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Sept 20, 2015

RE: July 2015 Ambient Air Monitoring Monthly Reports

Attached are the monthly ambient air monitoring reports for the LICA Airshed Zone's Cold Lake South, Maskwa, St. Lina, and Elk Point continuous stations.

Should you have any questions, please don't hesitate to contact me directly at (780) 266-7068.

Respectfully,

A handwritten signature in blue ink that reads "Michael Bisaga".

Michael Bisaga

Airshed Program Manager
Lakeland Industry and Community Association

cc (email): LICA Office

AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
COLD LAKE SOUTH SITE

JOB #:2833-2015-07-01- C

JULY 2015

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
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Attention: MIKE BISAGA

DATE: August 25, 2015

Prepared by:



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SUMMARY

In JULY 2015, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Cold Lake South Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

All Gas Parameters: Channels were put into maintenance mode on July 7 during HVAC maintenance.

PM 2.5: Seven 24-hr contraventions were recorded this month: concentrations of 51 ug/m³ on July 1, 114 ug/m³ on July 4, 47 ug/m³ on July 9, 155 ug/m³ on July 10, 128 ug/m³ on July 11, 41 ug/m³ on July 12 and 33 ug/m³ on July 13. AE Reference numbers 300251, 300393, 300636, 300693, 300799, 300802 and 300905 respectively.

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 is issuing this completed report to Lakeland Industry & Community Association, Cold Lake South Site.

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

Lakeland Industry & Community Association Cold Lake South Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	1-HOUR			24-HOUR		
	1-HR	24-HR	1-HR	24-HR				HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
SO2 (PPB)	172	48	0	0	0	2	28, 28	7, 9	4.2 8.5	W NW	0.2	VAR	99.5
TRS (PPB)	-	-	-	-	1	14	31	0	2.3	W	1.6	15	99.3
THC (PPM)	-	-	-	-	2.1	3.2	6	5	0.6	NW	2.4	25, 28	99.5
NO2 (PPB)	159	-	0	-	2.1	9.4	4	7	2.3	NW	4.2	1	99.5
NO (PPB)	-	-	-	-	0.3	8.3	15	4	1.1	ESE	0.8	28	99.5
NOX (PPB)	-	-	-	-	2.3	14.9	28	7	4.2	W	4.5	1	99.5
O3 (PPB)	82	-	0	-	24	56	8	14	9.2	SW	42.7	11	99.5
PM2.5 (UG/M3)	-	30	-	7	25.8	278.0	10	9	9.6	NE	155.2	10	97.4
RELATIVE HUMIDITY (%)	-	-	-	-	67.8	100	VAR	VAR	VAR	VAR	92.5	17	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	18.5	30.3	11, 12	16, 13	14.4 4.8	SE ENE	24.4	12	100.0
VECTOR WS (KPH)	-	-	-	-	5.8	17.7	29	12	-	W	10.2	11, 29	100.0
VECTOR WD (DEG)	-	-	-	-	WNW	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 1- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 24- Hour Exceedences

DATE	READING (ug/m3)	WS (kph)	WD (deg)
JULY 1	51	4.3	W
JULY 4	114	6.3	WNW
JULY 9	47	4.9	E
JULY 10	155	7.6	NE
JULY 11	128	10.2	N
JULY 12	41	4.1	N
JULY 13	33	4.3	N

Passive Sampler Summary

	Sulphur Dioxide (in ppb)
Mean	0.4
Minimum	0.1
Maximum	1.2

Note: Access papers for stations #12 and #25 were not provided and there were aggressive animals at station # 19.
 As a result, samples were not changed out in these stations.

	Hydrogen Sulphide (in ppb)
Mean	0.27
Minimum	0.05
Maximum	0.86

Note: Access papers for stations #12 and #25 were not provided. As a result, samples were not changed out in these stations.

	Nitrogen Dioxide (in ppb)
Mean	1.0
Minimum	0.1
Maximum	3.2

Note: Access papers for station #12 were not provided and there were aggressive animals at station # 19.
 As a result, samples were not changed out in these stations.

	Ozone (in ppb)
Mean	29.10
Minimum	21.13
Maximum	37.62

Note: Access papers for station #12 were not provided and there were aggressive animals at station # 19.
 As a result, samples were not changed out in these stations.

Volatilic Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatilic Organic Compound
JULY 5, 2015	9.20	ACETONE
JULY 11 , 2015	8.40	ACETONE
JULY 17, 2015	3.90	ACETONE
JULY 23, 2015	5.90	ACETONE
JULY 29, 2015	3.30	ACETONE

Note: NA

Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
JULY 5, 2015	0.93	RETENE
JULY 11, 2015	1.99	RETENE
JULY 17, 2015	0.56	RETENE
JULY 23, 2015	0.23	PHENANTHRENE
JULY 29, 2015	0.20	PHENANTHRENE

Note: NA

Partisol Sampler Summary

Sample Collected Date	Concentration (mg)
JULY 5, 2015	0.315
JULY 11, 2015	2.450
JULY 17, 2015	0.192
JULY 23, 2015	0.050
JULY 29, 2015	0.018

Note: NA

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Analytical Results

Passive Samples

VOCs Samples

PAHs Samples

Partisol Samples

Appendix V

Chain of Custody

1.0 Discussion

This monthly report consists of data for parameters SO₂, TRS, THC, NO_x, NO, NO₂, O₃, PM_{2.5}, WS, WD, RH and Temperature. It also includes results for non-continuous parameters Passives, VOC, PAH and Partisol.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) 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 calibration is done a minimum of once a month for each continuous air monitor. In addition 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.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as 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 (greater than 15%).

Hourly data is corrected using daily zero information.

SULPHUR DIOXIDE (SO₂)

The routine monthly calibration was performed on July 8. The channel was put into maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance.

TOTAL REDUCED SULPHUR (TRS)

The routine monthly calibration was performed on July 8. The analyzer spanned low on July 13. An as found points check was performed on the same day. The result was good. The analyzer continued to span low after the as found points check. Troubleshooting was performed following a shut down calibration on July 15. Analyzer and converter performance was checked using different calibrators. No issues were identified. A start-up calibration was performed after the check. The daily span results were within acceptance limits after the calibration. As the as found points check, shut-down and start-up calibrations all passed AMD requirements, no data were invalidated due to this event. The channel was put into maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance. The analyzer was put into maintenance mode on July 16 at hour 8 for a calibration gas cross-check.

TOTAL HYDROCARBONS (THC)

The routine monthly calibration was performed on July 8. The channel was put into maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance.

NITROGEN DIOXIDE (NO₂)

A shut-down calibration was performed before the pump for the zero/span system was rebuilt on July 8. A post-repair calibration was performed after pump maintenance. Another as found points check was performed to ensure the analyzer's functionality on July 16. The expected span value was adjusted after the as found points check. The channel was put into maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance.

OZONE (O₃)

The routine monthly calibration was performed on July 9. The analyzer started spanning high on July 20. Following an as found points check on July 22, the pump for the zero/span system was rebuilt. The expected span value was changed after the as found points check. The channel was put into maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance.

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM_{2.5})

Two Teom audits were performed this month: one was completed on July 3, and the other audit was performed on July 16. Both the inlet filter and the FDMS filter were replaced during the audits. Data was corrected using Alberta air quality guideline. If the data was between 0 to -3 ug/m^3 , the data was corrected to 0 ug/m^3 . If the data was below -3 ug/m^3 , the data was invalidated. 10 hours of data were invalidated as the data were below -3 ug/m^3 this month. The channel was put into maintenance mode on July 7 from hour 7 to hour 15 for HVAC maintenance.

Seven 24-hr contraventions were recorded this month: concentrations of 51 ug/m^3 on July 1, 114 ug/m^3 on July 4, 47 ug/m^3 on July 9, 155 ug/m^3 on July 10, 128 ug/m^3 on July 11, 41 ug/m^3 on July 12 and 33 ug/m^3 on July 13. AE Reference numbers 300251, 300393, 300636, 300693, 300799, 300802 and 300905, respectively.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

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 coming from.

The wind system was working well throughout the month.

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month.

PASSIVE SAMPLES

Samples were collected over the months of June and July. Samples were collected at all designated stations, except stations 12, 19 and 25. Access papers to stations 12 and 25 were not provided by client and there were aggressive animals at station 19. Results are included in this report.

VOC SAMPLES

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the VOCs were reported as ppb in 2 decimal places.

Samples were collected on July 5, 11, 17, 23 and 29. Results are included in this report.

PAH SAMPLES

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs were reported as μg in 2 decimal places.

Samples were collected on July 5, 11, 17, 23 and 29. Results are included in this report.

PARTISOL SAMPLES

The routine monthly calibration was performed on July 16. The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the Partisol were reported as mg in 2 decimal places.

Samples were collected on July 5, 11, 17, 23 and 29. Results are included in this report.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling team consisted of Alexander Yakupov and Christopher Wesson.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

Seven 24-hr contraventions were recorded for PM 2.5 this month: concentrations of 51 ug/m³ on July 1, 114 ug/m³ on July 4, 47 ug/m³ on July 9, 155 ug/m³ on July 10, 128 ug/m³ on July 11, 41 ug/m³ on July 12 and 33 ug/m³ on July 13. AE Reference numbers 300251, 300393, 300636, 300693, 300799, 300802 and 300905 respectively.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, and 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006).

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00210: Ambient TRS Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canister and Xontech

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - Thermo 43i UV Fluorescent Analyzer
- Total Reduced Sulphur - Thermo 450i UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - Thermo 42C Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Teom Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Ambient Temperature - Met One Unit
- Datalogger - ESC 8832
- Partisol - R&P 2000H Unit

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE



SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

DAY	HOURLY AVERAGES																								DAILY MAX	24-HOUR AVG	PPB	
	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				
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	1	0.1	24	
2	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
3	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	0.1	24
4	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	0.1	24
5	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
6	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	0.1	24
7	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	0.1	24
8	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	0.2	24
9	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
10	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
11	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	0.1	24
12	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
13	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
14	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
15	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
16	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
17	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
18	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
19	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
20	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
21	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
22	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	0.2	24
23	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
24	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
25	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
26	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
27	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
28	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	0.2	24
29	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
30	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
31	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
HOURLY MAX	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
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	

STATUS FLAG CODES

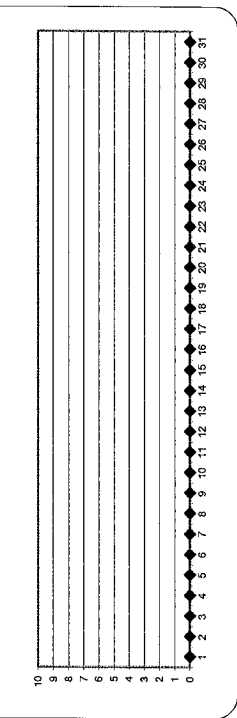
C	QUALITY ASSURANCE
Q	RECOVERY
M	MAINTENANCE
D	DAILY ZERO/SKIP CHECK
S	POWER FAILURE
P	OPERATOR ERROR
G	OUT OF REPAIR
X	MACHINE MALFUNCTION
O	COLLECTION ERROR

OBJECTIVE LIMIT: ALBERTA ENVIRONMENT: 1-PPB 172-PPB 324-PPB 178-PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	31
MAXIMUM 1-HR AVERAGE:	2 PPB @ HOUR(S) 7, 9
MAXIMUM 24-HR AVERAGE:	0.2 PPB
ISZ CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.22
OPERATIONAL TIME:	740 HRS
AMTD OPERATION UPTIME:	99.5 %
MONTHLY AVERAGE:	0 PPB

24 HOUR AVERAGES FOR JULY 2015

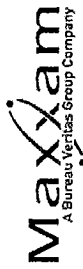


01 Hour Averages

500	500	500	500	500	500
372.5	372.5	372.5	372.5	372.5	372.5
245	245	245	245	245	245
117.5	117.5	117.5	117.5	117.5	117.5
-10	-10	-10	-10	-10	-10

07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA SO2_ PPB



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

Hourly Max	0500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	Daily Max	24-Hour Avg	Rdgs		
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
2	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24
3	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	0	0.6	24	
4	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
5	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.4	24	
6	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24	
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	20	
8	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
14	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
15	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24	
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6	24	
17	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
18	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
19	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	24	
20	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24	
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	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	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
24	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
25	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
26	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
27	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
28	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.7	24	
29	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
30	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
Hourly Avg	0.7	0.6	0.7	0.7	0.7	0.8	0.9	0.8	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	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.7		

STATUS FLAG CODES

C	-CALIBRATION
O	-QUALITY ASSURANCE
R	-RECOVERY
X	-WAGHEIM/ALFAUGHTON
S	-DAILY ZERO/SPAN CHECK
P	-POWER FAILURE
G	-OUT FOR REPAIR
K	-COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	586
MAXIMUM INSTANTANEOUS VALUE:	14 PPB @ HOUR(S) 18 ON DAY(S) 28
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	740 HRS
STANDARD DEVIATION:	0.64
VAR-VARIOUS	

01 Hour Averages

500	500	500	500	500	500	500
375	375	375	375	375	375	375
250	250	250	250	250	250	250
125	125	125	125	125	125	125
0	0	0	0	0	0	0

07/01/15 00:00/07/06/15 00:00/07/11/15 00:00/07/16/15 00:00/07/21/15 00:00/07/26/15 00:00/07/31/15 00:00

— LICA SO2MAX PPB

LICA
SO2_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : SO2_
Units : PPF

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	2.83	4.10	4.95	2.40	2.26	3.25	5.24	2.97	3.25	4.24	8.78	15.15	18.13	11.75	6.94	3.68	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.83	4.10	4.95	2.40	2.26	3.25	5.24	2.97	3.25	4.24	8.78	15.15	18.13	11.75	6.94	3.68	

Calm : .00 %

Total # Operational Hours : 706

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	20	29	35	17	16	23	37	21	23	30	62	107	128	83	49	26	706
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	20	29	35	17	16	23	37	21	23	30	62	107	128	83	49	26	

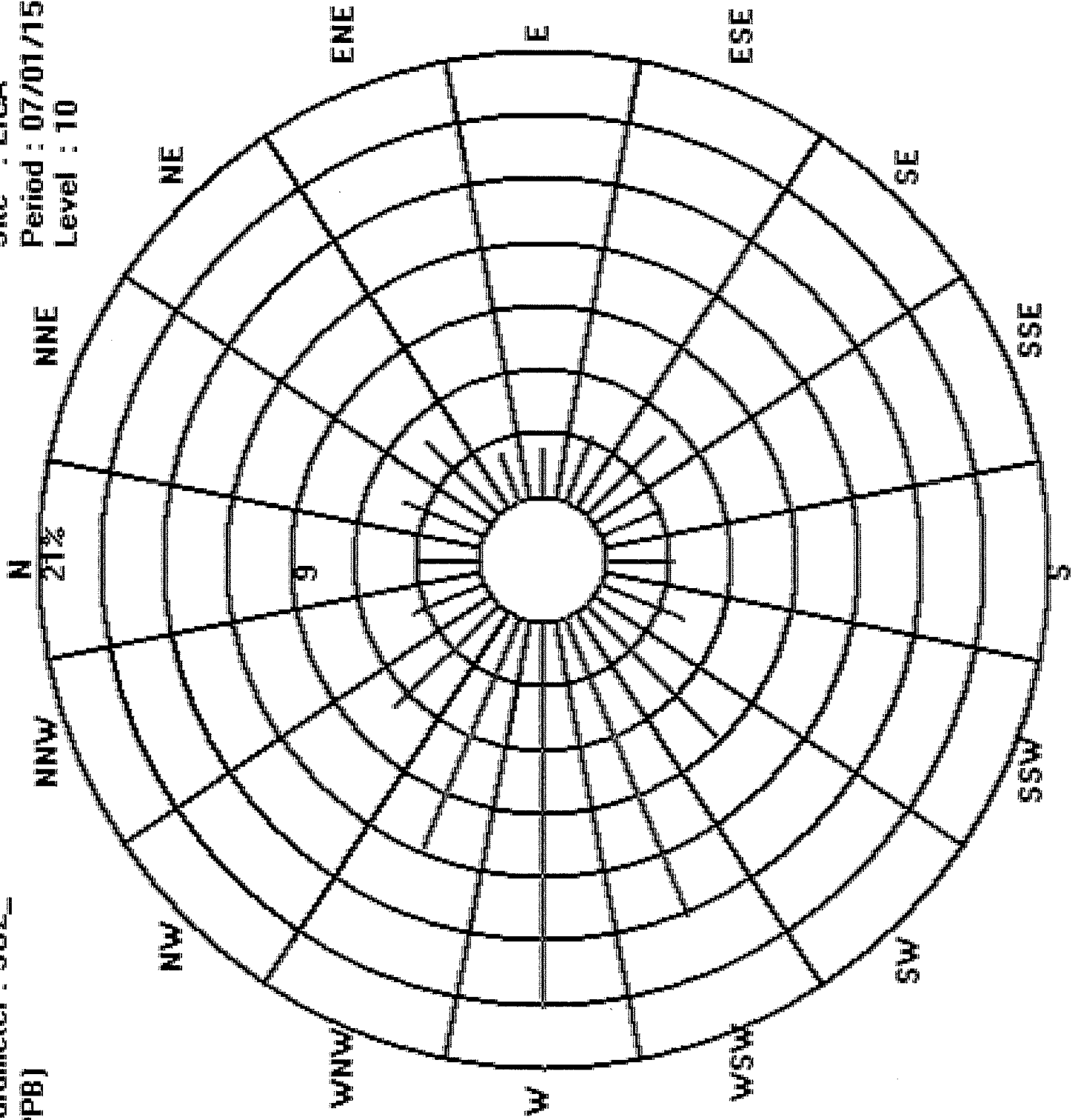
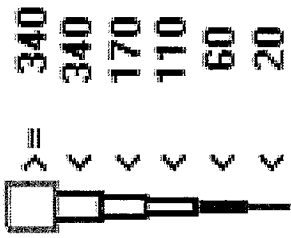
Calm : .00 %

Total # Operational Hours : 706

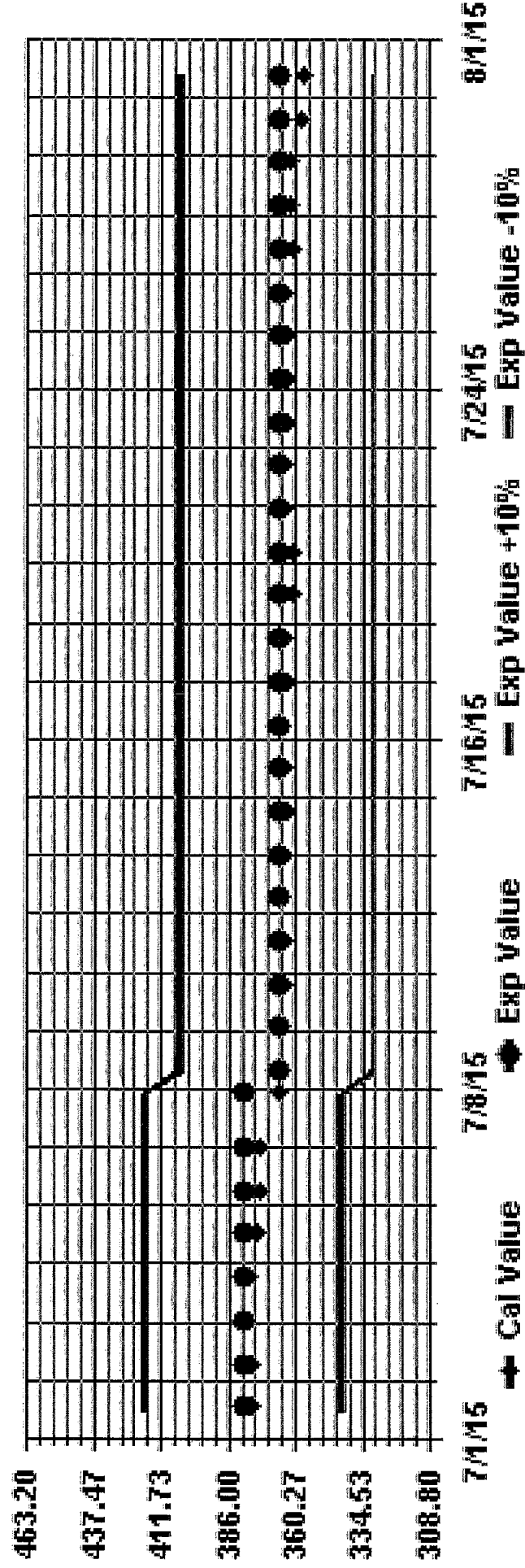
Site : LICA
Period : 07/01/15-07/31/15
Level : 10

Logger : 01 Parameter : SO2_

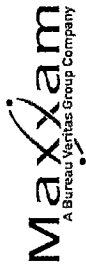
Class Limits (PPB)



Calibration Graph for Site: LICA Parameter: S02_ Sequence: S02_ Phase: SPAN



TOTAL REDUCED SULPHUR



TOTAL REDUCED SULPHUR (TRS) hourly averages in ppb

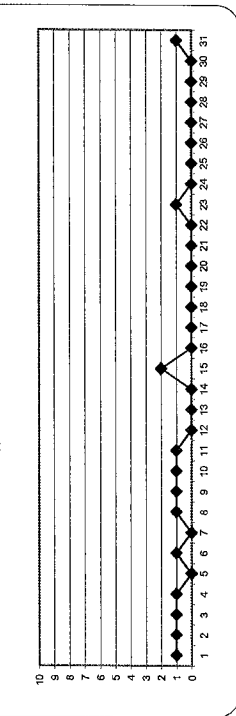
MST

DAY	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	24:00	DAILY MAX.	DAILY AVG.	RDS.	
1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	2	0.9	24
2	1	2	2	2	5	2	2	3	4	3	4	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	5	1.4	24
3	1	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	3	3	1.0	24
4	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	2	1.0	24
5	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	0.5	24	
6	1	2	3	3	3	2	4	5	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	1.3	24	
7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.2	20	
8	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	2	1.1	24
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24
13	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	1	0.3	24	
14	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	1	0.2	24	
15	1	1	1	1	1	1	2	6	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1.6	24	
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.4	23	
17	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	0.1	24	
18	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	
19	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	
20	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	0.1	24	
21	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	
22	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	
23	2	2	2	2	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
24	0	1	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4	24	
25	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	
26	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	
27	1	0	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.4	24	
28	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	0.1	24	
29	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	
30	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	5	0.3	24	
31	14	2	2	1	1	1	5	1	5	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	1.0	24	
HOURLY MAX	14	2	3	3	5	2	6	5	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	1.0	24	
HOURLY AVG	1.1	0.7	0.9	1.0	1.0	0.9	1.0	0.9	1.0	0.9	0.6	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6	0.7	0.7	

STATUS FLAG CODES

C	---CALIBRATION	Q	---QUALITY ASSURANCE
M	---MAINTENANCE	R	---RECOVERY
S	---DAILY ZERO/SPAN CHECK	X	---MACHINE/MALFUNCTION
P	---POWER FAILURE	O	---OPERATOR ERROR
G	---OUT FOR REPAIR	K	---COLLECTION ERROR

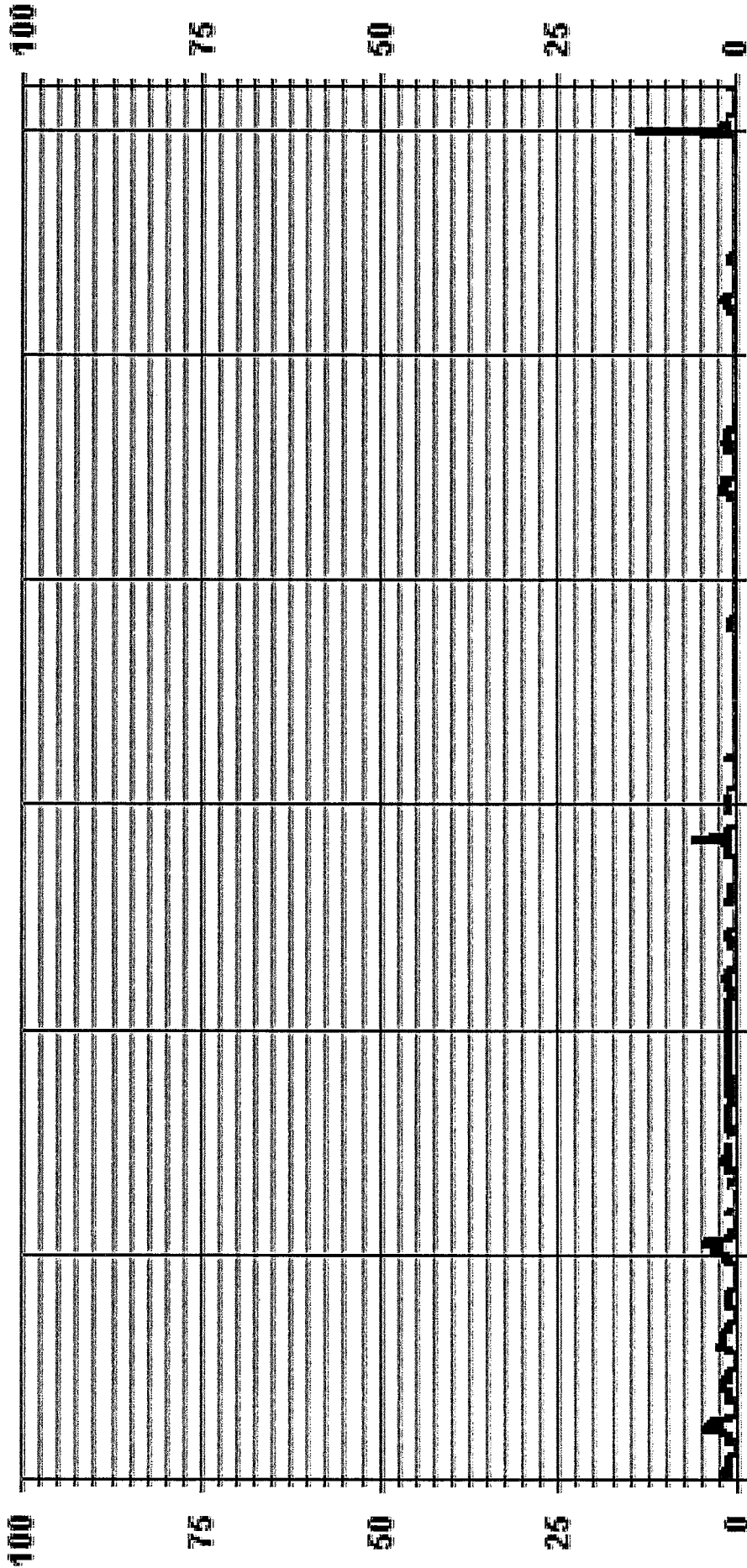
24 HOUR AVERAGES FOR JULY 2015



MONTHLY SUMMARY

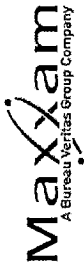
NUMBER OF NON-ZERO READINGS:	249	ON DAY(S)	31
MAXIMUM 1-HR AVERAGE:	14 PPB	@ HOUR(S)	0
MAXIMUM 24-HR AVERAGE:	1.6 PPB	ON DAY(S)	15
1/2S CALIBRATION TIME:	36 HRS	OPERATIONAL TIME:	739 HRS
MONTHLY CALIBRATION TIME:	16 HRS	AMTD OPERATION UPTIME:	99.3 %
STANDARD DEVIATION:	0.95	MONTHLY AVERAGE:	1 PPB

01 Hour Averages



07/01/15 00:0007/06/15 00:0007/11/15 00:0007/16/15 00:0007/21/15 00:0007/26/15 00:0007/31/15 00:00

— LICA TRS_ PPB



TOTAL REDUCED SULPHUR MAX instantaneous maximum in ppb

MST

HOUR START	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	24:00	RDGS.	
HOUR END	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	24:00	AVG.	DAILY MAX.	
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG.	DAILY MAX.	
1	3	3	2	4	5	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.9	
2	3	5	5	6	12	4	6	5	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	12	
3	3	5	3	3	3	3	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	3.0	
4	4	7	6	3	5	6	4	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	7	
5	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	2.2	
6	3	3	5	6	6	4	6	6	5	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	7	2.6	
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.4	
8	3	3	3	4	4	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	2.6	
9	1	1	1	2	5	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.2	
10	4	1	2	2	5	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.2	
11	2	2	5	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.4	
12	2	5	3	6	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.7	
13	5	1	1	2	2	1	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.7	
14	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.4	
15	2	2	2	3	2	6	7	6	3	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.4	
16	2	4	2	2	2	5	5	5	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.1	
17	1	2	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3.1	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.2	
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
20	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0
23	4	4	4	5	6	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	
24	1	4	5	3	2	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	2.2	
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
27	1	2	3	2	2	4	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.6	
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9
30	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2.8	
31	43	7	6	6	12	6	7	6	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	5	43	3.6
HOURLY MAX	5.2	2.2	2.3	2.3	2.6	2.3	2.2	1.8	1.5	1.3	1.1	1.1	1.1	1.1	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	2.6	
HOURLY AVG																										2.3	

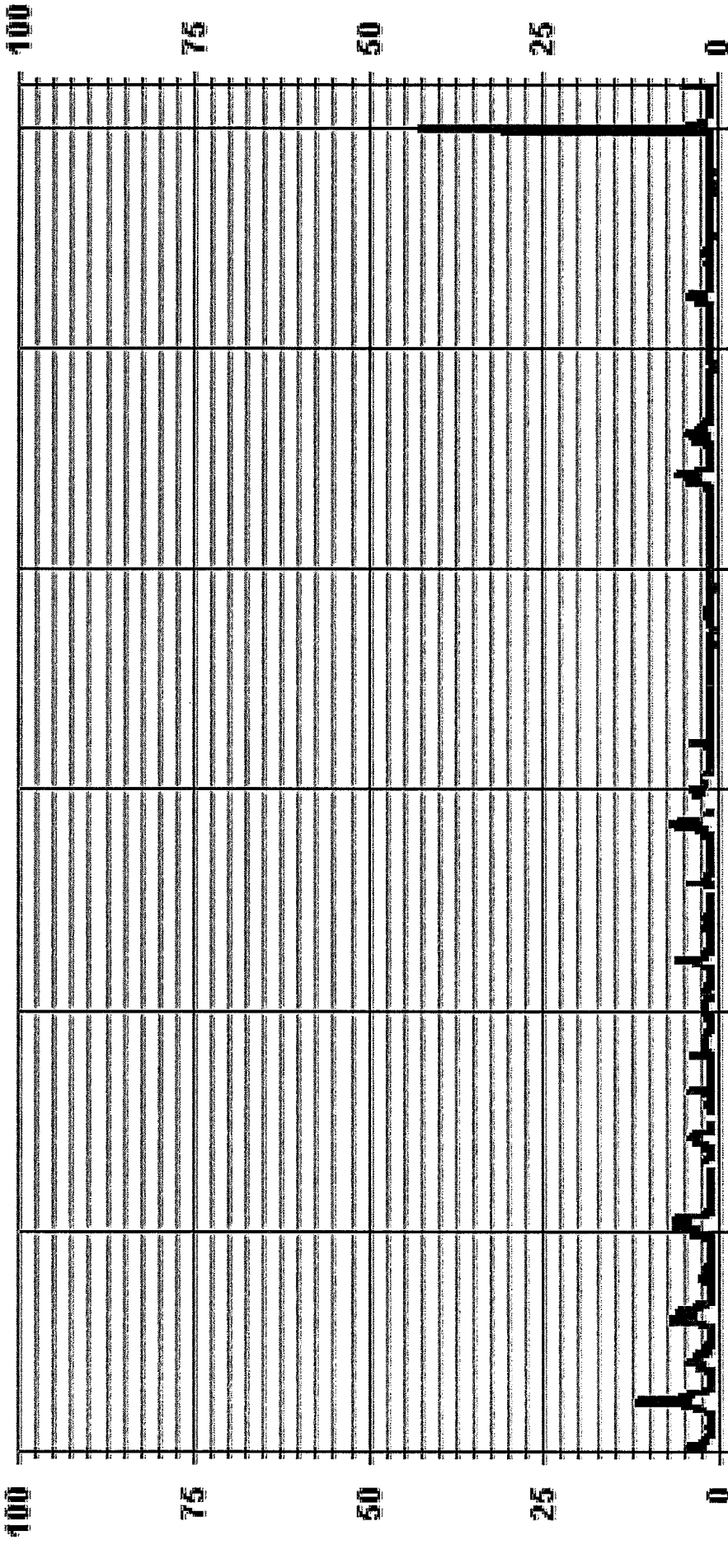
STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO / SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	673
MAXIMUM INSTANTANEOUS VALUE:	43 PPB @ HOUR(S) 0 ON DAY(S) 31
IZS CALIBRATION TIME:	39 HRS
MONTHLY CALIBRATION TIME:	17 HRS
STANDARD DEVIATION:	2.33
OPERATIONAL TIME:	738 HRS
VAR- VARIOUS	0

01 Hour Averages



— LICA TRSMAX PPB

LIICA
TRS_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LIICA
Parameter : TRS_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	2.91	4.22	4.94	2.47	2.18	3.34	5.09	2.62	3.05	3.93	7.86	14.11	18.19	11.93	6.84	3.78	97.52
< 10	.00	.00	.00	.00	.00	.14	.14	.14	.14	.29	.29	1.16	.00	.14	.00	.00	2.32
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.14
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.91	4.22	4.94	2.47	2.18	3.34	5.24	2.76	3.20	4.22	8.15	15.28	18.34	12.08	6.84	3.78	

Calm : .00 %

Total # Operational Hours : 687

Distribution By Samples

Direction

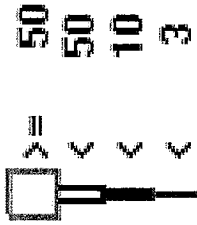
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	20	29	34	17	15	23	35	18	21	27	54	97	125	82	47	26	670
< 10						1	1	1	1	2	2	8		1			16
< 50																1	
>= 50																	
Totals	20	29	34	17	15	23	36	19	22	29	56	105	126	83	47	26	

Calm : .00 %

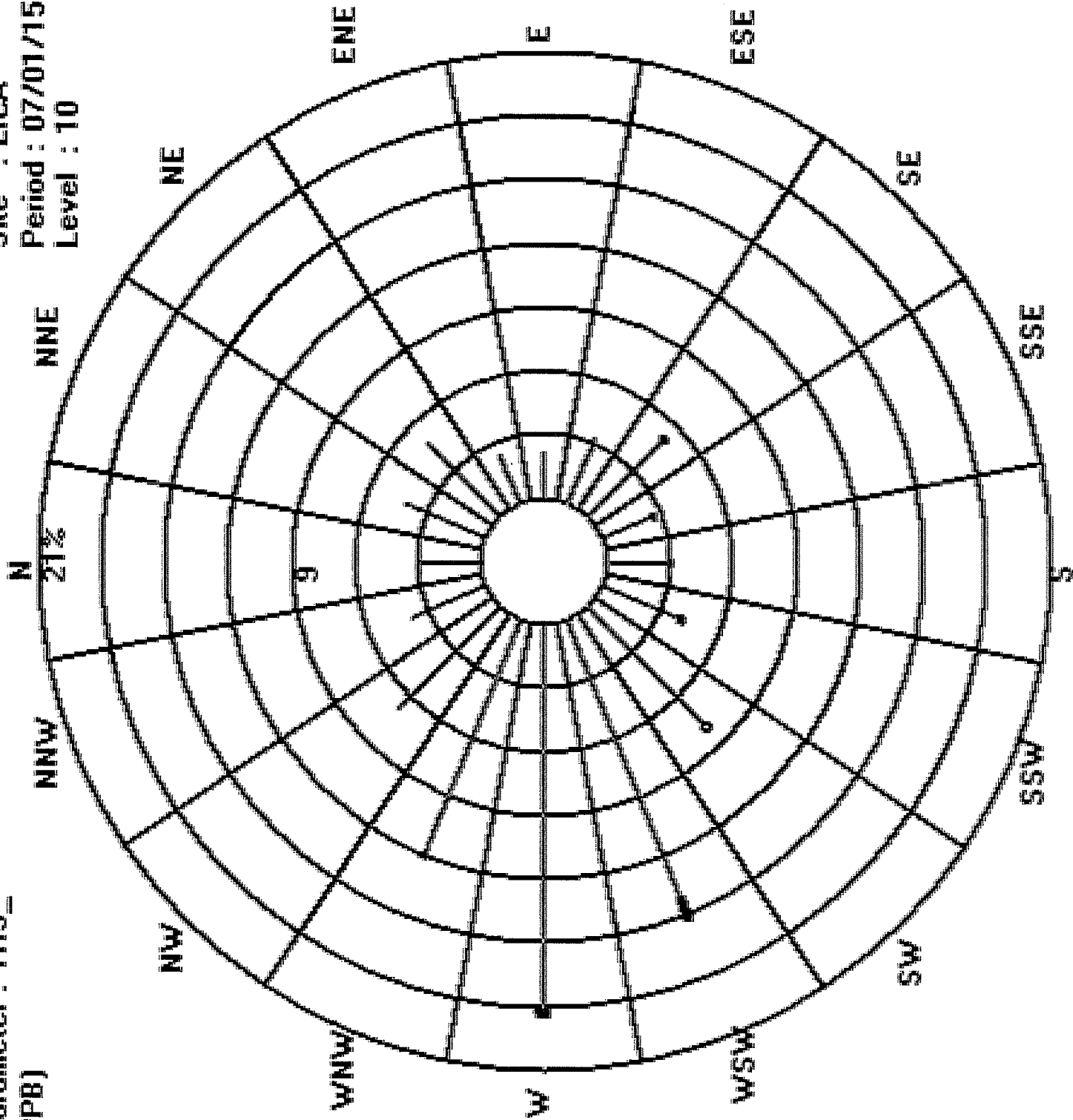
Total # Operational Hours : 687

Logger : 01 Parameter : TRS_

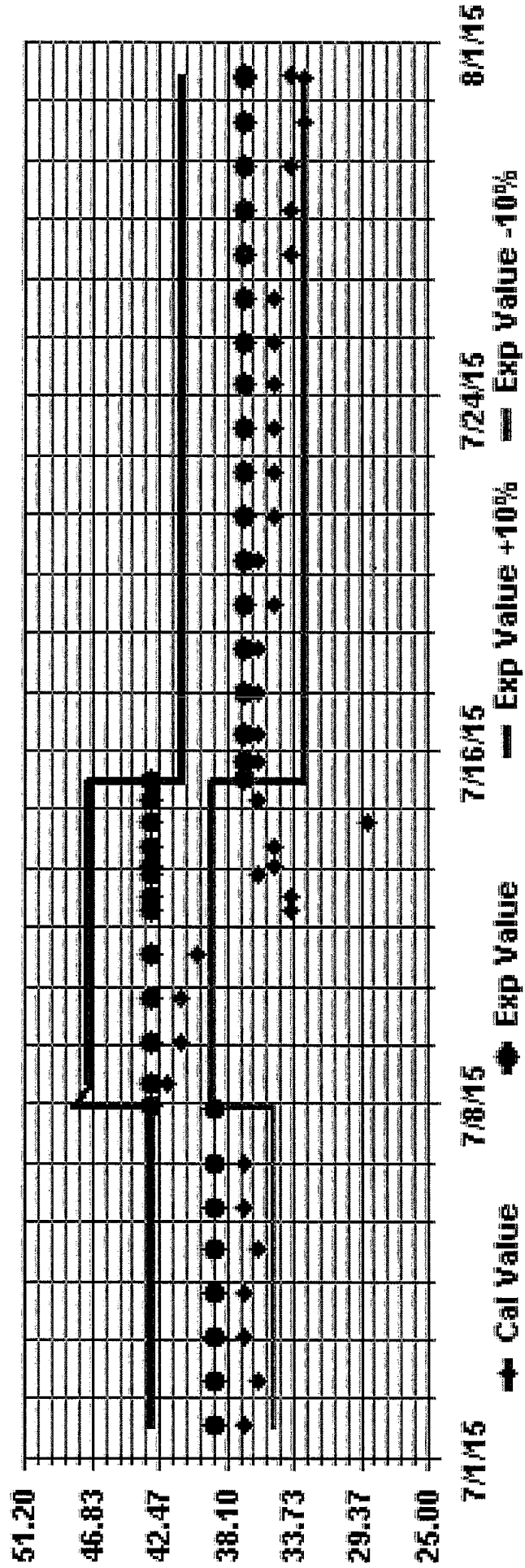
Class Limits (PPB)



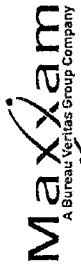
Site : LICA
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA Parameter: TRS_ Sequence: TRS Phase: SPAN



TOTAL HYDROCARBON

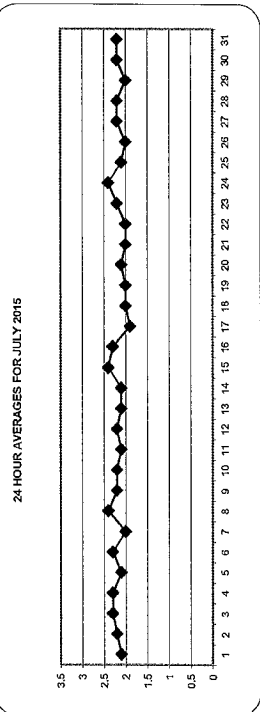


TOTAL HYDROCARBONS (THC) hourly averages in ppm

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS.
	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			
1	2.2	2.3	2.4	2.4	2.3	2.3	2.5	2.4	2.5	2.3	2.1	1.9	2.0	2.0	1.8	1.7	1.7	1.7	1.9	2.0	2.1	2.1	2.2	2.5	2.1	2.4	
2	2.2	2.3	2.4	2.4	2.7	2.8	2.6	2.4	2.3	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.2	2.5	2.1	2.4	
3	2.5	2.8	2.7	2.6	2.7	2.7	2.8	2.7	2.3	2.0	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.4	2.5	2.6	2.3	2.4	
4	2.5	2.6	2.6	2.5	2.6	2.6	2.6	2.8	2.5	2.5	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.0	2.1	1.9	1.9	2.0	2.0	2.3	2.4	
5	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.3	3.0	2.1	2.4	
6	3.1	3.0	3.0	2.9	3.0	3.2	2.8	2.5	2.2	2.0	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	1.9	1.9	3.2	2.4	
7	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	
8	2.8	3.0	2.8	2.8	2.8	2.9	2.6	2.3	2.4	C	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	3.0	2.4	2.4	
9	2.0	2.0	2.1	2.1	2.1	2.4	2.4	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4	
10	2.3	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	
11	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4
12	2.3	2.4	2.4	2.4	2.5	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4
13	2.4	2.2	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4
14	2.1	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.2	2.0	2.5	2.1	2.4	2.4
15	2.6	2.5	2.5	2.7	2.7	2.8	2.5	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.6	2.7	2.8	2.4	2.4
16	2.6	3.0	2.7	2.9	2.8	2.9	2.8	3.0	2.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.4	2.4
17	2.0	2.0	2.0	1.9	1.9	1.8	1.8	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.4	2.4
18	2.0	1.9	1.9	2.1	2.2	2.3	2.3	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.4	2.4
19	2.0	2.0	2.0	2.1	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4
20	2.2	2.3	2.4	2.5	2.6	2.5	2.3	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.4
21	1.9	1.9	1.9	1.9	1.9	2.1	1.9	1.9	2.0	2.0	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.4	2.4
22	2.5	2.2	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.4	2.4
23	2.4	2.4	2.4	2.5	2.3	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.4	2.4
24	2.4	2.5	2.7	2.7	2.8	3.0	2.7	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4
25	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.3	2.3	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.4	2.4
26	1.9	1.9	1.9	2.0	1.9	1.9	2.1	2.3	2.2	2.1	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.4	2.4
27	2.3	2.4	2.5	2.6	2.6	2.5	2.6	2.7	2.5	2.2	2.1	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.4	2.4
28	2.3	2.3	2.5	2.8	2.9	3.0	2.7	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.4	2.4
29	2.2	2.2	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4
30	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4
31	2.6	2.5	2.6	2.5	2.7	2.5	2.7	2.3	2.2	2.3	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.4	2.4
HOURLY MAX	3.1	3.0	3.0	2.9	3.0	3.2	2.8	3.0	2.9	2.5	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4
HOURLY AVG	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1

STATUS FLAG CODES

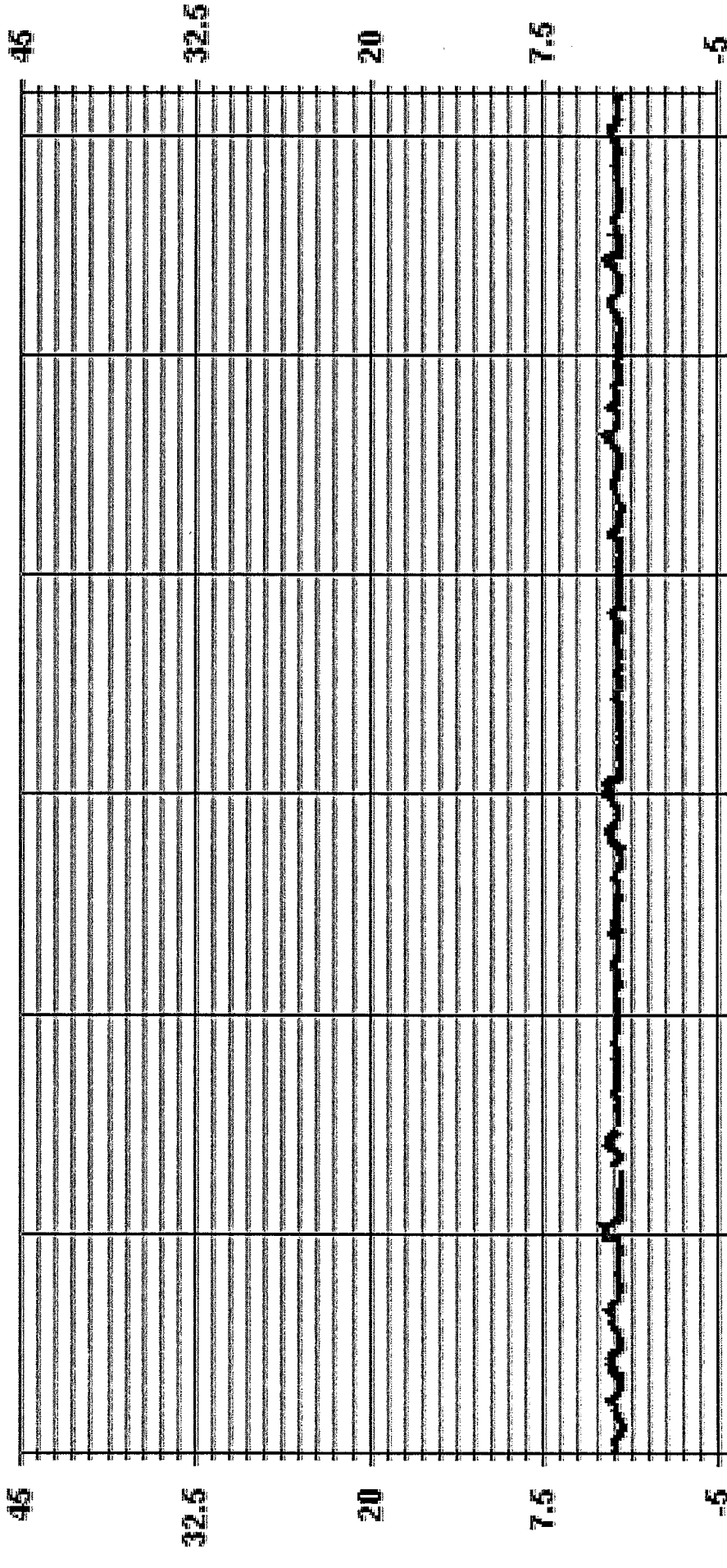
C	- CALIBRATION	O	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/Span CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



MONTHLY SUMMARY

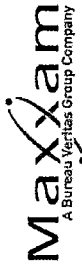
NUMBER OF NON-ZERO READINGS:	706	ON DAY(S)	6
MAXIMUM 1-HR AVERAGE:	3.2 PPM	@ HOUR(S)	5
MAXIMUM 24-HR AVERAGE:	2.4 PPM	VAR- VARIOUS	VAR
ISZ CALIBRATION TIME:	30 HRS	OPERATIONAL TIME:	740 HRS
MONTHLY CALIBRATION TIME:	4 HRS	AMTD OPERATION UPTIME:	99.5 %
STANDARD DEVIATION:	0.27	MONTHLY AVERAGE:	2.1 PPM

01 Hour Averages



07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA THC PPM



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST

HOURLY START HOUR	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	24:00										
HOURLY END HOUR	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	0:00	1:00										
DAYS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	24										
RDGS.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.	MAX.										
AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.										
1	2.9	2.8	2.9	2.9	2.6	2.5	2.7	2.5	2.6	2.5	2.5	2.0	2.1	2.2	2.0	1.8	1.8	S	2.0	2.0	2.0	2.4	2.7	2.4	2.5	2.4									
2	2.5	2.6	2.8	3.0	3.1	3.1	2.9	2.4	2.4	2.2	2.2	2.1	2.7	2.2	2.0	2.0	S	2.0	2.0	2.7	2.7	2.8	3.3	2.8	3.3	2.5	2.4								
3	3.0	3.3	3.4	3.2	3.2	3.0	2.9	2.9	2.6	2.2	2.2	2.1	2.2	2.1	2.0	S	2.1	2.1	2.1	2.2	2.3	3.3	2.9	3.2	3.4	2.6	2.4								
4	2.9	2.9	2.8	2.7	3.1	2.9	3.0	3.0	2.7	2.6	3.1	2.5	2.3	2.3	2.3	S	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	3.1	2.5	2.4								
5	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	S	2.0	2.1	2.0	2.1	2.0	2.1	2.3	2.4	2.0	2.2	3.5	2.5	2.4							
6	3.5	3.3	3.3	3.0	3.3	3.4	3.0	2.7	2.4	2.1	2.2	2.1	S	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.3	2.4	2.0	2.2	3.5	2.5	2.4								
7	2.2	2.0	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.8	1.9	Y	Y	Y	Y	Y	Y	Y	Y	Y	2.6	2.5	2.6	3.1	3.1	2.2	2.0								
8	3.1	3.3	3.4	3.2	3.2	3.1	2.8	2.5	C	C	C	C	C	C	C	C	C	C	C	C	2.2	2.1	2.6	3.3	4.5	2.8	2.4								
9	2.3	2.5	2.7	2.6	S	2.9	2.7	2.7	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4							
10	3.1	2.3	2.4	S	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4						
11	2.2	2.3	S	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.3	2.3	2.2	2.4	2.4						
12	2.7	S	3.2	3.3	3.5	2.7	2.2	2.2	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	3.6	3.5	2.6	2.1	3.6	2.6	2.4	2.4						
13	S	3.0	2.5	3.0	2.7	2.3	2.2	2.5	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.5	2.2	2.4	2.1	2.2	2.2	S	3.0	2.4	2.4	2.4						
14	2.3	2.4	2.7	2.5	2.6	2.4	2.4	2.4	2.2	2.1	2.7	2.0	2.7	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	3.0	2.2	S	2.8	2.6	2.4	2.4						
15	3.5	2.9	3.1	3.1	2.9	3.4	2.7	2.6	2.4	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	3.4	S	3.5	3.2	3.5	2.7	2.4	2.4						
16	3.1	3.6	3.0	3.2	3.3	3.1	3.1	3.5	3.6	2.2	2.1	2.0	2.1	2.0	1.9	2.0	1.9	2.0	1.9	1.9	1.9	1.9	S	2.0	2.0	2.1	3.6	2.5	2.4	2.4					
17	2.1	2.3	2.3	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	S	2.0	2.0	2.0	2.0	2.0	2.4	2.4					
18	2.2	2.1	2.1	2.4	2.3	2.4	2.4	2.4	2.3	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1				
19	2.1	2.1	2.2	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1				
20	2.5	2.7	2.5	2.8	2.8	2.8	2.5	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
21	2.0	2.0	2.0	2.0	2.1	2.3	2.1	2.0	2.2	2.1	2.0	2.0	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
22	3.4	2.8	2.3	2.5	2.6	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1			
23	2.8	2.9	2.7	2.9	2.8	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.5	2.1	S	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
24	2.7	3.0	2.9	3.2	2.9	3.3	3.0	2.8	2.4	2.3	2.2	2.2	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1		
25	2.4	2.2	2.2	2.4	2.5	2.3	2.4	2.9	2.5	2.3	2.1	S	2.0	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.6	2.8	2.3	2.1	2.9	2.3	2.4	2.4	2.4	2.4	2.4		
26	2.1	2.0	2.2	2.0	2.1	2.4	2.5	2.3	2.2	2.1	S	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.3	2.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4		
27	2.7	2.6	3.0	2.9	2.9	2.6	2.8	2.8	2.6	S	2.4	2.3	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.5	2.5	3.0	2.5	3.0	2.5	2.4	2.4	2.4	2.4	2.4		
28	2.5	2.8	2.9	3.2	3.2	3.3	3.1	2.3	S	2.1	2.1	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.3	6.1	3.1	2.4	2.5	2.2	2.3	6.1	2.6	2.4	2.4	2.4		
29	2.5	2.4	2.6	2.6	2.5	2.4	2.4	S	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
30	2.4	2.2	2.3	2.3	2.3	2.2	S	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
31	2.8	2.7	3.0	2.7	3.0	S	2.6	2.3	2.4	2.3	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
HOURLY MAX	3.5	3.6	3.4	3.3	3.5	3.4	3.1	3.5	3.6	2.6	3.1	2.5	2.7	2.3	2.4	2.8	2.4	2.5	7.0	4.4	4.0	4.5	3.8	3.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
HOURLY AVG	2.6	2.6	2.6	2.7	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1

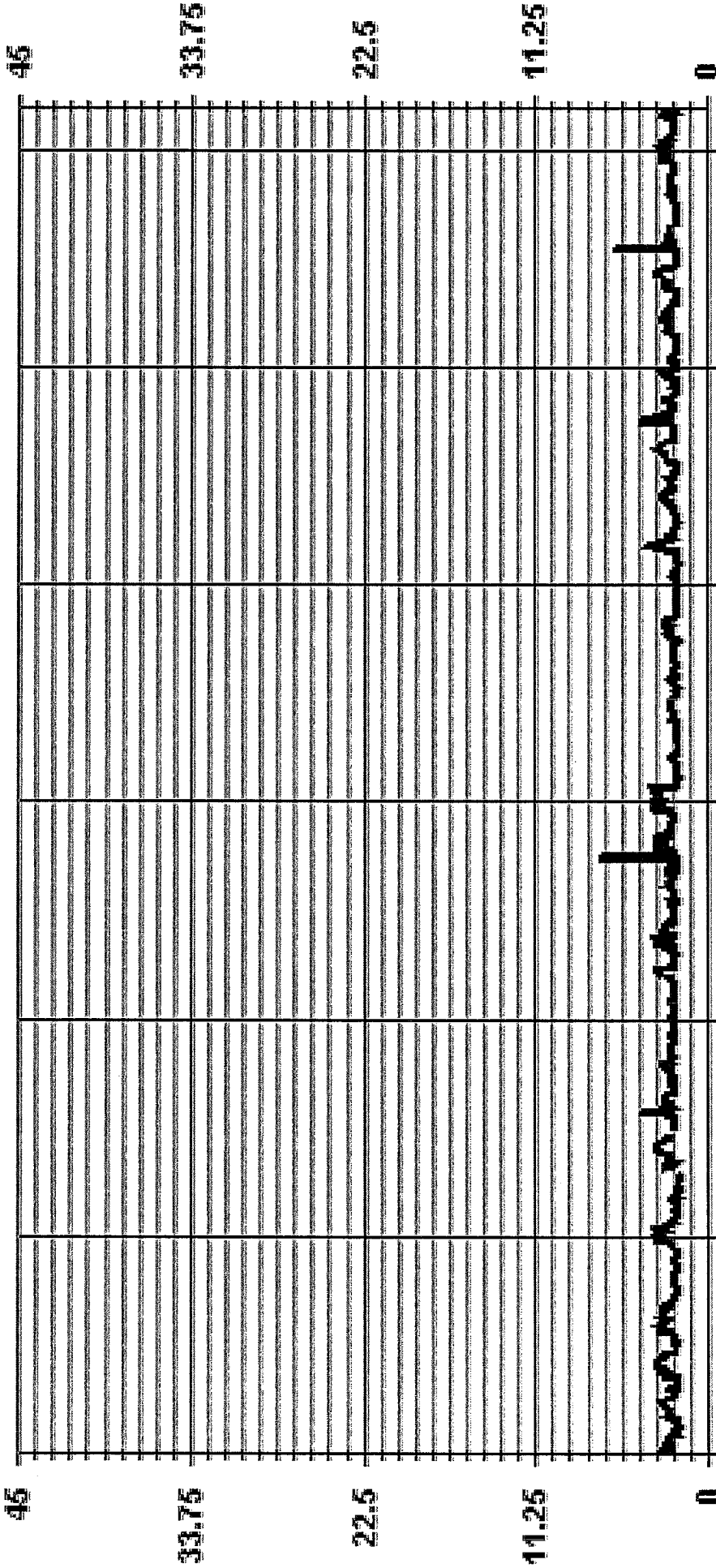
STATUS FLAG CODES

C	CALIBRATION	QUALITY ASSURANCE	
Y	MAINTENANCE	RECOVERY	
S	DAILY ZERO/SPAN CHECK	R	- MACRO MALFUNCTION
P	POWER FAILURE	X	- OPERATOR ERROR
G	OUT FOR REPAIR	K	- COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	704	PPM	@ HOUR(S)	18	ON DAY(S)	14
MAXIMUM INSTANTANEOUS VALUE:	7.0	PPM	@ HOUR(S)	18	VAR- VARIOUS	HRS
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	740	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	STANDARD DEVIATION:	0.47		

01 Hour Averages



— LICA THCMAX PPM

LIICA
THC / WD Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LIICA
Parameter : THC
Units : PPM

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	2.83	4.10	4.95	2.40	2.26	3.25	5.09	2.83	2.97	3.68	8.92	14.87	17.98	11.75	6.79	3.68	98.44
< 10.0	.00	.00	.00	.00	.00	.14	.14	.14	.28	.28	.14	.28	.14	.00	.14	.00	1.55
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.83	4.10	4.95	2.40	2.26	3.25	5.24	2.97	3.25	3.96	9.06	15.15	18.13	11.75	6.94	3.68	

Calm : .00 %

Total # Operational Hours : 706

Distribution By Samples

Direction

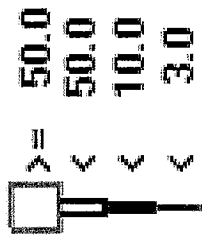
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	20	29	35	17	16	23	36	20	21	26	63	105	127	83	48	26	695
< 10.0						1	1	1	2	2	1	2	1	1	1		11
< 50.0																	
>= 50.0																	
Totals	20	29	35	17	16	23	37	21	23	28	64	107	128	83	49	26	

Calm : .00 %

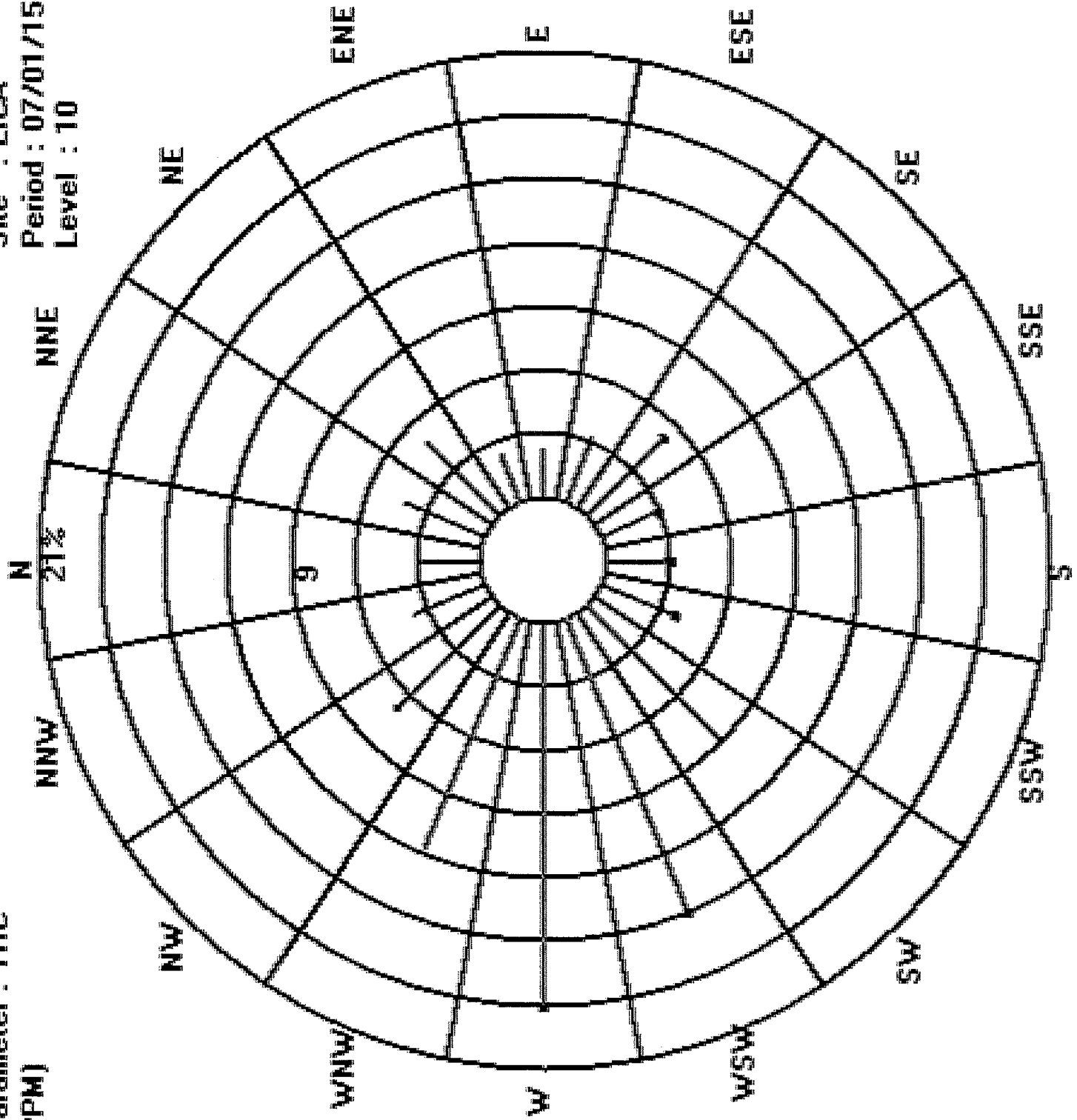
Total # Operational Hours : 706

Logger : 01 Parameter : THC

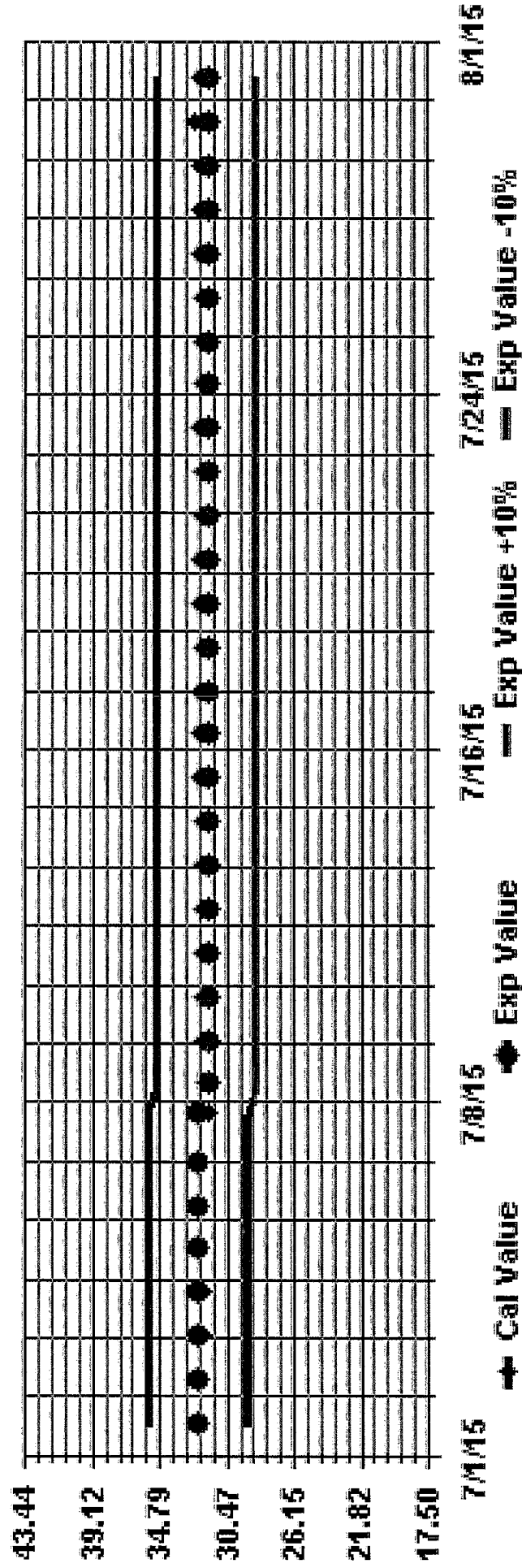
Class Limits (PPM)



Site : LICA
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA Parameter: THC Sequence: THC Phase: SPAN



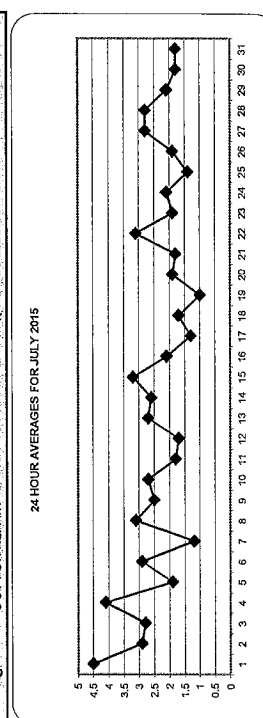
OXIDES OF NITROGEN



OXIDES OF NITROGEN (NOx) hourly averages in ppb

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS.			
	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				24:00		
1	5.2	5.8	6.4	6.3	5.1	6.6	7.6	6.4	7.3	5.7	4.9	3.2	3.1	3.8	2.8	1.7	1.7	1.7	1.7	1.7	2.1	1.7	2.4	4.4	5.0	4.3	7.6	4.5	24	
2	3.9	3.6	3.1	3.0	3.1	7.4	5.9	4.9	3.8	5.0	3.4	1.8	1.2	1.5	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.6	2.0	4.2	2.6	2.3	7.4	2.9	24
3	2.8	3.4	3.4	3.3	3.0	4.2	5.5	4.9	3.5	2.7	2.6	2.0	2.4	1.6	0.9	0.8	0.8	0.6	1.2	2.7	3.4	4.5	4.7	5.5	4.7	5.5	4.7	5.5	2.8	24
4	5.3	4.3	4.3	5.5	5.5	4.7	6.8	10.2	9.9	5.9	5.2	3.9	2.7	2.2	2.2	1.6	2.0	1.7	1.5	2.1	1.9	2.5	2.6	10.2	4.1	2.4	10.2	4.1	24	
5	2.0	3.3	3.8	3.5	4.1	3.1	1.4	0.6	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.6	0.6	0.7	1.2	1.9	3.2	2.2	3.9	4.3	4.3	4.3	1.9	24	24	
6	4.0	3.0	2.2	2.1	2.6	2.5	4.7	4.3	4.3	3.5	3.0	2.0	1.3	1.3	1.7	1.9	1.9	2.3	2.7	3.8	3.2	3.7	3.8	4.7	2.9	2.4	4.7	2.9	24	
7	2.6	2.1	1.3	0.9	1.3	0.8	1.2	0.8	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.8	2.2	1.6	2.4	2.6	1.2	20
8	3.0	2.8	2.2	2.4	5.2	4.9	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	24
9	2.7	1.8	2.1	2.1	2.1	6.3	8.2	9.3	1.8	1.4	1.3	1.1	1.2	1.4	1.5	1.6	1.7	1.5	1.4	2.3	2.3	1.9	1.4	1.9	9.3	5.2	3.1	2.4	24	24
10	2.2	1.7	1.1	1.1	2.0	2.0	1.9	2.4	3.0	3.4	3.9	3.0	2.7	2.5	3.0	3.6	2.9	2.4	2.3	2.6	3.9	3.3	2.9	2.4	3.9	2.7	2.4	3.9	2.7	24
11	2.3	2.6	2.6	2.3	2.3	1.8	1.6	1.7	2.2	2.3	2.6	2.4	2.2	2.2	1.6	1.2	0.9	0.7	0.8	1.0	1.6	1.9	1.4	1.4	2.6	1.8	2.4	2.6	1.8	24
12	2.9	3.8	3.8	3.4	3.5	4.0	1.7	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.6	0.5	0.6	0.9	0.8	1.4	2.6	3.3	2.3	1.3	4.0	1.7	2.4	1.7	24	24
13	3.6	3.0	4.0	3.0	3.4	6.1	4.3	4.5	3.2	2.4	1.8	1.6	1.4	1.1	1.1	0.9	0.8	0.9	1.3	1.7	2.4	2.8	1.4	5.4	2.7	2.4	5.4	2.7	2.4	24
14	4.0	4.8	4.1	4.1	14.1	4.7	4.5	6.0	3.8	3.3	1.2	0.7	3.1	1.8	0.7	0.5	0.4	0.5	0.6	1.0	2.2	2.8	1.4	14.1	3.2	2.4	14.1	3.2	2.4	24
15	3.7	3.5	2.5	2.4	2.8	4.5	5.2	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	24
16	2.5	2.6	1.4	0.6	0.7	0.7	1.4	0.7	1.9	1.4	1.8	0.4	1.1	1.1	0.3	0.2	0.5	0.6	0.8	1.8	1.4	2.0	2.4	2.9	1.3	2.4	2.9	1.3	2.4	24
17	3.8	2.3	1.4	2.7	3.3	4.1	3.9	2.5	2.5	1.8	1.4	0.7	0.5	0.6	0.4	0.6	0.5	0.6	1.8	1.4	1.4	0.5	0.6	2.0	4.1	1.7	2.4	1.7	2.4	24
18	1.5	1.6	2.3	2.1	0.9	0.9	0.7	0.5	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	1.5	1.5	1.8	2.1	2.3	1.0	2.4	1.0	2.4	24
19	2.2	2.3	3.5	5.2	4.3	5.2	4.3	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	24
20	0.5	0.5	0.8	0.9	1.1	2.9	2.4	1.4	1.7	1.7	1.5	1.4	1.3	1.7	1.5	1.6	1.6	1.9	2.3	2.7	3.3	3.1	4.1	4.1	1.8	2.4	1.8	2.4	1.8	24
21	2.8	3.7	2.4	2.3	4.1	5.1	9.2	9.6	3.4	4.8	1.5	1.2	1.0	3.3	1.2	1.1	1.5	1.5	1.4	1.4	2.2	2.0	2.7	2.8	9.6	3.1	2.4	9.6	3.1	24
22	3.1	2.8	2.7	2.9	2.6	2.6	2.6	2.7	2.8	3.1	2.4	1.3	0.9	0.9	1.0	1.2	1.4	0.9	0.8	1.2	1.6	2.0	2.1	1.8	3.1	1.9	2.4	3.1	1.9	24
23	2.0	2.3	2.2	2.2	2.0	4.2	5.0	5.4	5.5	2.1	1.4	0.9	1.0	1.2	1.4	1.4	1.4	0.9	0.8	0.9	1.6	2.1	1.6	1.2	1.0	5.5	2.1	2.4	2.1	24
24	1.0	0.8	0.8	1.4	2.1	1.9	2.5	1.9	2.5	1.1	0.8	1.0	0.6	0.6	0.8	0.8	0.8	0.6	0.6	1.8	1.7	1.8	3.1	2.1	3.1	1.4	2.4	1.4	2.4	24
25	2.2	1.7	2.3	3.0	2.4	3.5	4.5	3.1	2.3	1.2	1.2	1.4	0.8	0.7	0.6	1.0	0.6	0.7	0.6	1.4	2.4	2.5	2.4	2.2	4.5	1.9	2.4	4.5	1.9	24
26	1.8	2.1	2.2	1.9	2.3	4.4	7.3	10.5	7.6	3.8	3.3	1.9	0.9	1.0	0.9	1.1	0.6	0.5	0.7	1.4	2.6	3.1	2.6	2.7	10.5	2.8	2.4	2.8	2.4	24
27	2.6	2.1	2.2	3.7	4.4	5.1	8.9	14.9	5	3.8	1.0	0.6	0.3	0.3	0.2	0.4	0.2	0.2	0.4	0.4	0.2	3.5	0.5	0.7	2.1	2.4	3.1	14.9	2.8	24
28	3.8	3.1	4.6	5.0	4.4	4.2	3.9	5	2.1	1.0	0.8	0.7	0.6	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	24
29	3.1	3.0	3.4	3.5	2.6	2.2	5	2.6	2.7	2.1	1.4	1.0	0.8	0.4	0.3	0.3	0.3	0.3	0.3	0.9	0.2	0.8	1.9	1.8	2.4	3.5	1.8	2.4	2.4	24
30	2.6	3.2	2.4	2.3	3.4	5	5.3	4.0	2.5	1.6	1.2	1.5	0.7	0.6	0.6	0.8	0.7	0.7	1.0	1.3	1.3	1.4	1.3	0.9	5.3	1.8	2.4	1.8	2.4	24
31	5.3	5.8	6.4	6.3	14.1	7.4	9.2	14.9	9.9	5.9	5.2	3.9	3.1	3.8	3.0	3.6	2.9	2.4	3.5	2.7	3.9	4.4	5.0	4.7	2.6	2.6	2.6	2.6	2.6	24
HOURLY MAX	2.9	2.7	2.8	3.0	3.5	3.8	4.3	4.4	3.2	2.4	1.9	1.5	1.3	1.3	1.0	1.0	1.0	1.0	0.9	1.1	1.5	2.2	2.3	2.4	2.6	2.6	2.6	2.6	2.6	24
HOURLY AVG	2.9	2.7	2.8	3.0	3.5	3.8	4.3	4.4	3.2	2.4	1.9	1.5	1.3	1.3	1.0	1.0	1.0	1.0	0.9	1.1	1.5	2.2	2.3	2.4	2.6	2.6	2.6	2.6	2.6	24

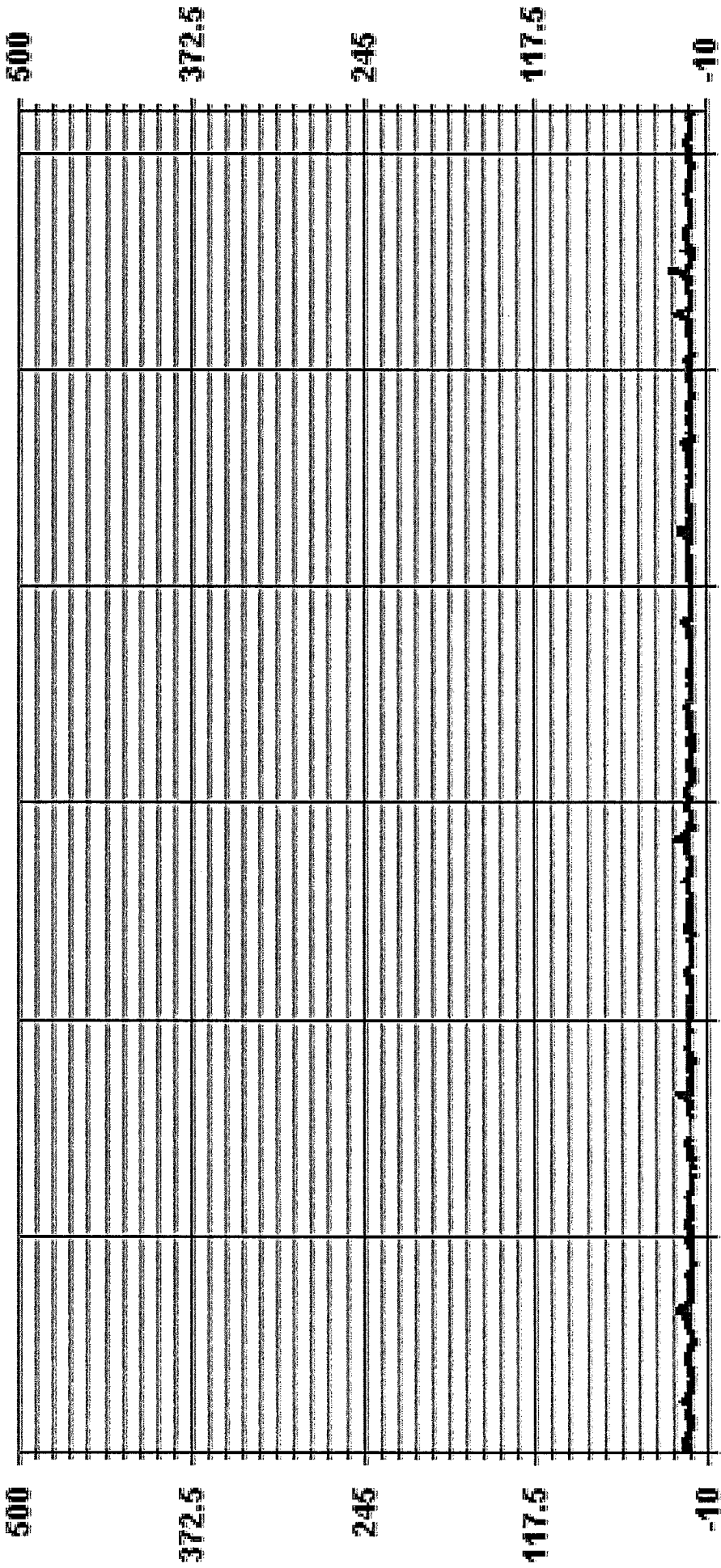
STATUS FLAG CODES
 C - CALIBRATION
 Y - MAINTENANCE
 S - ZERO/SPAN CHECK
 P - POWER FAILURE
 G - OUT FOR REPAIR
 O - QUALITY ASSURANCE
 R - RECOVERY
 X - MACHINE/WALKFUNCTION
 O - OPERATOR ERROR
 K - COLLECTION ERROR



MONTHLY SUMMARY

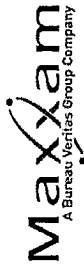
NUMBER OF NON-ZERO READINGS:	692	ON DAY(S)	28
MAXIMUM 1-HR AVERAGE:	14.9 PPB	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	4.5 PPB	VAR- VARIOUS	
12S CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	740 HRS
MONTHLY CALIBRATION TIME:	13 HRS	AMTD OPERATION UPTIME:	99.5 %
STANDARD DEVIATION:	1.77	MONTHLY AVERAGE:	2.3 PPB

01 Hour Averages



07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA NOX_ PPB



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
HOURLY MAX	6.1	6.6	7.6	6.1	8.1	9.6	7.1	11.1	7.6	6.6	4.6	4.1	4.1	3.6	2.6	2.1	\$	2.5	2.0	4.0	6.0	6.0	5.0	11.1	11.1	6.0	5.0	26.0	6.0	5.7	24	
HOURLY AVG	4.1	4.0	3.9	4.2	5.0	5.5	4.5	5.5	4.5	4.5	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	4.0	4.0	4.0	4.0	4.0	4.0
24-HOUR AVG	4.1	4.0	3.9	4.2	5.0	5.5	4.5	5.5	4.5	4.5	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	4.0	4.0	4.0	4.0	4.0	4.0

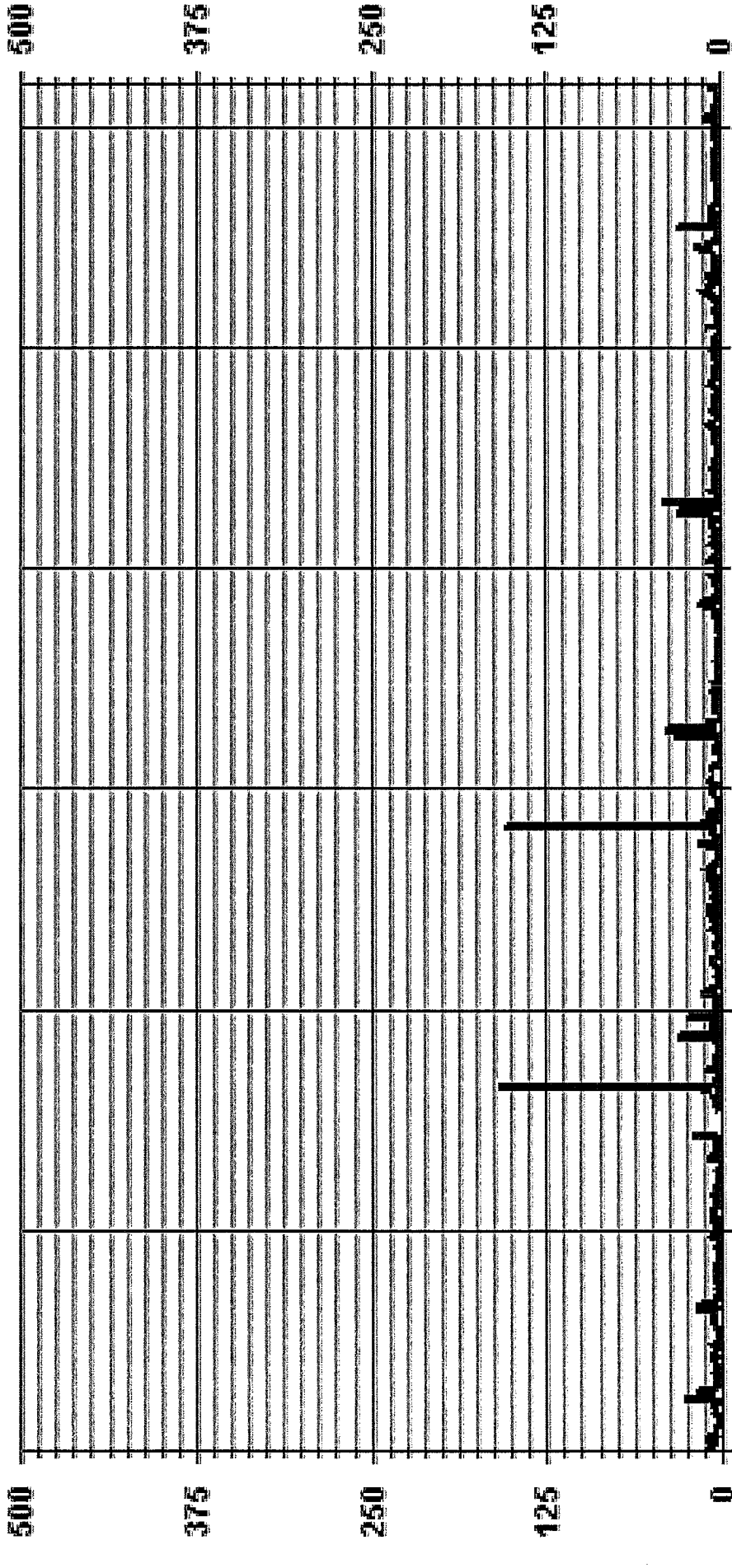
STATUS FLAG CODES

C	QUALITY ASSURANCE	Q	QUALITY ASSURANCE
Y	RECOVERY	R	RECOVERY
M	MAINTENANCE	M	MAINTENANCE
D	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	689	ON DAY(S)	9
MAXIMUM INSTANTANEOUS VALUE:	158.3 PPB	@ HOUR(S)	7
OPERATIONAL TIME:	740 HRS	VAR-VARIOUS	
IS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	740 HRS
MONTHLY CALIBRATION TIME:	16 HRS		
STANDARD DEVIATION:	9.12		

01 Hour Averages



— LICA NOXMAX PPB

07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

LIICA
 NOX_ / WD Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
 Site Name : LIICA
 Parameter : NOX_
 Units : PPS

Wind Parameter : WD
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.87	4.16	5.02	2.44	2.29	3.30	5.31	2.87	3.16	3.73	8.76	15.37	17.95	11.92	7.04	3.73	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.87	4.16	5.02	2.44	2.29	3.30	5.31	2.87	3.16	3.73	8.76	15.37	17.95	11.92	7.04	3.73	

Calm : .00 %

Total # Operational Hours : 696

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	20	29	35	17	16	23	37	20	22	26	61	107	125	83	49	26	696
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	20	29	35	17	16	23	37	20	22	26	61	107	125	83	49	26	

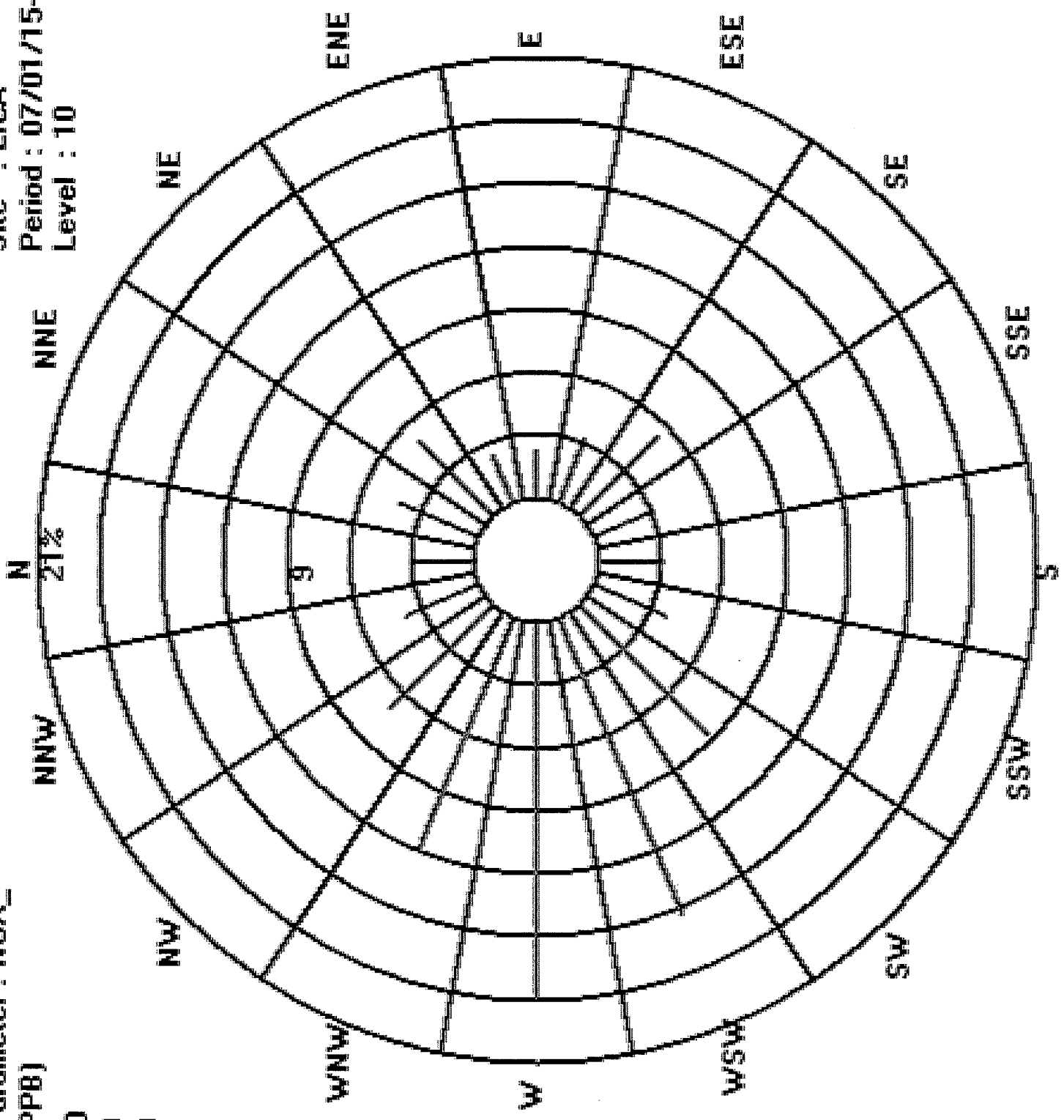
Calm : .00 %

Total # Operational Hours : 696

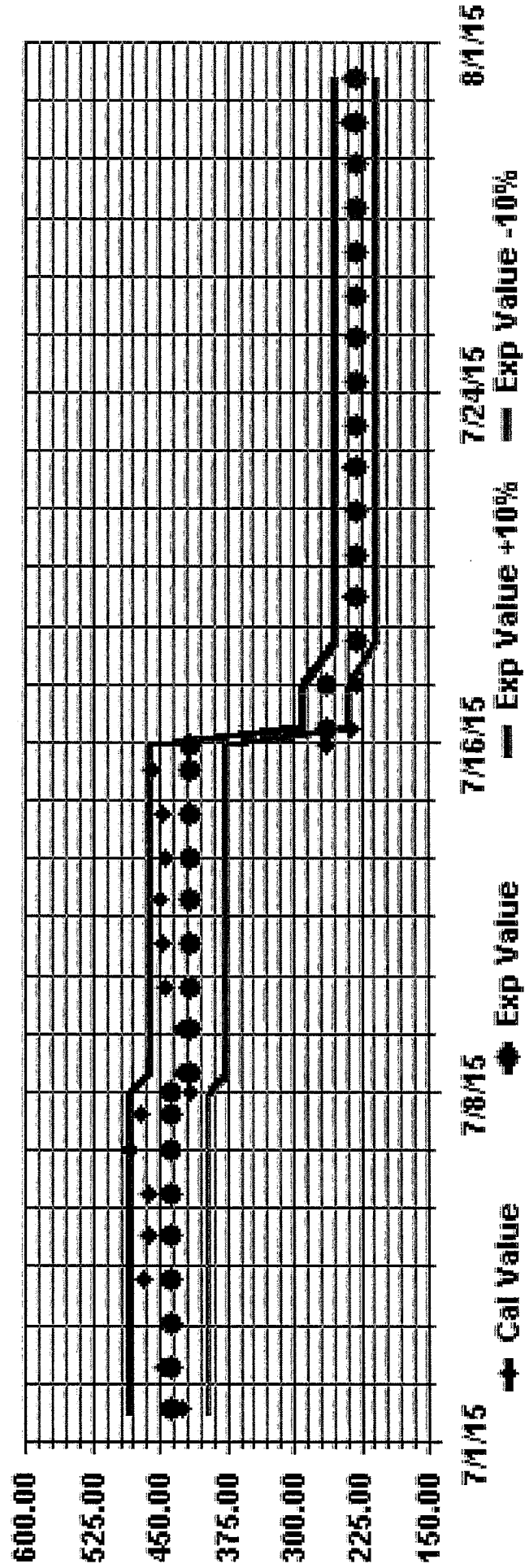
Site : LICA
Period : 07/01/15-07/31/15
Level : 10

Logger : 01 Parameter : NDX_
Class Limits (PPB)

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0



Calibration Graph for Site: LICA Parameter: NOX_ Sequence: NO2 Phase: SPAN



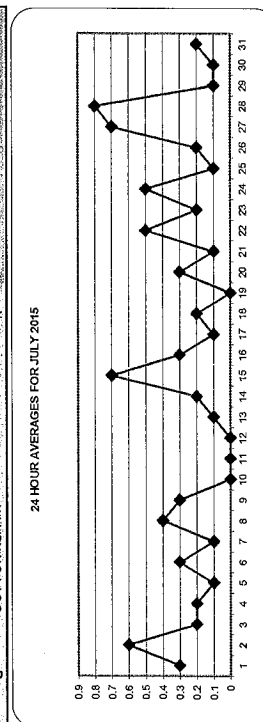
NITRIC OXIDES



NITRIC OXIDE (NO) hourly averages in ppb

DAY	HOUR START																								DAILY MAX	24-HOUR AVG	RDSS
	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			
1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6	1.0	0.8	0.2	0.1	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	1.0	0.3	24
2	0.4	0.6	0.6	0.7	1.3	0.4	0.9	1.1	0.7	0.9	0.4	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	4.9	0.6	24
3	0.2	0.3	0.3	0.2	0.3	0.5	0.9	0.7	0.4	0.3	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	0.2	24
4	0.4	0.4	0.2	0.0	0.2	0.2	0.5	0.8	1.1	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.2	24
5	0.0	0.0	0.1	0.1	0.3	0.4	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	0.0	0.3	0.4	0.5	0.5	0.1	24
6	0.4	0.4	0.5	0.4	0.9	1.0	1.2	0.9	0.8	0.5	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	1.2	0.3	0.4	24
7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.1	Y	Y	Y	Y	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.1	20
8	0.2	0.2	0.1	0.1	2.1	1.4	0.9	S	0.5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	0.1	2.1	0.4	24
9	0.0	0.1	0.0	0.1	S	1.0	1.7	3.8	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.8	0.3	24
10	0.1	0.0	0.1	S	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	24
11	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	0.0	0.0	0.0	0.0	0.2	0.0	24
12	0.0	S	0.0	0.0	0.3	0.4	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	0.0	0.4	0.0	24
13	S	0.0	0.0	0.0	0.1	0.2	0.5	0.6	1.2	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.4	0.1	24
14	0.0	0.0	0.0	0.1	0.2	0.5	0.6	1.2	0.6	0.2	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	S	0.4	0.1	24
15	0.3	0.5	0.6	0.8	8.3	2.1	1.1	1.7	0.7	0.4	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	S	8.3	0.7	24
16	0.2	0.2	0.1	0.1	0.4	1.5	1.3	C	C	C	C	C	C	0.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.3	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.9	0.3	0.6	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1	24
18	0.0	0.0	0.0	0.0	0.2	0.8	1.3	0.9	0.7	0.2	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	1.3	0.2	24
19	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
20	0.3	0.3	0.0	0.6	1.1	2.6	2.2	0.3	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	0.1	0.1	0.0	2.6	0.3	24
21	0.0	0.0	0.0	0.0	0.1	1.0	0.5	0.2	0.3	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.1	24
22	0.0	0.0	0.0	0.0	0.3	0.7	4.0	0.7	1.0	0.6	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	4.0	0.5	24
23	0.1	0.3	0.1	0.3	0.2	0.4	0.9	1.0	1.0	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	1.0	0.2	24
24	0.3	0.5	0.7	0.5	0.5	2.3	2.3	2.2	1.9	0.2	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	2.3	0.5	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.6	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	0.6	0.1	24
26	0.0	0.0	0.0	0.0	0.0	0.5	1.5	1.0	0.6	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	1.5	0.2	24
27	0.2	0.2	0.3	0.2	0.5	1.1	2.7	5.3	3.4	S	0.6	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	5.3	0.7	24
28	0.2	0.2	0.3	0.4	0.7	2.2	4.9	7.5	S	1.1	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	0.0	7.5	0.8	24
29	0.0	0.0	0.0	0.0	0.2	0.8	1.2	S	0.4	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	1.2	0.1	24
30	0.0	0.0	0.0	0.0	0.0	0.1	S	0.6	0.6	0.4	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	0.1	0.6	0.1	24
31	0.1	0.0	0.0	0.0	0.6	S	2.1	1.1	0.5	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.2	24
HOURLY MAX	0.4	0.6	0.7	0.8	8.3	4.9	4.9	7.5	3.4	1.1	0.6	0.3	0.3	0.8	0.1	0.1	0.2	0.1	1	0.1	0.3	0.4	0.4	0.5	2.1	0.2	24
HOURLY AVG	0.1	0.1	0.1	0.1	0.2	0.6	0.9	1.2	1.3	0.6	0.3	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1

STATUS FLAG CODES
 C - CALIBRATION
 Y - MAINTENANCE
 S - DAILY ZERO/SPAN CHECK
 P - POWER FAILURE
 G - OUT FOR REPAIR
 Q - QUALITY ASSURANCE
 R - RECOVERY
 X - MACHINE/MALEFUNCTION
 O - OPERATOR ERROR
 K - COLLECTION ERROR



MONTHLY SUMMARY

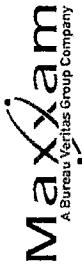
NUMBER OF NON-ZERO READINGS:	284		
MAXIMUM 1-HR AVERAGE:	8.3	PPB	@ HOUR(S)
MAXIMUM 24-HR AVERAGE:	0.8	PPB	
125 CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:
MONTHLY CALIBRATION TIME:	13	HRS	AMTD OPERATION UPTIME:
STANDARD DEVIATION:	0.71		MONTHLY AVERAGE:
			0.3
			PPB
			740
			HRS
			99.5
			%
			15
			ON DAY(S)
			28
			ON DAY(S)
			VAR-VARIOUS

01 Hour Averages

500	500	500	500	500	500
372.5	372.5	372.5	372.5	372.5	372.5
245	245	245	245	245	245
117.5	117.5	117.5	117.5	117.5	117.5
-10	-10	-10	-10	-10	-10

07/01/15 00:00/07/06/15 00:00/07/11/15 00:00/07/16/15 00:00/07/21/15 00:00/07/26/15 00:00/07/31/15 00:00

— LICA NO_ PPB



NITRIC OXIDE MAX instantaneous maximum in ppb

MST

DAY	HOURS																								DAILY MAX.	24-HOUR AVG.	RODS.	
	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				24:00
1	0.5	0.5	1.0	0.5	1.0	0.5	1.0	3.0	1.0	3.0	1.0	1.0	0.5	1.0	0.5	0.0	0.5	0.5	0.5	0.0	0.0	0.5	0.5	0.5	0.5	3.0	0.7	24
2	2.5	1.5	2.5	2.0	3.5	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	23.0	0.6	24
3	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.5	0.7	24
4	0.5	0.5	0.5	0.5	0.5	0.5	1.5	2.5	1.0	1.5	2.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6.5	1.0	24
5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	0.8	24
6	1.0	1.5	1.0	1.9	1.4	1.4	1.9	1.9	1.5	1.0	1.5	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.9	1.0	24
7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.9	0.9	20
8	0.5	1.0	0.5	0.9	13.4	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	13.4	2.0	24
9	0.1	1.5	0.1	0.6	5.0	4.5	118.6	0.0	1.0	2.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	118.6	6.1	24	
10	0.5	0.1	0.5	0.5	0.1	0.4	0.5	0.4	10.9	10.9	1.4	1.4	1.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	10.9	1.8	24
11	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	1.2	24
12	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	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.4	0.5	24
13	0.9	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	0.4	0.4	0.4	0.4	0.4	0.4	0.4	3.9	0.7	24
14	1.9	0.5	0.5	0.9	0.9	0.9	1.9	3.9	2.4	0.9	1.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	4.9	1.1	24
15	0.9	2.0	1.5	2.5	73.4	4.9	1.9	2.9	1.4	0.5	3.9	0.4	1.9	1.4	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	73.4	4.5	24
16	0.9	1.4	0.4	0.9	2.4	3.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	1.1	24
17	0.4	0.5	0.5	0.0	0.5	0.0	0.5	12.9	0.9	19.9	10.4	4.4	2.9	2.9	6.5	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9	2.9	24
18	0.4	0.0	0.0	0.4	0.4	1.4	1.9	1.4	1.4	0.9	0.5	1.9	0.0	1.4	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.9	0.6	24
19	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	24
20	0.9	0.9	0.5	1.4	2.4	11.9	2.9	1.9	4.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	11.9	1.5	24
21	0.1	0.1	0.1	0.1	0.6	6.1	1.5	0.6	1.0	0.6	0.6	0.6	0.6	0.6	0.6	1.5	0.4	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6.1	0.8	24
22	0.9	0.5	0.5	0.9	0.9	1.4	4.9	14.4	1.4	2.9	0.4	0.4	0.4	0.4	0.0	13.9	0.0	0.4	2.9	0.0	0.4	0.4	0.4	0.4	0.5	14.4	2.1	24
23	1.0	1.0	0.9	0.9	0.9	1.5	2.9	1.9	1.9	1.9	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	1.0	0.9	24
24	1.4	1.4	1.4	1.4	0.9	4.9	7.4	2.9	3.0	1.4	1.4	0.0	0.0	0.4	2.4	1.4	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.5	2.4	24
25	0.5	1.0	0.0	1.9	1.0	0.5	1.0	2.9	0.9	0.4	0.9	1.9	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.4	24
26	0.0	0.0	0.0	0.0	0.5	1.5	2.0	1.9	0.9	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	0.8	2.4	24
27	1.0	1.0	0.9	0.4	2.4	3.4	4.9	6.5	4.5	0.4	0.4	1.9	0.9	1.9	6.9	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.1	24
28	0.9	0.9	0.9	0.9	1.9	3.4	7.9	9.0	0.4	2.9	0.9	1.4	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	1.8	2.4	24
29	0.4	0.0	0.5	0.5	0.5	1.4	1.9	0.9	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	0.4	0.4	24
30	0.0	0.5	0.5	0.0	0.4	0.5	1.5	1.4	0.9	0.9	0.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.5	0.5	24
31	0.5	0.5	0.4	0.4	10.4	5.5	1.9	0.9	0.5	0.5	1.9	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	10.4	1.3	24	
HOURLY MAX	2.5	2.0	2.5	2.5	73.4	23.0	12.9	118.6	19.9	10.9	12.4	2.9	2.9	13.9	2.9	6.9	8.5	3.9	9.9	4.9	4.4	1.4	1.9	1.0				
HOURLY AVG	0.7	0.7	0.6	0.8	4.1	2.8	3.1	6.8	2.1	1.8	1.9	0.9	0.9	1.6	0.8	0.8	0.9	0.4	0.7	0.5	0.6	0.5	0.5	0.5				

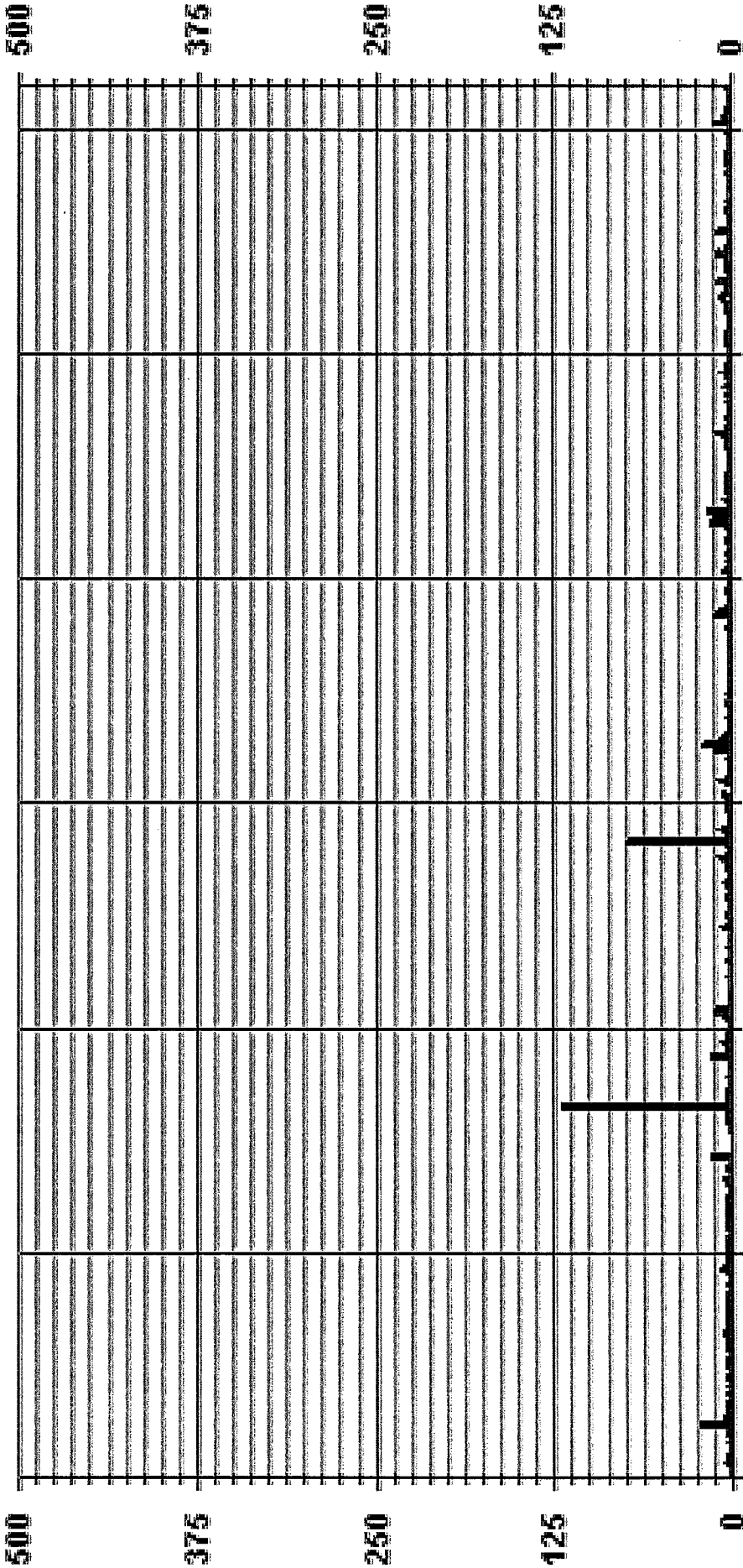
STATUS FLAG CODES

C	- CALIBRATION
O	- QUALITY ASSURANCE
R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK
P	- POWER FAILURE
G	- OUT FOR REPAIR
X	- MACHINE MALFUNCTION
O	- OPERATOR ERROR
K	- COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	562
MAXIMUM INSTANTANEOUS VALUE:	118.6 PPB @ HOUR(S) 7 ON DAY(S) 9
1/2S CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	16 HRS
STANDARD DEVIATION:	5.66
OPERATIONAL TIME:	740 HRS
VAR-VARIOUS	

01 Hour Averages



07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA NOMAX PPB

LICA
NO_ / WD Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : NO
Units : PPS

