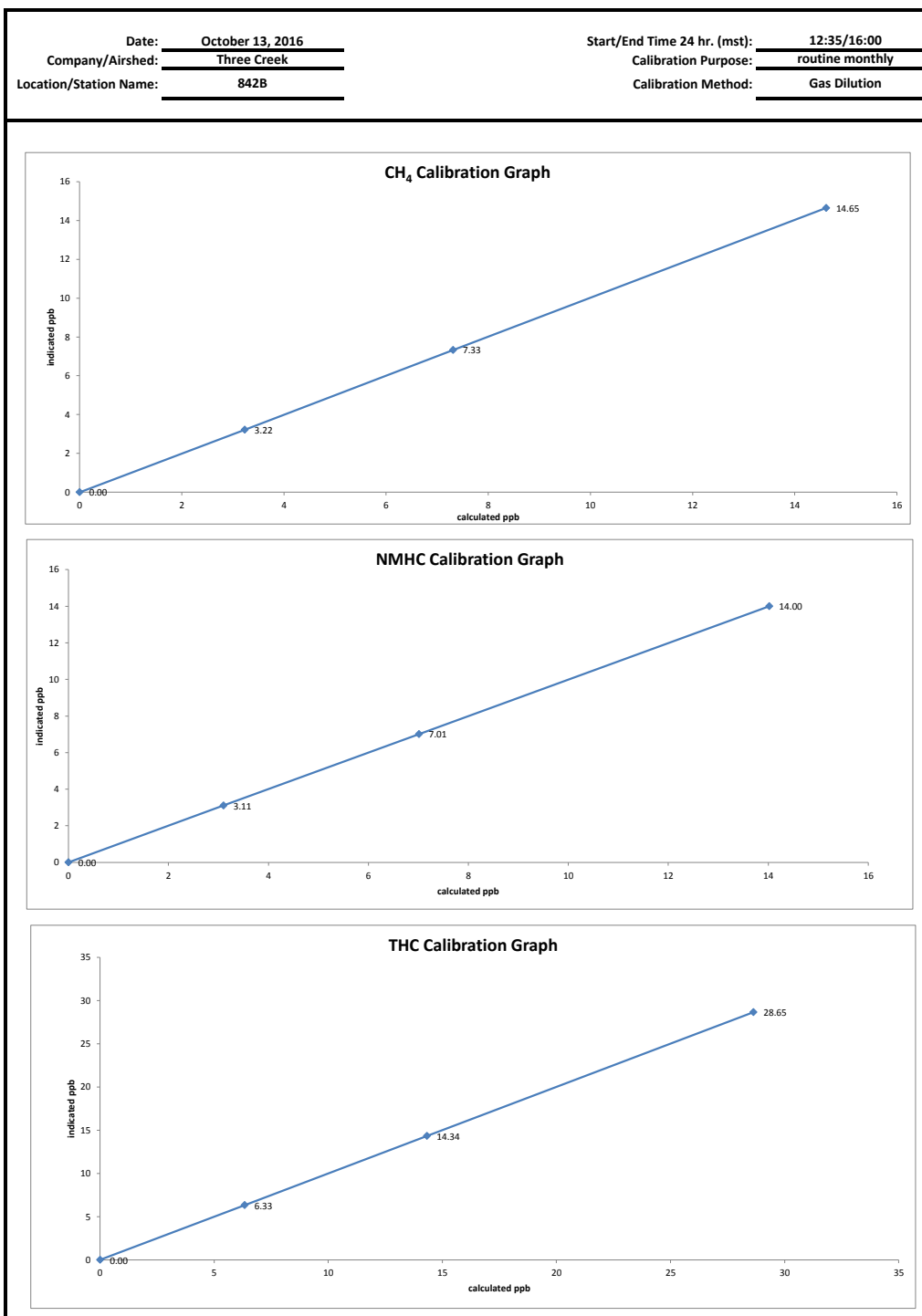
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Calibrator: Flow Meter ID's: n/a Make & Model: EnviroNics 2000 Serial #: 1991 Cal Gas Cylinder I.D. # : BLM2508 Cal Gas Conc. (ppm): 10.2	Standard Calibration Points for Ranges <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><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																																																														
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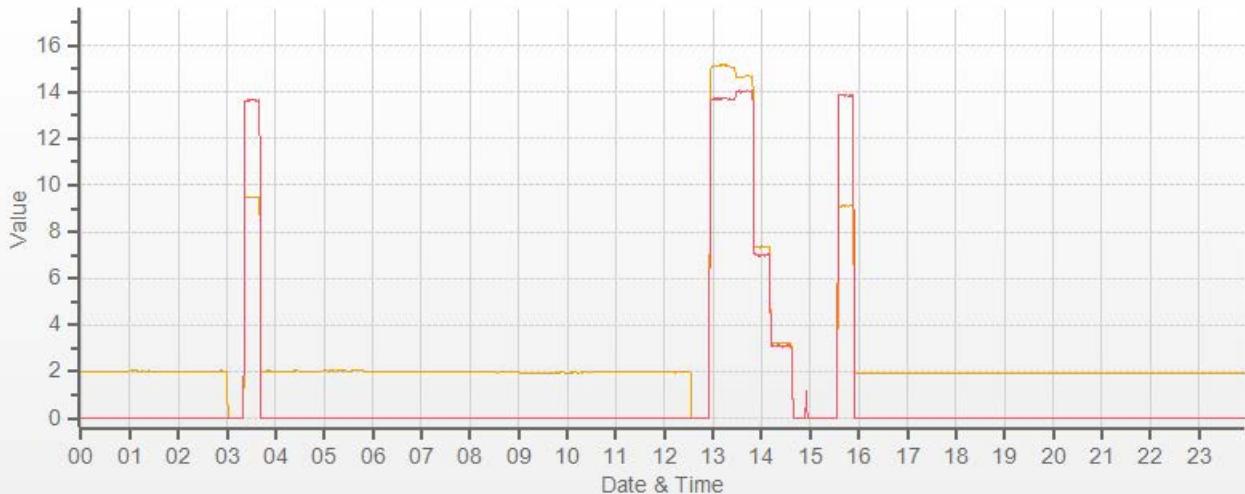