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 50.0	2.87	4.16	5.02	2.44	2.29	3.30	5.31	2.87	3.16	3.73	8.76	15.37	17.95	11.92	7.04	3.73	100.00	
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	2.87	4.16	5.02	2.44	2.29	3.30	5.31	2.87	3.16	3.73	8.76	15.37	17.95	11.92	7.04	3.73		

Calm : .00 %

Total # Operational Hours : 696

Distribution By Samples

Direction

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 50.0	20	29	35	17	16	23	37	20	22	26	61	107	125	83	49	26	696	
< 110.0																		
< 210.0																		
>= 210.0																		
Totals	20	29	35	17	16	23	37	20	22	26	61	107	125	83	49	26		

Calm : .00 %

Total # Operational Hours : 696

Logger : 01 Parameter : NO_

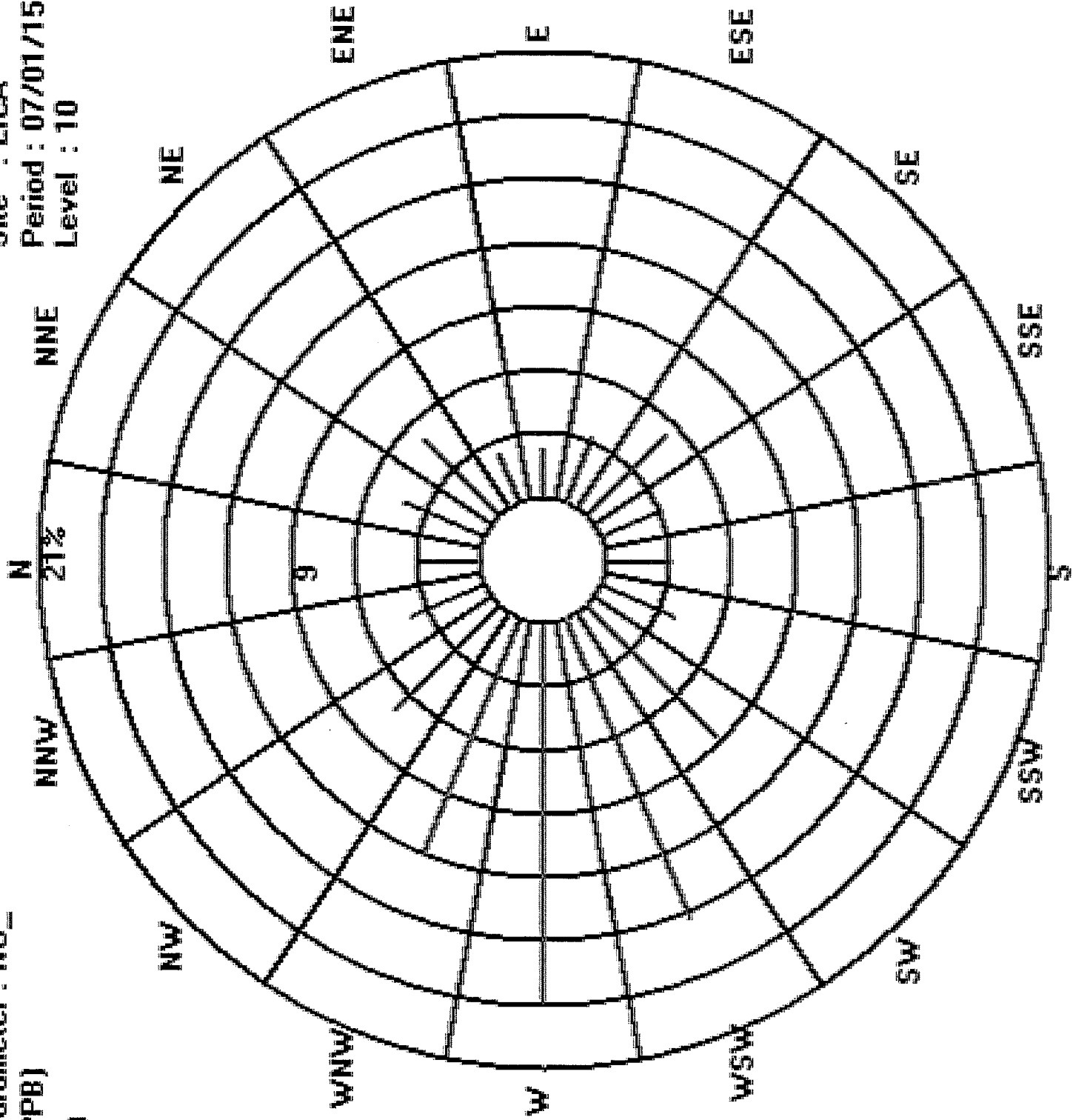
Site : LICA

Period : 07/01/15-07/31/15

Level : 10

Class Limits (PPB)

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0



NITROGEN DIOXIDE



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 Cold Lake South Site - JULY 2015
 JOB # 2833-2015-07-01-C

NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

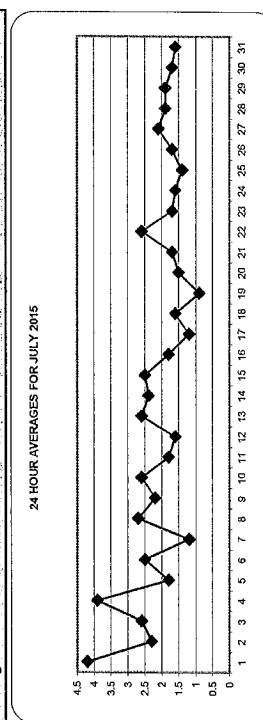
DAY	24-HOUR AVG.																															
	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400							
1	5.0	5.6	6.2	6.1	4.9	6.2	7.0	5.6	6.3	4.9	4.7	3.1	2.9	3.5	2.8	1.7	1.7	1.7	1.7	2.1	1.7	2.4	4.4	4.8	4.1	7.0	4.2	24				
2	3.5	3.0	2.5	2.3	1.8	2.5	4.0	3.8	3.1	4.1	3.0	1.6	1.2	1.4	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.6	2.0	2.2	2.5	2.1	4.1	2.3	24			
3	2.6	3.1	3.1	2.7	3.7	4.6	4.2	3.1	2.4	2.5	2.0	2.2	1.6	0.9	1.0	1.0	1.0	0.8	0.8	0.6	1.2	2.7	3.4	4.4	4.4	4.4	4.6	2.6	24			
4	4.9	4.1	4.1	5.5	5.3	4.5	6.3	9.4	8.8	5.5	4.5	3.6	2.6	2.1	1.5	2.0	1.6	1.7	1.5	2.1	1.9	2.5	2.6	2.6	2.6	9.4	3.9	24				
5	2.0	3.3	3.7	3.4	3.8	2.7	1.3	0.6	0.5	0.3	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.2	1.9	2.9	1.8	3.5	3.8	1.8	24			
6	3.6	2.6	1.7	1.7	1.7	1.5	3.5	3.4	3.5	3.0	2.5	1.8	1.3	1.3	1.2	1.7	1.9	1.9	2.3	2.7	3.6	3.1	3.7	3.8	3.8	3.8	2.5	24				
7	2.6	2.1	1.3	0.9	1.3	0.8	1.1	0.7	0.8	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	24			
8	2.8	2.6	2.1	2.3	3.1	3.5	2.6	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	24			
9	2.7	1.7	2.1	2.0	1.0	5.3	6.5	5.5	1.8	1.4	1.2	1.0	1.1	1.4	1.4	1.5	1.6	1.5	1.6	1.5	1.6	1.5	2.3	2.3	1.9	1.4	1.8	6.5	2.2	24		
10	2.1	1.7	1.0	1.0	2.0	2.0	1.9	2.4	3.0	3.2	3.7	3.0	2.7	2.5	3.0	3.6	2.9	2.3	2.3	2.6	3.8	3.3	2.9	2.4	3.8	2.6	2.4	3.8	2.6	24		
11	2.3	2.6	1.0	2.3	2.3	1.8	1.6	1.7	2.2	2.3	2.4	2.4	2.2	2.2	1.6	1.2	0.9	0.7	0.8	1.0	1.6	1.9	1.4	1.4	2.6	1.8	1.8	2.4	2.4	24		
12	2.9	3.8	3.4	3.2	3.6	1.7	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.6	0.9	0.8	1.4	2.6	3.3	2.3	1.3	3.8	1.6	2.4	24		
13	2.6	4.3	5.0	5.4	2.6	2.0	3.5	3.9	2.2	2.7	2.5	2.3	1.9	1.7	1.7	2.0	1.7	1.2	1.2	2.7	1.6	2.3	1.4	1.4	5.4	2.6	2.4	2.4	2.4	24		
14	3.6	3.0	4.0	2.9	3.2	5.6	3.7	3.3	2.6	2.2	1.7	1.6	1.4	1.1	1.1	0.9	0.8	0.9	1.3	1.6	2.4	2.7	1.4	1.4	3.8	2.6	2.4	2.4	2.4	24		
15	3.7	4.3	3.5	3.3	3.8	2.6	3.4	4.3	3.1	2.9	1.2	0.7	2.8	1.8	0.7	0.5	0.4	0.5	0.6	1.0	2.2	1.4	2.7	3.9	3.7	5.8	2.5	2.4	2.4	24		
16	3.5	3.3	2.4	2.3	2.4	3.0	3.7	4.3	1.0	1.1	1.0	0.8	0.3	0.2	0.5	0.6	0.8	0.5	0.6	0.8	0.5	2.7	2.9	2.0	2.4	4.3	1.8	2.4	2.4	24		
17	2.5	2.6	1.4	0.6	0.7	0.7	0.7	1.0	1.2	1.0	1.1	1.0	0.8	0.3	0.2	0.5	0.6	0.8	0.5	0.6	0.8	0.5	2.7	2.9	2.0	2.4	4.3	1.8	2.4	2.4	24	
18	3.8	2.3	1.4	2.7	3.1	3.3	2.6	1.7	1.8	1.6	1.4	0.7	0.5	0.6	0.4	0.6	0.5	0.6	1.8	1.4	0.5	0.6	2.0	3.8	1.6	2.4	3.8	1.6	2.4	2.4	24	
19	1.5	1.6	2.3	2.1	0.9	0.9	0.7	0.5	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.6	1.5	1.7	1.8	2.3	0.9	2.4	2.4	2.4	2.4	2.4	2.4	24	
20	1.9	2.0	3.5	4.6	3.2	2.6	3.0	1.2	0.9	0.9	0.8	0.7	0.8	0.6	0.6	0.6	0.6	0.6	1.4	0.8	1.1	1.7	0.9	0.6	0.5	4.6	1.5	2.4	2.4	2.4	2.4	24
21	0.5	0.5	0.8	0.9	1.0	1.9	1.9	1.2	1.4	1.6	1.4	1.4	1.3	1.6	1.4	1.6	1.6	1.6	1.9	2.3	2.7	3.3	3.0	4.1	1.7	2.4	2.4	2.4	2.4	2.4	24	
22	2.8	3.7	2.4	2.3	3.8	4.4	5.5	5.6	2.7	3.8	1.5	1.2	1.0	2.5	1.2	1.1	1.1	1.1	1.4	1.4	2.2	2.0	2.7	2.8	5.6	2.6	2.4	2.4	2.4	2.4	24	
23	3.0	2.5	2.6	2.6	2.4	2.2	1.8	1.8	2.1	1.8	1.2	0.9	0.9	1.1	1.0	0.9	0.9	0.9	0.8	1.2	1.6	1.9	1.9	1.6	3.0	1.7	2.4	2.4	2.4	2.4	24	
24	1.7	1.8	1.5	1.6	1.5	1.9	2.7	3.2	3.6	1.9	1.3	0.9	1.0	1.2	1.4	1.4	0.9	0.8	0.9	1.6	2.1	1.6	1.2	1.0	3.6	1.6	2.4	2.4	2.4	2.4	24	
25	1.0	0.8	0.8	1.4	2.1	1.9	2.1	1.5	1.9	1.1	0.8	1.0	0.6	0.8	0.8	0.8	0.8	0.8	0.6	0.6	1.8	1.7	1.8	3.1	2.1	1.4	2.4	2.4	2.4	2.4	24	
26	2.2	1.7	2.3	3.0	2.4	2.9	3.0	2.1	1.7	1.2	1.2	1.2	0.8	0.7	0.6	1.0	0.6	0.7	0.6	1.4	2.4	2.4	2.4	2.0	3.0	1.7	2.4	2.4	2.4	2.4	24	
27	1.6	1.9	1.9	1.7	1.8	3.3	4.6	5.2	4.2	2.7	1.8	0.9	1.0	0.9	1.0	0.6	0.5	0.7	1.4	2.5	2.9	2.4	2.5	5.2	2.1	2.4	2.4	2.4	2.4	2.4	24	
28	2.4	1.9	1.9	1.9	3.3	3.7	2.9	4.0	7.4	2.7	1.0	0.6	0.3	0.2	0.4	0.2	0.2	0.2	2.5	0.5	0.7	2.9	2.4	2.5	2.1	2.4	2.4	2.4	2.4	2.4	24	
29	3.8	3.1	4.6	5.0	4.2	3.4	2.7	1.7	1.0	0.8	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	2.5	2.2	2.7	5.0	1.9	2.4	2.4	2.4	2.4	24	
30	3.1	3.0	3.4	3.5	2.6	2.1	1.5	2.0	2.1	1.7	1.3	1.0	0.8	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.8	1.9	1.8	2.4	2.5	3.5	1.7	2.4	2.4	2.4	24	
31	2.5	3.2	2.4	2.3	2.8	1.5	3.2	2.9	2.0	1.5	1.2	1.4	0.7	0.6	0.6	0.8	0.7	0.7	1.0	1.3	1.3	1.4	1.3	1.4	1.3	0.9	3.2	1.6	2.4	2.4	2.4	24
DAILY MAX	5.0	5.6	6.2	6.1	5.8	6.2	7.0	9.4	8.8	5.5	4.9	3.6	2.9	3.5	3.0	3.6	2.9	2.3	2.5	2.7	3.8	4.4	4.8	4.4	7.0	4.1	4.8	4.1	7.0	4.2	24	
HOURLY AVG	3	3	3	3	3	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	24

STATUS FLAG CODES

- C - CALIBRATION
- O - QUALITY ASSURANCE
- M - MAINTENANCE
- R - RECOVERY
- S - DAILY ZERO/SPAN CHECK
- X - MACHINE MALFUNCTION
- P - POWER FAILURE
- O - OPERATOR ERROR
- G - OUT-OF-REPAIR
- K - COLLECTION ERROR

ALBERTA ENVIRONMENT: 24 HR 159 PPB

OBJECTIVE LIMIT:



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	692
MAXIMUM 1-HR AVERAGE:	9.4 PPB
MAXIMUM 24-HR AVERAGE:	4.2 PPB
ISZ CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	13 HRS
STANDARD DEVIATION:	1.35
ON DAY(S)	7
ON DAY(S) VAR-VARIOUS	1
OPERATIONAL TIME:	740 HRS
AMID OPERATION UPTIME:	99.5 %
MONTHLY AVERAGE:	2.1 PPB

01 Hour Averages

500	500	500	500	500	500	500
372.5	372.5	372.5	372.5	372.5	372.5	372.5
245	245	245	245	245	245	245
117.5	117.5	117.5	117.5	117.5	117.5	117.5
-10	-10	-10	-10	-10	-10	-10

07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA NO2_ PPB



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS.	
	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				
1	5.7	6.7	7.7	7.7	6.2	7.7	8.7	6.2	8.7	6.2	4.2	4.2	3.7	4.2	3.2	2.2	2.2	2.2	\$	2.5	2.0	4.0	5.5	6.0	5.0	8.7	5.3	24
2	4.5	4.0	3.0	3.0	2.5	3.5	5.0	4.0	11.5	7.5	3.5	1.5	5.0	1.4	3.0	3.0	\$	1.4	1.4	3.4	2.9	3.4	4.4	3.9	11.5	3.9	24	
3	4.4	4.9	3.9	4.4	3.9	4.9	4.4	3.9	4.4	3.9	5.9	4.4	2.9	1.9	1.4	\$	1.0	1.0	1.5	2.0	4.0	5.0	5.0	6.0	6.5	3.8	24	
4	6.0	5.0	5.0	7.0	6.5	5.5	11.5	12.0	13.0	10.0	6.0	4.5	3.5	2.5	\$	1.9	2.9	2.4	2.4	2.4	3.4	3.4	2.9	2.9	13.0	5.3	24	
5	2.9	4.4	4.4	3.9	4.9	3.9	4.4	3.9	4.4	3.9	4.4	3.9	4.4	3.9	1.4	\$	1.0	1.5	1.0	1.5	3.0	5.5	3.0	4.5	5.5	2.7	24	
6	5.0	3.5	2.0	1.9	2.4	2.4	4.4	4.4	5.5	3.5	4.0	4.5	\$	2.5	2.0	3.0	3.5	2.0	3.0	3.5	5.5	4.0	4.5	4.5	5.5	3.5	24	
7	4.5	3.5	2.0	1.0	1.5	1.5	2.0	1.0	1.0	2.5	1.0	Y	Y	Y	Y	Y	Y	Y	Y	2.9	1.9	2.9	3.9	2.4	3.9	2.4	20	
8	3.4	3.9	2.9	3.3	12.3	7.4	\$	C	C	C	C	C	C	C	C	C	C	C	C	2.5	3.0	4.5	3.0	4.0	12.3	4.6	24	
9	4.0	3.5	3.0	2.1	\$	7.2	9.6	46.1	2.1	1.6	2.1	2.1	2.1	2.1	2.1	3.1	10.6	2.1	1.6	4.1	3.6	3.6	2.1	3.1	46.1	5.4	24	
10	3.1	2.6	1.6	\$	2.8	2.3	2.4	2.8	3.3	5.8	21.8	3.8	4.8	2.8	5.3	4.8	3.3	5.3	2.8	3.3	20.3	4.8	3.3	3.3	21.8	5.1	24	
11	2.8	3.3	\$	3.6	2.6	2.6	2.6	2.1	2.6	2.6	6.6	3.6	4.1	4.6	2.6	2.1	1.6	1.1	1.6	2.6	2.6	3.1	2.1	2.6	6.6	2.9	24	
12	5.1	\$	5.7	4.2	4.2	4.2	4.2	4.2	4.2	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	4.2	6.2	5.2	3.2	2.7	6.2	3.0	24	
13	\$	4.0	6.0	6.5	7.5	3.0	2.5	7.0	7.0	4.5	4.5	3.0	3.0	2.6	5.5	2.0	2.0	3.5	1.5	4.0	2.0	6.0	2.0	\$	7.5	4.1	24	
14	5.7	3.7	4.7	3.2	4.7	8.2	4.7	4.2	4.2	3.2	2.2	2.7	1.7	1.7	1.7	1.7	1.2	1.2	1.2	1.2	13.2	3.7	3.7	\$	4.1	13.2	4.0	24
15	4.6	5.2	4.7	4.7	85.6	3.6	4.1	6.2	4.1	4.6	1.6	1.6	8.1	3.6	1.1	1.1	1.6	1.1	1.1	1.6	4.1	\$	6.0	5.0	85.6	7.2	24	
16	4.5	4.5	3.0	2.5	4.0	5.0	5.0	C	C	C	C	C	C	4.5	6.5	0.0	0.5	0.5	0.5	0.5	\$	4.1	4.1	2.6	31.6	5.0	24	
17	3.1	3.1	2.1	1.1	1.6	1.1	20.1	1.1	10.1	31.6	7.6	1.6	1.6	5.1	6.6	1.6	0.6	1.1	0.6	1.6	\$	4.1	4.1	2.6	31.6	5.0	24	
18	5.1	4.6	2.1	3.6	3.6	3.1	2.1	2.6	2.1	2.6	2.1	2.6	1.1	1.6	1.1	1.6	1.1	1.1	1.1	1.1	2.1	1.6	1.6	1.1	5.1	2.4	24	
19	1.6	2.1	2.6	2.6	1.1	1.1	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	\$	0.6	1.1	2.6	2.6	1.3	24	
20	2.6	3.1	4.1	7.1	4.6	5.1	3.1	2.6	5.1	1.1	1.1	1.1	1.1	0.6	1.1	1.1	0.6	\$	2.0	1.0	1.5	3.5	1.0	0.5	7.1	2.4	24	
21	0.5	0.5	1.0	1.0	1.5	4.0	4.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.7	2.7	2.7	4.7	3.7	2.5	24	
22	4.7	5.7	2.7	3.2	5.3	4.7	6.7	16.2	3.2	5.7	2.7	2.2	1.3	25.2	\$	1.7	1.7	2.2	2.2	5.2	3.7	2.7	3.2	3.3	25.2	4.8	24	
23	3.8	3.3	3.3	2.7	2.7	2.2	2.3	3.2	3.2	2.2	2.2	1.7	2.7	\$	1.6	1.1	0.6	1.1	0.6	1.1	2.6	3.6	2.2	1.6	3.8	2.2	24	
24	2.6	2.1	1.1	1.6	1.6	2.1	4.1	3.1	4.1	3.1	2.1	1.1	\$	3.0	1.5	5.0	1.0	1.0	1.5	3.0	3.0	3.0	1.5	1.1	5.0	2.4	24	
25	1.1	1.0	1.0	3.0	6.0	4.6	3.6	2.0	2.5	1.5	1.0	\$	3.1	1.1	0.6	0.6	0.6	0.6	0.6	4.1	2.1	2.6	4.1	2.1	6.0	2.2	24	
26	2.6	2.7	3.1	3.7	2.7	3.2	3.2	2.6	1.6	1.6	\$	6.2	0.8	1.7	1.2	1.2	1.2	1.2	1.2	0.7	2.7	4.2	2.7	2.8	6.2	2.4	24	
27	2.3	2.3	2.2	2.2	2.7	4.2	6.7	6.2	4.8	\$	4.0	2.5	2.0	1.5	3.5	5.0	4.5	0.5	1.0	3.0	4.5	3.6	3.1	3.1	6.7	3.3	24	
28	3.0	2.5	3.5	4.5	4.5	4.0	6.0	8.1	\$	5.6	1.5	2.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	20.5	1.5	3.0	3.1	2.6	6.0	20.5	3.8	24
29	5.6	3.6	6.0	6.6	5.1	4.1	3.1	\$	2.2	1.2	1.2	1.2	1.2	0.7	0.7	0.7	0.7	0.7	0.7	1.2	3.7	3.7	3.2	3.3	6.6	2.6	24	
30	3.3	3.3	3.8	3.8	2.8	2.3	\$	2.8	2.7	2.2	1.7	1.7	2.2	1.2	0.7	0.7	0.7	0.7	1.2	0.7	2.7	2.7	2.7	2.8	3.3	3.8	2.3	24
31	6.0	6.7	7.7	7.7	85.6	8.2	20.1	46.1	13.0	31.6	21.8	6.2	8.1	25.2	5.5	5.0	10.6	5.3	20.5	13.2	20.3	6.0	6.5	6.0	4.7	2.6	24	
HOURLY MAX	3.7	3.5	3.4	3.6	6.7	4.0	5.0	5.7	3.9	4.5	3.7	2.5	2.6	3.5	1.8	1.9	2.0	1.6	2.4	2.9	4.0	5.6	3.2	3.3				

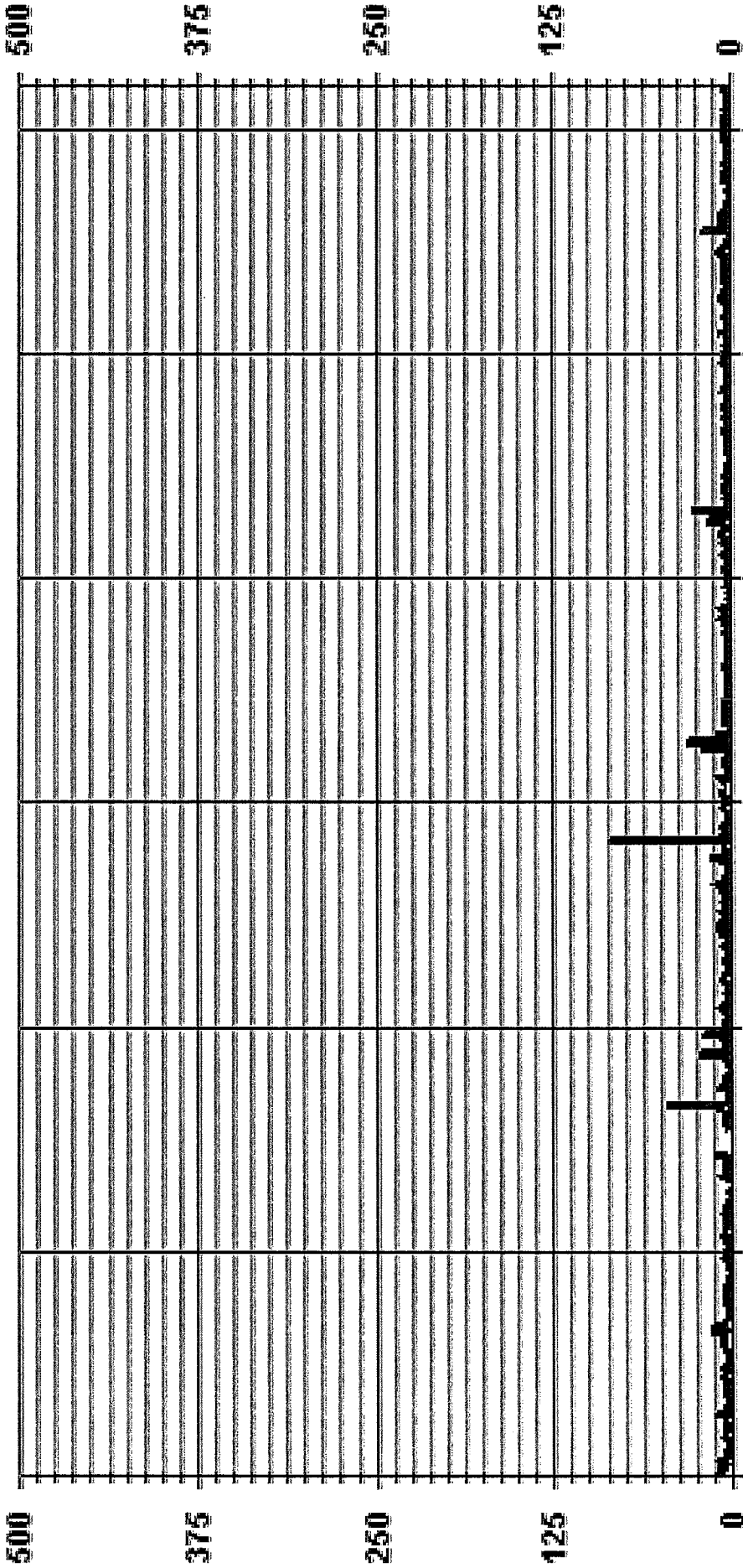
STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER VALUE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	680
MAXIMUM INSTANTANEOUS VALUE:	85.6 PPB @ HOUR(S) 4 ON DAY(S) 15
12S CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	16 HRS
STANDARD DEVIATION:	4.49
OPERATIONAL TIME:	740 HRS
VAR- VARIOUS	

01 Hour Averages



— LICA NO2MAX PPB

LICA
NO2_ / WD Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : NO2
Units : PPE

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.87	4.16	5.02	2.44	2.29	3.30	5.31	2.87	3.16	3.73	8.76	15.37	17.95	11.92	7.04	3.73	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.87	4.16	5.02	2.44	2.29	3.30	5.31	2.87	3.16	3.73	8.76	15.37	17.95	11.92	7.04	3.73	

Calm : .00 %

Total # Operational Hours : 696

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	20	29	35	17	16	23	37	20	22	26	61	107	125	83	49	26	696
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	20	29	35	17	16	23	37	20	22	26	61	107	125	83	49	26	

Calm : .00 %




Total # Operational Hours : 696

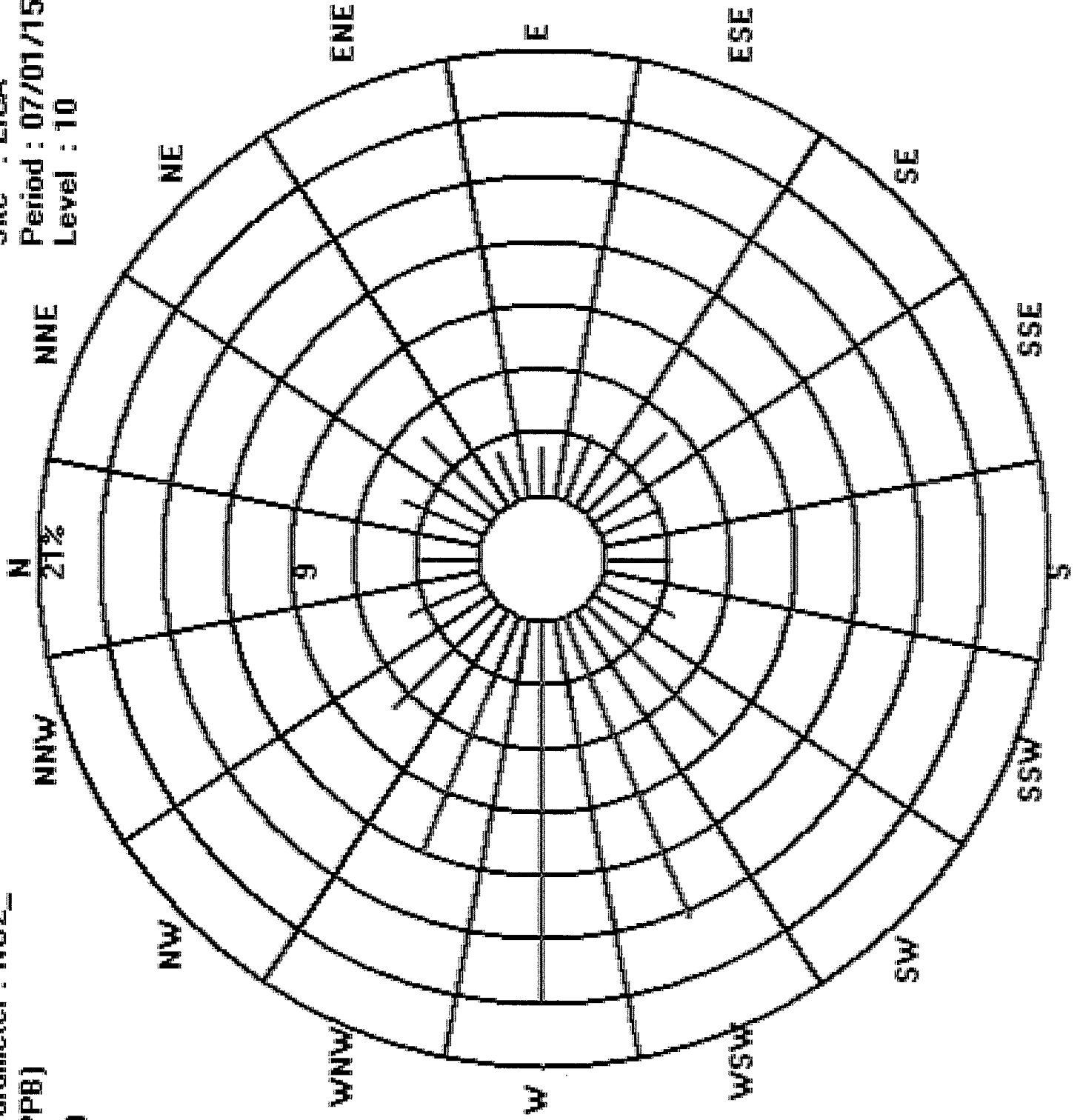
Logger : 01 Parameter : ND2_

Site : LICA

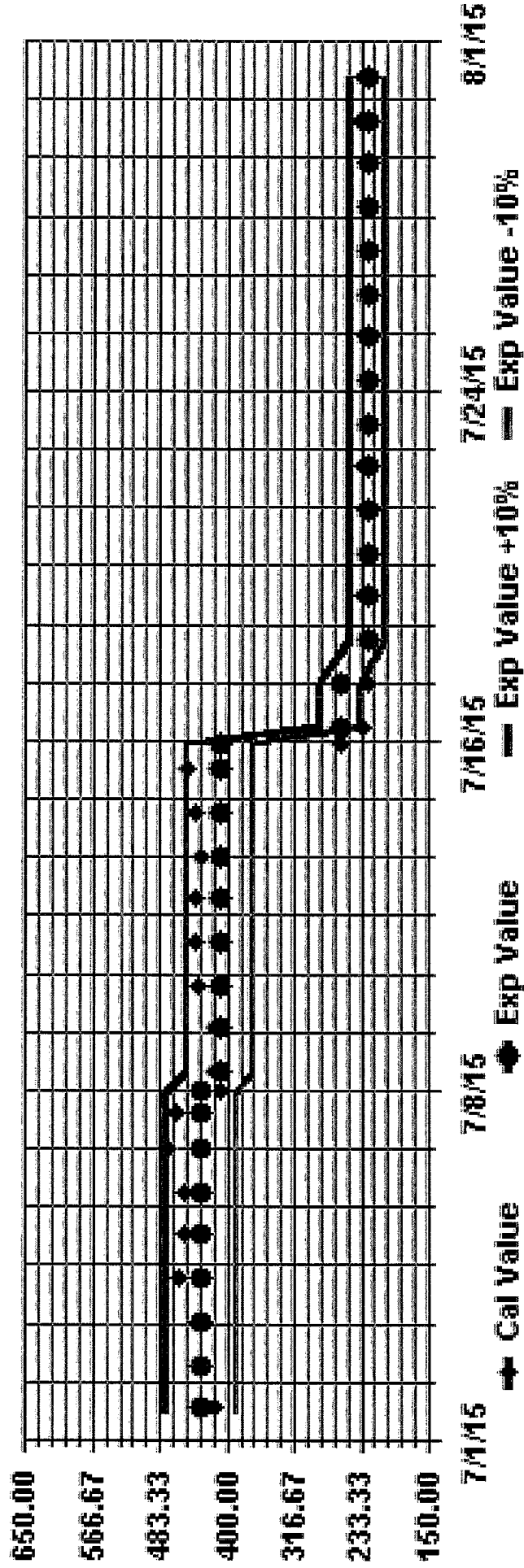
Class Limits (PPB)

Period : 07/01/15-07/31/15
Level : 10

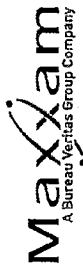
-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0



Calibration Graph for Site: LICA Parameter: NO2_ Sequence: NO2 Phase: SPAN



OZONE



OZONE (O3) hourly averages in ppb

DAY	HOUR																								DAILY MAX	24-HOUR AVG	ROSGS		
	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					
1	17	17	15	14	16	16	17	17	18	18	17	27	28	31	37	42	42	41	35	35	37	32	26	12	42	25.1	24		
2	1	7	3	1	1	0	1	1	17	13	19	27	36	37	38	38	37	36	36	36	34	36	32	17	38	22.6	24		
3	14	12	15	20	12	18	25	30	42	50	55	51	39	43	37	3	44	46	53	46	42	35	21	14	55	33.2	24		
4	16	12	12	30	30	26	23	29	33	34	33	34	38	38	3	39	38	37	35	36	32	28	20	39	29.0	24			
5	18	13	10	9	10	14	16	20	21	19	20	26	30	32	34	37	36	27	19	13	12	7	4	37	19.4	24			
6	3	2	1	1	1	1	7	14	19	25	27	34	38	40	42	46	48	54	48	34	37	40	42	54	26.3	24			
7	34	29	24	25	27	35	32	25	27	27	30	31	30	36	36	36	36	36	36	36	36	36	36	36	36	36	24		
8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	24		
9	35	34	23	16	5	6	10	22	30	29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	24		
10	19	23	20	5	16	15	16	20	26	30	34	35	41	49	53	55	56	54	52	47	46	42	33	38	29	56	33.2	24	
11	41	40	5	42	36	40	39	40	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	24	
12	19	5	15	9	5	11	24	27	28	29	33	42	43	44	45	44	40	38	34	23	20	21	26	35	45	28.5	24		
13	5	19	19	16	14	22	24	18	18	22	29	39	47	47	47	47	50	52	45	29	21	39	26	52	52	30.9	24		
14	17	15	12	9	8	9	10	13	20	25	27	30	36	36	36	36	36	36	36	36	36	36	36	36	36	36	24		
15	6	5	2	2	1	4	14	19	28	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	24		
16	6	4	8	6	4	2	4	7	10	15	16	15	17	19	24	24	22	19	16	16	16	16	16	16	16	16	24		
17	8	7	21	33	36	39	39	33	29	29	28	25	28	32	28	22	20	21	5	17	16	7	9	39	23.0	24			
18	10	14	13	10	8	7	9	13	18	26	30	26	27	28	29	26	26	24	5	19	17	28	28	25	30	20.0	24		
19	25	24	21	16	16	16	18	20	22	22	25	26	26	27	27	27	27	26	24	5	25	23	15	12	7	4	27	20.4	24
20	3	4	2	1	3	8	22	24	25	28	30	29	26	27	29	5	27	25	22	24	27	27	27	27	27	27	24		
21	24	21	16	18	17	8	16	5	26	30	35	42	43	43	44	44	43	43	43	43	39	25	5	12	9	44	24.8	24	
22	13	11	12	7	6	6	7	14	23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	24		
23	11	8	9	6	8	10	11	13	17	21	25	25	25	25	25	26	26	25	24	23	19	14	9	3	3	26	15.7	24	
24	2	2	1	1	1	1	2	7	11	18	23	25	28	34	40	41	39	39	38	28	19	19	21	22	41	20.0	24		
25	24	27	25	17	12	14	13	15	22	30	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	24	
26	19	19	17	14	10	9	10	16	20	24	5	28	32	33	30	32	31	28	31	25	15	11	12	7	33	20.6	24		
27	3	3	2	2	1	3	3	6	11	5	24	31	32	34	32	30	29	28	29	25	13	8	6	5	34	15.7	24		
28	3	2	1	1	1	1	2	3	8	5	21	22	21	23	22	24	24	24	24	22	21	15	16	14	24	14.7	24		
29	11	12	9	9	10	13	5	20	25	29	32	33	38	40	38	35	31	31	30	28	25	22	40	24.1	24				
30	20	18	17	16	15	15	5	20	22	26	31	33	33	33	33	34	34	34	32	29	19	16	13	10	34	23.8	24		
31	9	12	6	5	4	5	10	18	23	30	33	34	34	39	39	42	46	47	48	43	37	34	35	20	48	27.8	24		
HOURLY MAX	41	40	25	42	36	40	39	40	44	50	55	51	53	55	56	54	52	51	54	49	42	38	40	42					
HOURLY AVG	14.8	13.9	11.9	12.1	11.0	12.5	15.1	18.8	23.6	27.7	30.5	32.7	34.6	36.1	37.0	36.7	37.2	35.6	34.5	30.8	25.7	22.6	20.1	17.7					

STATUS FLAG CODES

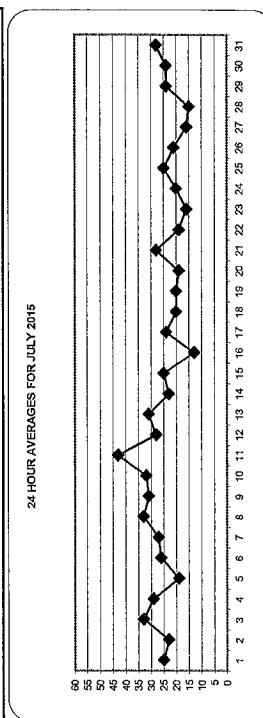
C	QUALITY ASSURANCE	O	RECOVERY
Y	MAINTENANCE	P	MACHINE MALFUNCTION
S	DAILY ZERO/SPAN CHECK	X	OPERATOR ERROR
P	POWER FAILURE	O	COLLECTION ERROR
G	-OUT FOR REPAIR	K	

ALBERTA ENVIRONMENT: 5-HR: 32 PPB

OBJECTIVE LIMIT:

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES	0
NUMBER OF NON-ZERO READINGS:	700
MAXIMUM 1-HR AVERAGE:	56 PPB
MAXIMUM 24-HR AVERAGE:	42.7 PPB
1/25 CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	13.02
ON DAY(S)	14
ON DAY(S) VAR-VARIOUS	8
OPERATIONAL TIME AND OPERATION UPTIME:	740 HRS
MONTHLY AVERAGE:	59.5 %
MONTHLY AVERAGE:	24 PPB

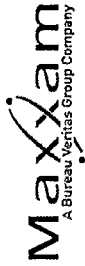


01 Hour Averages

500						500
372.5						372.5
245						245
117.5						117.5
-10						-10

07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA 03_ PPB



OZONE MAX instantaneous maximum in ppb

MST

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
HOURLY MAX	43	41	39	58	73	42	43	44	50	54	58	56	57	58	61	54	65	57	48	46	45	46	45	46	45	46	45	46	45	46	45	46
HOURLY AVG	18.4	17.1	15.8	15.9	16.1	15.6	18.4	22.6	27.3	31.0	33.9	36.1	37.2	39.2	39.6	39.5	40.7	38.7	39.1	36.2	31.3	27.5	23.8	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	
DAILY MAX	45	41	38	40	39	41	39	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	
DAILY AVG	29.1	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	

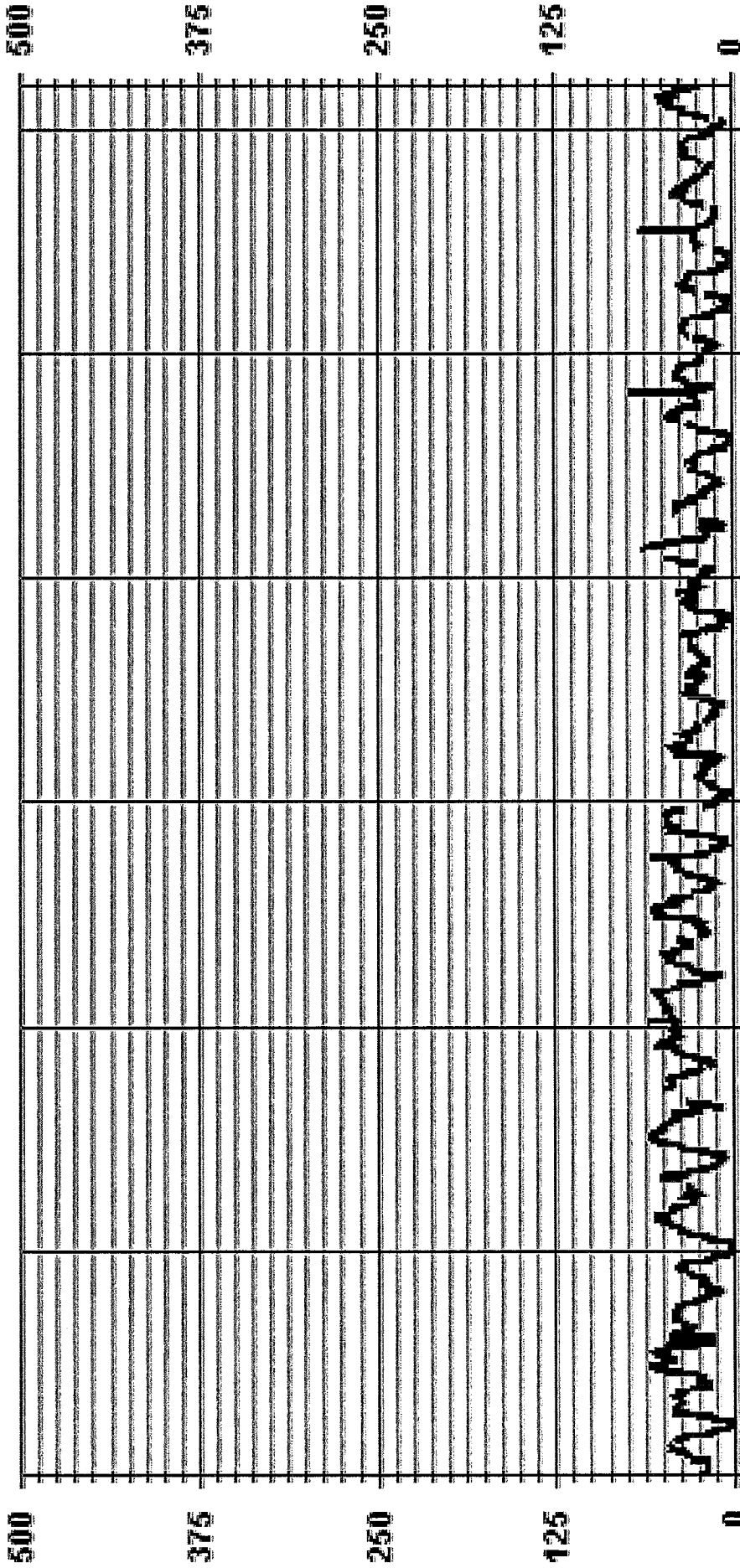
STATUS FLAG CODES

C	QUALITY ASSURANCE
M	MAINTENANCE
D	DAILY ZERO / SPAN CHECK
P	POWER FAILURE
G	OUT OF REPAIR
R	RECOVERY
X	MACHINE MALFUNCTION
O	OPERATOR ERROR
K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	696
MAXIMUM INSTANTANEOUS VALUE:	73 PPB @ HOUR(S) 4 ON DAY(S) 25
12S CALIBRATION TIME:	34 HRS
MONTHLY CALIBRATION TIME:	10 HRS
STANDARD DEVIATION:	13.56
OPERATIONAL TIME:	740 HRS
VAR-VARIOUS	

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA O3MAX PPB

LIICA
 O3_ / WD Joint Frequency Distribution (Percent)
 July 2015

Distribution By % Of Samples

Logger Id : 01
 Site Name : LIICA
 Parameter : O3
 Units : PPE

Wind Parameter : WD
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	2.71	4.13	4.56	2.28	2.28	3.28	4.85	2.99	3.13	4.13	8.70	15.26	17.54	11.69	6.70	3.56	97.86
< 110	.14	.00	.14	.00	.00	.00	.28	.00	.00	.28	.57	.00	.42	.00	.28	.00	2.13
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.85	4.13	4.70	2.28	2.28	3.28	5.13	2.99	3.13	4.42	9.27	15.26	17.97	11.69	6.99	3.56	

Calm : .00 %

Total # Operational Hours : 701

Distribution By Samples





Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	19	29	32	16	16	23	34	21	22	29	61	107	123	82	47	25	686
< 110	1	1	1	1	1	2	2	2	2	2	4	3	3	2	2	2	15
< 210																	
>= 210																	
Totals	20	29	33	16	16	23	36	21	22	31	65	107	126	82	49	25	

Calm : .00 %

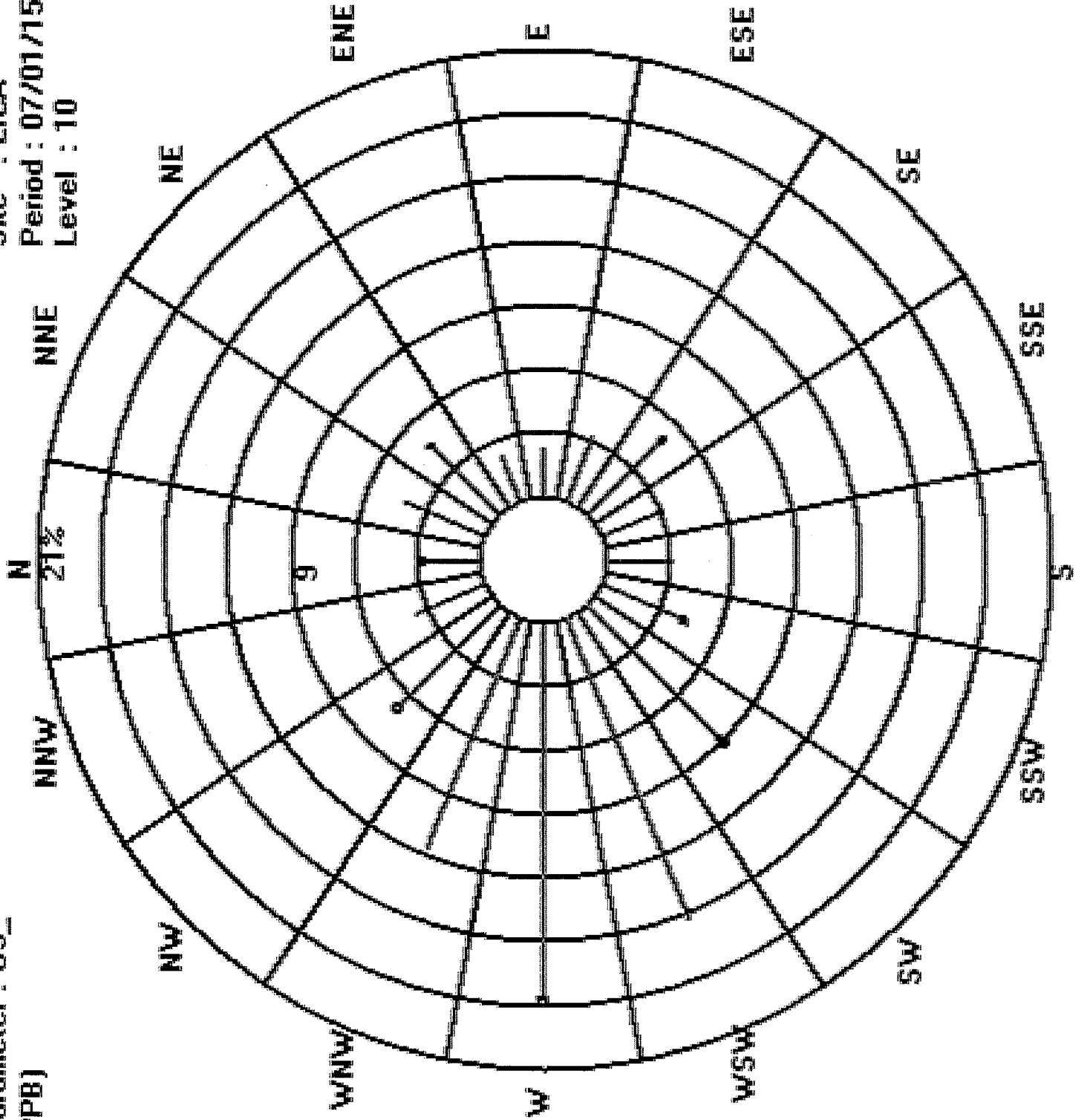
Total # Operational Hours : 701

Logger : 01 Parameter : 03_

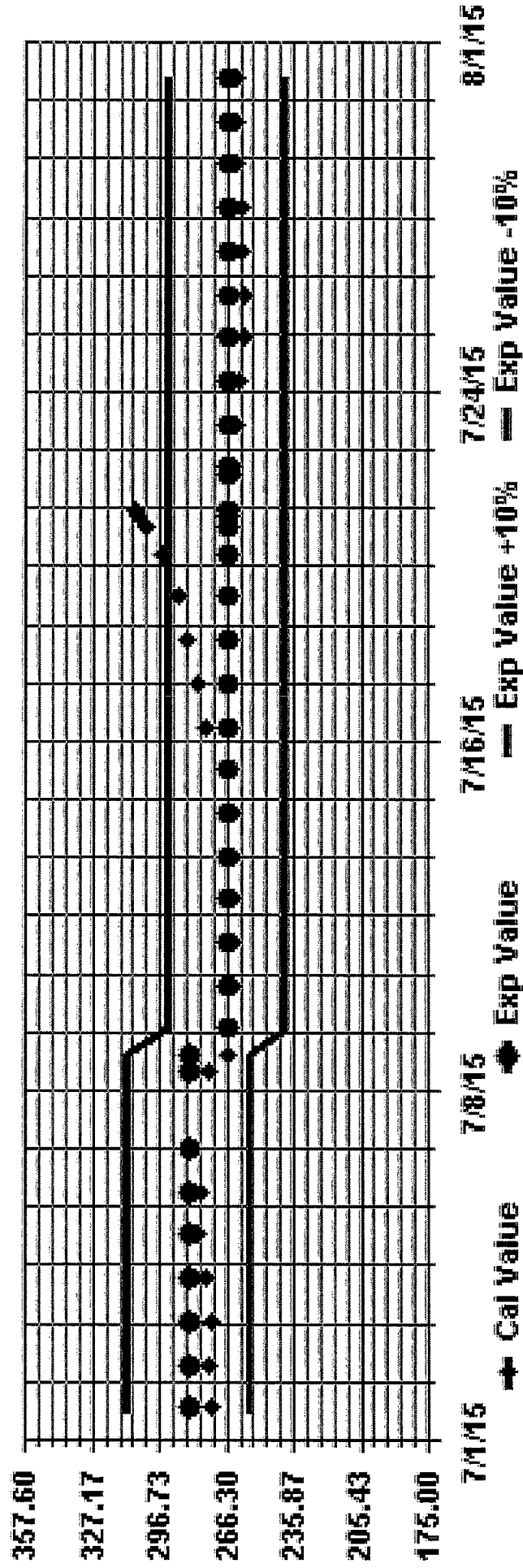
Class Limits (PPB)

-  >= 210
-  < 210
-  < 110
-  < 50

Site : LICA
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA Parameter: O3_ Sequence: O3_ Phase: SPAN



PARTICULATE MATTER 2.5



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

DAY	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 MAX	24-HOUR AVG	RDGS	
1	46	43	43	42	42	36	39	40	46	45	55	145	81	69	67	58	45	45	37	26	41	39	40	46	50	145	50.9	24
2	38	42	43	37	43	40	35	30	29	19	23	17	21	7	8	8	4	4	7	7	14	5	5	5	20	43	21.1	24
3	16	13	27	31	22	20	6	4	C	8	11	17	10	4	4	5	3	10	34	78	69	76	78	20.2	24	24	20.2	24
4	90	88	84	162	257	249	261	249	210	182	160	131	121	95	83	75	28	19	29	33	28	26	28	37	261	113.5	24	
5	42	52	53	51	52	41	25	9	0	2	10	9	7	3	12	X	2	0	4	3	8	2	6	8	53	17.4	23	
6	6	9	7	9	12	9	2	5	12	8	0	0	0	6	10	X	0	23	42	41	44	51	57	52	57	18.0	24	
7	33	23	14	7	3	6	2	Y	Y	Y	Y	Y	Y	Y	Y	Y	9	0	1	8	19	25	9	3	33	10.8	15	
8	8	7	9	4	3	10	2	3	6	16	14	24	13	16	21	21	18	24	25	19	18	16	18	25	13.9	24		
9	22	15	9	10	13	13	16	43	75	52	34	38	38	58	86	74	78	93	83	65	30	59	66	64	93	47.3	24	
10	56	58	56	52	86	171	174	190	270	278	265	232	188	176	184	240	171	111	98	126	131	117	164	278	155.2	24		
11	155	171	173	193	179	157	157	149	169	195	195	205	191	171	136	107	77	53	40	39	49	45	42	27	205	128.1	24	
12	35	37	33	32	26	30	41	46	59	53	43	35	31	39	39	38	50	49	43	63	44	38	40	46	63	41.3	24	
13	73	66	53	42	38	24	27	30	27	31	28	24	20	26	45	36	43	34	23	34	26	16	14	18	73	33.1	24	
14	14	17	16	16	11	12	11	8	12	11	8	12	15	9	14	15	12	16	17	47	9	2	11	5	47	13.3	24	
15	8	4	7	4	8	5	11	19	24	22	19	20	25	26	0	2	X	17	3	X	4	10	9	26	11.6	22		
16	7	5	6	4	8	6	6	1	C	0	5	10	11	6	4	3	4	5	2	0	3	3	9	5	11	4.9	24	
17	5	2	6	11	9	8	8	14	13	17	20	20	19	18	17	15	12	7	3	5	8	6	6	9	20	10.8	24	
18	8	9	5	9	11	8	6	9	11	16	15	9	5	3	7	10	7	0	4	10	8	6	2	6	16	7.7	24	
19	3	2	2	3	2	7	7	7	6	3	7	5	1	3	5	5	2	0	5	7	5	X	7	6	7	4.3	23	
20	4	6	5	0	2	4	7	17	X	1	4	7	6	7	6	1	5	4	4	7	6	3	X	0	17	4.8	22	
21	22	1	11	2	8	9	9	3	6	6	6	0	8	1	4	2	4	5	3	9	14	13	12	12	22	7.1	24	
22	10	12	6	8	9	7	9	4	3	7	5	14	5	7	8	9	7	2	6	7	4	7	8	14	7.1	24		
23	6	6	3	6	5	4	7	6	0	2	0	2	5	4	3	7	3	0	5	4	10	7	3	10	4.2	24		
24	1	6	0	5	5	4	6	0	6	0	0	1	3	1	4	3	4	5	9	6	6	6	9	8	9	4.1	24	
25	9	8	7	4	8	5	6	7	8	6	9	2	7	7	6	7	5	6	3	3	7	5	7	5	9	6.1	24	
26	4	6	8	6	5	4	8	4	9	5	7	7	1	5	7	8	4	8	8	1	9	9	8	5	9	6.1	24	
27	4	5	3	4	7	5	6	7	1	0	0	0	0	3	2	3	0	3	3	4	6	8	6	3	8	3.5	24	
28	5	8	8	2	7	0	3	6	7	6	0	6	2	0	5	X	0	7	42	6	7	2	3	5	42	6.0	23	
29	8	3	8	7	4	5	3	3	3	4	0	0	1	1	X	X	6	5	3	3	5	5	3	5	3	3.6	22	
30	5	6	3	2	4	4	4	0	4	4	6	6	0	0	X	6	1	3	0	4	7	8	4	3	8	3.6	23	
31	8	7	5	7	4	2	6	4	9	7	0	6	4	1	9	0	0	7	5	5	12	8	12	8	12	5.7	24	
HOURLY MAX	155	171	173	193	257	249	261	249	270	278	265	232	191	176	184	240	171	111	98	126	131	117	164	278	155.2	24		
HOURLY AVG	24.2	23.8	23.0	24.9	28.8	29.2	29.4	30.6	38.0	33.2	31.5	33.3	28.2	25.9	27.4	28.2	21.3	18.2	17.5	20.7	19.4	20.9	21.8	22.1	24.1	24.1	24.1	

OBJECTIVE LIMIT: 24-HR: 30 ug/m3

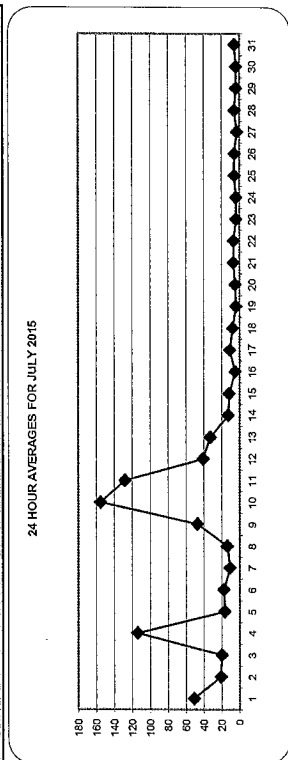
ALBERTA ENVIRONMENT: 24-HR: 30 ug/m3

STATUS FLAG CODES

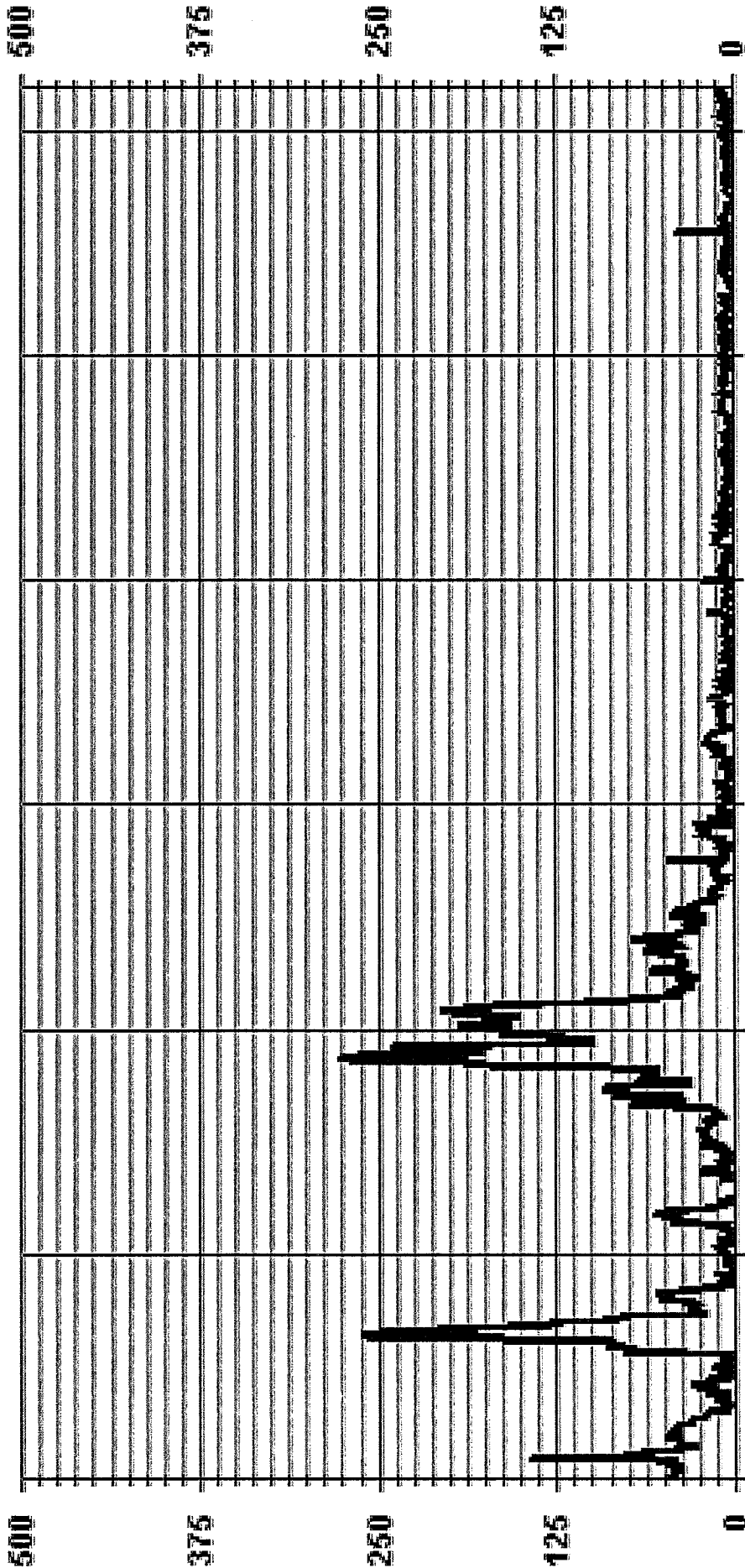
- C - CALIBRATION
- G - GOUT FOR REPAIR
- M - MAINTENANCE
- P - POWER FAILURE
- S - DAILY ZERO/Span CHECK
- Y - OPERATOR ERROR
- O - OPERATOR ERROR
- X - MACHINE/VALVE/FUNCTION
- K - COLLECTION ERROR
- Q - QUALITY ASSURANCE
- R - RECOVERY

MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	7
NUMBER OF NON-ZERO READINGS:	681
MAXIMUM 1-HR AVERAGE:	278 ug/m3 @ HOUR(S) 9
MAXIMUM 24-HR AVERAGE:	155.2 ug/m3 ON DAY(S) VARIOUS
MONTHLY CALIBRATION TIME:	2 HRS
MONTHLY AVERAGE:	45.37
OPERATIONAL TIME:	725 HRS
AMID OPERATION UPTIME:	97.4 %
MONTHLY AVERAGE:	25.8 ug/m3



01 Hour Averages



— LICA - - - PM2 . . . UG/M3

LIICA
PM2 / WD Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LIICA
Parameter : PM2
Units : UG/M3

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	1.79	1.93	2.48	.82	.55	1.52	3.59	2.48	2.62	3.87	7.60	13.96	16.59	8.71	5.39	2.76	76.76
< 60	.55	.96	.96	.96	.69	.55	.82	.13	.41	.55	.96	.96	1.65	1.52	.96	.55	13.27
< 80	.00	.13	.27	.00	.00	.00	.41	.27	.00	.00	.13	.13	.13	.41	.13	.13	2.21
< 120	.00	.13	.00	.27	.13	.00	.41	.13	.00	.00	.13	.27	.00	.27	.13	.00	1.93
< 240	.13	.69	.69	.41	.82	.96	.00	.13	.00	.00	.00	.00	.27	.41	.00	.13	4.70
>=	.00	.13	.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.27	.27	.00	1.10
Totals	2.48	4.01	4.84	2.21	3.04	5.25	3.18	3.04	4.42	8.85	15.35	18.67	11.61	6.91	3.59		

Calm : .00 %

Total # Operational Hours : 723

Distribution By Samples

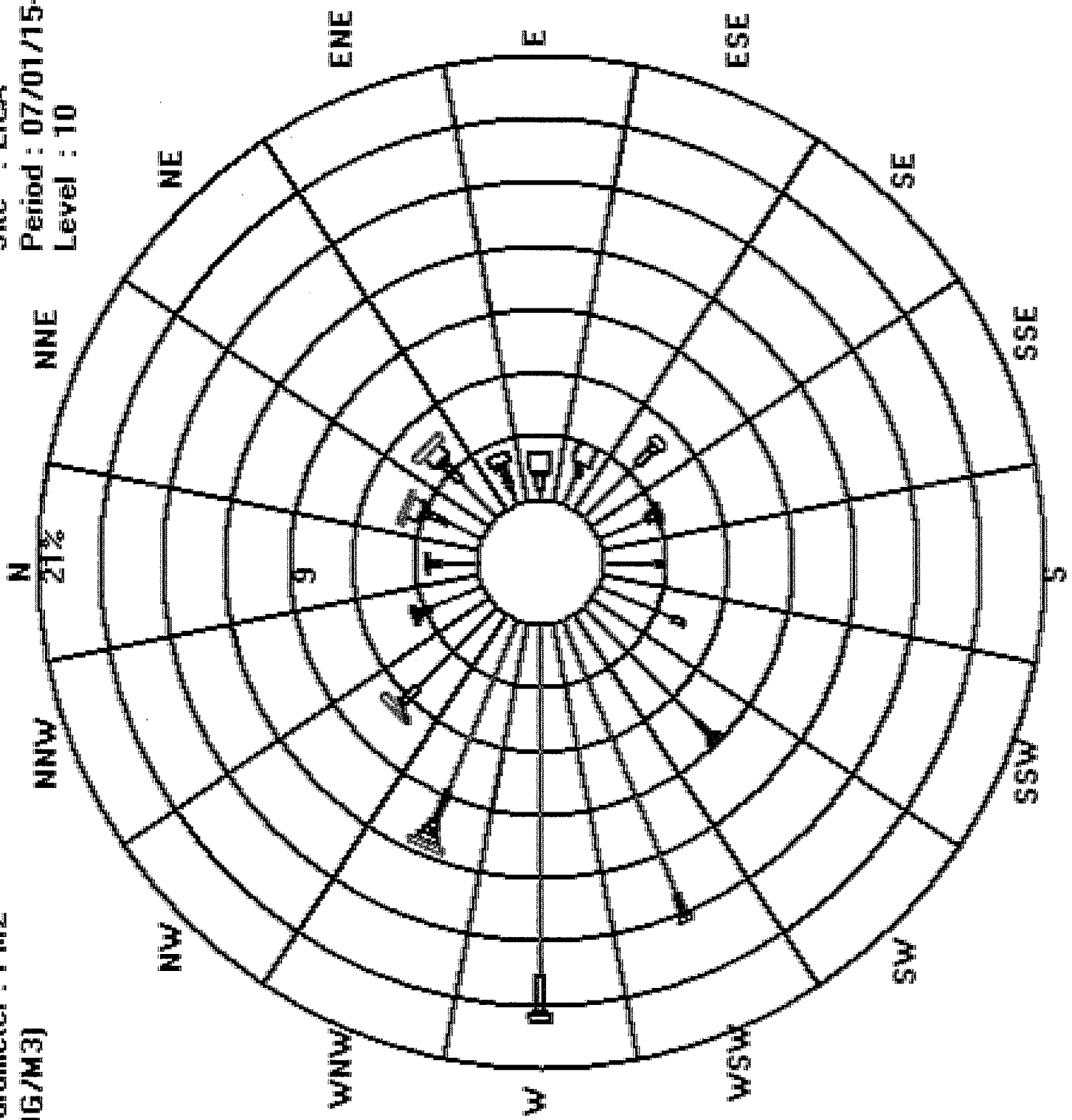
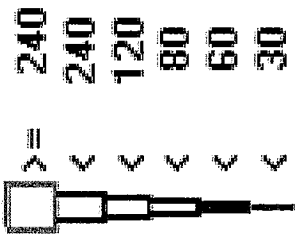
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	13	14	18	6	4	11	26	18	19	28	55	101	120	63	39	20	555
< 60	4	7	7	7	5	4	6	1	3	4	7	7	12	11	7	4	96
< 80		1	2				3	2		1	1	1	1	3	1	1	16
< 120		1		2	1		3	1		1	2			2	1		14
< 240	1	5	5	3	6	7		1				2	3	3		1	34
>=		1	3											2	2		8
Totals	18	29	35	18	16	22	38	23	22	32	64	111	135	84	50	26	

Calm : .00 %

Total # Operational Hours : 723

Site : LICA
 Period : 07/01/15-07/31/15
 Level : 10

Logger : 01 Parameter : PM2
 Class Limits (UG/M3)



WIND SPEED

WIND SPEED (WS) hourly averages in km/hr

MST

DAY	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	24:00	ROGS.			
HOURLY	START	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	DAILY	MAX.	AVG.	24-HOUR
1	2.2	2.4	2.7	2.8	1.5	2.4	3.5	2.6	3.4	3.0	0.2	4.0	3.9	5.7	9.4	10.1	11.0	9.3	6.7	5.3	7.3	1.8	1.0	1.8	1.7	11.0	4.3	24	
2	0.9	0.7	0.7	0.5	0.4	0.3	1.5	0.4	0.3	4.1	4.5	4.0	6.5	6.1	7.8	8.8	7.7	7.8	8.3	6.6	3.6	3.2	1.9	0.6	0.6	8.8	3.8	24	
3	0.5	0.3	0.7	1.2	0.8	1.3	1.9	3.7	6.2	9.4	3.5	8.5	3.1	8.0	12.4	16.1	11.4	8.7	7.6	6.1	3.9	2.5	0.8	0.8	16.1	5.1	24		
4	2.3	1.6	0.4	5.3	2.1	2.3	2.5	2.3	5.9	7.3	5.8	6.7	8.8	11.5	12.5	14.2	9.1	13.8	6.9	9.1	5.8	6.3	4.1	3.8	14.2	6.3	24		
5	5.1	4.1	4.5	5.5	5.5	8.8	11.0	11.4	10.7	11.6	12.3	11.0	7.4	7.0	5.5	5.8	6.6	2.8	1.4	1.8	1.0	1.2	0.6	0.3	12.3	6.0	24		
6	0.3	0.5	0.6	0.5	0.5	0.6	2.9	5.1	5.1	5.8	5.4	6.8	7.5	6.9	6.0	6.2	5.7	5.2	5.2	3.1	3.0	2.8	2.3	3.1	4.8	7.5	3.9	24	
7	4.6	7.7	13.4	10.5	9.7	10.6	10.9	11.2	12.2	8.2	8.6	8.2	8.6	5.8	9.2	7.2	7.2	6.3	6.1	3.6	2.4	1.2	1.0	0.6	13.4	7.3	24		
8	0.9	0.2	0.0	0.1	0.6	1.9	4.0	4.6	6.4	6.4	5.1	5.7	7.6	9.7	9.2	7.4	4.3	3.7	4.9	3.6	1.2	0.7	3.4	1.1	9.7	3.9	24		
9	4.9	1.9	1.5	1.3	1.1	0.6	1.5	6.0	6.4	7.0	5.9	5.8	4.7	5.5	7.7	8.1	11.0	13.4	8.3	3.3	2.0	4.9	4.3	1.5	13.4	4.9	24		
10	1.0	5.7	2.9	2.4	7.6	8.0	8.9	10.2	10.4	9.6	10.3	10.1	10.7	10.9	9.4	8.6	9.3	8.6	6.2	6.5	5.1	5.2	7.0	6.9	10.9	7.6	24		
11	5.1	7.4	4.3	6.5	9.8	10.3	10.8	13.8	13.5	14.8	14.2	14.8	14.0	12.5	13.1	15.3	14.4	14.1	11.1	7.2	6.1	4.9	4.3	3.5	15.3	10.2	24		
12	1.0	1.7	1.0	1.3	0.9	2.5	5.8	3.9	4.0	7.3	8.5	7.2	5.5	4.8	8.3	5.7	5.3	3.8	3.3	1.5	2.5	1.5	4.0	6.0	8.5	4.1	24		
13	0.3	3.8	4.1	2.6	5.3	9.1	5.0	0.5	5.7	4.5	4.4	4.1	2.9	4.8	5.5	6.8	6.6	4.5	4.3	2.3	9.0	2.9	1.6	3.5	9.1	4.3	24		
14	1.6	1.7	0.8	0.5	1.1	1.0	2.7	2.8	2.0	2.6	5.8	7.6	10.0	10.8	8.0	7.1	7.0	3.9	3.2	2.1	1.9	1.3	0.3	1.0	10.8	3.6	24		
15	0.8	0.5	0.2	1.0	1.4	0.9	1.0	5.8	8.5	10.3	7.2	8.0	12.3	12.7	12.3	11.4	10.1	6.2	6.1	8.3	6.6	7.0	5.1	12.7	6.2	24			
16	4.2	2.3	3.8	9.9	9.6	11.1	10.2	12.8	13.3	16.4	16.4	16.6	14.5	12.2	8.9	6.9	7.6	8.9	9.7	5.4	5.8	4.9	1.0	3.3	16.6	9.0	24		
17	5.3	5.6	4.5	4.3	4.6	3.5	5.3	6.1	6.7	8.1	8.0	9.7	11.9	11.9	11.6	13.7	13.1	8.0	5.3	5.3	3.5	3.5	14.6	4.2	14.6	7.5	24		
18	6.4	9.6	10.3	8.9	7.6	11.2	12.9	13.9	14.1	13.9	15.9	16.8	12.1	14.9	13.4	14.5	12.9	10.9	7.8	4.1	2.0	1.8	0.6	16.8	9.9	24			
19	1.6	3.3	4.1	1.9	1.3	1.0	2.0	5.7	5.9	5.8	5.4	4.3	2.5	5.2	5.1	4.3	6.0	7.0	8.5	6.4	6.1	9.0	9.6	8.5	9.6	5.0	24		
20	8.8	11.7	4.3	9.6	5.1	0.7	4.9	3.3	5.1	4.5	3.4	2.0	3.8	2.6	2.3	0.9	2.0	1.6	5.0	3.3	1.1	0.1	1.3	1.1	11.7	3.7	24		
21	1.5	1.6	2.1	1.9	3.9	3.4	4.0	3.2	2.2	3.6	6.7	6.4	4.4	4.7	8.2	9.4	11.4	4.0	2.9	4.5	3.0	1.4	2.9	3.9	11.4	4.2	24		
22	2.1	2.2	2.1	2.6	3.5	4.8	5.9	7.4	8.3	10.3	10.4	9.6	11.2	11.1	10.2	9.7	7.9	11.6	5.1	2.0	2.7	1.0	0.5	1.2	11.6	6.0	24		
23	0.4	0.4	1.0	0.6	0.3	0.7	2.5	2.8	3.0	3.5	4.1	4.6	5.1	4.7	5.2	4.9	4.9	4.9	5.5	2.5	3.8	4.0	4.4	5.0	5.5	3.3	24		
24	3.5	6.8	6.0	4.9	2.1	1.4	1.8	5.2	7.8	10.9	10.8	9.4	9.1	9.4	8.8	8.8	8.5	4.9	2.2	2.5	3.2	6.6	7.2	10.9	6.1	24			
25	8.6	5.5	4.0	4.9	4.1	4.1	5.8	9.4	9.0	9.6	9.3	9.1	11.5	10.8	10.2	9.7	8.6	6.3	6.6	2.8	1.6	2.9	2.8	0.5	11.5	6.6	24		
26	0.9	0.8	0.3	0.1	0.2	1.5	2.5	2.4	3.1	4.3	4.1	5.4	3.3	5.0	5.3	2.9	3.3	4.2	5.7	3.9	2.2	2.5	1.1	1.0	5.7	2.8	24		
27	0.7	1.0	1.2	1.3	0.9	1.4	1.2	4.2	4.2	8.5	7.9	10.8	13.9	11.5	13.7	11.3	8.1	8.9	6.9	8.0	3.3	4.2	6.0	5.0	13.9	6.0	24		
28	5.5	6.1	5.4	4.7	4.8	5.6	7.3	9.3	9.5	12.0	14.0	16.0	17.7	16.0	16.5	15.1	13.6	11.2	12.6	7.0	7.5	9.1	10.1	7.8	17.7	10.2	24		
29	5.1	4.2	4.9	5.6	4.3	5.5	8.4	9.0	8.0	7.5	8.8	10.4	13.5	13.0	13.2	13.1	11.9	9.0	8.4	5.2	1.9	2.5	2.5	1.7	13.5	7.4	24		
30	2.3	3.6	0.4	0.4	0.5	0.6	2.8	3.8	2.9	2.3	4.2	4.3	4.9	3.8	4.6	4.6	5.0	4.4	4.3	4.5	5.7	4.4	3.4	1.1	5.7	3.3	24		
31	8.8	11.7	13.4	10.5	9.8	11.2	12.9	13.9	14.1	16.4	16.4	16.8	17.7	16.0	16.5	16.1	14.4	14.1	12.6	9.1	9.0	14.6	10.1	8.5	14.6	3.4	3.1		
HOURLY MAX	8.8	11.7	13.4	10.5	9.8	11.2	12.9	13.9	14.1	16.4	16.4	16.8	17.7	16.0	16.5	16.1	14.4	14.1	12.6	9.1	9.0	14.6	10.1	8.5	14.6	3.4	3.1		
HOURLY AVG	2.9	3.4	3.0	3.2	3.4	4.0	5.0	6.2	6.9	7.7	7.9	8.4	8.6	8.9	9.3	9.1	8.4	7.4	6.4	4.5	3.6	3.6	3.6	3.4	3.1	3.6	3.1		

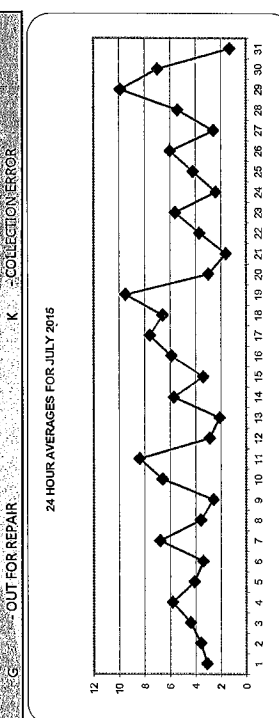
LAST CALIBRATION: April 1, 2015
MAGNETIC DECLINATION 19 DEGREE EAST

DECLINATION:

STATUS FLAG CODES:
 C - CALIBRATION
 Y - MAINTENANCE
 S - DAILY ZERO/SPAN CHECK
 P - POWER FAILURE
 G - OUT FOR REPAIR
 O - QUALITY ASSURANCE
 R - RECOVERY
 X - MACHINE/MALFUNCTION
 - OPERATOR ERROR
 - COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	743
MAXIMUM 1-HR AVERAGE:	17.7 KPH
MAXIMUM 24-HR AVERAGE:	10.2 KPH
MONTHLY CALIBRATION TIME:	0 HRS
STANDARD DEVIATION:	3.93
OPERATIONAL TIME:	744 HRS
AMID OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	5.8 KPH
ON DAY(S):	29
VAR-VARIOUS:	11, 29

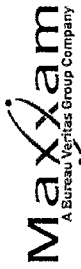


01 Hour Averages

130									
97.5									
65									
32.5									
0									

07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA WSP KPH



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Site - JULY 2015
JOB # 2833-2015-07-01-C

VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RODS
	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400			
1	4.5	2.8	3.2	3.8	5.6	6.7	5.4	6.5	6.3	5.2	10.0	7.9	11.4	14.7	18.0	19.6	14.3	13.0	9.4	15.5	7.6	4.8	3.7	4.7	19.6	8.8	24
2	4.2	6.5	3.9	3.2	2.1	2.2	6.0	8.7	8.0	9.7	11.5	14.9	13.6	16.9	18.0	14.7	14.9	15.5	12.5	5.7	5.3	4.4	2.6	5.0	18.0	8.6	24
3	2.2	1.8	2.4	3.7	1.8	3.6	5.5	6.8	11.0	17.4	10.9	16.3	14.0	20.1	21.2	25.6	21.1	17.8	15.9	10.3	6.6	5.5	3.0	3.3	25.6	10.3	24
4	4.1	5.5	3.5	8.0	7.1	5.8	5.4	7.8	12.5	11.3	10.2	13.9	14.7	21.4	21.9	35.4	21.0	33.7	12.5	23.3	9.7	10.3	6.9	6.8	35.4	13.0	24
5	8.4	9.5	7.3	10.5	9.9	16.5	19.8	17.6	20.5	17.2	17.5	18.1	15.0	14.7	12.3	13.7	12.0	6.7	3.9	2.9	3.2	3.0	3.6	1.7	20.5	11.1	24
6	2.2	2.2	1.6	1.6	1.9	1.7	8.2	9.3	8.6	11.2	9.5	14.9	13.3	13.4	13.7	15.6	11.0	12.3	13.1	5.8	5.6	5.4	19.6	19.7	9.2	24	24
7	8.1	13.0	21.8	15.1	15.9	17.0	15.4	17.4	17.6	17.9	15.0	17.9	19.0	18.0	18.4	16.4	16.0	11.7	13.6	5.9	3.6	3.5	2.4	2.7	21.8	13.5	24
8	4.0	1.8	2.5	1.9	1.8	6.2	8.4	11.9	11.8	12.1	11.0	12.9	19.4	20.4	17.4	14.4	9.9	7.1	8.9	6.7	5.9	4.2	8.1	8.3	20.4	9.0	24
9	14.4	6.3	5.0	3.6	3.9	2.9	3.5	10.7	15.2	11.7	11.0	12.5	11.1	14.4	17.8	15.1	18.2	18.8	14.7	5.8	3.8	13.9	9.9	4.8	18.8	10.4	24
10	4.2	11.4	9.8	6.9	11.6	13.0	13.8	20.0	17.6	14.6	16.6	15.3	17.3	18.1	12.5	13.3	15.1	13.2	10.5	10.2	9.5	6.8	12.9	10.3	20.0	12.7	24
11	14.1	15.1	8.8	12.7	24.0	15.2	15.9	24.1	21.8	22.8	23.2	22.6	24.7	20.3	22.7	23.7	23.4	20.6	17.5	12.4	11.7	8.5	6.7	6.3	24.7	17.5	24
12	3.3	3.5	3.6	2.3	3.0	6.3	10.6	9.3	10.2	12.4	16.8	15.2	13.7	14.0	14.0	10.2	8.7	6.7	5.4	2.9	7.2	5.6	8.0	11.0	16.8	8.5	24
13	4.9	10.2	8.8	7.1	11.7	14.2	13.3	8.0	11.0	9.1	10.1	10.0	9.2	10.4	13.2	16.6	12.2	9.7	9.7	17.6	20.8	12.8	6.6	9.5	20.8	11.1	24
14	4.2	4.5	4.5	3.6	6.5	9.1	6.2	9.6	10.8	17.3	16.2	18.5	17.3	19.7	18.8	21.1	18.3	18.3	19.2	13.0	4.1	3.0	6.1	4.1	21.1	11.4	24
15	2.9	4.5	2.5	2.4	2.4	3.3	4.7	6.1	5.7	8.6	12.4	13.0	18.8	20.2	15.7	15.4	14.2	9.3	6.3	4.2	4.0	3.1	2.6	2.8	20.2	7.7	24
16	2.1	5.6	5.8	5.8	20.8	6.4	6.5	10.4	15.0	17.3	11.2	11.6	18.9	19.3	18.2	15.1	9.8	10.5	11.9	12.3	12.0	7.8	21.9	11.9	24	24	
17	7.5	5.4	13.0	15.8	14.5	17.9	19.1	20.9	20.9	27.2	27.9	24.5	25.0	19.9	15.1	12.8	18.6	23.4	18.9	11.2	8.8	8.9	5.3	8.1	27.9	16.3	24
18	8.2	10.7	7.8	7.8	7.9	7.8	11.1	11.2	11.3	14.7	15.4	18.3	19.9	20.7	22.9	22.0	24.1	12.7	10.5	11.6	7.6	38.5	9.2	8.5	38.5	14.2	24
19	10.6	14.6	15.4	14.8	13.8	17.5	20.1	26.2	23.7	26.8	23.6	28.3	20.1	21.3	22.8	22.3	21.2	17.8	15.4	7.1	10.3	9.8	4.4	6.0	28.3	17.2	24
20	6.9	5.9	6.2	5.7	3.9	3.4	5.0	9.3	11.4	11.2	11.0	12.2	12.1	10.0	10.9	13.9	12.2	14.8	14.3	12.1	10.3	14.9	14.7	14.6	14.9	10.3	24
21	13.0	19.2	12.5	18.4	15.9	6.5	8.4	10.5	11.3	9.9	9.8	11.8	11.3	8.0	10.6	9.2	7.5	7.9	10.2	7.4	3.4	2.2	3.6	5.1	19.2	9.7	24
22	5.9	11.9	8.3	4.4	7.7	6.7	7.3	8.1	6.4	11.0	15.7	12.0	12.1	11.9	16.4	19.6	16.6	11.3	6.5	13.4	6.6	4.3	4.5	6.9	19.6	9.8	24
23	4.1	5.2	5.1	4.4	7.6	9.3	10.1	14.4	15.3	19.5	17.1	18.2	18.2	19.4	20.2	17.6	17.4	24.9	9.5	8.2	6.2	3.9	2.7	3.4	24.9	11.7	24
24	3.0	2.5	2.6	2.7	1.9	3.8	5.9	7.3	7.3	7.4	10.2	10.0	13.7	13.3	12.0	11.0	12.1	11.9	8.4	4.8	5.9	5.6	6.0	6.7	13.7	7.3	24
25	7.5	11.2	14.1	7.5	6.2	9.2	7.1	11.9	13.0	17.4	16.9	14.3	17.0	14.2	16.8	14.6	15.3	15.6	9.4	5.8	5.3	5.7	11.8	11.6	17.4	11.6	24
26	13.7	10.5	7.2	6.6	6.8	8.2	11.3	15.7	17.7	18.3	14.7	15.0	21.6	18.1	19.7	15.6	16.1	14.8	14.5	6.8	3.4	6.0	4.8	3.3	21.6	12.1	24
27	2.9	3.1	4.1	3.4	2.2	4.7	6.0	6.7	7.1	10.7	8.6	15.6	9.6	8.5	9.9	7.6	7.7	7.4	10.5	6.4	3.7	4.5	4.2	2.4	15.6	6.6	24
28	3.1	2.4	3.2	2.8	5.0	5.1	6.2	8.2	10.2	13.6	13.5	18.6	21.0	20.5	28.3	21.4	14.3	18.9	10.6	13.0	9.9	6.5	8.5	6.5	28.3	11.3	24
29	8.8	8.3	7.5	7.0	8.1	8.9	13.2	13.7	18.1	18.6	21.8	25.6	26.0	27.5	27.7	21.6	25.2	18.6	19.5	12.7	10.7	12.2	13.3	11.4	27.7	16.1	24
30	7.5	6.8	6.5	8.3	7.8	8.6	12.7	14.5	15.4	16.2	18.0	20.4	22.1	23.3	20.0	20.8	20.9	16.7	14.0	8.8	4.6	4.1	4.5	4.0	23.3	12.8	24
31	5.4	8.0	2.3	3.1	3.0	2.4	7.8	7.2	6.8	7.7	10.3	13.1	12.8	9.2	13.1	10.9	11.6	12.1	8.0	8.1	20.0	7.6	6.5	8.2	20.0	8.6	24
HOURLY MAX	14.4	19.2	21.8	18.4	24.0	17.9	20.1	26.2	23.7	27.2	27.9	28.3	26.0	27.5	28.3	35.4	25.2	33.7	19.5	23.3	20.8	38.5	19.6	19.7			
HOURLY AVG	6.3	7.4	6.8	6.6	7.8	8.1	9.7	11.9	12.9	14.4	14.4	15.9	16.6	16.8	17.5	17.1	15.7	14.6	11.7	9.4	7.7	7.8	7.1	7.0			

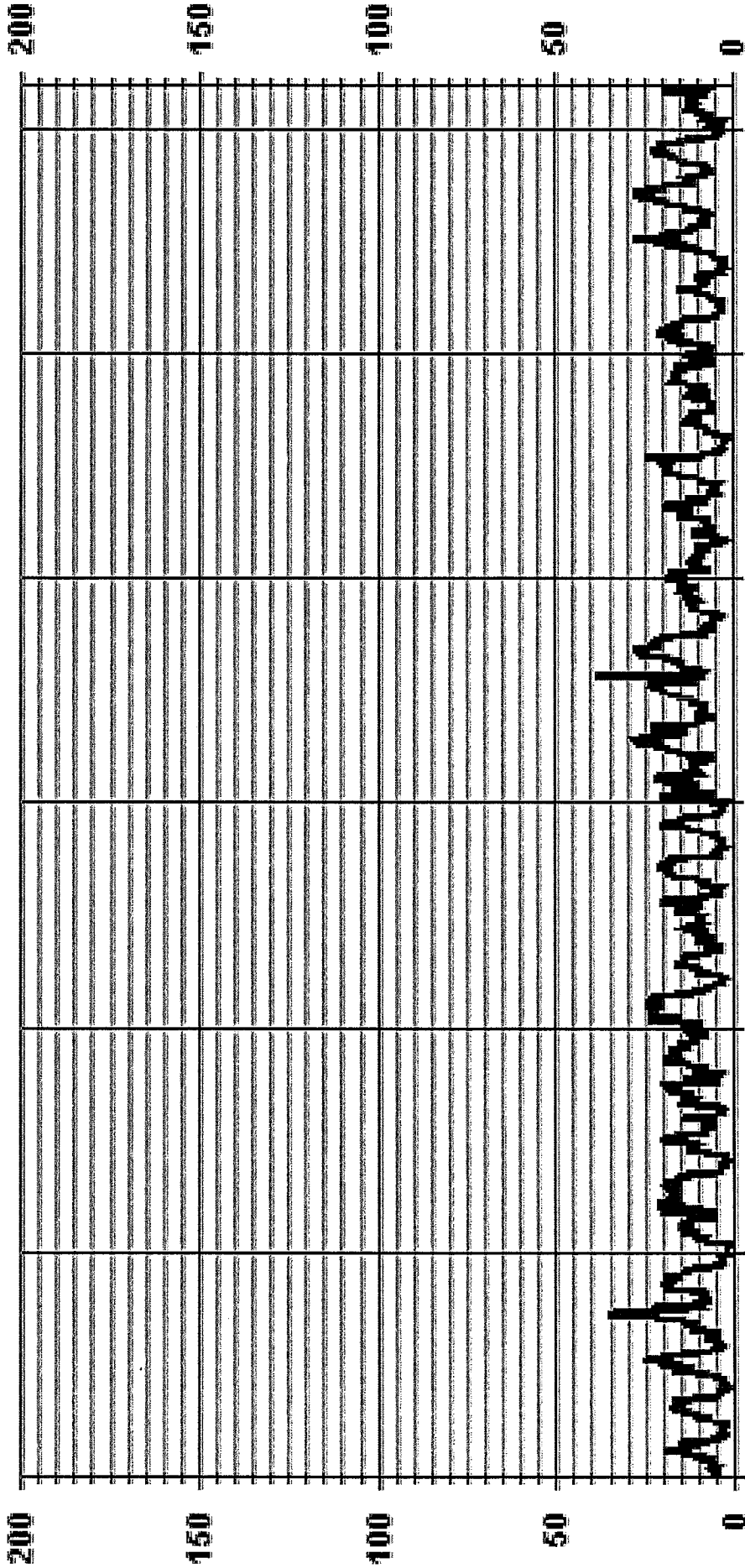
STATUS FLAG CODES

C	-	CALIBRATION	O	-	QUALITY ASSURANCE
M	-	MAINTENANCE	R	-	RECOVERY
D	-	DATA ZERO/SPIRING CHECK	X	-	MACHINE MALFUNCTION
P	-	POWER FAILURE	O	-	OPERATOR ERROR
G	-	OUT FOR REPAIR	K	-	COLLECTION ERROR

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	38.5	KPH	@ HOUR(S)	21	ON DAY(S)	18
OPERATIONAL TIME:	744	HRS	VAR-VARIOUS			

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA WSMAX KPH

LICA
WSP / WD Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : WSP
Units : KPH

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	.94	1.47	2.68	1.47	1.34	2.82	2.68	2.82	3.76	6.98	11.96	8.60	4.56	2.01	1.34	56.85	
< 12.0	1.07	1.88	2.01	.80	.53	1.07	1.61	.26	.13	.26	1.61	2.82	8.46	5.51	2.41	2.28	32.79
< 20.0	.80	.26	.13	.13	.26	.67	.53	.00	.00	.00	.00	.13	1.20	1.47	2.28	.26	8.19
< 29.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.82	3.62	4.83	2.41	2.15	3.09	4.97	2.95	2.95	4.03	8.60	14.91	18.27	11.55	6.72	3.89	

Calm : 2.15 %

Total # Operational Hours : 744

Distribution By Samples

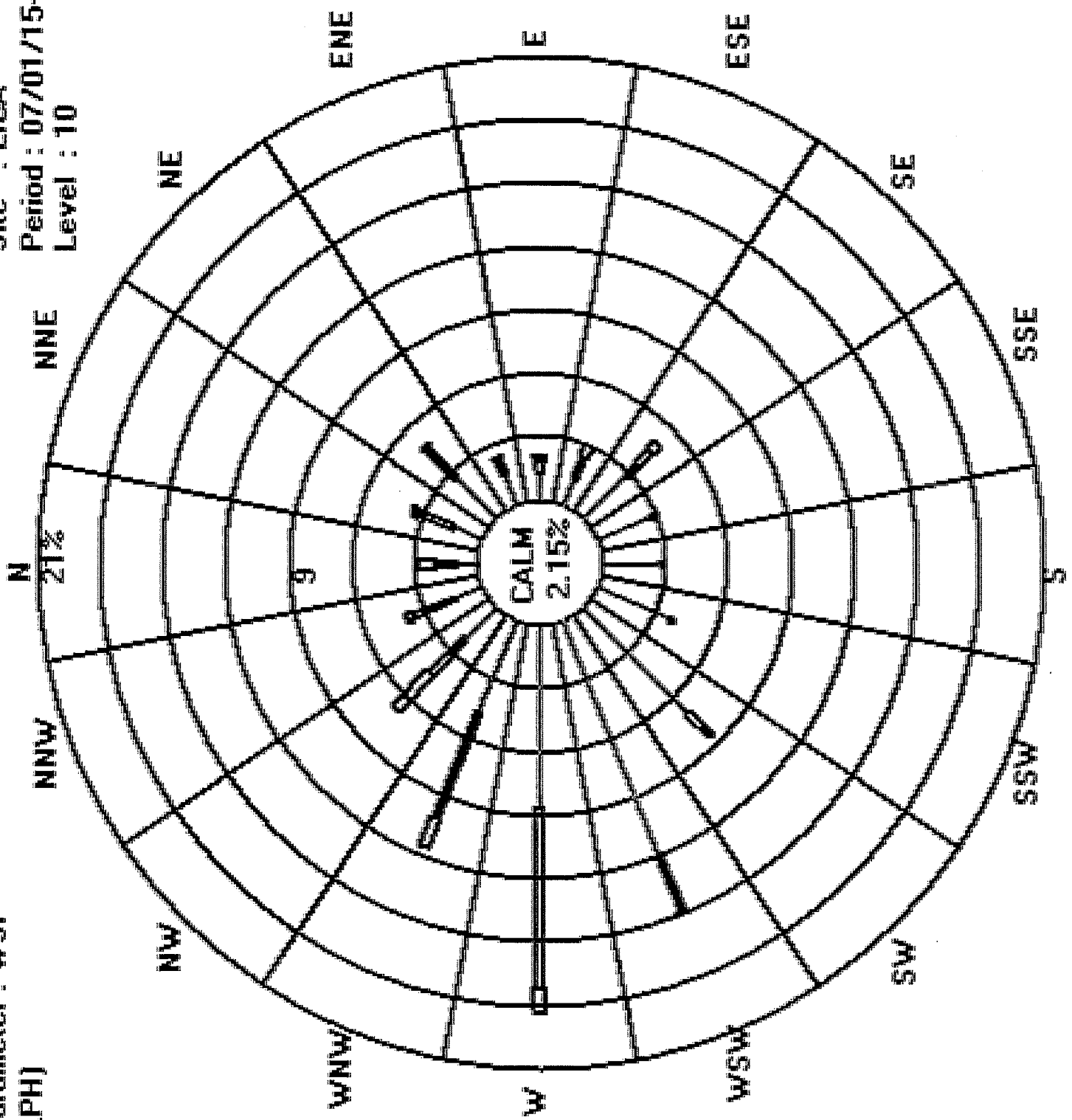
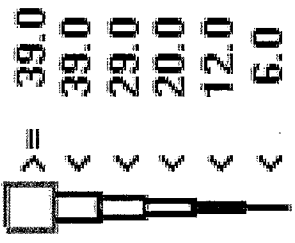
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	7	11	20	11	10	10	21	20	21	28	52	89	64	34	15	10	423
< 12.0	8	14	15	6	4	8	12	2	1	2	12	21	63	41	18	17	244
< 20.0	6	2	1	1	2	5	4					1	9	11	17	2	61
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	21	27	36	18	16	23	37	22	22	30	64	111	136	86	50	29	

Calm : 2.15 %

Total # Operational Hours : 744

Site : LICA
 Period : 07/01/15-07/31/15
 Level : 10

Logger : 01 Parameter : WSP
 Class Limits (KPH)



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Site - JULY 2015
JOB # 2833-2015-07-01-C

WIND DIRECTION (WD) hourly averages

DAY	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	24:00	24-HOUR AVG	QUADRANT	RDCS.
1	WSW	WSW	SW	W	WSW	WSW	WSW	WSW	WSW	W	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	24
2	WSW	SSW	SSW	W	WSW	WSW	WSW	WSW	WSW	W	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
3	NE	NNW	WSW	SW	WSW	WSW	WSW	WSW	WSW	W	NNW	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	24
4	WSW	SW	NNW	NNW	WSW	WSW	WSW	WSW	WSW	W	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	24
5	NNW	W	WSW	W	WSW	WSW	WSW	WSW	WSW	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	24
6	SSW	SSE	SE	SSW	S	WSW	WSW	WSW	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
7	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	24
8	SSE	WSW	NNW	NE	NNE	SSE	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
9	NNE	E	W	WSW	WSW	ESE	WNNW	NNE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	24
10	NNW	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	24
11	E	E	ENE	E	ENE	E	ENE	E	ENE	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	24
12	NNE	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	E	ENE	24
13	NNW	WSW	W	W	WSW	WSW	WSW	WSW	WSW	W	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	24
14	S	SSW	WSW	W	WSW	WSW	WSW	WSW	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	24
15	WSW	WSW	SW	W	ESE	WSW	W	WSW	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	24
16	E	SSE	NNW	SSW	SE	W	NNW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
17	NNW	W	W	WSW	WSW	WSW	WSW	WSW	WSW	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	NNE	N	24
18	W	W	W	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
19	WSW	W	W	NNW	NNW	NNW	NNW	NNW	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	NNW	N	24
20	SW	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	W	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	24
21	ESE	SE	ESE	SE	ESE	SE	ESE	SE	ESE	SE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	24
22	NNW	SE	NNW	NNW	W	NNW	W	NNW	W	NNW	W	NNW	W	NNW	W	NNW	W	NNW	W	NNW	W	NNW	W	NNW	W	NNW	24
23	SW	WSW	SW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
24	SW	E	S	SSW	NNE	SW	WSW	WSW	WSW	WSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
25	SE	SE	ENE	ENE	SE	ESE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	24
26	NNW	NNW	W	W	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
27	SSE	SW	SE	S	SSE	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
28	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
29	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
30	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
31	W	WSW	NE	SSW	ENE	SSE	WSW	W	SSW	S	WSW	SW	S	WSW	SW	S	WSW	SW	S	WSW	SW	S	WSW	SW	S	WSW	24

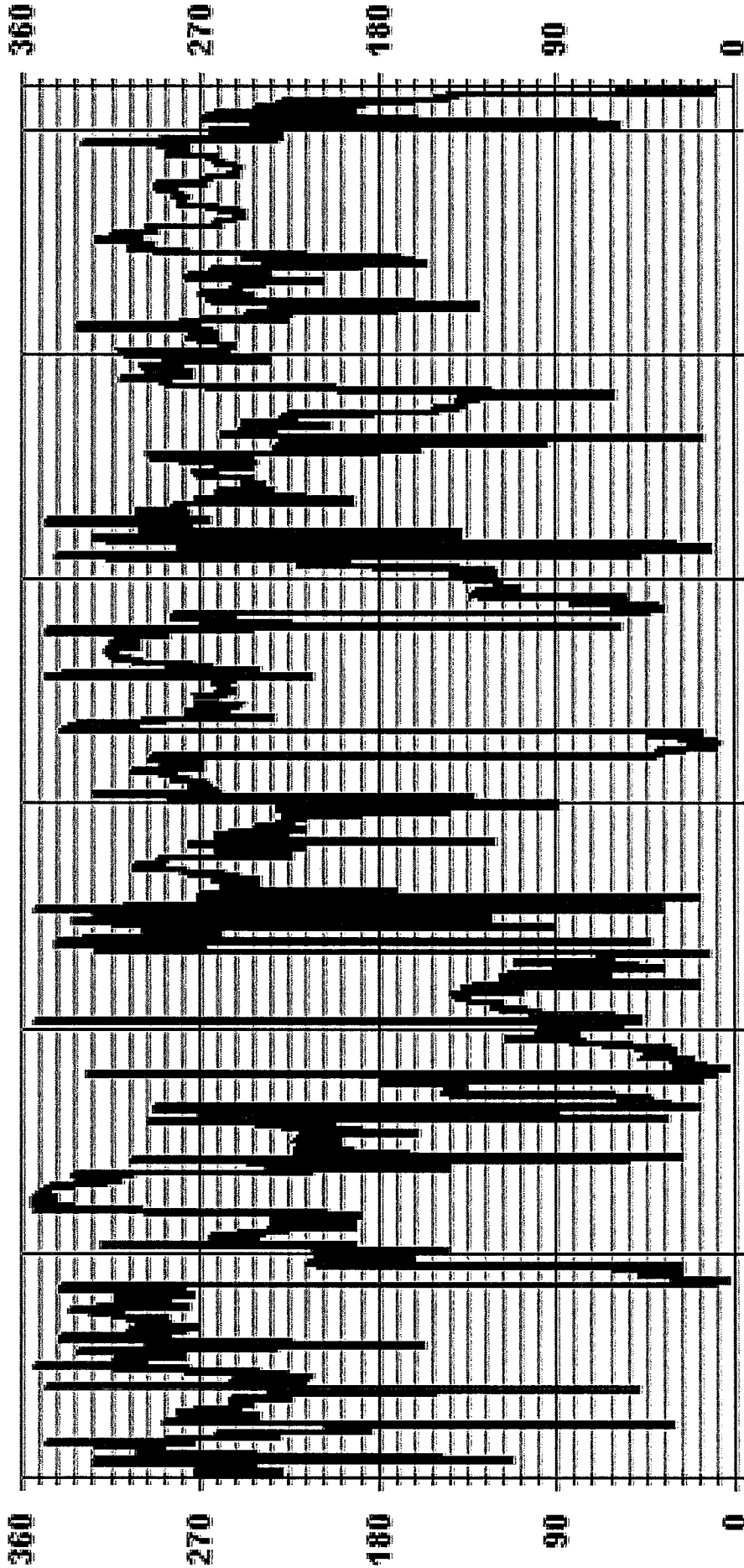
STATUS FLAG CODES

C	CALIBRATION	O	QUALITY ASSURANCE
V	VERIFICATION	P	RECOVERY
M	MAINTENANCE	X	MACHINE MALFUNCTION
S	DAILY ZERO/SPAN CHECK	O	OPERATOR ERROR
P	POWER FAILURE	K	COLLECTION ERROR
G	OUT FOR REPAIR		

LAST CALIBRATION: April 1, 2015
DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME: 0 HRS
STANDARD DEVIATION: 90.36
OPERATIONAL TIME: 744 HRS
AMD OPERATION UPTIME: 100.0 %
MONTHLY AVERAGE: WNW

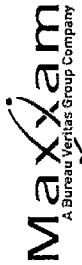
01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA - - - WDR . . . DEG

STANDARD DEVIATION WIND DIRECTION



STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

MST

DAY	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	24:00	25:00	26:00	27:00	28:00	29:00	30:00	31:00		
1	31	32	40	46	33	22	32	28	35	57	22	29	27	24	23	22	20	17	17	17	24	49	35	47									
2	46	45	48	53	60	49	45	27	35	37	42	36	43	39	34	36	30	30	24	30	29	40	43	69									
3	66	69	61	54	60	49	49	29	29	29	58	33	47	25	22	19	22	21	20	17	17	20	42	61									
4	33	51	71	14	20	31	26	37	23	22	26	30	27	23	24	22	40	18	21	21	21	22	20	20									
5	18	21	19	20	19	18	17	18	21	20	20	27	36	40	43	45	36	52	41	24	52	31	55	61									
6	56	46	42	56	45	58	28	23	27	32	34	32	33	40	47	42	43	42	32	33	21	35	39	31									
7	17	17	17	17	19	17	19	16	21	22	30	31	45	36	43	27	37	35	22	23	17	11	44	32	48								
8	33	75	62	57	48	54	41	42	38	36	49	48	42	37	36	37	38	31	38	36	48	52	36	39									
9	33	46	53	41	42	51	44	24	27	24	34	36	42	45	33	33	19	14	24	24	29	47	26	50									
10	44	22	43	37	18	21	23	21	24	24	25	26	23	23	23	23	23	24	22	20	18	20	23	23									
11	30	25	33	24	24	21	21	22	24	24	25	23	24	25	25	21	18	17	14	15	22	19	14	25									
12	38	29	59	33	48	31	25	30	42	28	26	35	51	58	27	33	24	31	19	15	22	44	23	21									
13	42	27	22	39	20	20	26	48	42	27	55	44	48	45	34	31	33	30	19	37	29	53	54	36									
14	47	52	59	37	28	20	27	27	30	31	27	29	26	26	21	23	23	24	22	20	12	16	13	18									
15	26	42	49	55	37	62	25	40	46	46	46	35	29	29	37	42	36	39	35	34	33	41	67	45									
16	45	70	48	40	55	39	36	27	22	23	19	20	21	22	22	23	21	24	19	21	18	22	19	19									
17	24	44	43	22	22	22	22	17	18	17	18	18	18	18	18	18	18	17	17	30	16	21	44	39									
18	19	20	24	18	19	20	19	18	20	18	19	19	24	21	22	21	26	24	22	24	31	33	26	28									
19	21	20	19	20	20	19	18	20	18	19	19	19	24	21	22	21	26	24	22	21	21	21	34	55	40								
20	58	20	10	39	54	45	32	29	31	40	39	56	74	38	54	57	31	24	21	22	23	24	24	24									
21	22	20	40	22	36	56	22	38	40	50	45	61	49	41	40	74	57	26	23	38	50	56	40										
22	46	43	54	36	33	43	21	34	50	53	31	32	56	40	23	19	21	61	40	37	48	45	28	24									
23	29	30	36	21	24	25	27	27	29	26	30	28	27	27	30	25	25	23	24	29	32	58	56	37									
24	40	43	32	37	52	61	35	46	46	42	46	51	47	55	45	44	41	36	24	24	10	11	12	13									
25	24	19	38	70	39	54	43	27	24	24	26	28	27	27	29	24	23	25	20	32	25	25	21	26									
26	19	17	18	14	19	24	21	21	27	26	28	31	26	29	22	24	24	23	31	28	20	25	47	43									
27	66	65	68	47	72	47	36	40	41	36	39	36	50	34	35	47	47	22	22	19	14	14	47	43									
28	47	42	39	31	60	44	56	24	30	22	25	25	22	24	18	22	17	20	20	20	45	14	16	14									
29	15	17	18	19	20	21	20	22	27	25	24	24	23	24	23	23	24	21	20	18	17	17	16	14									
30	19	18	18	19	22	20	20	22	27	32	32	30	27	27	26	24	25	24	22	18	21	17	20	37									
31	31	23	70	62	56	49	28	28	45	59	44	43	52	45	50	47	36	40	13	27	36	26	27	66									

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE W/REVISION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

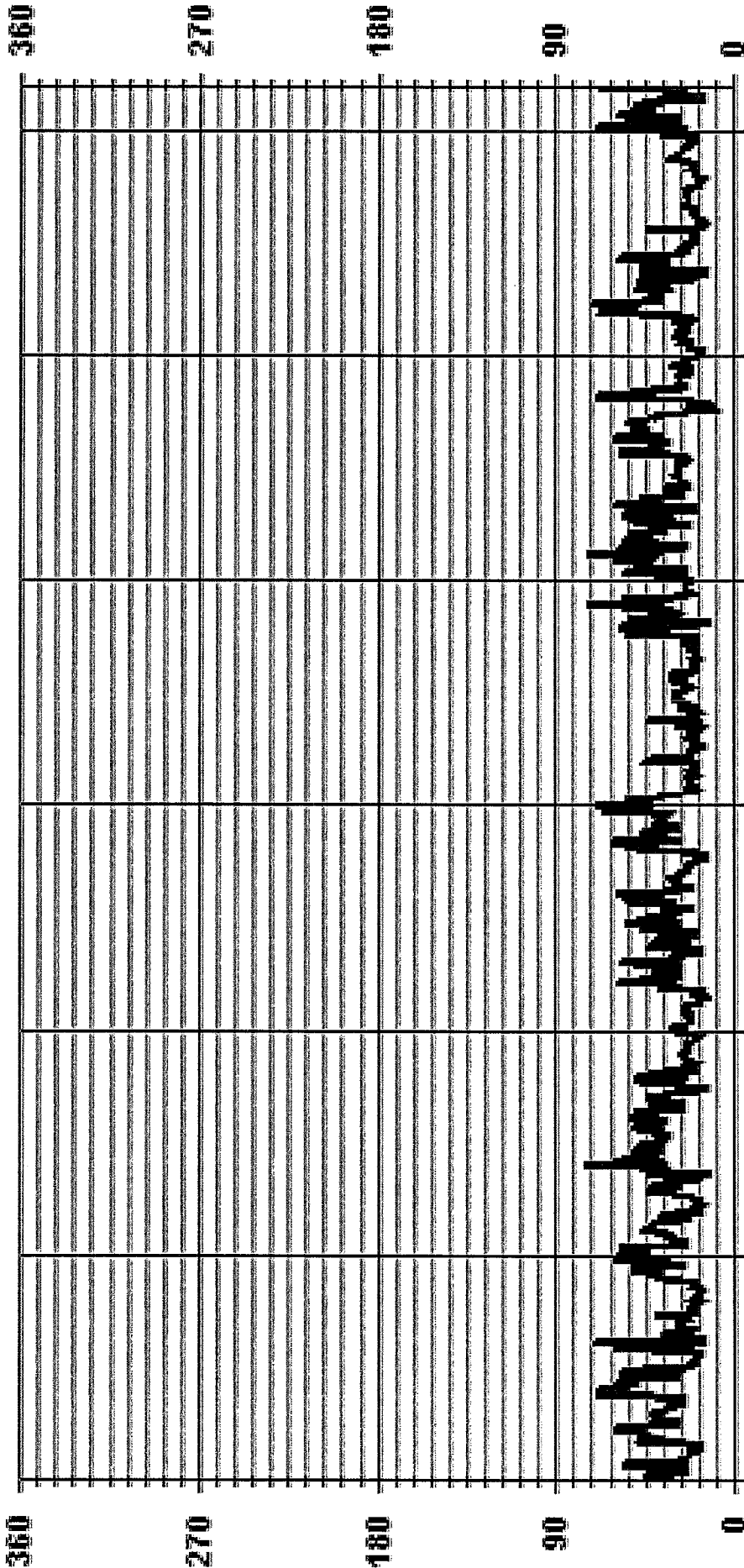
LAST CALIBRATION:

April 1, 2015

CALIBRATION TIME: 0 HRS

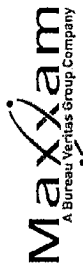
OPERATIONAL TIME: 744 HRS

01 Hour Averages



— LICA STDYDIR DEG

RELATIVE HUMIDITY



RELATIVE HUMIDITY (RH) hourly averages in %

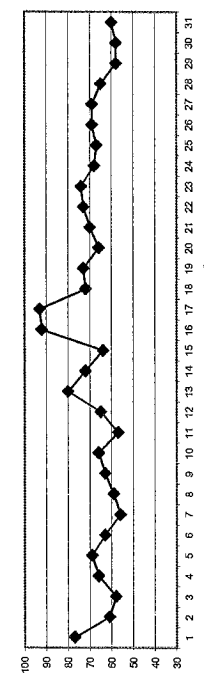
MST

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
HOURLY MAX	89	88	88	89	90	91	91	88	85	90	91	87	81	86	83	80	77	77	77	78	78	78	78	78	78	78	78	78	78	78	78
HOURLY AVG	86.2	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	
DAILY MAX	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	
DAILY AVG	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	

STATUS FLAG CODES

C	QUALITY ASSURANCE
Y	MAINTENANCE
S	DAILY ZERO/Span CHECK
P	POWER FAILURE
G	OUT FOR REPAIR
Q	RECOVERY
X	MACHINE MALFUNCTION
O	OPERATOR ERROR
K	COLLECTION ERROR

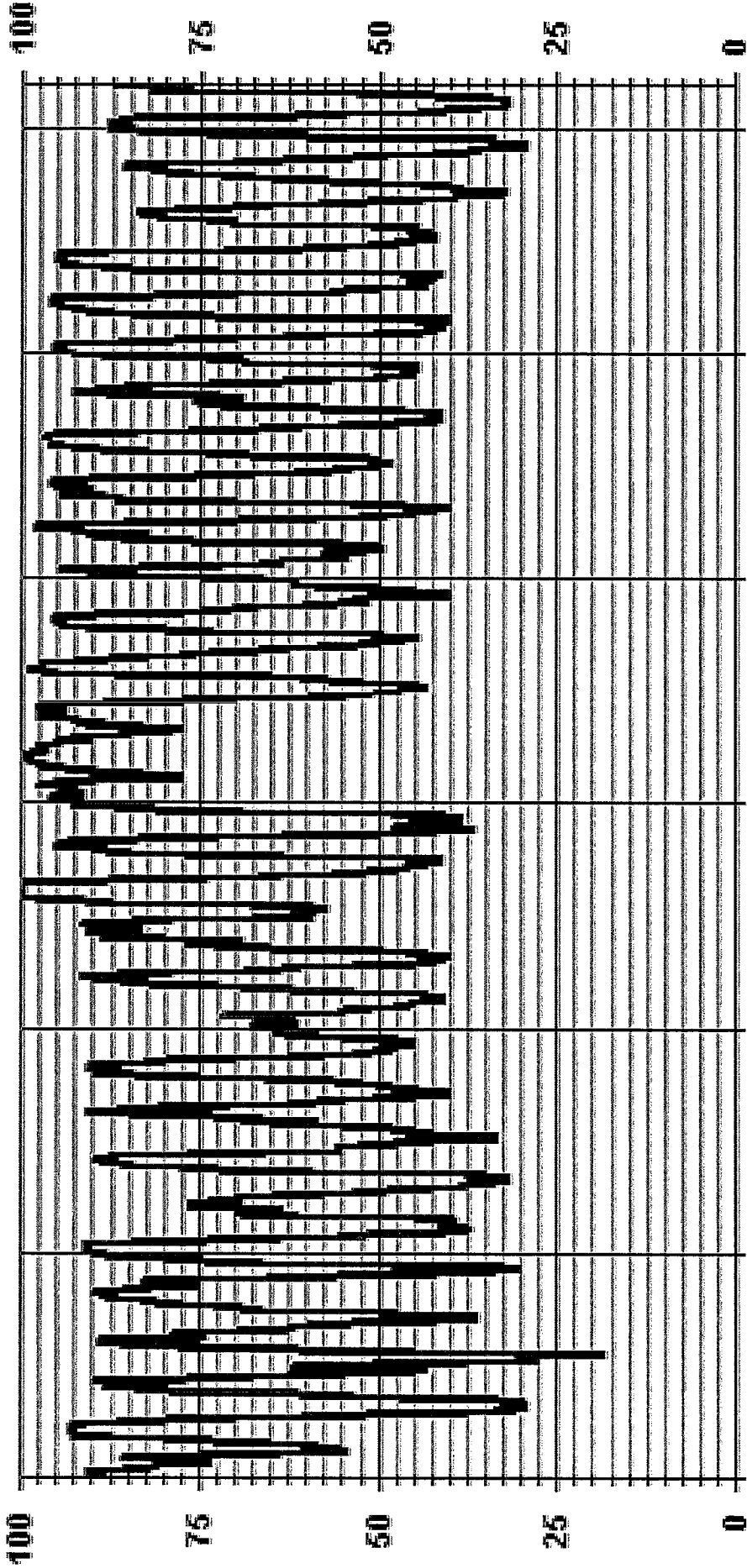
24 HOUR AVERAGES FOR JULY 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	100	% @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	92.5	%		ON DAY(S)	17
STANDARD DEVIATION:	20.52			VAR-VARIOUS	
OPERATIONAL TIME:	744	HRS			
AMT OPERATION UPTIME:	100.0	%			
MONTHLY AVERAGE:	68	%			

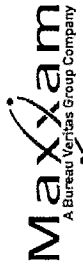
01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA RH %FS

AMBIENT TEMPERATURE



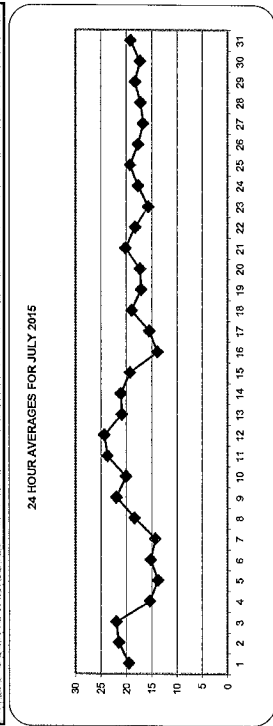
AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

MST

DAY	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 MAX	24-HOUR AVG	RDGS	
1	16.3	16.3	16.1	15.9	17.1	18.1	18.9	19.8	21.2	19.7	18.1	20.9	23.6	24.6	25.1	25.1	19.5	24
2	13.0	12.2	11.6	11.1	10.9	12.1	16.0	18.9	21.2	20.9	23.6	24.6	25.1	25.1	25.1	25.1	21.5	24
3	15.5	14.7	14.6	15.0	14.4	18.0	21.2	23.3	26.1	27.5	28.5	28.3	24.7	26.6	28.2	27.9	27.2	24
4	12.2	11.5	11.3	12.3	12.9	11.7	12.2	14.4	16.4	16.7	17.8	19.4	22.0	20.9	17.5	15.0	13.9	24
5	11.7	11.3	11.1	11.0	11.2	12.0	12.3	12.8	11.6	11.0	11.8	13.7	15.7	17.6	18.8	19.6	20.0	24
6	7.4	6.4	5.9	5.4	4.9	5.9	9.5	13.0	15.5	17.4	19.0	20.1	20.7	21.7	22.1	22.0	21.9	24
7	14.7	14.1	12.9	11.7	11.1	10.6	10.9	11.5	12.6	13.0	14.1	15.7	17.0	17.5	18.5	19.9	18.3	24
8	6.8	6.1	5.7	5.3	5.5	9.2	12.9	16.3	18.0	19.1	21.2	23.7	24.9	26.4	27.4	26.8	25.6	24
9	19.9	19.0	16.4	14.7	13.8	14.7	17.2	19.5	20.0	20.8	21.9	23.3	24.7	27.0	28.2	28.9	28.4	24
10	16.9	17.0	17.6	17.0	16.1	16.0	15.8	16.0	17.5	19.3	20.3	21.3	22.4	23.5	24.0	24.9	25.0	24
11	19.5	18.9	18.6	19.4	18.8	19.2	19.1	18.6	19.8	22.1	23.8	25.5	26.8	28.2	29.2	29.8	30.3	24
12	19.5	18.5	17.9	17.2	16.5	18.5	21.5	23.7	25.2	26.2	27.5	29.1	30.0	30.3	30.1	29.9	29.4	24
13	20.7	18.7	18.1	17.3	17.1	18.3	19.2	18.7	19.1	20.2	21.3	23.3	25.4	25.4	25.0	25.7	25.0	24
14	17.3	17.0	17.0	16.9	16.7	17.1	17.5	19.9	22.3	23.4	23.6	24.5	25.5	26.0	26.0	25.4	25.2	24
15	14.1	13.0	11.8	11.2	10.8	13.8	17.2	20.1	22.7	24.4	25.0	25.0	23.6	22.7	23.0	24.4	24.4	24
16	13.6	13.3	12.9	12.5	15.1	15.1	15.1	15.0	15.4	15.3	16.1	16.2	16.1	16.9	17.4	18.6	18.2	24
17	12.9	13.4	14.3	15.2	15.1	15.1	15.1	15.0	15.4	15.3	16.1	16.2	16.1	16.9	17.4	18.6	18.2	24
18	14.0	14.2	14.1	13.9	13.2	13.6	15.0	17.5	19.7	21.4	22.4	23.3	24.3	24.3	24.1	24.2	23.5	24
19	14.0	13.8	14.0	14.3	14.6	14.8	15.4	15.8	15.6	16.2	17.6	18.4	19.6	20.8	21.5	22.2	21.4	24
20	10.7	9.7	9.5	8.9	8.3	10.5	14.6	16.0	16.8	17.8	18.8	20.0	21.7	22.3	23.5	23.1	22.7	24
21	17.4	16.6	15.1	15.0	14.8	14.6	16.8	18.9	19.9	21.0	21.5	23.6	24.7	24.0	24.0	25.2	25.8	24
22	17.4	16.2	15.5	14.8	14.4	14.7	16.2	19.4	22.1	23.3	23.6	24.1	24.4	24.8	24.2	22.1	19.6	24
23	11.3	10.5	10.3	9.5	9.4	11.3	13.7	15.6	17.5	18.9	20.1	20.9	21.3	21.3	22.1	22.0	21.3	24
24	9.3	8.7	8.1	7.6	7.5	9.4	13.4	16.2	18.8	19.7	21.2	22.5	23.6	24.4	24.4	24.4	24.4	24
25	16.6	17.3	16.9	15.3	14.4	14.9	16.1	17.0	19.2	21.0	21.9	23.2	23.9	24.2	23.8	22.8	22.8	24
26	14.0	13.5	13.5	13.0	12.2	13.4	15.3	16.4	17.6	18.8	20.6	22.0	22.7	22.7	22.7	22.6	21.6	24
27	10.7	10.0	9.4	8.9	9.4	10.6	12.1	14.9	18.0	20.4	21.1	21.6	22.5	22.4	22.8	22.7	23.2	24
28	9.6	8.8	8.2	8.0	8.0	8.6	11.7	15.1	18.2	19.7	21.5	22.4	23.3	23.4	23.5	24.1	23.4	24
29	14.0	13.7	12.9	12.5	12.1	13.3	15.5	17.2	19.2	20.7	21.8	22.4	22.3	23.3	23.9	24.0	22.7	24
30	13.0	11.8	11.0	10.3	9.8	10.8	13.1	15.1	17.2	19.4	20.8	22.0	22.5	23.2	23.4	24.0	23.6	24
31	10.1	10.7	10.0	9.9	10.3	10.7	14.5	18.2	20.5	22.7	24.2	24.6	25.7	25.8	26.4	27.3	26.9	24
HOURLY MAX	20.7	19.0	18.6	19.4	18.8	19.2	21.5	23.7	26.1	27.5	28.5	29.1	30.0	30.3	30.1	29.9	30.3	24
HOURLY AVG	14.0	13.4	13.0	12.6	12.3	13.3	15.3	17.1	18.7	19.9	20.9	21.9	22.8	23.4	23.8	24.0	23.6	24

STATUS FLAG CODES

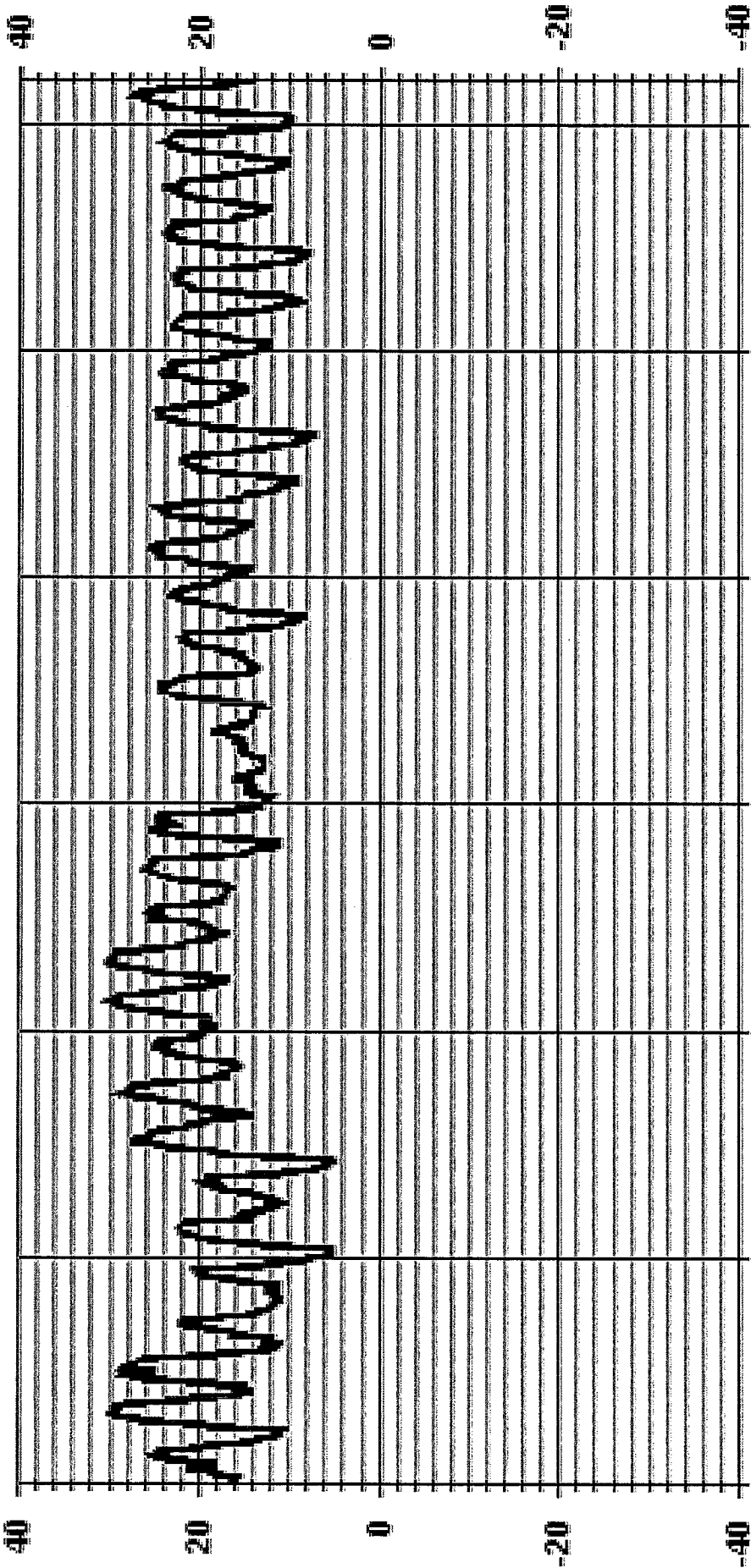
C	CALIBRATION	O	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUTSIDE REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	4.9	°C	@ HOUR(S)	4	ON DAY(S)	6
MAXIMUM 1-HR AVERAGE:	30.3	°C	@ HOUR(S)	16, 13	ON DAY(S)	11, 12
MAXIMUM 24-HR AVERAGE:	24.4	°C			ON DAY(S)	12
					VAR-VARIOUS	
STANDARD DEVIATION:	5.38					
OPERATIONAL TIME:	744	HRS				
AMD OPERATION UPTIME:	100.0	%				
MONTHLY AVERAGE:	18.5	°C				

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA TPX DGC

APPENDIX II
NON-CONTINUOUS MONITORING DATA RESULTS

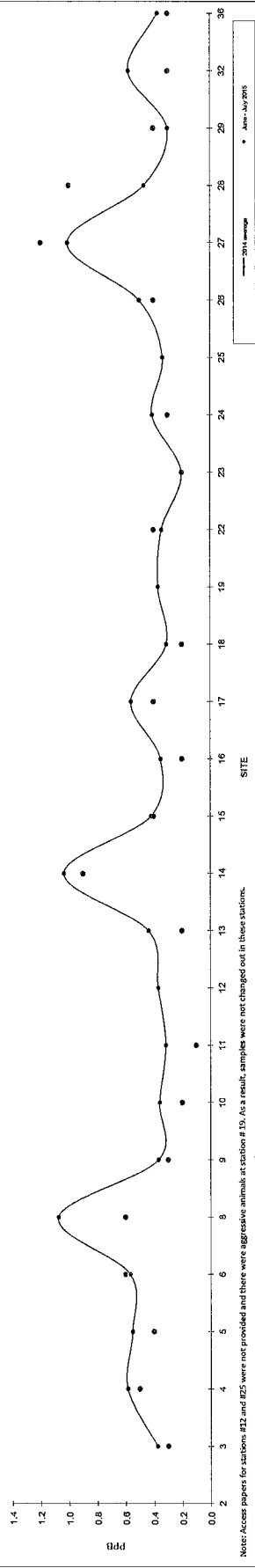
PASSIVE RESULTS

Passive Summary Results for June - July 2015

Lakeland Industry & Community Association

Mean	2014																				June - July 2015									
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	25	26	27	28	29	32	36	Reading	Site	
Minimum	NA	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.4	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	#11
Maximum	NA	0.8	0.9	1.0	1.5	3.2	0.7	0.6	0.8	0.8	0.9	2.4	0.8	0.8	1.1	0.7	0.8	0.7	0.4	0.8	0.5	1.2	1.9	0.8	0.7	2.0	0.9	1.2	0.1	#27

LICA - Sulphur Dioxide Passives



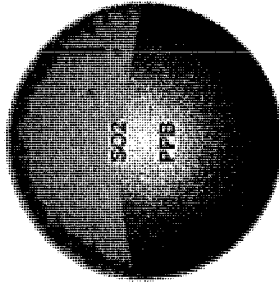
Note: Access papers for stations #12 and #25 were not provided and there were aggressive animals at station #19. As a result, samples were not changed out in these stations.

Lakeland Industry & Community Association SO₂ Passive Bubble Map

JUNE - JULY 2015

PASSIVE STATIONS

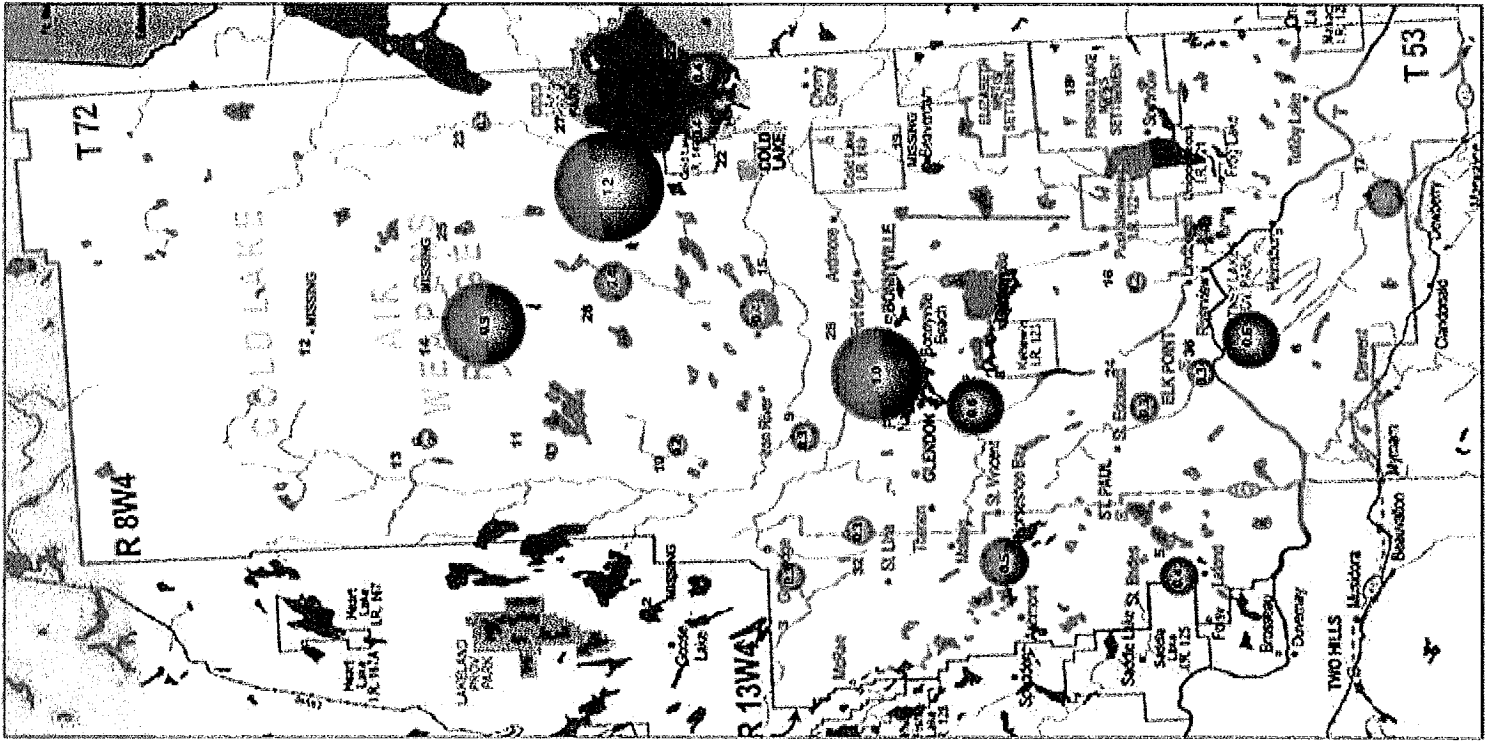
PASSIVE STATIONS	MISSING	DUPLICATE
2 - Sand River	MISSING	NA
3 - Therien	0.3 PPB	NA
4 - Flat Lake	0.5 PPB	NA
5 - Lake Eliza	0.4 PPB	NA
6 - Telegraph Creek	0.5 PPB	NA
8 - Muriel-Kehewin	0.5 PPB	NA
9 - Dupre	0.3 PPB	0.3 PPB
10 - La Corey	0.2 PPB	0.2 PPB
11 - Wolf Lake	0.1 PPB	0.1 PPB
12 - Foster Creek	MISSING	NA
13 - Primrose	0.2 PPB	NA
14 - Maskwa	0.9 PPB	NA
15 - Ardmore	0.4 PPB	NA
16 - Frog Lake	0.2 PPB	NA
17 - Clear Range	0.4 PPB	NA
18 - Fishing Lake	0.2 PPB	NA
19 - Beaverdam	MISSING	NA
22 - Cold Lake South	0.4 PPB	NA
23 - Medley-Martineau	0.2 PPB	NA
24 - Fort George	0.3 PPB	NA
25 - Burnt Lake	MISSING	NA
26 - Mahikan	0.4 PPB	NA
27 - Mahkeses	1.2 PPB	NA
28 - Town of Bonnyville	1.0 PPB	NA
29 - Cold Lake South 2	0.4 PPB	NA
32 - St. Lina	0.3 PPB	NA
36 - Elk Point	0.3 PPB	NA



Summary

Minimum: 0.1 PPB - Wolf Lake
 Maximum: 1.2 PPB - Mahkeses
 Average: 0.4 PPB *includes Duplicates

Note: Sampler at #2 was removed. Access papers were not provided for #12 and #25 and there were aggressive animals at #19. As a result, samples were not changed out in these stations.

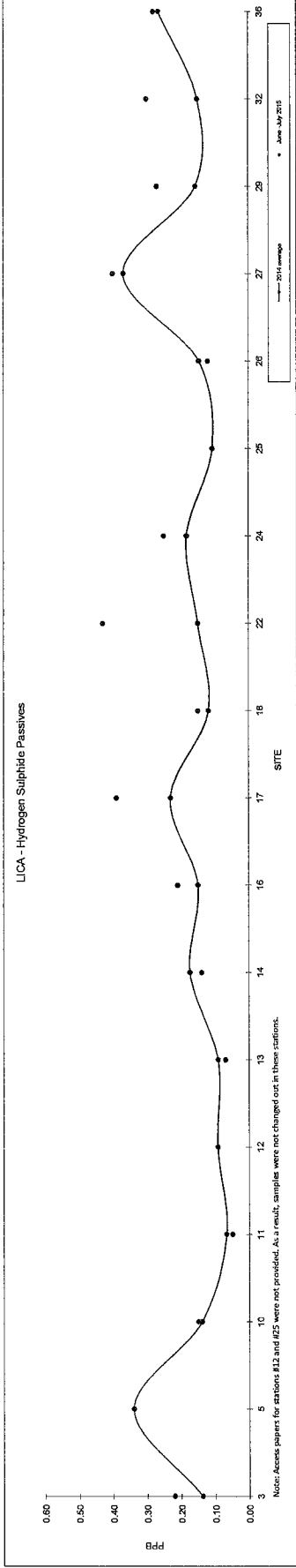


Passive Summary Results for June - July 2015

Lakeland Industry & Community Association

	2014																June - July 2015			
	3	5	10	11	12	13	14	15	16	17	18	22	24	25	26	27	29	32	36	Site
Mean	0.14	0.34	0.14	0.07	0.09	0.09	0.17	0.15	0.23	0.12	0.12	0.15	0.18	0.11	0.15	0.37	0.16	0.15	0.27	-
Minimum	0.05	0.07	0.06	0.04	0.02	0.02	0.05	0.07	0.11	0.04	0.04	0.06	0.06	0.03	0.06	0.04	0.05	0.05	0.07	#11
Maximum	0.24	0.97	0.31	0.11	0.20	0.16	0.30	0.29	0.44	0.17	0.32	0.32	0.32	0.16	0.21	1.23	0.33	0.26	1.36	#5

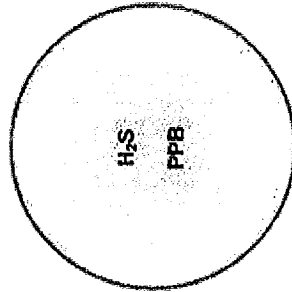
Hydrogen Sulphide
ppb



Lakeland Industry & Community Association H₂S Passive Bubble Map

JUNE - JULY 2015

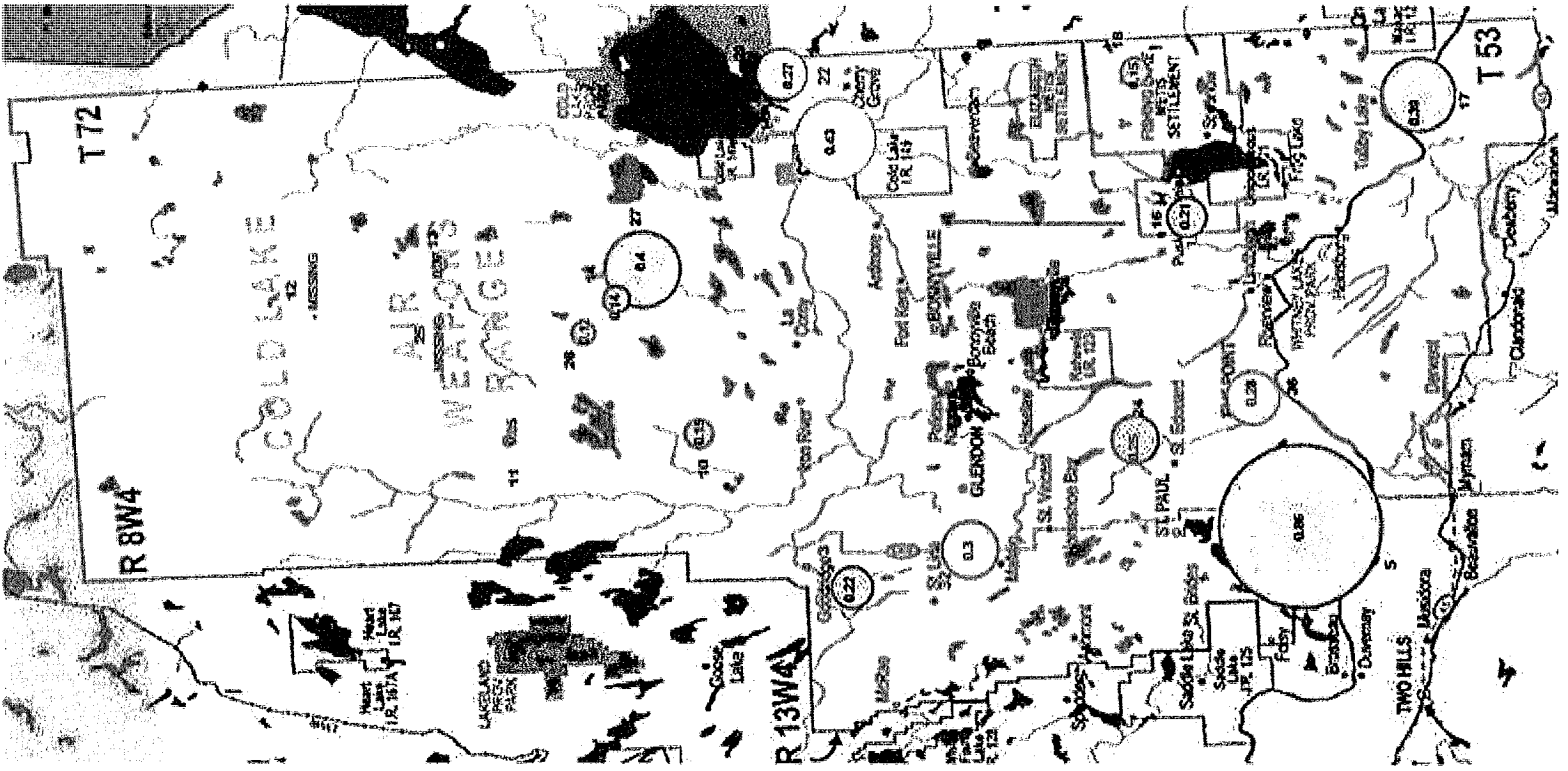
PASSIVE STATIONS	DUPLICATE
3 - Thenien	0.22 PPB NA
5 - Lake Eliza	0.86 PPB NA
10 - La Corey	0.15 PPB NA
11 - Wolf Lake	0.05 PPB NA
12 - Foster Creek	MISSING NA
13 - Primrose	0.07 PPB NA
14 - Maskwa	0.13 PPB 0.15 PPB
16 - Frog Lake	0.21 PPB 0.21 PPB
17 - Clear Range	0.39 PPB NA
18 - Fishing Lake	0.15 PPB NA
22 - Cold Lake South	0.43 PPB NA
24 - Fort George	0.25 PPB NA
25 - Burnt Lake	MISSING NA
26 - Mahitkan	0.12 PPB NA
27 - Mahkeses	0.40 PPB NA
29 - Cold Lake South 2	0.27 PPB NA
32 - St. Lina	0.30 PPB NA
36 - Elk Point	0.28 PPB NA



Summary

Minimum : 0.05 PPB - Wolf Lake
 Maximum: 0.86 PPB - Lake Eliza
 Average: 0.27 PPB (includes Duplicates)

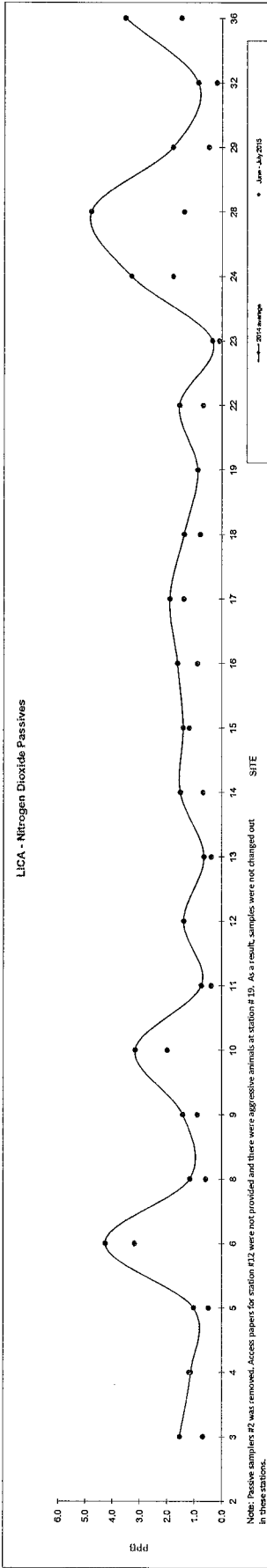
Note: Access papers were not provided for #12 and #25. As a result, samples were not changed out in these stations.



Passive Summary Results for June - July 2015

Lakeland Industry & Community Association

	Nitrogen Dioxide ppb																				June - July 2015				
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	28	29	32	36	Site
Mean	NA	1.5	1.1	1.0	4.3	1.2	1.4	3.2	0.8	1.4	0.7	1.5	1.4	1.6	1.9	1.4	0.9	1.6	0.4	3.3	4.8	1.8	0.9	3.6	-
Minimum	NA	0.5	0.3	0.1	2.1	0.5	0.5	1.4	0.2	0.5	0.1	0.5	0.4	0.5	1.1	0.0	0.2	0.6	0.1	1.0	1.8	0.3	0.2	1.4	#23
Maximum	NA	4.2	2.3	2.4	6.8	2.9	2.9	5.3	2.9	2.8	1.4	-0.3	3.1	3.7	3.1	2.7	2.9	3.2	1.2	5.7	11.3	4.2	2.0	7.9	#6

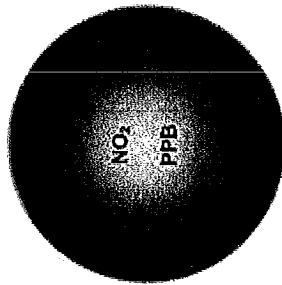


Lakeland Industry & Community Association NO₂ Passive Bubble Map

JUNE - JULY 2015

PASSIVE STATIONS

Station Number	Location	NO ₂ Concentration (PPB)	Duplicate
2	Sand River	MISSING	NA
3	Therrien	0.7 PPB	NA
4	Flat Lake	1.2 PPB	NA
5	Lake Eliza	0.5 PPB	NA
6	Telegraph Creek	3.2 PPB	NA
8	Muriel-Kehewin	0.6 PPB	NA
9	Dupro	0.9 PPB	0.8 PPB
10	La Corey	2.0 PPB	2.0 PPB
11	Wolf Lake	0.4 PPB	NA
12	Foster Creek	MISSING	NA
13	Primrose	0.4 PPB	NA
14	Maskwa	0.7 PPB	NA
15	Ardmore	1.2 PPB	NA
16	Frog Lake	0.9 PPB	NA
17	Clear Range	1.4 PPB	NA
18	Fishing Lake	0.8 PPB	NA
19	Beavertdam	MISSING	NA
22	Cold Lake South	0.7 PPB	NA
23	Medley-Martineau	0.1 PPB	NA
24	Fort George	1.8 PPB	NA
28	Town of Bonnyville	1.4 PPB	NA
29	Cold Lake South 2	0.5 PPB	NA
32	St. Lina	0.2 PPB	NA
36	Elk Point	1.5 PPB	NA



Summary

Minimum: 0.1 PPB - Medley-Martineau
 Maximum: 3.2 PPB - Telegraph Creek
 Average: 1.0 PPB *includes Duplicates

Note: Sampler at #2 was removed. Access papers were not provided for #12 and there were aggressive animals at #19. As a result, samples were not changed out in these stations.

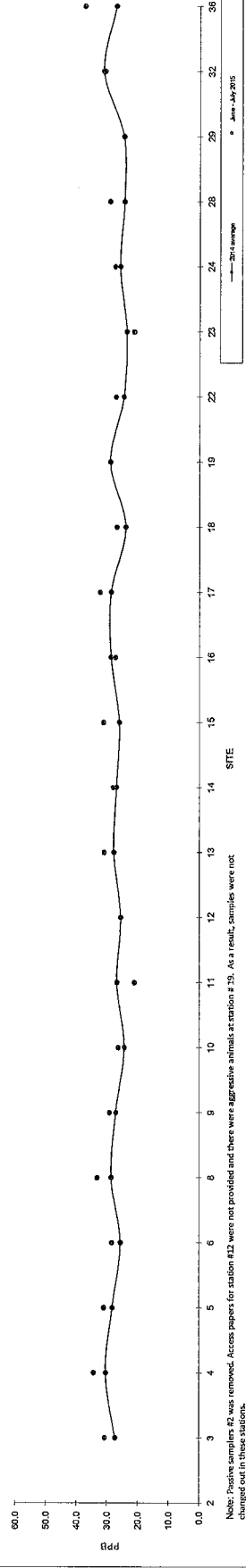


Passive Summary Results for June - July 2015

Lakeland Industry & Community Association

	2	3	4	5	6	8	9	10	11	12	2014	14	15	16	17	18	19	20	23	24	26	28	29	32	36	June - July 2015	Site
Mean	NA	27.3	30.4	28.2	25.6	28.6	27.1	24.3	26.8	25.5	27.8	27.0	26.0	28.7	28.8	24.0	28.1	24.7	23.8	25.9	24.5	24.8	24.6	31.3	27.3	25.10	#11
Minimum	NA	18.7	20.0	19.9	17.0	20.1	17.8	14.5	13.9	16.4	18.6	21.0	16.5	18.1	19.9	14.9	20.3	16.4	14.4	17.6	16.2	15.4	15.4	22.8	13.1	21.10	#11
Maximum	NA	40.5	46.6	38.0	37.9	41.5	42.3	37.6	51.2	35.2	40.2	34.8	36.8	43.7	38.0	33.6	40.7	32.4	39.2	39.0	31.3	36.7	36.7	40.6	34.2	37.60	#08

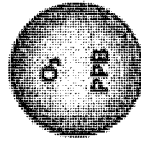
LICA - Ozone Passives



Note: Passive samplers #2 were not provided and there were aggressive animals at station # 19. As a result, samples were not changed out in these stations.

Lakeland Industry & Community Association O₃ Passive Bubble Map

JUNE - JULY 2015

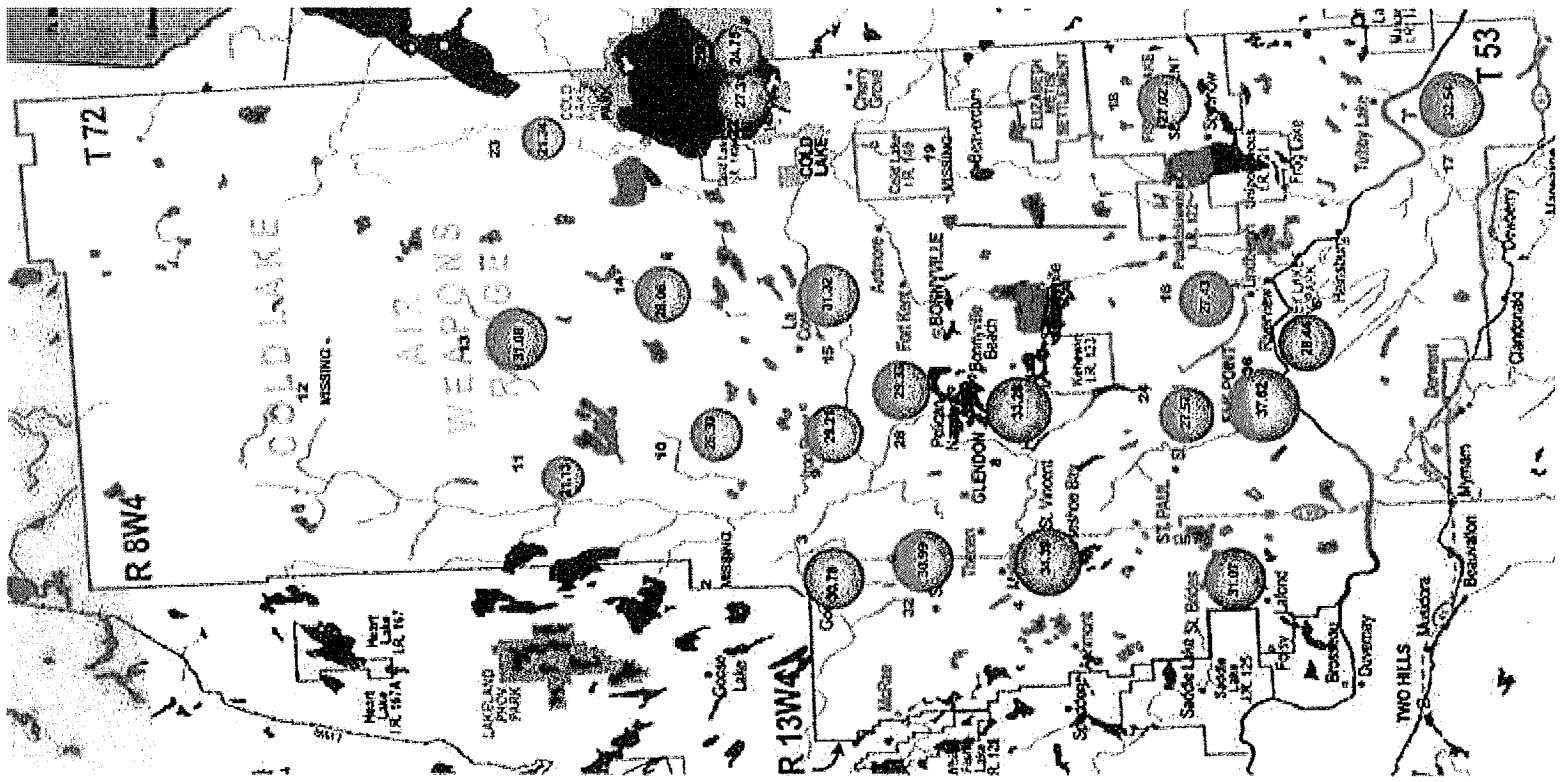


PASSIVE STATIONS	DUPLICATE
2 - Sand River	MISSING
3 - Therien	30.78 PPB
4 - Flat Lake	34.39 PPB
5 - Lake Eliza	31.07 PPB
6 - Telegraph Creek	28.44 PPB
8 - Muriel-Kehewin	33.28 PPB
9 - Dupre	31.83 PPB
10 - La Corey	25.68 PPB
11 - Wolf Lake	21.13 PPB
12 - Foster Creek	MISSING
13 - Primrose	31.08 PPB
14 - Maskwa	28.06 PPB
15 - Ardmore	31.32 PPB
16 - Frog Lake	27.43 PPB
17 - Clear Range	32.54 PPB
18 - Fishing Lake	27.02 PPB
19 - Beaverdam	MISSING
22 - Cold Lake South	27.31 PPB
23 - Medley-Martineau	21.34 PPB
24 - Fort George	27.57 PPB
28 - Town of Bonnyville	29.33 PPB
29 - Cold Lake South 2	24.75 PPB
32 - St. Lina	30.99 PPB
36 - Elk Point	37.62 PPB

Summary

Minimum: 21.13 PPB - Wolf Lake
 Maximum: 37.62 PPB - Elk Point
 Average: 29.10 PPB *includes Duplicates

Note: Sampler at #2 was removed. Access papers were not provided for #12 and there were aggressive animals at #19. As a result, samples were not changed out in these stations.



Passive Sampler Data Sheet for LICA JUNE-JULY 2015

ID	SAMPLER		START		END		NOTES
	SO ₂	NO ₂	DATE	TIME	DATE	TIME	
2		O ₃	NA	NA	NA	NA	Samplers were removed
3	H ₂ S	NO ₂	May 27, 2015	17:30	July 30, 2015	17:32	
4	---	NO ₂	May 28, 2015	12:06	July 31, 2015	12:31	
5	H ₂ S	NO ₂	May 28, 2015	12:49	July 31, 2015	13:11	
6	---	NO ₂	May 28, 2015	14:37	July 31, 2015	15:42	
8	---	NO ₂	May 28, 2015	10:51	July 31, 2015	11:08	
9	---	NO ₂	May 27, 2015	19:53	July 30, 2015	19:16	See "Duplicates" (+3)
10	H ₂ S	NO ₂	May 27, 2015	14:50	July 30, 2015	15:05	See "Duplicates" (+3)
11	H ₂ S	NO ₂	May 27, 2015	15:45	July 30, 2015	15:51	See "Duplicates" (+1)
12	H ₂ S	NO ₂	Feb 27, 2015	17:36	No access	NA	No access papers provided by the client
13	H ₂ S	NO ₂	May 27, 2015	12:28	July 30, 2015	13:30	
14	H ₂ S	NO ₂	May 27, 2015	11:18	July 30, 2015	12:04	See "Duplicates" (+1)
15	---	NO ₂	May 27, 2015	20:46	July 30, 2015	20:15	
16	H ₂ S	NO ₂	May 28, 2015	18:03	July 31, 2015	18:57	
17	H ₂ S	NO ₂	May 28, 2015	15:37	July 31, 2015	16:39	
18	H ₂ S	NO ₂	May 28, 2015	17:06	July 31, 2015	17:55	
19	---	NO ₂	May 28, 2015	18:44	No access	19:39	Aggressively behaving animals on the field
22	H ₂ S	NO ₂	May 28, 2015	08:37	July 30, 2015	09:34	
23	---	NO ₂	May 27, 2015	08:53	July 30, 2015	10:27	
24	H ₂ S	NO ₂	May 28, 2015	13:51	July 31, 2015	15:06	
25	H ₂ S	---	Feb 27, 2015	18:58	No access	NA	No access papers provided by the client
26	H ₂ S	---	May 27, 2015	11:45	July 30, 2015	12:28	
27	H ₂ S	---	May 27, 2015	10:50	July 30, 2015	11:37	
28	---	NO ₂	May 27, 2015	19:39	July 30, 2015	19:43	
29	H ₂ S	NO ₂	May 28, 2015	08:37	July 30, 2015	09:35	
32	H ₂ S	NO ₂	May 27, 2015	18:20	July 30, 2015	18:15	
36	H ₂ S	NO ₂	May 28, 2015	13:31	July 31, 2015	14:05	
DUPLICATES							
9	---	SO ₂	May 27, 2015	19:53	July 30, 2015	19:16	
10	---	SO ₂	May 27, 2015	14:50	July 30, 2015	16:05	
11	---	SO ₂	May 27, 2015	15:45	July 30, 2015	15:51	
14	H ₂ S	---	May 27, 2015	11:18	July 30, 2015	12:04	
16	H ₂ S	---	May 28, 2015	18:03	July 31, 2015	18:57	

VOC RESULTS

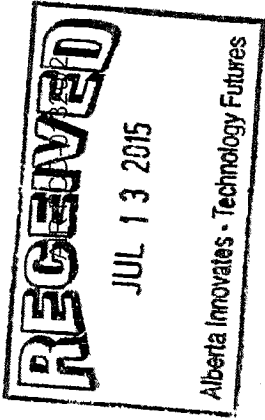
Sample ID: 15070083-001

Customer ID: LICA

Cust Samp ID: LICAVOC/CLS/July 5, 2015

Maxxam

VOC Sample Collection Data Sheet



Client: LICA
 Location: CLS
 Station ID: LICA 01
 Field Sample ID: LICA/VOC/CLS/July 5, 2015

Sampler S/N: 6167
 Canister ID: 1839
 Canister Installation Date/Time: July 3, 2015 @ 09:58
 Canister Removal Date/Time: July 9, 2015 @ 10:12

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 5, 2015	00:00 July 5, 2015	20:00 July 6, 2015

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	6.52	24

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	23.8

Canister valve open prior to sampling?: YES NO
 Timer set to 0.00 minutes prior to sampling? YES NO
 Canister valve closed prior to disconnection?: YES NO

Comments:

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

Date: July 9, 2015

Volatile Organics Data Results

Date: JULY 5, 2015
Canister ID: 1839

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	0.20
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	0.30
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.06
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.11
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	0.7
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.03
2-Methylhexane	< 0.01
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	9.2
Acrolein	< 0.3
Benzene	0.42
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	4.06
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.64
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.11
cis-2-Pentene	0.05
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	3.1
Ethyl acetate	< 0.4
Ethylbenzene	0.13
Freon-11	0.23

Volatile Organics Data Results

Date: JULY 5, 2015
Canister ID: 1839

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	< 0.02
Freon-12	0.56
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.10
Isopentane	0.14
Isoprene	1.55
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.39
m-Diethylbenzene	< 0.04
m-Ethyltoluene	0.19
Methyl butyl ketone	0.61
Methyl ethyl ketone	1.5
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.38
Methylcyclopentane	0.06
Methylene chloride	< 0.3
n-Butane	0.25
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	0.08
n-Undecane	< 0.5
Naphthalene	12.4
o-Ethyltoluene	0.14
o-Xylene	0.19
p-Diethylbenzene	0.13
p-Ethyltoluene	0.08
Styrene	0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.41
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.17
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15070188-001

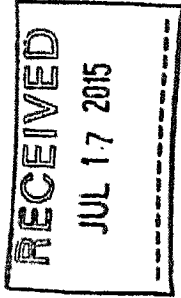
Customer ID: LICA

Cust Samp ID: LICAVOC/CLS/July 11, 2015

AIR FCD-01320/2

Maxxam

VOC Sample Collection Data Sheet



Client: LICA
 Location: CLS
 Station ID: LICA 01
 Field Sample ID: LICA/VOC/CLS / July 11, 2015

Sampler S/N: 6167
 Canister ID: 17122
 Canister Installation Date/Time: July 9, 2015 @ 10:14
 Canister Removal Date/Time: July 16, 2015 @ 09:25

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 11, 2015	00:00	00:00	24.0
	July 11, 2015	July 12, 2015	

Canister Information	
Initial Canister Vacuum (inHg)	28.0
Final Canister Pressure (psig)	23.8

23.5 psi
 S/NP

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	6.52	24

Canister valve open prior to sampling? YES NO
 Timer set to 0.00 minutes prior to sampling? YES NO
 Canister valve closed prior to disconnection? YES NO

Comments:

Technician Signature: Sample in - by Alex Yakupov
Sample out by Alex Yakupov
 Date July 16, 2015

Volatile Organics Data Results

Date: JULY 11, 2015
Canister ID: 17122

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	0.19
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	0.04
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.04
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.26
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.02
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.06
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	< 0.01
Acetone	8.4
Acrolein	0.7
Benzene	1.13
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.75
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	2.5
Ethyl acetate	< 0.4
Ethylbenzene	0.16
Freon-11	0.24

Volatile Organics Data Results

Date: JULY 11, 2015
Canister ID: 17122

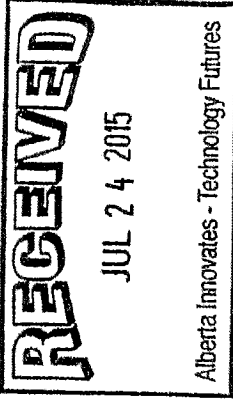
PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.06
Freon-114	< 0.02
Freon-12	0.57
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.22
Isopentane	0.25
Isoprene	5.30
Isopropyl alcohol	1.3
Isopropylbenzene	< 0.01
m,p-Xylene	0.68
m-Diethylbenzene	< 0.04
m-Ethyltoluene	0.10
Methyl butyl ketone	0.62
Methyl ethyl ketone	1.1
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	0.03
Methylene chloride	< 0.3
n-Butane	0.71
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.13
n-Nonane	0.03
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.04
o-Xylene	0.16
p-Diethylbenzene	0.08
p-Ethyltoluene	0.12
Styrene	0.07
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.54
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15070304-003

Customer ID: LICA

Cust Samp ID: LICAVOC/CLS/July 17, 2015

AIR FCD-01320/2



Maxxam

VOC Sample Collection Data Sheet

Client: LICA
 Location: CLS
 Station ID: LICA 01
 Field Sample ID: LICA/VOC/CLS/July 17, 2015

Sampler S/N: 6167
 Canister ID: 85807
 Canister Installation Date/Time: July 16, 2015 @ 08:27
 Canister Removal Date/Time: July 22, 2015 @ 08:19

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 17, 2015	00:00	00:00
	July 17, 2015	July 19, 2015
		24.0

Canister Information	
Initial Canister Vacuum (inHg)	28.0
Final Canister Pressure (psig)	23.4

23.4
S.N.

Flow Settings	
Meter Reading (sccm)	10.0
Pot Set Pt.	6.52
Pump Pressure Setting (psig)	24

Canister valve open prior to sampling?: YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection? YES / NO

Comments:

Technician Signature:

Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

Date: July 21, 2015

Volatile Organics Data Results

Date: JULY 17, 2015
Canister ID: S5607

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.01
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.04
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.03
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.02
Acetone	3.9
Acrolein	< 0.3
Benzene	0.11
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.49
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.69
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.2
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.29

Volatile Organics Data Results

Date: JULY 17, 2015
Canister ID: S5607

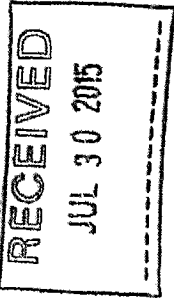
PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.02
Freon-12	0.65
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.08
Isopentane	0.14
Isoprene	0.31
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.20
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.03
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.07
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15070377-001

Customer ID: LICA

Cust Samp ID: LICAVOC/CLS/July 23, 2015

AIR FCD-01320/2



Maxxam

VOC Sample Collection Data Sheet

Client: LICA
 Location: CLS
 Station ID: LICA 01
 Field Sample ID: LICA/VOC/CLS/July 23, 2015

Sampler S/N: 6167
 Canister ID: 1149
 Canister Installation Date/Time: July 22, 2015 @ 08:10
 Canister Removal Date/Time: July 28, 2015 @ 08:22

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 23, 2015	00:00	July 24, 2015	24.0

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	23.0

23 PSI
SND

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	0.52	24

Canister valve open prior to sampling?: YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection?: YES / NO

Comments:

Technician Signature: Sample in- by Alex Yanupov
Sample cert by Alex Yanupov
 Date: July 28, 2015

Volatile Organics Data Results

Date: JULY 23, 2015
Canister ID: 1149

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.10
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.17
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.20
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.52
2,3-Dimethylpentane	0.24
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.08
2-Methylhexane	0.27
2-Methylpentane	0.21
3-Methylheptane	0.03
3-Methylhexane	0.46
3-Methylpentane	0.68
Acetone	5.9
Acrolein	< 0.3
Benzene	0.40
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	1.48
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	0.08
Chloroform	0.02
Chloromethane	0.77
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.03
cis-2-Pentene	< 0.02
Cyclohexane	0.66
Cyclopentane	0.22
Dibromochloromethane	< 0.01
Ethanol	0.9
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.28

Volatile Organics Data Results

Date: JULY 23, 2015
Canister ID: 1149

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.02
Freon-12	0.64
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.23
Isopentane	1.10
Isoprene	1.16
Isopropyl alcohol	0.5
Isopropylbenzene	< 0.01
m,p-Xylene	0.05
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.7
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.40
Methylcyclopentane	0.48
Methylene chloride	< 0.3
n-Butane	0.44
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.65
n-Hexane	0.45
n-Nonane	< 0.01
n-Octane	0.07
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.03
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.35
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

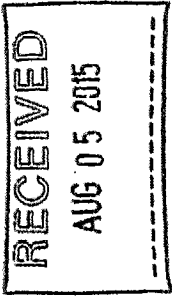
Sample ID: 15080014-001

Customer ID: LICA
Cust Samp ID: LICAVOC/CLS/ July 29, 2015

AIR FCD-01320/2

Maxxam

VOC Sample Collection Data Sheet



Client: LICA
 Location: CLS
 Station ID: LICA 01
 Field Sample ID: LICA/VOC/CLS/July 29, 2015

Sampler S/N: 6167
 Canister ID: 35679
 Canister Installation Date/Time: July 28, 2015 @ 08:24
 Canister Removal Date/Time: July 30, 2015 @ 08:37

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 29, 2015	00:00 July 29, 2015	00:00 July 30, 2015	24.0

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	6.52	24

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	23.5

23psi
(S/N)

Canister valve open prior to sampling?: YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection?: YES / NO

Comments:

Technician Signature: Sample in - by Alex Yampov

Sample out - by Alex Yampov

Date: July 30, 2015

Volatile Organics Data Results

Date: JULY 29, 2015
Canister ID: S5679

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.01
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.04
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.02
Acetone	3.3
Acrolein	< 0.3
Benzene	< 0.01
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.03
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.63
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	0.03
Dibromochloromethane	< 0.01
Ethanol	0.9
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.28

Volatile Organics Data Results

Date: JULY 29, 2015
Canister ID: S5679

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.02
Freon-12	0.60
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.13
Isopentane	0.13
Isoprene	1.27
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.06
Methylcyclopentane	0.05
Methylene chloride	< 0.3
n-Butane	0.25
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.06
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.02
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

PAH RESULTS

Sample ID: 15070083-002

Customer ID: LICA

Cust Samp ID: LICAPUF/CLS/July 5, 2015

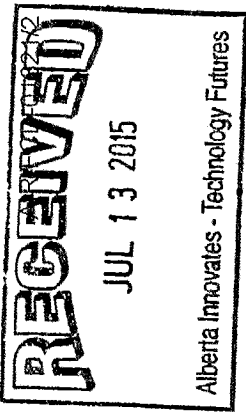
Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA
 Location: CLS
 Station ID: LICA 01
 Field Sample ID: LICA/PUF/CLS/July 5, 2015

Puf+ S/N: TE-02
 Motor S/N: 1138
 Installation Date/Time: July 3, 2015 @ 09:52
 Removal Date/Time: July 9, 2015 @ 10:26



Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 5, 2015	00:00 July 5, 2015	00:00 July 6, 2015
		Elapsed Time (Hours) 24.0

PUF and QFF Information		
Date Received	Date Shipped	Puf Expiration Date
NA	NA	NA
		QFF Prep Date NA

Set Flow Rate (slpm): 230

Date of Last Calibration: 01. sept-11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
744.714	229	15.1°
		Volume (Vstd m³) 330.22

Time set correctly prior to sampling? YES/NO
 Timer set correctly prior to sampling? YES/NO
 Sampling data saved to memory card after sampling? YES/NO

Comments:

Technician Signature: Sample in - by Alex Yakupov
Sample out by Alex Yakupov

Date: July 9, 2015

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 5 2015
PUF S/N: TE02

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.06
2-Methylnaphthalene	0.08
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	0.02
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.05
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.04
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.02
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.08
Fluorene	0.13
Indeno(1,2,3-cd)pyrene	0.04
Naphthalene	0.07
Perylene	0.04
Phenanthrene	0.54
Pyrene	0.05
Retene	0.93

Sample ID: 15070188-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/July 11, 2015

AIR FCD-01321/2

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA
 Location: CLS
 Station ID: LICA 01
 Field Sample ID: LICA/PUF/CLS/July 11, 2015

Puf+ S/N: TE-07
 Motor S/N: 1138
 Installation Date/Time: July 9, 2015 @ 10:27
 Removal Date/Time: July 16, 2015 @ 08:34

RECEIVED
JUL 17 2015

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 11, 2015	00:00	00:00	24.0
	July 11, 2015	July 12, 2015	

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
NA	NA	NA	NA

Set Flow Rate (slpm): 230

Date of Last Calibration: 01-sept-11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
705	229	24.4°
		Volume (Vstd m ³)
		330.22

Time set correctly prior to sampling? YES NO
 Timer set correctly prior to sampling? YES NO
 Sampling data saved to memory card after sampling? YES NO

Comments:

Technician Signature: Sample in - by Alex Yampov
Sample out by Alex Yampov

Date: July 16, 2015

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 11, 2015
PUF S/N: TE07

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.05
2-Methylnaphthalene	0.09
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.06
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.04
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.03
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.16
Fluorene	0.10
Indeno(1,2,3-cd)pyrene	0.06
Naphthalene	0.09
Perylene	0.05
Phenanthrene	1.33
Pyrene	0.08
Retene	1.99

Sample ID: 15070304-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/July 17, 2015

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ SIN: TE-01
 Location: CLS Motor SIN: 1138
 Station ID: LICA 01 Installation Date/Time: July 16, 2015 @ 08:35
 Field Sample ID: LICA/PUF/CLS/July 17, 2015 Removal Date/Time: July 22, 2015 @ 08:46

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST) / Elapsed Time (Hours)
July 17, 2015	00:00 July 17, 2015	00:00 July 18, 2015 / 24.0

PUF and QFF Information		
Date Received	Date Shipped	Puf Expiration Date / QFF Prep Date
NA	NA	NA / NA

Set Flow Rate (slpm): 230

Date of Last Calibration: 01- sept -11

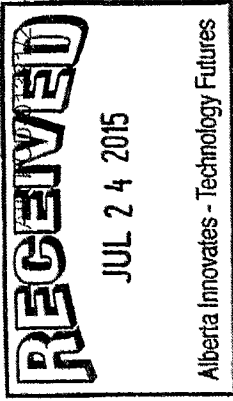
Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C) / Volume (Vstd m³)
705	229	16.30 / 330.20

Time set correctly prior to sampling? YES/NO
 Timer set correctly prior to sampling? YES/NO
 Sampling data saved to memory card after sampling? YES/NO

Comments:

Technician Signature: _____
 Sample in- by Alex Yampou
 Sample out by Alex Yampou

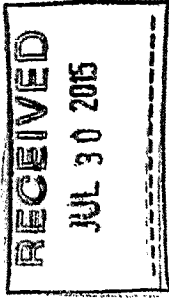
Date: July 22, 2015



Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 17, 2015
PUF S/N: TE01

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.02
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.06
Fluorene	0.10
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.46
Pyrene	0.04
Retene	0.56



Sample ID: 15070377-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/July 23, 2015

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA

Location: CLS

Station ID: LICA 01

Field Sample ID: LICA/PUF/CLS/July 23, 2015

Puf+ S/N: IE-01 A.Y. 9801

Motor S/N: 1138

Installation Date/Time: July 22, 2015 @ 08:27

Removal Date/Time: July 23, 2015 @ 08:12

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 23, 2015	00:00	00:00	24.0
	July 23, 2015	July 24, 2015	

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
NA	NA	NA	NA

Set Flow Rate (slpm): 230

Date of Last Calibration: 01- sept - 11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
707	229	17.4°
		Volume (Vstd m³)
		330.22

Time set correctly prior to sampling? YES/NO

Timer set correctly prior to sampling? YES/NO

Sampling data saved to memory card after sampling? YES/NO

Comments: no data saved on the screen. Data was retrieved from internal memory log.

Technician Signature: Sample in - by Alex Yampov

Sample out - by Alex Yampov

Date: 28 July, 2015

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 23, 2015
PUF S/N: 9801

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.05
2-Methylnaphthalene	0.08
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.05
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	0.17
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.06
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.05
Perylene	< 0.01
Phenanthrene	0.23
Pyrene	0.03
Retene	0.03

Sample ID: 15080014-002

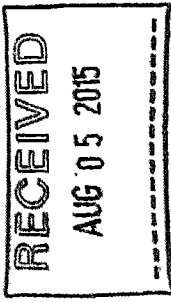
Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/July 29, 2015

AIR FCD-01321/2

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet



Client: LICA Puf+ S/N: TE-11
 Location: ELS Motor S/N: 1138
 Station ID: LICA 01 Installation Date/Time: July 28, 2015 @ 08:13
 Field Sample ID: LICA/PUF/CLS/July 29, 2015 Removal Date/Time: July 30, 2015 @ 08:37

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 29, 2015	00:00	00:00
	July 29, 2015	July 30, 2015
		24.0

PUF and QFF Information		
Date Received	Date Shipped	Puf Expiration Date
NA	NA	NA
		NA

Set Flow Rate (slpm): 290

Date of Last Calibration: 01-sept-11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
710	229	19.6°
		Volume (Vstd m ³)
		330.20

Time set correctly prior to sampling? YES NO
 Timer set correctly prior to sampling? YES NO
 Sampling data saved to memory card after sampling? YES NO

Comments:

Technician Signature: _____
 Sample in - by Alex Yakupov
 Sample out - by Alex Yakupov
 Date: July 30, 2015

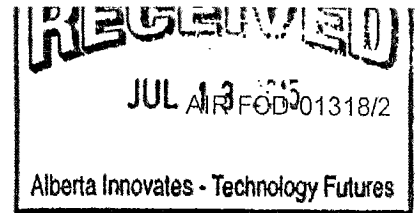
Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 29, 2015
PUF S/N: TE11

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.04
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.04
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.20
Pyrene	0.04
Retene	0.02

PARTISOL RESULTS

Sample ID: 15070082-001



Customer ID: LICA

Cust Samp ID: LICA P4148569

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: July 5, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: LICA P4148569

Start Time 00:00 July 5, 2015

End Time 00:00 July 6, 2015

Status OK

Std Vol 23.464

Valid Time 24:00

Total Time 24

Comments: Weather Conditions, etc.

Horizontal lines for handwritten comments.

Technician Signature: Alex Yakupov

Date: July 9, 2015

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 15070187-001

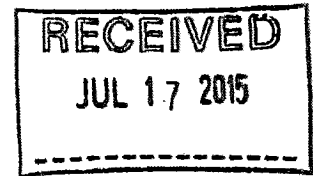
Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA P4148570

Partisol Sample Data Sheet

Priority: Normal



Date Sampled: July 11, 2015

Location: CL#

Parameter: TSP PM10

PM2.5

Filter #: LICA P4148570

Start Time 00:00 July 11, 2015

End Time 00:00 July 12, 2015

Status OK

Std Vol 22.374

Valid Time 24:00

Total Time 24

Comments: Weather Conditions, etc.

Technician Signature: Alex Yankov

Date: July 16, 2015

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 15070305-001

Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA P4149452

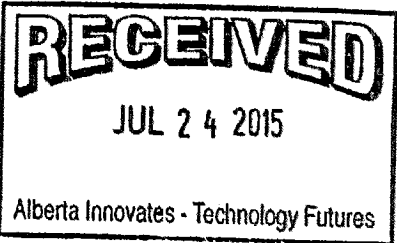
Partisol Sample Data Sheet

Priority: Normal

Date Sampled: July 17, 2015
 Location: CLS
 Parameter: TSP PM10
 Filter #: LICA P414 9452

PM2.5

Start Time 00:00 July 17, 2015
 End Time 00:00 July 18, 2015
 Status OK
 Std Vol 23 10f
 Valid Time 24:00
 Total Time 24



Comments: Weather Conditions, etc.

Technician Signature: Alex Yakupov

Date July 22, 2015

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 15070378-001

Customer ID: LICA

Cust Samp ID: LICA P4149573

AIR FCD-01318/2

Partisol Sample Data Sheet

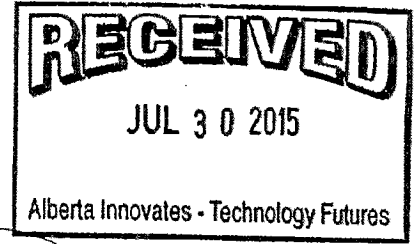
Priority: Normal

Date Sampled: July 23, 2015

Location: CLS

Parameter: TSP PM10

Filter #: LICA P414 95-73



PM2.5

Start Time 00:00 July 23, 2015

End Time 00:00 July 24, 2015

Status OK

Std Vol 23.050

Valid Time 24:00

Total Time 24

Comments: Weather Conditions, etc.

The filter case is damaged, and requires replacement.

Technician Signature: Alex Yakupov

Date: July 28, 2015

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 15080013-001

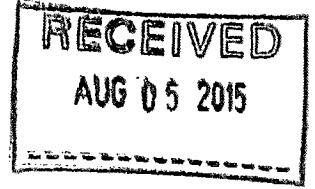
Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA P4149435

Partisol Sample Data Sheet

Priority: Normal



Date Sampled: July 29, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: LICA P4149435

Start Time 00:00 July 29, 2015

End Time 00:00 July 30, 2015

Status OK

Std Vol 22.952

Valid Time 24:00

Total Time 24

Comments: Weather Conditions, etc.

Horizontal lines for handwritten comments.

Technician Signature: Alex Yakupov

Date: July 30, 2015
08:39

- Programming
- 1) Make sure system is in "Stop Mode"
 - 2) "ESC" to Time Screen then "Program"
 - 3) Enter Beg 1 0:00
 - 4) Enter Dur 24:00:00
 - 5) Enter Beg D dd-Aug
 - 6) Enter End D dd-Aug
 - 7) "Stop/Run"

Note: Beginning & End Date should be same date



Partisol Sampler Results

Date	Filter NO.	Concentration (mg)
JULY 5	P4148569	0.315
JULY 11	P4148570	2.450
JULY 17	P4149452	0.192
JULY 23	P4149573	0.050
JULY 29	P4149435	0.018

APPENDIX III
ANALYZER CALIBRATION RESULTS

SULPHUR DIOXIDE

Maxxam Thermo 43i SO2 Analyzer Calibration

Date: <u>8-Jul-15</u>	Start/End Time (mst): <u>13:04 - 16:43</u>
Company: <u>LICA</u>	Calibration Purpose: <u>Monthly</u>
Station Name/Location: <u>Cold Lake South</u>	Converter Make & Model: <u>NA</u>
Performed by: <u>Alex Yakupov</u>	Converter Serial #: <u>NA</u>
Application H ₂ S/TRS/SO ₂ : <u>SO2</u>	Cal Gas Expiry Date: <u>12-Mar-19</u>

Analyzer: Serial Number: <u>806528242</u>	Range ppb: <u>500</u>
Last Calibration Date: <u>2-Jun-15</u>	As Found C.F.: <u>0.962</u>
Previous Cal High Point C.F.: <u>1.000</u>	New C.F.: <u>0.992</u>

	As found:	As left:
MOTHERBOARD:	BKG: <u>7.1</u>	BKG: <u>6.8</u>
	COEF: <u>1.119</u>	COEF: <u>1.067</u>
	<u>3.3</u> <u>3.3</u>	<u>3.3</u> <u>3.3</u>
	<u>5.0</u> <u>5.0</u>	<u>5.0</u> <u>5.0</u>
	<u>15.0</u> <u>15.0</u>	<u>15.0</u> <u>15.0</u>
INTERFACE BOARD:	<u>24.0</u> <u>23.8</u>	<u>24.0</u> <u>23.9</u>
	<u>-3.3</u> <u>-3.2</u>	<u>-3.3</u> <u>-3.2</u>
	PMT: <u>-632.3</u>	PMT: <u>-632.3</u>
	FLASH: <u>707</u>	FLASH: <u>707</u>
	<u>3.3</u> <u>3.3</u>	<u>3.3</u> <u>3.3</u>
<u>5.0</u> <u>5.0</u>	<u>5.0</u> <u>5.0</u>	
<u>15.0</u> <u>14.8</u>	<u>15.0</u> <u>14.8</u>	
<u>-15.0</u> <u>-15.1</u>	<u>-15.0</u> <u>-15.1</u>	
<u>24.0</u> <u>23.5</u>	<u>24.0</u> <u>23.5</u>	
INTERNAL: <u>28.4</u>	INTERNAL: <u>27.4</u>	
CHAMBER: <u>45.1</u>	CHAMBER: <u>45.1</u>	
PERM OVEN GAS: <u>45.0</u>	PERM OVEN GAS: <u>45.0</u>	
PERM OVEN HEATER: <u>44.19</u>	PERM OVEN HEATER: <u>44.18</u>	
PRESSURE: <u>673.5</u>	PRESSURE: <u>672.2</u>	
SAMPLE FLOW: <u>0.470</u>	SAMPLE FLOW: <u>0.469</u>	
LAMP INTENSITY: <u>77</u>	LAMP INTENSITY: <u>76</u>	
CONVERTER: <u>NA</u>	CONVERTER: <u>NA</u>	
CONVERTER SET: <u>NA</u>	CONVERTER SET: <u>NA</u>	
Internal Span: <u>380.3</u>	Internal Span: <u>367.2</u>	

Calibrator: Flow Meter ID's: <u>NA</u> Make & Model: <u>SABIO 2010 D</u> Serial #: <u>11900613</u> Cal Gas Cylinder I.D. #: <u>BLM002073</u> Cal Gas Conc. (ppm): <u>49.5</u>	Calibrator Flow Targets: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>point</th> <th>diluent (cc/min)</th> <th>cal gas (cc/min)</th> <th>total (cc/min)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5012</td> <td>0</td> <td>5012</td> </tr> <tr> <td>high</td> <td>4976</td> <td>38</td> <td>5014</td> </tr> <tr> <td>mid</td> <td>4996</td> <td>18</td> <td>5014</td> </tr> <tr> <td>low</td> <td>5004</td> <td>9</td> <td>5013</td> </tr> </tbody> </table>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)	zero	5012	0	5012	high	4976	38	5014	mid	4996	18	5014	low	5004	9	5013
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)																		
zero	5012	0	5012																		
high	4976	38	5014																		
mid	4996	18	5014																		
low	5004	9	5013																		

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5012	0.0	5012	0	0.0	NA
adjusted zero	5012	0.0	5012	0	0.0	NA
as found high	4976	37.70	5014	372.2	387.0	0.962
adjusted high	4976	37.70	5014	372.2	372.0	1.001
mid	4996	17.90	5014	176.7	177.0	0.998
low	5004	9.00	5013	88.9	91.0	0.977
calibrator zero	5012	0.00	5012	0	0.0	NA
Average C.F. =						0.992

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS <u>> or = 0.995</u>	Pass/Fail ? <u>PASS</u>
Slope = <u>1.002</u>	LIMITS <u>0.85-1.15</u>	Pass/Fail ? <u>PASS</u>
b (intercept as % of full scale) = <u>-0.19%</u>	LIMITS <u>± 3% F.S.</u>	Pass/Fail ? <u>PASS</u>
% change in C.F. from last cal = <u>3.82%</u>	LIMITS <u>± 15%</u>	Pass/Fail ? <u>PASS</u>

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

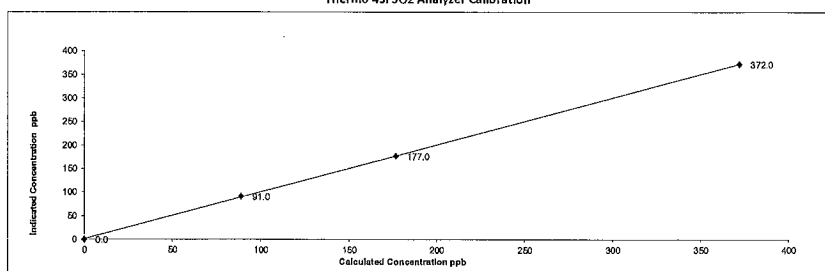
SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

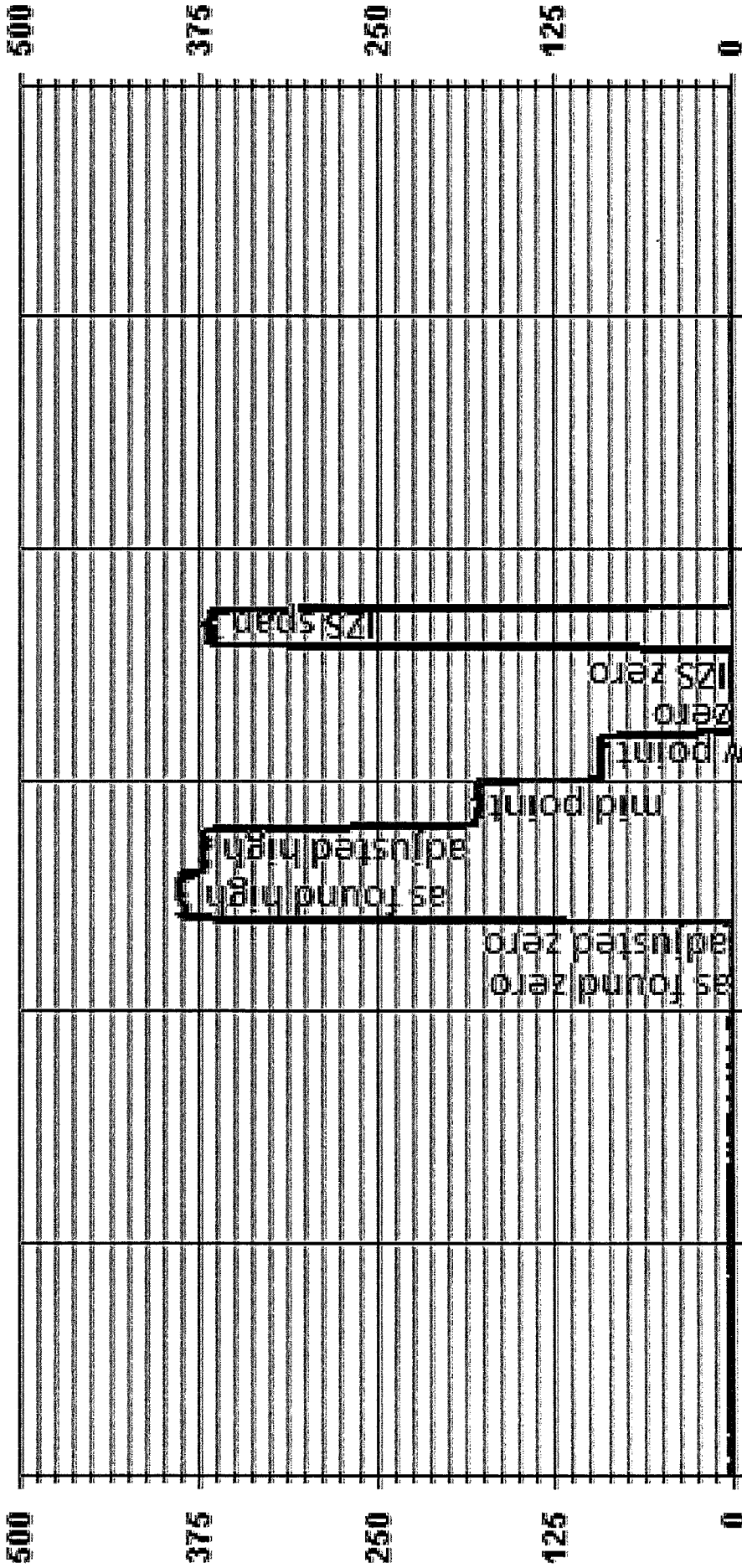
Comments:

Sample filter changed.

Thermo 43i SO2 Analyzer Calibration



01 Minute Averages



07:08/15 09:10 07:08/15 11:10 07:08/15 13:10 07:08/15 15:10 07:08/15 17:10 07:08/15 19:10

— LICA 502_ PPB

TOTAL REDUCED SULPHUR

Maxxam Thermo 450i TRS Analyzer Calibration

Date: 8-Jul-15	Start/End Time (mst): 12:30 - 16:07
Company: LICA	Calibration Purpose: Monthly
Station Name/Location: Cold Lake South	Converter Make & Model: Thermo CDN -101
Performed by: Alex Yakupov	Converter Serial #: 501
Application H ₂ S/TRS/SO ₂ : TRS	Cal Gas Expiry Date: 15-Jul-17

Analyzer: Serial Number: 812728560 Last Calibration Date: 2-Jun-15 Previous Cal High Point C.F.: 1.001	Range ppb: 100 As Found C.F.: 1.055 New C.F.: 1.000
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MOTHERBOARD: As found: BKG: 13.6 COEF: 0.972 3.3 3.3 5.0 5.0 15.0 15.0 24.0 23.9 -3.3 -3.2	As left: BKG: 14.7 COEF: 1.057 3.3 3.3 5.0 5.0 15.0 15.0 24.0 23.9 -3.3 -3.2
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INTERFACE BOARD: PMT: -650.8 FLASH: 743 3.3 3.2 5.0 5.0 15.0 14.7 -15.0 -15.0 24.0 23.5 INTERNAL: 30.7 CHAMBER: 44.9 CONVERTER TEMP: 324.1 CONVERTER SET: 325.0 PERM OVEN GAS: 45.00 PERM OVEN HTR: 44.38 PRESSURE: 650.2 SAMPLE FLOW: 0.506 LAMP INTENSITY: 91 Internal Span: 38.9	PMT: -650.8 FLASH: 741 3.3 3.2 5.0 5.0 15.0 14.7 -15.0 -15.0 24.0 23.5 INTERNAL: 30.5 CHAMBER: 45.1 CONVERTER TEMP: 325.2 CONVERTER SET: 325.0 PERM OVEN GAS: 45.00 PERM OVEN HTR: 44.38 PRESSURE: 649.6 SAMPLE FLOW: 0.507 LAMP INTENSITY: 93 Internal Span: 42.87
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Calibrator: Flow Meter ID's: NA Make & Model: API 700 Serial #: 830 Cal Gas Cylinder I.D. #: LL36837 Cal Gas Conc. (ppm): 10.0	Calibrator Flow Targets: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>point</th> <th>diluent (cc/min)</th> <th>cal gas (cc/min)</th> <th>total (cc/min)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5000</td> <td>0</td> <td>5000</td> </tr> <tr> <td>high</td> <td>5000</td> <td>39</td> <td>5039</td> </tr> <tr> <td>mid</td> <td>5000</td> <td>19</td> <td>5019</td> </tr> <tr> <td>low</td> <td>5000</td> <td>11</td> <td>5011</td> </tr> </tbody> </table>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)	zero	5000	0	5000	high	5000	39	5039	mid	5000	19	5019	low	5000	11	5011
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)																		
zero	5000	0	5000																		
high	5000	39	5039																		
mid	5000	19	5019																		
low	5000	11	5011																		

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	4999	0.0	4999	0	0.0	NA
as found high	4958	39.00	4997	78.0	74.0	1.055
adjusted high	4958	39.00	4997	78.0	78.0	1.001
mid	4979	19.00	4998	38.0	38.0	1.000
low	4990	11.00	5001	22.0	22.0	1.000
calibrator zero	4999	0.00	4999	0	0.0	NA
Average C.F.=						1.000

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000 Slope = 1.001 b (Intercept as % of full scale) = -0.01% % change in C.F. from last cal = -5.36%	LIMITS Pass/Fail ? > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS ± 15% PASS
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Converter Efficiency Check for H₂S/TRS application:

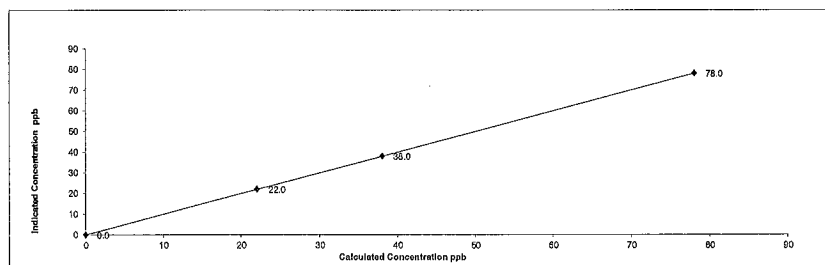
run converter efficiency test immediately following zero adjust

SO ₂ High Point gas concentration: 22.0	Time gas run (mst): 12:58 - 13:04
Zero corrected analyzer response: 0	

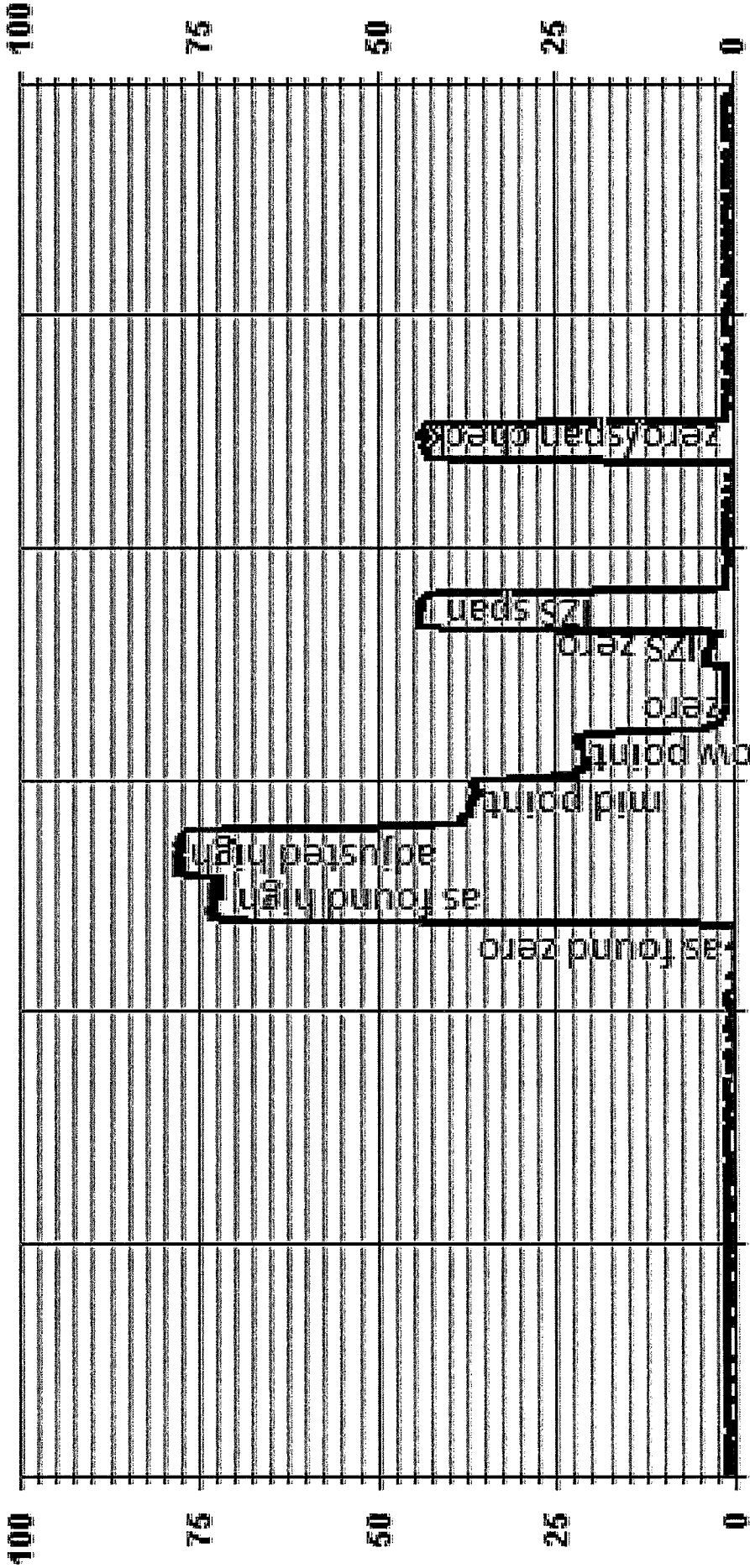
Comments:

Filter changed. No ZERO adjustments made

Thermo 450i TRS Analyzer Calibration



01 Minute Averages



07/08/15 08:25 07/08/15 10:25 07/08/15 12:25 07/08/15 14:25 07/08/15 16:25 07/08/15 18:25

— LICA TRS_ PPB

Maxxam Thermo 450i TRS Analyzer Calibration

Date: 13-Jul-15 **Start/End Time (mst):** 17:13 - 19:16
Company: LICA **Calibration Purpose:** As found
Station Name/Location: Cold Lake South **Converter Make & Model:** Thermo CDN -101
Performed by: Alex Yakupov **Converter Serial #:** 501
Application H₂S/TRS/SO₂: TRS **Cal Gas Expiry Date:** 15-Jul-17

Analyzer:
Serial Number: 812728560 **Range ppb:** 100
Last Calibration Date: 8-Jul-15 **As Found C.F.:** 1.001
Previous Cal High Point C.F.: 1.001 **New C.F.:** NA

<p>MOTHERBOARD:</p> <p style="text-align: center;">As found:</p> <p>BKG: 14.7 COEF: 1.057 3.3 3.3 5.0 5.0 15.0 15.0 24.0 24.0 -3.3 -3.2</p> <p>INTERFACE BOARD:</p> <p>PMT: -651.2 FLASH: 742 3.3 3.2 5.0 5.0 15.0 14.7 -15.0 -15.0 24.0 23.5 INTERNAL: 30.5 CHAMBER: 45.0 CONVERTER TEMP: 324.9 CONVERTER SET: 325.0 PERM OVEN GAS: 44.99 PERM OVEN HTR: 44.38 PRESSURE: 649.9 SAMPLE FLOW: 0.505 LAMP INTENSITY: 91 Internal Span: 42.87</p>	<p style="text-align: center;">As left:</p> <p>BKG: 14.7 COEF: 1.057 3.3 3.3 5.0 5.0 15.0 15.0 24.0 23.9 -3.3 -3.2</p> <p>PMT: -651.2 FLASH: 740 3.3 3.2 5.0 5.0 15.0 14.7 -15.0 -15.0 24.0 23.5 INTERNAL: 30.7 CHAMBER: 45.2 CONVERTER TEMP: 326.6 CONVERTER SET: 325.0 PERM OVEN GAS: 45.00 PERM OVEN HTR: 44.38 PRESSURE: 651.7 SAMPLE FLOW: 0.506 LAMP INTENSITY: 91 Internal Span: 42.87</p>
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Calibrator:

<p>Flow Meter ID's: NA Make & Model: API 700 Serial #: 830 Cal Gas Cylinder I.D. #: LL36837 Cal Gas Conc. (ppm): 10.0</p>	<p style="text-align: center;">Calibrator Flow Targets:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>point</th> <th>diluent (cc/min)</th> <th>cal gas (cc/min)</th> <th>total (cc/min)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5000</td> <td>0</td> <td>5000</td> </tr> <tr> <td>high</td> <td>5000</td> <td>39</td> <td>5039</td> </tr> <tr> <td>mid</td> <td>5000</td> <td>19</td> <td>5019</td> </tr> <tr> <td>low</td> <td>5000</td> <td>11</td> <td>5011</td> </tr> </tbody> </table>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)	zero	5000	0	5000	high	5000	39	5039	mid	5000	19	5019	low	5000	11	5011
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low	5000	11	5011																		

Calibration:

Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors:
as found zero	4999	0.0	4999	0	0.0	NA
as found high	4958	39.00	4997	78.0	78.0	1.001

Average C.F. =

Linear Regression/Calibration Results:

<p>Correlation Coefficient = _____</p> <p>Slope = _____</p> <p>b (Intercept as % of full scale) = _____</p> <p>% change in C.F. from last cal = 0.04%</p>	<p style="text-align: right;">LIMITS Pass/Fail ?</p> <p style="text-align: right;">> or = 0.995</p> <p style="text-align: right;">0.85-1.15</p> <p style="text-align: right;">± 3% F.S.</p> <p style="text-align: right;">± 15% PASS</p>
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Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

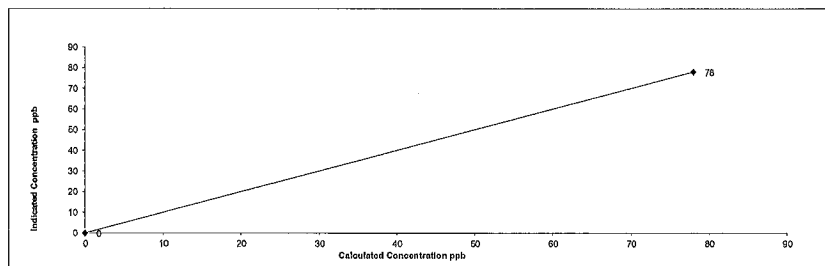
SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

Comments:

No ZERO adjustments made. No High Point adjustment made. "As Found" calibration required because a SPAN value during daily ZS check was low (drift was -20.93%)

Thermo 450i TRS Analyzer Calibration



Maxxam Thermo 450i TRS Analyzer Calibration

Date: 15-Jul-15	Start/End Time (mst): 14:16-16:25
Company: LICA	Calibration Purpose: Shut-Down
Station Name/Location: Cold Lake South	Converter Make & Model: Thermo CDN -101
Performed by: Chris Wesson	Converter Serial #: 501
Application H ₂ S/TRS/SO ₂ : TRS	Cal Gas Expiry Date: 15-Jul-17

Analyzer:	Range ppb: 100
Serial Number: 812728560	As Found C.F.: 0.874
Last Calibration Date: 8-Jul-15	New C.F.: 0.880
Previous Cal High Point C.F.: 1.001	

<p style="text-align: center;">As found:</p> <p>MOTHERBOARD:</p> <table border="0" style="width: 100%;"> <tr><td>BKG:</td><td>14.6</td></tr> <tr><td>COEF:</td><td>1.057</td></tr> <tr><td>3.3:</td><td>3.3</td></tr> <tr><td>5.0:</td><td>5.0</td></tr> <tr><td>15.0:</td><td>15.0</td></tr> <tr><td>24.0:</td><td>24.0</td></tr> <tr><td>-3.3:</td><td>-3.2</td></tr> </table> <p>INTERFACE BOARD:</p> <table border="0" style="width: 100%;"> <tr><td>PMT:</td><td>-651.2</td></tr> <tr><td>FLASH:</td><td>743</td></tr> <tr><td>3.3:</td><td>3.2</td></tr> <tr><td>5.0:</td><td>5.0</td></tr> <tr><td>15.0:</td><td>14.7</td></tr> <tr><td>-15.0:</td><td>-15.0</td></tr> <tr><td>24.0:</td><td>23.5</td></tr> </table> <p>INTERNAL:</p> <table border="0" style="width: 100%;"> <tr><td>INTERNAL:</td><td>31.7</td></tr> <tr><td>CHAMBER:</td><td>45.1</td></tr> <tr><td>CONVERTER TEMP:</td><td>323.9</td></tr> <tr><td>CONVERTER SET:</td><td>325.0</td></tr> <tr><td>PERM OVEN GAS:</td><td>45.00</td></tr> <tr><td>PERM OVEN HTR:</td><td>44.39</td></tr> <tr><td>PRESSURE:</td><td>652.6</td></tr> <tr><td>SAMPLE FLOW:</td><td>0.506</td></tr> <tr><td>LAMP INTENSITY:</td><td>91</td></tr> <tr><td>Internal Span:</td><td>42.87</td></tr> </table>	BKG:	14.6	COEF:	1.057	3.3:	3.3	5.0:	5.0	15.0:	15.0	24.0:	24.0	-3.3:	-3.2	PMT:	-651.2	FLASH:	743	3.3:	3.2	5.0:	5.0	15.0:	14.7	-15.0:	-15.0	24.0:	23.5	INTERNAL:	31.7	CHAMBER:	45.1	CONVERTER TEMP:	323.9	CONVERTER SET:	325.0	PERM OVEN GAS:	45.00	PERM OVEN HTR:	44.39	PRESSURE:	652.6	SAMPLE FLOW:	0.506	LAMP INTENSITY:	91	Internal Span:	42.87	<p style="text-align: center;">As left:</p> <p>MOTHERBOARD:</p> <table border="0" style="width: 100%;"> <tr><td>BKG:</td><td>NA</td></tr> <tr><td>COEF:</td><td>NA</td></tr> <tr><td>3.3:</td><td>NA</td></tr> <tr><td>5.0:</td><td>NA</td></tr> <tr><td>15.0:</td><td>NA</td></tr> <tr><td>24.0:</td><td>NA</td></tr> <tr><td>-3.3:</td><td>NA</td></tr> </table> <p>INTERFACE BOARD:</p> <table border="0" style="width: 100%;"> <tr><td>PMT:</td><td>NA</td></tr> <tr><td>FLASH:</td><td>NA</td></tr> <tr><td>3.3:</td><td>NA</td></tr> <tr><td>5.0:</td><td>NA</td></tr> <tr><td>15.0:</td><td>NA</td></tr> <tr><td>-15.0:</td><td>NA</td></tr> <tr><td>24.0:</td><td>NA</td></tr> </table> <p>INTERNAL:</p> <table border="0" style="width: 100%;"> <tr><td>INTERNAL:</td><td>NA</td></tr> <tr><td>CHAMBER:</td><td>NA</td></tr> <tr><td>CONVERTER TEMP:</td><td>NA</td></tr> <tr><td>CONVERTER SET:</td><td>NA</td></tr> <tr><td>PERM OVEN GAS:</td><td>NA</td></tr> <tr><td>PERM OVEN HTR:</td><td>NA</td></tr> <tr><td>PRESSURE:</td><td>NA</td></tr> <tr><td>SAMPLE FLOW:</td><td>NA</td></tr> <tr><td>LAMP INTENSITY:</td><td>NA</td></tr> <tr><td>Internal Span:</td><td>NA</td></tr> </table>	BKG:	NA	COEF:	NA	3.3:	NA	5.0:	NA	15.0:	NA	24.0:	NA	-3.3:	NA	PMT:	NA	FLASH:	NA	3.3:	NA	5.0:	NA	15.0:	NA	-15.0:	NA	24.0:	NA	INTERNAL:	NA	CHAMBER:	NA	CONVERTER TEMP:	NA	CONVERTER SET:	NA	PERM OVEN GAS:	NA	PERM OVEN HTR:	NA	PRESSURE:	NA	SAMPLE FLOW:	NA	LAMP INTENSITY:	NA	Internal Span:	NA
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<p>Callibrator:</p> <p>Flow Meter ID's: NA</p> <p>Make & Model: Sablo 2010</p> <p>Serial #: 17100415</p> <p>Cal Gas Cylinder I.D. #: LL74219</p> <p>Cal Gas Conc. (ppm): 10.0</p>	<p style="text-align: center;">Callibrator Flow Targets:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>point</th> <th>diluent (cc/min)</th> <th>cal gas (cc/min)</th> <th>total (cc/min)</th> </tr> </thead> <tbody> <tr><td>zero</td><td>7500</td><td>0</td><td>7500</td></tr> <tr><td>high</td><td>7440</td><td>60</td><td>7500</td></tr> <tr><td>mid</td><td>7470</td><td>30</td><td>7500</td></tr> <tr><td>low</td><td>7485</td><td>15</td><td>7500</td></tr> </tbody> </table>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)	zero	7500	0	7500	high	7440	60	7500	mid	7470	30	7500	low	7485	15	7500
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)																		
zero	7500	0	7500																		
high	7440	60	7500																		
mid	7470	30	7500																		
low	7485	15	7500																		

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	7516	0.0	7516	0	0.2	NA
as found high	7457	58.70	7516	78.1	89.6	0.874
mid	7487	28.70	7516	38.2	43.5	0.882
low	7502	14.40	7516	19.2	21.9	0.883
Average C.F.=						0.880

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS	Pass/Fail ?
Slope = 0.873	> or = 0.995	PASS
b (Intercept as % of full scale) = -0.02%	0.85-1.15	PASS
% change in C.F. from last cal = 12.73%	± 3% F.S.	PASS
	± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

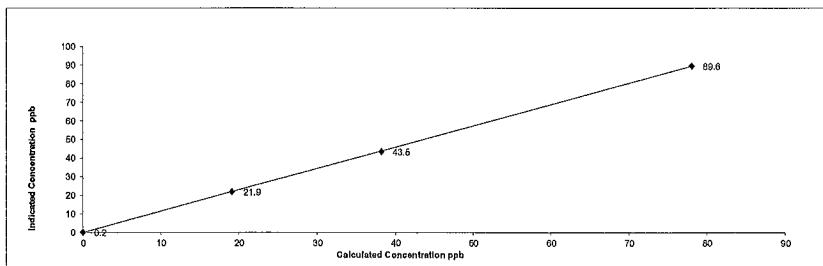
run converter efficiency test immediately following zero adjust

SO ₂ High Point gas concentration: NA	Time gas run (mst): NA
Zero corrected analyzer response: NA	

Comments:

Analyzer performance suspect. Shut down calibration performed as a result of calibration drift. Analyzer and converter thoroughly checked. No problems found.