— TRS[ppb]

TOTAL HYDROCARBON

Thermo 55i Methane/Non-Methane Analyzer Calibration																																																																																																																																
Date: October 13, 2016 Company/Airshed: Three Creek Location/Station Name: 842B Parameter: CH ₄ / NMHC / THC Start/End Time 24 hr. (mst): 12:35/16:00 Calibration Method: Gas Dilution	Barometric Pressure: 27.48 inHg Station Temperature °C: 20.5 Weather Conditions: Mainly cloudy with clear breaks Calibration Purpose: routine monthly Performed By/Reviewer: Limin Li Trina Whitsitt Cal Gas Expiry Date: July 7, 2022																																																																																																																															
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Calibrator: Flow Meter ID's: n/a Make & Model: Sabio 2010 Serial #: 17200415 Cal Gas Cylinder I.D. #: LL83638 CH₄ Cylinder Conc. = 582.0 203.0 =C ₂ H ₆ Cylinder Conc. CH₄ as C₂H₆ = 558.3 1140.3 =total CH ₄ equivalent																																																																																																																																
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Interface Board Voltages: Bias Supply: -288.3 Temperatures: Detector Oven: 175 Filter: 175 Column Oven: 75 Internal: 29.7 Cylinder Pressures/reg.: Carrier: 1050 50 Fuel: 650 50 Span Gas: 150 22 Zero Air Generator: 45 Internal Pressures: Carrier: 31.3 Fuel: 41.6 Air: 25.9 FID Status: Status: LIT Counts: 23479 Flame: 405 Det Base: 175 Flame and Power Stats: Last Power On: 09SEPT2016 08:14:30 Flameouts: 1 Det Oven at Start: 158.1 Col Oven at Start: 71.7 Calibration History: Time: 09SEPT2016 09:19 Type: SPAN Status: GOOD Check/Adjust: ADJUST CH ₄ Span Conc: 14.58 CH ₄ SP Ratio: 0.000788 CH ₄ RT: 11.6 CH ₄ PK IDX: 18 CH ₄ PK HT: 18496 NM Span Conc: 14.12 NM SP Ratio: 0.000157	Calibration History cnt'd: NM Peak Area: 89836 Crucial Settings: Methane Start: n/a Methane End: n/a Backflush: n/a NMHV Start: n/a NMHC End: n/a Run History>1: Date: 13OCT16 Time: 10:01 CH ₄ PK HT: 2471 CH ₄ RT: 11.6 CH ₄ Baseline: 1949 CH ₄ LOD: 64 CH ₄ SD: 21 CH ₄ CONC: 1.95 NM PK HT: 0 NM Peak Area: 0 NM CONC: 0.00 NM Base Start: 1923 NM Base End: 1917 NM LOD: 13 NM Start IDX: 62 NM End IDX: 63 NM Max Slope: 4.3e-01 NM Min Slope: -5.5e-01 NM PT Count: 0 Expected Values: Previous CH ₄ : 9.54 Previous NMHC: 13.68 Previous THC: 23.24 New CH ₄ : 9.54 New NMHC: 13.68 New THC: 23.24																																																																																																																															
Comments: The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned.																																																																																																																																
No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.																																																																																																																																