Thermo 450i TRS Analyzer Calibration



Maxxam Thermo 450i TRS Analyzer Calibration

Date: 15-Jul-15 **Start/End Time (mst):** 1732-2033

Company: LICA **Calibration Purpose:** Start Up

Station Name/Location: Cold Lake South **Converter Make & Model:** Thermo CDN -101

Performed by: Chris Wesson **Converter Serial #:** 501

Application H₂S/TRS/SO₂: TRS **Cal Gas Expiry Date:** 15-Jul-17

Analyzers:

Serial Number: 812728560 **Range ppb:** 100

Last Calibration Date: 8-Jul-15 **As Found C.F.:** 0.874

Previous Cal High Point C.F.: 1.001 **New C.F.:** 1.011

<p>MOTHERBOARD:</p> <p style="text-align: center;">As found:</p> <p>BKG: 14.6</p> <p>COEF: 1.057</p> <p>3.3 3.3</p> <p>5.0 5.0</p> <p>15.0 15.0</p> <p>24.0 24.0</p> <p>-3.3 -3.2</p> <p>INTERFACE BOARD:</p> <p>PMT: -651.2</p> <p>FLASH: 740</p> <p>3.3 3.2</p> <p>5.0 5.0</p> <p>15.0 14.7</p> <p>-15.0 -15.0</p> <p>24.0 23.5</p> <p>INTERNAL: 31.8</p> <p>CHAMBER: 45.1</p> <p>CONVERTER TEMP: 323.9</p> <p>CONVERTER SET: 325.0</p> <p>PERM OVEN GAS: 45.00</p> <p>PERM OVEN HTR: 44.39</p> <p>PRESSURE: 651.4</p> <p>SAMPLE FLOW: 0.506</p> <p>LAMP INTENSITY: 92</p> <p>Internal Span: 42.87</p>	<p style="text-align: center;">As left:</p> <p>BKG: 12.9</p> <p>COEF: 0.908</p> <p>3.3 3.3</p> <p>5.0 5.0</p> <p>15.0 15.0</p> <p>24.0 24.0</p> <p>-3.3 -3.2</p> <p>PMT: -651.2</p> <p>FLASH: 741</p> <p>3.3 3.2</p> <p>5.0 5.0</p> <p>15.0 14.7</p> <p>-15.0 -15.0</p> <p>24.0 23.5</p> <p>INTERNAL: 31.9</p> <p>CHAMBER: 45.2</p> <p>CONVERTER TEMP: 326.5</p> <p>CONVERTER SET: 325.0</p> <p>PERM OVEN GAS: 45.00</p> <p>PERM OVEN HTR: 44.38</p> <p>PRESSURE: 651.1</p> <p>SAMPLE FLOW: 0.507</p> <p>LAMP INTENSITY: 91</p> <p>Internal Span: 36.9</p>
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Calibrator:

Flow Meter ID's: NA

Make & Model: Sablo 2010

Serial #: 17100415

Cal Gas Cylinder I.D. #: LL74219

Cal Gas Conc. (ppm): 10.0

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	7500	0	7500
high	7440	60	7500
mid	7470	30	7500
low	7485	15	7500

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	7518	0.0	7518	0	0.0	NA
adjusted high	7457	58.70	7516	78.1	78.1	1.000
mid	7487	28.70	7516	38.2	37.9	1.008
low	7501	14.40	7515	19.2	18.7	1.025
calibrator zero	7517	0.00	7517	0	0.2	NA
Average C.F.=						1.011

Linear Regression/Calibration Results:

<p>Correlation Coefficient = 1.000</p> <p>Slope = 0.998</p> <p>b (intercept as % of full scale) = 0.24%</p> <p>% change in C.F. from last cal = 12.69%</p>	<p>LIMITS Pass/Fail ?</p> <p>> or = 0.995 PASS</p> <p>0.85-1.15 PASS</p> <p>± 3% F.S. PASS</p> <p>± 15% PASS</p>
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Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

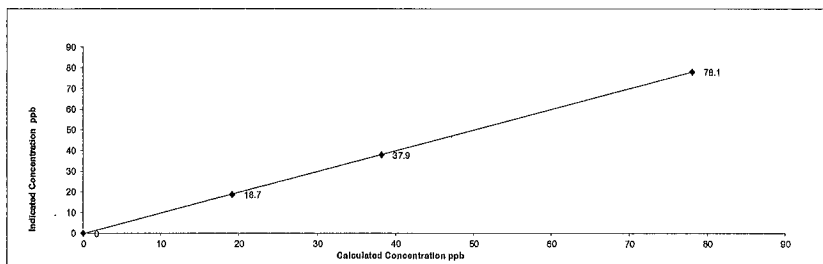
SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

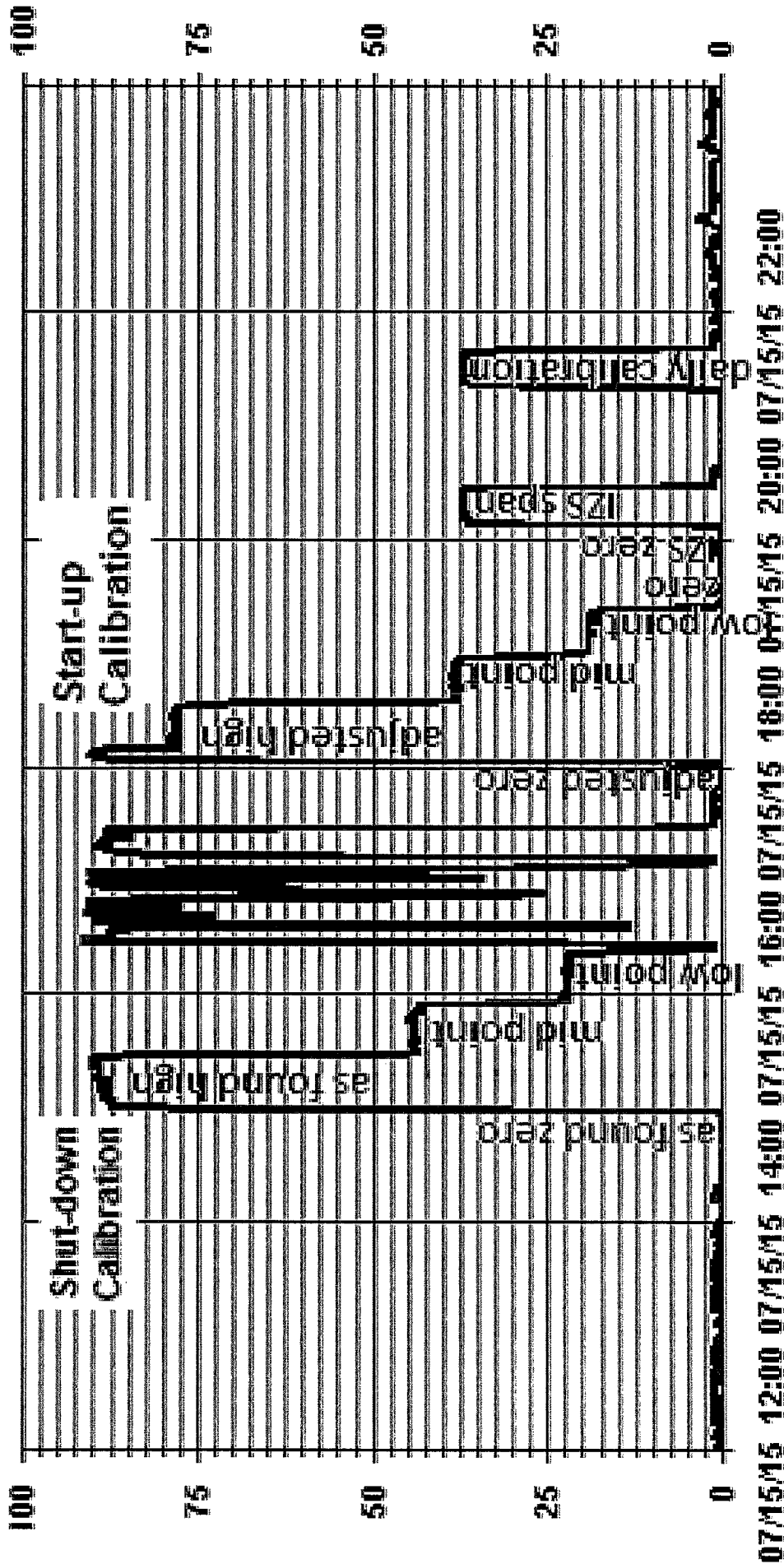
Comments:

Sample filter changed. Analyzer performance suspect. Shut down calibration was performed as a result of calibration drift. Analyzer and converter thoroughly checked. No problems found. This is the start up calibration calibration after all the checks were performed.

Thermo 450i TRS Analyzer Calibration



01 Minute Averages



— LICA TRS_ PPB

TOTAL HYDROCARBON

Maxxam Thermo 51C THC Analyzer Calibration

Date: 8-Jul-15
 Company: LICA
 Station Name/Location: Cold Lake South
 Performed by: Alex Yakupov

Start Time (mst): 8:55
 End Time (mst): 13:01
 Calibration Purpose: Monthly Calibration
 Cal Gas Expiry Date: 12-Aug-17

Analyzer: 427408718
 Serial Number: 3-Jun-15
 Last Calibration Date: 1.002
 Previous Cal High Point C.F.:
 Range ppm: 50
 As Found C.F.: 1.010
 New C.F.: 1.005

	As found:		As left:
H ₂ cylinder (psi):	1300	H ₂ cylinder (psi):	1300
H ₂ cylinder reg set (psi):	23	H ₂ cylinder reg set (psi):	23
Span Cylinder (psi):	950	Span Cylinder (psi):	950
Span Cylinder Reg Set (psi):	30	Span Cylinder Reg Set (psi):	30
Zero Air Gen Pressure:	34	Zero Air Gen Pressure:	34
measurement alarms:	None	measurement alarms:	None
service alarms:	None	service alarms:	None
FID status:	cnt: 1407	cnt:	1425
	rng: 1	rng:	1
	try: 0	try:	0
	flm: 183.3	flm:	183.6
	det: 125.3	det:	125.7
Oven Readings:	Flame: 183	Flame:	183
	Filter: 125	Filter:	125
	Base: 125	Base:	125
	Pump: 06.52	Pump:	06.53
Voltages:	+5 5.0	+5	5.0
	+15 14.8	+15	14.8
	-15 -15.1	-15	-15.1
	Internal Span: 32.3	Internal Span:	31.71

Calibrator: Flow Meter ID's: NA
 Make & Model: API 700
 Serial #: 830
 Cal Gas Cylinder I.D. #: LL33674
 CH₄/C₃H₈ Cylinder Conc. (ppm): 601.4 202.0
 CH₄ as propane/total CH₄ equivalents (ppm): 555.5 1156.9

Calibrator Flow Targets:			
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	2000	0	2000
high	1935	65	2000
mid	1969	31	2000
low	1984	16	2000

Calibration:

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppm)	Indicated Concentration (ppm)	Correction Factors
	Diluent	Cal Gas	Total			
as found zero	2000	0.00	2000	0	-0.01	NA
adjusted zero	2000	0.00	2000	0	0.00	NA
as found high	1932	65.00	1997	37.66	37.30	1.010
adjusted high	1932	65.00	1997	37.66	37.60	1.002
mid	1969	31.00	2000	17.93	17.80	1.007
low	1984	16.00	2000	9.26	9.20	1.006
calibrator zero	2000	0.00	2000	0	0.00	NA
Average C.F.=						1.005

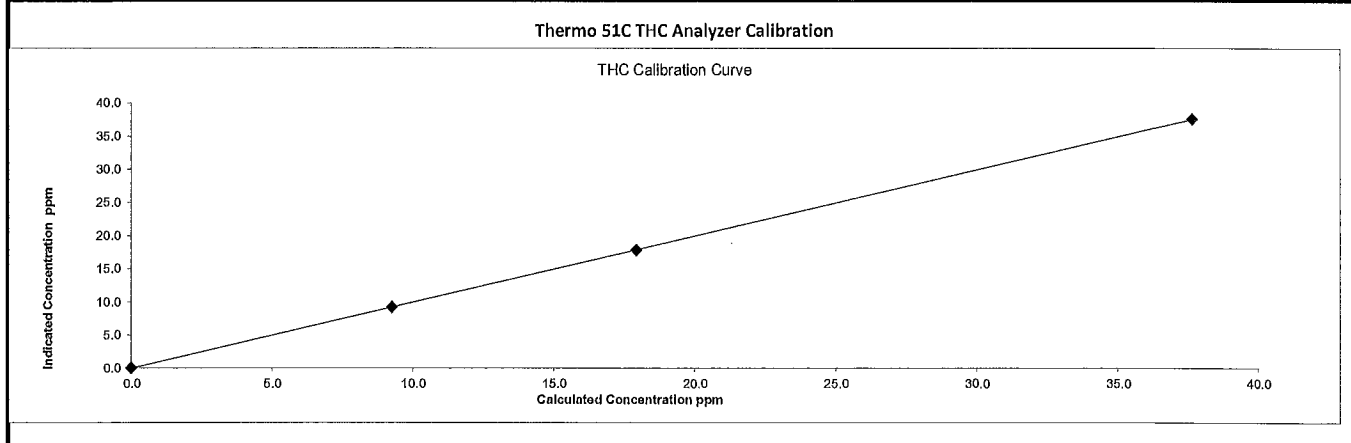
Linear Regression/Calibration Results:

Correlation Coefficient = 1.000
 Slope = 0.999
 b (Intercept as % of full scale) = -0.079%
 % change in C.F. from last cal = -0.75%

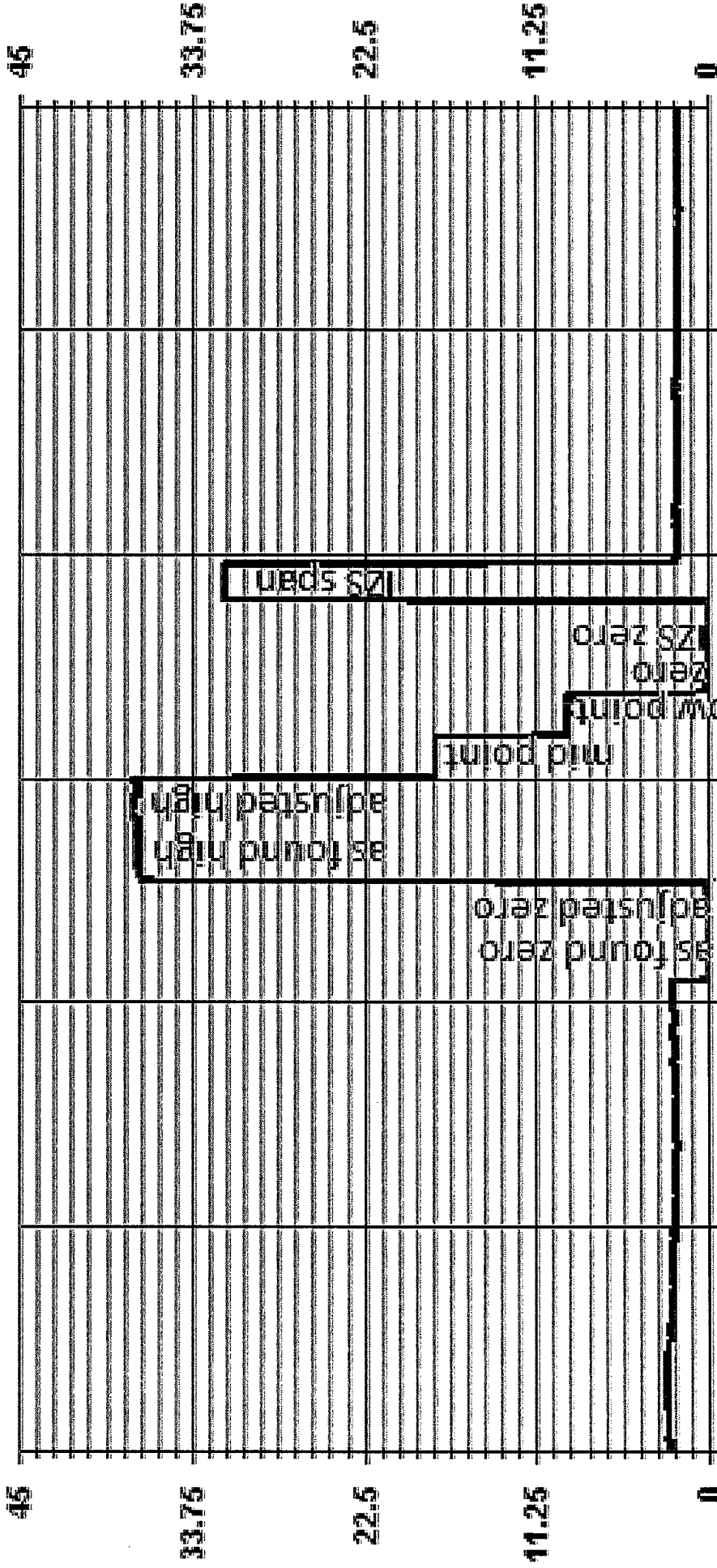
LIMITS Pass/Fail ?
 > or = 0.995 PASS
 0.85-1.15 PASS
 ± 3% F.S. PASS
 ± 15% PASS

Comments:

Sample filter changed.

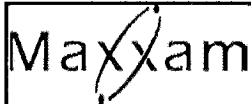


01 Minute Averages



— LICA - - - - - THC PPM

NITROGEN DIOXIDE



Thermo 42C NOx Analyzer Calibration

Date: 8-Jul-15
 Company: LICA
 Station Name/Location: Cold Lake South
 Performed by: Alex Yakupov

Start Time (mst): 8:55
 End Time (mst): 12:36
 Calibration Purpose: Shutdown
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 427408716
 Last Calibration Date: 2-Jun-15
 Range ppb: 500

Correction Factors:
 As found C.F. Previous Cal High Point C.F.:
 NO= 0.986 NO= 1.000
 NOx= 0.986 NOx= 1.000
 NO₂= 1.004 NO₂= 1.000

As found:
 NO Bkg ppb: 5.0
 NOx Bkg ppb: 5.2
 NO Coef: 1.009
 NOx Coef: 1.011
 NO₂ Coef: 1.003
 PMT: -850
 +15: 15.1
 +5: 5.0
 +15: 15.1
 -15: -15.1
 Battery: 3.2
 Internal: 28.7
 Chamber: 50.0
 Cooler: -2.5
 Converter: 317
 Converter Set: 319
 Pressure: 189.9
 Sample Flow: 0.537
 Ozonator Flow: OK
 Internal Span: 439.3/7.5/431.6

As left:
 NO Bkg ppb: NA
 NOx Bkg ppb: NA
 NO Coef: NA
 NOx Coef: NA
 NO₂ Coef: NA
 PMT: NA
 +15: NA
 +5: NA
 +15: NA
 -15: NA
 Battery: NA
 Internal: NA
 Chamber: NA
 Cooler: NA
 Converter: NA
 Converter Set: NA
 Pressure: NA
 Sample Flow: NA
 Ozonator Flow: NA
 Internal Span: NA

Calibrator Flow Targets:

Make & Model: SABIO 2010 D
 Serial #: 11900613
 Cal Gas Cylinder I.D. #: BLM002073
 NO Cylinder Conc. (ppm): 50.6
 NOx Cylinder Conc. (ppm): 50.6

point	diluent (cc/min)	cal gas (cc/min)	O ₃ setting (v or ppb)	total (cc/min)
zero	5013	0	0	5013
high	4976	37	250.00	5013
mid	4996	18	135.00	5014
low	5004	9	45.00	5013

Calibration:

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5013	0.0	5013	0	0	0.0	0.0	NA	NA
as found high	4976	37.70	5014	380.5	380.5	386	386	0.986	0.986
mid	4996	17.90	5014	180.6	180.6	184	184	0.982	0.982
low	5004	9.00	5013	90.8	90.8	95	95	0.956	0.956
Average C.F.=								0.975	0.975

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ increase	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4976	37.70	5014	0.0	389.0	388.0	-1.0	0.0	0.0	
as found NO ₂	4976	37.70	5014	250.0	140.0	387.0	247.0	249.0	248.0	1.004
gpt mid	4976	37.70	5014	135.0	250.0	388.0	138.0	139.0	139.0	1.000
gpt low	4976	37.70	5014	45.0	341.0	389.0	48.0	48.0	49.0	0.980
Average NO ₂ C.F.=									0.995	

Linear Regression/Calibration Results:

	NO	NOx	NO ₂
Correlation Coefficient =	1.000	1.000	1.000
Slope =	1.012	1.012	0.994
b (Intercept as % of full scale) =	0.26%	0.26%	0.12%
% change in C.F. from last cal =	1.43%	1.43%	-0.40%
NO ₂ converter efficiency			100.5%

LIMITS
 > or = 0.995
 0.85-1.15
 ± 3% F.S.
 +/-15%
 >85%

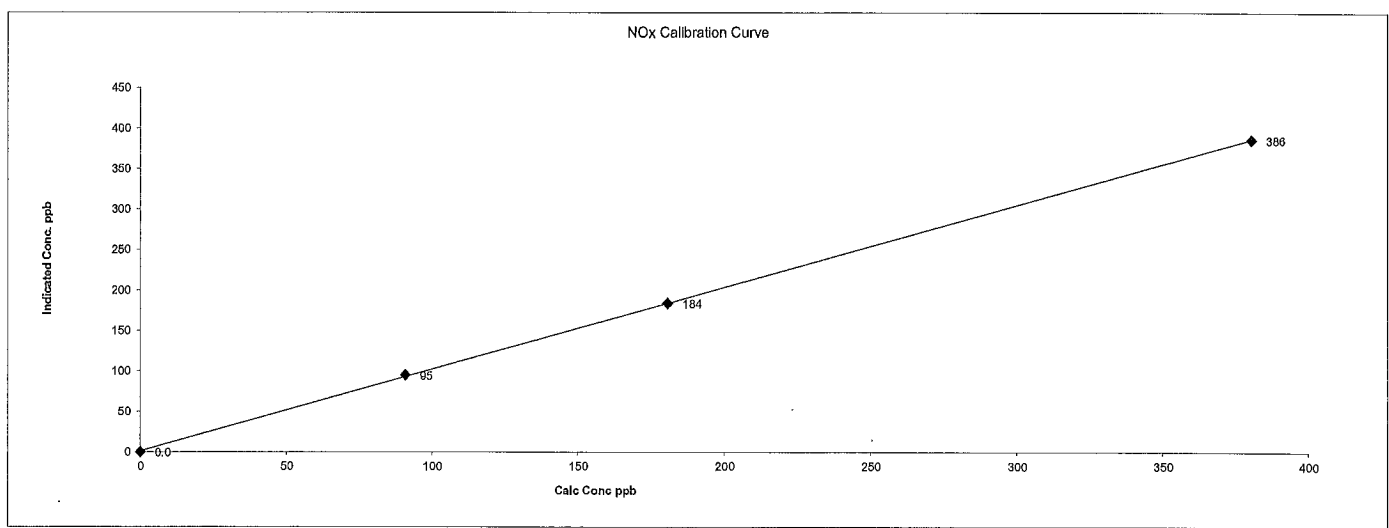
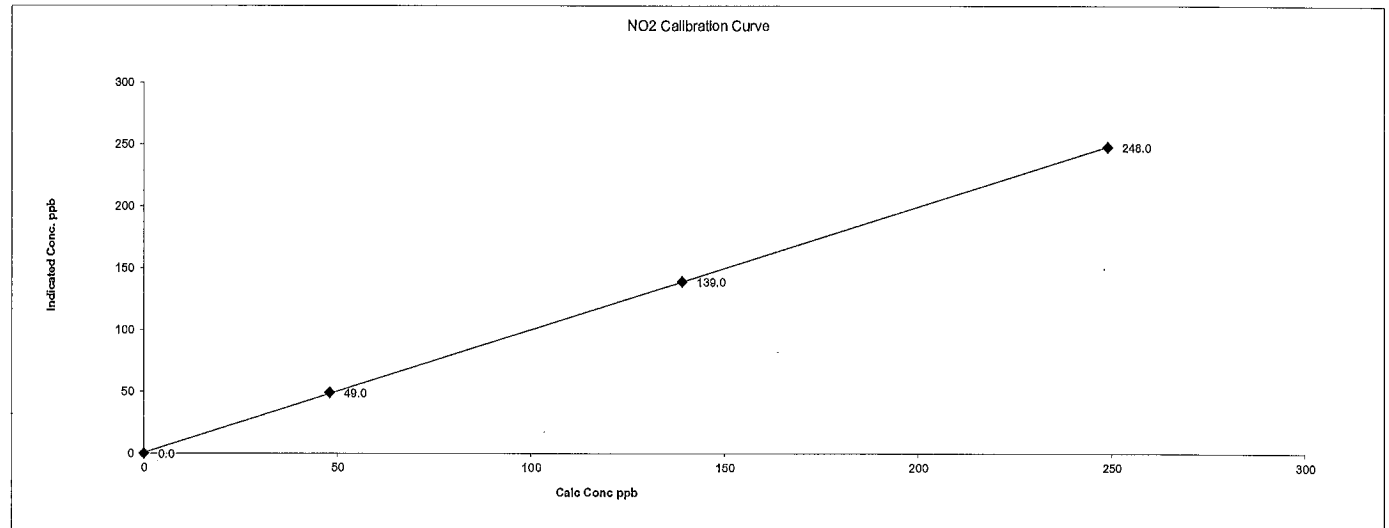
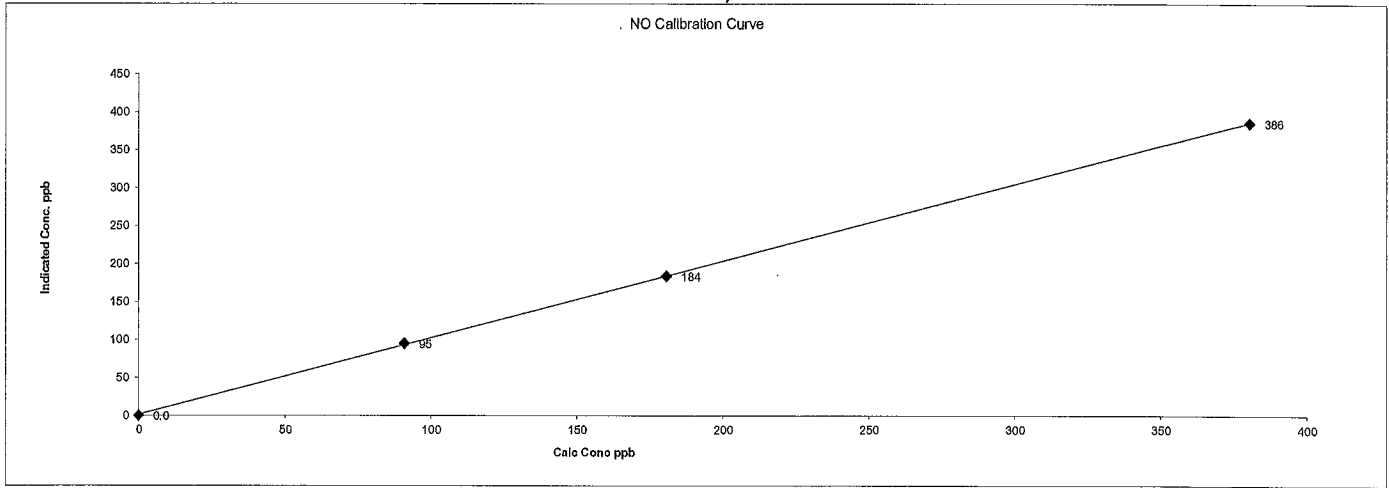
Comments:

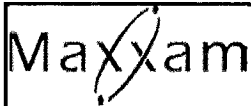
No zero adjustments made. No High Point adjustments made. "Shutdown" calibration performed for maintenance purposes (because of High SPAN value during ZC check, a pump is to be rebuilt)

Date: 8-Jul-15
 Company: LICA
 Station Name/Location: Cold Lake South
 Performed by: Alex Yakupov

Start Time (mst): 8:55
 End Time (mst): 12:36
 Calibration Purpose: Shutdown
 Cal Gas Expiry Date: 12-Mar-19

Thermo 42C NOx Analyzer Calibration





Thermo 42C NOx Analyzer Calibration

Date: 8-Jul-15
 Company: LICA
 Station Name/Location: Cold Lake South
 Performed by: Alex Yakupov

Start Time (mst): 13:09
 End Time (mst): 18:31
 Calibration Purpose: Post-repair
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 427408716
 Last Calibration Date: 2-Jun-15
 Range ppb: 500

Correction Factors:
 As found C.F. Previous Cal High Point C.F.:
 NO= 0.981 NO= 1.000
 NOx= 0.983 NOx= 1.000
 NO₂= 1.000 NO₂= 1.000

As found:
 NO Bkg ppb: 5.0
 NOx Bkg ppb: 5.2
 NO Coef: 1.009
 NOx Coef: 1.011
 NO₂ Coef: 1.003
 PMT: -850
 +15: 15.1
 +5: 5.0
 +15: 15.1
 -15: -15.1
 Battery: 3.2
 Internal: 27.3
 Chamber: 49.9
 Cooler: -2.5
 Converter: 318
 Converter Set: 319
 Pressure: 190.1
 Sample Flow: 0.532
 Ozonator Flow: OK
 Internal Span: 439.3/7.5/431.6

As left:
 NO Bkg ppb: 5.0
 NOx Bkg ppb: 5.0
 NO Coef: 0.988
 NOx Coef: 1.013
 NO₂ Coef: 1.003
 PMT: -850
 +15: 15.1
 +5: 5.0
 +15: 15.1
 -15: -15.1
 Battery: 3.2
 Internal: 25.5
 Chamber: 49.6
 Cooler: -2.5
 Converter: 318
 Converter Set: 319
 Pressure: 190.3
 Sample Flow: 0.530
 Ozonator Flow: OK
 Internal Span: 417.6/8.1/409.4

Calibrator Flow Targets:

Make & Model: SABIO 2010 D
 Serial #: 11900613
 Cal Gas Cylinder I.D. #: BLM002073
 NO Cylinder Conc. (ppm): 50.6
 NOx Cylinder Conc. (ppm): 50.6

point	diluent (cc/min)	cal gas (cc/min)	O ₃ setting (v or ppb)	total (cc/min)
zero	5012	0	0	5012
high	4976	38	250.00	5014
mid	4996	18	135.00	5014
low	5004	9	45.00	5013

Calibration:

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5012	0.0	5012	0	0	0.0	0.0	NA	NA
adjusted zero	5012	0.0	5012	0	0	0.0	0.0	NA	NA
as found high	4976	37.70	5014	380.5	380.5	388	387	0.981	0.983
adjusted high	4976	37.70	5014	380.5	380.5	381	381	0.999	0.999
mid	4996	17.90	5014	180.6	180.6	181	181	0.998	0.998
low	5004	9.00	5013	90.8	90.8	93	93	0.977	0.977
calibrator zero	5012	0.00	5012	0	0	0.0	0.0	NA	NA
Average C.F.=								0.991	0.991

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ Increase	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4976	37.70	5014	0.0	380.0	380.0	0.0	0.0	0.0	
as found NO ₂	4976	37.70	5014	250.0	137.0	380.0	243.0	243.0	243.0	1.000
gpt mid	4976	37.70	5014	135.0	245.0	380.0	135.0	135.0	135.0	1.000
gpt low	4976	37.70	5014	45.0	333.0	380.0	47.0	47.0	47.0	1.000
Average NO ₂ C.F.=									1.000	

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	1.000	1.000	0.85-1.15
b (Intercept as % of full scale) =	0.17%	0.17%	0.00%	± 3% F.S.
% change in C.F. from last cal =	1.94%	1.68%	0.00%	+/-15%
NO ₂ converter efficiency			100.0%	>85%

Comments:

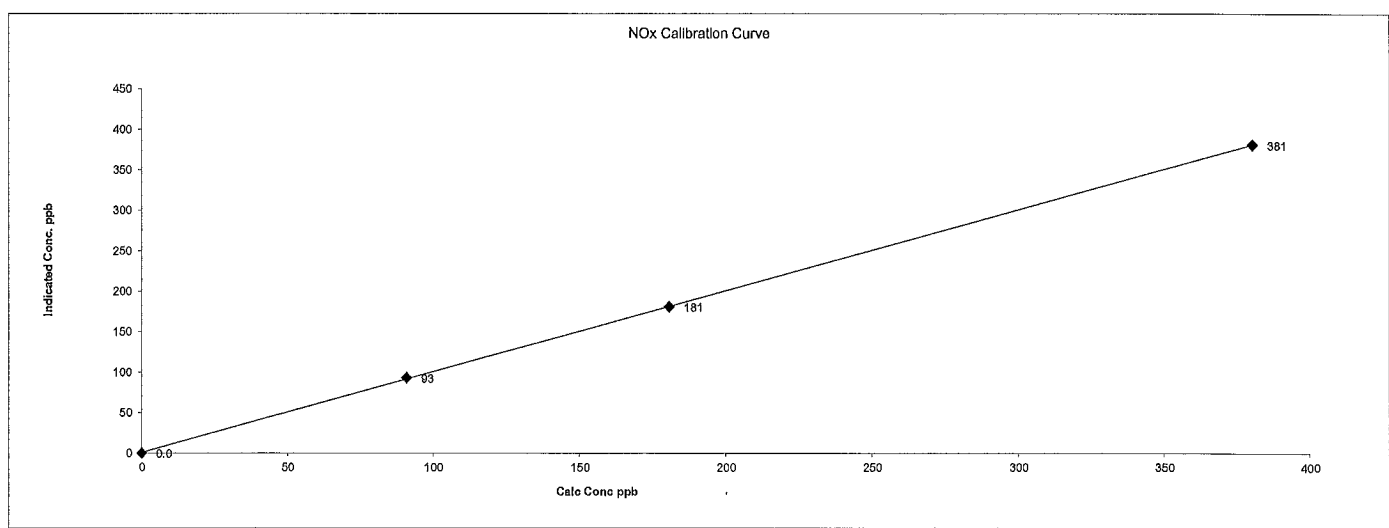
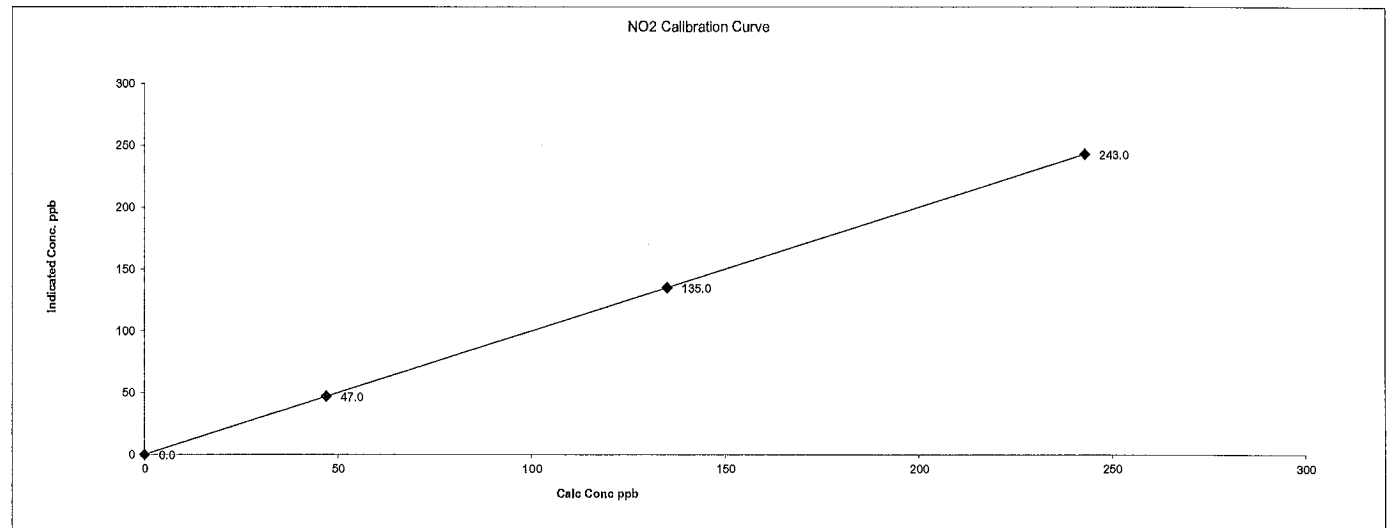
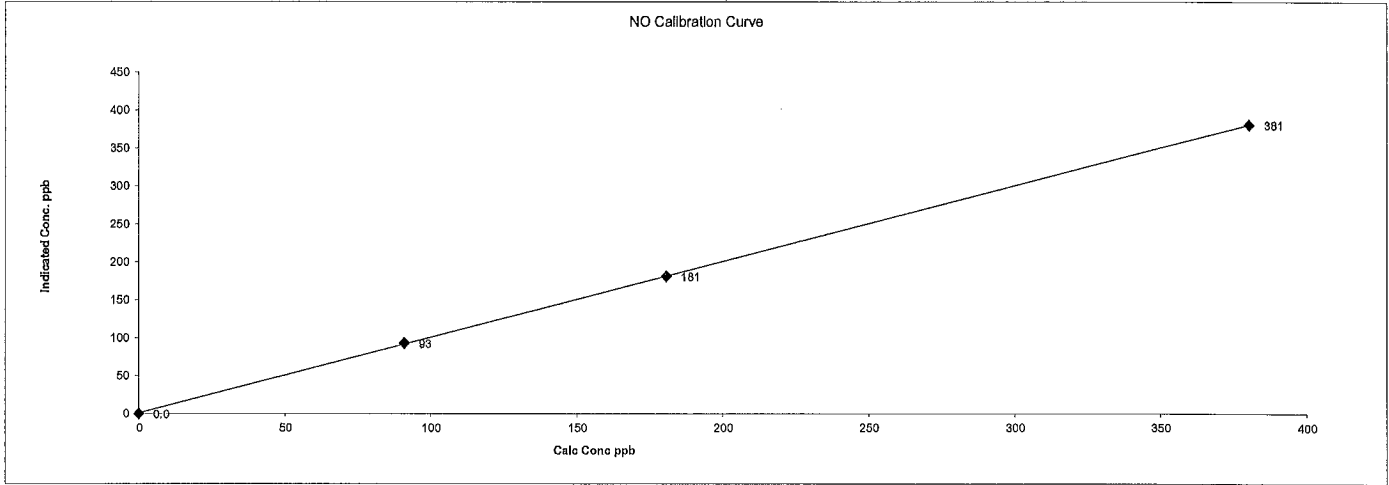
Filter changed. NOx reference point starts at 16:06.

NO₂ adjustment not required.

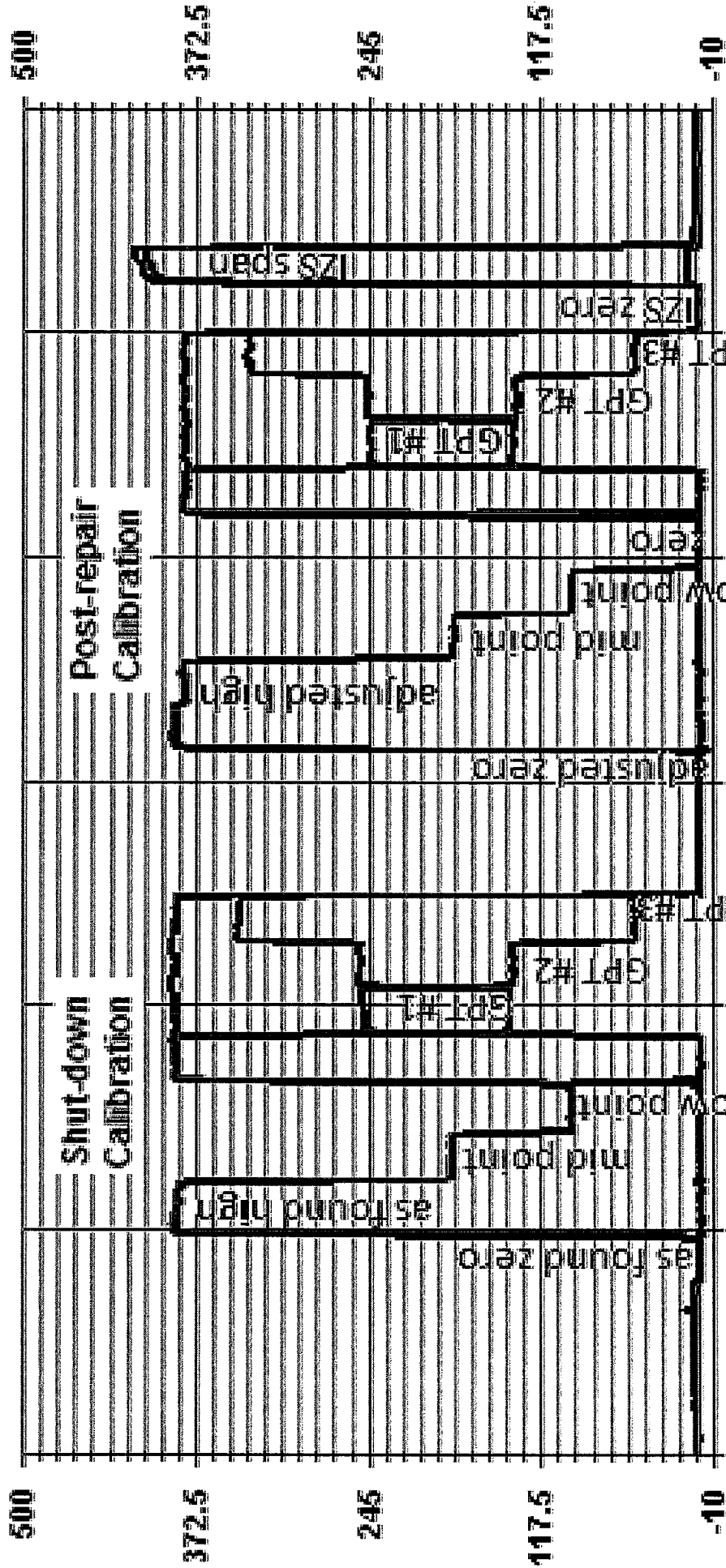
Date: 8-Jul-15
Company: LICA
Station Name/Location: Cold Lake South
Performed by: Alex Yakupov

Start Time (mst): 13:09
End Time (mst): 18:31
Calibration Purpose: Post-repair
Cal Gas Expiry Date: 12-Mar-19

Thermo 42C NOx Analyzer Calibration

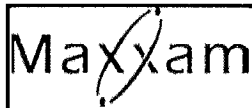


01 Minute Averages



07/08/15 07:40 07/08/15 09:40 07/08/15 11:40 07/08/15 13:40 07/08/15 15:40 07/08/15 17:40

— LICA NOX_ PPB — LICA NO_ PPB — LICA NO2_ PPB



Thermo 42C NOx Analyzer Calibration

Date: 16-Jul-15
 Company: LICA
 Station Name/Location: Cold Lake South
 Performed by: Chris Wesson

Start Time (mst): 8:11
 End Time (mst): 9:45
 Calibration Purpose: As-Found
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 427408716
 Last Calibration Date: 8-Jul-15
 Range ppb: 500

Correction Factors:
 As found C.F. Previous Cal High Point C.F.:
 NO= 1.050 NO= 0.999
 NOx= 1.050 NOx= 0.999
 NO₂= 1.004 NO₂= 1.000

As found:
 NO Bkg ppb: 5.0
 NOx Bkg ppb: 5.0
 NO Coef: 0.988
 NOx Coef: 1.013
 NO₂ Coef: 1.003
 PMT: -850
 +15: NA
 +5: 5.0
 +15: +15.1
 -15: -15.1
 Battery: 3.2
 Internal: 26.8
 Chamber: 49.9
 Cooler: -2.5
 Converter: 318
 Converter Set: 319
 Pressure: 188.9
 Sample Flow: 0.536
 Ozonator Flow: OK
 Internal Span: NOX417.6;NO8.1;NO2409.2

As left:
 NO Bkg ppb: 5.0
 NOx Bkg ppb: 5.0
 NO Coef: 0.988
 NOx Coef: 1.013
 NO₂ Coef: 1.003
 PMT: -850
 +15: NA
 +5: 5.0
 +15: +15.1
 -15: -15.1
 Battery: 3.2
 Internal: 26.4
 Chamber: 49.9
 Cooler: -2.4
 Converter: 317
 Converter Set: 320
 Pressure: 188.9
 Sample Flow: 0.537
 Ozonator Flow: OK
 Internal Span: NOX=263;NO=4.7;NO2=259

Calibrator Flow Targets:

Make & Model: EnviroNics 6100
 Serial #: 4760
 Cal Gas Cylinder I.D. #: LL67747
 NO Cylinder Conc. (ppm): 50.9
 NOx Cylinder Conc. (ppm): 50.9

point	diluent (cc/min)	cal gas (cc/min)	O ₂ setting (v or ppb)	total (cc/min)
zero	5000	0	0	5000
high	4960	40	250.00	5000
mid	4980	20	125.00	5000
low	4990	10	75.00	5000

Calibration:

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	4985	0.0	4985	0	0	0.0	0.0	NA	NA
as found high	4959	37.22	4996	379.2	379.2	361	361	1.050	1.050
Average C.F.=								1.050	1.050

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ Increase	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx-reference	4959	37.22	4996	0.0	361.0	361.0	0.0	0.0	0.0	
as found NO ₂	4959	37.22	4996	250.0	100.0	360.0	260.0	261.0	260.0	1.004
Average NO ₂ C.F.=										n/a

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	n/a	n/a	n/a	> or = 0.995
Slope =	n/a	n/a	n/a	0.85-1.15
b (Intercept as % of full scale)=	n/a	n/a	n/a	± 3% F.S.
% change ln C.F. from last cal=	-5.14%	-5.14%	-0.38%	+/-15%
NO2 converter efficiency			n/a	>85%

Comments:

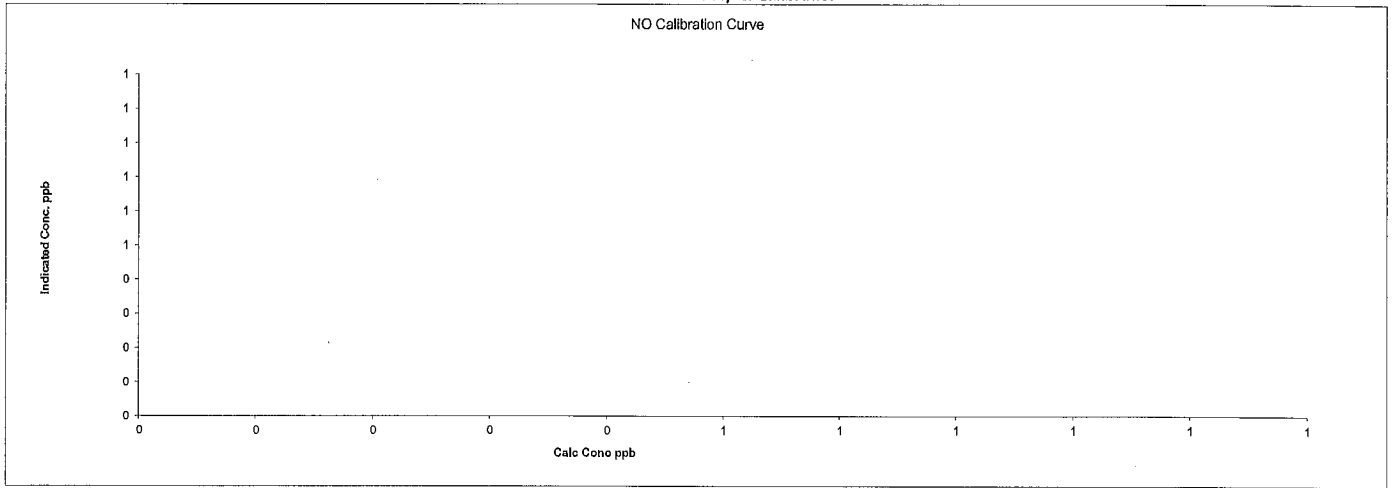
Increased span oven flow rate to 4.95. NOx and NO2 conc now approx 60% of high point.

Date: 16-Jul-15
Company: LICA
Station Name/Location: Cold Lake South
Performed by: Chris Wesson

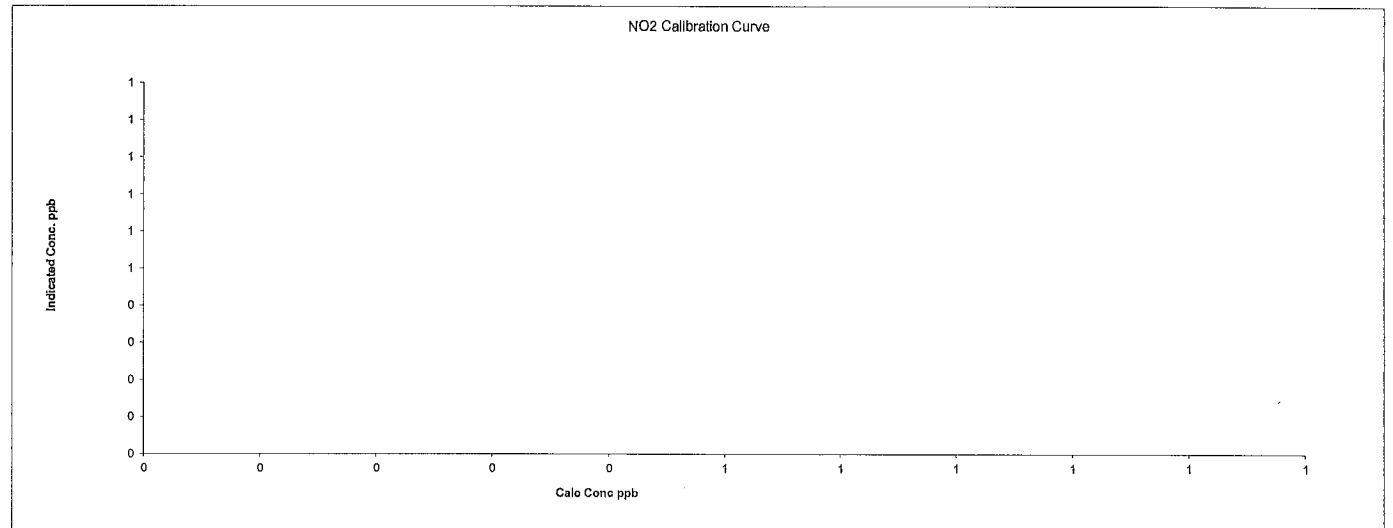
Start Time (mst): 8:11
End Time (mst): 9:45
Calibration Purpose: As-Found
Cal Gas Expiry Date: 12-Mar-19

Thermo 42C NOx Analyzer Calibration

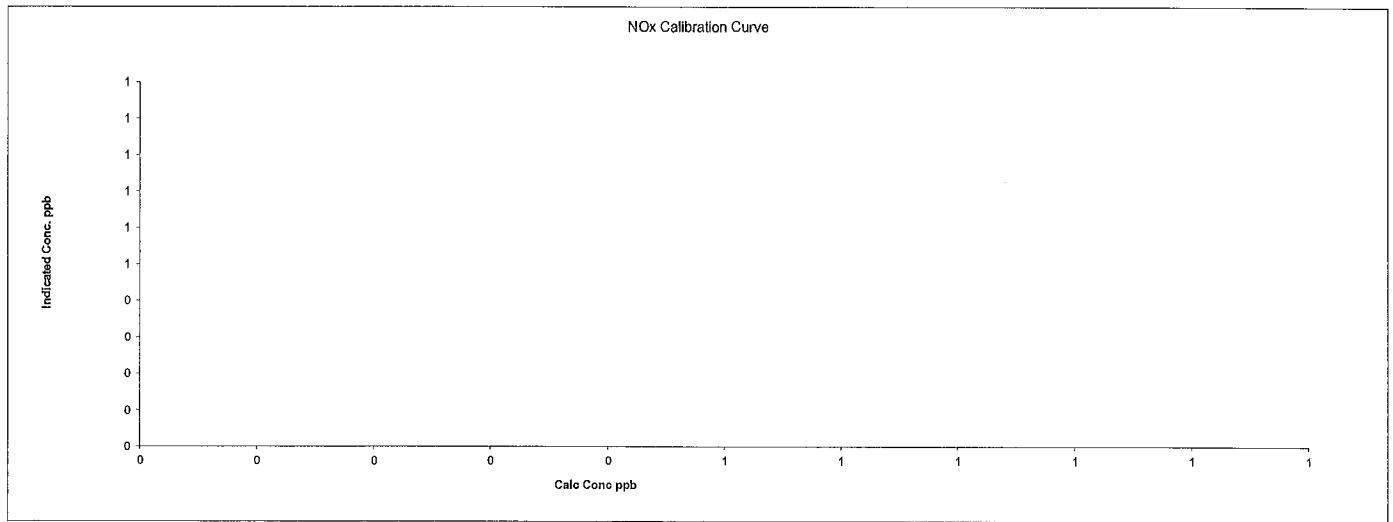
NO Calibration Curve



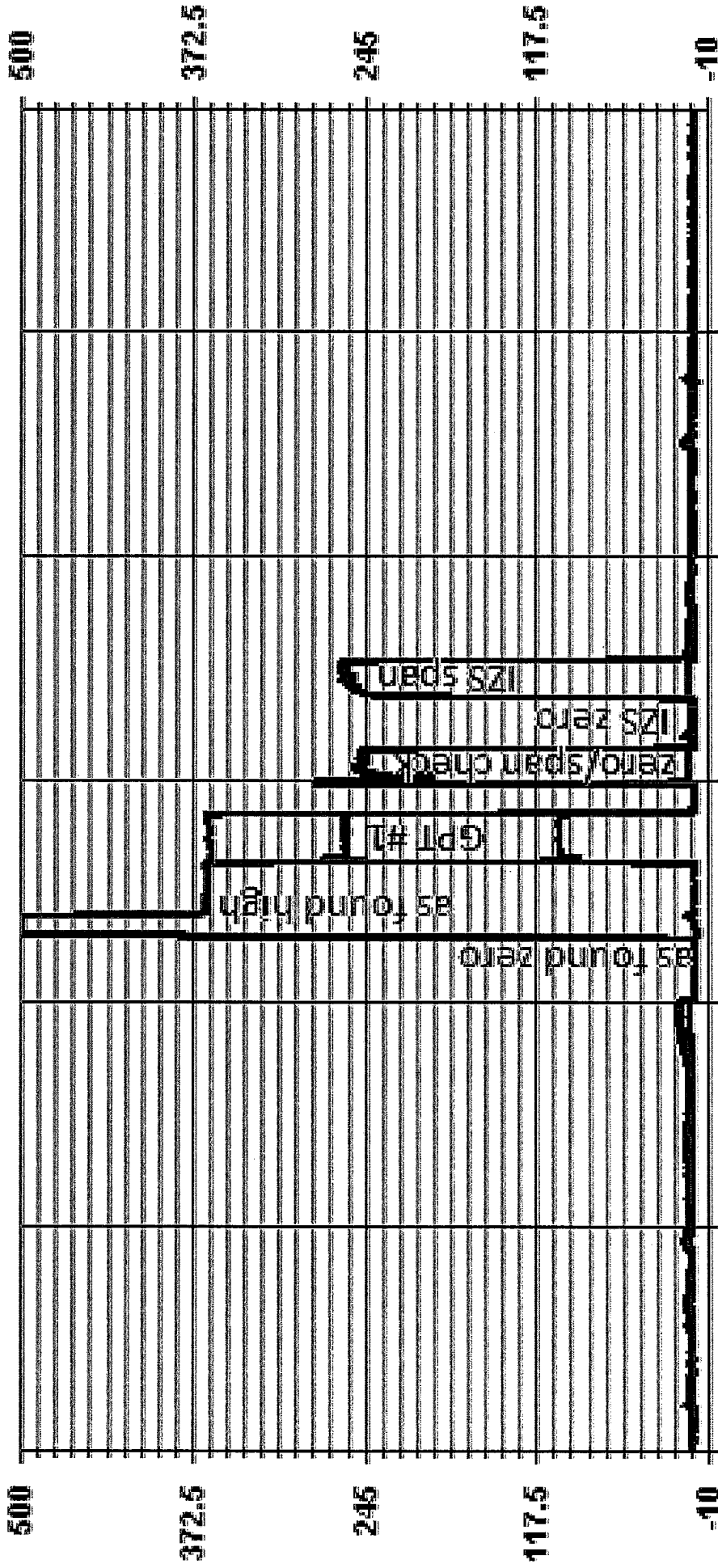
NO2 Calibration Curve



NOx Calibration Curve



01 Minute Averages



— LICA NOX_ PPB — LICA NO_ PPB — LICA NO2_ PPB

OZONE

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: <u>9-Jul-15</u> Company: <u>LICA</u> Station Name/Location: <u>Cold Lake South</u> Performed by: <u>Alex Yakupov</u>	Start Time (mst): <u>9:44</u> End Time (mst): <u>14:05</u> Calibration Purpose: <u>Monthly Calibration</u> G.P.T. Date: <u>NA</u>
---	--

Analyzer: Serial Number: <u>700419951</u> Last Calibration Date: <u>3-Jun-15</u> Previous Cal High Point C.F.: <u>1.000</u>	Range ppm: <u>500</u> As Found C.F.: <u>0.969</u> New C.F.: <u>1.000</u>
--	--

As found:

O ₃ Bkg:	0.3
O ₃ Coef:	1.049
Motherboard:	3.3
	15.0
	24.0
	-3.3
Interface Board:	3.3
	5.0
	15.0
	-15.0
Photo Lamp	8.7
	24.0
O ₃ Lamp	9.0
Bench:	28.0
Bench Lamp:	53.5
O ₃ Lamp:	67.4
Pressure:	696.8
Cell A lpm:	0.710
Cell B lpm:	0.748
O ₃ ppb:	0.8
Cell A ppb:	11.8
Cell B ppb:	-10.2
Cell A Int:	58502
Cell B Int:	56845
Internal Span:	283

As left:

O ₃ Bkg:	-0.0
O ₃ Coef:	1.011
	3.3
	15.0
	24.0
	-3.3
	3.3
	5.0
	15.0
	-15.0
Photo Lamp	8.7
	24.0
O ₃ Lamp	9.0
Bench:	27.3
Bench Lamp:	53.4
O ₃ Lamp:	67.3
Pressure:	696.5
Cell A lpm:	0.710
Cell B lpm:	0.747
O ₃ ppb:	0.2
Cell A ppb:	18.5
Cell B ppb:	-18.1
Cell A Int:	58525
Cell B Int:	56848
Internal Span:	266

Calibrator: Make & Model: <u>SABIO 2010 D</u> Serial #: <u>11900613</u> NOx Gas Cylinder I.D. #: <u>BLM002073</u> NOx Cylinder Conc. (ppm): <u>50.6</u>	Calibrator Flow Targets: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>point</th> <th>total flow (cc/min)</th> <th>O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr><td>zero</td><td>5012</td><td>0</td></tr> <tr><td>high</td><td>5013</td><td>381</td></tr> <tr><td>mid</td><td>5014</td><td>180</td></tr> <tr><td>low</td><td>5015</td><td>90</td></tr> </tbody> </table>	point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5012	0	high	5013	381	mid	5014	180	low	5015	90
point	total flow (cc/min)	O ₃ setting (v or ppb)														
zero	5012	0														
high	5013	381														
mid	5014	180														
low	5015	90														

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5012	0.0	5012	0.0	1.0	NA
adjusted zero	5012	0.0	5012	0.0	0.0	NA
as found high	5012	0.00	5012	381.0	393.0	0.969
adjusted high	5012	0.00	5012	381.0	381.0	1.000
mid	5012	0.00	5012	180.0	180.0	1.000
low	5012	0.00	5012	90.0	90.0	1.000
calibrator zero	5012	0.00	5012	0.0	0.0	NA
** copy and paste flows and NO decrease from NOx cal in to calculated concentration**						Average C.F.= 1.000

Linear Regression/Calibration Results:

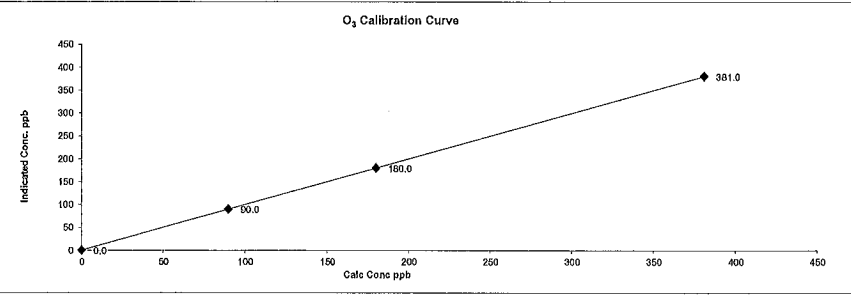
Correlation Coefficient = <u>1.000</u> Slope = <u>1.000</u> b (Intercept as % of full scale) = <u>0.000%</u> % change in C.F. from last cal = <u>3%</u>	LIMITS Pass/Fail ? > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS ± 15% PASS
--	--

Comments:

Filter changed.

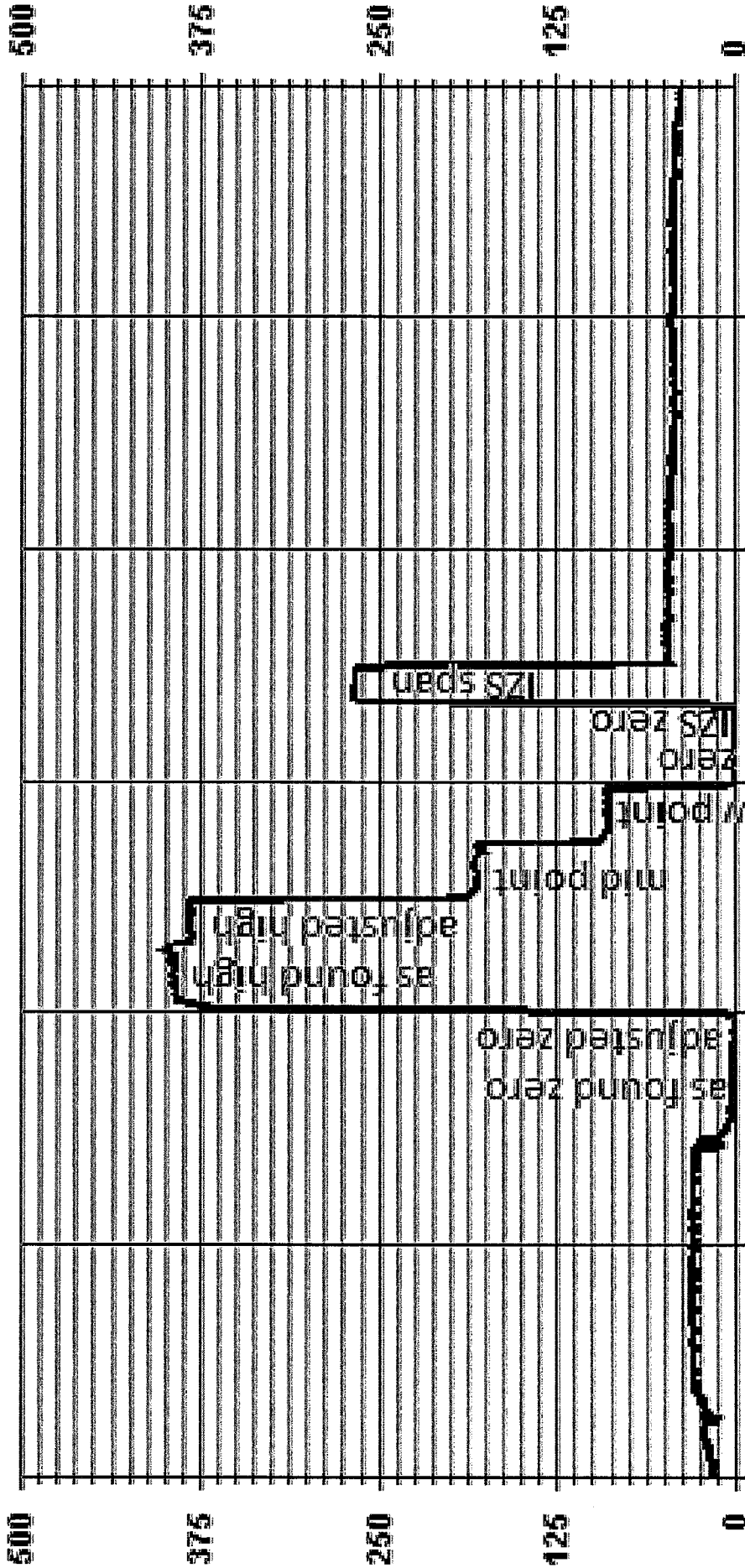
Thermo 49i O₃ Analyzer Calibration

O₃ Calibration Curve



The graph displays a linear relationship between the calculated concentration (x-axis) and the indicated concentration (y-axis) for O₃. The x-axis ranges from 0 to 450 ppb, and the y-axis ranges from 0 to 450 ppb. Four data points are plotted: (0, 0), (90, 90), (180, 180), and (381, 381). A straight line is drawn through these points, demonstrating a perfect linear fit with a slope of 1.000.

01 Minute Averages



— LICA 03_ PPB

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: 22-Jul-15	Start Time (mst): 8:51
Company: LICA	End Time (mst): 11:27
Station Name/Location: Cold Lake South	Calibration Purpose: As Found
Performed by: Alex Yakupov	G.P.T. Date: NA

Analyzer: Serial Number: 700419951 Last Calibration Date: 9-Jul-15 Previous Cal High Point C.F.: 1.000	Range ppm: 500 As Found C.F.: 0.992 New C.F.: NA
---	--

	As found:	As left:
Motherboard:	O ₃ Bkg: -0.0	O ₃ Bkg: -0.0
	O ₃ Coef: 1.011	O ₃ Coef: 1.011
	3.3 3.3	3.3 3.3
	15.0 15.1	15.0 15.1
	24.0 23.9	24.0 23.9
Interface Board:	-3.3 -3.2	-3.3 -3.2
	3.3 3.3	3.3 3.3
	5.0 4.9	5.0 4.9
	15.0 14.8	15.0 14.8
	-15.0 -14.8	-15.0 -14.8
Photo Lamp:	8.7 8.7	8.7 8.7
	24.0 23.7	24.0 23.7
O ₃ Lamp:	9.0 9.0	9.0 9.0
	27.9 27.9	27.9 27.9
Bench Lamp:	53.4 53.4	53.5 53.5
	67.4 67.4	67.3 67.3
Pressure:	515.3 515.3	514.4 514.4
	0.576 0.576	0.576 0.576
Cell A lpm:	0.710 0.710	0.609 0.609
	25.8 25.8	1.2 1.2
Cell A ppb:	45.0 45.0	11.9 11.9
	6.6 6.6	-9.4 -9.4
Cell A Int:	58096 58096	58156 58156
	56504 56504	53533 53533
Internal Span:	266 266	266 266

Callibrator: Make & Model: SABIO 2010 D Serial #: 11900613 NOx Gas Cylinder I.D. #: BLM002073 NOx Cylinder Conc. (ppm): 50.6	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>point</th> <th>total flow (cc/min)</th> <th>O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5012</td> <td>0</td> </tr> <tr> <td>high</td> <td>5013</td> <td>381</td> </tr> <tr> <td>mid</td> <td>5014</td> <td>180</td> </tr> <tr> <td>low</td> <td>5015</td> <td>90</td> </tr> </tbody> </table>	point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5012	0	high	5013	381	mid	5014	180	low	5015	90
point	total flow (cc/min)	O ₃ setting (v or ppb)														
zero	5012	0														
high	5013	381														
mid	5014	180														
low	5015	90														

Callibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5012	0.0	5012	0.0	3.0	NA
as found high	5012	0.00	5012	381.0	384.0	0.992
** copy and paste flows and NO decrease from NOx cal In to calculated concentration**						Average C.F.:= NA

Linear Regression/Calibration Results:

Correlation Coefficient =	NA	LIMITS	Pass/Fail ?
Slope =	NA	> or = 0.995	NA
b (Intercept as % of full scale) =	NA	0.85-1.15	NA
% change in C.F. from last cal	1%	± 3% F.S.	NA
		± 15%	PASS

Comments:

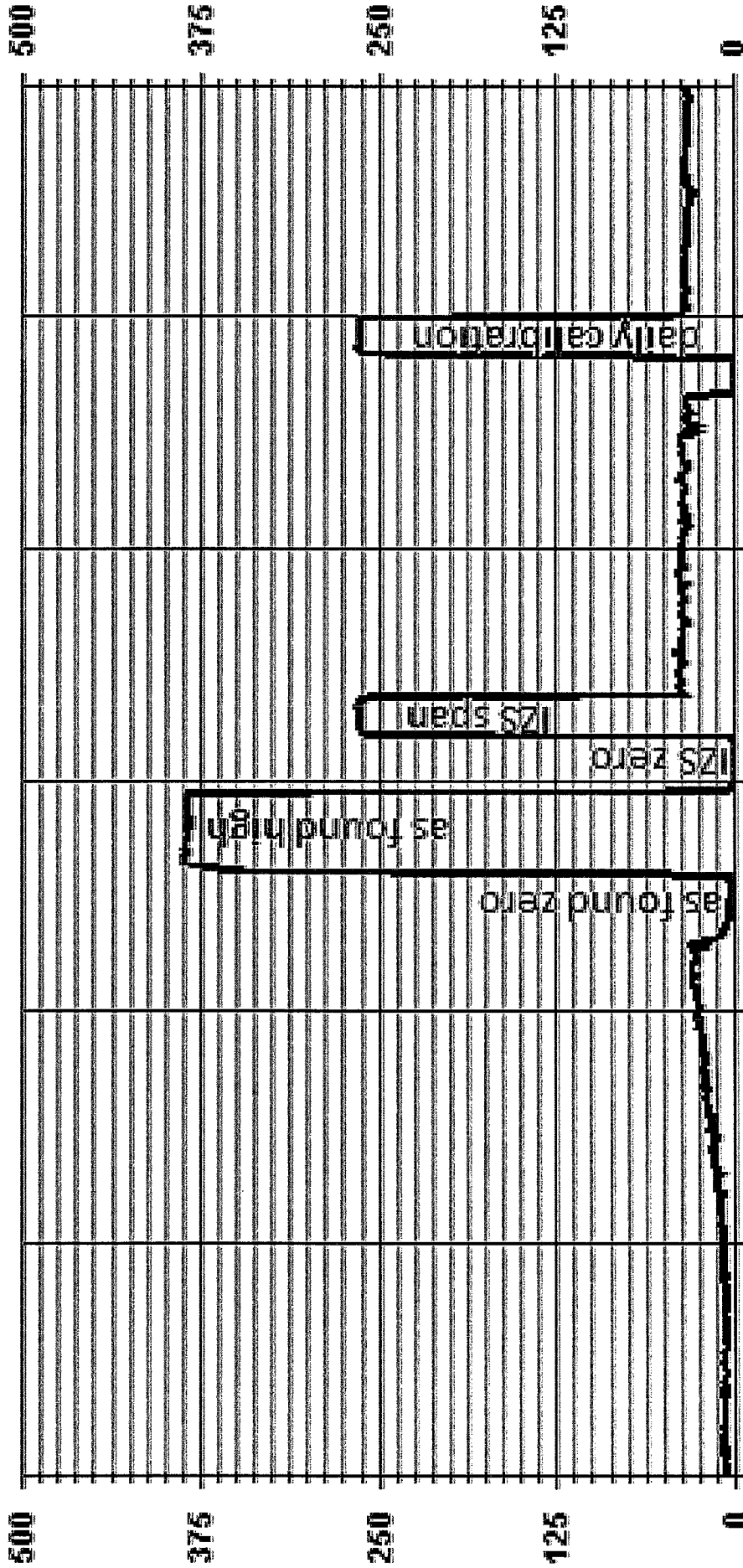
As Found calibration was done because SPAN drift during dally ZS check was over 10%. SPAN pump was rebuilt.

Thermo 49i O₃ Analyzer Calibration

O₃ Calibration Curve

Calc Conc (ppb)	Indicated Conc (ppb)
-3.0	0
384.0	384.0

01 Minute Averages



07/22/15 04:40 07/22/15 06:40 07/22/15 08:40 07/22/15 10:40 07/22/15 12:40 07/22/15 14:40

— LICA 03_ PPB

PARTICULATE MATTER



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 3-Jul-15
 Company: LICA
 Station Name/Location: Cold Lake South
 Previous Audit Date: 19-Jun-15

Parameter: PM 2.5
 Performed by: Alex Yakupov
 Start/End Time (mst): 08:28 - 09:46
 Calibration Purpose: 1st Audit

1400A Information and Status:

Serial Number:	<u>1405A201620804</u>	As Found Filter Loading %:	<u>58.62</u>
Ko Factor:	<u>14578</u>	As Left Filter Loading %:	<u>17.36</u>
Ambient Temperature °C:	<u>27.97</u>	As Found Noise:	<u>0.007</u>
Ambient Pressure atm:	<u>0.936</u>	As Left Noise:	<u>0.000</u>
Main Flow Reading lpm:	<u>3.00</u>	Pump Vacuum:	<u>0.35</u>
Aux Flow Reading lpm:	<u>13.67</u>	Warnings:	<u>None</u>

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>FB61291</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>NA</u>	<u>18-Mar-15</u>	<u>18-Mar-15</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	-0.03	0.27	-0.01	0.26
	limit	0.15	X	0.15	X
Bypass Flow	actual	-0.02	0.55	0.06	0.43
	limit	0.60	X	0.60	X

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	-0.03	0.27	-0.01	0.26
	limit	0.15	X	0.15	X
Bypass Flow	actual	-0.02	0.55	0.06	0.43
	limit	0.60	X	0.60	X

As found temperature and pressure:

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>29.3</u>	1405F pressure atm:	<u>0.937</u>
reference temperature °C:	<u>26.5</u>	reference pressure:	<u>0.934</u>
difference °C:	<u>-2.8</u>	difference:	<u>0.003</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>26.5</u>	1405F pressure atm:	<u>0.934</u>
reference temperature °C:	<u>26.5</u>	reference pressure:	<u>0.934</u>
difference °C:	<u>0.0</u>	difference:	<u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm		total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%	
1405F main flow lpm:	<u>3.00</u>	1400A total/aux flow lpm:	<u>16.67</u>
reference main flow lpm:	<u>2.95</u>	reference total/aux flow lpm:	<u>16.92</u>
difference lpm:	<u>-0.05</u>	difference lpm:	<u>0.25</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm		total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%	
1405F main flow lpm:	<u>3.00</u>	1400A total/aux flow lpm:	<u>16.67</u>
reference main flow lpm:	<u>3.00</u>	reference total/aux flow lpm:	<u>16.68</u>
difference lpm:	<u>0.00</u>	difference lpm:	<u>0.01</u>

K_o Audit:

Last K_o audit date: 18-Mar-15
 1405F K_o factor: 14578
 Measured K_o factor: 14753.2000
 % difference: 1.20

Comments:



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 16-Jul-15
 Company: LICA
 Station Name/Location: Cold Lake South
 Previous Audit Date: 3-Jul-15

Parameter: PM 2.5
 Performed by: Alex Yakupov
 Start/End Time (mst): 08:08 - 09:15
 Calibration Purpose: 2nd Audit

1400A Information and Status:

Serial Number:	<u>1405A201620804</u>	As Found Filter Loading %:	<u>45.13</u>
Ko Factor:	<u>14578</u>	As Left Filter Loading %:	<u>19.40</u>
Ambient Temperature °C:	<u>14.16</u>	As Found Noise:	<u>0.009</u>
Ambient Pressure atm:	<u>0.931</u>	As Left Noise:	<u>0.000</u>
Main Flow Reading lpm:	<u>3.00</u>	Pump Vacuum:	<u>0.38</u>
Aux Flow Reading lpm:	<u>13.67</u>	Warnings:	<u>None</u>

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>FB61291</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>NA</u>	<u>18-Mar-15</u>	<u>18-Mar-15</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	0.17	0.02	0.17
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.21	-0.10	0.18	-0.10
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	0.17	0.02	0.17
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.21	-0.10	0.18	-0.10
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>15.9</u>	1405F pressure atm:	<u>0.931</u>
reference temperature °C:	<u>15.4</u>	reference pressure:	<u>0.929</u>
difference °C:	<u>-0.5</u>	difference :	<u>0.002</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>15.4</u>	1405F pressure atm:	<u>0.929</u>
reference temperature °C:	<u>15.4</u>	reference pressure:	<u>0.929</u>
difference °C:	<u>0.0</u>	difference :	<u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.03</u>	reference total/aux flow lpm: <u>17.21</u>
difference lpm: <u>0.03</u>	difference lpm: <u>0.54</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.03</u>	reference total/aux flow lpm: <u>16.96</u>
difference lpm: <u>0.03</u>	difference lpm: <u>0.29</u>

Ko Audit:

Last Ko audit date: 16-Jul-15
 1405F Ko factor: 14578
 Measured Ko factor: 14760.7000
 % difference: 1.25

Comments:

WIND SYSTEM



Met One Instruments
1600 NW Washington Blvd.
Grants Pass, Oregon 97526
Telephone 541-471-7111
Facsimile 541-471-7116

Regional Service
3206 Main St. Suite 106
Rowlett, Texas 75088
Telephone 972-412-4715
Facsimile 972-412-4716

Sonic Wind Sensor Certificate of Calibration

Sensor Model No: 50.5H Sonic Sensor Serial No: F1644
 Customer: _____ P.O. No: _____ Sales Order: _____
 Final Calibration By: Kevin Ricks Calibration Date: 04-01-15
 Quality Control Inspected By: AJ2 Inspection Date: APR 03 2015

New Unit Repair/Adjust Re-Calibration As Found

Unit Within Tolerance as Found Unit Within Tolerance as Left

Calibration Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Due
Digital Multimeter 1	Agilent/HP	34401A	MY41039534	4/11/2015
Digital Multimeter 2	Agilent/HP	34401A	US36094551	8/26/2015
Frequency Counter	Agilent/HP	53131A	MY40009285	5/22/2015
Standard Sensor	MOI	010C-1	P22383	7/11/2017
Temperature Probe	MOI	920005/PC8340	E3402	9/03/2015

Test 1: Average Wind Tunnel Speed: 3.08 Meters per Second Firmware Version: 3194-01 R2.62

WD Setting (Deg)	WD Output (Volts)	WD Indication (Deg)	WD Error (+/- 3 Deg)	WS Standard (m/s)	WS Output (Volts)	WS Indication (m/s)	WS Error (+/- .20 m/s)	Output Type:
30	.084	30.3	.3	3.06	.059	2.96	-.1	0 to 1 volt <input checked="" type="checkbox"/>
60	.165	59.3	-.7	3.07	.059	2.94	-.13	0 to 2.5 volt <input type="checkbox"/>
120	.334	120.2	.2	3.08	.059	2.94	-.14	0 to 5 volt <input type="checkbox"/>
150	.415	149.5	-.5	3.07	.059	2.94	-.13	RS-232 <input checked="" type="checkbox"/>
210	.583	210	0	3.08	.059	2.95	-.12	SDI-12 <input type="checkbox"/>
240	.668	240.3	.3	3.08	.06	2.98	-.1	RS-422 <input type="checkbox"/>
300	.834	300.4	.4	3.07	.06	3.02	-.04	RS-485 <input type="checkbox"/>
330	.916	329.8	-.2	3.09	.059	2.97	-.12	<input type="checkbox"/>

Test 2: Average Wind Tunnel Speed: 11.85 Meters per Second Output Range: 0-50 m/s

WD Setting (Deg)	WD Output (Volts)	WD Indication (Deg)	WD Error (+/- 3 Deg)	WS Standard (m/s)	WS Output (Volts)	WS Indication (m/s)	WS Error (+/- .24 m/s)	Test Items:
30	.081	29.3	-.7	11.79	.235	11.76	-.04	Array Alignment <input checked="" type="checkbox"/>
60	.165	59.5	-.5	11.85	.237	11.87	.01	Jumper Config <input checked="" type="checkbox"/>
120	.331	119.1	-.9	11.85	.236	11.81	-.03	Firmware Config <input checked="" type="checkbox"/>
150	.415	149.3	-.7	11.88	.236	11.8	-.08	Zero Calibration <input checked="" type="checkbox"/>
210	.582	209.5	-.5	11.81	.236	11.79	-.02	Low Speed Test OK <input checked="" type="checkbox"/>
240	.666	239.9	-.1	11.88	.235	11.73	-.16	High Speed Test OK <input checked="" type="checkbox"/>
300	.833	299.7	-.3	11.87	.235	11.73	-.13	Sensor Function <input checked="" type="checkbox"/>
330	.915	329.6	-.4	11.84	.238	11.9	.06	Physical Inspection <input checked="" type="checkbox"/>

The standards used for this calibration have accuracies equal to or greater than the instruments tested. These standards are on record and traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated hereon, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A. Calibration performed by direct comparison to the above standard following test procedure: 50.5-6100 Rev E

PARTISOL SAMPLER

PARTISOL

Station		Audit Transfer Standard	
Date:	July 16, 2015	Make/Model:	BIOS DryCAL DC-2
Company:	LICA	S/N Flow/Cell:	B1193 / 2272
Plant:	Cold Lake South	Temperature (°C):	Brunton ADC-Summit
Station:	Lica 01	Serial Number:	NA

Sampler		Ambient Data	
Make/Model:	R&P 2000H	Temperature (°C):	14.4
Unit #:	AMU #1517	Pressure (ATM):	0.929
S/N:	2000A204009710	Set Flow (l/min):	16.7

Note: Tolerances are noted as **BOLD** in Brackets

Calibration Data						
Calibration Constants						
Item	Calculated		Offset		Span	
	Initial	Final	Initial	Final	Initial	Final
Analog Input	0.01	NA	0.0054	NA	0.9894	NA
Temperature	13.8	NA	NA	NA	1.017	NA
Pressure	0.929	NA	NA	NA	0.9061	NA
Flow	-0.1	NA	-0.0436	NA	0.9989	NA
Interface Board Calibration						
Item	Acceptable		Pre Calibration		Post Calibration	
R21	6.00 VDC (±0.05 V)		NA		NA	
R44	10.000 VDC (±0.002 V)		NA		NA	
Analog Input Calibration						
Item	Acceptable		Pre Calibration		Post Calibration	
"AO" Offset	0.050 - 0.150 VDC (±0.005 V)		NA		NA	
"AO" Span	4.800 - 4.900 VDC (±0.002 V)		NA		NA	
Temperature/Pressure Calibration						
Calc Temp (±2 °C)	14.1		Δ °C			
Calc Press (±0.02 ATM)	0.929		Δ ATM			
Leak Check						
Unit	Flow Controller Valve Closed (V1)	Pump Valve Closed after 10 Secs. (V2)	VL=1/2*V1		Leakage Calculation (v2 > VL) After 10 Secs	
Hub	-13.5 inHg	-13 inHg	-7	inHg	OK	inHg
Flow Calibration						
Item	Acceptable		Calculated		Actual	
"Zero" Offset	Enter Zero for "Actual"		-0.1		Zero	
"Flow" Span	±7.0 % Adjust to 16.7 L		16.7		16.77	

	Condition		Condition		Condition		Condition
Rubber Seals:	OK	Inlet:	OK	Inline Filter:	OK	Status:	OK

Comments:	Audit Start Time (MST):	10:45	Audit End Time (MST):	11:08
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Calibration Performed By: Chris Wesson

CALIBRATORS

Company: Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010D</u>	Make/Model	<u>N/A</u>
Serial Number	<u>11900613</u>	Serial Number	<u>N/A</u>
Oven Temperature	<u>N/A</u>	Temperature (°C)	<u>N/A</u>
Last Verification Date	<u>N/A</u>	Barometric Pressure	<u>N/A</u>

Flow Measurements

Pt. No. 1 5000 Pt. No. 2 5000 Pt. No. 3 5000

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
5013	0.000	0.001		
5013	0.400	0.407	1%	± 10%
5013	0.200	0.204	1%	± 10%
5014	0.100	0.101	0%	± 10%
Absolute Average Percent Difference			1%	± 10%

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

<u>O₃</u>		<u>LIMITS</u>
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0163	0.90-1.10
b (Intercept % of FS)=	0.0800	± 3% F.S.

AENV Standards		Ozone Analyzer	
Audit Calibrator		Make/Model	<u>Teco 49i</u>
Make/Model	<u>Teco 49i PS</u>	Serial/AMU Number	<u>AMU 1843</u>
Serial/AMU Number	<u>AMU 1808</u>	Last Calibration Date	<u>May 21, 2015</u>
Ozone Standard	<u>Primary</u>	Full Scale (ppm)	<u>0.5</u>

COMMENTS: _____

Auditor: Al Clark Date: May 21, 2015
 Operator Signature: *Limin Li* Location: McIntyre Center Edmonton

Company <u>Maxxam</u>		Operator: <u>Limin Li</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Envtronics 6100</u>	Make/Model	<u>N/A</u>
Serial Number	<u>4760</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>December 2013</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> Gas flows not available from display.

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4980	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4993	0.0	0.799	0.799	0.840	-0.001	0.839	5%	5%
4994	0.0	0.399	0.399	0.420	-0.001	0.419	5%	5%
4991	0.0	0.200	0.200	0.211	0.000	0.211	5%	5%
Absolute Average Percent Difference							5%	5%

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)= 1.0511	0.90-1.10	m (Slope)= 1.0496
b (Intercept % of FS)= 0.0400	± 3% F.S.	b (Intercept % of FS)= 0.0400

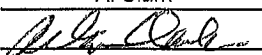
Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4993	0.000	0.000	0.823	-0.001	0.822	NO ₂	% Diff. Limit
4993	0.480	0.530	0.293	0.530	0.823	0	± 10%
4993	0.240	0.269	0.554	0.269	0.823	0	± 10%
4993	0.090	0.096	0.727	0.097	0.824	0	± 10%
Absolute Average Percent Difference						0	± 10%

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

NO₂	LIMITS	
Correlation= 1.0000	≥ 0.995	
m (Slope)= 1.0006	0.90-1.10	
b (Intercept % of FS)= -0.0132	± 3% F.S.	

AENV Standards	NO_x Analyzer
Audit Calibrator	Make/Model <u>Teco 421</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>December 15, 2014</u>
	Full Scale (ppm) <u>1.0</u>

COMMENTS: _____

Auditor: Al Clark
Operator Signature: 

Date: December 17, 2014
Location: McIntyre Center Edmonton

Company: Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>830</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>Oct 2013</u>	Temperature (°C)	<u>N/A</u>
SO ₂ Cylinder Conc.	<u>50.3</u>	Barometric Pressure	<u>N/A</u>
SO ₂ Cylinder S/N	<u>LL42475</u>		

Flow Measurements

Pt. No. 1 79.5 Pt. No. 2 39.8 Pt. No. 3 19.9

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
4918	0.800	0.798	0%	± 10%
4960	0.400	0.398	-1%	± 10%
4977	0.200	0.200	0%	± 10%
Absolute Average Percent Difference			0%	± 10%

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

SO ₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9971	0.90-1.10
b (Intercept % of FS)=	0.0000	± 3% F.S.

AENV Standards		SO ₂ Analyzer	
Audit Calibrator		Make/Model	<u>Teco 43C</u>
Make/Model	<u>R&R MFC 201</u>	Serial/AMU Number	<u>AMU 1623</u>
Serial/AMU Number	<u>AMU 1690</u>	Last Calibration Date	<u>Dec 15/14</u>
		Full Scale (ppm)	<u>1.0</u>

COMMENTS: H2S gas was slow to move through the calibrator. Check for contamination inside calibrator. SO2 moves through quickly.

Auditor: Al Clark Date: December 16, 2014
Operator Signature: _____ Location: McIntyre Center Edmonton

Company Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>17100415</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>New</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>BLM0027561</u>	Barometric Pressure	<u>N/A</u>
NO/NOX Concentration	<u>50.7/50.7</u>		

Dilution Flow (sccm)		
Pt. #1	<u>5000</u>	Pt. #3 <u>5000</u>
Pt. #2	<u>5000</u>	
Gas Flow (sccm)		
Pt. #1	<u>80</u>	Pt. #3 <u>20</u>
Pt. #2	<u>40</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%	
5016	79.1	0.800	0.800	0.811	-0.011	0.800	1%	0%
5016	39.7	0.401	0.401	0.405	-0.005	0.400	1%	0%
5015	19.9	0.201	0.201	0.203	-0.003	0.200	1%	0%
Absolute Average Percent Difference							1%	0%

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)=	1.0139	0.90-1.10		m (Slope)=	1.0003
b (Intercept % of FS)=	#DIV/0!	± 3% F.S.		b (Intercept % of FS)=	#DIV/0!

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5016	0.000	0.000	0.809	-0.013	0.796	NO ₂	% Diff. Limit
5016	0.500	0.484	0.325	0.469	0.794	0	± 10%
5016	0.300	0.278	0.531	0.263	0.794	0	± 10%
5016	0.100	0.090	0.719	0.076	0.765	0	± 10%
Absolute Average Percent Difference						0	± 10%

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

NO ₂		LIMITS	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9960	0.90-1.10	
b (Intercept % of FS)=	#DIV/0!	± 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 21, 2015</u>
		Full Scale (ppm)	

COMMENTS: Contains 49.9 ppm SO2

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: May 21, 2015
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-345CGA

Company: Maxxam Operators name: Limin Li
Cylinder #: BLM002073 Conc (PPM) 50.6/50.6 Tolerance (%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model Teco 146I
Serial Number AMU 1809
Last Verification Date March 31, 2015
Gas Type NO Conc. 48.79
Cylinder Number CAL018024

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 42I Serial/AMU Number: 1868
Instrument Settings Zero: 4.2 Span: 1.008 Range: 1.0
Last Calibration: Date: Mar 31/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (secm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000	0.01660	60.242	51.5	51.1
4976	82.6	0.855	0.848	0.01660	60.242	51.5	51.1
4993	41.0	0.427	0.421	0.00821	121.780	52.0	51.3
4977	20.2	0.213	0.209	0.00406	246.386	52.5	51.5
Average Cylinder Concentration:						52.0	51.3

NO NOx

Previous Stated Concentration PPM: 50.6 50.6

Percent variance from Stated: 2.8 1.4

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration Contains 49.5 ppm SO2 in cylinder

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

Auditor: Al Clark Date: March 31, 2015
Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-344CGA

Company: Maxxam **Operator's Name:** Limin Li
Cylinder #: BLM002073 **Concentration PPM:** 49.5 **Tolerance(%)** 2 **Certified By:** Alr Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1890
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 (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.01660	60.242	48.3
4976	82.6	0.801	0.01660	60.242	48.3
4993	41.0	0.396	0.00821	121.780	48.2
4977	20.2	0.193	0.00406	246.386	47.6
Average Cylinder Concentration:					48.0

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 3.0

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

NO Cylinder Gas

File No. 2015-340CGA

Company: Maxxam Operators name: Limin Li
Cylinder #: LL67747 Conc (PPM) 50.9/50.9 Tolerance (%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model Teco 146I
Serial Number AMU 1809
Last Verification Date March 31, 2015
Gas Type NO Conc. 48.79
Cylinder Number CAL018024

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 42I Serial/AMU Number: 1868
Instrument Settings Zero: 4.2 Span: 1.008 Range: 1.0
Last Calibration: Date: Mar 31/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000	0.01660	60.242	51.0	49.9
4976	82.6	0.846	0.829	0.01660	60.242	51.0	49.9
4993	41.0	0.421	0.413	0.00821	121.780	51.3	50.3
4977	20.2	0.207	0.203	0.00406	246.386	51.0	50.0
Average Cylinder Concentration:						51.1	50.1

NO **NOx**

Previous Stated Concentration PPM: 50.9 50.9

Percent variance from Stated: 0.4 1.6

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration Contains 49.7 ppm SO2 in cylinder

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

Auditor: Al Clark Date: March 31, 2015
Operator Signature: [Signature] Location: McIntyre Center Edmonton



Praxair Canada, Inc.
 2501-34th Street
 Edmonton, AB T6B 2X8
 Tel: 780-449-0778
 Fax: 780-449-5302

03/27/2014

MAXXAM ANALYTICS INC "NA"
 9372 48TH ST
 EDMONTON, AB T6B 2L7

Work Order No. 20248656
 Customer Reference No.

Product Lot/Batch No. Z582 4 085 02
 Product Part No. NI ME600P2P-AQ

CERTIFICATE OF ANALYSIS
 Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Methane	500.0ppm	501.4ppm	U	±1% rel
Propane	200.0ppm	202ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler-Toledo Analytical Balance-ID2sx/USA--
 Hewlett-Packard (Agilent)-6890--GC-FID

Cylinder Style: AQ
 Cylinder Pressure @70F: 2200 psig
 Cylinder Volume: 82.0 ft3
 Valve Outlet Connection: CGA-350
 Cylinder No(s): LC33874

Filling Method: Gravimetric
 Date of Fill: 03/26/2014
 Expiration Date: 03/26/2017

Analyst: Todd Hryniv

This gas calibration cylinder standard prepared by Praxair Canada, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. This calibration standard is provided as certified against Praxair Canada, Inc. Reference Materials which are either prepared by weight methods or the National Institute of Standards and Technology (NIST), MetroLab, Canada or a NIST NIST Standard Reference Material where available.

Some of the components for which no NIST or NIST SRM are available are for gas phase by volume (e.g. ppmv) unless otherwise noted.

1. Gas Chromatography with Thermal Conductivity Detector	2. Gas Chromatography with Discharge Ionization Detector	3. Gas Chromatography with Electrode Conductivity Detector	4. Gas Chromatography with Flame Ionization Detector
5. Gas Chromatography with Photoacoustic Detector	6. Gas Chromatography with Wettable Catalyst	7. Gas Chromatography with Thermal Conductivity Detector	8. Gas Chromatography with Photoacoustic Detector
9. Gas Chromatography with Thermal Conductivity Detector	10. Gas Chromatography with Thermal Conductivity Detector	11. Gas Chromatography with Thermal Conductivity Detector	12. Gas Chromatography with Thermal Conductivity Detector
13. Gas Chromatography with Thermal Conductivity Detector	14. Gas Chromatography with Thermal Conductivity Detector	15. Gas Chromatography with Thermal Conductivity Detector	16. Gas Chromatography with Thermal Conductivity Detector
17. Gas Chromatography with Thermal Conductivity Detector	18. Gas Chromatography with Thermal Conductivity Detector	19. Gas Chromatography with Thermal Conductivity Detector	20. Gas Chromatography with Thermal Conductivity Detector

DISCLAIMER

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Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: December 15, 2014
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. 702 mmhg

Reference Analyzer:

Make/Model: Teco 45C Serial/AMU Number: 1624
Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
Last Calibration: Date: Dec15/14 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	10.0	10.0
5099	38.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

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

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: December 16, 2014
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-256CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: LL74219 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:
 Make/Model: R&R MFC 201
 Serial Number: AMU 1690
 Last Verification Date: December 15, 2014
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015106

Flow Measurement Device:
 Make/Model: Bios DC2
 Serial Number: AMU 1659
 Temp. °C: 23.5 C
 B.P. 701 mmhg

Reference Analyzer:
 Make/Model: Teco 45C Serial/AMU Number: 1624
 Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
 Last Calibration: Date: Dec15/14 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.00756	132.234	10.1
5091	38.5	0.0766	0.00756	132.234	10.1
5096	17.9	0.0356	0.00351	284.693	10.1
5067	9.1	0.0178	0.00180	556.813	9.9
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.0
 Percent variance from Stated: 0.6

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

Auditor: Al Clark Date: December 16, 2014
 Operator Signature: [Signature] Location: McIntyre Center Edmonton

APPENDIX IV
ANALYTICAL RESULTS

PASSIVE SAMPLES

Your Project #: 2015/05/27 - 2015/07/30
Site Location: LICA

Attention:MICHAEL BISAGA
LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
PO BOX 8237
5107W- 50TH STREET
BONNYVILLE, AB
CANADA T9N 2J5

Report Date: 2015/08/17
Report #: R2024870
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B566074
Received: 2015/08/04, 10:18

Sample Matrix: Air
Samples Received: 31

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
H2S Passive Analysis (1)	20	2015/08/11	2015/08/17	PTC SOP-00150	Tang.Passive H2S in
NO2 Passive Analysis (1)	25	2015/08/13	2015/08/17	PTC SOP-00148	Passive NO2 in ATM
O3 Passive Analysis (1)	25	2015/08/07	2015/08/17	PTC SOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	29	2015/08/17	2015/08/17	PTC SOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) The detection limit is based on a 30 day sampling period.

Encryption Key **Carmen Toker**
Carmen Toker
17 Aug 2015 15:39:36 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B566074
Report Date: 2015/08/17

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2015/05/27 - 2015/07/30
Site Location: LICA
Sampler Initials: WA

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		MU7082	MU7083	MU7084	MU7085	MU7086	MU7087	MU7088		
Sampling Date		2015/05/27 17:30	2015/05/28 12:06	2015/05/28 12:49	2015/05/28 14:37	2015/05/28 10:51	2015/05/27 19:53	2015/05/27 14:50		
	UNITS	3	4	5	6	8	9	10	RDL	QC Batch

Passive Monitoring										
Calculated H2S	ppb	0.22		0.86				0.15	0.02	7998563
Calculated NO2	ppb	0.7	1.2	0.5	3.2	0.6	0.9	2.0	0.1	8000389
Calculated O3	ppb	30.78	34.39	31.07	28.44	33.28	31.83	25.68	0.1	7994219
Calculated SO2	ppb	0.3	0.5	0.4	0.6	0.6	0.3	0.2	0.1	8005015
RDL = Reportable Detection Limit										

Maxxam ID		MU7089		MU7090	MU7091	MU7092	MU7093	MU7094		
Sampling Date		2015/05/27 15:45		2015/05/27 17:30	2015/05/27 12:28	2015/05/27 11:18	2015/05/27 20:46	2015/05/28 18:03		
	UNITS	11	QC Batch	12	13	14	15	16	RDL	QC Batch

Passive Monitoring										
Calculated H2S	ppb	0.05	7998563	MISSING	0.07	0.13		0.21	0.02	7998563
Calculated NO2	ppb	0.4	8000389	MISSING	0.4	0.7	1.2	0.9	0.1	8000397
Calculated O3	ppb	21.13	7994230	MISSING	31.08	28.06	31.32	27.43	0.1	7994230
Calculated SO2	ppb	0.1	8005015	MISSING	0.2	0.9	0.4	0.2	0.1	8005015
RDL = Reportable Detection Limit										

Maxxam ID		MU7095	MU7096	MU7097	MU7098		MU7099	MU7100		
Sampling Date		2015/05/28 15:37	2015/05/28 17:06	2015/05/28 18:44	2015/05/28 08:37		2015/05/27 08:53	2015/05/28 13:51		
	UNITS	17	18	19	22	QC Batch	23	24	RDL	QC Batch

Passive Monitoring										
Calculated H2S	ppb	0.39	0.15		0.43	7998563		0.25	0.02	7998563
Calculated NO2	ppb	1.4	0.8	MISSING	0.7	8000397	0.1	1.8	0.1	8000397
Calculated O3	ppb	32.54	27.02	MISSING	27.31	7994230	21.34	27.57	0.1	7994230
Calculated SO2	ppb	0.4	0.2	MISSING	0.4	8005015	0.2	0.3	0.1	8005044
RDL = Reportable Detection Limit										

Maxxam ID		MU7101	MU7102	MU7103	MU7104	MU7105	MU7106	MU7107		
Sampling Date		2015/02/27 18:58	2015/05/27 11:45	2015/05/27 10:50	2015/05/27 19:39	2015/05/28 08:37	2015/05/27 18:20	2015/05/28 13:31		
	UNITS	25	26	27	28	29	32	36	RDL	QC Batch

Passive Monitoring										
Calculated H2S	ppb	MISSING	0.12	0.40		0.27	0.30	0.28	0.02	7998563
Calculated NO2	ppb				1.4	0.5	0.2	1.5	0.1	8000397
Calculated O3	ppb				29.33	24.75	30.99	37.62	0.1	7994230
Calculated SO2	ppb	MISSING	0.4	1.2	1.0	0.4	0.3	0.3	0.1	8005044
RDL = Reportable Detection Limit										

Maxxam Job #: B566074
Report Date: 2015/08/17

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2015/05/27 - 2015/07/30
Site Location: LICA
Sampler Initials: WA

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		MU7110	MU7111	MU7112	MU7113	MU7152		
Sampling Date		2015/05/27 19:53	2015/05/27 14:50	2015/05/27 15:45	2015/05/27 11:18	2015/05/28 18:03		
	UNITS	9 DUP	10 DUP	11 DUP	14 DUP	16 DUP	RDL	QC Batch
Passive Monitoring								
Calculated H2S	ppb				0.15	0.21	0.02	7998563
Calculated NO2	ppb	0.8	2.0				0.1	8000397
Calculated O3	ppb	26.58	26.91				0.1	7994230
Calculated SO2	ppb	0.3	0.2	0.1			0.1	8005015
RDL = Reportable Detection Limit								

Maxxam Job #: B566074
Report Date: 2015/08/17

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2015/05/27 - 2015/07/30
Site Location: LICA
Sampler Initials: WA

GENERAL COMMENTS

Samples: MU7090 (#12) and MU7097 (#19) for O3 parameter were not returned to the lab. - OZ

Samples: MU7090(#12), MU7097(#19) and MU7101(#25) for SO2 parameter were not returned to the lab. -YL6

Results relate only to the items tested.

Maxxam Job #: B566074
Report Date: 2015/08/17

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2015/05/27 - 2015/07/30
Site Location: LICA
Sampler Initials: WA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7994219	OZ	Spiked Blank	Calculated O3	2015/08/07		99.3	%	90 - 110
7994219	OZ	Method Blank	Calculated O3	2015/08/07	<0.1		ppb	
7994230	OZ	Spiked Blank	Calculated O3	2015/08/07		99.0	%	90 - 110
7994230	OZ	Method Blank	Calculated O3	2015/08/07	<0.1		ppb	
7998563	LCH	Spiked Blank	Calculated H2S	2015/08/11		102	%	N/A
8000389	SS6	Spiked Blank	Calculated NO2	2015/08/13		99	%	90 - 110
8000389	SS6	Method Blank	Calculated NO2	2015/08/13	<0.1		ppb	
8000397	SS6	Spiked Blank	Calculated NO2	2015/08/13		102	%	90 - 110
8000397	SS6	Method Blank	Calculated NO2	2015/08/13	<0.1		ppb	
8005015	YL6	Spiked Blank	Calculated SO2	2015/08/17		100	%	90 - 110
8005015	YL6	Method Blank	Calculated SO2	2015/08/17	<0.1		ppb	
8005044	YL6	Spiked Blank	Calculated SO2	2015/08/17		101	%	90 - 110
8005044	YL6	Method Blank	Calculated SO2	2015/08/17	<0.1		ppb	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

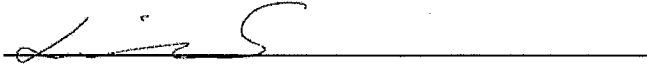
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Maxxam Job #: B566074
Report Date: 2015/08/17

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2015/05/27 - 2015/07/30
Site Location: LICA
Sampler Initials: WA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

VOCS SAMPLES

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070083-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/July 5, 2015</p> <p>CANISTER ID: 1839</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 13-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	16-Jul-15
1,2,3-Trimethylbenzene	I	0.20	ppbv	0.05	AC-058	16-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	16-Jul-15
1,2,4-Trimethylbenzene	I	0.30	ppbv	0.03	AC-058	16-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	16-Jul-15
1,2-Dichloroethane	I	0.06	ppbv	0.01	AC-058	16-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
1,3,5-Trimethylbenzene	I	0.11	ppbv	0.02	AC-058	16-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	16-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
1,4-Dioxane		0.7	ppbv	0.4	AC-058	16-Jul-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070083-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/July 5, 2015</p> <p>CANISTER ID: 1839</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 13-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.03	ppbv	0.01	AC-058	16-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
2-Methylpentane	I	0.07	ppbv	0.01	AC-058	16-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
Acetone		9.2	ppbv	0.4	AC-058	16-Jul-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	16-Jul-15
Benzene		0.42	ppbv	0.01	AC-058	16-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
Carbon disulfide		4.06	ppbv	0.01	AC-058	16-Jul-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	16-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
Chloroform	I	0.02	ppbv	0.02	AC-058	16-Jul-15
Chloromethane		0.64	ppbv	0.02	AC-058	16-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	16-Jul-15
cis-2-Butene	I	0.11	ppbv	0.02	AC-058	16-Jul-15
cis-2-Pentene	I	0.05	ppbv	0.02	AC-058	16-Jul-15
Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		3.1	ppbv	0.3	AC-058	16-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
Ethylbenzene	I	0.13	ppbv	0.01	AC-058	16-Jul-15
Freon-11	I	0.23	ppbv	0.02	AC-058	16-Jul-15
Freon-113	I	0.07	ppbv	0.01	AC-058	16-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
Freon-12		0.56	ppbv	0.02	AC-058	16-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	16-Jul-15
Isobutane	I	0.10	ppbv	0.02	AC-058	16-Jul-15
Isopentane	I	0.14	ppbv	0.03	AC-058	16-Jul-15
Isoprene		1.55	ppbv	0.01	AC-058	16-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
m,p-Xylene		0.39	ppbv	0.03	AC-058	16-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	16-Jul-15
m-Ethyltoluene	I	0.19	ppbv	0.08	AC-058	16-Jul-15
Methyl butyl ketone		0.61	ppbv	0.5	AC-058	16-Jul-15
Methyl ethyl ketone		1.5	ppbv	0.3	AC-058	16-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	16-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	16-Jul-15
Methylcyclohexane		0.38	ppbv	0.01	AC-058	16-Jul-15
Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	16-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	16-Jul-15
n-Butane	I	0.25	ppbv	0.03	AC-058	16-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	16-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	16-Jul-15
n-Propylbenzene	I	0.08	ppbv	0.05	AC-058	16-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	16-Jul-15
Naphthalene		12.4	ppbv	0.5	AC-058	16-Jul-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
o-Ethyltoluene	I	0.14	ppbv	0.01	AC-058	16-Jul-15
o-Xylene	I	0.19	ppbv	0.01	AC-058	16-Jul-15
p-Diethylbenzene	I	0.13	ppbv	0.04	AC-058	16-Jul-15
p-Ethyltoluene	I	0.08	ppbv	0.07	AC-058	16-Jul-15
Styrene	I	0.04	ppbv	0.04	AC-058	16-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	16-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
Toluene		0.41	ppbv	0.01	AC-058	16-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	16-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	16-Jul-15
trans-2-Butene	I	0.17	ppbv	0.01	AC-058	16-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	16-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	16-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	16-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	20-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	20-Jul-15
1,2,4-Trimethylbenzene	I	0.19	ppbv	0.03	AC-058	20-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
1,2-Dichlorobenzene	I	0.04	ppbv	0.03	AC-058	20-Jul-15
1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	20-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
1,3,5-Trimethylbenzene	I	0.04	ppbv	0.02	AC-058	20-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Jul-15
1-Butene	I	0.26	ppbv	0.02	AC-058	20-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
2,2,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	20-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	20-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
2-Methylpentane	I	0.06	ppbv	0.01	AC-058	20-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
3-Methylhexane	I	0.03	ppbv	0.02	AC-058	20-Jul-15
3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
Acetone		8.4	ppbv	0.4	AC-058	20-Jul-15
Acrolein		0.7	ppbv	0.3	AC-058	20-Jul-15
Benzene		1.13	ppbv	0.01	AC-058	20-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Bromomethane	I	0.01	ppbv	0.01	AC-058	20-Jul-15
Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	20-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Chloroform	I	0.02	ppbv	0.02	AC-058	20-Jul-15
Chloromethane		0.75	ppbv	0.02	AC-058	20-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Jul-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070188-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/July 11, 2015</p> <p>CANISTER ID: 17122</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 17-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		2.5	ppbv	0.3	AC-058	20-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Jul-15
Ethylbenzene	I	0.16	ppbv	0.01	AC-058	20-Jul-15
Freon-11	I	0.24	ppbv	0.02	AC-058	20-Jul-15
Freon-113	I	0.06	ppbv	0.01	AC-058	20-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Freon-12		0.57	ppbv	0.02	AC-058	20-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	20-Jul-15
Isobutane	I	0.22	ppbv	0.02	AC-058	20-Jul-15
Isopentane	I	0.25	ppbv	0.03	AC-058	20-Jul-15
Isoprene		5.30	ppbv	0.01	AC-058	20-Jul-15
Isopropyl alcohol		1.3	ppbv	0.4	AC-058	20-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
m,p-Xylene		0.68	ppbv	0.03	AC-058	20-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Jul-15
m-Ethyltoluene	I	0.10	ppbv	0.08	AC-058	20-Jul-15
Methyl butyl ketone		0.62	ppbv	0.5	AC-058	20-Jul-15
Methyl ethyl ketone		1.1	ppbv	0.3	AC-058	20-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	20-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Jul-15
Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	20-Jul-15
Methylcyclopentane	I	0.03	ppbv	0.02	AC-058	20-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Jul-15
n-Butane		0.71	ppbv	0.03	AC-058	20-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	20-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane		< 0.4	ppbv	0.4	AC-058	20-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
n-Hexane	I	0.13	ppbv	0.01	AC-058	20-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	20-Jul-15
n-Propylbenzene	I	0.05	ppbv	0.05	AC-058	20-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	20-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	20-Jul-15
n-Nonane	I	0.03	ppbv	0.01	AC-058	20-Jul-15
o-Ethyltoluene	I	0.04	ppbv	0.01	AC-058	20-Jul-15
o-Xylene	I	0.16	ppbv	0.01	AC-058	20-Jul-15
p-Diethylbenzene	I	0.08	ppbv	0.04	AC-058	20-Jul-15
p-Ethyltoluene	I	0.12	ppbv	0.07	AC-058	20-Jul-15
Styrene	I	0.07	ppbv	0.04	AC-058	20-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Jul-15
Toluene		0.54	ppbv	0.01	AC-058	20-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	25-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	25-Jul-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	25-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1-Butene	I	0.04	ppbv	0.02	AC-058	25-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070304-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/July 17, 2015</p> <p>CANISTER ID: S5607</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 17-Jul-15 0:00</p> <p>DATE RECEIVED: 24-Jul-15</p> <p>REPORT CREATED: 19-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
2-Methylpentane	I	0.03 ppbv	0.01	AC-058	25-Jul-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
3-Methylhexane	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
3-Methylpentane	I	0.02 ppbv	0.01	AC-058	25-Jul-15
Acetone		3.9 ppbv	0.4	AC-058	25-Jul-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	25-Jul-15
Benzene	I	0.11 ppbv	0.01	AC-058	25-Jul-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	25-Jul-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
Carbon disulfide		0.49 ppbv	0.01	AC-058	25-Jul-15
Carbon tetrachloride	I	0.09 ppbv	0.01	AC-058	25-Jul-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Chloroform	I	0.02 ppbv	0.02	AC-058	25-Jul-15
Chloromethane		0.69 ppbv	0.02	AC-058	25-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	25-Jul-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Cyclohexane	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.2	ppbv	0.3	AC-058	25-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
Freon-11	I	0.29	ppbv	0.02	AC-058	25-Jul-15
Freon-113	I	0.08	ppbv	0.01	AC-058	25-Jul-15
Freon-114	I	0.02	ppbv	0.02	AC-058	25-Jul-15
Freon-12		0.65	ppbv	0.02	AC-058	25-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	25-Jul-15
Isobutane	I	0.08	ppbv	0.02	AC-058	25-Jul-15
Isopentane	I	0.14	ppbv	0.03	AC-058	25-Jul-15
Isoprene		0.31	ppbv	0.01	AC-058	25-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	25-Jul-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	25-Jul-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	25-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	25-Jul-15
Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
n-Butane	I	0.20	ppbv	0.03	AC-058	25-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	25-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
n-Hexane	I	0.03	ppbv	0.01	AC-058	25-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	25-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	25-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	25-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	25-Jul-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	25-Jul-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Toluene	I	0.07	ppbv	0.01	AC-058	25-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15

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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070377-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/July 23, 2015</p> <p>CANISTER ID: 1149</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 23-Jul-15 0:00</p> <p>DATE RECEIVED: 30-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	01-Aug-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	01-Aug-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	01-Aug-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	01-Aug-15
1,2-Dichloroethane	I	0.10	ppbv	0.01	AC-058	01-Aug-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	01-Aug-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
1-Butene	I	0.17	ppbv	0.02	AC-058	01-Aug-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
2,2-Dimethylbutane	I	0.20	ppbv	0.01	AC-058	01-Aug-15
2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	01-Aug-15
2,3-Dimethylbutane		0.52	ppbv	0.02	AC-058	01-Aug-15
2,3-Dimethylpentane	I	0.24	ppbv	0.02	AC-058	01-Aug-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15

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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070377-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/July 23, 2015</p> <p>CANISTER ID: 1149</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 23-Jul-15 0:00</p> <p>DATE RECEIVED: 30-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.08	ppbv	0.01	AC-058	01-Aug-15
2-Methylhexane	I	0.27	ppbv	0.01	AC-058	01-Aug-15
2-Methylpentane	I	0.21	ppbv	0.01	AC-058	01-Aug-15
3-Methylheptane	I	0.03	ppbv	0.02	AC-058	01-Aug-15
3-Methylhexane		0.46	ppbv	0.02	AC-058	01-Aug-15
3-Methylpentane		0.68	ppbv	0.01	AC-058	01-Aug-15
Acetone		5.9	ppbv	0.4	AC-058	01-Aug-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	01-Aug-15
Benzene		0.40	ppbv	0.01	AC-058	01-Aug-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
Carbon disulfide		1.48	ppbv	0.01	AC-058	01-Aug-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	01-Aug-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Chloroethane	I	0.08	ppbv	0.02	AC-058	01-Aug-15
Chloroform	I	0.02	ppbv	0.02	AC-058	01-Aug-15
Chloromethane		0.77	ppbv	0.02	AC-058	01-Aug-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
cis-2-Butene	I	0.03	ppbv	0.02	AC-058	01-Aug-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Cyclohexane		0.66	ppbv	0.02	AC-058	01-Aug-15
Cyclopentane	I	0.22	ppbv	0.01	AC-058	01-Aug-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		0.9	ppbv	0.3	AC-058	01-Aug-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Ethylbenzene	I	0.02	ppbv	0.01	AC-058	01-Aug-15
Freon-11	I	0.28	ppbv	0.02	AC-058	01-Aug-15
Freon-113	I	0.08	ppbv	0.01	AC-058	01-Aug-15
Freon-114	I	0.02	ppbv	0.02	AC-058	01-Aug-15
Freon-12		0.64	ppbv	0.02	AC-058	01-Aug-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	01-Aug-15
Isobutane	I	0.23	ppbv	0.02	AC-058	01-Aug-15
Isopentane		1.10	ppbv	0.03	AC-058	01-Aug-15
Isoprene		1.16	ppbv	0.01	AC-058	01-Aug-15
Isopropyl alcohol		0.5	ppbv	0.4	AC-058	01-Aug-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
m,p-Xylene	I	0.05	ppbv	0.03	AC-058	01-Aug-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	01-Aug-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	01-Aug-15
Methyl ethyl ketone		0.7	ppbv	0.3	AC-058	01-Aug-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	01-Aug-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	01-Aug-15
Methylcyclohexane		0.40	ppbv	0.01	AC-058	01-Aug-15
Methylcyclopentane		0.48	ppbv	0.02	AC-058	01-Aug-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	01-Aug-15
n-Butane		0.44	ppbv	0.03	AC-058	01-Aug-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	01-Aug-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
n-Heptane		0.65	ppbv	0.01	AC-058	01-Aug-15
n-Hexane		0.45	ppbv	0.01	AC-058	01-Aug-15
n-Octane	I	0.07	ppbv	0.02	AC-058	01-Aug-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	01-Aug-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	01-Aug-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	01-Aug-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	01-Aug-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
o-Xylene	I	0.03	ppbv	0.01	AC-058	01-Aug-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	01-Aug-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Toluene		0.35	ppbv	0.01	AC-058	01-Aug-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15

Qualifiers

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Aug-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	08-Aug-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Aug-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Aug-15
1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	08-Aug-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Aug-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2,2-Dimethylbutane	I	0.01	ppbv	0.01	AC-058	08-Aug-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15

Qualifiers

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2-Methylpentane	I	0.04	ppbv	0.01	AC-058	08-Aug-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
3-Methylpentane	I	0.02	ppbv	0.01	AC-058	08-Aug-15
Acetone		3.3	ppbv	0.4	AC-058	08-Aug-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Aug-15
Benzene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Bromomethane	I	0.01	ppbv	0.01	AC-058	08-Aug-15
Carbon disulfide	I	0.03	ppbv	0.01	AC-058	08-Aug-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	08-Aug-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Chloroform	I	0.02	ppbv	0.02	AC-058	08-Aug-15
Chloromethane		0.63	ppbv	0.02	AC-058	08-Aug-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Cyclopentane	I	0.03	ppbv	0.01	AC-058	08-Aug-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/ July 29, 2015</p> <p>CANISTER ID: S5679</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		0.9	ppbv	0.3	AC-058	08-Aug-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
Freon-11	I	0.28	ppbv	0.02	AC-058	08-Aug-15
Freon-113	I	0.08	ppbv	0.01	AC-058	08-Aug-15
Freon-114	I	0.02	ppbv	0.02	AC-058	08-Aug-15
Freon-12		0.60	ppbv	0.02	AC-058	08-Aug-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	08-Aug-15
Isobutane	I	0.13	ppbv	0.02	AC-058	08-Aug-15
Isopentane	I	0.13	ppbv	0.03	AC-058	08-Aug-15
Isoprene		1.27	ppbv	0.01	AC-058	08-Aug-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Aug-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	08-Aug-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	08-Aug-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Aug-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Aug-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Aug-15
Methylcyclohexane	I	0.06	ppbv	0.01	AC-058	08-Aug-15
Methylcyclopentane	I	0.05	ppbv	0.02	AC-058	08-Aug-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Aug-15
n-Butane	I	0.25	ppbv	0.03	AC-058	08-Aug-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	08-Aug-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given
T Value reported is less than the laboratory method detection limit
U Compound was analyzed for but not detected
I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead
On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455
E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/CLS/ July 29, 2015</p> <p>CANISTER ID: S5679</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
n-Hexane	I	0.06	ppbv	0.01	AC-058	08-Aug-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	08-Aug-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Aug-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Aug-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Aug-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Aug-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Toluene	I	0.02	ppbv	0.01	AC-058	08-Aug-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15

Qualifiers

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PAHS SAMPLES

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070083-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/July 5, 2015</p> <p>CANISTER ID: TE-02</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 13-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.06 ug/Filter	0.01	NA-017	02-Aug-15
2-Methylnaphthalene		0.08 ug/Filter	0.01	NA-017	02-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
7,12-Dimethylbenz(a)anthracene		0.02 ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Anthracene		0.05 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(b,j,k)fluoranthene		0.04 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Chrysene		0.02 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Fluoranthene		0.08 ug/Filter	0.01	NA-017	02-Aug-15
Fluorene		0.13 ug/Filter	0.01	NA-017	02-Aug-15
Indeno(1,2,3-cd)pyrene		0.04 ug/Filter	0.01	NA-017	02-Aug-15
Naphthalene		0.07 ug/Filter	0.01	NA-017	02-Aug-15
Perylene		0.04 ug/Filter	0.01	NA-017	02-Aug-15
Phenanthrene		0.54 ug/Filter	0.01	NA-017	02-Aug-15
Pyrene		0.05 ug/Filter	0.01	NA-017	02-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070083-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/July 5, 2015</p> <p>CANISTER ID: TE-02</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 13-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.93 ug/Filter	0.01	NA-017	02-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070188-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/July 11, 2015</p> <p>CANISTER ID: TE-07</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 17-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.05	ug/Filter	0.01	NA-017	02-Aug-15
2-Methylnaphthalene		0.09	ug/Filter	0.01	NA-017	02-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
7,12-Dimethylbenz(a)anthracene		0.01	ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Acridine	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Anthracene		0.06	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(b,j,k)fluoranthene		0.04	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Chrysene		0.03	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Fluoranthene		0.16	ug/Filter	0.01	NA-017	02-Aug-15
Fluorene		0.10	ug/Filter	0.01	NA-017	02-Aug-15
Indeno(1,2,3-cd)pyrene		0.06	ug/Filter	0.01	NA-017	02-Aug-15
Naphthalene		0.09	ug/Filter	0.01	NA-017	02-Aug-15
Perylene		0.05	ug/Filter	0.01	NA-017	02-Aug-15
Phenanthrene		1.33	ug/Filter	0.01	NA-017	09-Aug-15
Pyrene		0.08	ug/Filter	0.01	NA-017	02-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070188-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/July 11, 2015</p> <p>CANISTER ID: TE-07</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 17-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		1.99 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070304-004 MATRIX: Air Filter CLIENT SAMPLE ID: LICA/PUF/CLS/July 17, 2015 CANISTER ID: TE-01 DESCRIPTION: CLS DATE SAMPLED: 17-Jul-15 0:00 DATE RECEIVED: 24-Jul-15 REPORT CREATED: 19-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.02 ug/Filter	0.01	NA-017	09-Aug-15
2-Methylnaphthalene		0.03 ug/Filter	0.01	NA-017	09-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Anthracene		0.02 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Chrysene		0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Fluoranthene		0.06 ug/Filter	0.01	NA-017	09-Aug-15
Fluorene		0.10 ug/Filter	0.01	NA-017	09-Aug-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Naphthalene		0.03 ug/Filter	0.01	NA-017	09-Aug-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Phenanthrene		0.46 ug/Filter	0.01	NA-017	09-Aug-15
Pyrene		0.04 ug/Filter	0.01	NA-017	09-Aug-15

Qualifiers K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit	Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070304-004</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/July 17, 2015</p> <p>CANISTER ID: TE-01</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 17-Jul-15 0:00</p> <p>DATE RECEIVED: 24-Jul-15</p> <p>REPORT CREATED: 19-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.56 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070377-002 MATRIX: Air Filter CLIENT SAMPLE ID: LICA/PUF/CLS/July 23, 2015 CANISTER ID: 9801 DESCRIPTION: CLS DATE SAMPLED: 23-Jul-15 0:00 DATE RECEIVED: 30-Jul-15 REPORT CREATED: 11-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.05	ug/Filter	0.01	NA-017	09-Aug-15
2-Methylnaphthalene		0.08	ug/Filter	0.01	NA-017	09-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthene		0.05	ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Acridine	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(c)phenanthrene		0.17	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Chrysene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Fluoranthene		0.03	ug/Filter	0.01	NA-017	09-Aug-15
Fluorene		0.06	ug/Filter	0.01	NA-017	09-Aug-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Naphthalene		0.05	ug/Filter	0.01	NA-017	09-Aug-15
Perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Phenanthrene		0.23	ug/Filter	0.01	NA-017	09-Aug-15
Pyrene		0.03	ug/Filter	0.01	NA-017	09-Aug-15

Qualifiers K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit	Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070377-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/July 23, 2015</p> <p>CANISTER ID: 9801</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 23-Jul-15 0:00</p> <p>DATE RECEIVED: 30-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.03 ug/Filter	0.01	NA-017	09-Aug-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given

T Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/ July 29, 2015</p> <p>CANISTER ID: TE-11</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.02 ug/Filter	0.01	NA-017	09-Aug-15
2-Methylnaphthalene		0.04 ug/Filter	0.01	NA-017	09-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(c)phenanthrene		0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Chrysene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Fluoranthene		0.04 ug/Filter	0.01	NA-017	09-Aug-15
Fluorene		0.04 ug/Filter	0.01	NA-017	09-Aug-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Naphthalene		0.02 ug/Filter	0.01	NA-017	09-Aug-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Phenanthrene		0.20 ug/Filter	0.01	NA-017	09-Aug-15
Pyrene		0.04 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/CLS/ July 29, 2015</p> <p>CANISTER ID: TE-11</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.02 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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PARTISOL SAMPLES

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Mike Bisaga 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070082-001</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA P4148569</p> <p>CANISTER ID:</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 13-Jul-15</p> <p>REPORT CREATED: 29-Jul-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.315 mg	0.004	AC-029	20-Jul-15

<p><u>Qualifiers</u></p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Mike Bisaga 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070187-001</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA P4148570</p> <p>CANISTER ID:</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 17-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		2.45 mg	0.004	AC-029	20-Jul-15

<p><u>Qualifiers</u></p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Mike Bisaga 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070305-001</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA P4149452</p> <p>CANISTER ID:</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 17-Jul-15 0:00</p> <p>DATE RECEIVED: 24-Jul-15</p> <p>REPORT CREATED: 08-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.192 mg	0.004	AC-029	30-Jul-15

<p><u>Qualifiers</u></p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Mike Bisaga 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070378-001</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA P4149573</p> <p>CANISTER ID:</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 23-Jul-15 0:00</p> <p>DATE RECEIVED: 30-Jul-15</p> <p>REPORT CREATED: 18-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.050 mg	0.004	AC-029	06-Aug-15

<p><u>Qualifiers</u></p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Mike Bisaga 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080013-001</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA P4149435</p> <p>CANISTER ID:</p> <p>DESCRIPTION: CLS</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 19-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Particulate Weight		0.018	mg	0.004	AC-029	12-Aug-15

<p><u>Qualifiers</u></p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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APPENDIX V
CHAIN OF CUSTODY



Maxxam Analytics - Air Services Group

Project Chain of Custody

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2015-07-01- C</u>
Site: <u>Cold Lake South Site</u>	Contact: <u>Mike Bisaga</u>

QA Check Complete woodmha Date 11 - Aug - 2015

QA Check Review woodmha Date 11 - Aug - 2015

Report Complete woodmha Date 26 - Aug - 2015

Report Reviewed [Signature] Date 27 - Aug - 2015

Report Shipped _____ Date _____

Notes

**AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
MASKWA SITE**

JOB #:2833-2015-07-30- C

JULY 2015


Prepared for:

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
BOX 8237, 5107W - 50 STREET
BONNYVILLE, ALBERTA
T9N 2J5**

Attention: MIKE BISAGA

DATE: August 18, 2015

Prepared by:



Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:



Lily Lin, B.Sc.
Senior Project Manager, Air Services, Maxxam Analytics

SUMMARY

In JULY 2015, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Maskwa Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

All Parameters: Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

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 is issuing this completed report to Lakeland Industry & Community Association, Maskwa Site.

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

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
Maskwa Site						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO2 (PPB)	172	48	0	0	1	10	19, 19	4, 8	7.1 6.4	NW NW	4.3	19	98.4
H2S (PPB)	10	3	0	0	0	3	3	VAR	VAR	VAR	1.2	3	98.4
THC (PPM)	-	-	-	-	2.1	2.7	VAR	VAR	VAR	VAR	2.3	6	98.4
NO2 (PPB)	159	-	0	-	2.5	19.6	29	0	4.7	W	5.9	28	98.4
NO (PPB)	-	-	-	-	0.7	16.0	18	6	2.8	W	3.5	19	98.4
NOX (PPB)	-	-	-	-	3.2	28.3	4	22	4.9	NW	8.9	19	98.4
RELATIVE HUMIDITY (%)	-	-	-	-	67.1	94	2, 24	VAR	VAR	VAR	88.2	16	98.4
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	939	949	VAR	VAR	VAR	VAR	947	VAR	98.4
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	18.0	31.1	12	14	5.8	ENE	23.8	12	98.4
PRECIPITATION (MM)	-	-	-	-	0.1	5.4	16	9	5.1	W	0.7	17	98.4
VECTOR WS (KPH)	-	-	-	-	4.6	14.9	17	12	-	NNE	8.1	17	98.4
VECTOR WD (DEG)	-	-	-	-	W	-	-	-	-	-	-	-	98.4

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 1- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

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1.0 Discussion

This monthly report consists of data for parameters SO₂, H₂S, THC, NO_x, NO, NO₂, WS, WD, RH, BP, Precipitation and Ambient Temperature.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) 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 calibration is done a minimum of once a month for each continuous air monitor. In addition 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.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as 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 (greater than 15%).

Hourly data is corrected using daily zero information.

Trailer inspection was performed on July 10.

SULPHUR DIOXIDE (SO₂)

The routine monthly calibration was performed on July 10. The analyzer started spanning high after the calibration. A shut-down calibration was performed on July 13 prior to maintenance. The sample pump was rebuilt, a post-repair calibration was performed and expected span value was adjusted on the same day. The analyzer spanned high again after the maintenance. An as found points check was performed on July 16. The result was good. The expected span value was then adjusted to the right value. No further issues were identified. As this issue is limited to the zero/span system, no data was discarded. Another as found points check was performed on July 29 to confirm analyzer's functionality. The result was good. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

HYDROGEN SULPHIDE (H₂S)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 10. An as found points check was performed on July 16 for monitoring purposes. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

TOTAL HYDROCARBONS (THC)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 10. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

NITROGEN DIOXIDE (NO₂)

The routine monthly calibration was performed on July 10. The analyzer showed some instability in its daily span readings towards the end of the month. An as found points check was performed on July 29. The result was good. No further issues were identified. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

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 coming from.

The wind system was working well throughout the month. Hourly maximum data collected on July 4 hour 17 was invalidated due to a spike. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

BAROMETRIC PRESSURE (BP)

The pressure sensor was working well throughout the month. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

PRECIPITATION

The rain gauge system was working well throughout the month. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month. 12 hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling team consisted of Alexander Yakupov and Christopher Wesson.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, and 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006).

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Met One Unit
- Precipitation - Met One Unit
- Datalogger - ESC 8832

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE



SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS.		
	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					
1	0	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.5	24	
2	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	6	0.3	24
3	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	2	0.2	24
4	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.3	24
5	4	1	1	1	3	1	1	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.6	24
6	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	1	0.0	24
7	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	1	0.0	24
8	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	1	0.0	24
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6	24
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	12
11	2	2	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	5	1.9	24
12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	8	3.9	24
13	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1.6	24
14	5	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	4	2.0	24
15	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	1	0.1	24
16	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	1	0.2	24
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.1	24
18	3	6	1	1	1	1	2	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.3	24
19	0	0	1	3	10	7	8	9	10	8	8	5	5	4	3	6	2	9	5	1	0	0	0	0	0	1	6	1.2	24
20	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	10	4.3	24
21	3	0	1	2	1	0	1	1	0	0	1	2	2	4	1	1	1	1	1	1	1	1	1	1	1	1	4	1.2	24
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	24
25	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.5	24
26	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	24
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1.3	24
28	1	1	2	3	2	2	3	6	8	5	2	3	6	5	7	3	7	3	3	1	1	1	1	1	1	1	8	3.6	24
29	8	2	1	1	1	2	3	3	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	1.7	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
31	0	0	0	0	0	0	1	5	5	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.0	24
HOURLY MAX	8	6	3	3	10	7	8	9	10	8	8	5	5	4	3	6	2	9	5	1	0	0	0	0	0	0	10	4.3	24
HOURLY AVG	1.1	0.7	0.7	0.8	0.9	0.9	1.3	1.6	2.4	1.3	1.1	1.1	1.1	1.1	1.2	1.0	1.0	1.2	1.2	0.9	1.0	1.0	1.1	1.1	1.1	1.3	1.2	1.0	24

STATUS FLAG CODES

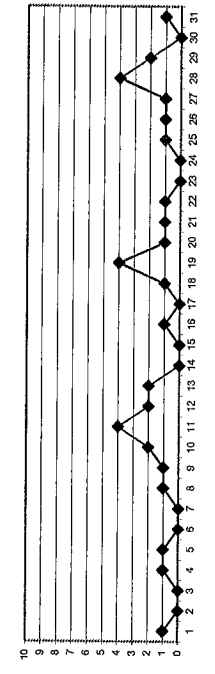
C	CALIBRATION	O	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

OBJECTIVE LIMIT: ALBERTA ENVIRONMENT: 1-HR: 172 PPB 24-HR: 48 PPB

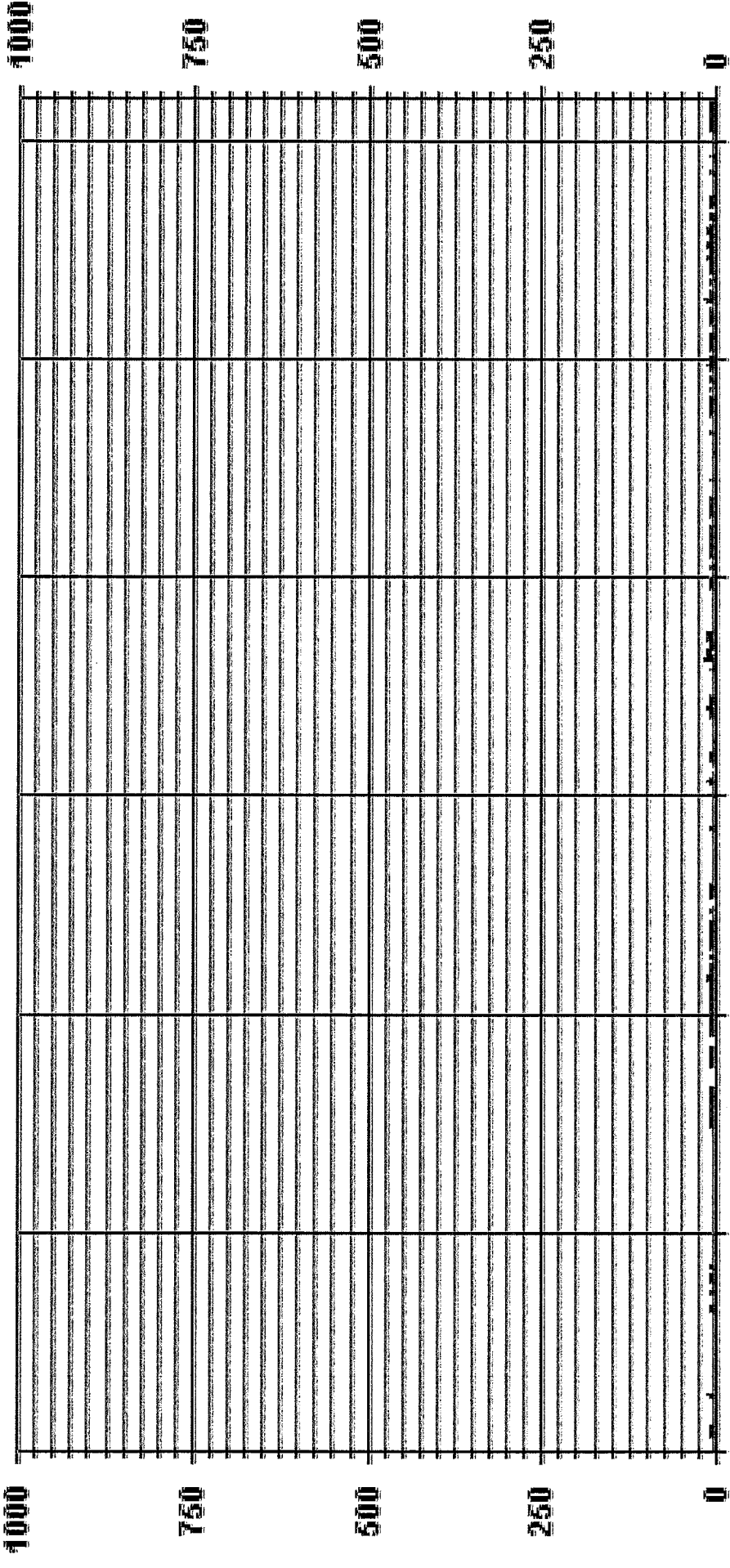
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0	NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	379	MAXIMUM 1-HR AVERAGE:	10 PPB @ HOUR(S) 4, 8 ON DAY(S) 19, 19
MAXIMUM 1-HR AVERAGE:	10 PPB	MAXIMUM 24-HR AVERAGE:	4.3 PPB VAR- VARIOUS ON DAY(S) 19
1ZS CALIBRATION TIME:	38 HRS	OPERATIONAL TIME:	732 HRS
MONTHLY CALIBRATION TIME:	19 HRS	AMD OPERATION UPTIME:	98.4 %
STANDARD DEVIATION:	1.66	MONTHLY AVERAGE:	1 PPB

24 HOUR AVERAGES FOR JULY 2015



01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA30 SO2_ PPB



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	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	24:00	ROGS.	
HOUR END	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	00:00	AVG.	MAX.	
DAY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	2.8	
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1.5	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.7	
4	0	0	1	0	1	1	2	5	9	2	5	6	6	5	3	14	10	1	1	1	1	1	4	10	9	14	4.2
5	7	2	1	4	5	3	1	1	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1.1	
6	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	0.6	
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.1	
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1.1	
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.2	
10	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	3.2	
11	3	3	3	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2.4	
12	4	4	4	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	2.3	
13	2	5	6	5	3	10	7	5	8	5	8	5	8	5	8	5	8	5	8	5	8	5	8	5	1	10	4.2
14	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.2
15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1.0	
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	2.7	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1.6	
18	10	10	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	3.0	
19	1	1	2	7	16	16	14	13	18	13	17	11	13	11	15	16	9	23	5	4	0	0	0	0	23	9.6	
20	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1.7	
21	6	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	2.3	
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.0	
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.1	
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	2.8	
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	2.6	
26	2	2	6	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	7.6
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	3.4
28	1	2	3	4	4	2	4	13	19	5	4	7	11	11	21	8	11	12	11	2	2	2	6	8	9	21	7.6
29	9	7	1	1	2	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	16	3.4
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	1.7
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	2.0
HOURLY MAX	10	10	6	7	16	16	14	13	19	13	17	11	13	11	21	16	14	23	16	10	14	10	10	10	9		
HOURLY AVG	2.0	1.7	1.5	1.7	2.0	2.2	2.4	3.1	5.0	2.8	2.8	2.6	2.8	2.7	3.4	2.7	3.2	3.4	2.3	2.0	2.0	2.3	2.7	2.0			

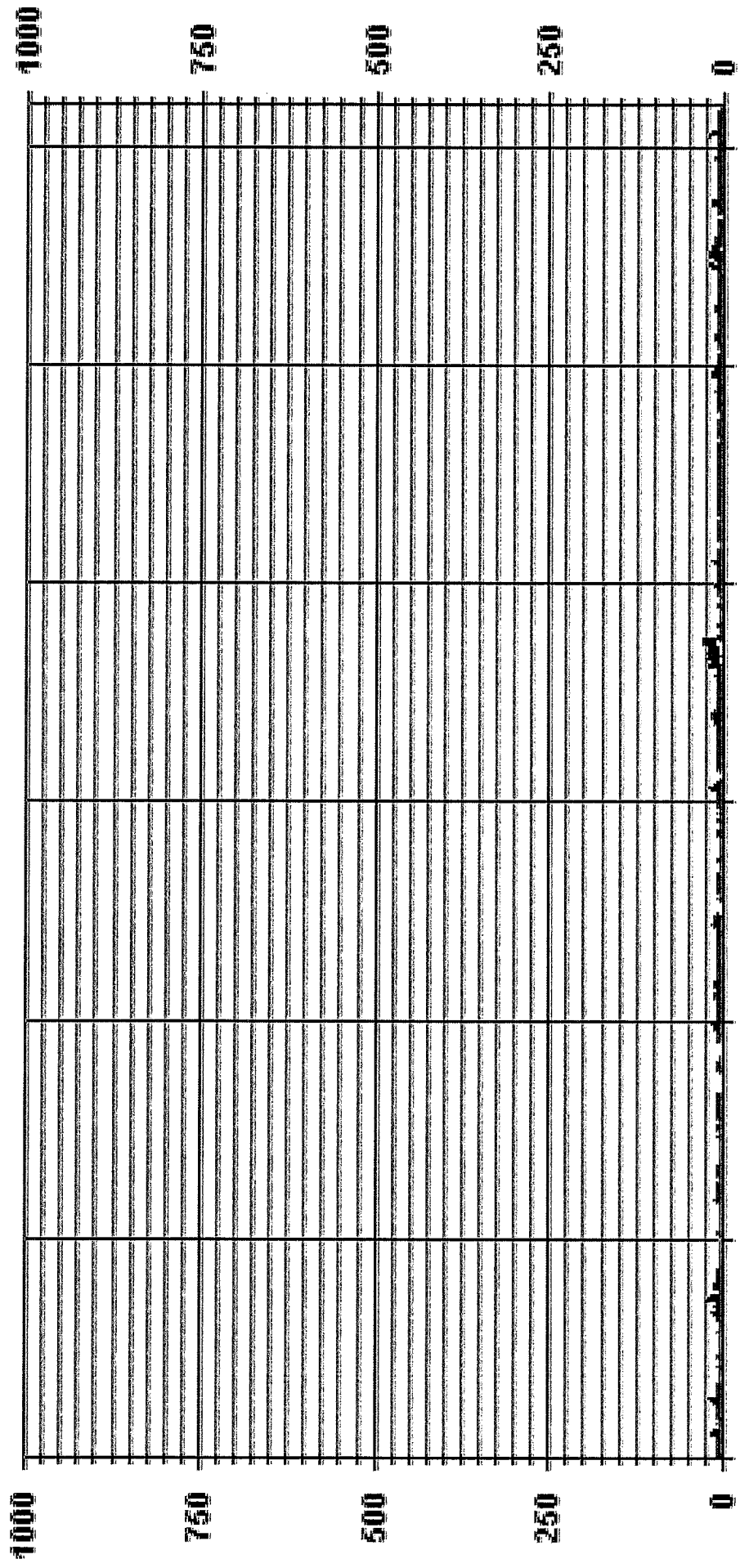
STATUS FLAG CODES

C	CALIBRATION	O	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DATA ZERO/SPAN CHECK	X	MACHINE/FUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	580
MAXIMUM INSTANTANEOUS VALUE:	23 PPB @ HOUR(S) 17 ON DAY(S) 19
IZS CALIBRATION TIME:	41 HRS
MONTHLY CALIBRATION TIME:	20 HRS
OPERATIONAL TIME:	732 HRS
STANDARD DEVIATION:	3.31
OPERATIONAL TIME:	VAR-VARIOUS

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA30 SO2MAX PPB

LICA30
 SO2 / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % of Samples

Logger Id : 30
 Site Name : LICA30
 Parameter : SO2
 Units : PPS

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 20	4.44	5.62	3.55	2.81	2.51	2.96	2.37	1.77	3.40	15.55	13.03	8.74	10.66	10.22	7.25	5.03	100.00	
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	4.44	5.62	3.55	2.81	2.51	2.96	2.37	1.77	3.40	15.55	13.03	8.74	10.66	10.22	7.25	5.03		

Calm : .00 %

Total # Operational Hours : 675

Distribution By Samples

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 20	30	38	24	19	17	20	16	12	23	105	88	59	72	69	49	34	675	
< 60																		
< 110																		
< 170																		
< 340																		
>= 340																		
Totals	30	38	24	19	17	20	16	12	23	105	88	59	72	69	49	34		

Calm : .00 %

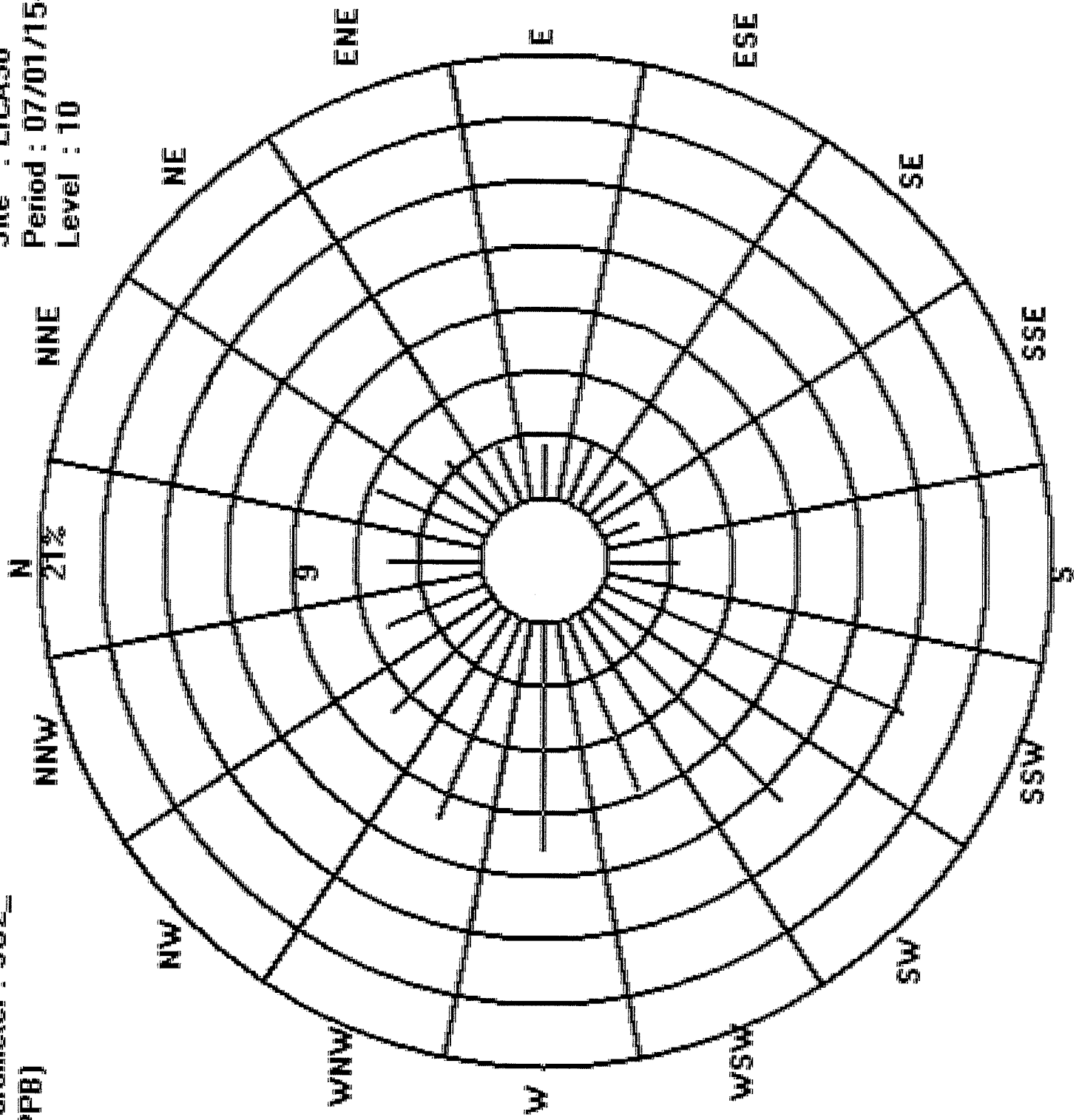
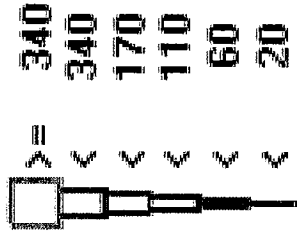
Total # Operational Hours : 675

Logger : 30 Parameter : SO2_

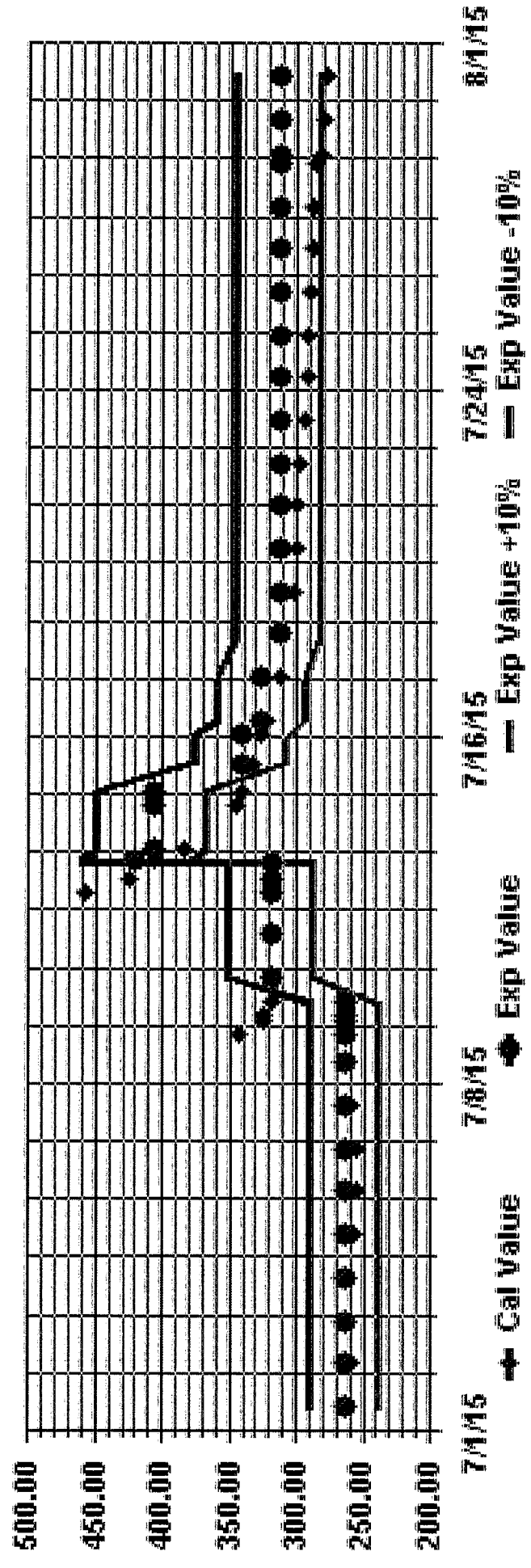
Site : LICA30

Class Limits (PPB)

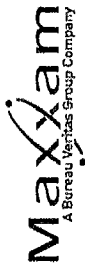
Period : 07/01/15-07/31/15



Calibration Graph for Site: LICA30 Parameter: S02_ Sequence: S02 Phase: SPAN



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

HOURS START	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	24:00	RODGS.		
HOURS END	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	0:00	1:00	24-HOUR AVG.		
DAY																									DAILY MAX.	24-HOUR AVG.	
1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0.4
2	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	1	0.3
3	1	2	2	2	3	3	3	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	3	1.2	
4	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.7	
5	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
6	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.4	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
8	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
11	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	0.1	
12	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	
13	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	
14	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	
15	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	
16	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0.3	
17	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	
18	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	
19	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	
20	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	
21	1	2	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	
22	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	0.1	
23	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	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	
25	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	
26	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	
27	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	0.1	
28	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	
29	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	
30	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	
31	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	0.1	
HOURLY MAX	1	2	2	3	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
HOURLY AVG	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	

STATUS FLAG CODES

C	-CALIBRATION	Q	-QUALITY ASSURANCE
Y	-MAINTENANCE	K	-RECOVERY
S	-DAILY ZERO/SPAN CHECK	X	-MACHINE MALFUNCTION
P	-POWER FAILURE	O	-OPERATOR ERROR
G	-OUT FOR REPAIR	K	-COLLECTION ERROR

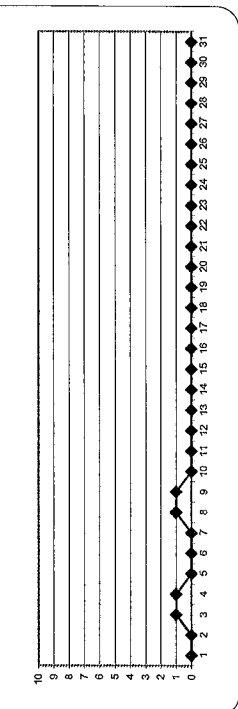
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR: 100 PPB 24-HR: 3 PPB

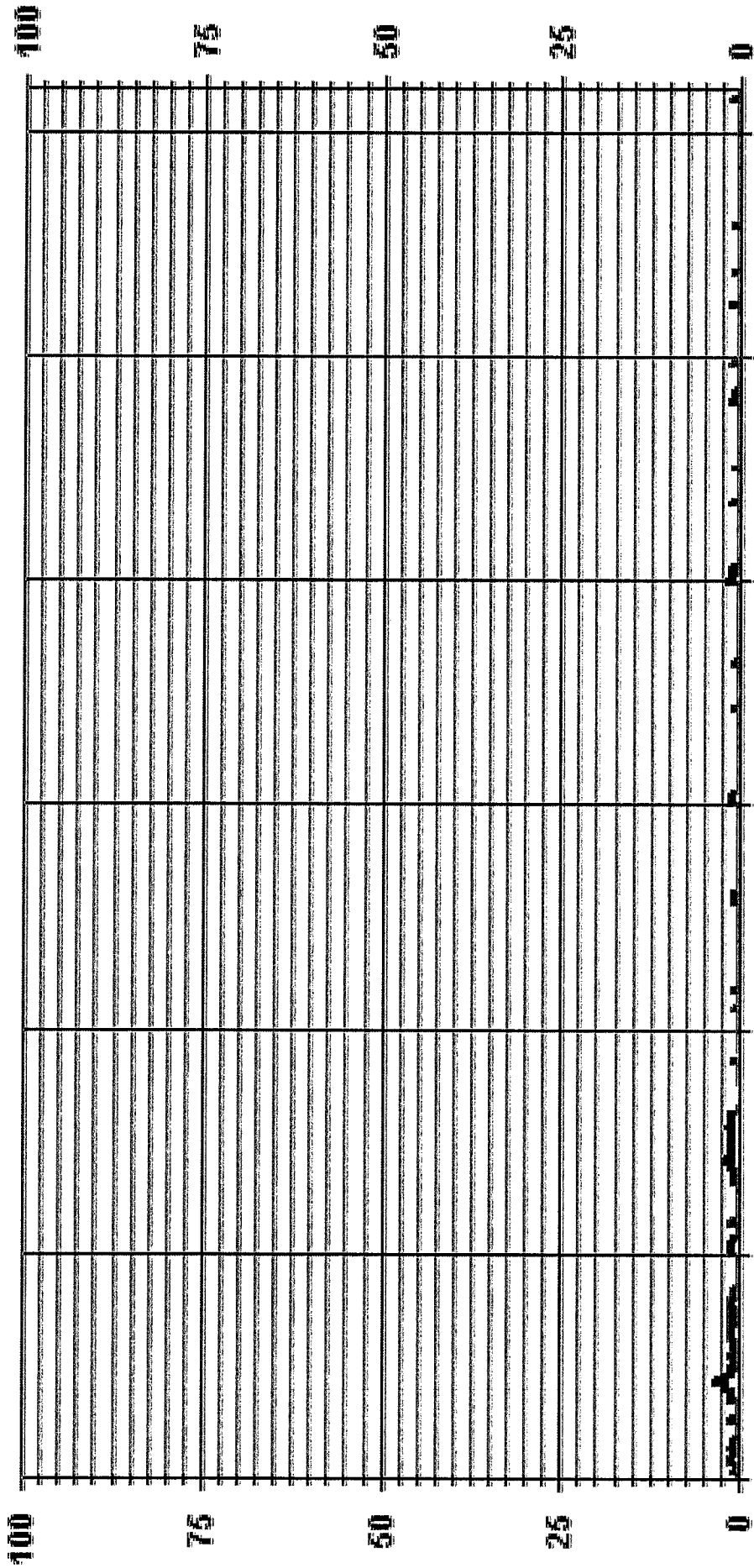
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	130			
MAXIMUM 1-HR AVERAGE:	3 PPB @ HOUR(S)	VAR	ON DAY(S)	3
MAXIMUM 24-HR AVERAGE:	1.2 PPB		ON DAY(S)	3
12S CALIBRATION TIME:	34 HRS	OPERATIONAL TIME:	732 HRS	
MONTHLY CALIBRATION TIME:	7 HRS	AMD OPERATION UPTIME:	98.4 %	
STANDARD DEVIATION:	0.47	MONTHLY AVERAGE:	0 PPB	

24 HOUR AVERAGES FOR JULY 2015



01 Hour Averages



07:01:15 00:00:07:06:15 00:00:07:11:15 00:00:07:16:15 00:00:07:21:15 00:00:07:26:15 00:00:07:31:15 00:00

— LICA30 H2S_ PPB



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

HOURLY START	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	24:00	RDGS.	
HOURLY END	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	0:00	DAILY MAX.	24-HOUR AVG.	
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	
2	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	
3	3	3	3	4	4	4	3	3	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	4	2.0	
4	1	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1.2	
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0.9	
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	
8	1	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.7	
9	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.4	
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0.6	
11	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.8	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6
13	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.7	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.6
15	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.8
16	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5
17	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7
19	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9
20	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	3	0.5
21	3	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.3	
22	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7
23	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7
24	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9
25	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.2	
26	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7
27	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.7	
28	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9
29	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6
30	1	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.4	
31	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.6
HOURLY MAX	3	4	4	3	4	4	4	3	3	3	2	3	1	3	2	2	1	2	1	2	3	2	6	2	2	3	0.8
HOURLY AVG	0.8	1.0	1.1	1.0	1.0	1.1	1.0	1.0	0.9	0.9	1.0	0.7	0.7	0.7	0.8	0.7	0.8	0.8	0.8	0.9	0.8	0.7	1.0	0.9	1.0	0.8	

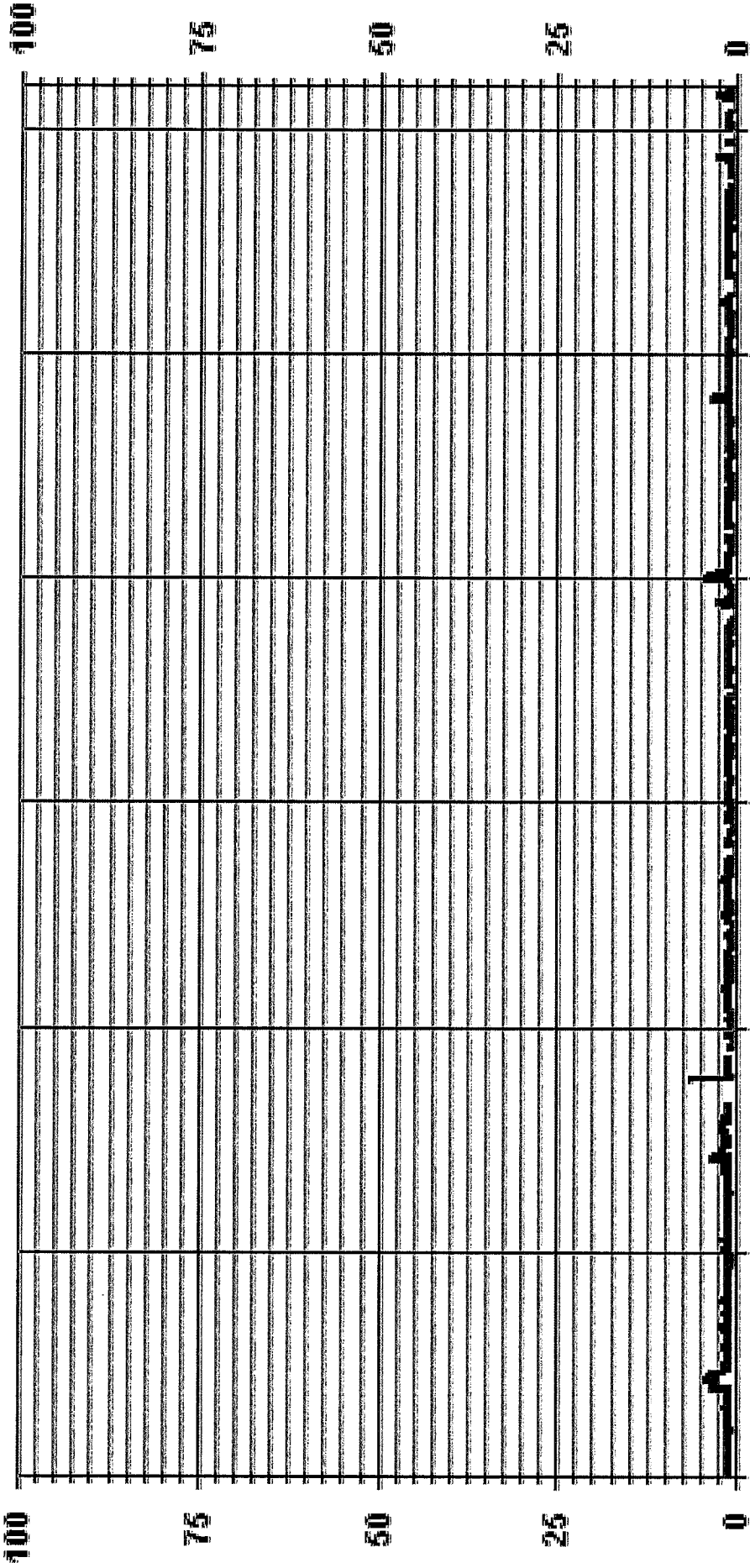
STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	525
MAXIMUM INSTANTANEOUS VALUE:	6 PPB @ HOUR(S) 21 ON DAY(S) 9
IZS CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	0.68
OPERATIONAL TIME:	732 HRS
VAR-VARIOUS	

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA30 H2SMAX PPB

LICA30
H2S_ / WDR Joint Frequency Distribution (Percent)
July 2015

Distribution By % Of Samples

Logger Id : 30
Site Name : LICA30
Parameter : H2S
Units : PPM

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	4.34	5.64	3.47	2.74	2.46	2.89	2.31	1.73	3.32	14.76	12.73	8.53	10.70	10.85	7.81	5.20	99.56
< 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.43	.00	.00	.00	.00	.00	.00	.43
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.34	5.64	3.47	2.74	2.46	2.89	2.31	1.73	3.32	15.19	12.73	8.53	10.70	10.85	7.81	5.20	

Calm : .00 %

Total # Operational Hours : 691

Distribution By Samples

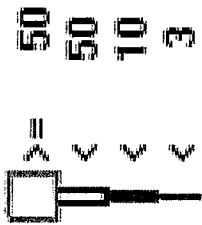
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	30	39	24	19	17	20	16	12	23	102	88	59	74	75	54	36	688
< 10										3							3
< 50																	
>= 50																	
Totals	30	39	24	19	17	20	16	12	23	105	88	59	74	75	54	36	

Calm : .00 %

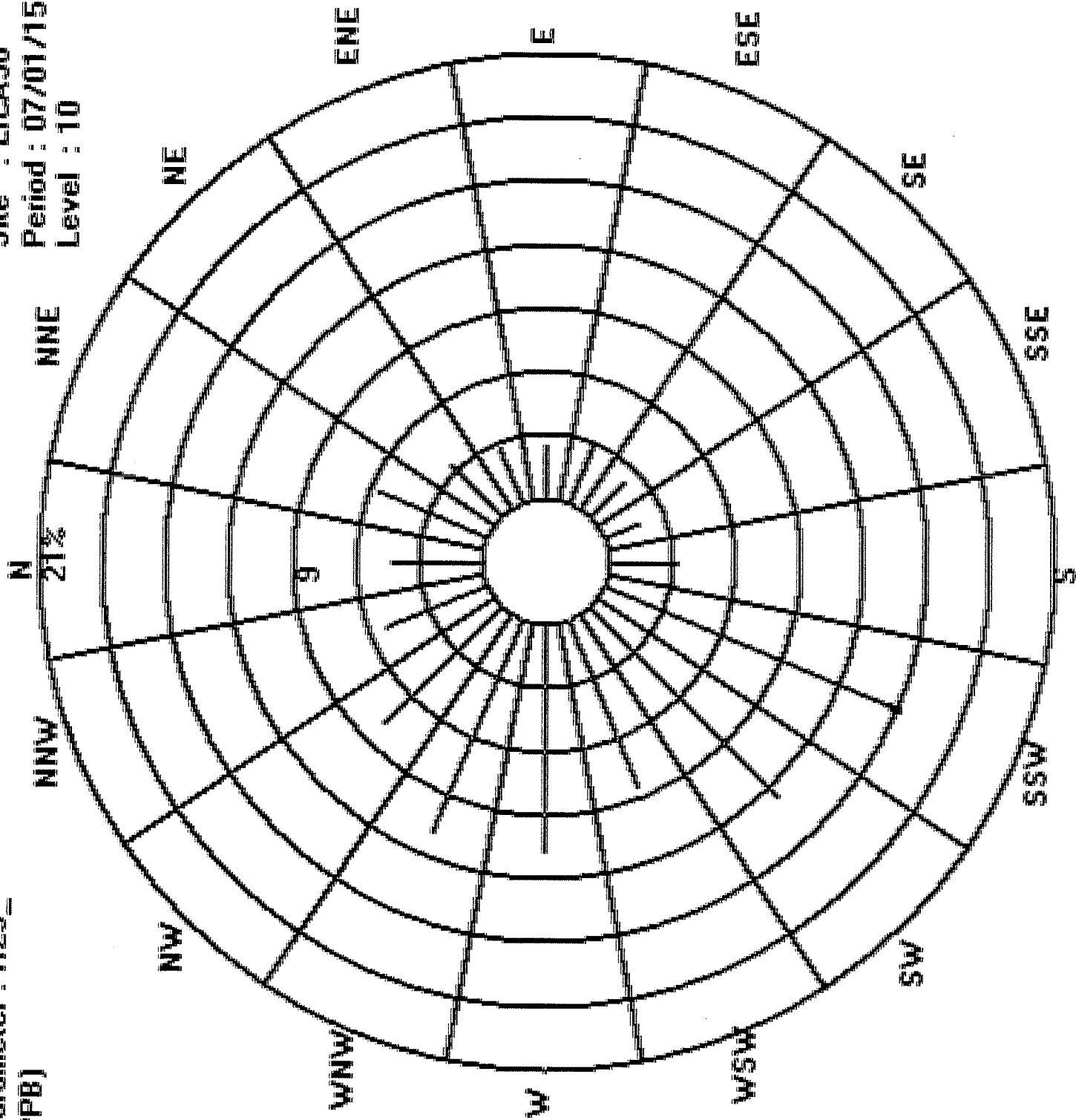
Total # Operational Hours : 691

Logger : 30 Parameter : H2S_

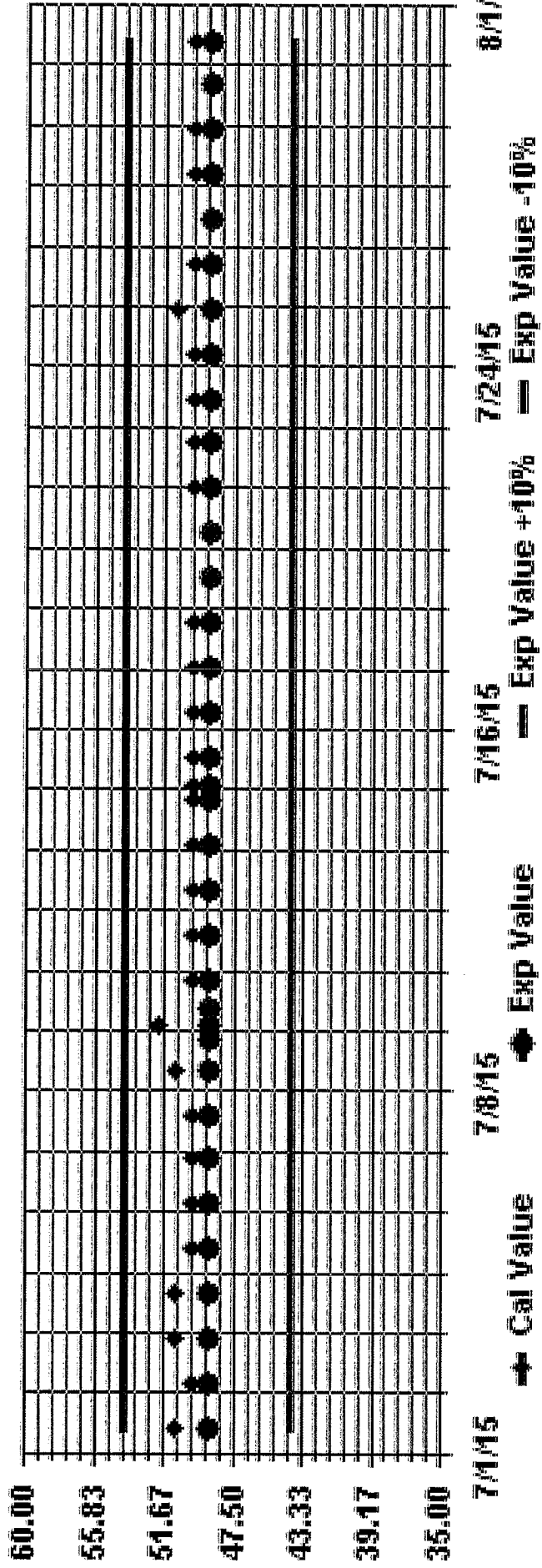
Class Limits (PPB)



Site : LICA30
Period : 07/01/15-07/31/15
Level : 10

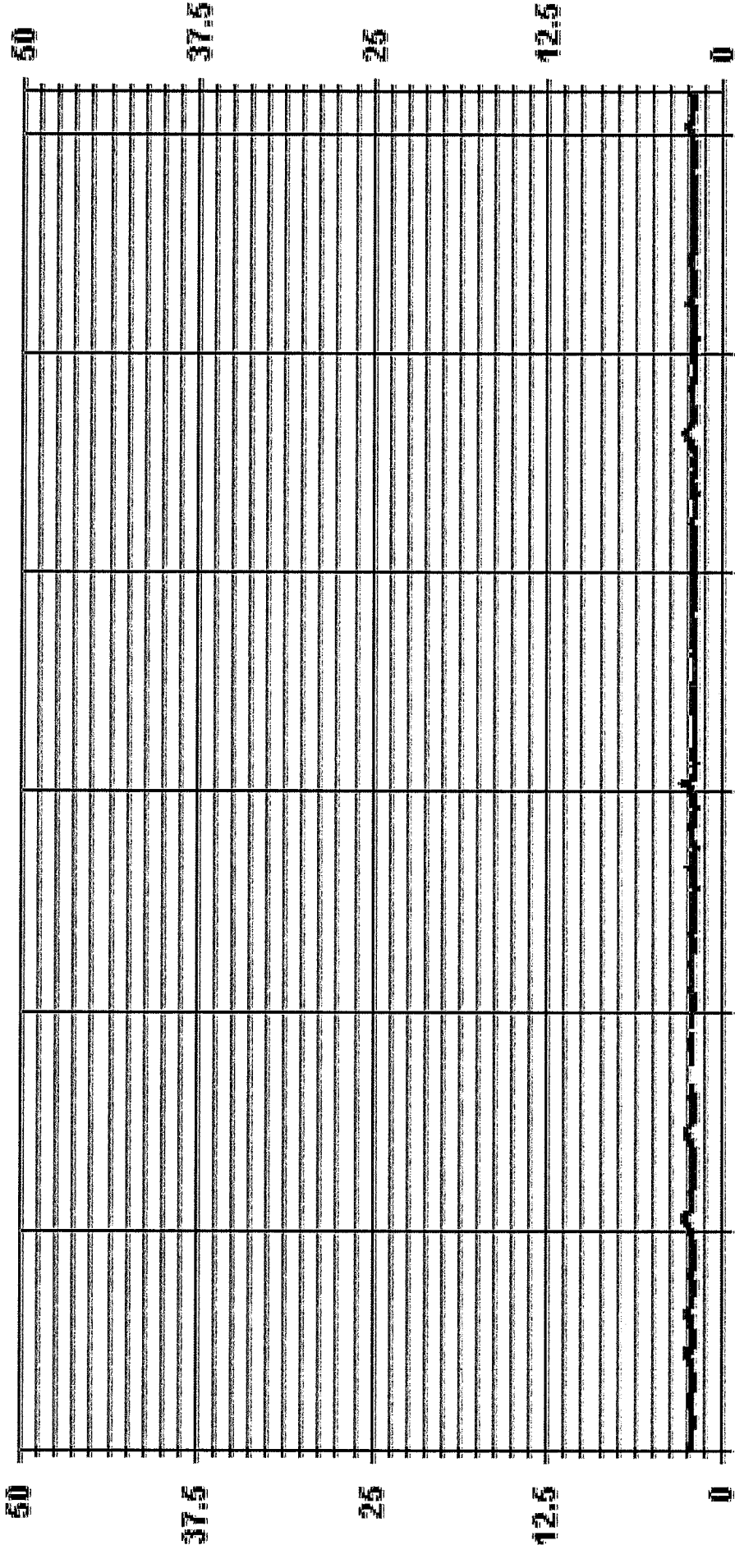


Calibration Graph for Site: LICA30 Parameter: H2S_ Sequence: H2S Phase: SPAN



TOTAL HYDROCARBON

01 Hour Averages



07/01/15 00:0007/06/15 00:0007/11/15 00:0007/16/15 00:0007/21/15 00:0007/26/15 00:0007/31/15 00:00

— LICA30 THC PPM



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Site - JULY 2015
JOB # 2833-2015-07-30-C

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST

DAY	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 MAX	24-HOUR AVG	RDGS	
1	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.1	2.1	2.1	2.2	2.2	2.1	5	2.0	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.2	24
2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.4	2.2	2.3	2.1	5	2.0	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.5	2.2	24
3	2.2	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.2	5	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.2	24
4	2.2	2.3	2.5	2.5	2.6	2.6	2.6	2.6	2.4	2.3	2.3	5	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.6	2.3	24
5	2.2	2.2	2.2	2.2	2.3	2.2	2.1	2.0	2.0	5	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.1	24
6	2.3	2.5	2.4	2.5	2.6	2.6	2.7	2.8	5	2.8	2.7	2.7	2.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.8	2.4	24	
7	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	24	
8	2.2	2.3	2.3	2.4	2.5	2.7	5	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.7	2.2	24	
9	2.6	2.8	2.6	2.2	2.2	5	2.3	2.1	5	2.3	2.1	5	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.7	2.2	24	
10	2.2	2.1	2.2	2.2	2.2	5	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.8	2.3	12	
11	2.3	2.2	2.3	5	3.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	24	
12	2.2	2.2	5	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.1	2.2	24	
13	2.4	5	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.2	24	
14	5	2.2	2.1	2.2	2.1	2.1	2.3	2.4	2.2	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.4	2.1	24	
15	2.1	2.2	2.3	2.2	2.2	2.3	5	2.2	2.1	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.4	2.1	24	
16	2.4	2.4	2.4	2.3	2.8	2.9	2.6	2.5	2.3	2.0	2.1	2.0	2.0	1.9	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.1	24	
17	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	24	
18	2.1	2.1	2.0	2.1	2.2	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	1.9	24	
19	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	24	
20	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	24	
21	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.0	24	
22	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	24	
23	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24	
24	2.2	2.4	2.5	2.6	2.7	2.7	2.7	2.7	2.5	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.1	24	
25	2.1	2.1	2.1	2.1	2.5	2.4	2.4	2.3	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	24	
26	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.1	24
27	2.1	2.2	2.2	2.3	2.6	2.5	2.4	2.4	2.3	2.1	5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	24	
28	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.2	2.1	5	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.6	2.2	24
29	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.1	5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.0	24
30	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	5	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	24
31	2.2	2.2	2.2	2.2	2.4	2.4	5	2.5	2.4	2.1	2.1	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.2	24
HOURLY MAX	2.6	2.8	2.6	2.6	3.1	2.9	2.7	2.8	2.5	2.8	2.7	2.7	2.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4	2.4	2.3		
HOURLY AVG	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	

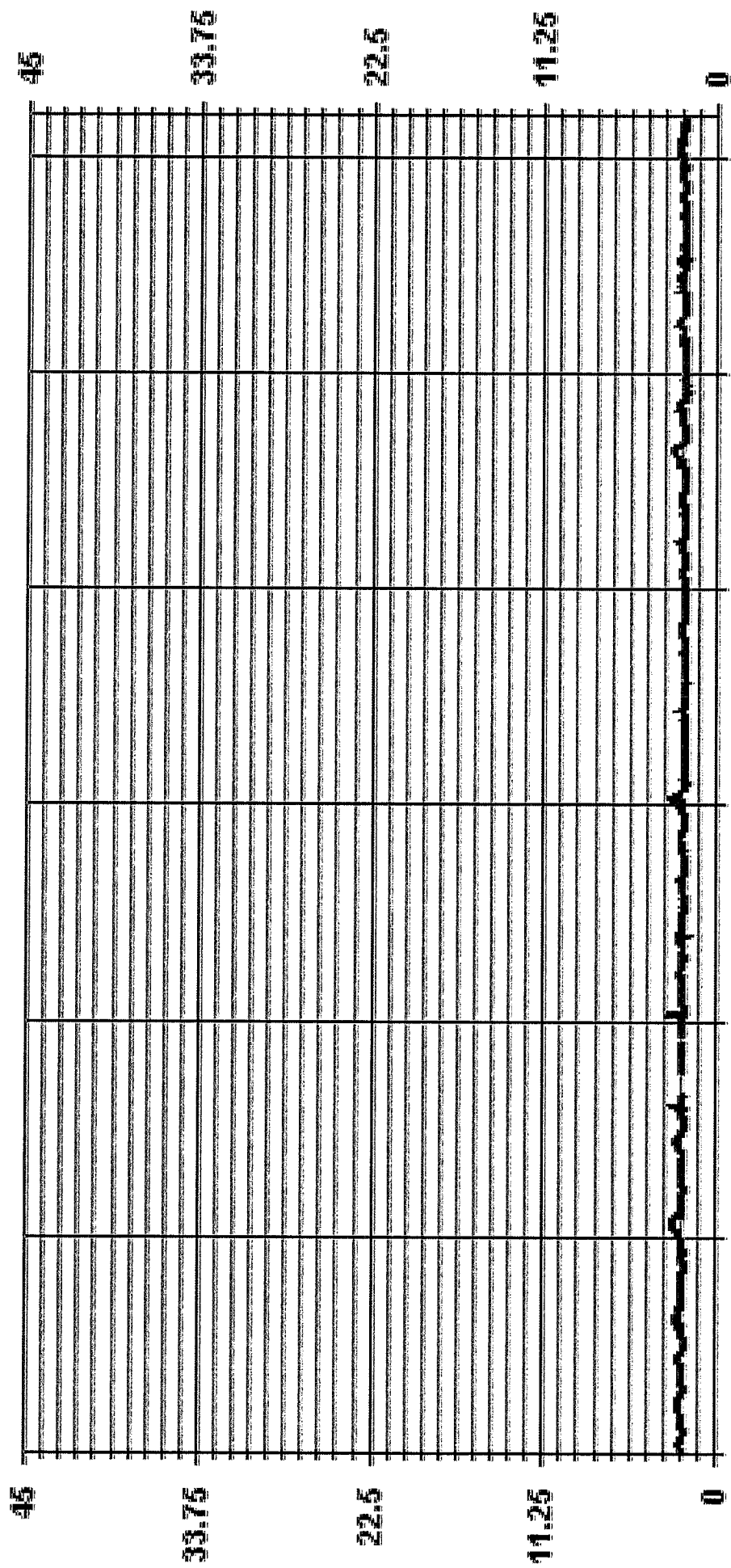
STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	691
MAXIMUM INSTANTANEOUS VALUE:	3.1 PPM @ HOUR(S) 4 ON DAY(S) 11
ISZ CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	6 HRS
OPERATIONAL TIME:	732 HRS
STANDARD DEVIATION:	0.17
VAR-VARIOUS	

01 Hour Averages



— LICA30 THCMAX PPM

LICA30
 THC / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 30
 Site Name : LICA30
 Parameter : THC
 Units : FPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WSW	NW	NNW		
< 3.0	4.32	5.62	3.60	3.03	2.30	2.59	2.30	1.73	3.31	15.15	12.69	8.51	10.67	11.11	7.79	5.19	100.00	
< 10.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	4.32	5.62	3.60	3.03	2.30	2.59	2.30	1.73	3.31	15.15	12.69	8.51	10.67	11.11	7.79	5.19		

Calm : .00 %

Total # Operational Hours : 693

Distribution By Samples

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WSW	NW	NNW		
< 3.0	30	39	25	21	16	18	16	12	23	105	88	59	74	77	54	36	693	
< 10.0																		
< 50.0																		
>= 50.0																		
Totals	30	39	25	21	16	18	16	12	23	105	88	59	74	77	54	36		

Calm : .00 %

Total # Operational Hours : 693

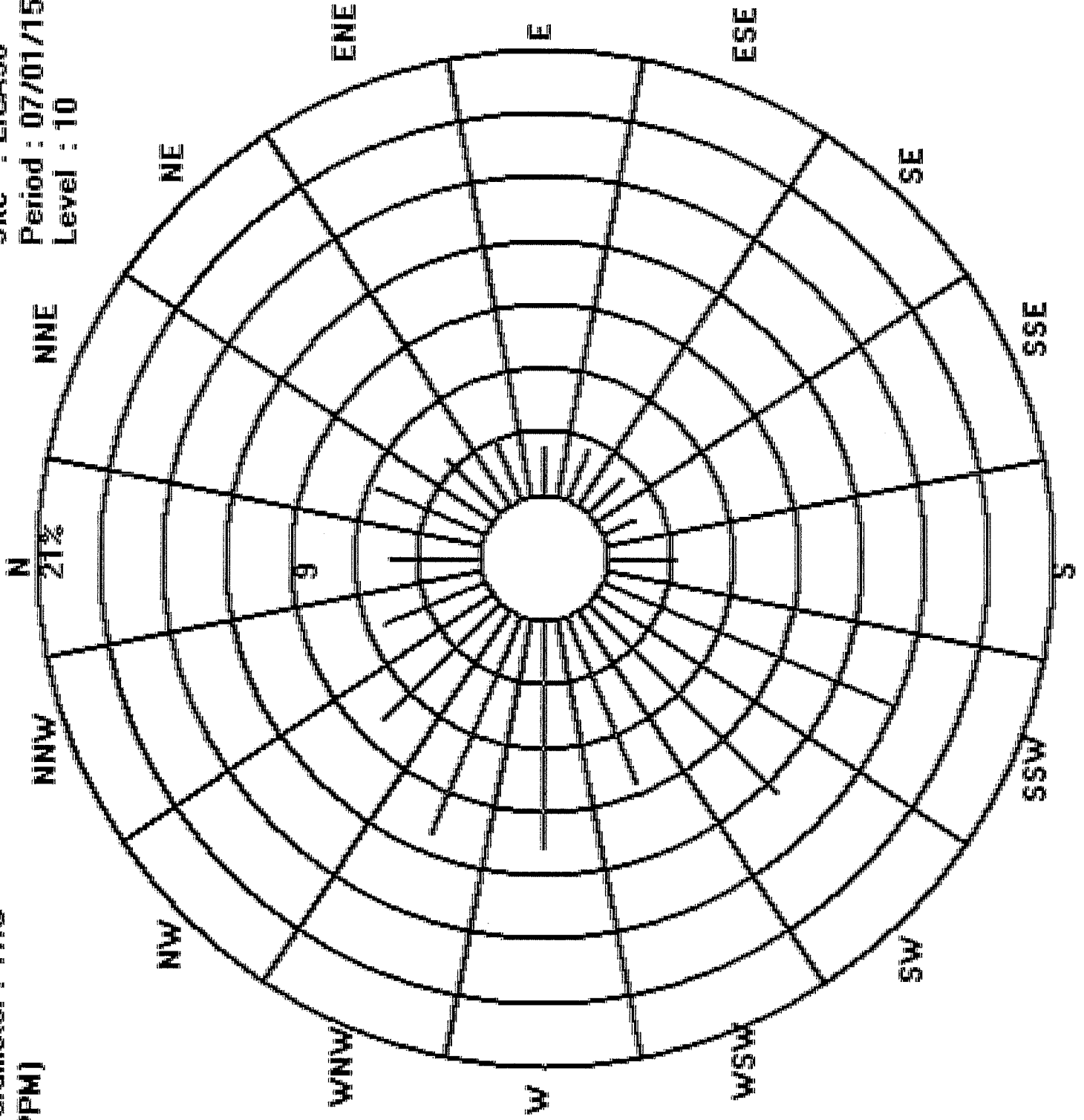
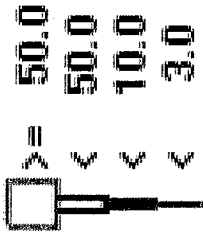
Logger : 30

Parameter : THC

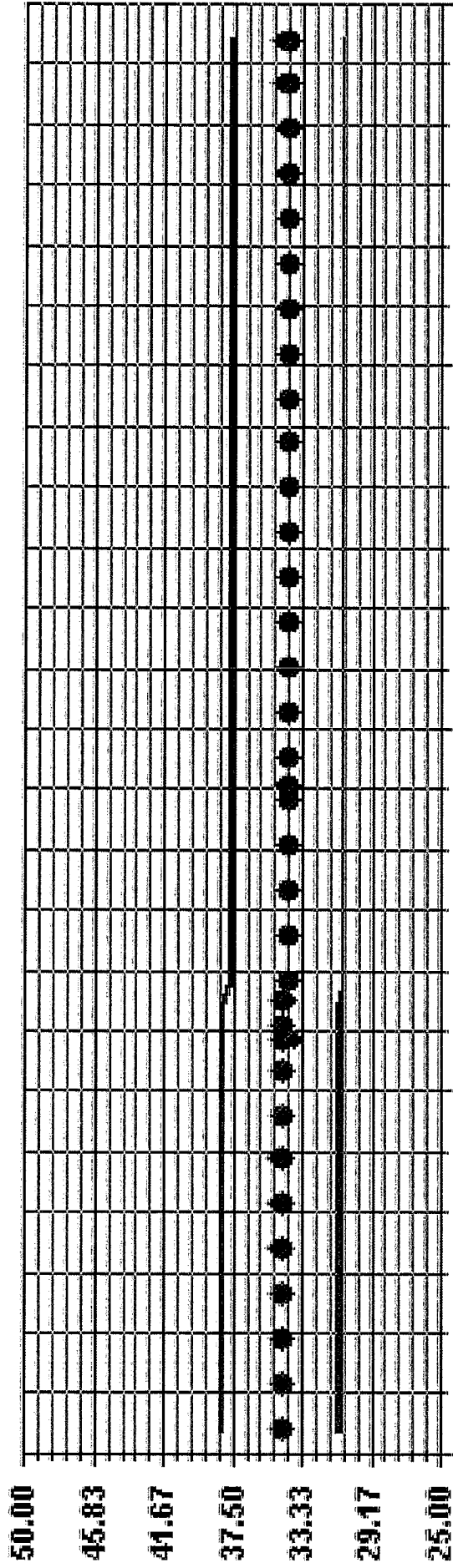
Site : LICA30

Period : 07/01/15-07/31/15

Level : 10



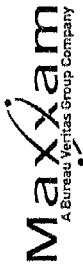
Calibration Graph for Site: LICA30 Parameter: THC Sequence: THC Phase: SPAN



7/11/15 7/12/15 7/13/15 7/14/15 7/15/15 7/16/15 7/17/15 7/18/15 7/19/15 7/20/15 7/21/15 7/22/15 7/23/15 7/24/15 7/25/15 7/26/15 7/27/15 7/28/15 7/29/15 7/30/15 7/31/15 8/1/15

Cal Value Exp Value Exp Value +10% Exp Value -10%

OXIDES OF NITROGEN



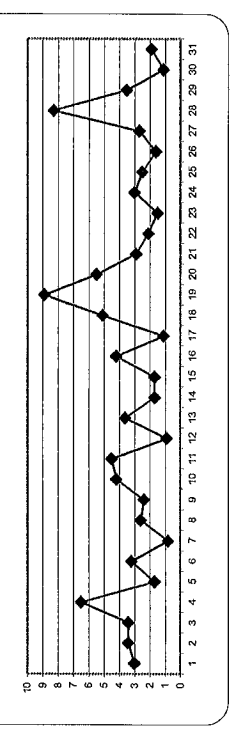
OXIDES OF NITROGEN (NOx) hourly averages in ppb

DAY	HOURS																								DAILY MAX.	24-HOUR AVG.	RDGS.
	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			
1	0.3	0.5	0.8	0.9	1.8	5.3	5.6	1.3	1.5	3.4	3.7	3.5	3.1	S	7.8	6.5	4.4	1.4	2.4	3.9	3.9	1.8	2.2	2.7	7.8	3.0	24
2	1.5	1.0	0.5	0.6	0.6	4.7	5.6	20.4	18.1	10.4	10.4	0.7	1.0	S	0.6	0.5	0.8	0.9	0.8	1.2	1.6	1.8	1.9	2.1	20.4	3.4	24
3	3.2	2.4	2.7	3.5	3.9	4.7	4.5	5.7	7.2	5.3	5.3	S	1.6	0.0	1.1	2.5	2.7	3.0	3.8	2.5	2.7	3.0	3.8	13.1	3.4	24	
4	2.5	2.7	4.0	3.4	3.0	3.9	10.0	6.2	13.6	5.7	S	6.6	4.9	5.5	2.2	1.2	11.5	4.1	2.5	2.2	2.7	8.9	28.3	14.7	6.5	24	
5	13.7	1.1	1.4	4.8	12.7	1.3	0.4	1.2	0.0	S	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.5	0.2	0.2	0.4	13.7	1.7	24
6	0.5	0.6	0.7	1.3	2.3	2.9	5.7	10.2	S	9.4	7.1	4.6	2.6	0.9	1.1	1.5	1.8	2.0	1.8	2.2	2.8	7.2	1.9	10.2	3.2	24	
7	1.6	1.2	0.9	0.8	0.6	0.9	1.1	S	1.0	0.5	1.0	0.9	1.6	0.3	0.7	1.2	2.5	0.0	0.6	0.5	0.0	0.0	0.2	0.9	2.5	0.8	24
8	1.6	2.0	1.6	1.8	2.0	6.4	S	4.6	4.6	4.1	3.7	3.0	2.2	1.4	1.4	1.4	1.8	1.5	1.6	1.7	2.2	3.3	3.8	6.4	2.6	24	
9	1.3	1.1	0.9	2.6	5.6	S	6.2	2.2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	6.2	2.4	12	
10	1.1	1.1	0.9	1.0	S	1.8	2.3	S	3.0	C	C	C	C	C	C	C	4.2	5.6	7.2	7.7	10.7	14.0	1.0	0.8	14.0	4.2	24
11	1.0	1.1	3.2	S	4.7	1.1	0.9	1.0	1.2	1.2	1.9	4.3	6.2	7.0	4.6	6.0	5.1	1.0	1.2	12.5	11.0	19.3	7.2	1.0	19.3	4.5	24
12	1.2	1.1	S	1.2	1.0	0.9	S	2.6	0.9	0.7	0.5	0.6	0.9	0.4	0.5	0.3	1.0	0.3	0.4	0.9	0.6	1.5	1.1	0.8	2.6	0.9	24
13	1.1	S	6.9	3.5	2.9	9.0	1.9	6.4	2.5	10.9	5.3	3.5	3.9	2.5	3.0	1.7	2.4	3.3	1.8	1.6	1.0	5.2	1.8	1.0	10.9	3.6	24
14	S	5.0	3.1	2.9	1.6	3.7	2.9	5.6	3.0	1.1	1.1	0.5	0.6	0.6	1.3	0.1	1.6	0.2	0.2	0.1	0.3	0.4	0.4	S	5.6	1.7	24
15	1.2	2.0	2.8	1.3	1.2	3.9	8.3	S	2.8	4.0	0.8	0.8	1.1	1.7	0.8	0.4	0.4	0.3	0.7	0.5	0.5	0.7	S	1.7	8.3	1.7	24
16	1.1	0.9	0.9	0.9	1.4	1.7	2.4	7.1	17.5	2.2	11.0	4.2	0.6	0.8	0.9	9.4	3.5	0.3	9.0	6.4	2.7	S	9.2	1.8	17.5	4.2	24
17	0.7	0.2	0.5	0.3	0.7	0.6	0.4	0.4	0.4	0.4	1.6	0.4	0.4	0.4	0.3	0.4	0.5	0.8	0.5	4.4	S	5.8	1.9	2.8	5.8	1.1	24
18	9.0	12.6	3.6	4.3	8.2	17.1	25.2	11.5	7.8	0.7	0.6	0.8	0.8	0.5	0.6	0.5	0.3	0.4	S	2.0	0.6	5.9	3.4	25.2	5.1	24	
19	0.6	1.0	7.0	12.0	26.9	16.8	14.7	17.5	19.2	12.6	12.2	8.2	8.5	6.4	5.0	9.2	3.7	14.0	S	4.0	0.7	0.6	1.4	1.7	26.9	8.9	24
20	1.5	7.6	11.8	6.7	3.1	2.8	1.7	1.3	1.6	3.8	2.2	3.5	3.5	0.9	0.5	0.6	S	1.5	10.4	10.7	15.0	15.3	20.0	20.0	5.5	24	
21	12.1	1.2	5.5	10.3	2.3	0.7	1.2	1.4	1.1	1.5	1.8	5.5	2.4	5.1	2.1	0.8	S	1.7	2.7	0.8	0.6	0.7	3.3	1.7	12.1	2.9	24
22	1.2	1.7	1.0	1.2	7.5	5.8	3.9	7.9	2.2	3.3	0.8	0.7	0.7	0.2	0.3	S	1.0	0.9	1.5	2.0	1.0	1.0	0.8	0.8	7.9	2.1	24
23	1.3	1.8	1.8	1.6	2.0	2.8	2.8	0.9	0.6	0.4	0.4	0.3	0.7	0.6	S	3.1	1.0	0.8	1.8	1.4	2.0	2.6	2.5	3.1	1.5	24	
24	2.2	2.7	4.3	4.2	3.2	6.1	9.4	10.8	7.7	3.1	1.6	0.9	1.0	S	0.8	0.9	0.6	0.5	0.6	0.7	2.5	2.0	1.5	0.8	10.8	3.0	24
25	0.8	0.5	1.8	1.4	1.8	1.0	1.3	5.1	6.5	4.0	4.9	2.5	S	0.5	0.5	0.3	0.5	3.3	0.7	0.5	15.4	2.4	0.8	0.7	15.4	2.5	24
26	2.2	2.9	4.9	6.9	3.0	1.2	1.1	1.5	1.1	0.5	0.4	S	0.5	0.3	0.8	1.4	2.2	3.2	1.6	0.2	0.1	0.4	0.3	0.3	6.9	1.6	24
27	1.9	2.9	1.4	0.6	2.1	3.6	3.3	S	20.2	1.9	S	2.0	1.8	0.8	1.8	0.4	0.5	0.2	0.1	0.2	0.3	1.4	9.9	2.1	20.2	2.7	24
28	2.4	7.6	8.9	11.1	5.7	9.1	15.0	17.6	13.7	S	3.5	4.1	8.5	7.4	11.0	3.7	10.7	4.2	4.5	0.8	0.0	2.1	17.9	20.5	8.3	24	
29	27.9	2.4	0.2	0.3	1.7	4.1	9.4	7.3	S	1.5	C	C	C	C	C	1.1	0.7	0.2	0.4	8.2	0.1	0.4	0.4	0.1	27.9	3.5	24
30	0.3	0.6	0.6	0.6	1.1	2.6	2.1	S	1.6	1.2	0.9	1.1	1.8	0.7	0.6	1.7	2.6	0.5	0.5	0.4	0.8	0.9	0.9	2.6	1.1	24	
31	1.5	1.1	1.2	1.2	2.9	3.8	S	15.5	1.3	1.1	1.3	1.4	0.7	0.6	0.6	0.6	0.4	0.8	0.9	0.9	2.1	0.7	0.6	0.5	15.5	1.9	24
HOURLY MAX	27.9	12.6	11.8	12.0	26.9	17.1	25.2	20.4	20.2	12.6	12.2	8.2	8.5	7.4	11.0	9.4	11.5	14.0	9.0	12.5	15.4	19.3	28.3	20.5			
HOURLY AVG	3.3	2.4	2.9	3.1	3.9	4.3	5.3	6.3	6.2	3.6	2.8	2.5	2.4	1.8	1.8	1.9	2.2	1.9	2.0	2.4	2.7	3.3	4.7	3.2			

STATUS FLAG CODES

C	- CALIBRATION
Y	- MAINTENANCE
S	- DAILY ZERO/SPAN CHECK
P	- POWER FAILURE
G	- OUT FOR REPAIR
Q	- QUALITY ASSURANCE
R	- RECOVERY
X	- MACHINE MALFUNCTION
O	- OPERATOR ERROR
K	- COLLECTION ERROR

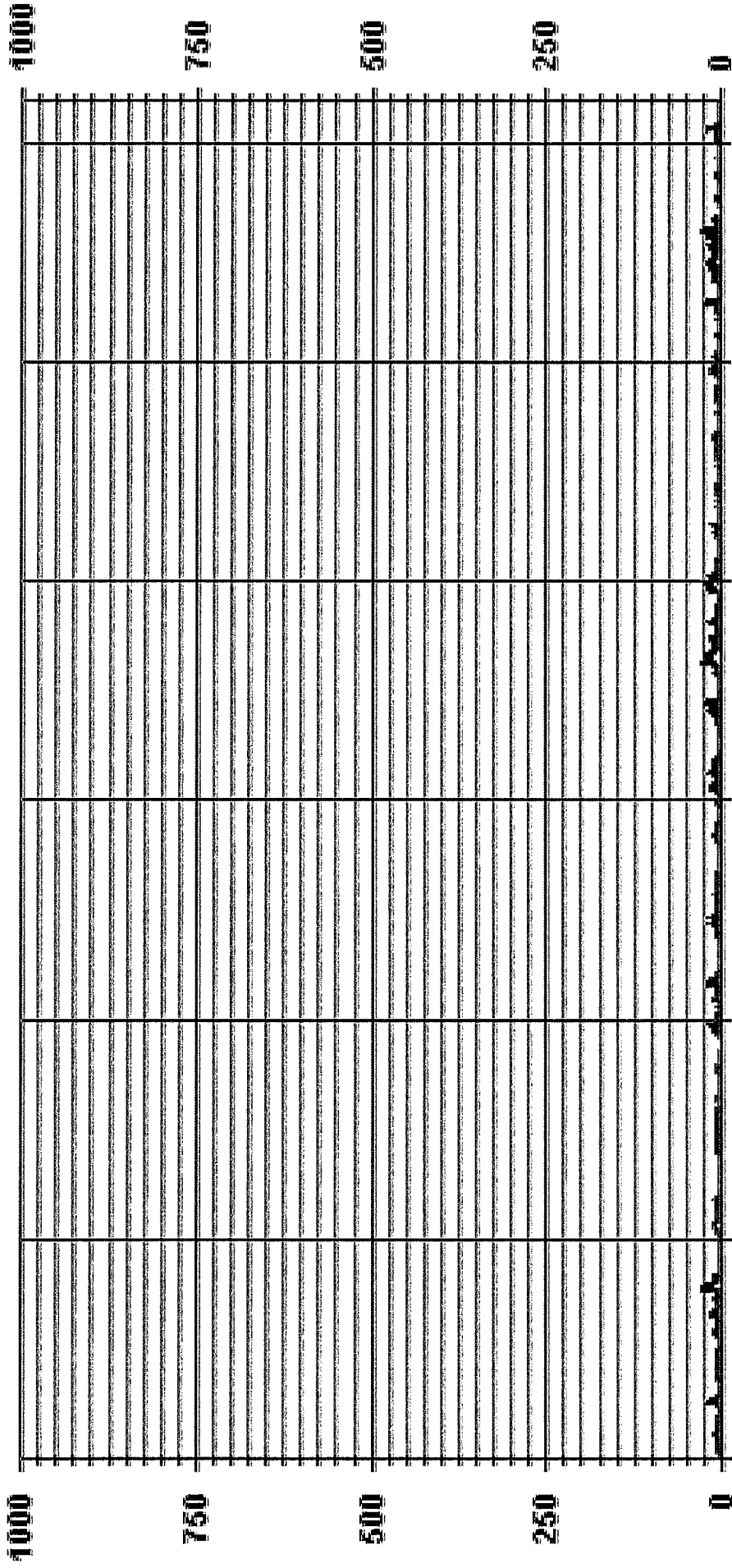
24 HOUR AVERAGES FOR JULY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	670	PPB @ HOUR(S)	22	ON DAY(S)	4
MAXIMUM 1-HR AVERAGE:	28.3	PPB		ON DAY(S)	19
MAXIMUM 24-HR AVERAGE:	8.9	PPB		VAR-VARIOUS	
1ZS CALIBRATION TIME:	38	HRS	OPERATIONAL TIME:	732	HRS
MONTHLY CALIBRATION TIME:	11	HRS	AMTD OPERATION UPTIME:	98.4	%
STANDARD DEVIATION:	4.22		MONTHLY AVERAGE:	3.2	PPB

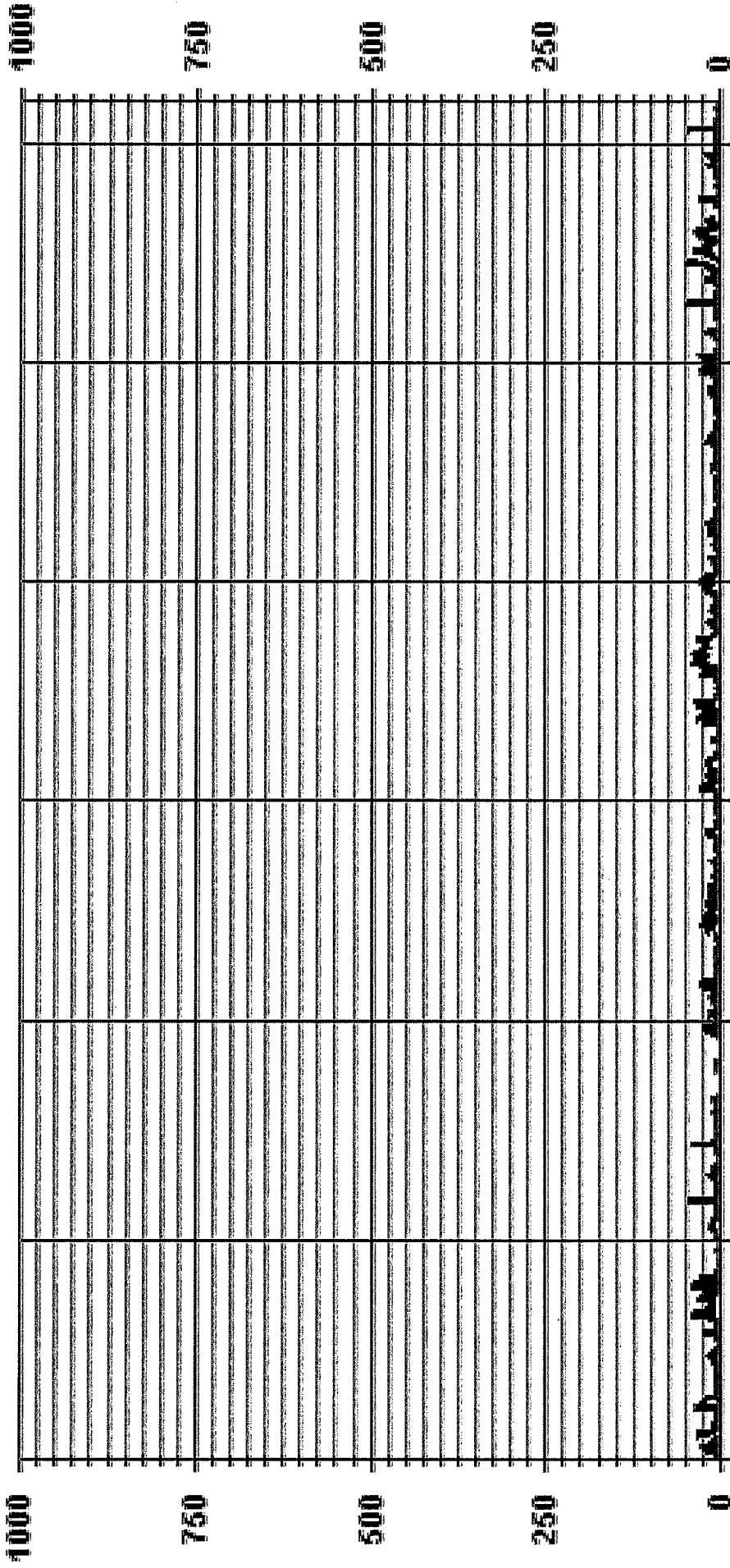
01 Hour Averages



07:01:15 00:00:07:06:15 00:00:07:11:15 00:00:07:16:15 00:00:07:21:15 00:00:07:26:15 00:00:07:31:15 00:00

— LICA30 NOX_ PPB

01 Hour Averages



07:01:15 00:00:07:06:15 00:00:07:11:15 00:00:07:16:15 00:00:07:21:15 00:00:07:26:15 00:00:07:31:15 00:00

--- LICA30 HOXMAX PPB

LICA30
NOX_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 30
Site Name : LICA30
Parameter : NOX_
Units : PPS_

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	4.39	5.56	3.51	2.48	2.34	2.92	2.34	1.75	3.36	15.37	12.88	8.63	10.68	10.54	7.90	5.27	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.39	5.56	3.51	2.48	2.34	2.92	2.34	1.75	3.36	15.37	12.88	8.63	10.68	10.54	7.90	5.27	

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples


Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	30	38	24	17	16	20	16	12	23	105	88	59	73	72	54	36	683
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	30	38	24	17	16	20	16	12	23	105	88	59	73	72	54	36	

Calm : .00 %

Total # Operational Hours : 683

Logger : 30 Parameter : NOX_

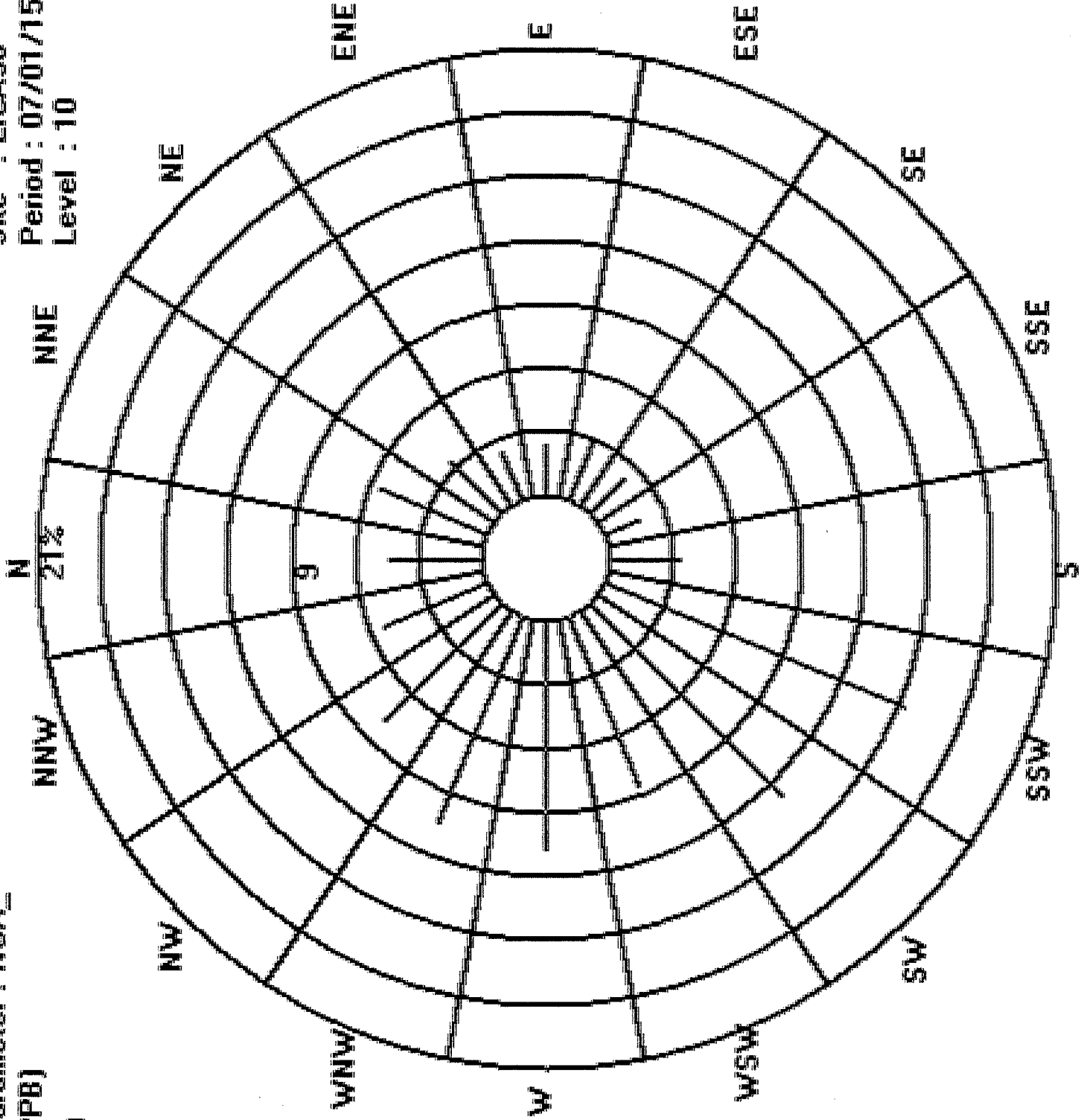
Class Limits (PPB)