— CH4[ppm] — NMHC[ppm]

WIND SYSTEM



Meteorological Sensor Audit

Location Information

Company:	PRAMP	Performed By:	Limin Li
Audit Location:	RENO	Reviewed By:	Trina Whitsitt
Audit Date:	October 13, 2016	Start Time (mst):	11:30
Previous Audit Date:	July 9, 2015	End Time (mst):	11:55

Wind Speed Sensor Information

Calibrator Information

Sensor make:	RM Young	Make:	RM Young
Sensor model:	5103VK	Model:	18802
Serial#:	110980	I.D.#/Serial#:	4309
Voltage range:	0-1V/output single range: 0-200kph	Certification Date:	October 9, 2013

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	17.7	17.7	0.996
2000	35.3	35.2	35.2	1.001
3000	52.9	52.9	52.9	1.001
4000	70.6	70.5	70.5	1.001
5000	88.2	88.1	88.1	1.001
6000	105.8	105.7	105.7	1.001
7000	123.5	123.3	123.3	1.001
8000	141.1	140.9	140.9	1.002
9000	158.8	158.6	158.6	1.001
10000	176.4	176.1	176.1	1.002
		The audit meets AMD requirements.	Average Correction Factor=	1.001

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

Generated Wind Direction	Indicated Wind Direction	Degrees Difference
0	0.8	-0.8
45	46.2	-1.2
90	90.4	-0.4
135	134.8	0.2
180	179.9	0.1
225	225.0	0.0
270	270.5	-0.5
315	315.5	-0.5
360	355.2	4.8
The audit meets AMD requirements.		Average Degrees Difference= 0.9

Recommendations:

360 deg is 355 deg position. Reading is 355.2deg.
 Wind system is installed back due to new system audit fail.

CALIBRATORS

Company Maxxam Operator: Christopher Wesson

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>17200415</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>May 2015</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>LL42475</u>	Barometric Pressure	<u>N/A</u>
NO/NOx Concentration	<u>48.5/48.5</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
5029	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5030	80.6	0.777	0.777	0.805	-0.005	0.800	4%	3%
5025	39.4	0.380	0.380	0.394	-0.002	0.392	4%	3%
5028	19.8	0.191	0.191	0.198	-0.001	0.197	4%	3%
Absolute Average Percent Difference							3.65%	3.09%

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)=	1.0360	0.90-1.10		m (Slope)=	1.0295		
b (Intercept % of FS)=	0.0110	± 3% F.S.		b (Intercept % of FS)=	0.0293		

Flow	O ₂ Conc	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
5030	Lamp C.	0.000	0.804	-0.004	0.800	NO ₂	% Diff. Limit
5030	1.388	0.495	0.309	0.491	0.800	0%	± 10%
5030	0.745	0.241	0.563	0.239	0.802	1%	± 10%
5030	0.367	0.091	0.713	0.089	0.801	2%	± 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)=	0.9988	0.90-1.10					
b (Intercept % of FS)=	-0.2760	± 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>
		Last Calibration Date	<u>May 18, 2016</u>
		Full Scale (ppm)	<u>1.0</u>

 COMMENTS: Contains 50.3 ppm SO₂. Flows not measured as per Chapter 7, Section 5 of AMD.

 Auditor: AI Clark
 Operator Signature: *Christopher Wesson*

 Date: May 18, 2016
 Location: McIntyre Center Edmonton



Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-166

Company Maxxam **Operator:** Chris Wesson

Calibrator:		Flow Measurement Device:	
Make/Model	<u>EnviroNics 2000</u>	Make/Model	<u>None</u>
Serial Number	<u>1991</u>	Serial Number	<u>None</u>
Last Verification Date	<u>April 2, 2015</u>	Temperature (°C)	<u>23.5</u>
NO Cylinder S/N	<u>LL119317</u>	Barometric Pressure	<u>706 mmHg</u>
NO/NOx Concentration	<u>50.3ppm/50.3ppm</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
		Pt. #3	<u>5001</u>
Gas Flow (sccm)			
Pt. #1	<u>77.5</u>	Pt. #2	<u>37.7</u>
		Pt. #3	<u>18.88</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5000	77.5	0.780	0.780	0.795	0.000	0.795	2%	2%
5000	37.7	0.380	0.380	0.381	-0.001	0.381	0%	0%
5001	18.9	0.190	0.190	0.189	0.000	0.190	-1%	0%
Absolute Average Percent Difference							0.52%	0.73%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO		LIMITS		NO _x			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0204	0.90-1.10		m (Slope)=	1.0200		
b (Intercept % of FS)=	-0.3105	± 3% F.S.		b (Intercept % of FS)=	-0.2765		

Flow	O ₂ Conc	NO Decrease	NO	NO ₂	NO _x	% Diff. Vs Audit gas	
5000	0	0.000	0.796	0.000	0.796	NO ₂	% Diff. Limit
5000	485	0.521	0.275	0.520	0.795	0%	± 10%
5000	280	0.271	0.525	0.271	0.796	0%	± 10%
5000	120	0.104	0.692	0.105	0.797	1%	± 10%
Absolute Average Percent Difference						0.3%	± 10%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO ₂		LIMITS					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	0.9973	0.90-1.10					
b (Intercept % of FS)=	0.0603	± 3% F.S.					

AENV Standards		NO _x Analyzer	
Audit Calibrator			
Make/Model	<u>Thermo 146i</u>	Make/Model	<u>Thermo 42i</u>
Serial/AMU Number	<u>1809</u>	Serial/AMU Number	<u>1868</u>
		Last Calibration Date	<u>March 28, 2016</u>
		Full Scale (ppm)	<u>1</u>

COMMENTS: NO Cyl has 49.9ppb SO2 - Flows Not Manually Measured

Auditor: Shea Beaton
 Operator Signature:

Date: March 31, 2016
 Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-342CGA

Company: Maxxam **Operator's Name:** Limin Li
Cylinder #: BLM002756T **Concentration PPM:** 49.9 **Tolerance(%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
 Serial Number: AMU 1690
 Last Verification Date: March 31, 2015
 Gas Type: SO2 Conc. 98.57
 Cylinder Number: CAL016720

Flow Measurement Device:

Make/Model: Bios DC2
 Serial Number: AMU 1659
 Temp. °C: 22.5 C
 B.P. 690 mmhg

Reference Analyzer:

Make/Model: Teco 43C Serial/AMU Number: 1623
 Instrument Settings: Zero: 7.9 Span: 1.028 Range: 1.0
 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	0.000	0.0000	0.000	0.000
4976	82.6	0.821	0.01660	60.242	49.5
4993	41.0	0.410	0.00821	121.780	49.9
4977	20.2	0.202	0.00406	246.386	49.8
Average Cylinder Concentration:					49.7

Previous Stated Concentration PPM: 49.9

Percent variance from Stated: 0.4

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

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



Praxair
 5700 South Alameda Street
 Los Angeles, CA 90058
 Tel: (323) 585-2154 Fax: (714) 542-6689
 PGVPID: F22014

DocNumber: 000068924

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

MAXXAM ANALYTICS INC *NA*
 9372 49TH ST
 EDMONTON AB T6B 2L

Praxair Order Number: 21137117
 Customer P. O. Number: 35-55963
 Customer Reference Number:

Fill Date: 7/1/2014
 Part Number: NI ME600P2E-AQ
 Lot Number: 109418203
 Cylinder Style & Outlet: AQ CGA 350
 Cylinder Pressure & Volume: 2200 psig 78 cu. ft.

Certified Concentration:

Expiration Date:	7/7/2022	NIST Traceable
Cylinder Number:	LL83638	Analytical Uncertainty:
582 ppm	METHANE	± 1.5 %
203 ppm	PROPANE	± 0.9 %
Balance	NITROGEN	

Certification Information: Certification Date: 7/7/2014 Term: 96 Months Expiration Date: 7/7/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: METHANE

Requested Concentration: 600 ppm
 Certified Concentration: 582 ppm
 Instrument Used: MKS Multigas 2031 FTIR
 Analytical Method: Fourier Transform Infrared
 Last Multipoint Calibration: 6/24/2014

Reference Standard Type: GMIS
 Ref. Std. Cylinder #: CC139480
 Ref. Std. Conc: 246 ppm
 Ref. Std. Traceable to SRM #: 2751
 SRM Sample #: 212-09-AL
 SRM Cylinder #: SX-20000

First Analysis Data:		Date: 7/7/2014	
Z: 0	R: 249.5	C: 589.4	Conc: 581.21
R: 249.5	Z: 0	C: 589	Conc: 580.82
Z: 0	C: 592	R: 249.4	Conc: 583.77
UOM: ppm	Mean Test Assay:		581.93 ppm

Second Analysis Data:		Date:	
Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: ppm	Mean Test Assay:		0 ppm

2. Component: PROPANE

Requested Concentration: 200 ppm
 Certified Concentration: 203 ppm
 Instrument Used: MKS Multigas 2031 FTIR
 Analytical Method: Fourier Transform Infrared
 Last Multipoint Calibration: 6/24/2014

Reference Standard Type: GMIS
 Ref. Std. Cylinder #: CC 163442
 Ref. Std. Conc: 265.8 ppm
 Ref. Std. Traceable to SRM #: vs 2644a
 SRM Sample #: 101-C-45
 SRM Cylinder #: XF003829B

First Analysis Data:		Date: 7/7/2014	
Z: 0	R: 273.6	C: 208.4	Conc: 202.43
R: 273.7	Z: 0	C: 208.6	Conc: 202.63
Z: 0	C: 208.5	R: 273.6	Conc: 202.53
UOM: ppm	Mean Test Assay:		202.53 ppm

Second Analysis Data:		Date:	
Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: ppm	Mean Test Assay:		0 ppm

Analyzed by:

Jack Fu

Certified by:

Ying Yu

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

***APPENDIX III
REPORT CERTIFICATION FORM***

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
NO	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Peace River Area Monitoring Program Committee	Reno 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

22-Nov-2016





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>196-2016-10-93-C</u>
Site: <u>Reno Station</u>	Contact: <u>Anthony Traverse</u>

Level 0 Preliminary Verification	<u></u>	Date <u>14-Nov-16</u>
Level 1 Primary Validation	<u></u>	Date <u>14-Nov-16</u>
Level 2 Final Validation	<u></u>	Date <u>22-Nov-16</u>
Level 3 Independent Data Review	<u></u>	Date <u>28-Nov-16</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.