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0

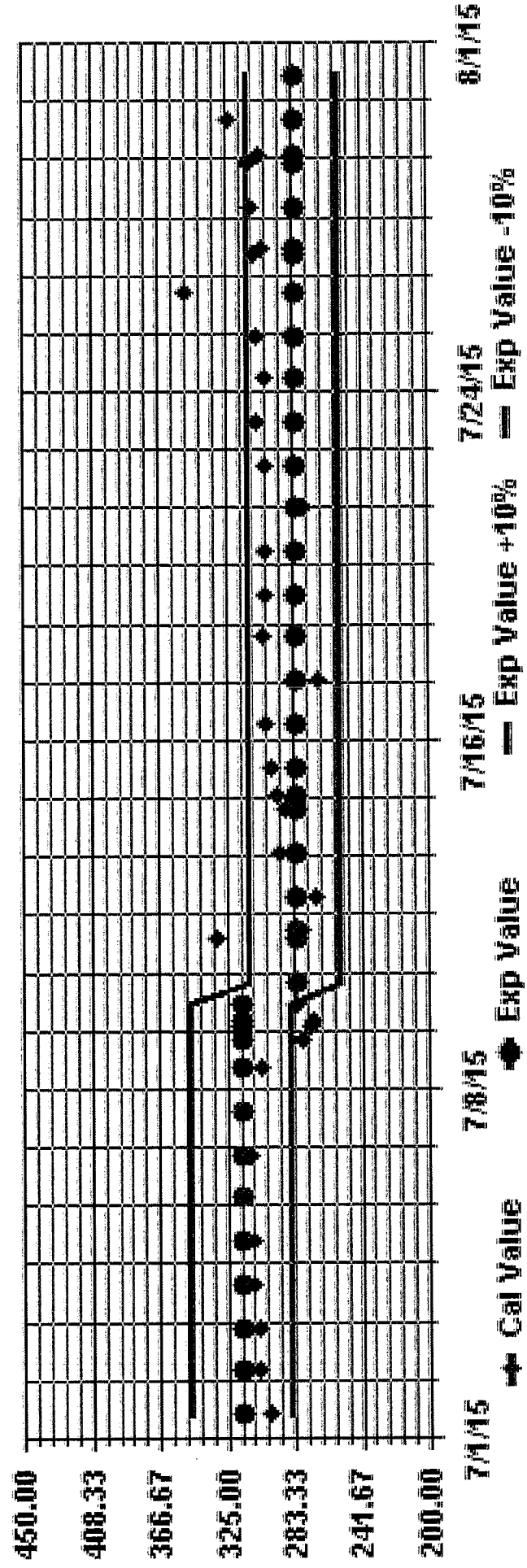
Site : LICA30

Period : 07/01/15-07/31/15

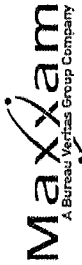
Level : 10



Calibration Graph for Site: LICA30 Parameter: NOX_ Sequence: NO2 Phase: SPAN



NITRIC OXIDES



NITRIC OXIDE (NO) hourly averages in ppb

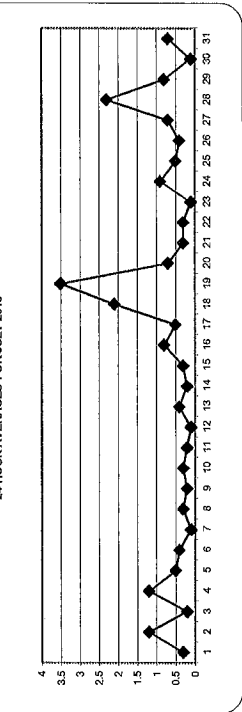
MST

DAY	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 MAX	24-HOUR AVG	RDGS.	
1	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.0	0.2	0.4	0.1	0.3	0.1	\$	1.7	0.9	0.5	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	1.7	0.3	24
2	0.0	0.1	0.0	0.0	0.0	1.8	1.9	10.4	8.3	3.8	0.0	0.3	\$	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	1.2	24
3	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.9	0.6	0.5	\$	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.2	24	
4	0.0	0.0	0.0	0.0	0.0	0.9	0.4	2.9	0.2	\$	1.0	0.5	0.6	0.0	0.0	0.0	2.6	0.5	0.0	0.0	0.0	0.0	0.7	11.7	5.0	1.2	24	
5	6.8	0.0	0.0	1.1	4.7	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	0.0	6.8	0.5	24	
6	0.0	0.0	0.0	0.0	0.0	0.3	0.8	2.4	\$	2.1	1.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	2.4	0.4	24	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	1.1	0.8	0.6	0.1	0.4	0.1	0.2	0.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	24	
8	0.0	0.1	0.0	0.0	0.0	\$	1.1	0.2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	0.0	3.3	0.3	24	
9	0.0	0.0	0.0	0.0	0.0	\$	0.1	0.2	S	0.5	C	C	C	C	C	C	C	C	C	C	C	C	C	0.0	1.1	0.2	12	
10	0.3	0.0	0.0	0.0	\$	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.8	0.3	0.5	0.2	0.0	0.0	0.0	0.3	0.7	0.0	1.8	0.3	24		
11	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	0.1	0.1	0.0	0.0	0.8	0.2	24		
12	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	0.1	0.1	0.0	0.0	2.0	0.1	24		
13	0.0	\$	0.7	0.5	0.0	2.3	0.0	0.8	0.0	3.0	1.0	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.1	0.0	3.0	0.4	24		
14	\$	0.1	0.0	0.0	0.0	0.3	0.4	2.1	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.2	24		
15	0.0	0.0	0.0	0.0	0.4	1.7	3.7	\$	0.4	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	3.7	0.3	24		
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	6.6	0.0	3.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	2.2	0.6	0.8	24	
17	0.2	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.4	0.4	1.1	0.4	0.4	0.3	0.3	0.4	0.1	0.1	0.1	0.2	0.3	\$	0.0	0.5	2.1	0.5	24	
18	3.4	4.1	0.6	0.7	2.7	9.2	16.0	5.9	3.2	0.4	0.3	0.3	0.0	0.2	0.4	0.1	0.1	0.1	0.2	0.3	\$	0.0	0.5	16.0	2.1	24		
19	0.0	0.0	0.7	3.4	14.2	7.9	6.7	7.6	7.4	5.2	5.5	2.9	3.5	2.1	1.6	3.5	0.9	5.6	\$	0.7	0.0	0.0	0.0	14.2	3.5	24		
20	0.0	0.2	1.2	0.6	0.1	0.4	0.4	0.3	0.3	0.7	0.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	\$	0.2	1.4	0.9	1.9	2.2	2.8	0.7	24	
21	1.2	0.0	1.5	2.6	0.0	0.0	0.0	0.1	0.2	0.0	0.0	1.0	0.0	0.8	0.0	0.0	0.0	0.0	\$	0.0	0.0	0.0	0.0	2.6	0.3	24		
22	0.0	0.0	0.0	0.0	1.7	1.1	1.1	2.9	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	0.0	0.0	0.0	0.0	2.9	0.3	24		
23	0.0	0.1	0.0	0.0	0.1	0.3	3.5	5.4	6.2	4.2	1.0	0.2	0.0	0.1	\$	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.9	24		
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.0	0.8	1.0	0.0	\$	0.2	0.5	0.0	0.3	0.8	0.4	0.5	2.2	0.6	0.5	2.2	0.5	24		
25	0.4	0.6	1.6	1.8	0.7	0.6	0.7	0.6	0.6	0.5	0.4	\$	0.0	0.0	0.0	0.2	0.6	0.7	0.1	0.0	0.0	0.0	1.1	0.0	11.3	0.4	24	
26	0.0	0.0	0.0	0.1	0.6	1.1	\$	11.3	0.6	\$	0.4	0.0	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	11.3	0.7	24	
27	0.0	0.7	1.6	1.8	0.3	2.8	6.5	9.1	7.4	\$	1.0	0.8	3.0	2.6	4.5	0.3	2.6	0.4	0.2	0.0	0.0	0.0	3.4	4.2	9.1	2.3	24	
28	8.3	0.0	0.0	0.0	0.0	0.7	3.2	2.7	\$	0.3	C	C	C	C	C	C	C	C	C	C	C	C	0.0	0.0	8.3	0.8	24	
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	0.4	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24	
30	0.0	0.0	0.0	0.0	0.0	0.0	\$	7.4	0.6	0.7	0.6	0.3	0.5	0.1	0.3	0.0	0.7	0.7	0.8	0.8	0.6	0.6	0.5	7.4	0.7	24		
31	8.3	4.1	1.6	3.4	14.2	9.2	16.0	10.4	11.3	5.2	5.5	2.9	3.5	2.6	4.5	3.5	2.6	5.6	5.6	0.9	1.7	2.2	2.1	11.7	5.0	0.5		
HOURLY MAX	8.3	4.1	1.6	3.4	14.2	9.2	16.0	10.4	11.3	5.2	5.5	2.9	3.5	2.6	4.5	3.5	2.6	5.6	5.6	0.9	1.7	2.2	2.1	11.7	5.0			
HOURLY AVG	0.7	0.2	0.3	0.4	0.9	1.3	1.9	2.3	2.4	0.9	0.7	0.5	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.3	0.8	0.5			

STATUS FLAG CODES

C	- CALIBRATION	Q	- QUALITY ASSURANCE
M	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

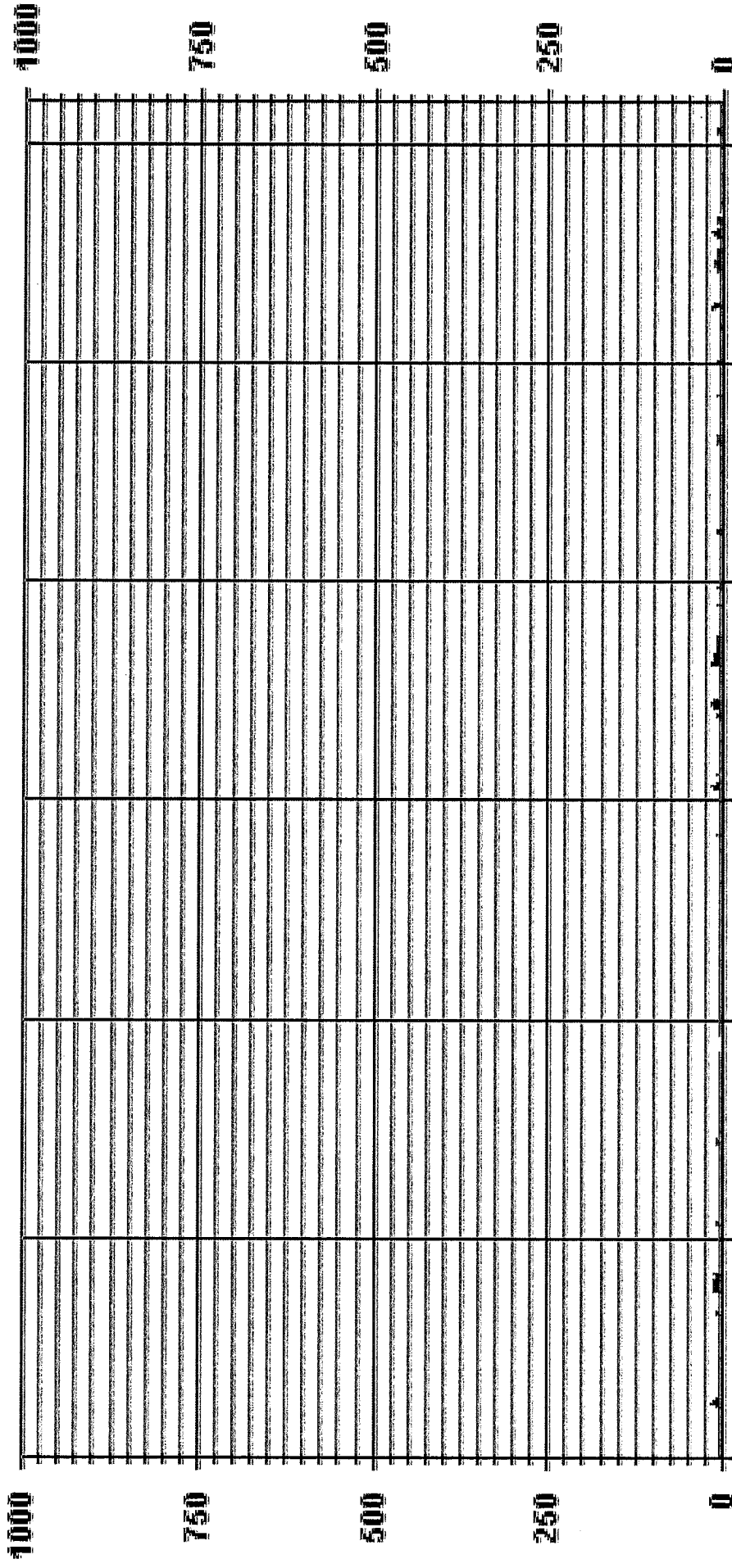
24 HOUR AVERAGES FOR JULY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	324	PPB @ HOURS(S)	6	ON DAY(S)	18
MAXIMUM 1-HR AVERAGE:	16.0	PPB		ON DAY(S)	19
MAXIMUM 24-HR AVERAGE:	3.5	PPB		VAR-VARIOUS	
IZS CALIBRATION TIME:	38	HRS	OPERATIONAL TIME:	732	HRS
MONTHLY CALIBRATION TIME:	11	HRS	AMD OPERATION UPTIME:	96.4	%
STANDARD DEVIATION:	1.72		MONTHLY AVERAGE:	0.7	PPB

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA30 NO_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Site - JULY 2015
JOB # 2833-2015-07-30-C

NITRIC OXIDE MAX instantaneous maximum in ppb

MST

DAY	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	24:00			
1	0.9	1.2	0.9	0.7	1.1	4.7	5.9	0.9	1.2	2.0	1.7	1.2	1.3	S	8.4	4.4	2.4	1.0	1.0	1.2	0.9	0.8	0.7	0.6	8.4		
2	0.8	1.0	1.1	0.7	1.0	33.1	8.2	15.8	9.2	0.7	2.2	S	1.0	0.9	0.8	0.9	1.0	1.1	1.0	1.0	0.8	0.7	1.1	0.6	33.1		
3	0.6	0.7	1.0	0.8	0.9	1.3	1.5	1.8	2.2	2.0	1.8	S	1.0	0.6	0.7	0.7	0.7	0.8	0.9	0.8	0.6	0.5	1.4	0.5	2.2		
4	0.8	0.6	0.6	0.6	0.8	0.7	2.3	3.1	7.9	16.1	2.3	S	3.8	3.8	4.2	3.4	1.1	10.8	6.9	2.1	0.6	0.5	8.0	20.4	20.4		
5	22.8	0.9	1.0	1.0	1.0	14.2	2.2	0.4	3.7	0.6	S	0.6	0.7	0.5	0.6	0.4	0.6	0.4	0.8	0.5	0.8	0.7	0.8	22.8			
6	0.6	0.4	0.2	0.7	0.7	1.8	1.9	4.1	S	3.3	2.6	2.8	1.0	0.8	0.8	0.8	0.8	0.7	0.6	0.7	0.8	10.2	1.7	24			
7	0.7	0.4	0.8	0.4	0.4	0.4	0.8	S	1.3	0.9	3.5	2.4	5.6	1.6	1.7	2.3	3.3	1.0	1.3	0.7	0.9	1.0	0.8	1.0	5.6		
8	0.6	0.6	0.8	0.8	1.0	26.1	S	2.3	2.1	1.8	1.4	1.2	1.0	1.1	1.2	1.0	0.9	0.8	0.9	1.1	1.0	1.1	1.2	26.1			
9	0.9	0.9	0.8	1.0	1.0	S	2.4	1.1	P	P	P	P	P	P	P	P	P	P	P	P	S	1.2	1.1	1.0	2.4		
10	1.2	0.8	1.0	1.2	S	1.3	S	S	1.3	C	C	C	C	C	C	C	C	C	C	1.5	2.3	1.6	1.3	2.1	0.5	0.4	2.3
11	0.4	0.4	0.4	0.4	S	1.7	0.5	0.6	0.5	0.5	0.5	2.0	2.8	2.0	1.7	1.7	0.9	0.5	0.6	1.6	1.1	1.3	0.5	0.4	2.8		
12	0.4	0.3	S	0.5	0.5	0.5	S	1.4	0.6	0.6	0.6	0.6	0.8	0.3	0.4	0.2	0.7	0.4	0.6	0.7	0.7	0.4	0.6	1.4	0.6		
13	0.5	S	3.9	4.2	0.5	11.1	2.6	1.7	1.1	8.5	3.8	3.9	3.7	2.3	3.5	0.9	2.8	4.6	3.1	0.6	0.6	0.9	0.6	0.5	11.1		
14	S	0.5	0.7	0.7	0.5	2.1	1.9	3.5	1.8	0.6	1.1	0.7	1.2	1.1	1.4	0.6	2.1	0.4	0.5	0.2	0.3	0.3	0.3	S	3.5		
15	0.9	0.7	0.7	0.8	0.9	6.5	S	7.5	4.8	0.5	0.2	2.5	0.5	0.3	0.6	0.5	0.3	0.4	0.6	0.4	0.6	0.4	0.3	S	0.4		
16	0.4	0.4	0.4	0.1	0.7	1.7	0.8	4.8	13.1	1.1	9.8	3.5	0.2	10.7	2.2	9.3	2.4	0.0	2.9	2.0	5.6	S	9.4	6.3	13.1		
17	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	5.4	0.8	1.0	0.8	0.8	1.0	1.2	1.1	1.1	7.2	S	12.6	0.7	1.9	12.6		
18	10.4	9.4	2.1	1.6	12.4	19.7	21.1	9.0	6.0	0.9	0.8	1.2	1.1	1.0	1.4	0.7	0.7	0.7	0.7	S	0.3	0.2	5.5	0.8	21.1		
19	0.2	0.2	4.1	12.8	23.5	19.0	13.5	14.2	15.7	9.5	11.8	14.6	19.5	7.5	8.7	9.9	5.4	14.2	S	1.7	0.4	0.5	0.5	0.3	23.5		
20	0.3	0.9	3.1	1.7	0.7	0.9	0.9	0.7	1.1	3.3	2.8	3.3	2.9	0.5	0.3	0.4	0.4	S	1.2	2.7	2.1	3.6	3.6	4.1	1.8		
21	4.1	0.4	9.3	8.8	0.8	0.5	0.8	0.5	0.7	1.2	1.8	1.5	2.6	0.7	0.5	S	0.6	0.5	0.3	0.3	0.1	0.4	0.3	9.3	1.6		
22	0.2	0.4	0.1	0.4	5.3	3.8	3.9	5.7	1.1	3.4	1.8	1.8	1.6	0.3	0.1	S	0.5	0.4	0.4	0.4	0.4	0.3	0.1	0.3	5.7		
23	0.1	0.1	0.1	0.2	0.2	0.8	1.2	1.1	0.7	0.2	0.3	0.1	0.5	0.3	S	2.4	0.7	0.6	1.1	0.8	0.7	0.6	0.4	0.4	0.6		
24	0.4	0.5	0.7	0.8	1.1	13.2	7.4	7.6	6.8	2.5	0.8	0.6	0.6	S	0.3	0.6	0.2	0.2	0.3	0.2	0.3	0.3	0.1	0.1	13.2		
25	0.1	0.1	0.1	0.1	0.5	0.5	1.0	3.3	5.1	5.0	4.9	2.3	S	1.4	1.2	0.9	1.1	2.3	1.1	1.1	7.9	1.3	1.1	0.9	7.9		
26	1.7	1.7	6.7	7.1	1.3	1.5	1.4	1.8	1.2	0.9	0.9	S	0.6	0.3	1.6	2.2	4.0	5.1	1.5	0.4	0.2	0.2	0.0	0.0	7.1		
27	0.1	0.1	0.3	0.3	0.9	1.2	S	28.0	2.5	S	2.0	1.4	1.2	1.2	0.5	0.7	0.7	0.5	0.7	0.5	0.7	0.5	0.6	4.9	0.5	28.0	
28	0.7	1.4	2.5	2.8	1.8	8.4	10.6	38.2	22.9	S	2.9	4.9	8.4	7.6	20.5	2.9	5.9	6.3	4.8	0.6	0.2	2.0	8.4	11.1	38.2		
29	11.0	3.4	0.2	0.2	0.4	4.2	6.0	4.9	S	1.8	C	C	C	C	0.6	0.4	0.0	0.1	12.1	0.0	0.0	0.0	0.0	12.1			
30	0.0	0.0	0.0	0.0	0.0	1.1	1.0	S	2.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.1	0.1	0.4	0.3		
31	0.4	0.3	0.5	0.1	0.4	1.4	S	22.4	2.7	1.5	1.0	1.3	1.6	1.2	1.3	0.9	1.6	1.1	1.4	1.2	1.1	1.4	1.0	22.4			
HOURLY MAX	22.8	9.4	9.3	12.8	23.5	33.1	21.1	38.2	28.0	9.5	11.8	14.6	19.5	10.7	20.5	9.9	10.8	14.2	12.1	7.2	7.9	12.6	20.4	19.3			
HOURLY AVG	2.1	1.0	1.5	2.1	2.5	5.8	4.0	5.7	6.4	2.7	2.5	2.3	2.7	2.0	2.4	1.8	2.0	2.1	1.6	1.1	1.0	1.5	2.6	1.9			

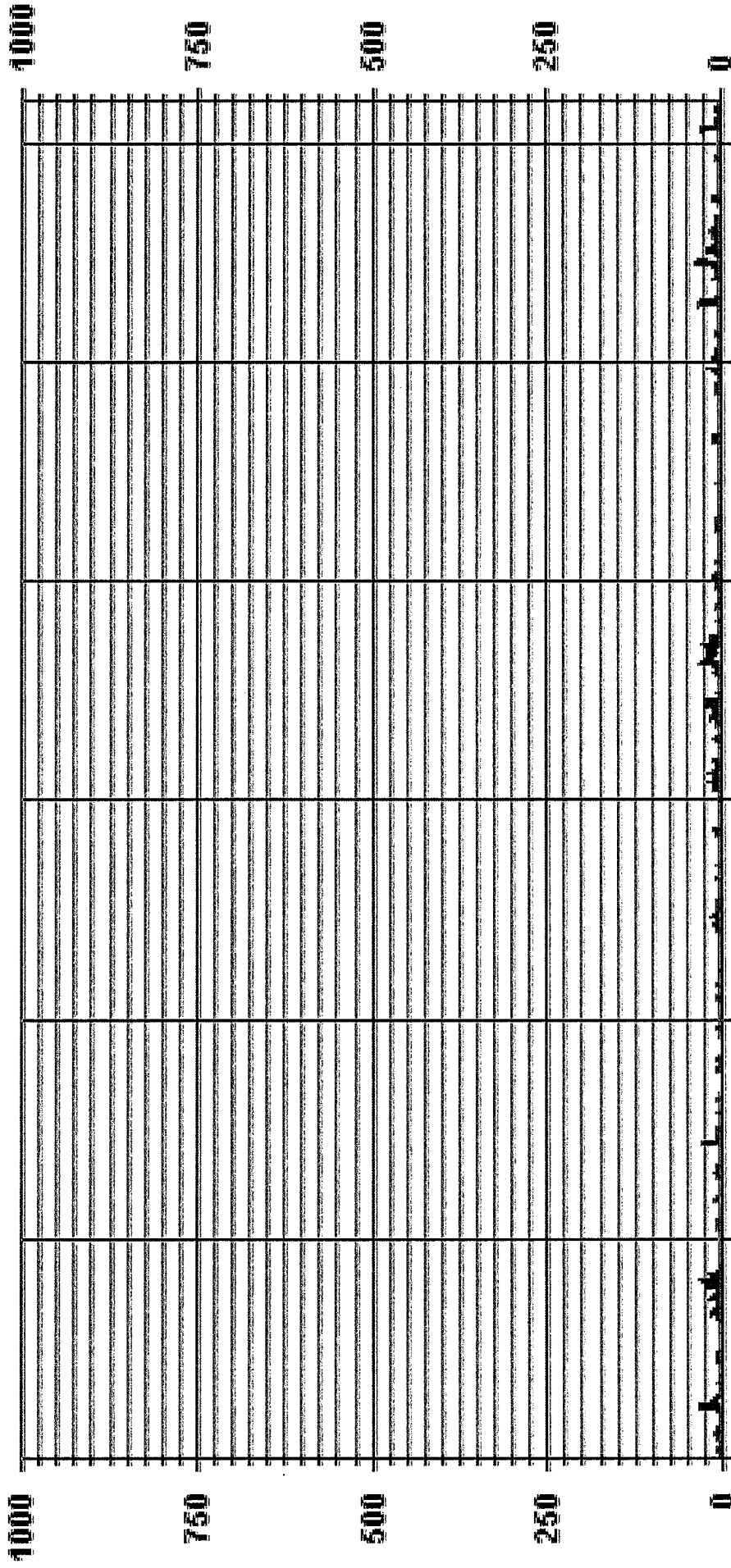
STATUS FLAG CODES

C	-CALIBRATION	Q	-QUALITY ASSURANCE
M	-MAINTENANCE	R	-RECOVERY
S	-DAILY ZERO/SPAN CHECK	X	-MACHINE MALFUNCTION
P	-POWER FAILURE	O	-OPERATOR ERROR
G	-OUT FOR REPAIR	K	-COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	664	PPB	@ HOUR(S)	7	ON DAY(S)	28
MAXIMUM INSTANTANEOUS VALUE:	38.2	PPB	OPERATIONAL TIME:	732	HRS	VAR-VARIOUS
1/25 CALIBRATION TIME:	42	HRS	MONTHLY CALIBRATION TIME:	12	HRS	
STANDARD DEVIATION:	4.54					

01 Hour Averages



--- LICA30 NOMAX PPB

LICA30
 NO_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 30
 Site Name : LICA30
 Parameter : NO
 Units : PPS

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	4.39	5.56	3.51	2.48	2.34	2.92	2.34	1.75	3.36	15.37	12.88	8.63	10.68	10.54	7.90	5.27	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.39	5.56	3.51	2.48	2.34	2.92	2.34	1.75	3.36	15.37	12.88	8.63	10.68	10.54	7.90	5.27	

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples




Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	30	38	24	17	16	20	16	12	23	105	88	59	73	72	54	36	683
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	30	38	24	17	16	20	16	12	23	105	88	59	73	72	54	36	

Calm : .00 %

Total # Operational Hours : 683

Logger : 30 Parameter : NO_

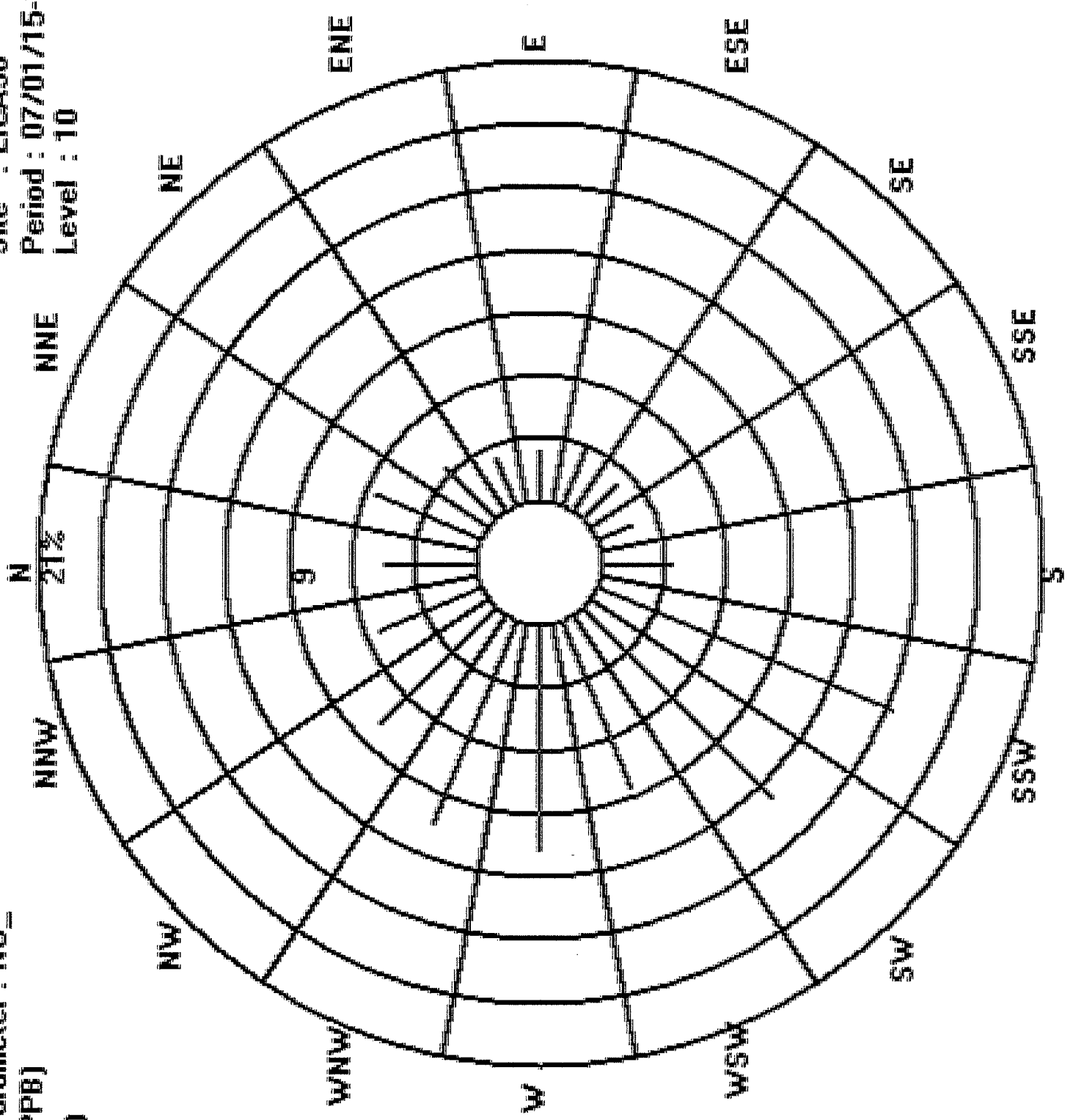
Class Limits (PPB)

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0

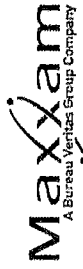
Site : LICA30

Period : 07/01/15-07/31/15

Level : 10



NITROGEN DIOXIDE



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Site - JULY 2015
JOB # 2833-2015-07-30- C

NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

DAY	24-HOUR AVERAGE																								RDGS.				
	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		24:00			
1	0.3	0.5	0.8	0.9	1.8	4.8	4.8	4.7	1.3	3.0	3.0	2.9	3.2	3.0	S	6.1	5.6	3.9	1.3	2.3	3.8	3.9	1.8	2.2	2.7	6.1	2.7	24	
2	1.5	0.9	0.5	0.6	0.6	2.9	3.7	10.0	9.8	6.6	6.7	0.7	5	0.5	0.4	0.8	0.9	0.8	0.8	1.2	1.6	1.8	1.9	2.1	10.0	2.2	2.2	24	
3	3.2	2.4	2.7	3.5	3.9	4.4	3.9	4.4	3.9	6.6	4.8	S	1.6	0.8	0.5	0.3	0.1	0.0	1.1	2.5	2.7	3.0	13.1	3.8	13.1	3.1	3.2	24	
4	2.5	2.7	4.0	3.4	3.0	3.9	9.1	5.8	10.7	5.5	S	5.6	4.4	4.9	2.2	1.2	8.9	3.6	2.5	2.2	2.7	8.2	16.6	9.7	16.6	5.4	24		
5	6.9	1.1	1.4	3.7	8.0	1.3	0.4	1.2	0.0	S	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.7	0.5	0.2	0.4	8.0	1.2	24		
6	0.5	0.6	0.7	1.3	2.3	2.6	4.9	7.8	S	7.3	5.5	4.0	2.6	0.9	1.1	1.5	1.5	1.8	2.0	1.8	2.2	2.8	6.8	1.9	7.8	2.8	24		
7	1.6	1.2	0.9	0.8	0.6	0.9	1.1	S	0.8	0.5	0.6	0.8	1.2	0.2	0.5	0.8	1.7	0.0	0.6	0.5	0.0	0.0	0.2	0.9	1.7	0.7	24		
8	1.6	2.0	1.6	1.8	2.0	3.1	S	3.5	3.5	3.3	3.1	2.7	2.2	1.5	1.3	1.3	1.7	1.6	1.4	1.6	1.7	2.1	3.2	3.8	3.8	2.2	24		
9	1.3	1.0	0.9	2.6	5.6	S	5.1	2.0	P	P	P	P	P	P	P	P	P	P	P	P	P	P	S	1.4	1.1	0.5	5.6	2.2	12
10	0.8	1.1	0.9	1.0	S	1.7	2.1	S	2.5	C	C	C	C	C	C	C	C	C	C	2.4	5.4	6.8	7.2	10.4	13.3	10.8	13.3	3.8	24
11	1.0	1.1	3.2	S	4.4	1.1	0.9	1.0	1.2	1.2	1.9	3.8	5.4	6.2	4.3	5.5	4.9	1.0	1.2	12.2	10.8	18.8	7.2	1.0	18.8	4.3	24		
12	1.2	1.1	S	1.2	1.0	0.9	S	0.6	0.8	0.7	0.5	0.6	0.8	0.4	0.5	0.3	1.0	0.3	0.3	0.8	0.6	1.4	1.1	0.8	1.4	0.8	24		
13	1.1	S	6.2	3.0	2.9	6.7	1.9	5.6	2.5	7.9	4.3	2.8	3.7	2.5	3.0	1.7	2.4	3.0	1.7	1.5	0.9	5.1	1.8	1.0	7.9	3.2	24		
14	S	4.9	3.1	2.9	1.6	3.4	2.5	3.5	2.2	1.1	1.1	0.5	0.6	1.1	0.1	1.4	0.4	0.4	0.4	0.3	0.7	0.5	0.7	S	4.9	1.5	24		
15	1.2	2.0	2.8	1.3	0.8	2.2	4.6	S	2.4	2.8	0.8	1.1	1.7	0.8	0.4	0.4	0.3	0.7	0.5	0.5	0.7	S	1.7	4.6	1.4	24			
16	1.1	0.9	0.9	0.9	1.4	1.7	2.2	5.9	10.9	2.2	7.5	3.5	3.5	0.6	0.8	0.9	6.3	3.5	0.3	8.1	6.4	2.7	S	7.0	1.2	10.9	3.3	24	
17	0.5	0.2	0.5	0.1	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	2.7	S	3.7	1.6	2.3	3.7	0.6	24
18	5.6	8.5	3.0	3.6	5.5	7.9	9.2	5.6	4.6	0.3	0.5	0.8	0.3	0.2	0.4	0.2	0.1	0.1	S	2.0	0.6	5.4	3.4	9.2	3.0	24			
19	0.6	1.0	6.3	8.6	12.7	8.9	8.0	9.9	11.8	7.4	6.7	5.3	5.0	4.3	3.4	5.7	2.8	8.4	S	3.3	0.7	0.6	1.4	1.7	12.7	5.4	24		
20	1.5	7.4	10.6	6.1	3.0	2.4	1.3	1.0	1.3	3.1	1.7	2.5	2.5	0.9	0.5	0.5	0.6	S	1.3	9.0	9.8	13.1	17.2	17.2	4.8	24			
21	10.9	1.2	4.0	7.7	2.3	0.7	1.1	1.2	1.1	1.5	1.8	4.5	2.4	4.3	2.1	0.8	S	1.7	2.7	0.8	0.6	0.7	3.3	1.7	10.9	2.6	24		
22	1.2	1.7	1.0	1.2	5.8	4.7	2.8	5.0	2.0	2.9	0.8	0.7	0.7	0.2	0.3	S	1.0	0.9	1.5	2.0	1.0	1.0	0.8	0.8	5.8	1.7	24		
23	1.3	1.8	1.8	1.6	2.0	2.8	2.6	0.9	0.6	0.4	0.4	0.3	0.7	0.6	S	2.4	0.8	0.7	1.5	1.2	1.3	1.9	2.6	2.5	2.8	1.4	24		
24	2.2	2.6	4.3	4.1	2.9	2.6	4.0	4.6	3.5	2.1	1.4	0.9	0.9	S	0.8	0.9	0.6	0.5	0.6	0.7	2.5	2.0	1.5	0.8	4.6	2.0	24		
25	0.8	0.5	1.8	1.4	1.8	1.0	1.2	3.7	4.5	3.2	3.9	2.5	S	0.3	0.0	0.3	0.2	2.5	0.3	0.0	13.2	1.8	0.3	0.4	13.2	2.0	24		
26	1.8	2.3	3.3	5.1	2.3	0.6	0.4	0.7	0.5	0.0	0.0	S	0.5	0.3	0.8	1.2	1.6	2.5	1.5	0.2	0.1	0.4	0.3	0.3	5.1	1.2	24		
27	1.9	2.9	1.4	0.6	2.0	3.0	2.2	S	8.9	1.3	S	1.6	1.8	0.8	1.4	0.4	0.3	0.2	0.1	0.2	0.3	1.4	8.8	2.1	8.9	2.0	24		
28	2.4	6.9	7.3	9.3	5.4	6.3	8.5	8.5	6.3	S	2.5	3.3	5.5	4.8	6.5	3.4	8.1	3.8	4.3	0.8	0.0	2.1	14.5	16.3	16.3	5.9	24		
29	19.6	2.4	0.2	0.3	1.7	3.4	6.2	4.6	S	1.2	C	C	C	C	C	1.1	0.7	0.2	0.4	8.2	0.1	0.4	0.4	0.1	19.6	2.7	24		
30	0.3	0.6	0.6	0.6	1.1	2.6	2.1	S	1.2	1.2	0.9	1.1	1.6	0.7	0.7	0.6	1.5	2.0	0.5	0.5	0.4	0.8	0.9	0.9	2.6	1.0	24		
31	1.5	1.1	1.2	1.2	2.9	3.8	S	S	8.1	0.7	0.4	0.7	1.1	0.2	0.5	0.3	0.4	0.1	0.2	0.1	1.5	0.1	0.0	0.0	8.1	1.2	24		
HOURLY MAX	19.6	8.5	10.6	9.3	12.7	8.9	9.2	10.0	11.8	7.9	7.5	5.6	6.2	6.5	6.3	6.3	8.9	8.4	8.2	12.2	13.2	18.8	16.6	17.2					
HOURLY AVG	3	2	3	3	3	3	3	4	4	3	2	2	2	1	1	1	2	2	2	2	2	2	3	3	4	3			

STATUS FLAG CODES

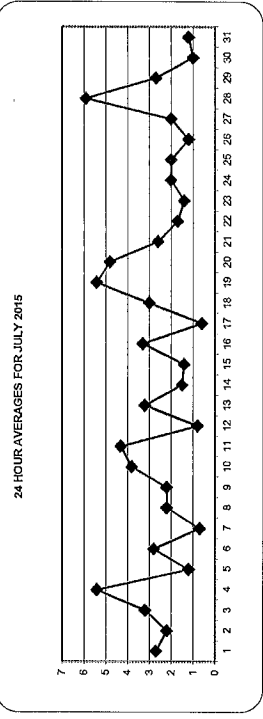
C	- CALIBRATION	O	- QUALITY ASSURANCE
M	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

OBJECTIVE LIMIT:

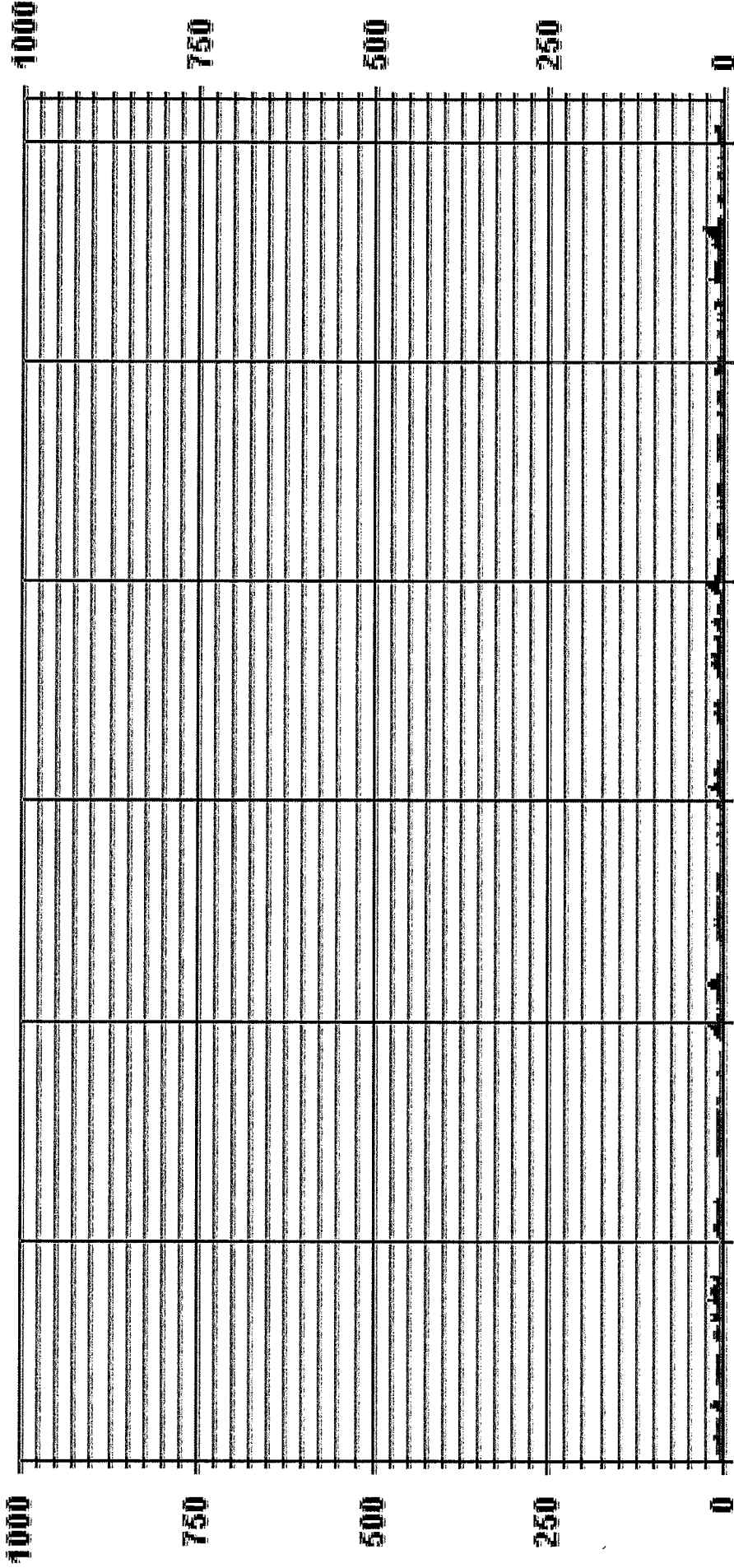
ALBERTA ENVIRONMENT: 1-HR: 159 PPB

MONTHLY SUMMARY

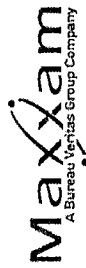
NUMBER OF I-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	655
MAXIMUM 1-HR AVERAGE:	19.6 PPB
MAXIMUM 24-HR AVERAGE:	5.9 PPB
1/2 CALIBRATION TIME:	98 HRS
MONTHLY CALIBRATION TIME:	11 HRS
STANDARD DEVIATION:	2.92
OPERATIONAL TIME:	792 HRS
AMTD OPERATION UPTIME:	98.4 %
MONTHLY AVERAGE:	2.5 PPB



01 Hour Averages



— LICA30 NO2_ PPB



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS.			
	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				24:00		
1	1.4	1.4	1.6	1.7	7.8	15.0	17.1	2.1	2.7	9.4	9.3	4.8	4.1	S	20.8	16.4	9.8	2.5	3.5	7.6	9.3	3.2	3.2	3.9	20.8	6.9	24			
2	3.1	1.4	0.9	1.3	1.2	9.5	9.3	11.9	12.5	13.1	1.7	3.9	S	1.0	0.9	1.3	1.6	1.7	1.3	2.5	3.1	2.3	2.3	3.4	13.1	4.0	24			
3	3.9	3.0	3.4	4.1	4.2	5.2	4.6	5.1	5.5	12.4	8.4	S	2.2	1.4	2.0	1.0	0.8	0.5	3.2	3.4	3.6	9.1	25.2	5.2	24	24				
4	3.6	3.7	5.8	4.2	4.2	9.2	14.6	17.7	25.0	9.7	S	9.5	9.9	9.6	9.1	4.9	20.6	16.6	9.2	5.5	8.4	15.3	20.0	17.6	25.0	11.0	24			
5	13.5	2.8	3.2	11.3	13.7	4.4	2.3	3.9	0.8	S	0.8	0.6	0.3	0.3	0.4	0.4	0.4	0.5	1.2	1.6	0.9	0.7	1.2	1.2	13.7	2.9	24			
6	1.1	1.5	2.1	3.2	3.2	5.9	8.6	S	8.0	6.2	6.6	5.5	1.2	1.8	1.8	2.1	2.4	2.4	2.1	2.7	3.0	34.0	2.5	34.0	4.8	24	24			
7	2.6	1.8	1.0	1.2	1.2	1.4	1.3	S	1.4	0.5	3.7	2.9	5.5	1.2	2.0	3.1	4.7	0.2	3.2	1.9	0.1	0.2	0.7	1.4	5.5	1.9	24			
8	2.5	2.5	1.9	2.1	2.6	13.0	S	3.4	3.5	3.1	3.0	2.7	2.1	1.3	1.6	1.2	1.6	1.4	1.4	1.4	1.6	2.4	5.3	5.4	13.0	2.9	24			
9	2.0	0.8	0.7	3.7	8.3	S	7.8	2.7	P	P	P	P	P	P	P	P	P	P	P	P	P	S	2.2	1.7	8.3	3.2	12			
10	1.7	1.6	1.3	1.4	S	3.0	S	S	3.6	C	C	C	C	C	C	C	C	C	C	C	7.6	13.7	13.4	16.8	24.8	1.3	1.2	24.8	7.0	24
11	1.4	1.7	7.0	S	11.9	1.8	1.3	1.4	1.6	1.8	2.6	8.0	9.7	9.4	8.8	9.7	7.2	3.3	3.7	21.0	26.0	25.1	20.6	1.5	26.0	8.1	24	24		
12	1.5	1.5	S	1.0	1.1	1.2	S	S	2.9	1.0	1.0	2.7	2.9	0.9	1.0	4.3	1.5	1.2	1.8	1.5	2.4	2.0	1.7	4.3	1.7	24	24	24		
13	1.6	S	14.1	11.3	6.0	18.8	8.2	8.9	7.0	16.2	9.9	7.1	7.0	6.4	9.2	3.4	5.4	10.2	9.2	3.7	1.6	13.7	3.8	1.6	18.8	8.0	24	24	24	
14	S	11.7	4.0	4.7	2.6	4.4	3.7	4.1	3.5	1.5	2.0	1.4	2.1	1.8	3.4	0.8	4.2	0.8	0.6	0.6	0.7	1.1	1.2	S	11.7	2.8	24	24	24	
15	2.4	2.8	4.4	2.6	2.2	6.9	S	S	9.8	6.9	1.6	1.3	3.2	2.5	1.6	1.0	1.0	1.3	1.1	1.0	1.3	S	2.1	9.8	2.8	24	24	24		
16	1.7	1.5	1.5	1.5	2.1	3.4	2.9	11.9	16.3	6.5	11.6	6.4	1.5	3.3	4.3	10.4	5.8	2.0	11.0	11.5	11.4	S	10.7	7.4	16.3	6.4	24	24	24	
17	1.5	1.2	1.5	1.0	1.5	1.4	1.2	1.1	1.1	1.1	5.1	0.7	1.0	0.7	0.8	0.7	0.8	2.2	1.7	12.8	S	15.9	3.6	6.2	15.9	2.8	24	24	24	
18	14.3	13.1	7.6	7.8	10.8	10.9	10.7	7.6	6.3	1.4	0.7	1.7	1.6	0.8	1.4	1.2	1.2	0.8	0.7	S	3.8	2.0	21.4	12.1	21.4	6.1	24	24	24	
19	1.3	1.4	12.2	14.4	15.7	14.4	12.1	12.9	15.0	12.5	11.7	15.8	11.0	8.6	10.0	10.2	7.7	14.7	S	7.3	1.0	0.7	2.2	2.3	15.8	9.4	24	24	24	
20	2.9	11.5	12.5	9.4	3.6	3.0	1.5	1.2	1.4	5.4	2.3	4.6	4.6	1.4	0.9	0.7	0.9	S	4.3	13.9	13.5	17.1	17.7	19.2	6.7	24	24	24	24	
21	19.0	3.7	15.3	14.3	8.9	1.2	1.4	1.7	1.6	1.9	4.0	6.4	5.8	8.0	3.5	1.7	S	2.3	2.9	2.0	1.4	6.6	3.8	19.0	5.1	24	24	24	24	
22	1.6	2.0	1.5	1.3	9.8	6.3	6.0	7.4	2.4	6.4	3.2	3.5	1.9	0.7	1.4	S	1.5	1.8	2.2	3.0	1.4	1.5	1.2	1.1	9.8	3.0	24	24	24	
23	2.0	2.3	2.7	2.0	2.8	3.0	2.4	1.4	1.4	0.9	0.9	1.0	1.0	1.0	1.0	S	6.8	1.2	1.4	2.7	2.0	1.3	2.6	3.1	3.3	6.8	2.1	24	24	24
24	2.5	4.1	4.7	5.1	3.5	3.8	4.8	5.3	5.2	3.0	1.6	1.2	0.9	S	1.1	1.6	1.1	1.1	1.1	1.7	3.3	3.2	2.5	1.5	5.3	2.8	24	24	24	
25	1.5	1.6	5.2	2.2	2.2	1.7	2.3	5.6	8.0	7.0	7.7	4.9	S	1.0	1.1	1.0	0.9	5.2	2.1	1.0	23.0	5.6	2.0	1.4	23.0	4.1	24	24	24	
26	10.7	9.8	12.0	15.0	6.0	1.6	1.4	1.7	1.3	1.0	0.9	S	0.7	0.8	3.2	4.6	7.3	11.1	5.5	0.6	0.6	1.0	1.0	1.2	15.0	4.3	24	24	24	
27	4.1	4.2	2.8	1.3	6.5	5.9	S	S	14.6	2.5	S	3.7	3.1	3.5	3.5	0.9	1.2	0.7	0.5	0.7	0.5	0.6	14.0	2.9	14.6	3.9	24	24	24	
28	4.6	8.8	8.4	11.0	7.7	8.3	10.2	14.1	14.4	S	4.1	5.0	9.6	8.2	14.7	7.2	12.7	12.3	10.4	2.4	0.6	0.6	14.0	19.1	19.9	9.9	24	24	24	
29	20.3	15.1	0.6	0.8	3.6	8.5	9.6	6.2	S	2.8	C	C	C	C	2.4	1.6	0.3	1.3	16.2	0.3	0.4	0.6	0.3	0.2	20.3	4.8	24	24	24	
30	0.7	0.8	0.9	0.8	1.3	3.6	2.6	S	1.9	1.3	0.5	1.3	5.1	0.5	1.1	1.2	6.7	8.6	0.6	0.4	0.5	0.9	0.9	0.6	8.6	1.9	24	24	24	
31	1.7	1.2	1.3	1.8	3.8	3.5	S	S	17.9	5.0	1.9	2.0	2.4	1.4	1.2	1.5	1.2	3.0	1.9	1.4	4.9	2.0	0.7	0.7	17.9	2.8	24	24	24	
HOURLY MAX	20.3	15.1	15.3	15.0	15.7	18.8	17.1	17.7	25.0	16.2	11.7	15.8	11.0	9.6	20.8	16.4	20.6	16.6	16.2	21.0	26.0	25.1	34.0	19.9						
HOURLY AVG	4.4	4.0	4.7	4.7	5.3	5.9	5.8	6.2	6.7	5.3	4.1	4.2	4.0	3.0	4.0	3.5	4.1	4.1	4.1	4.4	5.0	6.0	6.0	7.7	4.5					

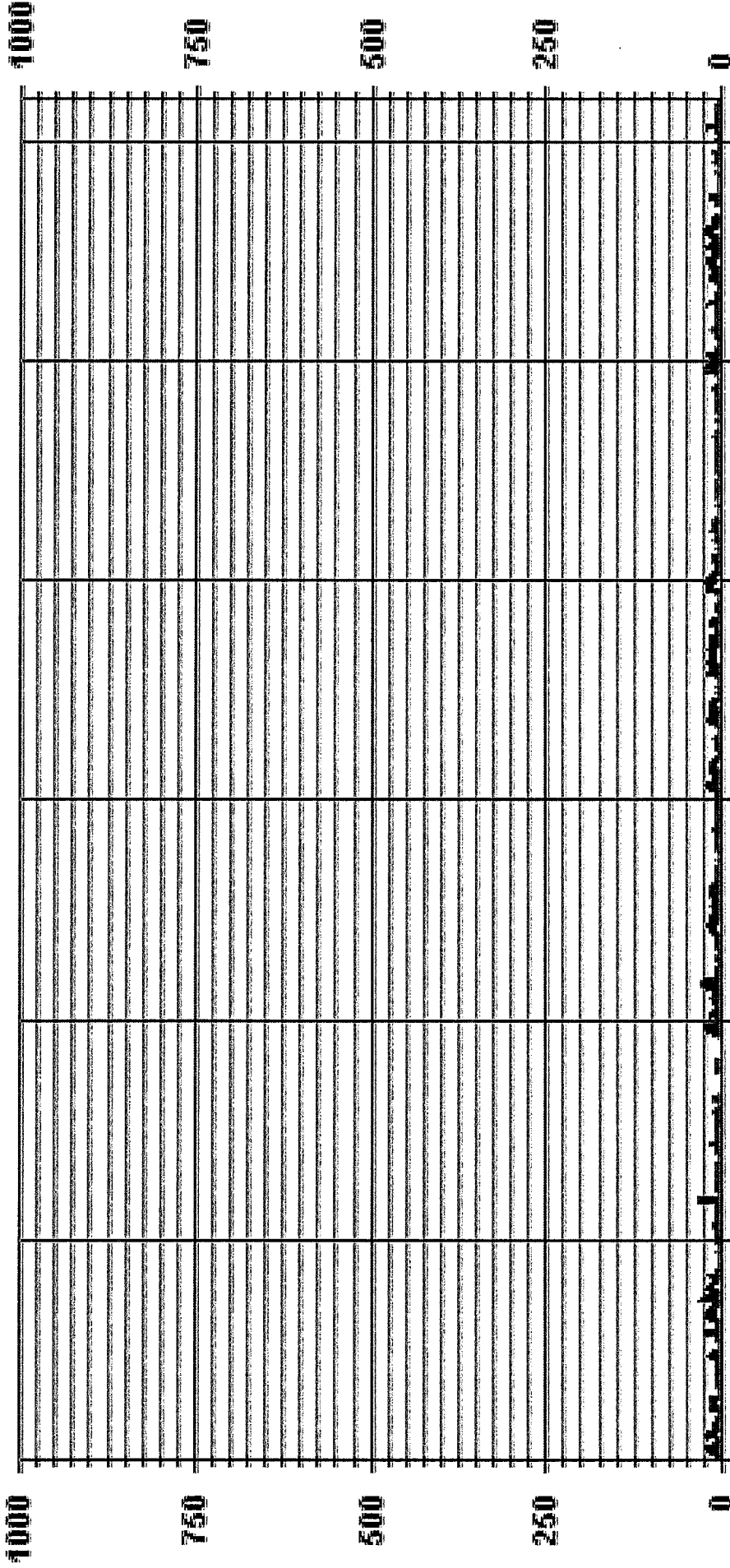
STATUS FLAG CODES

C	-CALIBRATION	Q	-QUALITY ASSURANCE
M	-MAINTENANCE	R	-RECOVERY
S	-DAILY ZERO/SPAN CHECK	X	-MACHINE MALFUNCTION
P	-POWER FAILURE	O	-OPERATOR ERROR
G	-OUT FOR REPAIR	K	-COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	678
MAXIMUM INSTANTANEOUS VALUE:	34 PPB @ HOUR(S) 22 ON DAY(S) 6
12S CALIBRATION TIME:	42 HRS
MONTHLY CALIBRATION TIME:	12 HRS
STANDARD DEVIATION:	5.13
OPERATIONAL TIME:	VAR-VARIOUS
	732 HRS

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

--- LICA30 NO2MAX PPB

LIC30
 NO2_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By # Of Samples

Logger Id : 30
 Site Name : LIC30
 Parameter : NO2
 Units : PFB

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	4.39	5.56	3.51	2.48	2.34	2.92	2.34	1.75	3.36	15.37	12.88	8.63	10.68	10.54	7.90	5.27	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.39	5.56	3.51	2.48	2.34	2.92	2.34	1.75	3.36	15.37	12.88	8.63	10.68	10.54	7.90	5.27	

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples




Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	30	38	24	17	16	20	16	12	23	105	88	59	73	72	54	36	683
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	30	38	24	17	16	20	16	12	23	105	88	59	73	72	54	36	

Calm : .00 %

Total # Operational Hours : 683

Logger : 30 Parameter : NO2_

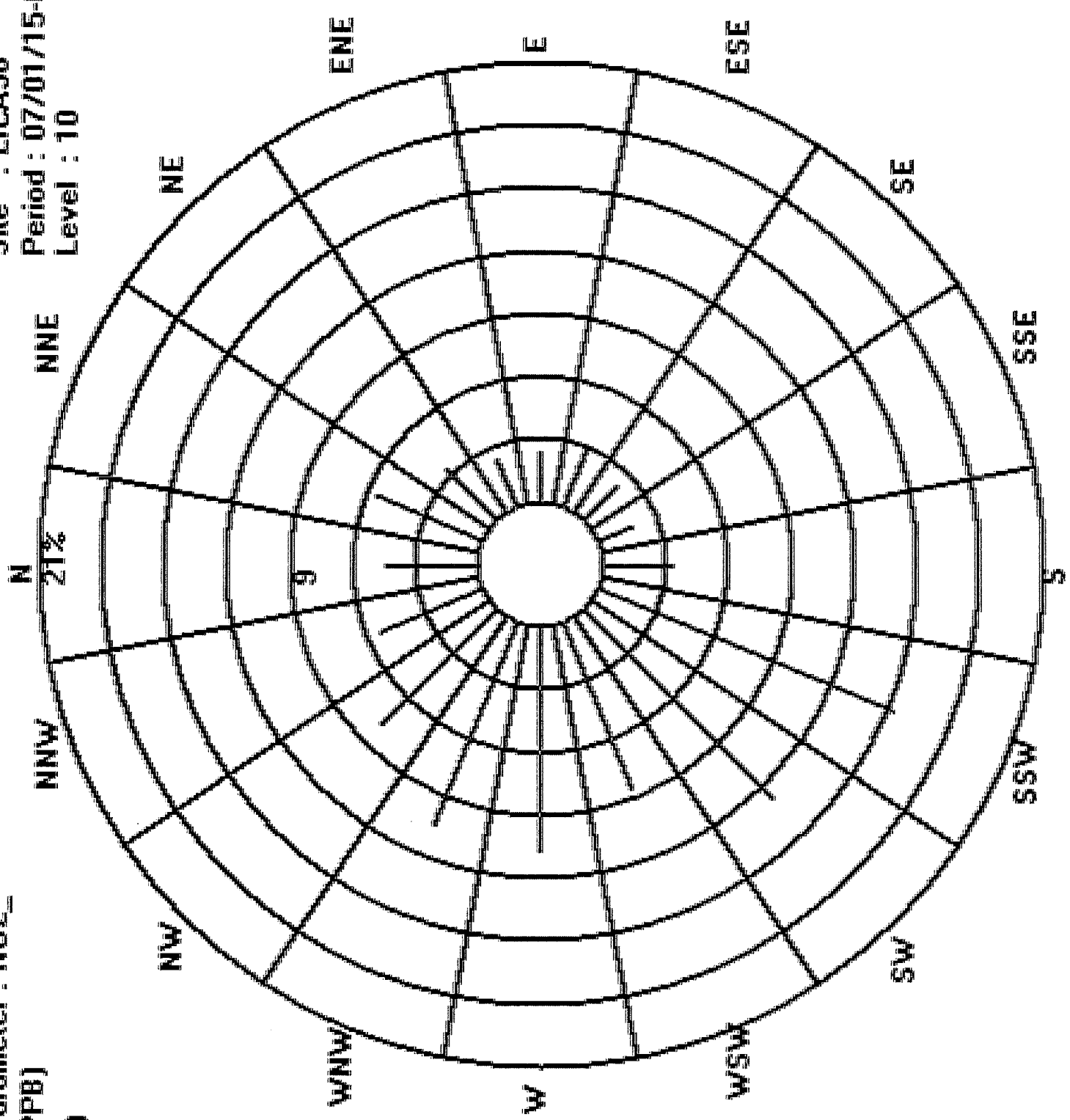
Class Limits (PPB)

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0

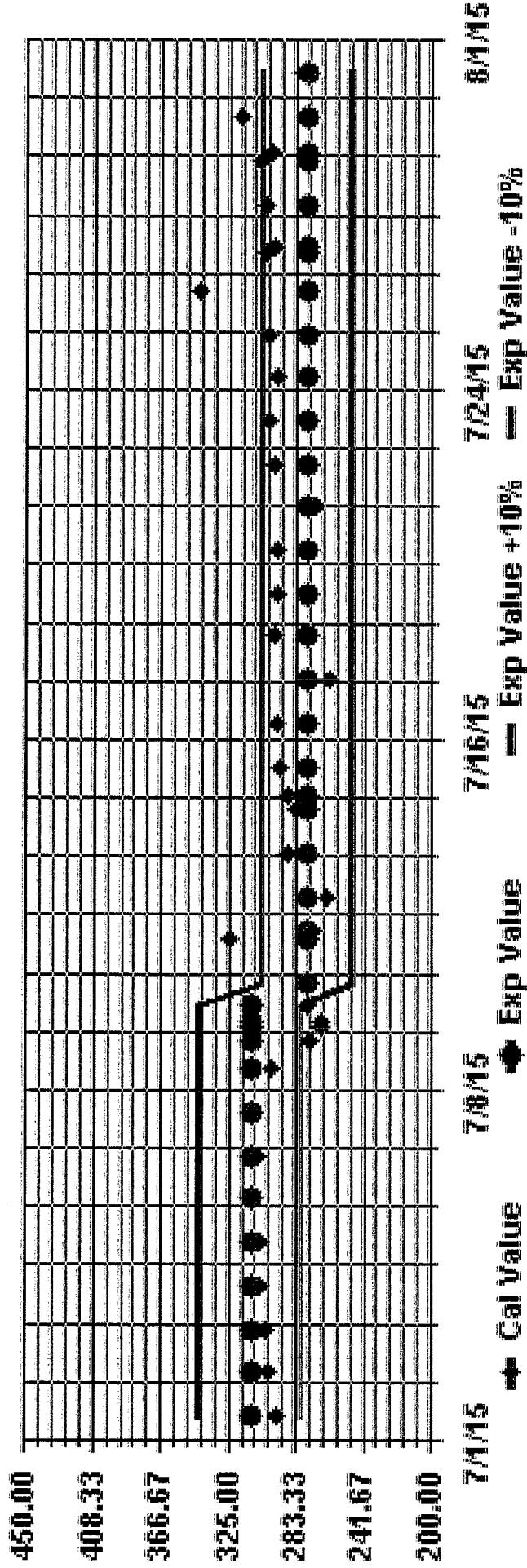
Site : LICA30

Period : 07/01/15-07/31/15

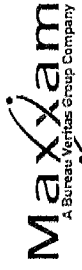
Level : 10



Calibration Graph for Site: LICA30 Parameter: NO2_ Sequence: NO2 Phase: SPAN



WIND SPEED



WIND SPEED (WS) hourly averages in km/hr

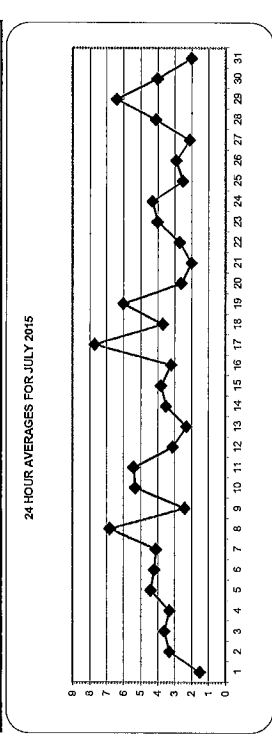
MST

DAY	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	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	24:00		
HOURLY START	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	24:00		
HOURLY 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	24:00		
WS	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	24:00		
ROGS	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX		
1	2.7	2.3	2.1	1.2	1.7	2.7	3.4	2.9	1.8	1.3	0.7	6.7	8.2	4.4	5.8	7.0	5.9	6.6	3.8	1.8	2.8	0.5	1.1	1.7	8.2	3.3	
2	2.2	2.5	2.4	0.8	0.6	3.0	1.2	2.7	3.4	3.6	5.4	4.4	6.2	5.9	4.6	3.9	6.6	6.2	3.0	4.0	4.8	4.3	4.5	4.7	6.6	3.8	
3	5.0	4.8	6.2	5.8	6.1	7.4	7.7	7.4	6.3	3.2	1.7	3.3	4.2	6.8	9.8	7.1	6.6	6.9	4.8	4.2	3.0	1.6	1.1	1.0	9.8	5.1	
4	0.3	1.0	0.5	0.7	0.2	1.3	1.1	3.0	2.9	4.1	4.9	5.6	5.7	5.5	8.0	8.6	9.3	4.9	4.6	2.8	4.0	4.8	4.9	3.2	9.3	3.8	
5	5.4	4.3	4.3	4.9	4.3	7.1	5.5	7.8	8.5	9.5	9.1	11.3	8.5	8.1	8.5	6.0	6.0	3.5	2.8	3.5	4.0	3.5	3.5	2.8	11.3	6.1	
6	1.8	2.1	1.3	1.6	2.0	3.1	4.6	5.4	4.4	4.4	5.4	5.8	6.1	5.7	9.0	8.6	7.7	6.7	5.6	5.0	5.2	2.3	3.7	9.0	4.7	24	
7	5.9	9.3	10.5	7.5	7.3	7.1	7.5	6.9	10.1	6.9	6.8	4.9	5.1	4.3	5.2	3.7	3.7	3.3	0.8	1.7	2.1	4.0	3.5	3.8	10.5	5.6	
8	4.3	4.6	3.9	3.5	3.2	4.0	8.4	9.3	7.0	8.3	8.7	10.7	10.9	12.4	12.3	10.0	6.8	6.2	7.9	6.5	7.1	6.4	2.8	1.6	12.4	7.0	
9	5.9	1.2	0.4	0.7	2.3	1.2	2.4	5.9	7.0	8.3	8.7	10.7	10.9	12.4	12.3	10.0	6.8	6.2	7.9	6.5	7.1	6.4	2.8	1.6	12.4	7.0	
10	1.6	3.4	0.8	2.9	6.7	8.7	10.4	10.2	11.2	12.8	7.8	7.2	7.3	6.7	6.3	7.4	5.2	5.3	5.2	3.8	4.3	4.2	3.6	4.3	12.8	6.1	
11	3.7	2.2	2.6	4.1	4.6	6.0	7.1	11.3	9.7	9.6	10.2	8.7	8.8	8.6	6.9	7.5	6.2	6.3	4.9	4.2	4.3	3.1	4.7	4.9	11.3	6.3	
12	3.6	1.8	2.5	2.0	3.5	3.6	4.0	3.1	5.2	8.7	6.6	6.1	4.8	6.2	5.8	5.3	4.1	2.6	0.9	1.9	0.8	3.9	2.0	2.3	8.7	3.8	
13	1.1	2.1	3.8	3.9	1.8	4.7	2.2	1.7	0.9	3.1	3.1	2.3	2.9	4.0	4.7	5.1	5.0	4.3	3.3	2.0	4.7	4.7	1.7	1.6	5.1	3.1	
14	1.9	1.3	1.4	0.2	0.6	2.2	4.9	3.2	3.0	5.6	7.3	6.3	8.3	8.8	8.1	7.7	5.6	5.5	3.2	1.9	3.4	2.2	2.4	2.2	8.8	4.2	
15	1.5	2.2	2.6	1.7	1.7	1.0	0.9	2.4	2.5	2.4	6.0	6.7	7.6	8.4	11.6	9.4	8.9	7.6	5.3	3.8	2.5	2.4	1.3	1.0	11.6	4.2	
16	1.7	0.3	1.2	0.6	0.8	0.7	1.6	3.1	4.5	5.1	3.3	3.0	4.9	6.9	8.2	6.9	6.6	7.1	4.8	4.8	5.1	4.3	3.1	2.1	8.2	3.8	
17	3.0	5.4	7.4	8.9	9.0	9.0	8.7	10.9	11.5	12.2	13.3	13.3	10.3	10.4	6.6	6.6	4.3	4.2	5.3	4.2	3.1	3.7	3.7	14.9	8.1	24	
18	4.5	2.9	3.2	3.1	2.7	1.8	2.8	4.0	4.4	4.6	5.5	5.6	7.1	7.3	7.4	5.7	5.8	4.0	3.6	3.9	4.8	5.9	3.6	3.8	7.4	4.5	
19	4.0	5.1	7.1	8.2	7.1	7.4	8.1	7.7	6.4	8.5	9.1	8.6	9.2	8.4	8.8	8.4	7.9	7.6	6.4	2.5	3.9	1.2	2.4	1.6	9.2	6.5	
20	2.1	1.9	1.9	1.5	1.9	3.3	4.7	5.3	3.6	2.5	3.7	3.9	5.1	4.1	5.8	4.5	5.4	3.6	4.0	5.8	6.9	5.3	6.9	4.1	24	4.1	
21	6.3	5.0	6.7	6.2	3.1	4.2	4.9	5.7	7.4	5.4	2.9	3.5	3.1	1.5	3.3	4.4	4.9	2.3	2.1	0.5	1.3	0.7	0.9	1.1	7.4	3.6	
22	0.8	0.7	0.4	0.5	2.4	1.1	1.0	3.2	3.4	3.2	3.6	5.0	5.2	4.7	5.3	4.9	5.4	4.4	6.7	4.7	3.1	2.7	3.8	4.4	6.7	3.4	
23	4.0	3.3	3.9	4.0	4.1	4.1	3.9	5.1	6.2	5.9	6.5	6.4	6.1	6.9	7.1	7.2	7.1	6.5	3.9	2.0	2.8	2.9	3.8	4.6	7.2	4.8	
24	5.0	1.8	1.8	3.0	1.1	2.3	2.2	3.1	4.3	5.2	6.9	6.7	6.4	6.4	6.1	6.9	7.1	7.2	7.1	6.5	3.9	2.0	2.8	2.9	3.8	4.6	7.8
25	5.6	4.1	3.3	2.8	0.4	2.4	1.4	4.1	5.9	7.8	5.5	5.2	5.9	6.1	5.6	5.0	4.5	3.3	2.0	2.8	2.9	3.8	4.6	7.8	4.1	24	
26	3.5	2.9	3.7	1.9	3.4	2.5	3.0	3.4	4.8	5.1	5.9	5.9	5.1	6.1	5.5	7.7	5.8	4.4	4.0	2.4	2.8	1.6	2.0	1.5	7.7	4.0	
27	2.2	1.5	1.8	1.0	1.8	1.2	1.2	2.0	3.1	4.2	3.0	3.2	3.4	2.2	3.9	3.9	4.7	3.0	2.4	2.2	2.0	1.6	2.4	4.7	2.6	24	
28	2.7	2.1	2.0	2.0	2.4	2.6	2.6	2.5	5.8	4.4	6.6	6.4	7.6	7.3	7.6	6.7	6.1	4.0	3.5	6.4	4.2	6.0	5.7	4.8	7.6	4.7	
29	4.7	3.5	3.8	5.2	6.4	5.9	5.6	6.4	7.2	6.6	7.7	9.7	10.8	9.8	8.0	10.8	8.8	8.0	7.9	4.7	3.9	3.5	3.4	2.7	10.8	6.5	
30	2.6	3.2	2.5	2.9	3.7	3.2	2.9	4.0	4.9	6.5	5.5	5.5	7.9	7.4	7.8	6.8	5.7	7.8	5.4	2.7	3.0	2.7	1.1	1.6	7.9	4.5	
31	2.8	2.7	0.9	3.2	2.5	0.8	1.4	2.5	1.8	3.4	2.6	5.4	7.8	5.5	6.4	5.4	5.5	4.6	2.7	2.2	2.6	4.2	3.1	3.0	7.8	3.5	
HOURLY MAX	6.3	9.3	10.5	8.9	9.0	9.0	10.4	11.3	11.2	12.8	12.2	13.3	14.9	13.3	12.3	10.8	9.3	8.0	7.9	6.5	7.1	6.4	6.9	6.6	3.0		
HOURLY AVG	3.3	3.0	3.1	3.1	3.2	3.7	4.1	5.0	5.4	5.8	5.8	6.2	6.8	6.7	7.1	6.8	6.2	5.4	4.2	3.4	3.7	3.7	3.1	3.1	3.0		

STATUS FLAG CODES

C	-CALIBRATION
Q	-QUALITY ASSURANCE
R	-RECOVERY
X	-MACHINE MALFUNCTION
S	-DAILY ZERO/SPAN CHECK
P	-POWER FAILURE
O	-OPERATOR ERROR
K	-COLLECTION ERROR
G	-OUT FOR REPAIR

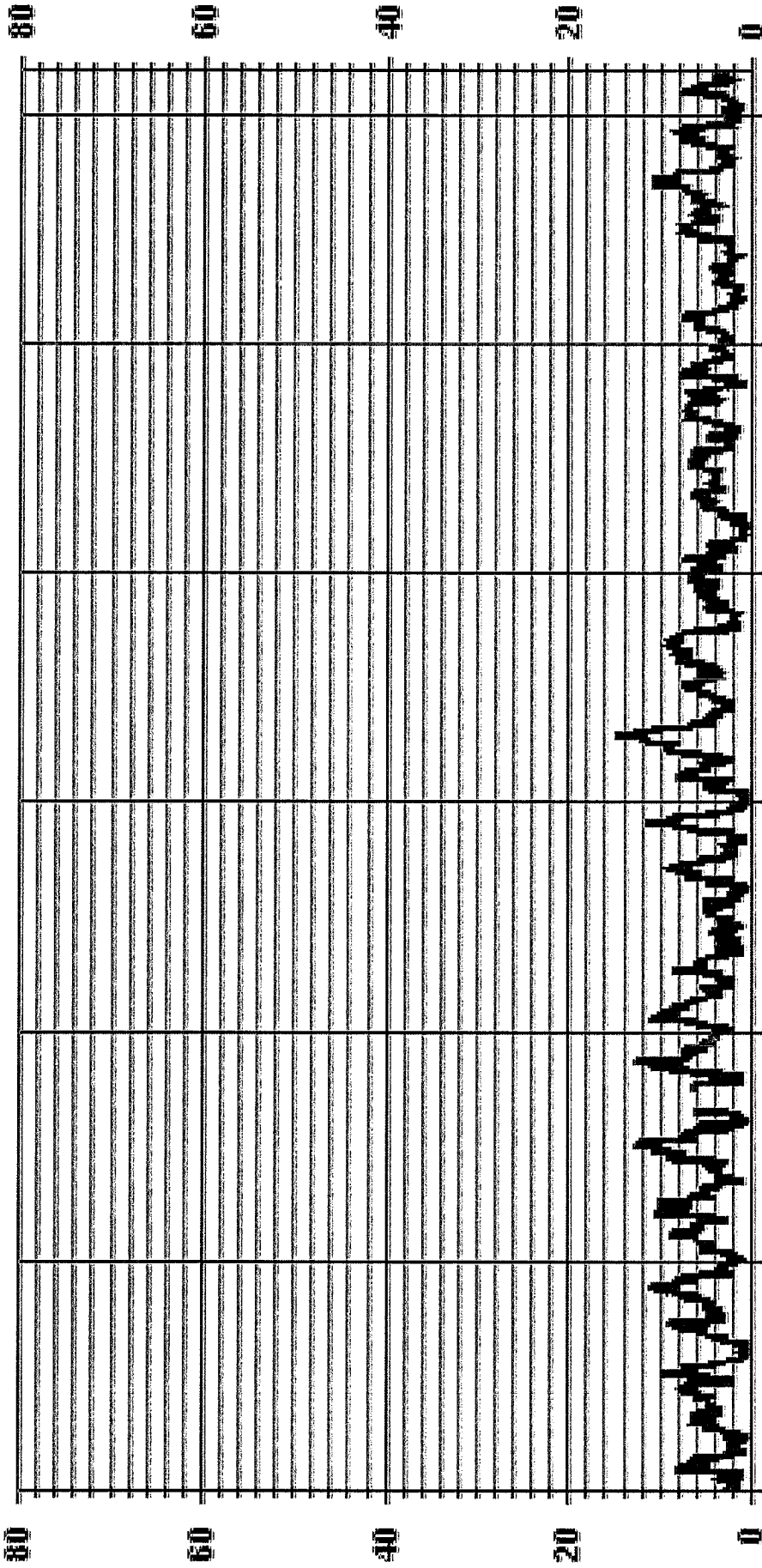
LAST CALIBRATION: March 4, 2014
DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

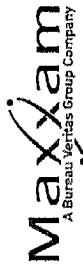
NUMBER OF NON-ZERO READINGS:	732
MAXIMUM 1-HR AVERAGE:	14.9 KPH
MAXIMUM 24-HR AVERAGE:	8.1 KPH
MONTHLY CALIBRATION TIME:	0 HRS
STANDARD DEVIATION:	2.55
ON DAY(S)	17
ON DAY(S) VAR-VARIOUS	17
OPERATIONAL TIME:	732 HRS
AMD OPERATION UPTIME:	98.4 %
MONTHLY AVERAGE:	4.6 KPH

01 Hour Averages



07:01:15 00:00:07:06:15 00:00:07:11:15 00:00:07:16:15 00:00:07:21:15 00:00:07:26:15 00:00:07:31:15 00:00

— LICA30 WSP KPH



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

Table with columns for Hourly Max, Hourly Avg, and 24-hour Avg. Rows represent hourly data from 0:00 to 23:00.

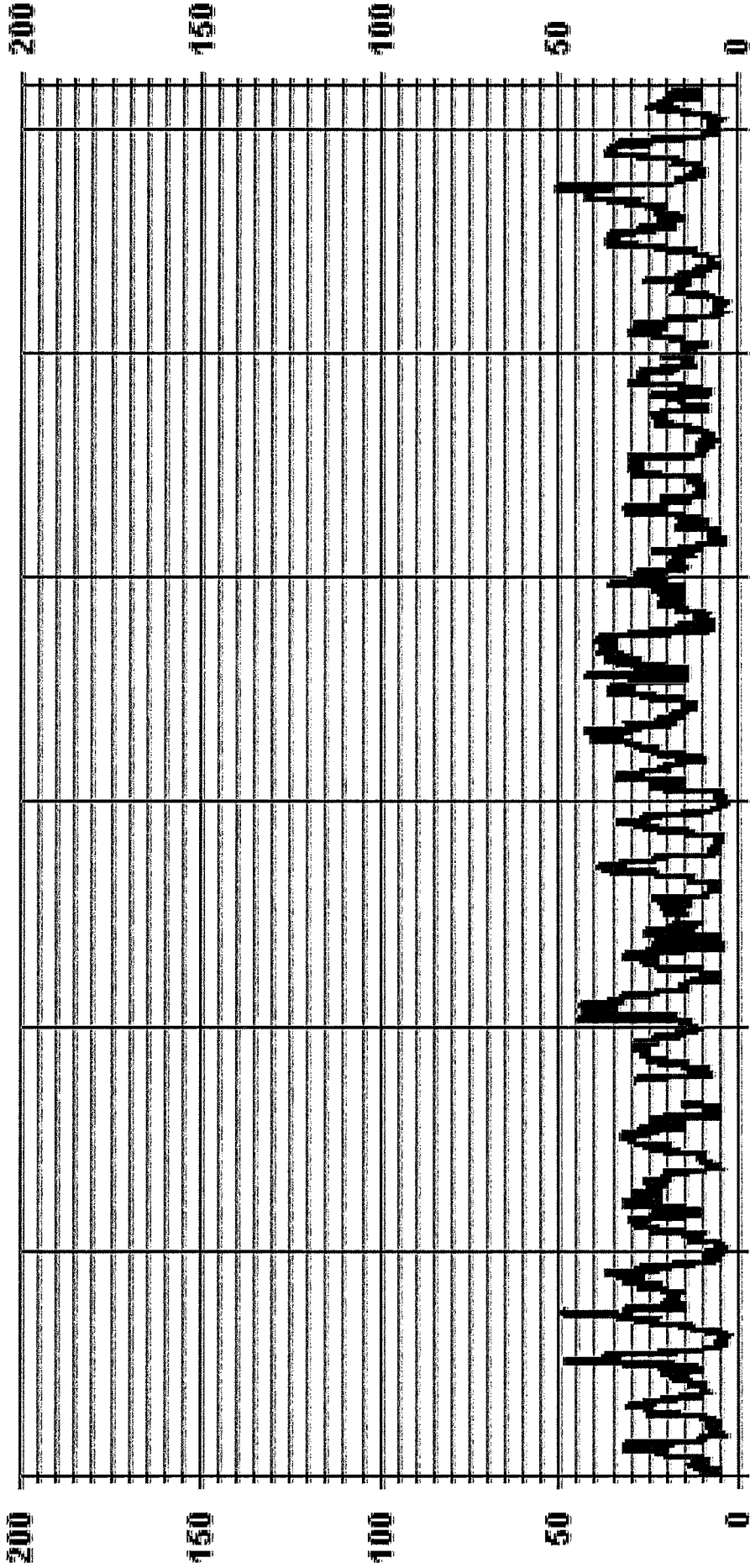
STATUS FLAG CODES

Legend for status flags: C - CALIBRATION, Q - QUALITY ASSURANCE, Y - MAINTENANCE, R - RECOVERY, S - DAILY ZERO/SPAN CHECK, X - MACHINE MALFUNCTION, P - POWER FAILURE, O - OPERATOR ERROR, G - OUT FOR REPAIR, K - COLLECTION ERROR.

MONTHLY SUMMARY

Summary table with columns: MAXIMUM INSTANTANEOUS VALUE: 50.9, KPH @ HOUR(S): 17, ON DAY(S): 29, OPERATIONAL TIME: 731 HRS.

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LIC30 WSMAX KPH

LICA30
WSP / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 30
Site Name : LICA30
Parameter : WSP
Units : KPH

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	W	WSW				
< 6.0	2.45	1.50	2.59	1.91	1.22	2.04	2.18	1.22	2.73	10.24	10.51	7.92	9.15	6.42	4.91	2.86	4.64	71.72		
< 12.0	1.91	3.41	.95	1.36	1.09	.68	.13	.40	.54	4.23	2.32	.81	1.63	4.50	2.86	.40	27.32			
< 20.0	.00	.54	.13	.00	.00	.00	.00	.00	.00	.27	.00	.00	.00	.00	.00	.00	.95			
< 29.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
Totals	4.37	5.46	3.68	3.27	2.32	2.73	2.32	1.63	3.27	14.75	12.84	8.74	10.79	10.92	7.78	5.05				

Calm : .00 %

Total # Operational Hours : 732

Distribution By Samples

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	W	WSW				
< 6.0	18	11	19	14	9	15	16	9	20	75	77	58	67	47	36	34	525			
< 12.0	14	25	7	10	8	5	1	3	4	31	17	6	12	33	21	3	200			
< 20.0		4	1							2							7			
< 29.0																				
< 39.0																				
>= 39.0																				
Totals	32	40	27	24	17	20	17	12	24	108	94	64	79	80	57	37				

Calm : .00 %

Total # Operational Hours : 732

Logger : 30 Parameter : WSP

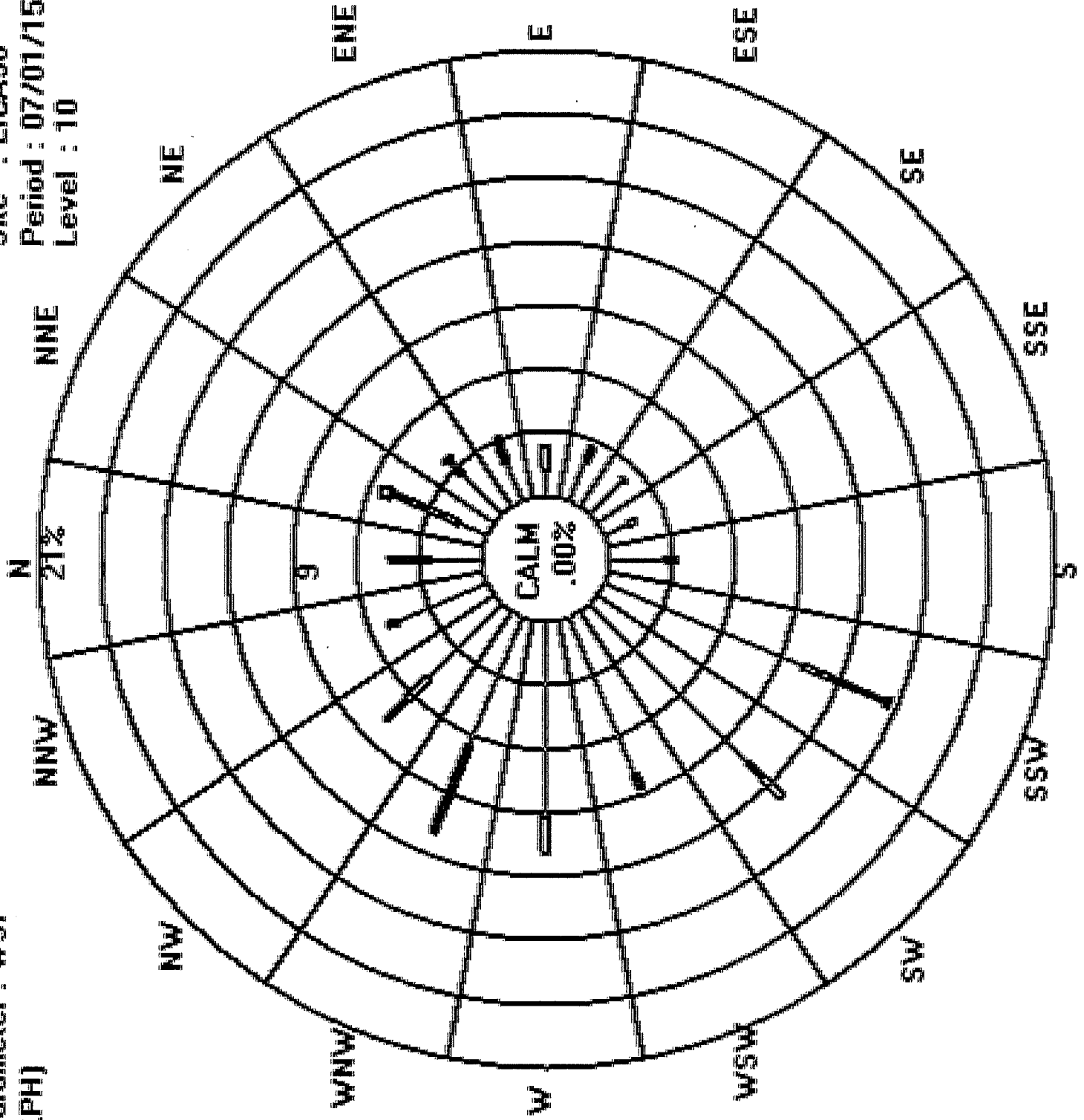
Site : LICA30

Class Limits (KPH)

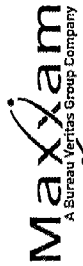
Period : 07/01/15-07/31/15

- >= 39.0
- < 39.0
- < 29.0
- < 20.0
- < 12.0
- < 6.0

Level : 10



WIND DIRECTION



WIND DIRECTION (WD) hourly averages

MST

DAY	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	24:00	RODS			
1	SW	SW	SW	SW	SW	W	NNW	NNW	N	NNW	WNW	NE	SSE	SSW	WSW	NW	NW	NW	NNW	N	NNW	SW	NNW	SSW	SSW	WNW	24		
2	SW	SSW	SSW	S	SSW	SSW	W	WNW	WNW	SW	SW	SW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	SSW	24	
3	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
4	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
5	NW	NNW	NNW	NNW	NNW	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	24	
6	SW	WNW	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
7	N	NNE	NNE	N	N	NNE	NNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	24	
8	SSW	SSW	SSW	S	S	SSW	S	SSW	S	SSW	S	SSW	S	SSW	S	SSW	S	SSW	S	SSW	S	SSW	S	SSW	S	SSW	S	24	
9	NNE	NE	SSW	W	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
10	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	12	
11	NE	NNE	N	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	24	
12	SE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	24	
13	NW	W	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	24	
14	W	SW	SSE	WSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24	
15	SW	SSW	SW	SSW	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24	
16	ESE	ENE	SE	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	SE	WNW	24	
17	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	24	
18	NW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	24	
19	WSW	W	WNW	NNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	24	
20	SSW	WSW	SW	WNW	NNE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	24	
21	ESE	SE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	24	
22	SW	SSE	WSW	SSE	W	SW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	24	
23	SW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24	
24	SE	ESE	SE	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	E	WNW	24	
25	W	NNW	NW	WNW	SW	SW	W	WSW	WSW	SW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24	
26	SSW	S	SSW	WSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24	
27	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24	
28	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24	
29	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24	
30	SW	SW	WSW	WSW	SW	SW	WSW	WSW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	WNW	W	24	
31	SSW	SW	SSE	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24	

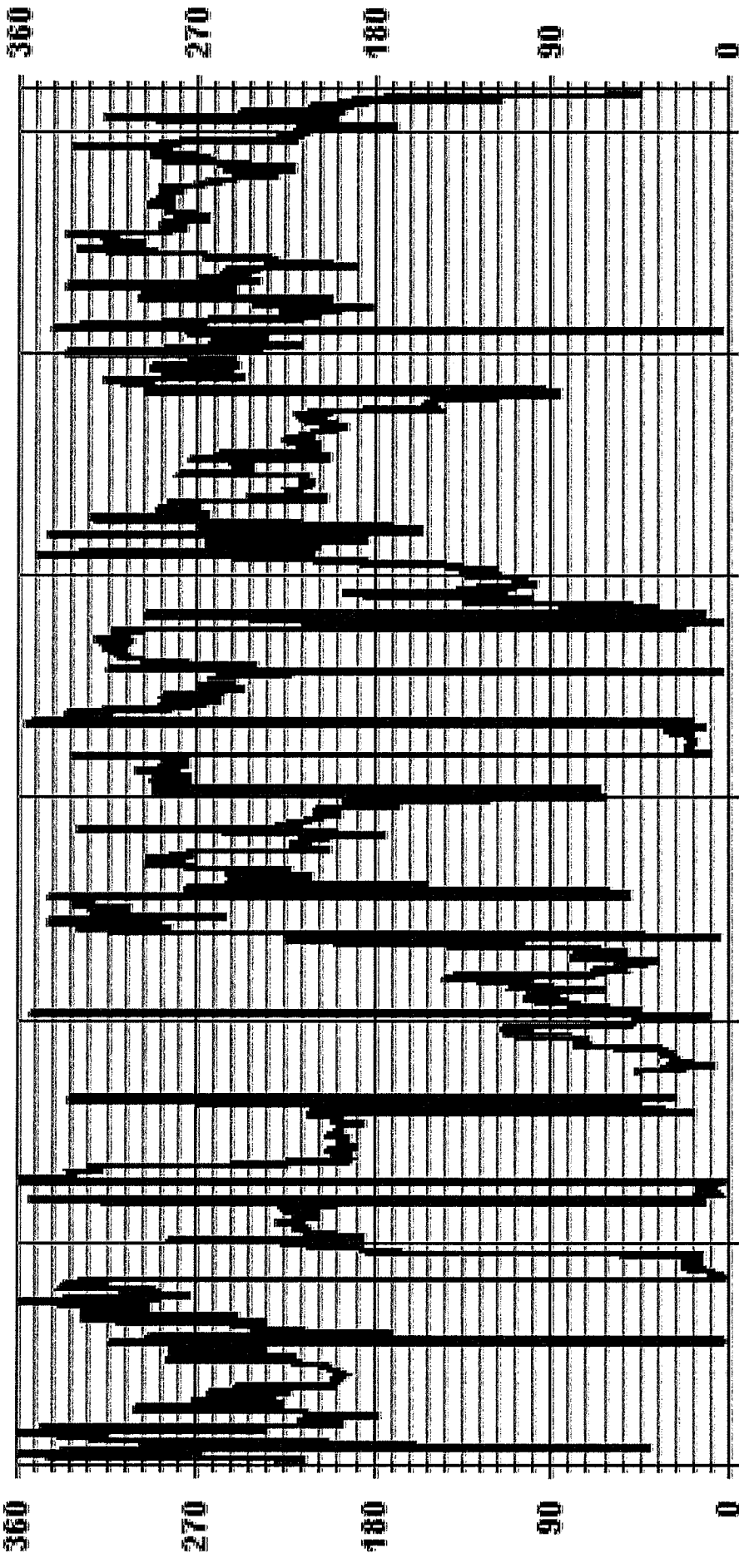
STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/Span CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

LAST CALIBRATION: March 4, 2014
DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	732	HRS
STANDARD DEVIATION:	94.66		AMD OPERATION UPTIME:	98.4	%
			MONTHLY AVERAGE:	W	

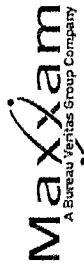
01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA30 WDR DEG

STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 Maskwa Site - JULY 2015
 JOB # 2833-2015-07-30-C

STANDARD DEVIATION WIND DIRECTION (STDWVD) hourly averages in degrees

MST

DAY	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	24:00
1	27	34	40	57	29	32	46	37	43	68	51	31	22	36	44	38	43	39	40	43	38	64	43	26	
2	26	17	41	64	55	14	55	35	36	45	42	57	44	46	51	57	37	37	49	20	15	10	10	11	
3	11	13	15	14	14	16	19	24	33	42	47	47	40	38	38	42	42	38	32	27	35	39	39	45	
4	62	46	67	61	62	46	37	44	43	40	38	45	47	47	42	39	39	36	53	45	37	33	39	45	
5	39	45	40	39	49	34	35	30	28	27	28	25	33	35	36	37	44	26	33	19	15	9	10	19	
6	25	12	18	35	16	15	16	20	23	23	31	43	40	45	35	30	35	35	33	19	13	13	38	24	
7	36	29	21	32	28	27	28	32	27	37	40	54	51	59	41	44	52	47	36	55	28	6	12	9	
8	19	45	47	56	27	38	38	21	21	26	25	24	23	24	23	22	20	21	23	21	18	17	16	61	21
9	59	33	66	37	13	15	14	16	18	18	32	35	32	37	39	37	41	39	38	36	31	31	27	19	48
10	20	61	51	43	39	19	24	27	33	37	40	38	41	43	38	34	30	34	38	32	38	28	21	21	
11	29	23	19	23	20	23	27	41	29	22	39	38	53	99	41	42	39	31	37	25	83	44	36	27	
12	56	54	41	43	40	43	58	50	62	57	46	66	55	46	39	42	40	43	42	44	30	36	33	52	27
13	40	54	30	65	36	22	17	32	54	40	31	46	47	38	39	43	39	40	39	43	41	11	45	27	
14	36	20	23	24	19	46	59	48	49	60	40	36	33	31	26	26	33	17	13	16	46	63	41	41	
15	35	57	52	42	55	44	34	44	45	38	48	46	41	39	35	41	37	40	31	37	42	43	41	41	
16	26	20	22	19	19	20	19	23	21	21	22	20	16	22	23	28	34	38	30	41	41	41	36	45	
17	43	49	43	44	37	50	41	39	44	49	46	43	42	44	44	46	41	42	43	28	32	30	43	36	
18	38	37	35	34	35	35	40	41	45	39	41	41	40	42	40	43	40	39	38	56	45	30	23	50	
19	25	42	46	55	37	20	15	23	39	65	52	50	49	51	42	52	40	33	34	35	34	35	37	37	
20	35	42	34	45	36	23	28	31	25	30	51	56	52	59	41	35	32	63	45	57	39	44	47	58	
21	60	60	50	57	48	51	61	42	45	50	50	47	49	49	46	38	39	23	17	34	29	26	22	18	
22	20	18	14	14	20	22	30	38	44	41	43	41	43	42	44	41	26	64	42	26	30	21	17	13	
23	13	44	28	16	40	23	33	35	33	24	29	30	41	32	36	30	31	26	23	16	13	15	16	18	
24	25	34	46	36	49	25	43	45	40	34	46	45	43	45	41	40	46	45	36	40	37	36	34	38	
25	42	48	40	45	30	24	41	36	39	46	41	43	56	47	41	40	43	43	42	38	24	50	20	39	
26	19	39	26	35	33	31	37	45	45	41	52	59	55	49	55	39	46	42	43	43	41	38	42	39	
27	18	31	37	37	28	33	43	46	40	45	39	46	44	45	39	46	42	37	50	35	35	30	35	36	
28	37	35	35	31	31	30	33	34	38	41	41	40	38	45	43	37	40	37	35	37	40	41	40	40	
29	33	30	41	35	25	32	40	43	43	43	47	51	40	47	43	43	41	37	43	37	22	29	59	32	
30	16	13	36	20	16	41	38	41	49	45	58	45	37	40	46	35	40	23	25	38	48	22	50	29	

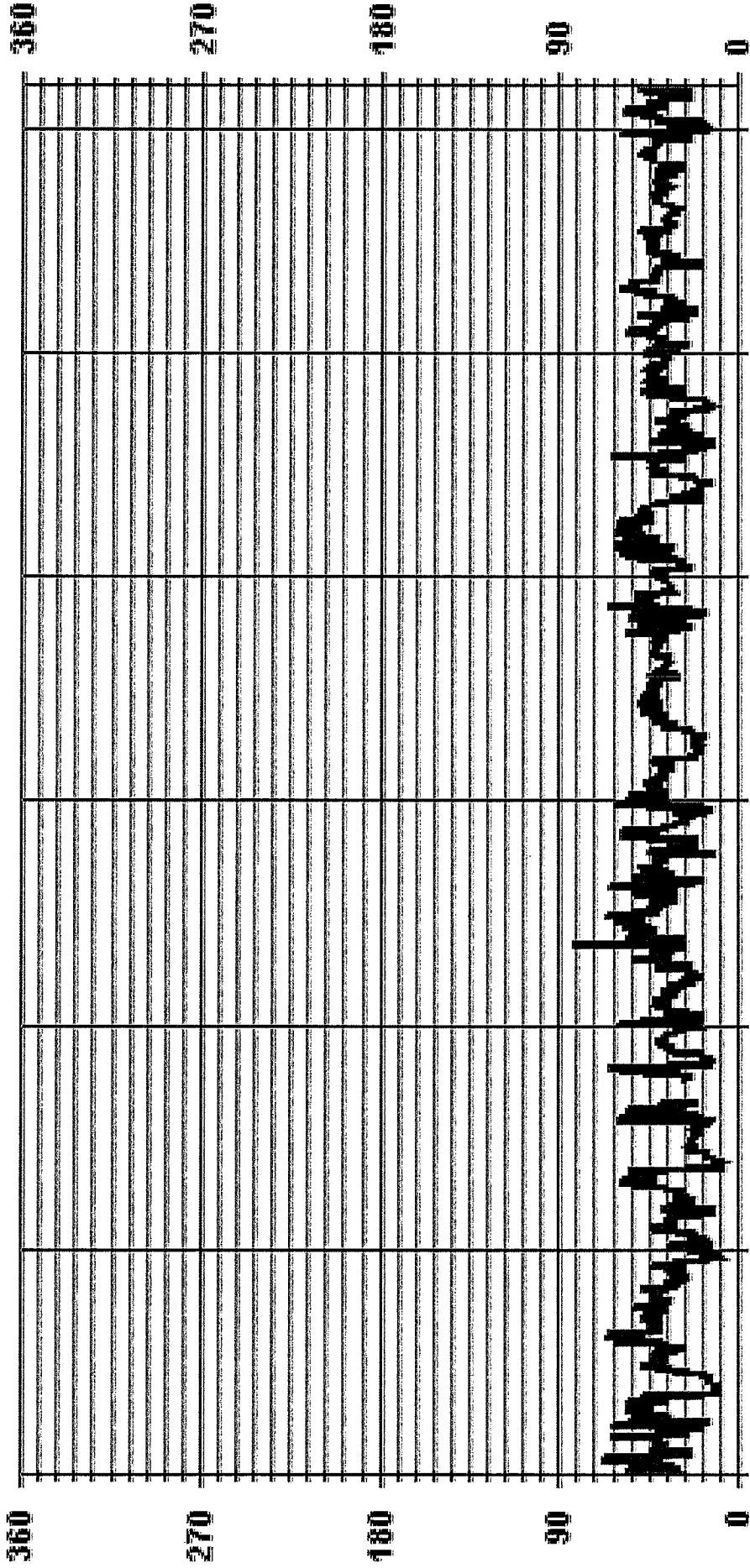
STATUS FLAG CODES

- C - CALIBRATION
- Y - MAINTENANCE
- S - DAILY ZERO/SPAN/CHECK
- P - POWER FAILURE
- G - OUT FOR REPAIR
- Q - QUALITY ASSURANCE
- R - RECOVERY
- X - MACHINE MALFUNCTION
- O - OPERATOR ERROR
- K - COLLECTION ERROR

LAST CALIBRATION: March 4, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 732 HRS

01 Hour Averages



— LIC-A30 STOWOIR DEG

RELATIVE HUMIDITY

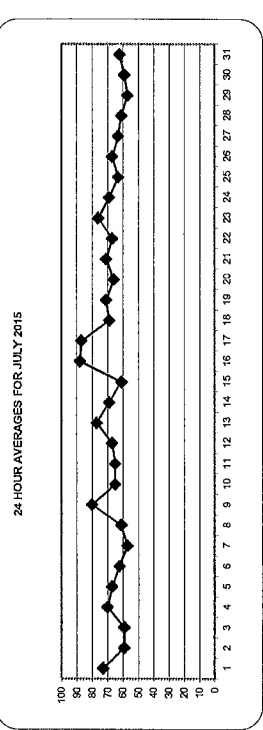


RELATIVE HUMIDITY (RH) hourly averages in %

DAY	HOURS																								DAILY MAX.	DAILY AVG.	RDGS.	
	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				24:00
1	87	86	85	87	90	83	78	77	71	62	57	64	65	58	48	49	47	53	67	79	80	86	92	93	93	72.7	24	
2	94	94	94	94	94	94	92	77	59	51	43	29	29	27	27	27	29	30	33	43	54	64	71	74	94	59.3	24	
3	76	79	78	80	80	72	69	65	59	50	43	29	29	27	27	29	30	33	43	54	64	71	74	94	59.3	24		
4	81	81	85	89	89	80	70	61	58	50	41	38	38	32	30	29	29	30	33	43	54	64	71	74	94	59.3	24	
5	90	90	91	90	88	86	84	84	82	79	69	49	41	37	36	35	33	34	39	56	69	75	81	85	91	66.8	24	
6	87	91	92	92	93	93	87	75	67	62	54	41	36	35	35	35	33	33	38	45	56	63	64	67	93	61.6	24	
7	70	76	77	74	73	72	72	65	55	53	44	40	37	35	36	35	40	46	48	48	53	59	60	65	91	60.6	24	
8	85	87	86	91	86	78	63	58	60	59	55	51	45	39	35	40	46	48	48	53	59	60	65	91	60.6	24		
9	66	76	84	91	93	93	81	71	P	P	P	P	P	P	P	P	P	P	P	P	66	71	81	89	93	80.2	12	
10	91	89	90	93	91	87	80	71	63	57	53	50	50	45	40	42	44	44	47	54	64	65	68	72	93	64.8	24	
11	77	74	84	88	85	87	85	78	71	58	56	54	52	49	48	49	49	50	49	53	60	68	73	74	88	65.5	24	
12	77	87	92	93	93	91	82	72	66	61	51	43	40	41	42	43	44	49	59	74	78	65	73	80	93	66.5	24	
13	86	89	87	88	89	85	81	78	80	86	83	74	67	62	59	57	60	60	63	71	84	87	89	92	92	77.4	24	
14	92	93	93	93	93	93	92	85	71	68	63	57	50	46	43	41	40	40	45	43	47	64	80	84	93	69.0	24	
15	85	88	90	90	90	83	70	55	41	37	36	36	42	46	41	40	40	39	40	47	67	76	86	91	91	60.7	24	
16	92	91	92	92	92	92	85	83	86	90	91	89	87	86	82	79	81	83	86	90	91	92	92	92	92	88.2	24	
17	93	93	93	93	92	92	92	92	92	90	91	90	89	85	81	74	68	77	83	88	86	87	87	88	89	93	87.2	24
18	88	88	89	91	92	89	81	70	59	53	52	50	45	44	42	48	50	55	57	61	74	90	91	92	92	68.8	24	
19	92	92	92	89	89	87	82	81	80	73	64	62	55	51	50	45	51	45	47	54	67	80	88	85	92	70.9	24	
20	88	91	91	92	92	89	82	72	62	56	59	53	48	45	43	40	47	49	47	56	67	68	68	68	92	65.6	24	
21	71	70	87	89	89	91	86	74	70	66	63	58	56	52	58	54	54	51	54	67	81	86	87	86	91	70.8	24	
22	83	89	92	93	92	90	84	64	52	46	43	39	32	33	35	42	45	55	70	83	87	89	88	88	93	67.3	24	
23	88	90	92	92	93	90	85	74	64	58	53	51	51	49	48	54	60	81	87	88	91	92	93	93	75.7	24		
24	94	93	93	93	93	93	94	89	76	73	61	55	48	44	42	41	42	41	50	61	71	73	71	69	94	69.2	24	
25	71	72	70	84	89	91	85	72	64	59	55	49	45	40	43	44	43	42	58	63	62	65	65	74	91	62.7	24	
26	87	90	89	92	91	88	80	69	61	56	50	42	44	46	37	42	39	39	39	51	66	73	80	87	93	67.1	24	
27	91	92	93	93	93	93	92	72	54	44	41	37	38	41	38	38	39	34	39	51	66	73	80	87	93	63.3	24	
28	90	91	90	86	85	83	77	67	56	54	47	46	46	42	42	39	39	42	45	46	58	63	65	66	91	61.0	24	
29	68	74	78	75	72	69	58	52	47	41	40	39	37	35	34	38	34	38	43	51	59	66	68	70	78	57.0	24	
30	78	82	84	84	85	83	77	65	56	47	43	43	37	34	31	30	40	34	35	48	63	71	76	78	85	58.5	24	
31	82	85	87	87	88	88	82	56	45	41	33	35	34	30	33	33	33	38	49	63	89	90	90	92	92	61.8	24	
HOURLY MAX	94	94	94	94	94	94	94	94	94	94	91	89	87	86	82	79	81	83	88	90	91	92	93	93	93	93	72.7	24
HOURLY AVG	83.9	85.9	87.7	89.0	89.0	87.1	81.8	72.6	64.7	60.3	55.6	51.7	48.3	45.6	43.3	43.2	44.8	47.6	52.7	60.7	70.5	76.0	79.3	82.0	82.0	732	732	HRS

STATUS FLAG CODES

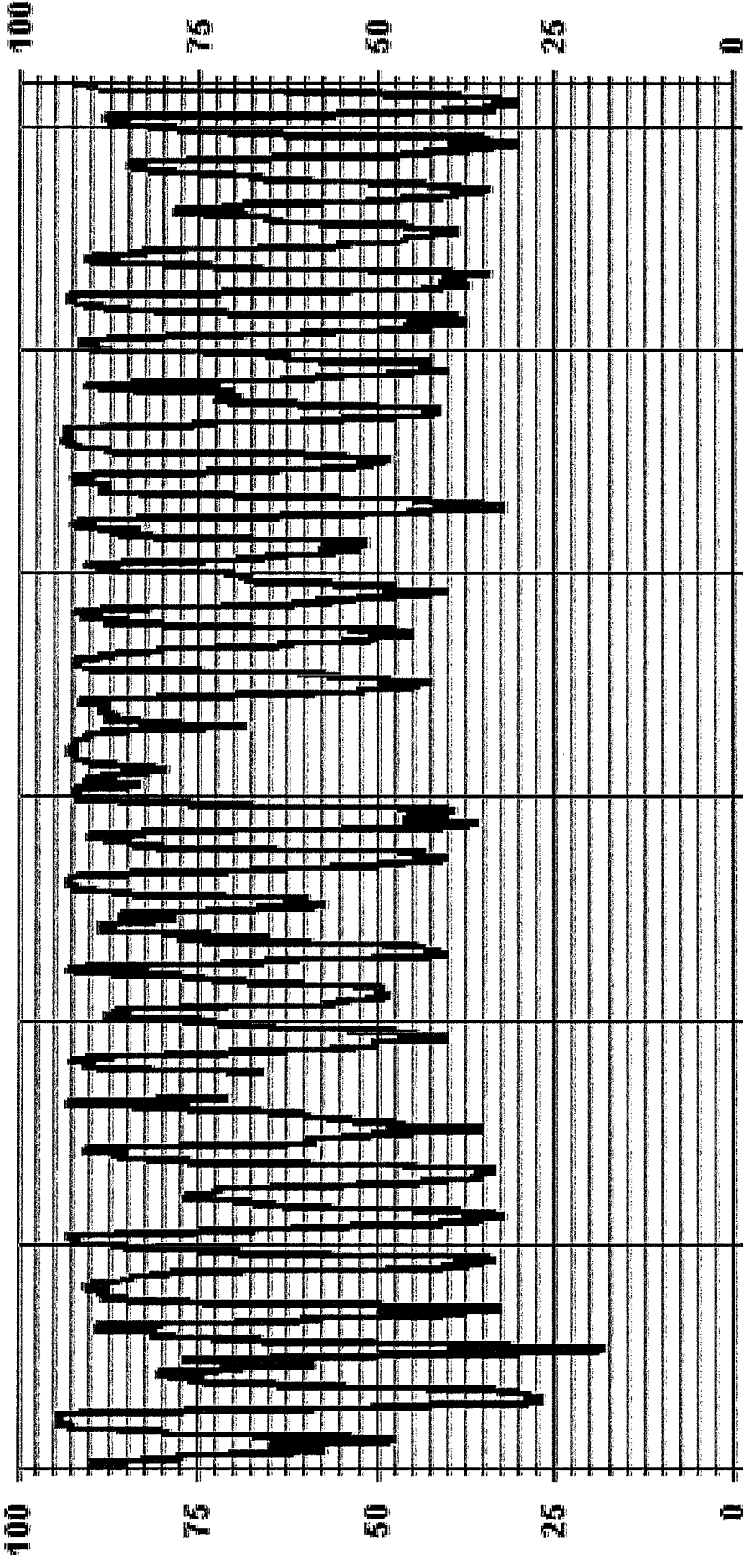
C	-CALIBRATION	O	-QUALITY ASSURANCE
M	-MAINTENANCE	R	-RECOVERY
S	-DAILY ZERO/SPAN CHECK	X	-MACHINE MALFUNCTION
P	-POWER FAILURE	O	-OPERATOR ERROR
G	-OUT FOR REPAIR	K	-COLLECTION ERROR



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	94	%	@ HOUR(S)	VAR	ON DAY(S)	2, 24
MAXIMUM 24-HR AVERAGE:	88.2	%			ON DAY(S)	16
STANDARD DEVIATION:	19.96				VAR- VARIOUS	
OPERATIONAL TIME:	732	HRS				
AMID OPERATION UPTIME:	98.4	%				
MONTHLY AVERAGE:	67	%				

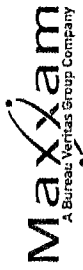
01 Hour Averages



07:01:15 00:00:07:06:15 00:00:07:11:15 00:00:07:16:15 00:00:07:21:15 00:00:07:26:15 00:00:07:31:15 00:00

— LIGA30 RH %

BAROMETRIC PRESSURE



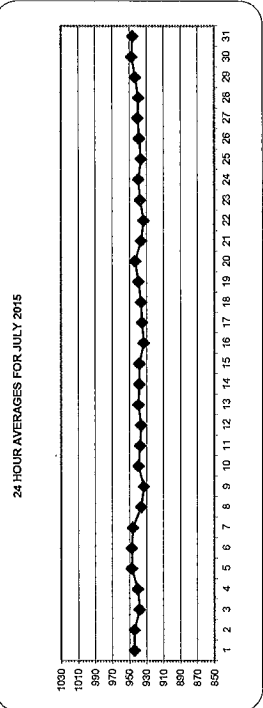
BAROMETRIC PRESSURE (BP) hourly averages in millibar

MST

HOURLY START	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	24:00	RDGS.			
HOURLY END	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	0:00	1:00	AVG.			
1	942	942	942	942	942	943	943	943	943	943	944	944	944	944	944	944	944	944	944	945	945	945	945	945	945	945	944	24	
2	945	945	945	945	945	946	946	946	946	946	947	947	947	947	947	947	947	947	947	948	948	948	948	948	948	948	948	944	24
3	941	940	940	939	939	939	939	939	939	939	939	939	938	938	937	937	937	937	937	937	937	937	937	937	937	937	941	24	
4	937	937	938	938	938	939	939	940	940	940	940	940	940	940	941	941	941	941	941	941	941	941	941	942	942	942	940	24	
5	943	943	943	944	944	945	945	945	945	945	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	947	24	
6	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	947	24	
7	945	946	946	946	947	947	947	947	948	948	948	948	948	948	947	947	947	947	947	947	947	947	947	947	947	947	946	24	
8	942	942	941	940	940	940	940	940	939	939	938	938	937	936	935	934	933	933	932	932	932	932	931	931	931	931	942	24	
9	932	932	932	933	934	934	934	935	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	933	12	
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21	938	938	937	935	936	936	936	936	936	936	936	936	936	936	936	935	935	935	935	935	935	935	935	935	935	938	24		
22	934	933	932	932	932	932	932	932	932	932	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	934	24	
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27	939	939	939	939	939	940	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	940	24	
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29	940	940	940	940	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	940	24	
30	945	945	945	945	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	943	24	
31	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	947	946	24	
HOURLY MAX	948	948	948	948	948	948	948	948	949	949	949	949	949	949	949	949	949	949	949	949	949	949	949	949	949	949	948	959	
HOURLY AVG	939	939	939	939	939	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	939	959

STATUS FLAG CODES

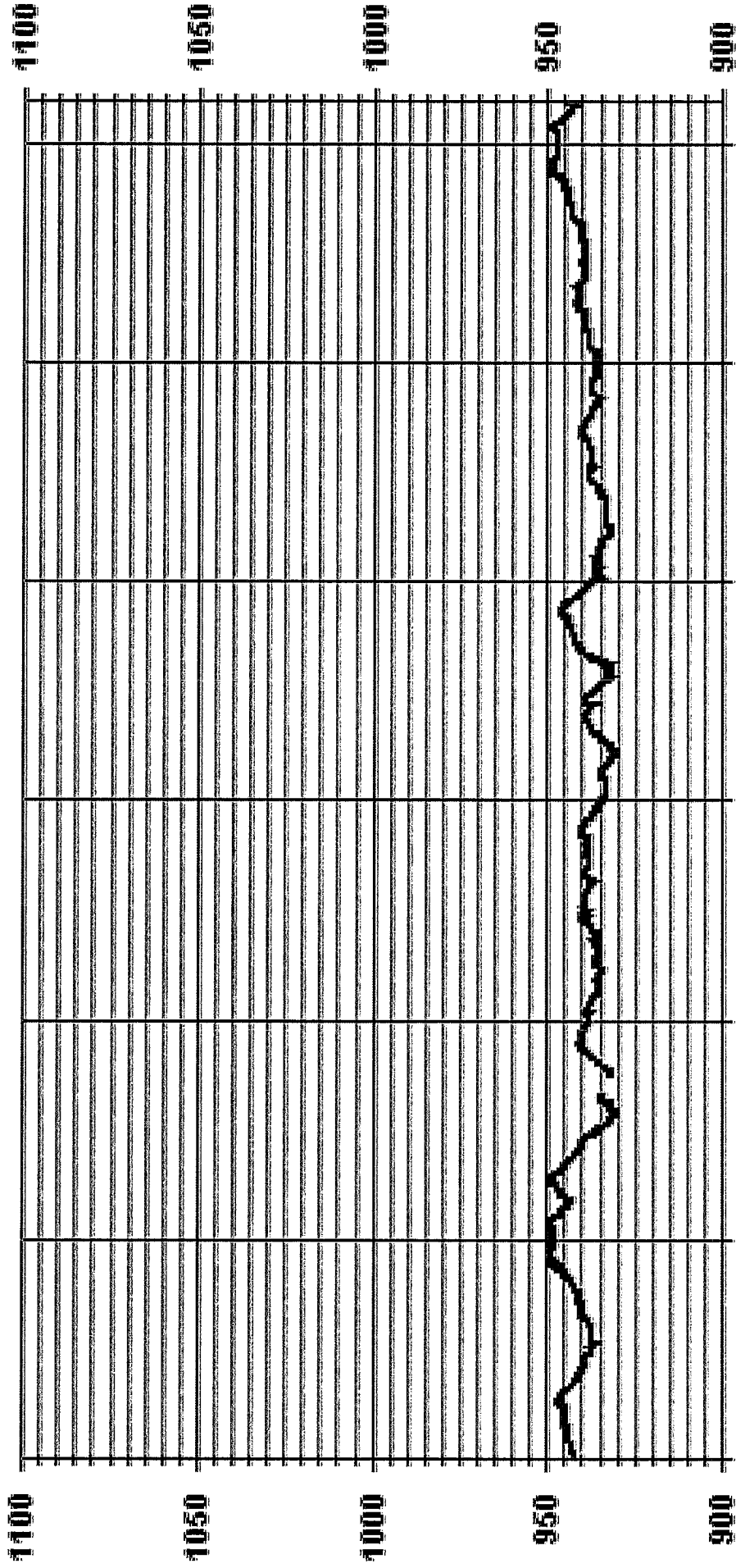
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	949	MB	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	947	MB			ON DAY(S)	VAR-VARIOUS
STANDARD DEVIATION:	4.50					
OPERATIONAL TIME:						HRS
AMD OPERATION UPTIME:						%
MONTHLY AVERAGE:						MB

01 Hour Averages



07:01:15 00:00:07:06:15 00:00:07:11:15 00:00:07:16:15 00:00:07:21:15 00:00:07:26:15 00:00:07:31:15 00:00

— LICA30 BP MB

AMBIENT TEMPERATURE



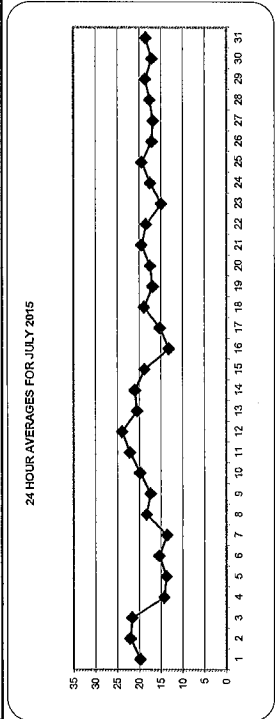
AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

MST

DAY	HOUR START																								DAILY MAX.	24-HOUR AVG.	ROGS.
	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			
1	15.6	15.9	15.8	15.5	15.0	17.0	18.8	18.9	20.5	22.9	23.9	23.8	23.2	25.0	26.1	25.5	25.7	23.7	20.4	18.5	17.9	16.1	13.9	13.2	26.1	19.7	24
2	12.9	11.9	11.4	10.9	10.5	12.8	15.7	19.4	23.7	26.2	27.7	29.8	29.8	30.5	30.7	30.3	29.7	29.3	27.7	25.2	22.6	19.9	18.3	17.7	30.7	21.9	24
3	17.5	16.7	17.1	16.6	16.7	18.9	20.1	21.7	24.4	26.3	23.6	20.1	24.7	28.1	28.4	28.9	28.5	28.5	23.4	20.0	15.5	13.7	12.1	28.9	21.5	24	
4	10.5	9.7	9.2	8.6	8.2	9.0	11.4	13.9	16.8	17.3	19.3	21.5	22.2	22.4	23.4	17.5	18.0	14.2	13.8	11.3	10.7	10.7	11.0	10.4	23.4	14.2	24
5	10.3	10.0	9.9	10.4	10.9	11.1	11.0	10.7	10.5	13.1	18.2	18.2	19.6	20.9	20.9	20.9	19.9	19.1	15.5	12.3	10.0	8.7	8.0	20.9	13.7	24	
6	7.3	6.4	5.6	5.4	4.9	6.8	9.9	12.6	14.7	16.7	19.3	21.3	21.2	22.4	22.8	22.8	23.1	22.6	21.5	19.7	16.7	14.5	14.3	13.9	23.1	15.3	24
7	14.1	12.8	11.0	10.3	9.6	9.4	9.8	11.2	12.7	13.2	16.2	17.8	18.7	19.1	18.0	18.9	19.8	18.7	15.9	16.7	12.3	8.7	6.7	5.7	19.8	13.6	24
8	6.3	6.7	7.1	5.8	6.3	8.8	12.6	14.9	16.1	18.4	20.8	25.0	25.1	26.4	26.9	25.8	24.8	24.9	25.5	22.9	22.0	21.5	20.0	26.9	18.2	24	
9	19.8	17.6	15.6	13.9	13.3	14.0	17.2	18.5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	23.3	17.3	12	
10	15.3	16.0	15.4	13.6	13.7	13.6	14.2	15.9	18.6	20.4	21.8	22.9	23.3	23.8	25.3	26.2	26.3	25.9	24.6	22.3	20.0	18.8	17.4	16.9	26.3	19.7	24
11	16.4	16.9	15.8	15.0	15.5	14.7	14.8	15.8	18.3	21.2	23.0	25.6	27.1	28.2	29.1	29.5	29.6	29.0	28.5	26.4	23.6	21.7	20.9	21.0	29.6	22.0	24
12	20.3	17.3	15.9	15.4	15.2	16.6	20.3	23.6	25.6	26.8	29.3	30.7	30.6	31.1	30.8	29.9	28.6	26.8	23.4	22.3	22.0	19.1	18.0	31.1	23.8	24	
13	16.7	16.4	17.2	17.1	16.7	17.9	19.1	20.1	19.6	19.1	20.4	22.7	24.3	25.5	25.9	26.1	25.2	24.8	23.7	22.0	18.5	17.9	16.8	16.4	26.1	20.4	24
14	16.7	16.6	16.4	16.3	16.0	16.1	16.7	19.2	22.7	23.4	24.5	25.7	27.1	26.8	27.0	26.8	26.6	25.7	25.2	23.8	18.7	15.2	14.9	13.1	27.1	20.9	24
15	12.1	10.8	10.5	9.3	8.6	11.9	16.6	21.3	24.1	25.1	25.9	25.2	24.0	24.3	24.5	24.1	24.6	24.5	23.8	21.8	16.7	14.4	12.5	11.4	25.9	18.7	24
16	11.0	10.6	10.0	9.8	9.9	11.5	14.2	15.3	14.9	14.0	14.0	14.6	15.0	14.5	15.1	15.3	14.7	14.1	13.3	12.7	12.3	12.2	12.3	12.5	15.3	13.1	24
17	12.7	13.5	13.9	13.8	13.9	13.9	13.9	14.1	14.4	14.8	14.7	15.5	15.8	16.7	17.7	19.6	20.3	16.8	15.6	14.9	14.6	14.3	14.5	14.0	13.9	15.2	24
18	13.9	13.7	13.3	12.3	11.6	12.9	15.5	18.8	21.5	23.0	23.6	24.1	24.9	24.3	25.6	24.1	23.2	22.2	21.9	20.6	18.1	14.2	13.8	13.5	25.6	18.8	24
19	13.3	13.3	13.9	14.1	14.0	14.1	14.9	14.7	14.8	16.4	18.8	18.9	20.8	21.6	21.5	22.9	21.2	22.2	22.1	19.8	16.1	12.5	10.6	11.4	22.9	16.8	24
20	10.0	9.3	8.8	8.5	8.1	10.0	12.6	15.9	18.7	20.8	20.8	22.2	22.7	23.6	23.9	24.3	24.0	23.0	22.7	19.6	17.6	17.6	17.6	17.6	24.3	17.4	24
21	16.3	16.6	14.5	14.3	13.8	13.4	15.5	18.0	19.3	20.8	22.3	23.5	23.9	25.2	23.7	24.7	24.7	25.6	24.5	21.2	17.0	15.7	15.8	15.3	25.6	19.4	24
22	15.1	14.5	13.9	13.3	12.9	13.1	14.8	19.9	22.8	24.4	25.3	25.7	26.3	26.4	25.7	22.8	21.7	19.2	16.9	14.9	13.5	12.5	11.9	11.4	26.4	18.3	24
23	10.8	9.7	9.3	8.8	9.1	10.2	12.5	16.3	18.2	19.9	20.9	20.8	21.1	22.0	20.1	18.7	14.0	14.1	12.8	11.6	10.6	10.3	22.1	14.9	24		
24	10.8	10.0	9.1	8.8	7.8	9.0	11.5	14.7	17.9	18.3	20.3	22.0	23.3	24.0	24.8	24.9	24.5	24.4	23.0	20.2	17.2	16.6	16.7	24.9	17.4	24	
25	16.4	16.2	17.0	14.4	13.4	12.6	15.2	19.0	21.1	22.1	23.4	24.5	24.7	24.8	23.6	23.3	23.6	23.4	20.2	18.4	17.0	16.5	16.5	24.8	19.3	24	
26	13.3	12.9	12.5	11.9	10.9	11.6	13.4	15.5	18.0	20.1	21.4	22.4	23.8	22.5	21.8	23.3	22.7	22.8	22.2	18.5	14.4	12.1	10.8	10.0	23.8	17.0	24
27	9.0	8.5	8.1	7.9	8.9	10.2	12.1	16.6	21.1	22.7	23.2	24.7	23.7	22.7	23.2	23.5	22.5	23.6	21.8	19.3	15.1	12.7	11.0	9.5	24.7	16.7	24
28	8.2	7.8	7.9	8.4	8.2	9.1	11.3	15.0	18.8	20.5	23.6	23.8	23.6	24.8	24.4	24.9	24.1	23.1	22.7	22.0	18.4	17.2	16.9	16.4	24.9	17.5	24
29	15.7	14.0	13.0	13.1	13.5	14.4	15.5	18.5	20.6	22.4	23.6	23.3	23.4	24.2	25.0	24.6	23.4	22.2	19.7	17.5	15.9	14.9	13.6	11.7	25.0	18.5	24
30	10.7	10.3	9.8	9.7	9.4	10.1	12.4	16.4	19.1	21.1	22.6	22.6	23.3	24.3	24.8	24.3	22.0	23.6	22.8	19.2	15.3	13.1	11.1	10.3	24.8	17.0	24
31	9.3	9.0	8.7	9.2	9.3	9.4	11.5	18.8	22.1	23.7	25.5	25.0	25.9	26.7	26.7	27.1	27.2	25.8	23.5	20.0	15.6	14.2	13.8	12.6	27.2	18.4	24
HOURLY MAX	20.3	17.6	17.2	17.1	16.7	18.9	20.3	23.6	25.6	26.8	29.3	30.8	30.7	30.6	31.1	30.8	29.9	29.3	28.5	26.4	23.6	22.0	21.5	21.0			
HOURLY AVG	13.2	12.6	12.2	11.7	11.5	12.4	14.4	17.0	19.1	20.3	21.8	22.7	23.4	24.1	24.4	24.1	23.6	22.8	21.6	19.6	17.1	15.4	14.3	13.6			

STATUS FLAG CODES

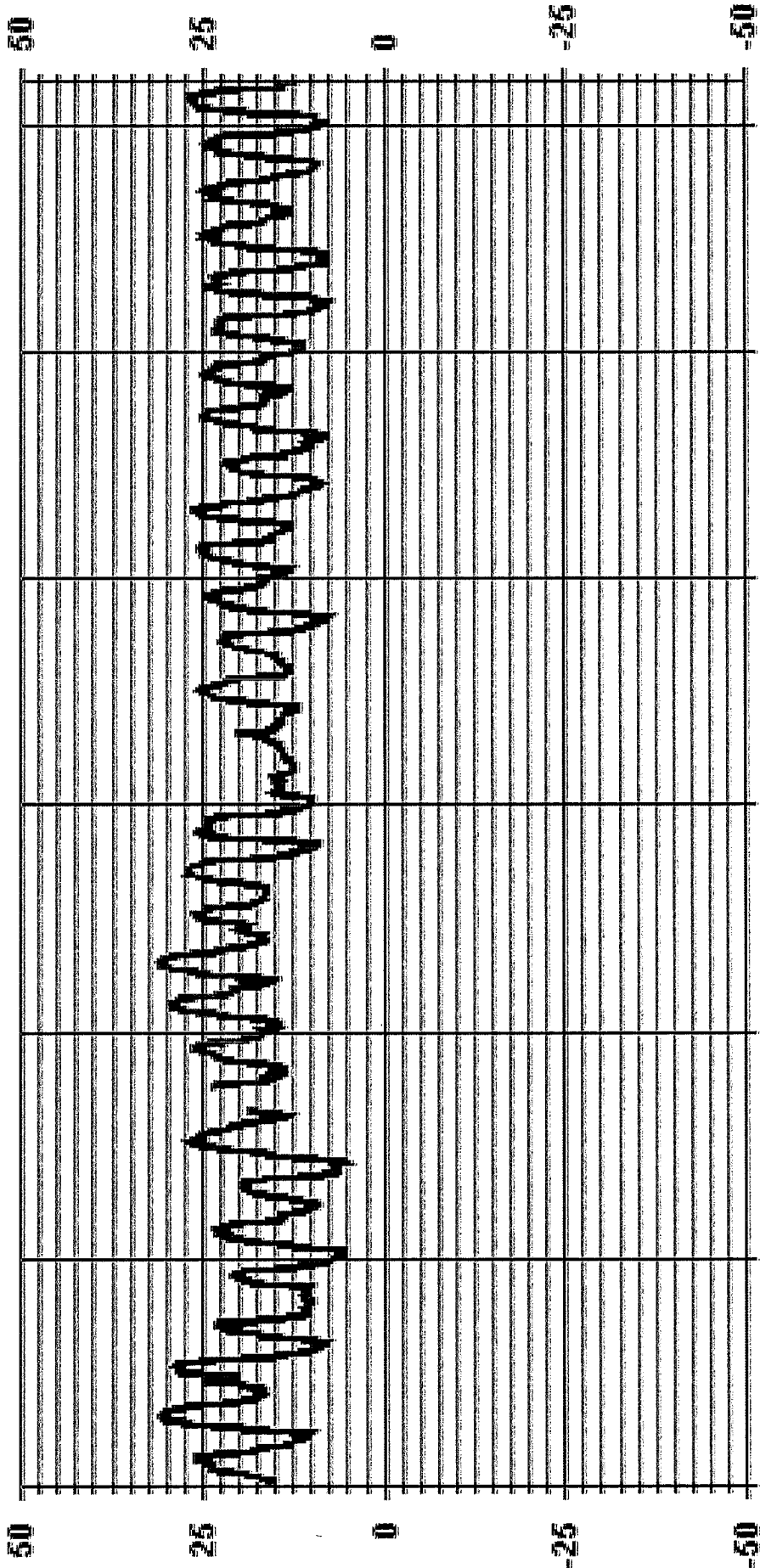
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
5	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	4.9	°C	@ HOUR(S)	4	ON DAY(S)	6
MAXIMUM 1-HR AVERAGE:	31.1	°C	@ HOUR(S)	14	ON DAY(S)	12
MAXIMUM 24-HR AVERAGE:	23.8	°C			ON DAY(S)	12
					VARIOUS	
STANDARD DEVIATION:	5.77					
OPERATIONAL TIME:	732	HRS				
AMD OPERATION UPTIME:	98.4	%				
MONTHLY AVERAGE:	18.0	°C				

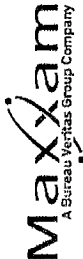
01 Hour Averages



07:01M5 00:00:07:06M5 00:00:07:11M5 00:00:07:16M5 00:00:07:21M5 00:00:07:26M5 00:00:07:31M5 00:00

— LICA30 TPX DGC

PRECIPITATION



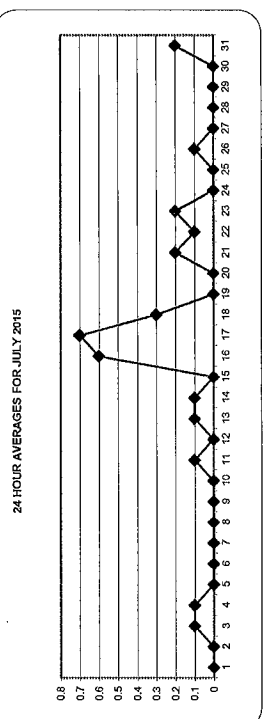
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Site - JULY 2015
JOB # 2833-2015-07-30-C

PRECIPITATION hourly averages (mm)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
HOURLY MAX	2.8	4.1	2.2	1.4	1.3	1.2	1.0	1.8	5.4	1.5	2.9	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	0.0	0.0	0.0	0.0
HOURLY AVG	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.3	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

STATUS FLAG CODES

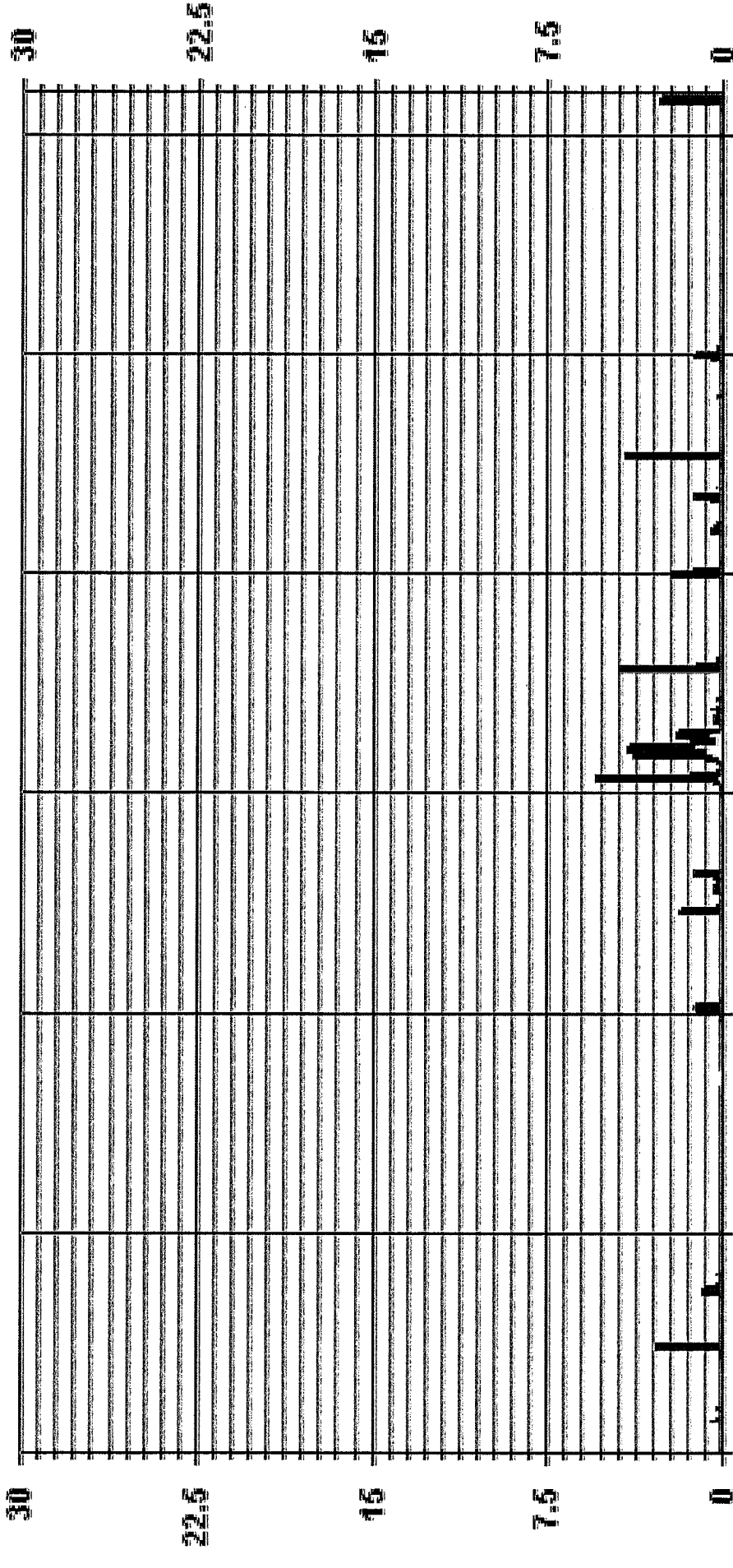
- C - CALIBRATION
- D - DAILY ZERO/SPAN CHECK
- E - EQUIPMENT MAINTENANCE
- F - FILTER CHANGE
- G - OUT FOR REPAIR
- H - HAZARDOUS WASTE
- I - INCOMPLETE
- J - JAM
- K - COLLECTION ERROR
- L - LABOR
- M - MATERIAL
- N - N/A
- O - OPERATOR ERROR
- P - POWER FAILURE
- Q - QUALITY ASSURANCE
- R - RECOVERY
- S - SAMPLE
- T - TANK
- U - UNKNOWN
- V - VIBRATION
- W - WIND
- X - MACHINE MALFUNCTION
- Y - YIELD
- Z - ZERO



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	5.4	MM	@ HOUR(S)	9	ON DAY(S)	16
MAXIMUM 24-HR AVERAGE:	0.7	MM			ON DAY(S)	17
MONTHLY TOTAL	70.7	MM			VAR-VARIOUS	
STANDARD DEVIATION:	0.48					
OPERATIONAL TIME:		AMD OPERATION UPTIME:		HRS		732
				%		98.4
MONTHLY AVERAGE:				MM		0.1

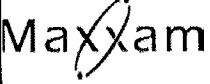
01 Hour Averages



— LICA30 PRECIP MM

APPENDIX II
ANALYZER CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E SO2 Analyzer Calibration

Date: 10-Jul-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 9:04 - 13:51

Calibration Purpose: Monthly Calibration

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Mar-19

Analyzer:

Serial Number: 508

Last Calibration Date: 16-Jun-15

Previous Cal High Point C.F.: 1.001

Range ppb: 1000

As Found C.F.: 0.993

New C.F.: 0.996

As found:

SLOPE: 0.991

OFFSET: 128.5

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 29.3

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 24.2

SAMP FL: 577

PMT: 112.2

NORM PMT: 124.4

UV LAMP: 3079.6

LAMP RATIO: 96

STR. LGT: 63.7

DRK PMT: 13.5

DRK LMP: -1.6

Internal Span: 262.9

As left:

SLOPE: 0.980

OFFSET: 124.5

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 29.6

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.2

PRES: 24.2

SAMP FL: 578

PMT: 109.7

NORM PMT: 125.0

UV LAMP: 3080.4

LAMP RATIO: 96.0

STR. LGT: 61.0

DRK PMT: 13.3

DRK LMP: -1.6

Internal Span: 319

Calibrator:

Flow Meter ID's: NA

Make & Model: SABIO 2010 D

Serial #: 11900613

Cal Gas Cylinder I.D. #: BLM002073

Cal Gas Conc. (ppm): 49.5

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5013	0	5013
high	4923	77	5000
mid	4976	37	5013
low	4981	19	5000

Calibration:

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors
	Diluent	Cal Gas	Total			
as found zero	5013	0.0	5013	0	-2.0	NA
adjusted zero	5013	0.0	5013	0	0.0	NA
as found high	4923	77.10	5000	763.3	769.0	0.993
adjusted high	4923	77.10	5000	763.3	763.0	1.000
mid	4976	37.70	5014	372.2	373.0	0.998
low	4981	18.80	5000	186.1	188.0	0.990
calibrator zero	5012	0.00	5012	0	0.0	NA
Average C.F. =						0.996

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>1.001</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>-0.10%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0.84%</u>	± 3% F.S.	PASS
		± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: NA Time gas run (mst): NA

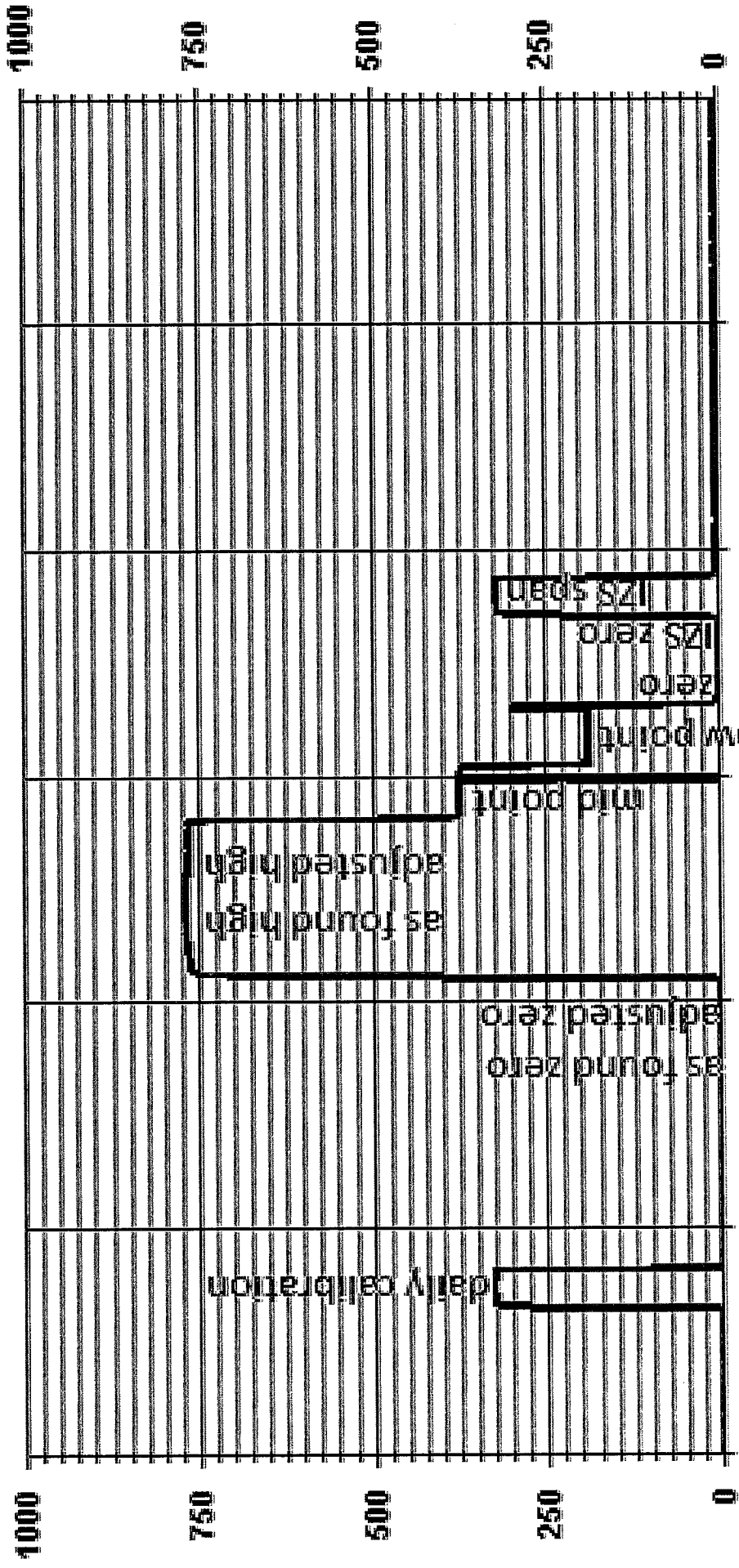
Zero corrected analyzer response: NA

Comments:

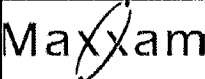
Sample filter changed.

API 100E SO2 Analyzer Calibration

01 Minute Averages



— LICA30 502_ PPB



API 100E SO2 Analyzer Calibration

Date: 13-Jul-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 10:14 - 12:21

Calibration Purpose: Shutdown

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Mar-19

Analyzer:

Serial Number: 508

Last Calibration Date: 10-Jul-15

Previous Cal High Point C.F.: 1.000

Range ppb: 1000

As Found C.F.: 0.994

New C.F.: 0.990

As found:

SLOPE: 0.980

OFFSET: 124.5

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 29.7

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 23.9

SAMP FL: 573

PMT: 113.6

NORM PMT: 126.7

UV LAMP: 3144.5

LAMP RATIO: 98.1

STR. LGT: 61.0

DRK PMT: 12.3

DRK LMP: -1.6

Internal Span: 319

As left:

SLOPE: NA

OFFSET: NA

HVPS: NA

RCELL TEMP: NA

BOX TEMP: NA

PMT TEMP: NA

IZS TEMP: NA

TEST: NA

STABIL: NA

PRES: NA

SAMP FL: NA

PMT: NA

NORM PMT: NA

UV LAMP: NA

LAMP RATIO: NA

STR. LGT: NA

DRK PMT: NA

DRK LMP: NA

Internal Span: NA

Calibrator:

Flow Meter ID's: NA

Make & Model: SABIO 2010 D

Serial #: 11900613

Cal Gas Cylinder I.D. #: BLM002073

Cal Gas Conc. (ppm): 49.5

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5013	0	5013
high	4935	79	5014
m/d	4976	39	5015
low	4994	19	5013

Calibration:

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	5013	0.0	5013	0	0.0	NA
as found high	4935	78.90	5014	778.9	784.0	0.994
m/d	4976	38.50	5015	380.0	384.0	0.990
low	4994	19.30	5013	190.6	193.0	0.987
Average C.F. =						0.990

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	> or = 0.995	PASS
Slope =	<u>0.994</u>	0.85-1.15	PASS
b (Intercept as % of full scale) =	<u>-0.08%</u>	± 3% F.S.	PASS
% change in C.F. from last cal	<u>0.64%</u>	± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: NA Time gas run (mst): NA

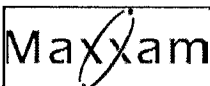
Zero corrected analyzer response: NA

Comments:

"Shutdown" calibration performed as pump maintenance required. Reason: Span drift is over 10%. No ZERO adjustments made. No High Point adjustments made.

API 100E SO2 Analyzer Calibration

Calculated (ppb)	Indicated (ppb)
0	0
193	193
384	384
784	784



API 100E SO2 Analyzer Calibration

Date: 13-Jul-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 12:50 - 16:31

Calibration Purpose: Post Repair

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Mar-19

Analyzer: 508

Serial Number: 13-Jul-15

Last Calibration Date: n/a

Previous Cal High Point C.F.: n/a

Range ppb: 1000

As Found C.F.: 1.001

New C.F.: 0.998

As found:

SLOPE: NA

OFFSET: NA

HVPS: NA

RCELL TEMP: NA

BOX TEMP: NA

PMT TEMP: NA

IZS TEMP: NA

TEST: NA

STABIL: NA

PRES: NA

SAMP FL: NA

PMT: NA

NORM PMT: NA

UV LAMP: NA

LAMP RATIO: NA

STR. LGT: NA

DRK PMT: NA

DRK LMP: NA

Internal Span: NA

As left:

SLOPE: 0.970

OFFSET: 127.6

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 28.8

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 23.9

SAMP FL: 574

PMT: 111.2

NORM PMT: 127.4

UV LAMP: 3149.6

LAMP RATIO: 98.2

STR. LGT: 61.6

DRK PMT: 12.4

DRK LMP: -1.6

Internal Span: 407.3

Calibrator:

Flow Meter ID's: NA

Make & Model: SABIO 2010 D

Serial #: 11900613

Cal Gas Cylinder I.D. #: BLM002073

Cal Gas Conc. (ppm): 49.5

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5013	0	5013
high	4935	79	5014
mid	4976	39	5015
low	4994	19	5013

Calibration:

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	5013	0.0	5013	0	0.0	NA
adjusted high	4936	79.00	5015	779.8	779.0	1.001
mid	4976	38.50	5015	380.0	380.0	1.000
low	4994	19.30	5013	190.6	192.0	0.993
calibrator zero	5012	0.00	5012	0	0.0	NA
Average C.F. =						0.998

Linear Regression/Calibration Results:

	LIMITS	Pass/Fail ?
Correlation Coefficient = <u>1.000</u>	> or = 0.995	PASS
Slope = <u>1.002</u>	0.85-1.15	PASS
b (Intercept as % of full scale) = <u>-0.07%</u>	± 3% F.S.	PASS
% change in C.F. from last cal = <u>n/a</u>	± 15%	n/a

Converter Efficiency Check for H₂S/TRS application:

****run converter efficiency test immediately following zero adjust****

SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

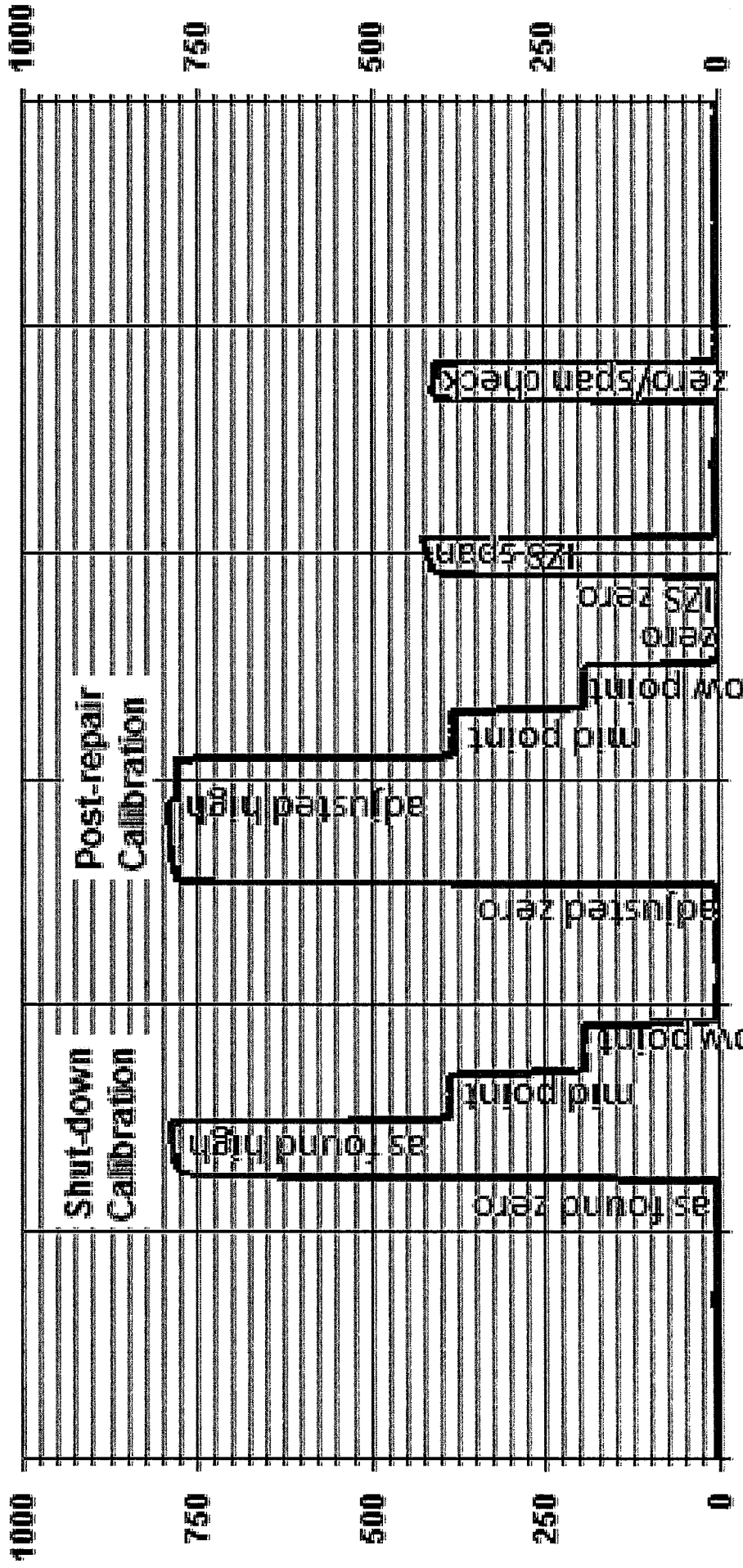
Comments:

Sample pump rebuilt. Filter changed


API 100E SO2 Analyzer Calibration

Calculated (ppb)	Indicated (ppb)
0	0
192	192
380	380
779	779

01 Minute Averages



— LICA30 502_ PPB



API 100E SO2 Analyzer Calibration

Date: 16-Jul-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Chris Wesson

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 1501-1612

Calibration Purpose: As Found

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Mar-19

Analyzer:

Serial Number: 508

Last Calibration Date: 13-Jul-15

Previous Cal High Point C.F.: 1.001

Range ppb: 1000

As Found C.F.: 1.031

New C.F.: NA

As found:

SLOPE: 0.969

OFFSET: 127.2

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 29.2

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.0

PRES: 24.0

SAMP FL: 574

PMT: 114.8

NORM PMT: 127.5

UV LAMP: 3197

LAMP RATIO: 99.6

STR. LGT: 61.6

DRK PMT: 12.2

DRK LMP: -1.6

Internal Span: 340.5

As left:

SLOPE: 0.969

OFFSET: 127.2

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 28.2

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 1.8

PRES: 24.0

SAMP FL: 574

PMT: 116.7

NORM PMT: 126.9

UV LAMP: 3197

LAMP RATIO: 99.8

STR. LGT: 61.6

DRK PMT: 12.4

DRK LMP: -1.5

Internal Span: 326

Calibrator:

Flow Meter ID's: NA

Make & Model: EnviroNics 6100

Serial #: 4760

Cal Gas Cylinder I.D. #: LL67747

Cal Gas Conc. (ppm): 49.7

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4920	80	5000
mid	4960	40	5000
low	4980	20	5000

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	4994	0.0	4994	0	0.0	NA
as found high	4915	78.30	4993	779.3	756.0	1.031
Average C.F. =						n/a

Linear Regression/Calibration Results:

Correlation Coefficient = <u>n/a</u>	LIMITS	Pass/Fail ?
Slope = <u>n/a</u>		
b (Intercept as % of full scale) = <u>n/a</u>		
% change in C.F. from last cal = <u>-2.99%</u>	± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

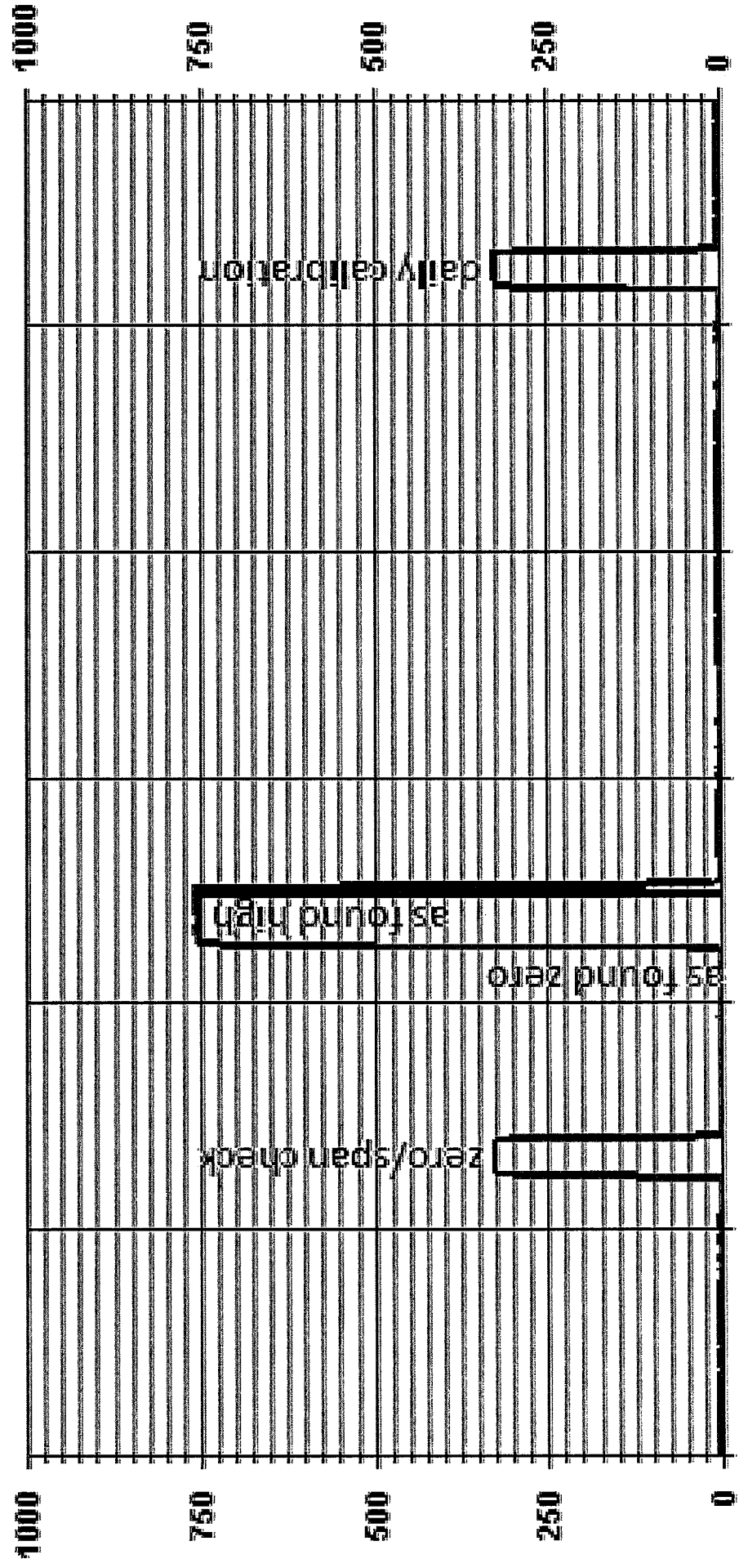
Comments:

As-found point acceptable. Span drift due to IZS oven restablilizing. EV adjusted.

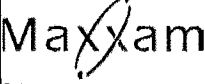
API 100E SO2 Analyzer Calibration

calculated ppb	indicated ppb
0	0
0.7793	0.7560

01 Minute Averages



— LICA30 SO2_ PPB



API 100E SO2 Analyzer Calibration

Date: 29-Jul-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 10:33 - 12:49

Calibration Purpose: As Found

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Mar-19

Analyzer:

Serial Number: 508

Last Calibration Date: 13-Jul-15

Previous Cal High Point C.F.: 1.001

Range ppb: 1000

As Found C.F.: 1.000

New C.F.: NA

As found:

SLOPE: 0.969

OFFSET: 127.2

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 29.2

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.2

PRES: 24.4

SAMP FL: 577

PMT: 114.5

NORM PMT: 128.1

UV LAMP: 3249.2

LAMP RATIO: 101.3

STR. LGT: 61.6

DRK PMT: 11.9

DRK LMP: -1.6

Internal Span: 313

As left:

SLOPE: 0.969

OFFSET: 127.2

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 29.0

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.3

PRES: 24.3

SAMP FL: 576

PMT: 116.7

NORM PMT: 128.9

UV LAMP: 3247.9

LAMP RATIO: 101.3

STR. LGT: 61.6

DRK PMT: 13.0

DRK LMP: -1.6

Internal Span: 313

Calibrator:

Flow Meter ID's: NA

Make & Model: SABIO 2010 D

Serial #: 11900613

Cal Gas Cylinder I.D. #: BLM002073

Cal Gas Conc. (ppm): 49.5

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5013	0	5013
high	4923	77	5000
mid	4976	37	5013
low	4981	19	5000

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5013	0.0	5013	0	0.0	NA
as found high	4938	77.20	5015	762.0	762.0	1.000
Average C.F. =						NA

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>NA</u>	LIMITS	Pass/Fail ?
Slope =	<u>NA</u>	> or = 0.995	NA
b (Intercept as % of full scale) =	<u>NA</u>	0.85-1.15	NA
% change in C.F. from last cal	<u>0.10%</u>	± 3% F.S.	NA
		± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: NA Time gas run (mst): NA

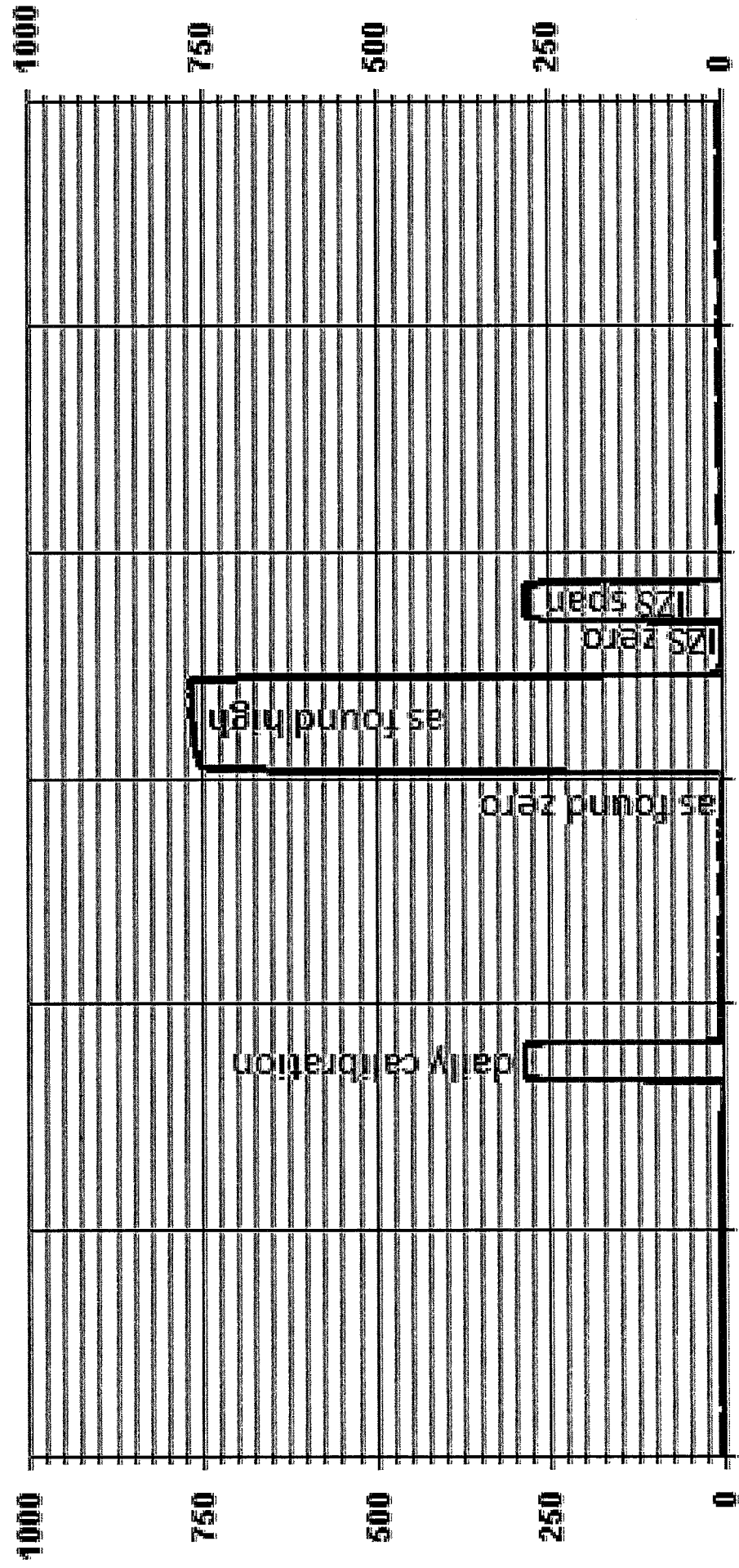
Zero corrected analyzer response: NA

Comments:

As Found calibration required because the span drift was over 10%. No zero adjustment was made. No high point adjustment was made. Zero and span check was triggered after the "As Found" check.

API 100E SO2 Analyzer Calibration

01 Minute Averages



07/29/15 05:00 07/29/15 07:00 07/29/15 09:00 07/29/15 11:00 07/29/15 13:00 07/29/15 15:00

— LICA30 SO2_ PPB

HYDROGEN SULPHIDE

API 101E H2S Analyzer Calibration

Date: 10-Jul-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: H2S

Start/End Time (mst): 9:04 - 13:40

Calibration Purpose: Monthly

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 15-Jul-17

Analyzer:

Serial Number: 511

Last Calibration Date: 16-Jun-15

Previous Cal High Point C.F.: 1.001

Range ppb: 100

As Found C.F.: 0.979

New C.F.: 0.993

As found:

SLOPE: 0.873

OFFSET: 49.5

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 31.2

PMT TEMP: 7.8

IZS TEMP: 45.0

TEST: NA

STABIL: 0.0

PRES: 28.9

SAMP FL: 653

PMT: 79.6

NORM PMT: 48.7

UV LAMP: 2657.4

LAMP RATIO: 85.4

STR. LGT: 21.6

DRK PMT: 37.2

DRK LMP: 5.5

Internal Span: 49.08

As left:

SLOPE: 0.843

OFFSET: 48.1

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 31.2

PMT TEMP: 7.8

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 28.9

SAMP FL: 653

PMT: 80.3

NORM PMT: 50.2

UV LAMP: 2656.7

LAMP RATIO: 85.4

STR. LGT: 20.3

DRK PMT: 35.7

DRK LMP: 5.4

Internal Span: 48.98

Calibrator:

Flow Meter ID's: NA

Make & Model: API

Serial #: 830

Cal Gas Cylinder I.D. #: LL36837

Cal Gas Conc. (ppm): 10.0

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4959	39	4998
mid	4979	19	4998
low	4990	11	5001

Calibration:

Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors
as found zero	4999	0.0	4999	0	-0.2	NA
adjusted zero	4999	0.0	4999	0	0.0	NA
as found high	4958	39.00	4997	78.0	79.7	0.979
adjusted high	4958	39.00	4997	78.0	78.0	1.001
mid	4979	19.00	4998	38.0	38.5	0.987
low	4989	11.00	5000	22.0	22.2	0.991
calibrator zero	4999	0.00	4999	0	0.0	NA
Average C.F. =						0.993

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	
Slope =	<u>1.001</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>-0.19%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>2.17%</u>	± 3% F.S.	PASS
		± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: 20 ppb Time gas run (mst): 10:05 - 10:10

Zero corrected analyzer response: 0 ppb

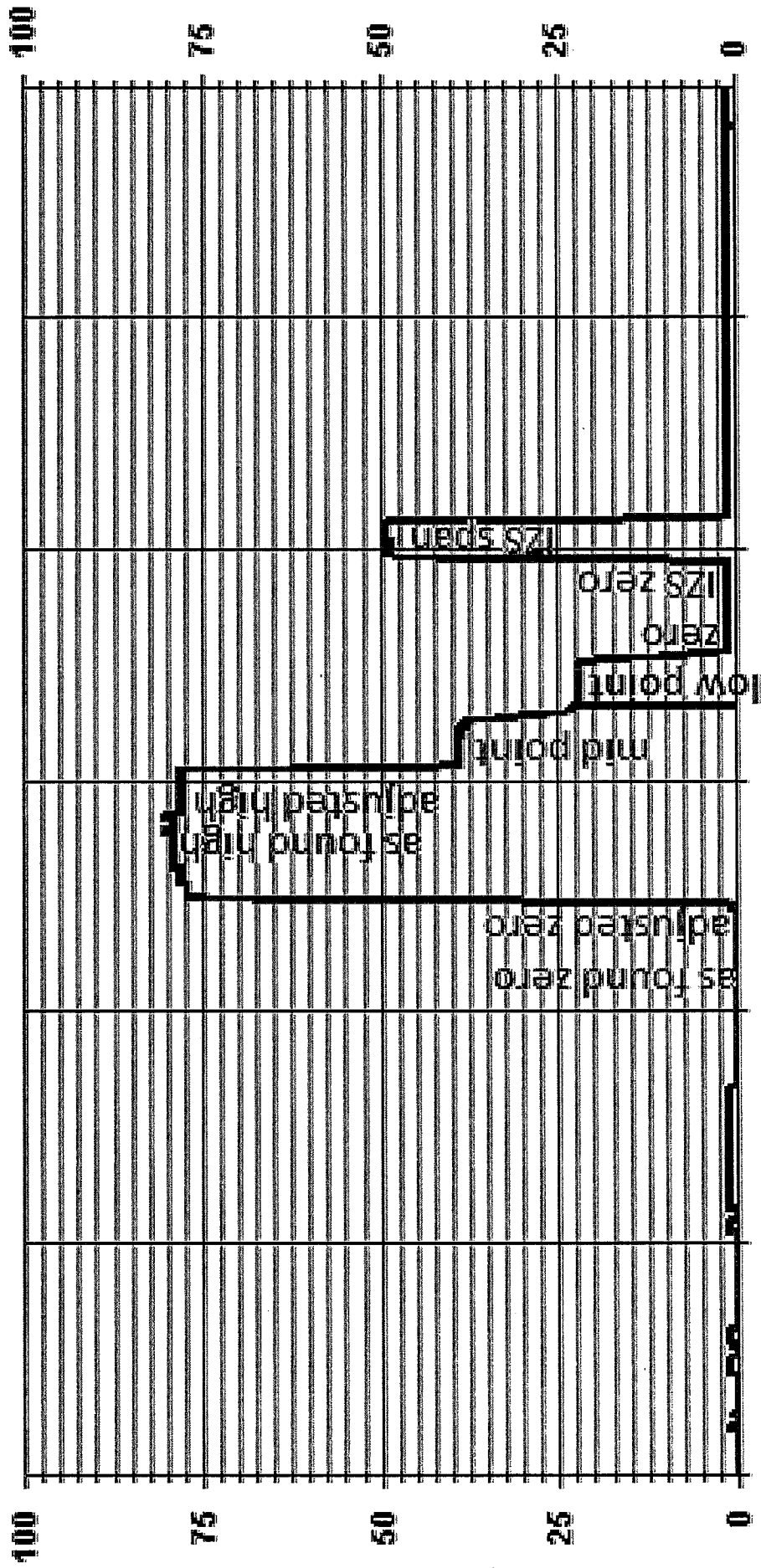
Comments:

Filter changed.

API 101E H2S Analyzer Calibration

Calculated Concentration (ppb)	Indicated Concentration (ppb)
0	0
22.2	22.2
38.5	38.5
78.0	78.0

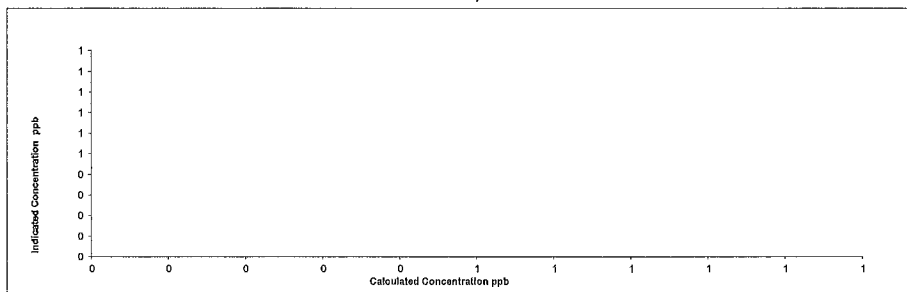
01 Minute Averages



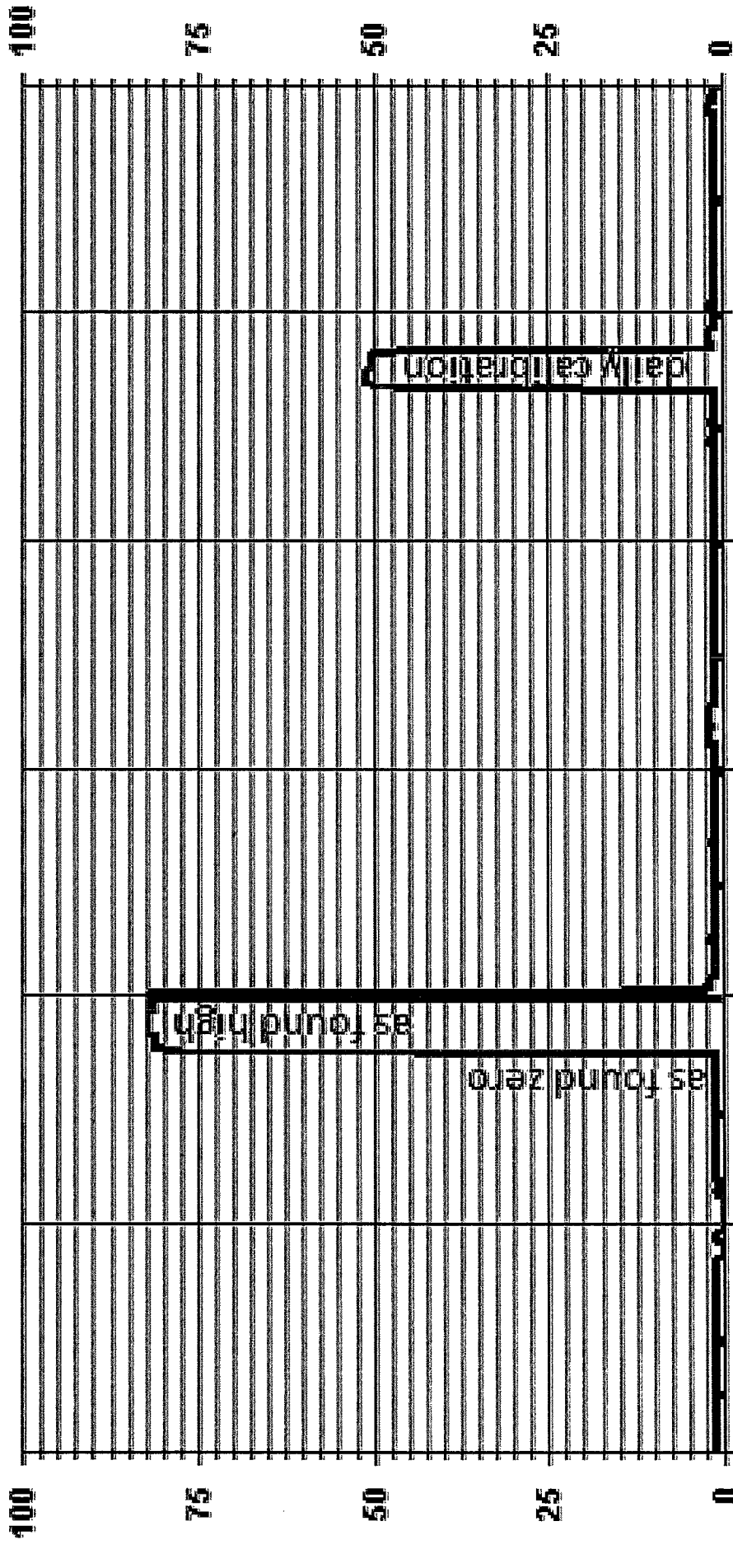
— LIC30 H25_ PPB

API 101E H2S Analyzer Calibration																																				
Date: 16-Jul-15 Company: LICA Station Name/Location: Maskwa Performed by: Chris Wesson Application H₂S/TRS/SO₂: H2S	Start/End Time (mst): 1501-1612 Calibration Purpose: As Found Converter Make & Model: Internal Converter Serial #: NA Cal Gas Expiry Date: 15-Jul-17																																			
Analyzer: Serial Number: 511 Last Calibration Date: 10-Jul-15 Previous Cal High Point C.F.: 1.001																																				
<table style="width:100%; border: none;"> <tr> <td style="width: 50%; border: none;"> As found: SLOPE: 0.843 OFFSET: 48.1 HVPS: 616 RCELL TEMP: 50.0 BOX TEMP: 29.8 PMT TEMP: 7.9 IZS TEMP: 45.0 TEST: ConvTemp=314.9 STABIL: 0.1 PRES: 28.7 SAMP FL: 650 PMT: 67.9 NORM PMT: 49.5 UV LAMP: 2645 LAMP RATIO: 85.1 STR. LGT: 20.3 DRK PMT: 32.7 DRK LMP: 5.5 Internal Span: 48.98 </td> <td style="width: 50%; border: none;"> As left: SLOPE: 0.843 OFFSET: 48.1 HVPS: 616 RCELL TEMP: 50.0 BOX TEMP: 29.4 PMT TEMP: 7.9 IZS TEMP: 45.0 TEST: ConvTemp=315.0 STABIL: 11.1 PRES: 28.7 SAMP FL: 651 PMT: 75.7 NORM PMT: 51.6 UV LAMP: 2648 LAMP RATIO: 85.1 STR. LGT: 20.3 DRK PMT: 32.0 DRK LMP: 5.5 Internal Span: 48.98 </td> </tr> </table>		As found: SLOPE: 0.843 OFFSET: 48.1 HVPS: 616 RCELL TEMP: 50.0 BOX TEMP: 29.8 PMT TEMP: 7.9 IZS TEMP: 45.0 TEST: ConvTemp=314.9 STABIL: 0.1 PRES: 28.7 SAMP FL: 650 PMT: 67.9 NORM PMT: 49.5 UV LAMP: 2645 LAMP RATIO: 85.1 STR. LGT: 20.3 DRK PMT: 32.7 DRK LMP: 5.5 Internal Span: 48.98	As left: SLOPE: 0.843 OFFSET: 48.1 HVPS: 616 RCELL TEMP: 50.0 BOX TEMP: 29.4 PMT TEMP: 7.9 IZS TEMP: 45.0 TEST: ConvTemp=315.0 STABIL: 11.1 PRES: 28.7 SAMP FL: 651 PMT: 75.7 NORM PMT: 51.6 UV LAMP: 2648 LAMP RATIO: 85.1 STR. LGT: 20.3 DRK PMT: 32.0 DRK LMP: 5.5 Internal Span: 48.98																																	
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Calibrator: Flow Meter ID's: NA Make & Model: Sablo 2010 Serial #: 17100415 Cal Gas Cylinder I.D. #: LL74219 Cal Gas Conc. (ppm): 10.0																																				
<table border="1" style="width:100%; border-collapse: collapse;"> <caption>Calibrator Flow Targets:</caption> <thead> <tr> <th>point</th> <th>diluent (cc/min)</th> <th>cal gas (cc/min)</th> <th>total (cc/min)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>7500</td> <td>0</td> <td>7500</td> </tr> <tr> <td>high</td> <td>7440</td> <td>60</td> <td>7500</td> </tr> <tr> <td>mid</td> <td>7470</td> <td>30</td> <td>7500</td> </tr> <tr> <td>low</td> <td>7485</td> <td>15</td> <td>7500</td> </tr> </tbody> </table>		point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)	zero	7500	0	7500	high	7440	60	7500	mid	7470	30	7500	low	7485	15	7500															
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)																																	
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mid	7470	30	7500																																	
low	7485	15	7500																																	
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<p style="text-align: center;">Linear Regression/Calibration Results:</p> <table style="width:100%; border: none;"> <tr> <td style="width: 50%;">Correlation Coefficient =</td> <td style="width: 10%;">n/a</td> <td style="width: 10%;">LIMITS</td> <td style="width: 25%;">Pass/Fail ?</td> </tr> <tr> <td>Slope =</td> <td>n/a</td> <td>> or = 0.995</td> <td></td> </tr> <tr> <td>b (Intercept as % of full scale) =</td> <td>n/a</td> <td>0.85-1.15</td> <td></td> </tr> <tr> <td>% change in C.F. from last cal</td> <td>3.68%</td> <td>± 3% F.S.</td> <td>PASS</td> </tr> <tr> <td></td> <td></td> <td>± 15%</td> <td></td> </tr> </table> <p style="text-align: center;">Converter Efficiency Check for H₂S/TRS application:</p> <p style="text-align: center;">**run converter efficiency test immediately following zero adjust**</p> <p>SO₂ High Point gas concentration: 100 ppb Time gas run (mst): 10:54-10:59</p> <p>Zero corrected analyzer response: 0.5</p>		Correlation Coefficient =	n/a	LIMITS	Pass/Fail ?	Slope =	n/a	> or = 0.995		b (Intercept as % of full scale) =	n/a	0.85-1.15		% change in C.F. from last cal	3.68%	± 3% F.S.	PASS			± 15%																
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% change in C.F. from last cal	3.68%	± 3% F.S.	PASS																																	
		± 15%																																		
Comments: Sample filter changed. As-found completed to cross-check calibration. No issues.																																				

API 101E H2S Analyzer Calibration



01 Minute Averages



— LICA30 H2S_ PPB

TOTAL HYDROCARBON

Maxxam Thermo 51C THC Analyzer Calibration

Date: 10-Jul-15 Start Time (mst): 13:00
 Company: LICA End Time (mst): 17:20
 Station Name/Location: Maskwa Calibration Purpose: Monthly Calibration
 Performed by: Alex Yakupov Cal Gas Expiry Date: 26-Mar-17

Analyzer: 436609738 Range ppm: 50
 Serial Number: 16-Jun-15 As Found C.F.: 0.997
 Last Calibration Date: 1.000 New C.F.: 1.003
 Previous Cal High Point C.F.: 1.000

	As found:		As left:
H ₂ cylinder (psi):	<u>700</u>	H ₂ cylinder (psi):	<u>700</u>
H ₂ cylinder reg set (psi):	<u>30</u>	H ₂ cylinder reg set (psi):	<u>30</u>
Span Cylinder (psi):	<u>2000</u>	Span Cylinder (psi):	<u>2000</u>
Span Cylinder Reg Set (psi):	<u>25</u>	Span Cylinder Reg Set (psi):	<u>25</u>
Zero Air Gen Pressure:	<u>35</u>	Zero Air Gen Pressure:	<u>35</u>
measurement alarms:	<u>None</u>	measurement alarms:	<u>None</u>
service alarms:	<u>None</u>	service alarms:	<u>None</u>
FID status:	cnt: <u>871</u>	FID status:	cnt: <u>873</u>
	rng: <u>1</u>		rng: <u>1</u>
	try: <u>0</u>		try: <u>0</u>
	flm: <u>179.4</u>		flm: <u>179.4</u>
	det: <u>125.5</u>		det: <u>125.5</u>
Oven Readings:	Flame: <u>179</u>	Oven Readings:	Flame: <u>179</u>
	Filter: <u>125</u>		Filter: <u>125</u>
	Base: <u>125</u>		Base: <u>125</u>
	Pump: <u>07.52</u>		Pump: <u>07.52</u>
Voltages:	+5 <u>4.9</u>	Voltages:	+5 <u>4.9</u>
	+15 <u>14.8</u>		+15 <u>14.8</u>
	-15 <u>-15.0</u>		-15 <u>-15.0</u>
	Internal Span: <u>34.6</u>		Internal Span: <u>34.22</u>

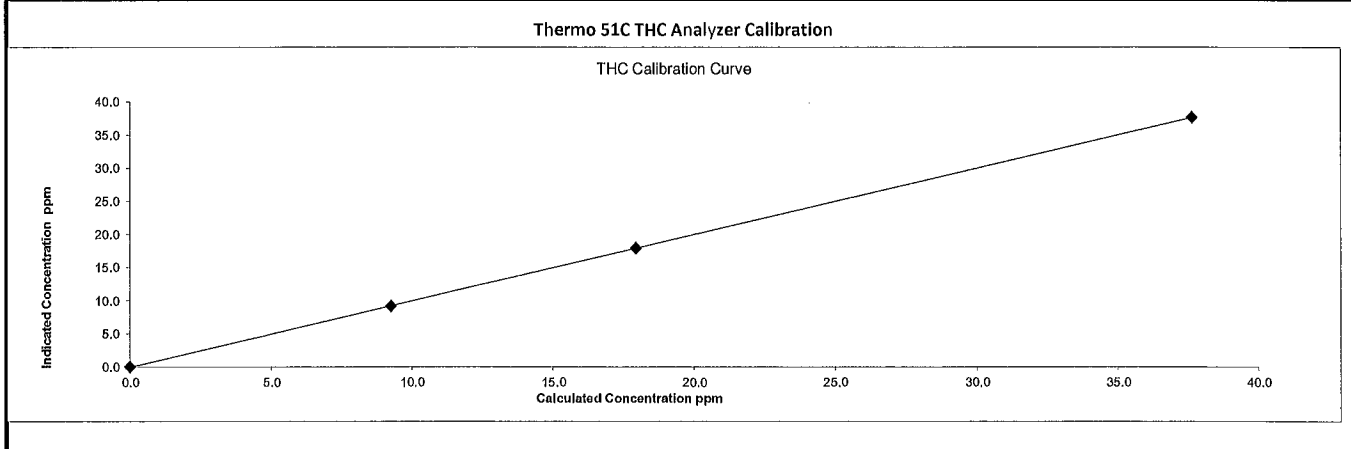
Calibrator: Flow Meter ID's: <u>NA</u> Make & Model: <u>API 700</u> Serial #: <u>830</u> Cal Gas Cylinder I.D. #: <u>LL33674</u> CH ₄ /C ₃ H ₈ Cylinder Conc. (ppm): <u>601.4</u> <u>202.0</u> CH ₄ as propane/total CH ₄ equivalents (ppm): <u>555.5</u> <u>1156.9</u>	Calibrator Flow Targets:			
	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
	zero	<u>2000</u>	<u>0</u>	<u>2000</u>
	high	<u>1935</u>	<u>65</u>	<u>2000</u>
	mid	<u>1969</u>	<u>31</u>	<u>2000</u>
low	<u>1984</u>	<u>16</u>	<u>2000</u>	

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	1999	0.00	1999	0	0.00	NA
as found high	1933	65.00	1998	37.64	37.77	0.997
adjusted high	1933	65.00	1998	37.64	37.67	0.999
mid	1969	31.00	2000	17.93	17.93	1.000
low	1984	16.00	2000	9.26	9.17	1.009
calibrator zero	1999	0.00	1999	0	0.00	NA
Average C.F. =						1.003

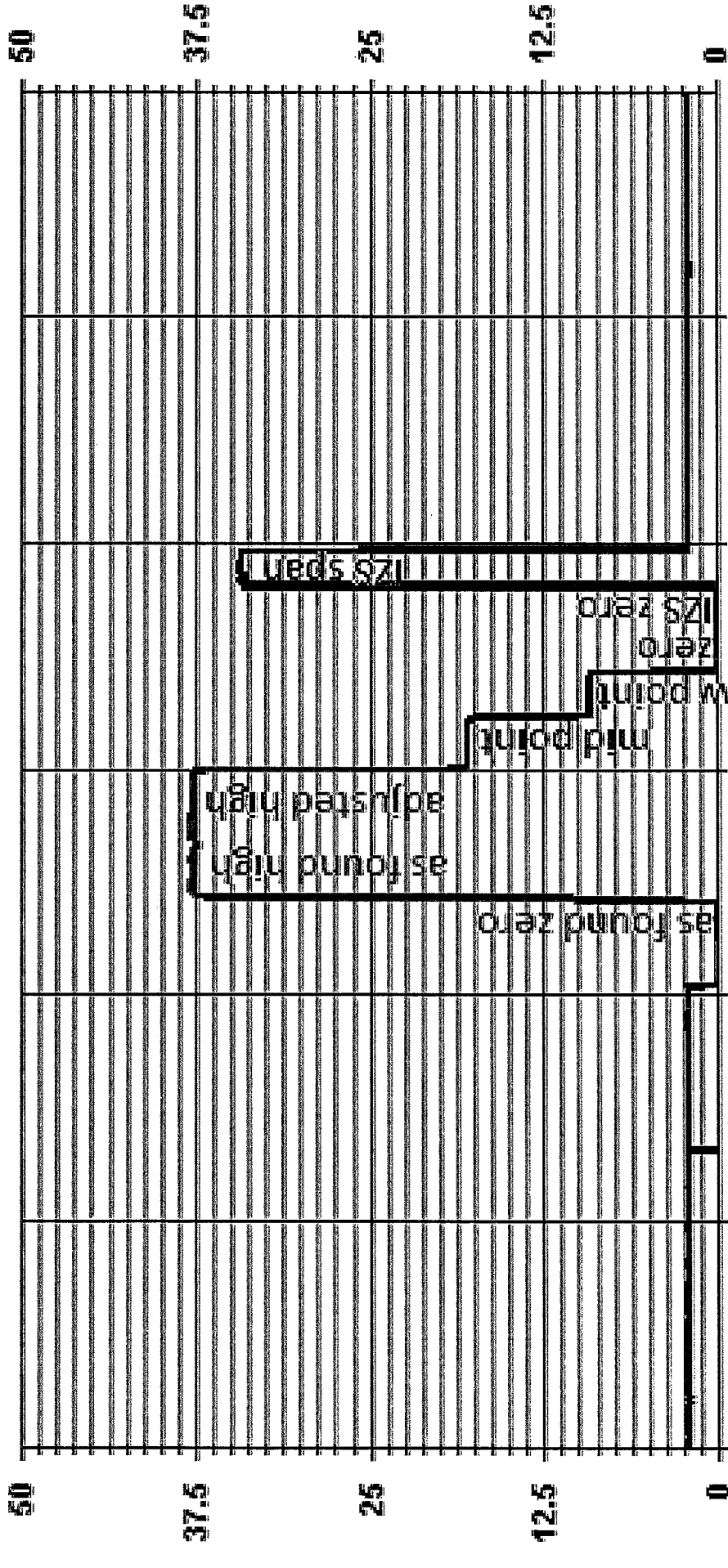
Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>1.002</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>-0.081%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0.35%</u>	± 3% F.S.	PASS
		± 15%	PASS

Comments:
 No zero adjustment made, sample filter changed.



01 Minute Averages



— LICA30 - - - - - THC PPM

NITROGEN DIOXIDE



API 200E NOx Analyzer Calibration

Date: 10-Jul-15
 Company: LICA
 Station Name/Location: Maskwa
 Performed by: Alex Yakupov

Start Time (mst): 9:04
 End Time (mst): 16:02
 Calibration Purpose: Monthly Calibration
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 593
 Last Calibration Date: 16-Jun-15
 Range ppb: 1000

Correction Factors:

As found C.F. Previous Cal High Point C.F.:
 NO= 1.011 NO= 1.002
 NOx= 1.016 NOx= 1.001
 NO₂= 1.000 NO₂= 0.994

As found:
 NOx SLOPE: 1.014
 NOx OFFS: 1.5
 NO SLOPE: 1.010
 NO OFFS: -0.2
 TEST: 126.7
 SAMP FLW: 477
 OZONE FL: 77
 PMT: 20.9
 NORM PMT: -1.5
 AZERO: 11.0
 HVPS: 634
 RCELL TEMP: 50.1
 BOX TEMP: 31.8
 PMT TEMP: 6.8
 IZS TEMP: 50.4
 MOLY TEMP: 314.0
 RCEL: 7.3
 SAMP: 26.8
 Internal Span: 316.1/4.4/311.4

As left:
 NOx SLOPE: 1.029
 NOx OFFS: 2.2
 NO SLOPE: 1.017
 NO OFFS: -1.3
 TEST: 126.7
 SAMP FLW: 477
 OZONE FL: 77
 PMT: 14.7
 NORM PMT: 1.2
 AZERO: 8.4
 HVPS: 634
 RCELL TEMP: 50.0
 BOX TEMP: 31.6
 PMT TEMP: 6.7
 IZS TEMP: 50.1
 MOLY TEMP: 314.7
 RCEL: 7.3
 SAMP: 26.8
 Internal Span: 282.4/5.9/276.3

Callibrator Flow Targets:

Make & Model: SABIO 2010 D
 Serial #: 11900613
 Cal Gas Cylinder I.D. #: BLM002073
 NO Cylinder Conc. (ppm): 50.6
 NOx Cylinder Conc. (ppm): 50.6

point	diluent (cc/min)	cal gas (cc/min)	O ₃ setting (v or ppb)	total (cc/min)
zero	5013	0	0	5013
high	4923	77	500.00	5000
mid	4976	38	280.00	5014
low	4981	19	100.00	5000

Calibration:

Callibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5013	0.0	5013	0	0	-2.0	5.0	NA	NA
adjusted zero	5013	0.0	5013	0	0	0.0	0.0	NA	NA
as found high	4923	77.10	5000	780.2	780.2	772	768	1.011	1.016
adjusted high	4923	77.10	5000	780.2	780.2	781	781	0.999	0.999
mid	4976	37.70	5014	380.5	380.5	382	382	0.996	0.996
low	4981	18.80	5000	190.3	190.3	194	190	0.981	1.001
callibrator zero	5013	0.00	5013	0	0	1.0	0.0	NA	NA
Average C.F.=								0.992	0.999

Callibrator Flow Rates (cc/min)				Callibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ Increase	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4938	77.20	5015	0.0	781.0	780.0	0.0	0.0	0.0	
as found NO ₂	4938	77.20	5015	500.0	298.0	781.0	483.0	483.0	483.0	1.000
gpt mid	4938	77.20	5015	280.0	505.0	781.0	277.0	276.0	277.0	0.996
gpt low	4938	77.20	5015	100.0	677.0	783.0	106.0	104.0	106.0	0.981
Average NO ₂ C.F.=									0.993	

Linear Regression/Calibration Results:

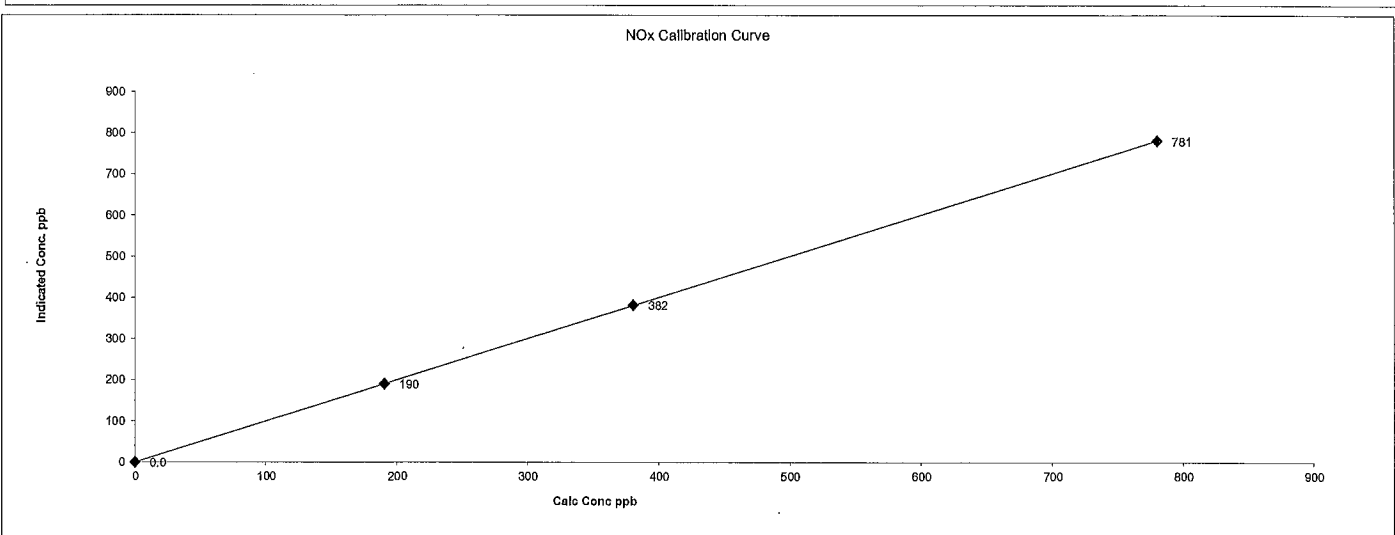
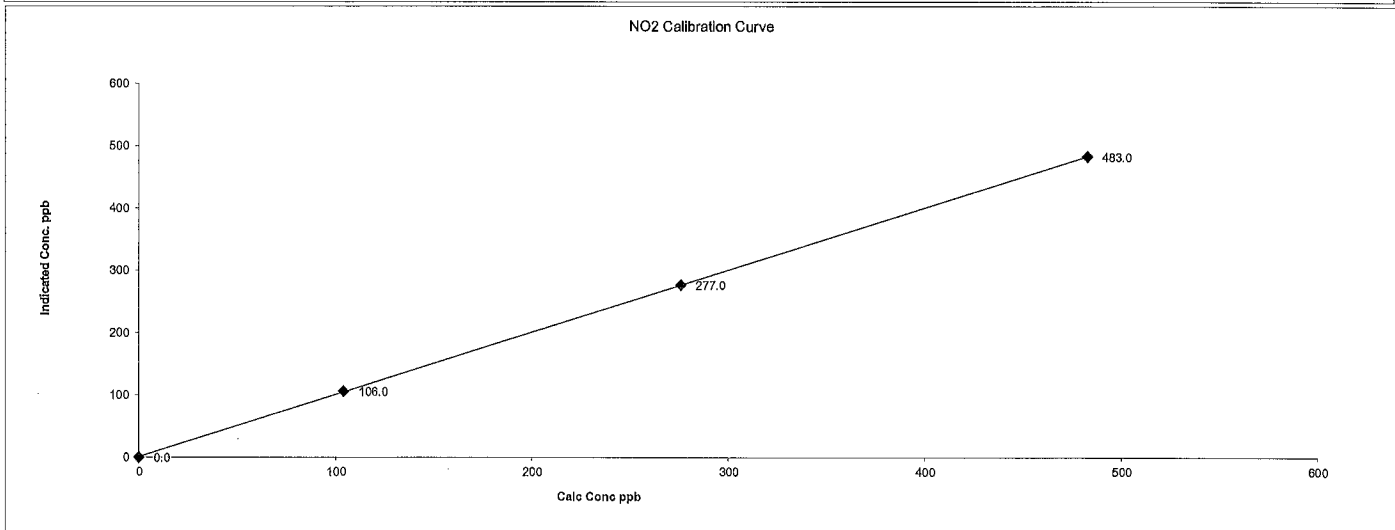
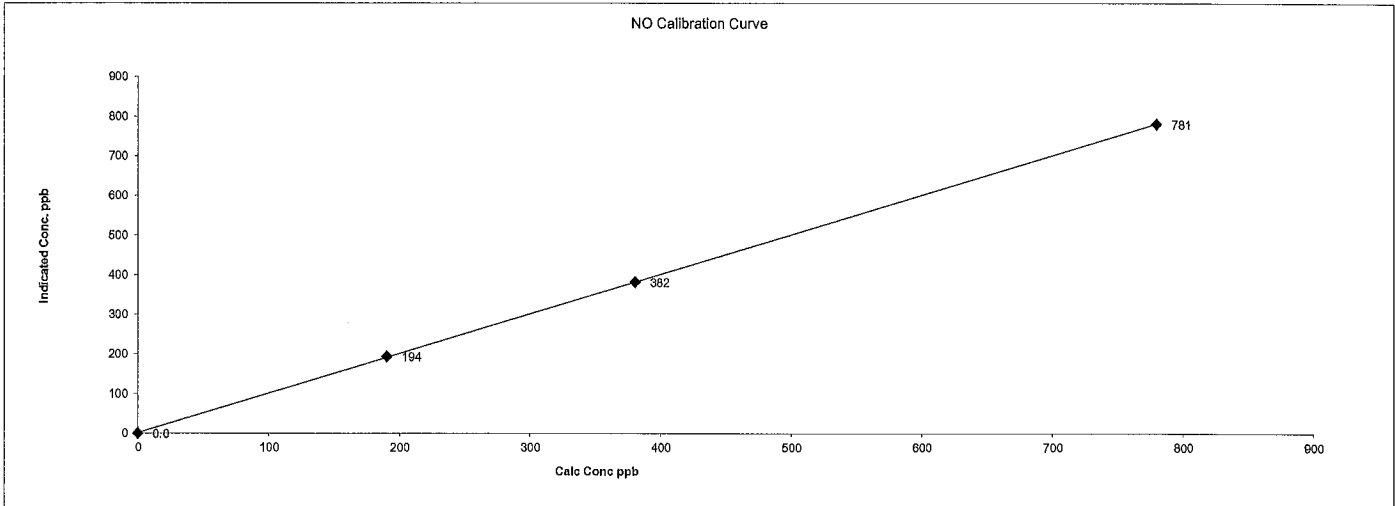
	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	1.001	0.999	0.85-1.15
b (Intercept as % of full scale)=	0.17%	0.01%	0.10%	± 3% F.S.
% change in C.F. from last cal=	-0.87%	-1.49%	-0.60%	+/-15%
NO ₂ converter efficiency			100.8%	>85%

Comments:

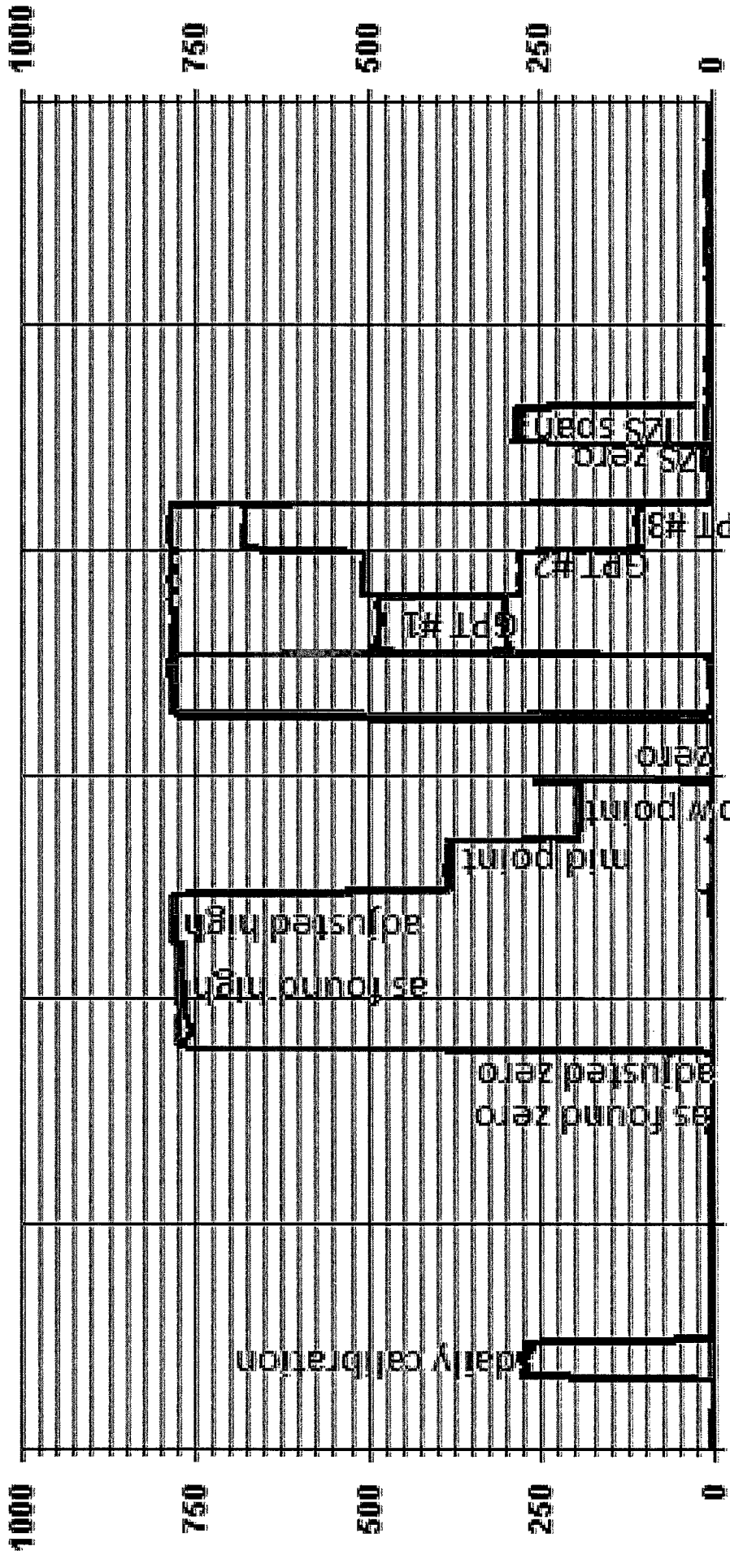
Sample filter changed. No NO₂ adjustment made.

Date:	<u>10-Jul-15</u>	Start Time (mst):	<u>9:04</u>
Company:	<u>LICA</u>	End Time (mst):	<u>16:02</u>
Station Name/Location:	<u>Maskwa</u>	Calibration Purpose:	<u>Monthly Calibration</u>
Performed by:	<u>Alex Yakupov</u>	Cal Gas Expiry Date:	<u>12-Mar-19</u>

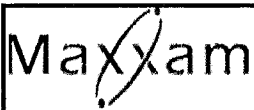
API 200E NOx Analyzer Calibration



01 Minute Averages



— LICA30 NOX_ PPB — LICA30 NO2_ PPB



API 200E NOx Analyzer Calibration

Date: 29-Jul-15
 Company: LICA
 Station Name/Location: Maskwa
 Performed by: Alex Yakupov

Start Time (mst): 10:33
 End Time (mst): 13:33
 Calibration Purpose: As found
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 593
 Last Calibration Date: 10-Jul-15
 Range ppb: 1000

Correction Factors:
 As found C.F. Previous Cal High Point C.F.:
 NO= 1.012 NO= 0.999
 NOx= 1.002 NOx= 0.999
 NO₂= 1.000 NO₂= 1.000

As found:
 NOx SLOPE: 1.029
 NOx OFFS: 2.2
 NO SLOPE: 1.017
 NO OFFS: -1.3
 TEST: 126.7
 SAMP FLW: 478
 OZONE FL: 77
 PMT: 8.6
 NORM PMT: -1.4
 AZERO: 7.9
 HVPS: 634
 RCELL TEMP: 50.0
 BOX TEMP: 31.8
 PMT TEMP: 6.7
 IZS TEMP: 50.0
 MOLY TEMP: 315.3
 RCEL: 7.6
 SAMP: 27.3
 Internal Span: 282.4/5.9/276.3

As left:
 NOx SLOPE: 1.029
 NOx OFFS: 2.2
 NO SLOPE: 1.017
 NO OFFS: -1.3
 TEST: 126.7
 SAMP FLW: 478
 OZONE FL: 77
 PMT: 8.9
 NORM PMT: 0.9
 AZERO: 7.7
 HVPS: 634
 RCELL TEMP: 50.0
 BOX TEMP: 31.6
 PMT TEMP: 6.8
 IZS TEMP: 50.0
 MOLY TEMP: 315.1
 RCEL: 7.7
 SAMP: 27.3
 Internal Span: 282.4/5.9/276.3

Calibrator Flow Targets:

Make & Model: SABIO 2010 D
 Serial #: 11900613
 Cal Gas Cylinder I.D. #: BLM002073
 NO Cylinder Conc. (ppm): 50.6
 NOx Cylinder Conc. (ppm): 50.6

point	diluent (cc/min)	cal gas (cc/min)	O ₃ setting (v or ppb)	total (cc/min)
zero	5013	0	0	5013
high	4923	77	500.00	5000
mid	4976	38	280.00	5014
low	4981	19	100.00	5000

Calibration:

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5013	0.0	5013	0	0	1.0	0.0	NA	NA
as found high	4938	77.20	5015	778.9	778.9	771	777	1.012	1.002
Average C.F.=								1.012	1.002

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ increase	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4938	77.20	5015	0.0	771.0	777.0	6.0	1.0	-1.0	
as found NO ₂	4938	77.20	5015	500.0	297.0	777.0	480.0	474.0	474.0	1.000
Average NO ₂ C.F.=										1.000

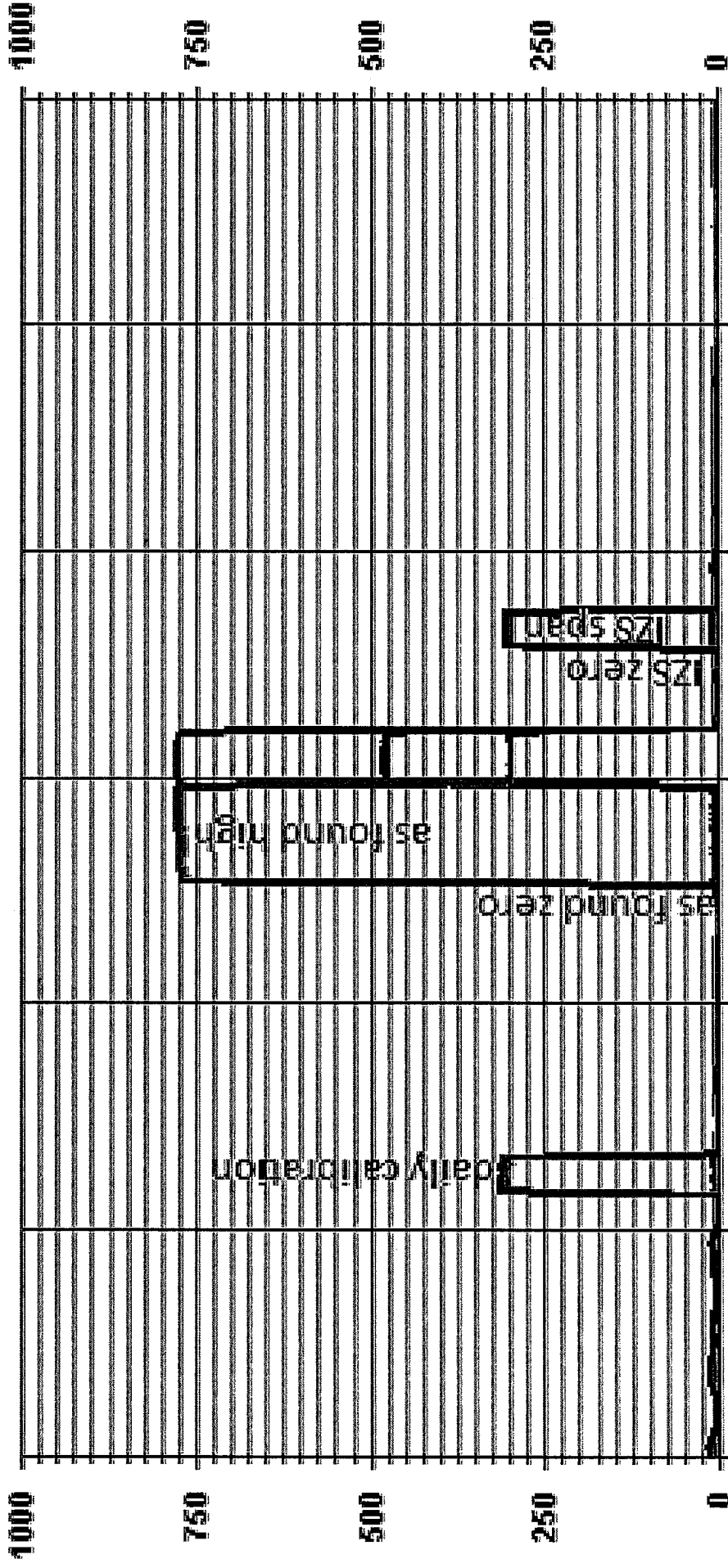
Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	NA	NA	NA	> or = 0.995
Slope =	NA	NA	NA	0.85-1.15
b (Intercept as % of full scale)=	NA	NA	NA	± 3% F.S.
% change In C.F. from last cal=	-1.26%	-0.34%	0.00%	+/-15%
NO2 converter efficiency			NA	>85%

Comments:

As found check required because of the span drift was over 10%. Zero/span check triggered after the as found calibration. No zero adjustemt was made. No high point adjustment was made. No NO2 adjustment was made.

01 Minute Averages



07/29/15 06:00 07/29/15 08:00 07/29/15 10:00 07/29/15 12:00 07/29/15 14:00 07/29/15 16:00

— LICA30 NOX_ PPB — LICA30 NO_ PPB — LICA30 NO2_ PPB

WIND SYSTEM

**Met One Instruments Inc.
Certificate of Calibration**

Instrument: **Sonic Wind Sensor**

Model No.: **50.5H**

Manufacturer: **Met One Instruments Inc.**

Serial No.: **H10703**

Sales Order No.: **101530**

Customer: **Maxxam Analytics**

Tested per P.O. No.: **35-54786**

Instrument Condition Within Tolerance: **As Found () As Left (X)**

Corrective Action: **No Adjustment () Adjust (X) Repair ()**

Preventative Maintenance ()

Quality Control Manual Revision: **September 16, 2013 MP42201Rev. G**

All Work Performed per Customers Purchase Order Requirements

Calibration Document No. **50.5-6100**

Date (As Found): **n/a**

Date (As Left Test): **3/4/2014**

Calibrated by: **Dan Ford**

Date: **3/4/14**

Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Accuracy
Digital Multimeter	keithley	197A	490833	3/8/2013	3/8/2014	+/- .02% of input
Counter	Hewlett Peckard	5245L	71616181	3/8/2013	3/8/2014	+/- 0.0001%
Standard Cup Assembly	Met One Instruments	170.41	3309	4/24/2012	4/24/2017	< .15mph or 1% ws

Environmental Data: Temperature **65 to 80 DegF**

Vibration **none**

Humidity **20 to 70 %**

Radiation **none**

The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the Institute's calibration facility. Unless otherwise stated hereon, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instruments accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with ISO 9001:2008 requirements.

QC Inspection by: **Byron Pearson**

Date: **3/10/14**

CALIBRATORS



Calibrator Performance Audit

Sulphur Dioxide (by Cylinder Dilution)

File No. 2014-258A

Company: Maxxam **Operator:** Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>830</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>Oct 2013</u>	Temperature (°C)	<u>N/A</u>
SO ₂ Cylinder Conc.	<u>50.3</u>	Barometric Pressure	<u>N/A</u>
SO ₂ Cylinder S/N	<u>LL42475</u>		

Flow Measurements			
Pt. No. 1	<u>79.5</u>	Pt. No. 2	<u>39.8</u>
		Pt. No. 3	<u>19.9</u>

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000	-	-
4918	0.800	0.798	0%	± 10%
4960	0.400	0.398	-1%	± 10%
4977	0.200	0.200	0%	± 10%
Absolute Average Percent Difference			0%	± 10%

LINEAR REGRESSION ANALYSIS		
<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>		
<u>SO₂</u>	<u>LIMITS</u>	
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9971	0.90-1.10
b (Intercept % of FS)=	0.0000	± 3% F.S.

AENV Standards		SO ₂ Analyzer	
Audit Calibrator		Make/Model	<u>Teco 43C</u>
Make/Model	<u>R&R MFC 201</u>	Serial/AMU Number	<u>AMU 1623</u>
Serial/AMU Number	<u>AMU 1690</u>	Last Calibration Date	<u>Dec 15/14</u>
		Full Scale (ppm)	<u>1.0</u>

COMMENTS: H2S gas was slow to move through the calibrator. Check for contamination inside calibrator. SO2 moves through quickly.

Auditor: Al Clark Date: December 16, 2014

Operator Signature: _____ Location: McIntyre Center Edmonton



Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-032A

Company Maxxam Operator: Limin Li

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>New</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>BLM0027561</u>	Barometric Pressure	<u>N/A</u>
NO/NOx Concentration	<u>50.7/50.7</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
5010	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5033	79.1	0.797	0.797	0.790	-0.011	0.779	-1%	-2%
5030	39.7	0.400	0.400	0.395	-0.005	0.390	-1%	-3%
5029	20.0	0.202	0.202	0.198	-0.003	0.195	-2%	-3%
Absolute Average Percent Difference							1%	3%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>			
Correlation=	1.0000	≥	0.990	Correlation=	1.0000		
m (Slope)=	0.9920		0.90-1.10	m (Slope)=	0.9783		
b (Intercept % of FS)=	#DIV/0!	±	3% F.S.	b (Intercept % of FS)=	#DIV/0!		

Flow	O ₂ Conc	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
5033	0.000	0.000	0.787	-0.011	0.776	NO ₂	% Diff. Limit
5033	0.520	0.490	0.297	0.475	0.772	0	± 10%
5033	0.280	0.261	0.526	0.249	0.774	0	± 10%
5033	0.100	0.089	0.698	0.078	0.775	0	± 10%
Absolute Average Percent Difference						0	± 10%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<u>NO₂</u>		<u>LIMITS</u>					
Correlation=	1.0000	≥	0.995				
m (Slope)=	0.9916		0.90-1.10				
b (Intercept % of FS)=	#DIV/0!	±	3% F.S.				

AENV Standards		NO _x Analyzer	
Audit Calibrator			
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 21, 2015</u>
		Full Scale (ppm)	

COMMENTS: Contains 49.9 ppm SO2

Auditor: Al Clark
 Operator Signature: *Al Clark*

Date: May 21, 2015
 Location: Molntyre Center Edmonton



Calibrator Performance Audit OZONE

File No. 2015-030A

Company: Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010D</u>	Make/Model	<u>N/A</u>
Serial Number	<u>11900613</u>	Serial Number	<u>N/A</u>
Oven Temperature	<u>N/A</u>	Temperature (°C)	<u>N/A</u>
Last Verification Date	<u>N/A</u>	Barometric Pressure	<u>N/A</u>

Flow Measurements

Pt. No. 1 5000 Pt. No. 2 5000 Pt. No. 3 5000

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
5013	0.000	0.001		
5013	0.400	0.407	1%	± 10%
5013	0.200	0.204	1%	± 10%
5014	0.100	0.101	0%	± 10%
Absolute Average Percent Difference			1%	± 10%

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

O_3		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0163	0.90-1.10
b (Intercept % of FS)=	0.0800	± 3% F.S.

AENV Standards		Ozone Analyzer	
Audit Calibrator		Make/Model	<u>Teco 49i</u>
Make/Model	<u>Teco 49i PS</u>	Serial/AMU Number	<u>AMU 1843</u>
Serial/AMU Number	<u>AMU 1808</u>	Last Calibration Date	<u>May 21, 2015</u>
Ozone Standard	<u>Primary</u>	Full Scale (ppm)	<u>0.5</u>

COMMENTS: _____

Auditor: Al Clark Date: May 21, 2015
 Operator Signature: Location: McIntyre Center Edmonton



Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2014-260A

Company <u>Maxxam</u>		Operator: <u>Limin Li</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Envronics 6100</u>	Make/Model	<u>N/A</u>
Serial Number	<u>4760</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>December 2013</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> Gas flows not available from display.

Callibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4980	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4993	0.0	0.799	0.799	0.840	-0.001	0.839	5%	5%
4994	0.0	0.399	0.399	0.420	-0.001	0.419	5%	5%
4991	0.0	0.200	0.200	0.211	0.000	0.211	5%	5%
Absolute Average Percent Difference							5%	5%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=Indicated concentration)</i>			
NO		LIMITS		NOx			
Correlation=	1.0000	≥	0.990	Correlation=	1.0000		
m (Slope)=	1.0511		0.90-1.10	m (Slope)=	1.0496		
b (Intercept % of FS)=	0.0400	±	3% F.S.	b (Intercept % of FS)=	0.0400		

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4993	0.000	0.000	0.823	-0.001	0.822	NO ₂	% Diff. Limit
4993	0.480	0.530	0.293	0.530	0.823	0	± 10%
4993	0.240	0.269	0.554	0.269	0.823	0	± 10%
4993	0.090	0.096	0.727	0.097	0.824	0	± 10%
Absolute Average Percent Difference						0	± 10%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=Indicated concentration)</i>			
NO₂		LIMITS					
Correlation=	1.0000	≥	0.995				
m (Slope)=	1.0006		0.90-1.10				
b (Intercept % of FS)=	-0.0132	±	3% F.S.				

AENV Standards		NO_x Analyzer	
Audit Calibrator			
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>December 15, 2014</u>
		Full Scale (ppm)	<u>1.0</u>

COMMENTS:

Auditor: Al Clark

Operator Signature:

Date: December 17, 2014

Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-344CGA

Company: Maxxam Operator's Name: Limin Li
Cylinder #: BLM002073 Concentration PPM: 49.5 Tolerance(%) 2 Certified By: Alr 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 (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.01660	60.242	48.3
4976	82.6	0.801	0.01660	60.242	48.3
4993	41.0	0.396	0.00821	121.780	48.2
4977	20.2	0.193	0.00406	246.386	47.6
Average Cylinder Concentration:					48.0

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 3.0

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

Single Component Cylinder Gas

File No. 2015-339CGA

Company: Maxxam Operator's Name: Limin Li
Cylinder #: LL67747 Concentration PPM: 49.7 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: AI Clark

Calibrator Flows (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.01660	60.242	49.3
4976	82.6	0.818	0.01660	60.242	49.3
4993	41.0	0.407	0.00821	121.780	49.6
4977	20.2	0.200	0.00406	246.386	49.3
Average Cylinder Concentration:					49.4

Previous Stated Concentration PPM: 49.7

Percent variance from Stated: 0.7

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: AI Clark
Operator Signature: *AI Clark*

Date: March 31, 2015
Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2016-345CGA

Company: Maxxam Operators name: Limin Li
Cylinder #: BLM002073 Conc (PPM) 50.6/50.6 Tolerance (%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model Teco 146I
Serial Number AMU 1809
Last Verification Date March 31, 2015
Gas Type NO Conc. 48.79
Cylinder Number CAL018024

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 42I Serial/AMU Number: 1868
Instrument Settings Zero: 4.2 Span: 1.008 Range: 1.0
Last Calibration: Date: Mar 31/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000	0.01660	60.242	51.5	51.1
4976	82.6	0.855	0.848	0.01660	60.242	51.5	51.1
4993	41.0	0.427	0.421	0.00821	121.780	52.0	51.3
4977	20.2	0.213	0.209	0.00406	246.386	52.5	51.5
Average Cylinder Concentration:						52.0	51.3

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>50.6</u>	<u>50.6</u>
Percent variance from Stated: <u>2.8</u>	<u>1.4</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration Contains 49.5 ppm SO2 in cylinder
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: March 31, 2015
Operator Signature: [Signature] Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-256CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: LL74219 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
 Serial Number: AMU 1690
 Last Verification Date: December 15, 2014
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015106

Flow Measurement Device:

Make/Model: Bios DC2
 Serial Number: AMU 1659
 Temp. °C: 23.5 C
 B.P. 701 mmhg

Reference Analyzer:

Make/Model: Teco 45C Serial/AMU Number: 1624
 Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
 Last Calibration: Date: Dec15/14 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	0.00756	132.234	10.1
5091	38.5	0.0766	0.00756	132.234	10.1
5096	17.9	0.0356	0.00351	284.693	10.1
5067	9.1	0.0178	0.00180	556.813	9.9
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 0.6

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: December 16, 2014
 Location: Molntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Bios DC2</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>AMU 1659</u>
Last Verification Date: <u>December 15, 2014</u>	Temp. °C: <u>23.0 C</u>
Gas Type: <u>H2S</u> Conc. <u>20.43</u>	B.P.: <u>702 mmhg</u>
Cylinder Number: <u>CAL015106</u>	

Reference Analyzer:
 Make/Model: Teco 45C Serial/AMU Number: 1624
 Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
 Last Calibration: Date: Dec15/14 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	10.0	10.0
5099	38.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

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

Auditor: Al Clark Date: December 16, 2014
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

APPENDIX III
CHAIN OF CUSTODY



Maxxam Analytics - Air Services Group

Project Chain of Custody

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2015-07-30- C</u>
Site: <u>Maskwa Site</u>	Contact: <u>Mike Bisaga</u>

QA Check Complete	<u>msdmbg</u>	Date	<u>11 - Aug - 2015</u>
QA Check Review	<u>msdmbg</u>	Date	<u>11 - Aug - 2015</u>
Report Complete	<u>msdmbg</u>	Date	<u>19 - Aug - 2015</u>
Report Reviewed	<u>E. Tangang</u>	Date	<u>19 - Aug - 15</u>
Report Shipped	_____	Date	_____

Notes

AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
ST. LINA SITE

JOB #:2833-2015-07-31- C

JULY 2015

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
BOX 8237, 5107W - 50 STREET
BONNYVILLE, ALBERTA
T9N 2J5

Attention: MIKE BISAGA

DATE: August 19, 2015

Prepared by:



Wunmi Adekanmbi, M.Sc.

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:



Lily Lin, B.Sc.

Senior Project Manager, Air Services, Maxxam Analytics

SUMMARY

In JULY 2015, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the St. Lina Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

Four 24-HR contraventions were recorded for PM_{2.5} this month: concentrations of 34 ug/m³ on July 1, 55 ug/m³ on July 4, 114 ug/m³ on July 10 and 81 ug/m³ on July 11. AE Reference numbers 300252, 300394, 300694 and 300800 respectively.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

All parameters: Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 hour 0 and July 16 hour 5 were invalidated as the analyzers and meteorological systems were recovering from short power outages.

PM 2.5: Thirteen hours of data were invalidated due to a malfunction of the Teom unit.

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 is issuing this completed report to Lakeland Industry & Community Association, St. Lina Site.

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

Lakeland Industry & Community Association St. Lina Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO2 (PPB)	172	48	0	0	0	1	VAR	VAR	VAR	VAR	0.2	9	99.2
H2S (PPB)	10	3	0	0	0	4	15, 27	5, 7	5.8 4.4	SW SW	0.8	23	99.2
THC (PPM)	-	-	-	-	1.8	3.0	20	1	5.9	NW	2.0	10	99.2
NO2 (PPB)	159	-	0	-	0.9	4.6	3	5	8	S	1.9	6, 10	99.2
NO (PPB)	-	-	-	-	0.1	2.7	24	9	4.7	SSE	0.4	24	99.2
NOX (PPB)	-	-	-	-	1.0	6.7	24	8	5.5	S	2.1	6, 24	99.2
O3 (PPB)	82	-	0	-	31	71	9	17	16.1	SW	47.0	11	99.2
PM2.5 (UG/M3)	-	30	-	4	14.9	216.0	10	23	10.9	ENE	114.2	10	97.4
RELATIVE HUMIDITY (%)	-	-	-	-	62.4	91	VAR	VAR	VAR	VAR	86.6	17	99.2
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	930	941	5	VAR	VAR	VAR	938	6	99.2
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	18.8	33.0	9	16	17.6	SW	24.8	9	99.2
PRECIPITATION (MM)	-	-	-	-	0.1	7.5	17	2	10.5	N	1.6	17	99.2
VECTOR WS (KPH)	-	-	-	-	9.0	22.9	11	8	-	ENE	13.1	11	99.2
VECTOR WD (DEG)	-	-	-	-	W	-	-	-	-	-	-	-	99.2

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 1- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

PM_{2.5} 24- Hour Exceedences

DATE	READING (ug/m3)	WS (kph)	WD (deg)
JULY 1	34	6.7	WNW
JULY 4	55	8.9	WNW
JULY 10	114	9.2	NE
JULY 11	81	13.1	E

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1.0 Discussion

This monthly report consists of data for parameters SO₂, H₂S, THC, NO_x, NO, NO₂, O₃, PM_{2.5}, WS, WD, RH, BP, Precipitation and Ambient Temperature.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) 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 calibration is done a minimum of once a month for each continuous air monitor. In addition 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.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as 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 (greater than 15%).

Hourly data is corrected using daily zero information.

SULPHUR DIOXIDE (SO₂)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 20. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 hour 0 and July 16 hour 5 were invalidated as the analyzer was recovering from short power outages.

HYDROGEN SULPHIDE (H₂S)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 20. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 hour 0 and July 16 hour 5 were invalidated as the analyzer was recovering from short power outages.

TOTAL HYDROCARBONS (THC)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 17. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 hour 0 and July 16 hour 5 were invalidated as the analyzer was recovering from short power outages.

NITROGEN DIOXIDE (NO₂)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 20. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 hour 0 and July 16 hour 5 were invalidated as the analyzer was recovering from short power outages.

OZONE (O₃)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 17. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 hour 0 and July 16 hour 5 were invalidated as the analyzer was recovering from short power outages.

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM_{2.5})

Two Teom audits were performed this month: one was completed on July 3, and the other audit was performed on July 17. Both the inlet filter and the FDMS filter were replaced during the audits. The Teom unit malfunctioned on July 17. Troubleshooting was performed by restarting the Teom unit prior to audit on on July 17. 13 hours of data were discarded due to this issue. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Data was corrected using Alberta Air Quality Guideline. If the data was between 0 to -3 ug/m³, the data was corrected to 0 ug/m³. If the data was below -3ug/m³, the data was invalidated. No hourly data was invalidated as all hourly data were above -3ug/m³ this month.

Four 24-hr contraventions were recorded this month: concentrations of 34 ug/m³ on July 1, 55 ug/m³ on July 4, 114 ug/m³ on July 10 and 81 ug/m³ on July 11. AE Reference numbers 300252, 300394, 300694 and 300800 respectively.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

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 coming from.

The wind system was working well throughout the month. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 hour 0 and July 16 hour 5 were invalidated as the wind system was recovering from short power outages.

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.

BAROMETRIC PRESSURE (BP)

The pressure sensor was working well throughout the month. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.

PRECIPITATION

The rain gauge system was working well throughout the month. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month. 6 hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling personnel was Alexander Yakupov.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM2.5.

Four 24-HR contraventions were recorded for PM2.5 this month: concentrations of 34 ug/m³ on July 1, 55 ug/m³ on July 4, 114 ug/m³ on July 10 and 81 ug/m³ on July 11. AE Reference numbers 300252, 300394, 300694 and 300800 respectively.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, and 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006).

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Teom Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Met One Unit
- Precipitation - Met One Unit
- Datalogger - ESC 8832

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) hourly averages in ppb

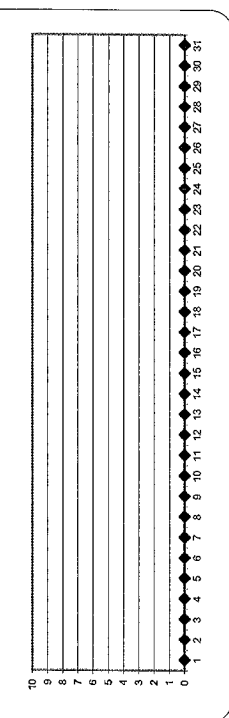
MST

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
HOURLY MAX	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
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0
DAILY MAX	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	
DAILY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-HOUR AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	
RDSS.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	

STATUS FLAG CODES

C	- CALIBRATION	Q	- QUALITY ASSURANCE
M	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPIKE CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

24 HOUR AVERAGES FOR JULY 2015



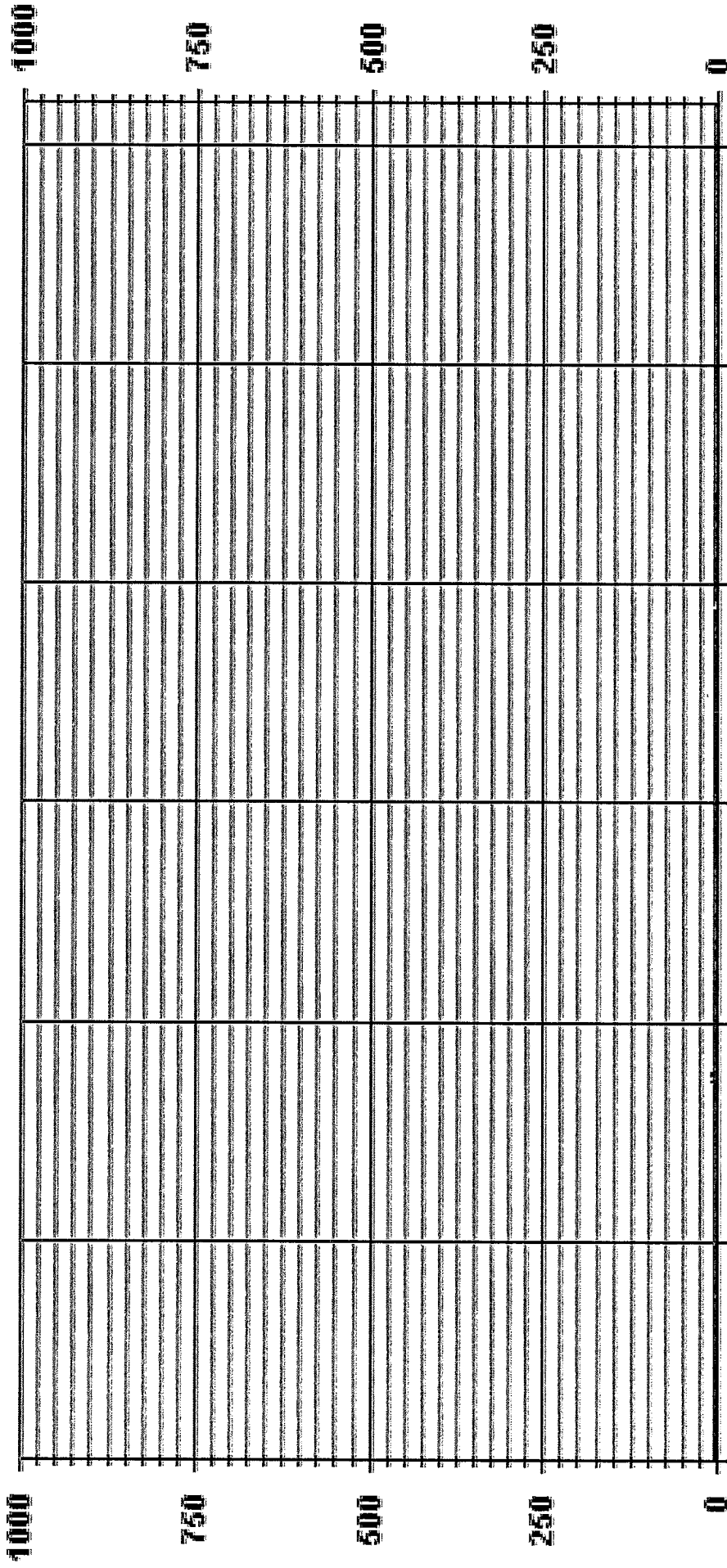
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR: 272 PPB, 24-HR: 48 PPB

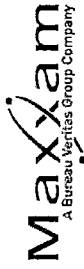
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	10
MAXIMUM 1-HR AVERAGE:	1 PPB
MAXIMUM 24-HR AVERAGE:	0.2 PPB
1ZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	0.12
OPERATIONAL TIME:	738 HRS
AMD OPERATION UPTIME:	99.2 %
MONTHLY AVERAGE:	0 PPB

01 Hour Averages



— LICA31 SO2_ PPB



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

DAY	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	24:00	RDGS.
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6
3	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	0.7
4	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	0.4
5	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	0.1
6	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	0.1
7	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	0.4
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.2
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
10	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	0.7
11	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	0.1
12	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	0.5
13	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	0.2
14	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	0.2
15	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
16	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
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.2
18	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	0.6
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7
20	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	0.6
21	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5
22	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
23	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	0.2
24	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	0.6
25	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
26	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	0.5
27	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	0.6
28	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	0.9
29	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	0.4
30	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
31	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	1.0
HOURLY MAX	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
HOURLY AVG	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.4

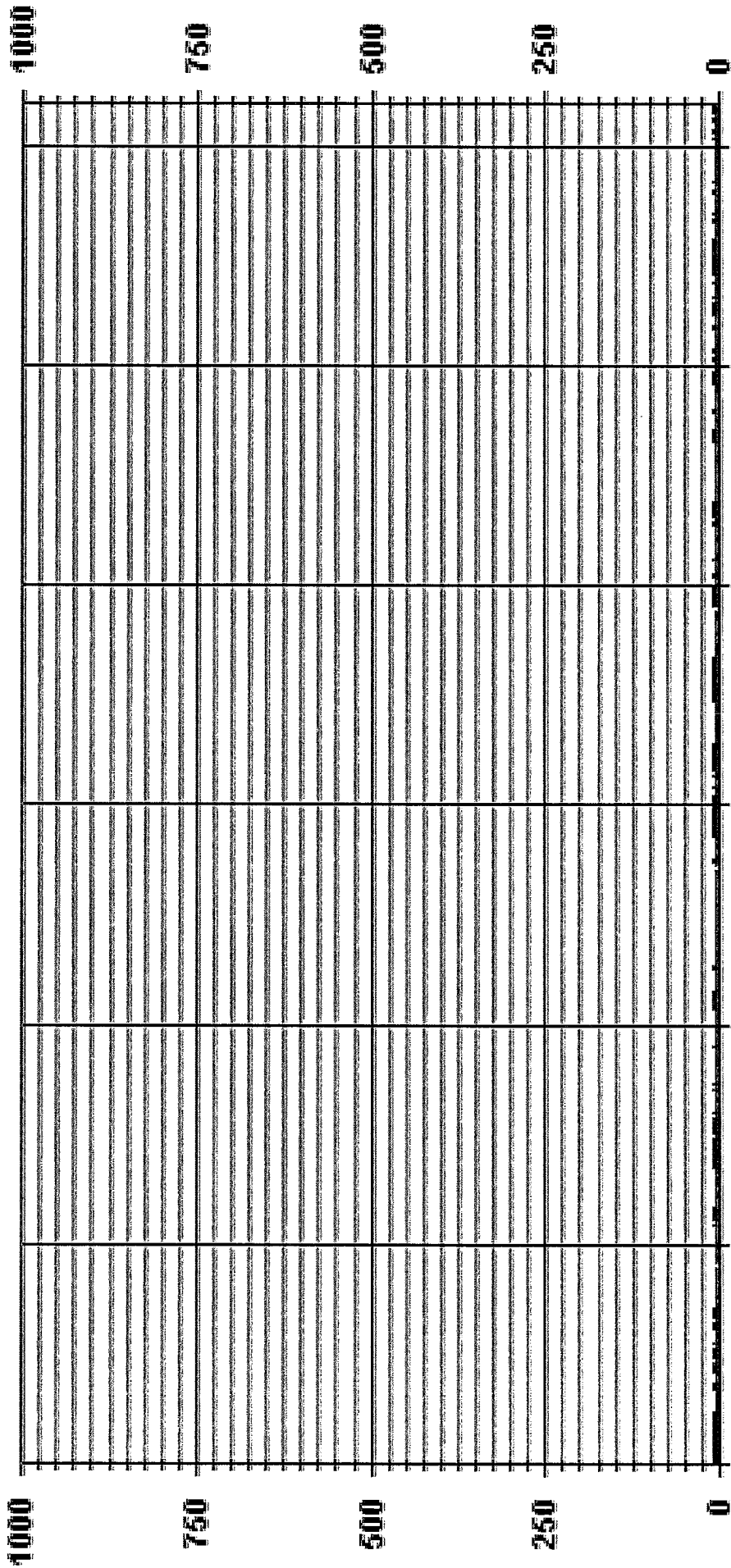
STATUS FLAG CODES

C	- CALIBRATION
O	- QUALITY ASSURANCE
M	- MAINTENANCE
R	- RECOVERY
X	- MACHINE/MALFUNCTION
O	- OPERATOR ERROR
K	- COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	323
MAXIMUM INSTANTANEOUS VALUE:	4 PPB @ HOUR(S) 10, 11 ON DAY(S) 15, 15
1ZS CALIBRATION TIME:	36 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	0.58
OPERATIONAL TIME:	VAR-VARIOUS
HRS	734

01 Hour Averages



— LICA31 SO2MAX PPB

LICA31
 SO2_ / WDR Joint Frequency Distribution (Percent)
 July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : SO2
 Units : PPF

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 20	4.72	1.28	1.85	3.00	2.57	2.71	1.14	2.57	4.57	5.43	8.44	12.01	17.02	19.88	7.43	5.29	100.00			
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
Totals	4.72	1.28	1.85	3.00	2.57	2.71	1.14	2.57	4.57	5.43	8.44	12.01	17.02	19.88	7.43	5.29				

Calm : .00 %

Total # Operational Hours : 699

Distribution By Samples

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 20	33	9	13	21	18	19	8	18	32	38	59	84	119	139	52	37	699			
< 60																				
< 110																				
< 170																				
< 340																				
>= 340																				
Totals	33	9	13	21	18	19	8	18	32	38	59	84	119	139	52	37				

Calm : .00 %

Total # Operational Hours : 699

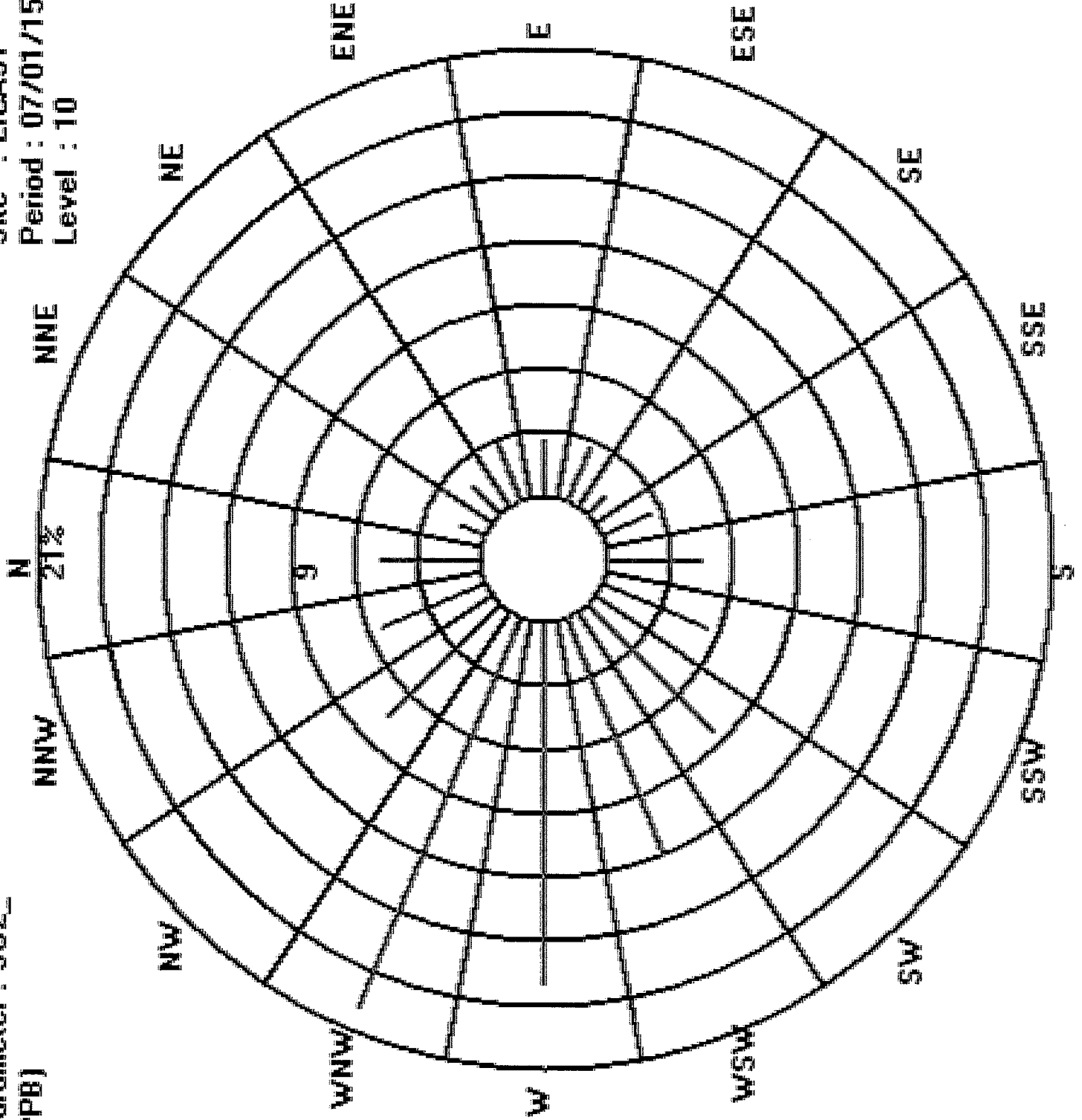
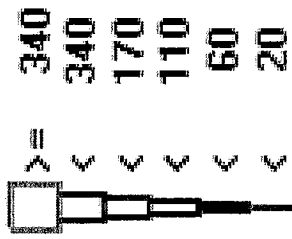
Logger : 31 Parameter : SO2_

Site : LICA31

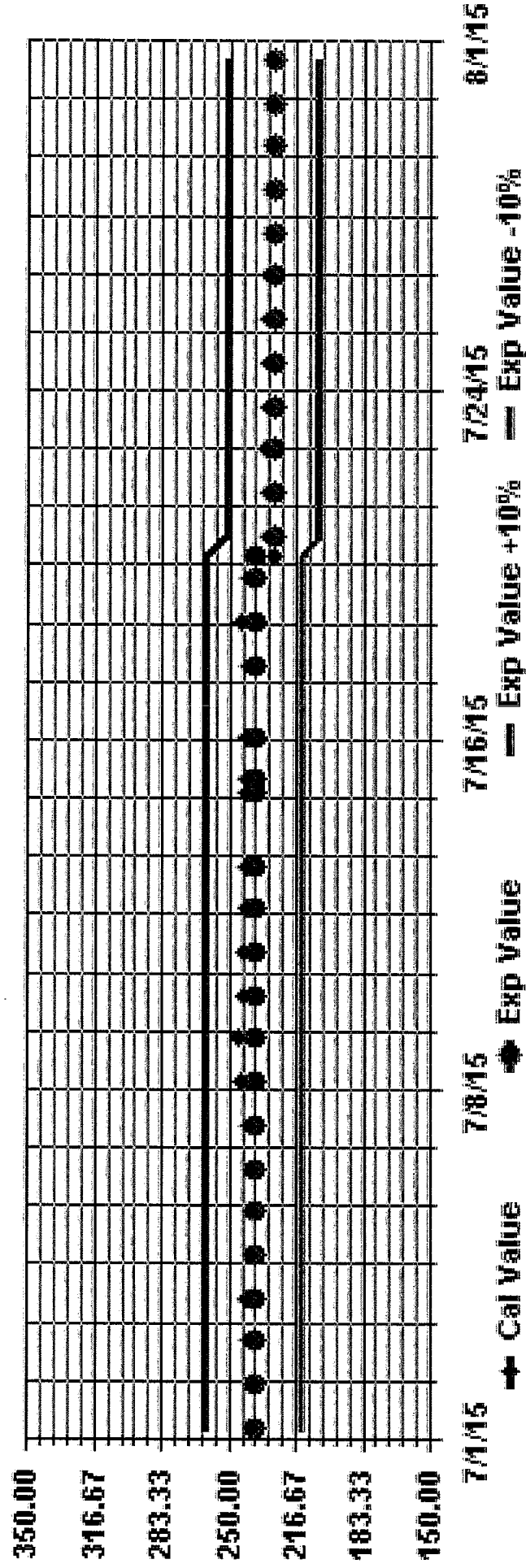
Period : 07/01/15-07/31/15

Level : 10

Class Limits (PPB)



Calibration Graph for Site: LICA31 Parameter: SO2_ Sequence: SO2 Phase: SPAN



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

DAY	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	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	24:00	RDGS.	
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	24
2	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
3	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
4	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
5	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	22
6	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	0	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
14	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
15	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	20
16	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
17	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
18	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
19	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
20	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
21	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
22	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
23	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
24	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
25	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
26	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
27	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
28	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
29	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
30	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
31	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
HOURLY MAX	2	1	1	2	3	4	3	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
HOURLY AVG	0.3	0.3	0.4	0.5	0.8	0.7	0.7	0.6	0.3	0.1	0.1	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	0.1	

STATUS FLAG CODES

C	- CALIBRATION
Y	- MAINTENANCE
S	- DAILY ZERO/SPAN/CHECK
P	- POWER FAILURE
G	- OUT FOR REPAIR
Q	- QUALITY ASSURANCE
R	- RECOVERY
X	- MACHINE/MALFUNCTION
O	- OPERATOR ERROR
K	- COLLECTION ERROR

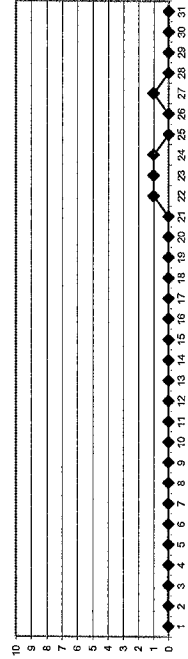
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 2-HR: 1.0 PPB: 24-HR: 3 PPB

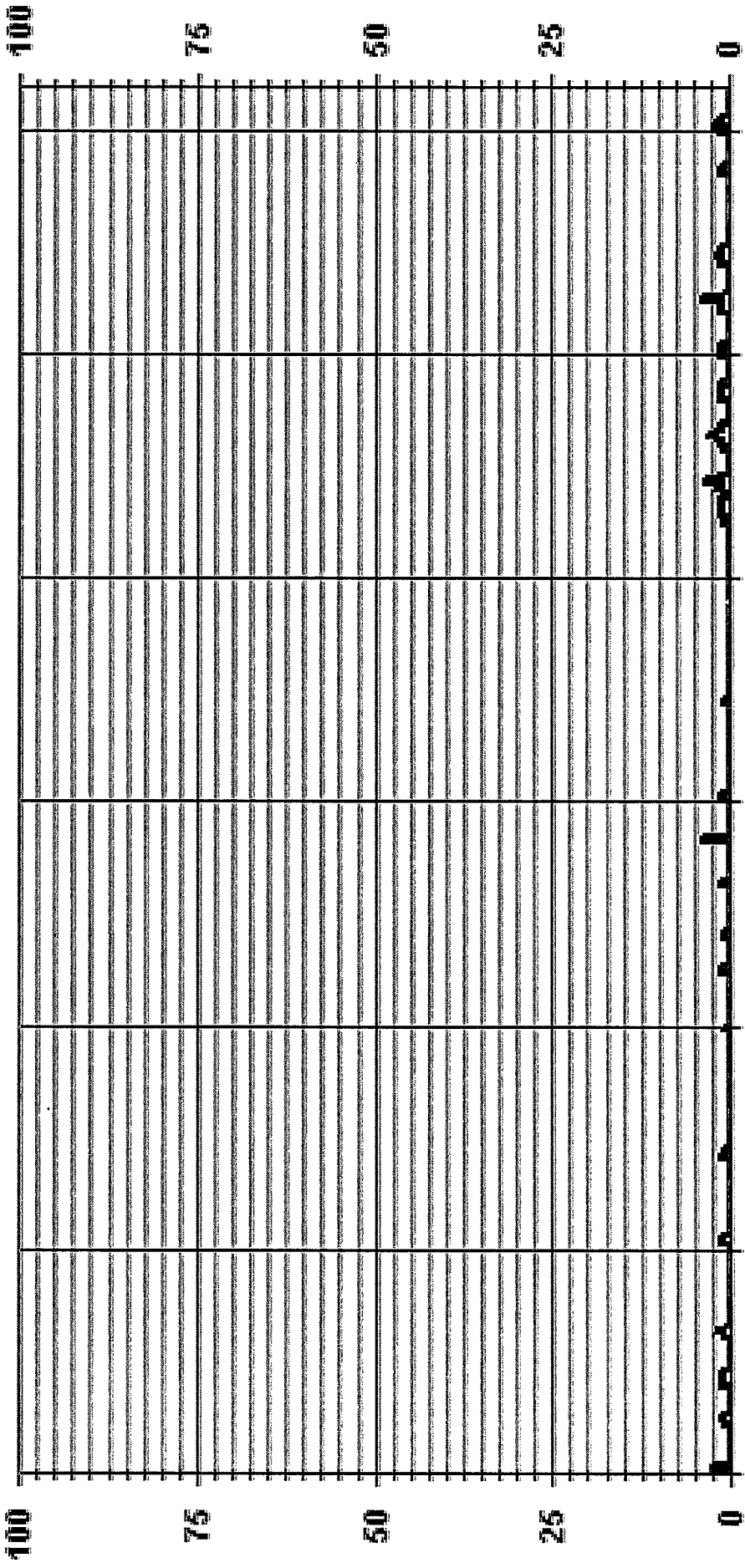
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES	0
NUMBER OF 24-HR EXCEEDENCES	0
NUMBER OF NON-ZERO READINGS	126
MAXIMUM 1-HR AVERAGE	4 PPB @ HOUR(S) 5, 7 ON DAY(S)
MAXIMUM 24-HR AVERAGE	0.8 PPB ON DAY(S) 23
IZS CALIBRATION TIME	32 HRS
MONTHLY CALIBRATION TIME	6 HRS
OPERATIONAL TIME	738 HRS
AMD OPERATION UPTIME	99.2 %
STANDARD DEVIATION	0.54
MONTHLY AVERAGE	0 PPB

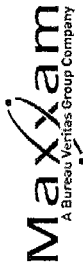
24 HOUR AVERAGES FOR JULY 2015



01 Hour Averages



— LICA31 H2S_ PPB



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

DAY	HOURS																								DAILY MAX	24-HOUR AVG.	RDGS.	
	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				24:00
1	0	0	1	2	4	3	\$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.5	24
2	0	0	1	3	\$	2	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.6	24
3	1	1	1	1	\$	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4	24	
4	1	1	2	\$	4	2	3	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.8	24	
5	0	0	\$	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	21	
6	0	\$	0	1	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24		
7	\$	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	
8	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24	
9	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	
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0	24	
11	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	23	
12	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.3	24	
13	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.4	24	
14	0	0	0	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4	19	
15	0	0	0	1	5	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.8	24	
16	0	0	1	0	3	R	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.3	23		
17	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	
18	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	
19	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	
20	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	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.7	24	
23	3	2	1	3	4	4	5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.7	24	
24	1	1	1	2	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3	24		
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
26	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.7	24		
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.0	24		
28	1	1	2	2	1	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.8	24		
29	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24		
30	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.7	24		
31	1	1	0	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.7	24		
HOURLY MAX	3	2	2	3	5	5	5	5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.3	0.4
HOURLY AVG	0.5	0.5	0.6	0.8	1.4	1.2	1.2	1.1	0.7	0.3	0.3	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	0.2	0.3	0.4

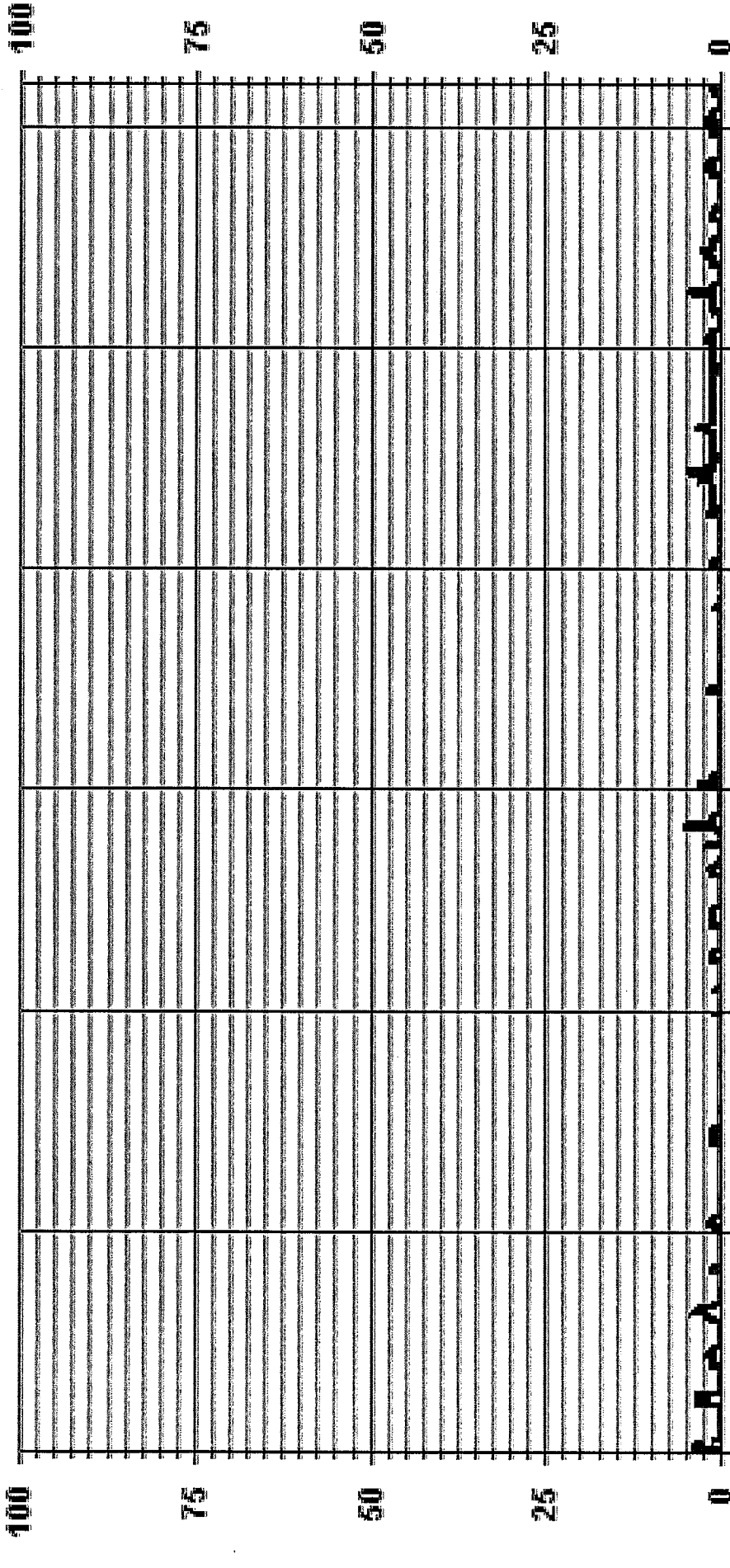
STATUS FLAG CODES

C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	233
MAXIMUM INSTANTANEOUS VALUE:	5 PPB @ HOUR(S) VAR ON DAY(S) VAR
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	6 HRS
OPERATIONAL TIME:	734 HRS
STANDARD DEVIATION:	0.81
VAR-VARIABLES:	VAR-VARIABLES

01 Hour Averages



07/01/15 00:0007/06/15 00:0007/11/15 00:0007/16/15 00:0007/21/15 00:0007/26/15 00:0007/31/15 00:00

— LICA31 H2SMAX PPB

H2S_ / WDR Joint Frequency Distribution (Percent)

LICA31

July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : H2S_

Wind Parameter : WDR
 Instrument Height : 10 Meters

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	4.71	1.42	1.85	3.00	2.57	2.71	1.14	2.57	4.57	5.28	8.00	11.57	17.00	19.85	7.42	5.28	99.00
< 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.42	.42	.00	.00	.00	.00	1.00
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.71	1.42	1.85	3.00	2.57	2.71	1.14	2.57	4.57	5.42	8.42	12.00	17.00	19.85	7.42	5.28	

Calm : .00 %

Total # Operational Hours : 700

Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	33	10	13	21	18	19	8	18	32	37	56	81	119	139	52	37	693
< 10										1	3	3					7
< 50																	
>= 50																	
Totals	33	10	13	21	18	19	8	18	32	38	59	84	119	139	52	37	

Calm : .00 %

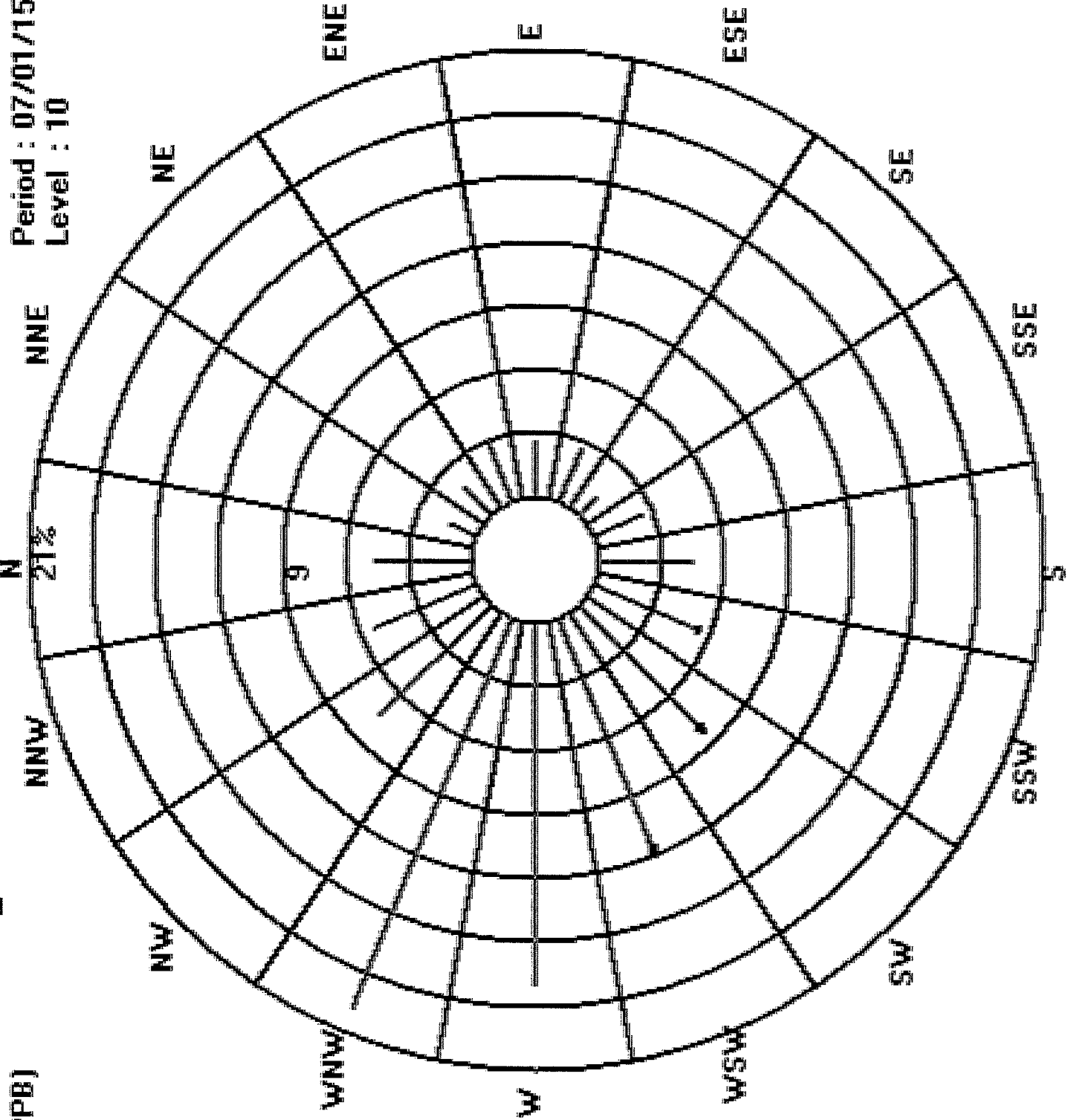
Total # Operational Hours : 700

Logger : 31 Parameter : H2S_

Site : LICA31

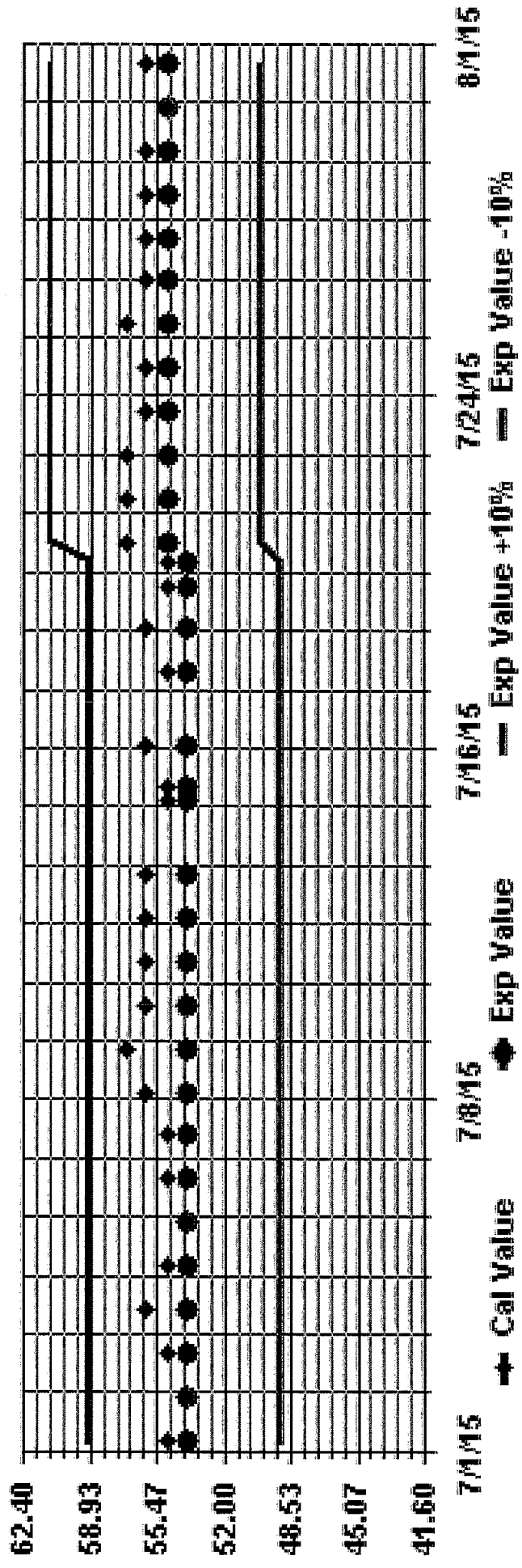
Period : 07/01/15-07/31/15

Level : 10

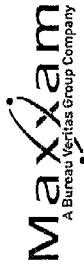


>= 50
< 50
< 10
< 3

Calibration Graph for Site: LICA31 Parameter: H2S_ Sequence: H2S Phase: SPAN



TOTAL HYDROCARBON

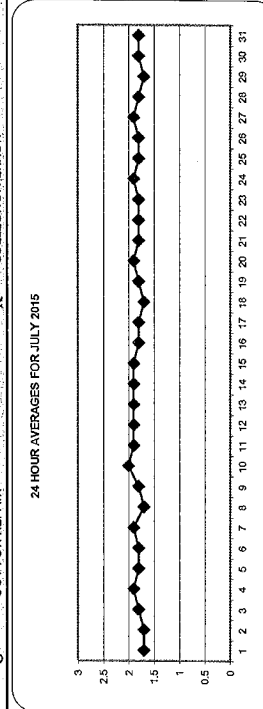


TOTAL HYDROCARBONS (THC) hourly averages in ppm

DAY	DAILY MAX.																								RDGS.				
	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		24:00			
1	1.7	1.8	1.7	1.7	1.8	1.9	1.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.8	1.9	1.7	24	
2	1.8	1.7	1.7	1.8	1.8	1.8	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.7	24
3	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
4	1.8	1.8	2.0	1.9	2.0	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.1	1.9	24	
5	1.9	1.9	1.9	1.9	1.9	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.8	2.0	1.8	22
6	1.8	1.8	1.8	1.8	1.8	1.7	1.5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.8	24	
7	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	24
8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	24
10	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.3	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24
11	2.1	2.0	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	1.9	24
12	1.9	2.0	2.0	2.1	2.0	2.3	2.2	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.3	1.9	24
13	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
14	2.0	2.0	1.9	1.9	2.1	2.1	2.1	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	20
15	2.3	2.1	2.1	1.9	2.0	2.1	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	24
16	1.9	1.8	1.8	1.8	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	24
17	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	24
18	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
19	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	24
20	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24
21	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	24
22	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	24
23	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	24
24	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
25	2.0	2.2	2.1	1.9	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
26	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
27	1.8	1.8	1.9	2.0	2.2	2.1	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
28	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
29	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	24
30	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24
31	1.8	1.8	1.7	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	24
HOURLY MAX	2.3	3.0	2.1	2.1	2.2	2.3	2.2	2.2	2.2	2.3	2.0	2.0	2.0	2.0	2.0	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	24
HOURLY AVG	1.9	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	24

STATUS FLAG CODES

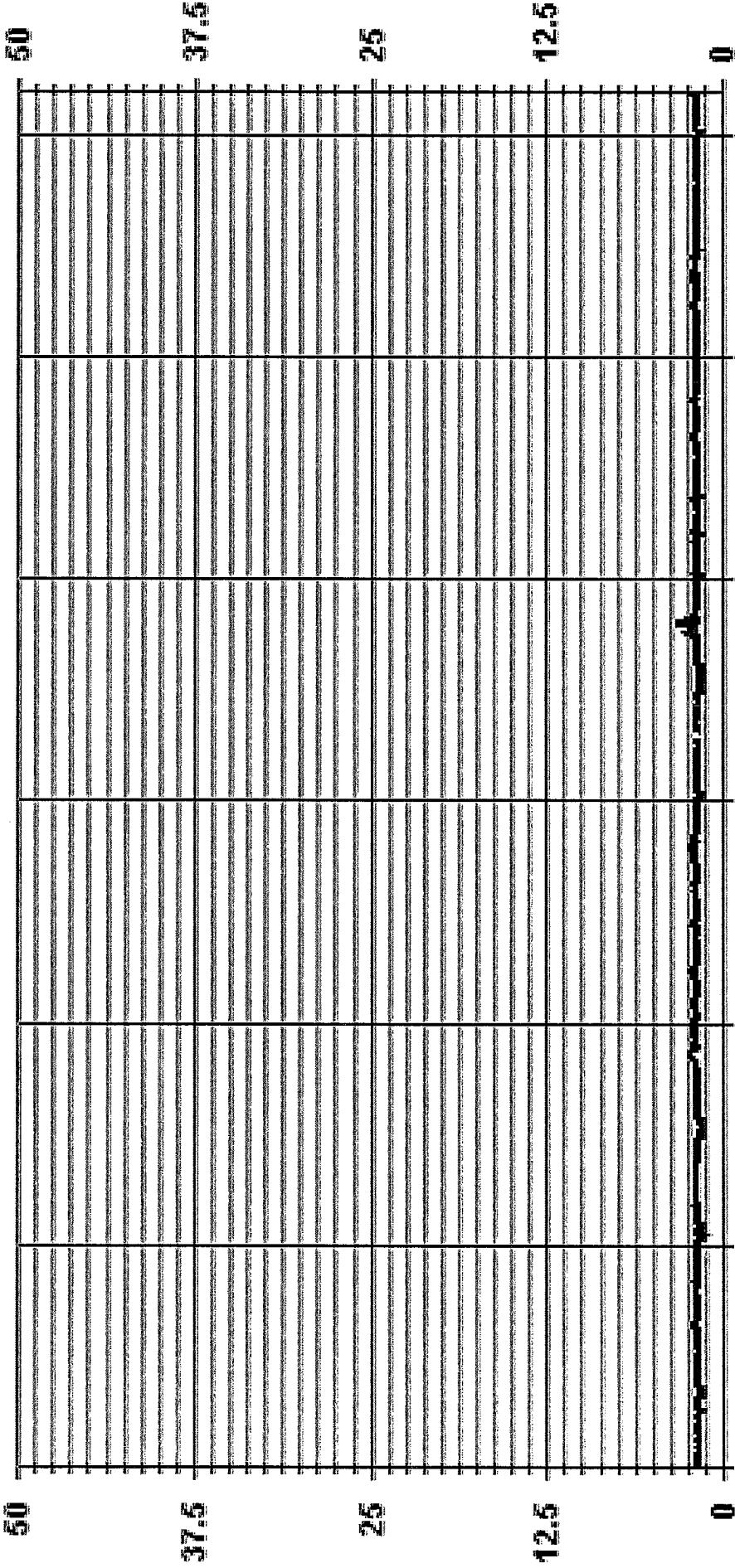
- C - CALIBRATION
- Y - MAINTENANCE
- S - DAILY ZERO/SPAN CHECK
- P - POWER FAILURE
- G - OUT FOR REPAIR
- O - QUALITY ASSURANCE
- R - RECOVERY
- X - MACHINE MALFUNCTION
- O - OPERATOR ERROR
- K - COLLECTION ERROR



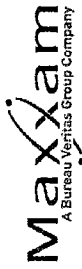
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	697	PPM @ HOUR(S)	1	ON DAY(S)	20
MAXIMUM 1-HR AVERAGE:	3.0	PPM	2.0	ON DAY(S)	10
MAXIMUM 24-HR AVERAGE:				VAR-VARIOUS	
725 CALIBRATION TIME:	36	HRS	OPERATIONAL TIME:	738	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	99.2	%
STANDARD DEVIATION:	0.13		MONTHLY AVERAGE:	1.8	PPM

01 Hour Averages



— LICA31 THC PPM



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 St. Lina Site - JULY 2015
 JOB # 2833-2015-07-31-C

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST

DAY	HOURS																								RDGS.						
	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	24:00							
1	1.8	3.6	1.7	1.8	1.9	2.8	5	1.8	1.7	2.1	3.9	2.0	2.1	2.4	2.3	2.2	2.4	2.1	2.2	2.6	2.9	3.5	2.4	2.5	3.9	2.4					
2	2.9	1.7	1.9	1.9	2.9	5	1.7	1.8	1.8	5	2.3	2.0	1.9	2.2	1.9	2.0	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.4					
3	1.7	1.7	1.7	1.7	1.7	1.9	1.8	1.8	1.9	2.1	2.4	2.3	1.9	2.0	2.0	2.1	2.0	2.1	2.0	2.1	3.1	2.6	2.3	1.8	2.1	2.0					
4	2.4	2.0	2.8	5	4.3	5.2	2.9	2.3	2.4	2.3	2.7	2.2	2.3	2.3	2.3	2.0	3.1	2.1	1.9	1.8	2.6	2.4	2.6	2.3	5.2	2.6					
5	2.3	2.5	5	2.5	2.3	2.7	1.9	1.8	1.9	1.8	1.9	1.8	1.9	P	P	2.0	2.1	1.9	2.2	2.8	2.8	3.6	3.0	3.6	2.3	2.1					
6	1.9	5	2.1	1.9	1.9	2.0	2.3	3.3	2.1	1.9	3.0	3.1	2.5	2.0	2.0	3.1	2.9	1.9	1.9	2.5	1.9	1.9	5.2	1.9	5.2	2.4					
7	5	1.9	2.0	1.9	2.0	2.0	1.9	2.3	2.0	2.1	2.5	2.4	2.3	2.8	2.3	2.4	2.4	2.4	2.7	1.9	1.9	1.9	5	2.8	2.2	2.4					
8	1.8	1.9	2.2	1.8	1.8	1.8	1.8	1.9	1.9	1.8	2.0	2.8	2.8	2.8	2.3	2.5	2.8	2.5	2.8	2.5	2.4	2.3	5	1.8	2.8	2.2					
9	2.6	3.2	3.1	4.5	2.6	3.1	2.8	1.9	1.9	1.8	1.8	1.8	1.8	2.1	1.8	1.9	1.7	1.7	1.7	1.7	5.8	5	1.8	1.9	5.8	2.4					
10	1.9	1.9	1.9	2.1	2.0	2.1	2.2	2.3	2.4	2.4	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.3	2.1	2.1	5	1.9	2.0	2.0	2.7	2.1	2.4				
11	R	2.1	2.1	2.1	1.9	1.9	1.9	1.9	2.2	2.0	2.0	2.0	2.0	2.1	2.0	1.9	1.9	1.9	1.9	5	1.8	1.9	1.9	1.9	2.2	2.0	2.3				
12	2.0	2.2	2.0	2.1	2.1	2.6	2.4	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	5	2.5	2.9	1.8	4.2	2.6	4.2	2.2				
13	2.5	2.4	2.4	2.3	2.5	3.3	3.2	3.0	2.5	2.8	2.8	3.1	2.4	2.8	2.5	2.5	2.2	5	3.1	2.0	2.4	2.5	2.3	2.8	3.3	2.6	2.4				
14	5.5	6.0	3.1	2.2	2.9	4.0	1.9	1.9	1.9	2.0	2.2	2.2	2.0	2.1	P	P	P	P	P	2.2	2.3	2.1	2.1	2.0	3.4	6.0	2.7	1.9			
15	4.4	4.4	6.4	1.9	2.2	2.3	3.6	2.1	5	1.9	1.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	6.4	2.4	2.4	2.4			
16	6.7	1.8	2.5	2.9	2.4	R	2.2	2.0	1.9	2.2	2.2	2.1	1.9	2.2	5	2.1	2.2	2.3	2.7	2.1	1.9	2.0	2.3	2.4	6.7	2.4	2.3	2.4			
17	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	C	C	C	C	C	C	1.9	1.8	2.2	2.4	2.4	4.2	2.8	2.0	4.2	2.1	2.4	2.4			
18	2.4	2.6	2.1	1.9	5	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.0	2.6	1.8	2.4	2.4			
19	1.6	1.7	2.1	5	2.3	2.3	2.9	2.0	2.0	2.0	2.3	2.1	2.2	2.4	2.3	2.0	2.0	2.1	2.1	2.1	4.0	4.2	3.5	2.6	2.5	4.2	2.4	2.4			
20	3.4	10.6	5	3.9	7.0	2.2	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	10.6	2.7	2.4	2.4			
21	2.0	5	1.8	8.3	1.7	1.8	1.7	1.8	1.7	2.0	2.2	2.2	2.2	2.2	2.2	2.1	2.5	2.7	2.1	1.7	4.4	2.1	3.9	4.3	4.1	8.3	2.7	2.4			
22	5	2.5	3.4	3.7	2.1	2.6	2.4	2.4	2.4	2.0	2.1	2.0	2.0	3.0	3.0	1.7	2.0	1.7	1.8	7.2	5.3	2.3	1.7	5	7.2	2.7	2.4	2.4			
23	1.7	1.8	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.1	2.0	1.9	1.8	1.8	1.8	2.4	2.3	2.0	1.8	1.9	1.8	5	1.8	2.4	1.9	2.4	2.4			
24	2.0	1.8	1.9	1.9	1.9	2.1	2.1	2.1	2.1	2.1	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.1	1.9	2.4	2.4			
25	2.1	5.6	6.1	2.0	3.2	2.4	2.6	2.2	2.1	2.1	2.4	1.9	2.3	1.9	2.2	2.0	2.5	2.5	1.9	2.6	5	2.1	2.1	1.8	6.1	2.5	2.4	2.4			
26	1.8	2.4	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.0	2.1	1.8	1.9	1.8	2.0	2.3	5	2.4	3.1	2.4	1.8	3.1	2.0	2.4	2.4			
27	2.1	2.6	3.0	5.0	7.0	6.5	2.0	1.9	2.5	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.0	2.4	2.4	2.4		
28	2.7	2.3	2.3	2.3	2.2	3.0	5	5	2.3	2.1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
29	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	
30	2.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
31	1.9	3.2	1.8	2.1	2.1	2.0	1.9	1.9	1.9	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	
HOURLY MAX	6.7	10.6	6.4	8.3	7.0	6.5	3.6	3.3	2.5	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
HOURLY AVG	2.5	2.8	2.5	2.5	2.6	2.5	2.2	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1

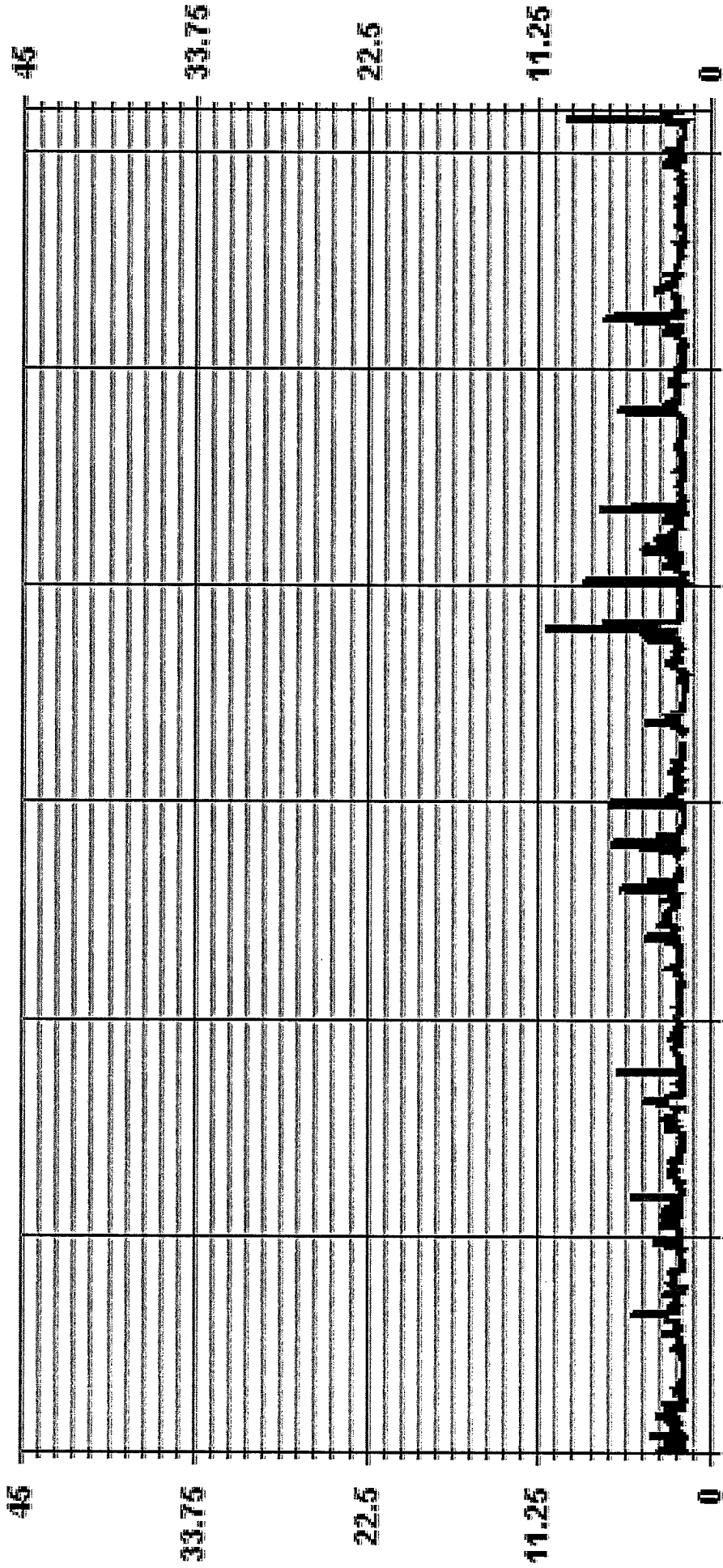
STATUS FLAG CODES

C	CALIBRATION
V	QUALITY ASSURANCE
M	RECOVERY
R	MAINTENANCE
X	DAILY ZERO/SPAN CHECK
O	OPERATOR ERROR
K	OUT FOR REPAIR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	689	ON DAY(S)	1	20
MAXIMUM INSTANTANEOUS VALUE:	10.6	PPM @ HOUR(S)	1	VARIOUS
OPERATIONAL TIME:	734	HRS		
MONTHLY CALIBRATION TIME:	6	HRS		
STANDARD DEVIATION:	0.89			

01 Hour Averages



— LICA31 THCMAX PPM

LIC31
 THC / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LIC31
 Parameter : THC
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	4.44	1.29	1.86	3.01	2.58	3.15	1.57	2.58	4.59	5.45	8.46	11.90	16.92	19.65	7.31	5.02	99.85
< 10.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.14
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.44	1.29	1.86	3.01	2.58	3.15	1.57	2.58	4.59	5.45	8.46	11.90	16.92	19.65	7.46	5.02	

Calm : .00 %

Total # Operational Hours : 697

Distribution By Samples





Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	31	9	13	21	18	22	11	18	32	38	59	83	118	137	51	35	696
< 10.0															1		1
< 50.0																	
>= 50.0																	
Totals	31	9	13	21	18	22	11	18	32	38	59	83	118	137	52	35	

Calm : .00 %

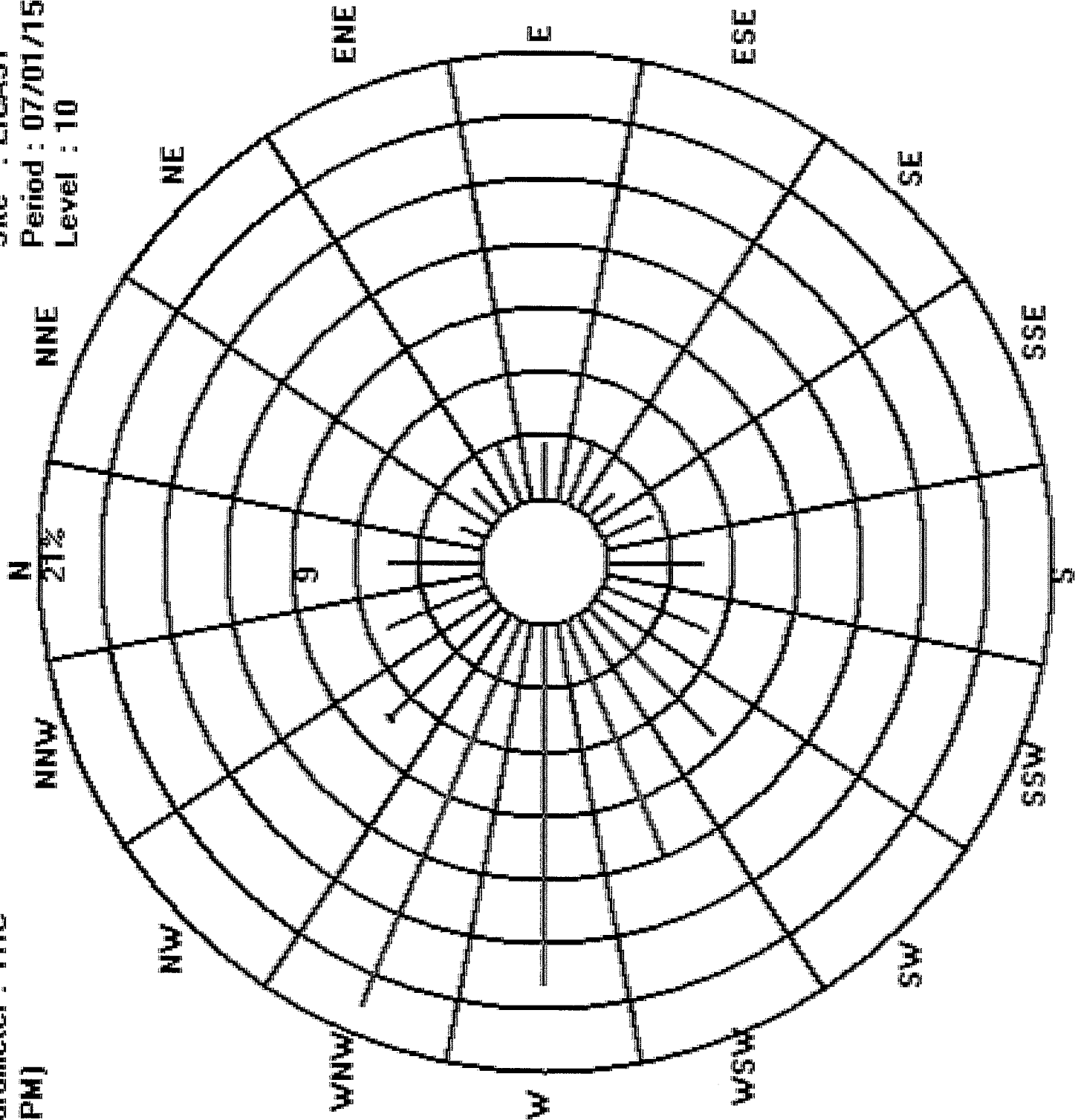
Total # Operational Hours : 697

Logger : 31 Parameter : THC

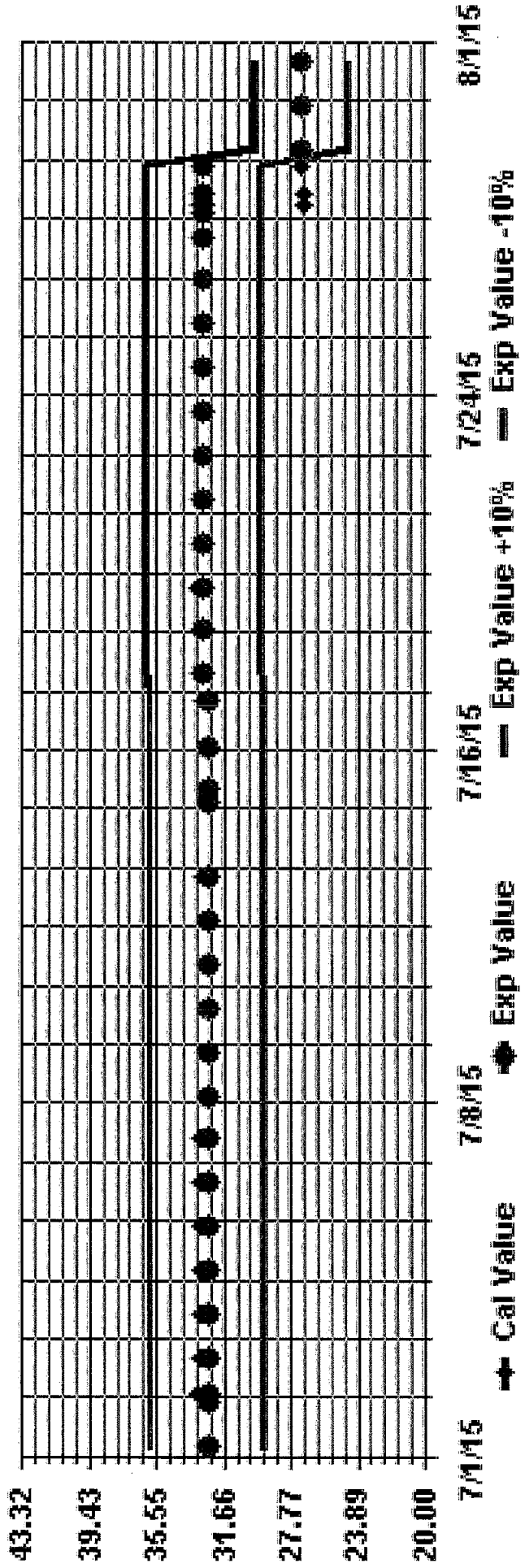
Class Limits (PPM)

-  >= 50.0
-  < 50.0
-  < 10.0
-  < 3.0

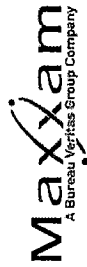
Site : LICA31
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA31 Parameter: THC Sequence: THC Phase: SPAN



OXIDES OF NITROGEN



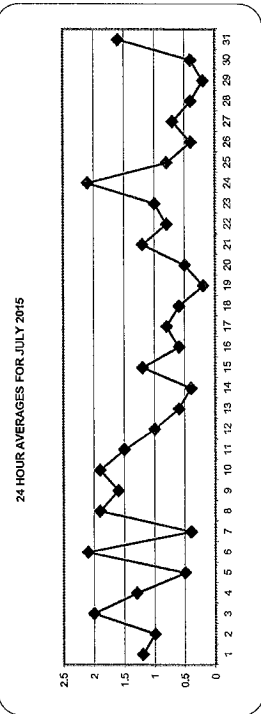
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

DAY	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	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 MAX.	24-HOUR AVG.	RDGS.		
1	1.7	1.8	1.9	1.7	2.6	3.0	\$	1.1	1.1	1.0	1.0	1.2	1.2	1.0	0.7	0.6	1.0	1.0	0.1	0.2	0.3	1.4	0.9	0.7	0.7	3.0	1.2	24	
2	0.5	0.3	0.5	0.5	0.5	\$	1.1	1.0	1.0	0.7	0.3	0.6	1.5	0.6	0.3	0.4	0.6	1.3	0.8	1.7	1.4	0.2	2.4	2.2	2.4	2.4	1.0	24	
3	2.3	2.6	3.3	4.4	\$	5.3	5.3	4.4	3.9	2.9	2.1	1.6	0.6	0.4	0.3	0.1	0.0	0.1	0.7	1.0	1.1	1.0	1.1	0.7	5.3	2.0	24		
4	0.9	1.1	1.0	\$	1.8	2.7	2.5	2.1	1.8	1.5	1.5	0.6	1.5	2.0	2.0	0.9	0.6	0.4	0.7	1.3	1.8	0.8	0.8	0.4	2.7	1.3	24		
5	0.1	0.1	\$	0.8	0.7	0.6	0.9	0.4	0.5	0.7	0.3	0.6	0.5	P	P	0.0	0.2	0.1	0.6	0.6	0.4	0.8	0.7	0.8	0.9	0.5	22		
6	0.5	\$	0.9	1.1	1.4	2.7	3.5	2.1	0.9	2.6	1.1	1.3	1.8	5.3	2.8	2.3	1.7	1.5	1.8	3.0	2.2	2.7	1.1	5.3	2.1	24			
7	\$	0.8	0.7	0.9	0.4	0.5	0.3	0.4	0.2	0.6	0.4	0.4	0.4	0.4	0.2	0.4	0.3	0.3	0.3	0.5	0.4	0.6	\$	0.9	0.4	24			
8	1.6	1.5	1.4	1.4	1.2	1.8	2.7	3.3	3.3	3.3	2.9	1.3	1.3	1.3	1.2	1.3	1.6	1.4	1.1	1.3	1.8	1.7	\$	2.7	3.3	1.9	24		
9	2.5	1.8	1.3	1.2	1.0	1.2	1.4	1.2	1.5	1.7	1.9	1.7	1.7	1.4	1.1	1.3	2.5	2.2	1.9	2.4	2.9	\$	0.4	0.1	2.9	1.6	24		
10	0.7	0.2	0.6	0.7	1.2	2.0	3.1	3.9	4.0	4.1	2.3	2.0	1.6	1.6	1.8	1.7	1.0	1.1	1.7	2.2	\$	2.1	2.1	2.3	4.1	1.9	24		
11	2.1	2.1	2.5	1.7	1.3	2.1	1.7	2.3	1.8	1.8	1.6	1.6	1.6	1.5	1.1	1.3	0.6	0.8	0.7	\$	1.4	1.1	1.1	1.0	2.5	1.5	24		
12	1.3	2.1	2.0	1.8	1.8	2.2	1.8	1.7	1.2	0.8	0.5	0.2	0.3	0.3	0.4	0.2	0.7	0.8	\$	0.9	0.7	0.7	0.6	0.7	2.2	1.0	24		
13	0.7	0.6	0.5	0.7	0.7	0.8	0.8	1.1	1.0	0.9	0.7	0.5	0.6	0.3	0.4	0.6	0.4	\$	0.2	0.2	0.7	0.5	0.7	0.5	1.1	0.6	24		
14	0.6	0.5	0.5	0.3	0.2	0.3	0.4	0.1	0.2	0.5	0.1	0.0	0.2	0.0	P	P	P	P	P	P	0.0	0.4	0.6	1.1	1.0	1.1	0.4	20	
15	0.6	1.2	0.8	1.4	1.5	4.1	2.4	1.5	0.6	\$	1.9	2.9	0.0	0.1	0.3	\$	0.4	0.4	0.5	0.6	1.2	1.1	1.6	1.6	4.1	1.2	24		
16	1.7	1.8	1.6	0.6	0.4	0.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	\$	0.6	0.9	0.4	0.7	0.8	0.6	0.5	0.4	0.7	1.8	0.6	24		
17	0.7	0.9	0.8	0.7	0.6	1.0	0.8	1.1	1.1	1.2	1.3	1.1	0.7	0.6	0.5	0.9	0.7	0.8	0.8	0.4	0.6	0.6	0.6	0.7	0.8	1.3	0.8	24	
18	0.6	0.4	0.7	0.4	\$	0.8	0.7	1.0	0.7	0.9	0.7	0.6	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.8	0.5	0.8	1.0	0.3	1.0	0.6	24		
19	0.3	0.5	0.0	\$	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.4	0.3	0.3	0.3	0.1	0.5	0.2	24		
20	0.1	0.5	\$	0.5	0.6	0.7	0.5	0.4	0.4	0.7	C	C	C	C	C	C	C	C	C	C	0.4	0.6	0.7	0.4	0.2	0.8	0.8	0.5	24
21	1.1	\$	1.6	1.6	1.8	2.2	3.0	2.3	1.8	1.0	0.9	0.7	0.8	0.6	0.6	0.7	0.6	0.4	0.8	1.5	1.1	0.9	0.9	1.1	3.0	1.2	24		
22	\$	0.6	0.4	0.4	0.5	1.0	0.6	1.0	0.6	0.3	0.0	0.0	0.0	0.0	0.2	1.9	4.5	2.0	0.9	0.8	0.6	0.3	1.0	\$	4.5	0.8	24		
23	1.6	1.2	1.4	1.5	1.4	1.8	1.8	1.0	0.6	0.3	0.5	0.4	0.0	0.1	0.4	0.8	0.8	2.3	1.3	1.2	1.3	\$	1.5	2.3	1.0	24			
24	1.8	1.9	2.0	2.3	2.2	2.4	3.0	3.3	6.7	6.6	4.4	2.0	0.9	0.9	1.1	0.6	0.5	0.4	0.4	0.6	1.0	\$	1.8	1.8	6.7	2.1	24		
25	3.0	3.4	2.2	1.4	1.1	0.8	0.6	0.7	0.7	0.6	0.1	0.2	0.0	0.1	0.2	0.1	0.1	0.1	0.9	0.7	\$	0.6	0.3	0.5	3.4	0.8	24		
26	0.7	0.5	0.5	0.2	0.5	0.6	0.6	0.5	0.5	0.5	0.1	0.2	0.4	0.2	0.4	0.3	0.4	0.1	0.4	\$	0.6	0.7	0.4	0.5	0.7	0.4	24		
27	1.0	1.2	1.2	1.2	1.1	1.4	1.5	1.4	1.1	0.5	0.3	0.4	0.2	0.0	0.0	0.0	0.1	0.3	\$	0.8	0.8	0.6	0.6	0.4	1.5	0.7	24		
28	0.4	0.8	0.9	0.8	0.4	0.6	0.9	0.8	0.1	0.5	0.4	0.3	0.1	0.0	0.1	0.0	0.0	\$	0.0	0.4	0.3	0.2	0.2	0.2	0.9	0.4	24		
29	0.4	0.5	0.2	0.2	0.1	0.2	0.5	0.3	0.5	0.4	0.4	0.2	0.3	0.1	0.1	\$	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	24		
30	0.0	0.5	0.5	0.7	0.6	0.7	0.4	0.1	0.8	0.0	0.1	0.0	0.0	0.0	0.0	\$	0.0	0.0	0.0	0.0	0.2	0.7	0.0	1.2	1.8	0.4	24		
31	1.1	1.0	0.1	0.7	0.9	2.3	3.0	5.6	3.8	2.5	0.7	0.6	0.2	\$	1.1	1.3	0.8	3.3	2.5	1.6	1.3	1.4	1.1	5.6	1.6	24			
HOURLY MAX	3.0	3.4	3.3	4.4	2.6	5.3	5.3	5.6	6.7	6.6	4.4	2.9	1.7	2.0	5.3	2.8	4.5	2.2	3.3	2.4	3.0	2.2	2.7	2.7	4.5	0.9	0.9		
HOURLY AVG	1.1	1.1	1.1	1.1	1.0	1.6	1.5	1.5	1.4	1.3	1.0	0.8	0.6	0.5	0.8	0.7	0.8	0.7	0.8	1.0	1.0	1.0	0.9	0.9	1.0	1.2	1.6		

STATUS FLAG CODES

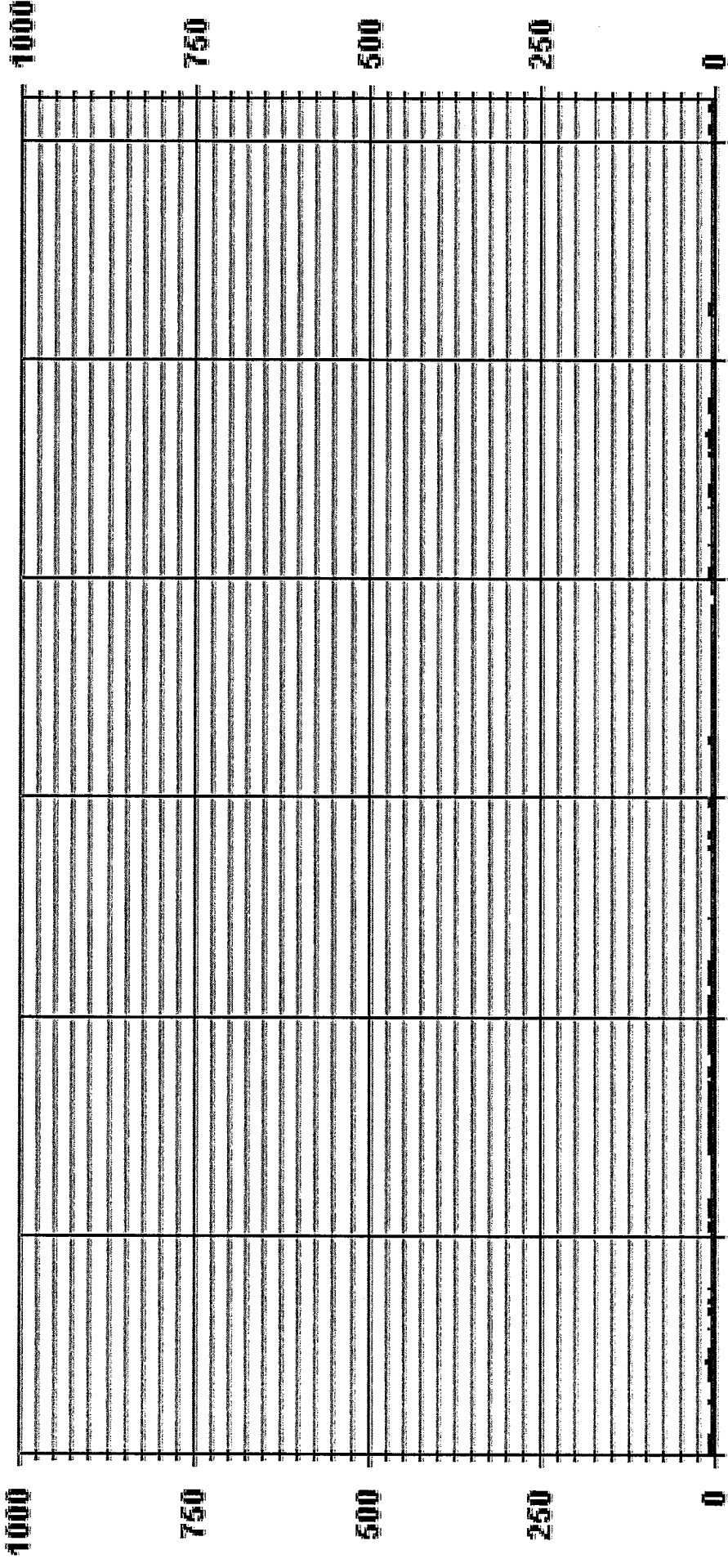
C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUTFOR REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

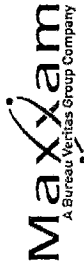
NUMBER OF NON-ZERO READINGS:	652	PPB @ HOUR(S)	8	ON DAY(S)	24
MAXIMUM 1-HR AVERAGE:	6.7	PPB	8	ON DAY(S)	6, 24
MAXIMUM 24-HR AVERAGE:	2.1	PPB	VARIOUS		
HRS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	738	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:	99.2	%
STANDARD DEVIATION:	0.95	MONTHLY AVERAGE:		1.0	PPB

01 Hour Averages



07/01/15 00:00:07/06/15 00:00:07/11/15 00:00:07/16/15 00:00:07/21/15 00:00:07/26/15 00:00:07/31/15 00:00:00

— LICA31 NOX_ PPB



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

DAY	HOUR START																								DAILY MAX.	24-HOUR AVG.	RDGS.	
	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				0:00
1	2.7	2.5	2.7	2.5	3.8	3.8	1.8	2.0	2.5	1.6	2.9	5.0	2.2	1.4	2.1	2.1	3.9	1.1	1.0	1.2	5.6	2.3	1.6	1.2	5.6	2.5	24	
2	1.8	0.9	1.0	1.3	1.0	1.0	2.5	3.0	2.1	14.8	1.4	2.3	52.3	12.7	1.1	1.6	2.5	2.8	4.6	2.7	2.5	3.1	3.0	2.9	52.3	5.4	24	
3	2.9	3.4	4.3	5.6	7.3	6.2	5.3	5.1	3.6	3.5	2.5	1.4	1.7	2.0	1.5	1.4	0.9	1.7	4.5	3.1	3.0	2.1	1.5	7.3	3.2	24		
4	1.5	1.7	1.7	1.7	3.1	3.4	3.5	2.8	3.0	2.5	28.3	1.3	3.3	2.6	2.9	2.6	1.5	1.1	1.3	2.4	7.9	1.5	1.8	1.1	28.3	3.6	24	
5	1.0	1.1	1.1	1.1	1.5	1.3	1.5	1.2	1.4	1.6	1.0	1.3	P	P	P	0.8	1.0	0.7	2.7	2.9	2.6	3.0	1.6	3.0	1.6	21		
6	1.3	1.5	1.5	1.9	3.0	5.2	8.9	25.8	3.4	1.7	40.0	2.2	2.5	2.6	45.9	25.3	3.2	2.7	2.9	3.8	6.7	3.6	31.5	1.9	45.9	9.9	24	
7	1.5	1.4	1.5	1.5	1.1	1.3	1.2	1.0	1.5	1.1	1.8	1.0	1.0	1.2	1.3	1.3	1.1	1.1	1.0	1.3	1.0	1.2	1.0	1.2	1.8	1.2	24	
8	2.2	2.3	2.0	1.9	1.8	2.6	3.5	4.0	3.9	3.6	3.0	2.1	1.9	2.0	2.1	3.3	2.4	1.9	1.9	2.5	2.2	2.2	2.2	2.2	4.0	2.6	24	
9	3.6	2.6	1.9	1.7	1.9	2.2	2.2	2.0	2.2	2.2	2.5	2.4	2.5	2.3	1.7	3.1	4.2	2.9	3.2	5.0	5.2	2.0	2.0	0.7	5.2	2.6	24	
10	1.5	1.1	1.4	1.3	1.9	3.0	4.0	5.0	5.1	5.5	3.0	2.9	2.4	2.6	2.6	2.7	1.7	1.8	2.5	2.9	2.7	2.7	2.7	2.9	5.5	2.7	24	
11	2.2	2.8	2.8	2.4	2.4	3.2	2.7	2.5	1.9	1.4	1.1	1.0	0.9	0.8	1.2	0.9	1.7	1.6	1.5	1.9	1.5	1.4	1.3	1.4	3.2	1.8	24	
12	1.3	1.3	1.3	1.3	1.4	1.5	1.7	1.5	1.7	1.9	1.1	1.2	0.9	1.2	2.8	1.1	1.1	1.0	3.1	1.2	1.4	1.2	1.4	1.2	3.1	1.5	24	
13	1.4	1.3	1.3	1.1	1.0	2.2	1.1	0.8	1.0	17.1	1.5	0.7	1.0	P	P	P	0.8	1.4	1.1	2.5	1.9	1.8	17.1	2.2	1.9	24		
14	1.3	2.0	1.7	2.0	3.0	9.4	5.2	3.8	S	5.4	5.5	1.0	0.7	3.5	S	1.1	1.1	1.4	1.3	4.5	1.8	2.3	2.3	9.4	2.9	24		
15	2.3	2.7	2.4	1.6	1.0	R	1.0	0.8	0.5	0.5	0.6	1.0	0.6	0.5	S	2.0	2.3	1.5	1.5	1.2	1.3	1.2	1.0	1.5	2.7	1.3	23	
16	1.3	1.5	1.5	1.2	1.3	1.7	1.5	1.7	1.9	2.1	2.0	1.9	1.3	1.3	1.3	1.1	2.6	1.3	1.3	2.8	1.3	1.5	1.3	1.5	2.8	1.6	24	
17	1.4	1.1	1.4	1.0	S	1.5	1.5	2.0	1.8	2.1	1.5	1.3	1.3	1.7	1.5	1.1	0.8	1.1	2.1	1.1	1.4	1.6	1.0	0.8	2.1	1.4	24	
18	1.0	1.1	0.7	S	1.4	1.1	0.8	0.9	0.7	1.0	0.7	0.9	0.9	1.0	1.0	0.8	0.5	1.1	1.3	1.0	1.0	1.0	0.8	0.8	1.4	0.9	24	
19	0.7	1.0	S	1.3	1.4	2.0	1.8	1.0	1.3	1.3	C	C	C	C	C	C	1.1	1.2	1.5	1.1	1.2	1.5	1.1	0.9	1.6	2.0	1.3	24
20	1.8	S	2.5	2.3	2.6	3.0	6.0	3.0	2.6	1.9	1.6	1.3	2.0	1.4	1.1	2.1	1.4	1.3	1.7	3.6	3.0	1.7	2.0	2.0	6.0	2.3	24	
21	1.1	1.0	1.0	1.1	4.3	1.6	2.1	1.8	1.3	0.5	0.9	1.2	1.8	0.7	4.6	5.9	3.4	2.9	1.8	1.7	2.0	1.8	1.8	2.0	5.9	2.0	24	
22	2.5	2.0	2.2	2.1	2.3	2.5	2.5	1.9	0.9	1.2	1.4	0.9	1.1	1.4	1.9	3.3	2.0	57.7	2.8	1.9	1.9	1.9	2.1	57.7	4.4	24		
23	2.4	2.9	2.6	2.9	3.3	3.4	5.5	4.4	8.4	7.9	5.8	3.6	1.7	2.2	2.2	1.6	1.4	0.9	0.8	1.3	1.6	1.6	1.6	2.6	2.8	8.4	3.1	24
24	3.7	4.3	3.0	2.4	1.9	1.5	1.2	1.4	1.4	2.0	0.7	0.9	1.3	0.7	1.5	1.2	1.1	0.7	2.6	3.4	1.8	1.2	1.3	4.3	1.8	24		
25	1.3	1.0	1.0	0.7	1.5	1.4	1.2	1.2	1.4	1.4	0.9	1.2	1.7	1.8	0.9	1.8	0.8	1.5	1.3	2.3	1.0	1.7	2.3	1.3	24			
26	1.7	2.0	1.9	2.2	2.1	4.0	2.8	3.4	2.9	1.4	0.9	2.0	2.0	0.9	1.2	0.6	1.5	1.1	3.3	2.4	1.3	1.1	0.9	4.0	1.9	24		
27	1.1	1.7	1.8	1.4	1.0	1.3	1.6	1.5	0.9	1.6	1.3	1.5	1.5	0.6	0.7	0.8	0.5	0.8	1.8	1.0	1.6	0.7	0.8	1.8	1.2	24		
28	1.0	1.1	0.8	0.7	0.8	0.8	1.6	1.1	2.2	1.0	2.7	1.4	8.0	1.0	0.6	0.9	1.5	1.3	0.8	0.4	0.4	0.5	0.5	8.0	1.4	24		
29	0.6	1.2	1.0	1.1	1.4	1.4	1.7	1.0	31.2	0.8	0.8	0.9	1.2	1.8	0.5	1.4	0.5	1.2	37.4	6.8	0.7	2.4	3.0	37.4	4.3	24		
30	2.0	2.1	1.1	1.6	1.6	6.2	5.5	7.2	5.1	6.1	4.2	1.6	1.7	1.6	1.6	2.5	5.5	2.0	9.0	5.2	4.4	3.1	3.9	1.7	9.0	3.7	24	
31	3.7	4.3	4.3	5.6	3.8	9.4	8.9	25.8	31.2	17.1	40.0	5.5	52.3	12.7	45.9	25.3	5.9	3.4	57.7	37.4	7.9	3.6	31.5	3.3	3.3	1.7	1.7	
HOURLY MAX	1.8	1.9	1.8	1.8	1.8	3.0	2.8	3.2	3.4	3.2	4.1	1.8	3.6	1.9	3.2	2.7	2.1	1.5	4.0	4.7	3.5	2.8	1.9	2.7	1.7	1.7	1.7	
HOURLY AVG																												

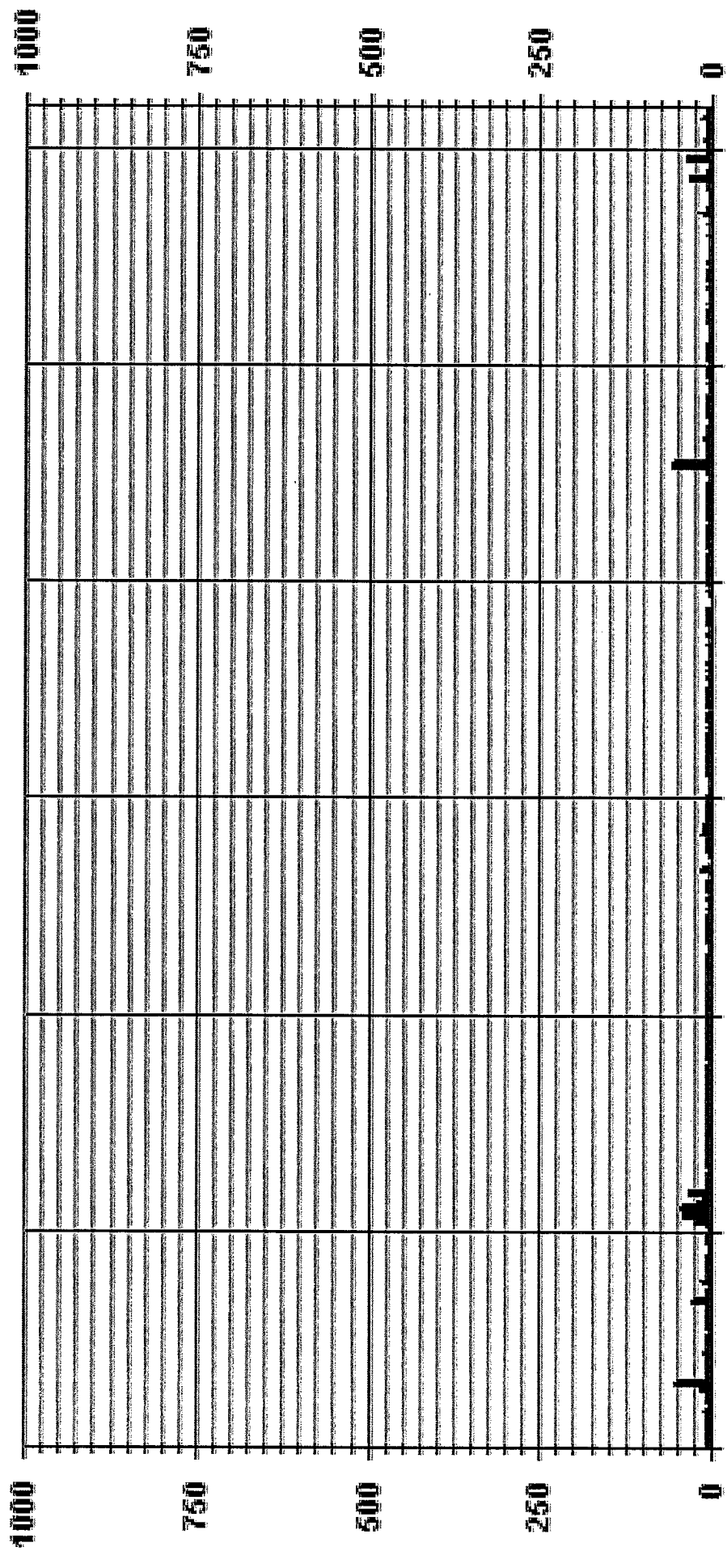
STATUS FLAG CODES

C	CALIBRATION	G	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINING (FUNCTION)
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	693
MAXIMUM INSTANTANEOUS VALUE:	57.7 PPB @ HOUR(S) 18 ON DAY(S) 23
12S CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	8 HRS
OPERATIONAL TIME:	734 HRS
STANDARD DEVIATION:	4.69
VAR-VARIOUS	VAR-VARIOUS

01 Hour Averages



— LICA31 NOXMAX PPB

07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

LICA31
 NOX_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : NOX_
 Units : PFB

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	4.72	1.43	1.86	3.00	2.57	2.43	1.14	2.57	4.58	5.44	8.45	12.03	17.04	19.91	7.44	5.30	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.72	1.43	1.86	3.00	2.57	2.43	1.14	2.57	4.58	5.44	8.45	12.03	17.04	19.91	7.44	5.30	

Calm : .00 %

Total # Operational Hours : 698

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	33	10	13	21	18	17	8	18	32	38	59	84	119	139	52	37	698
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	33	10	13	21	18	17	8	18	32	38	59	84	119	139	52	37	

Calm : .00 %

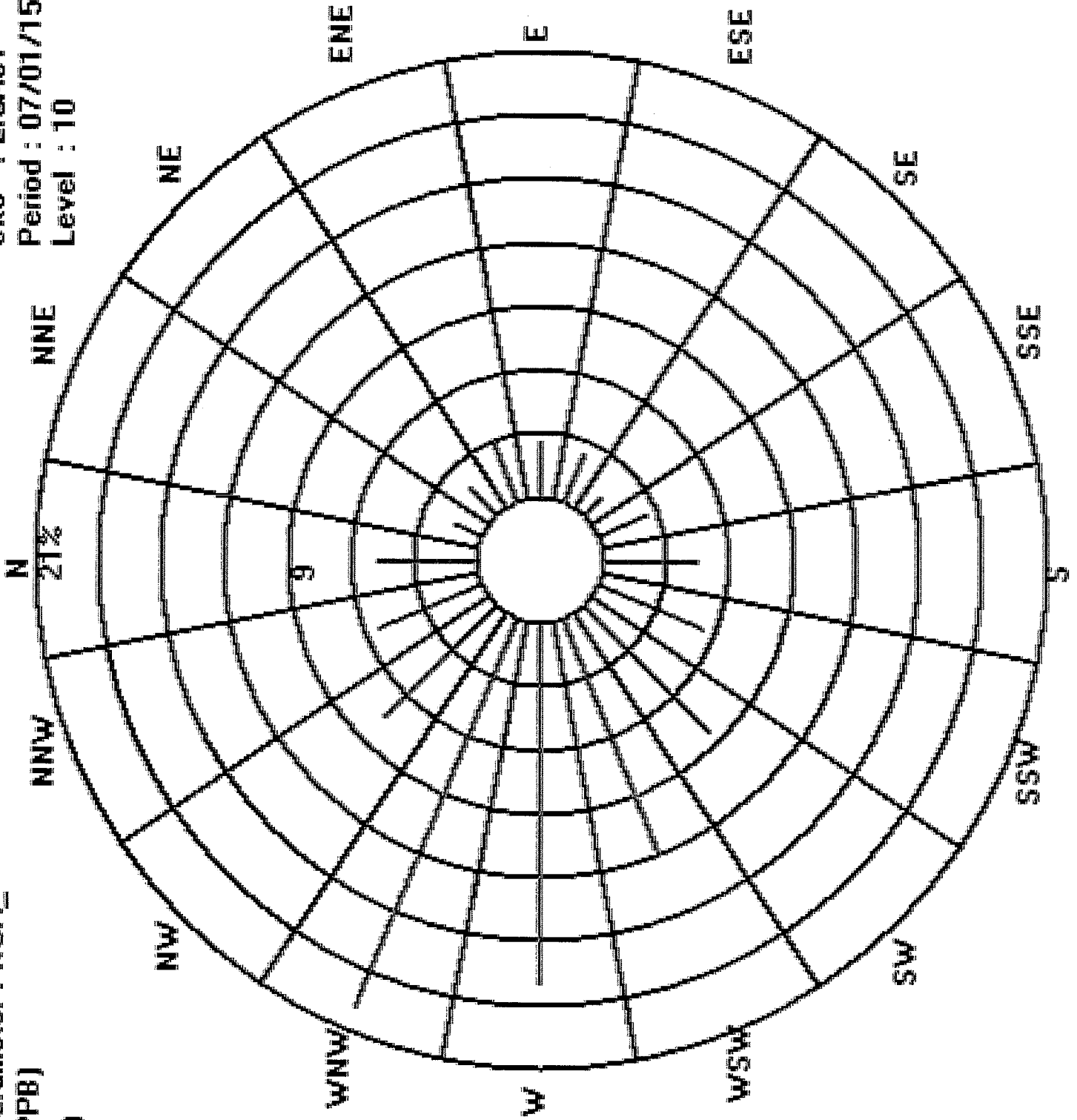
Total # Operational Hours : 698

Logger : 31 Parameter : NOX_

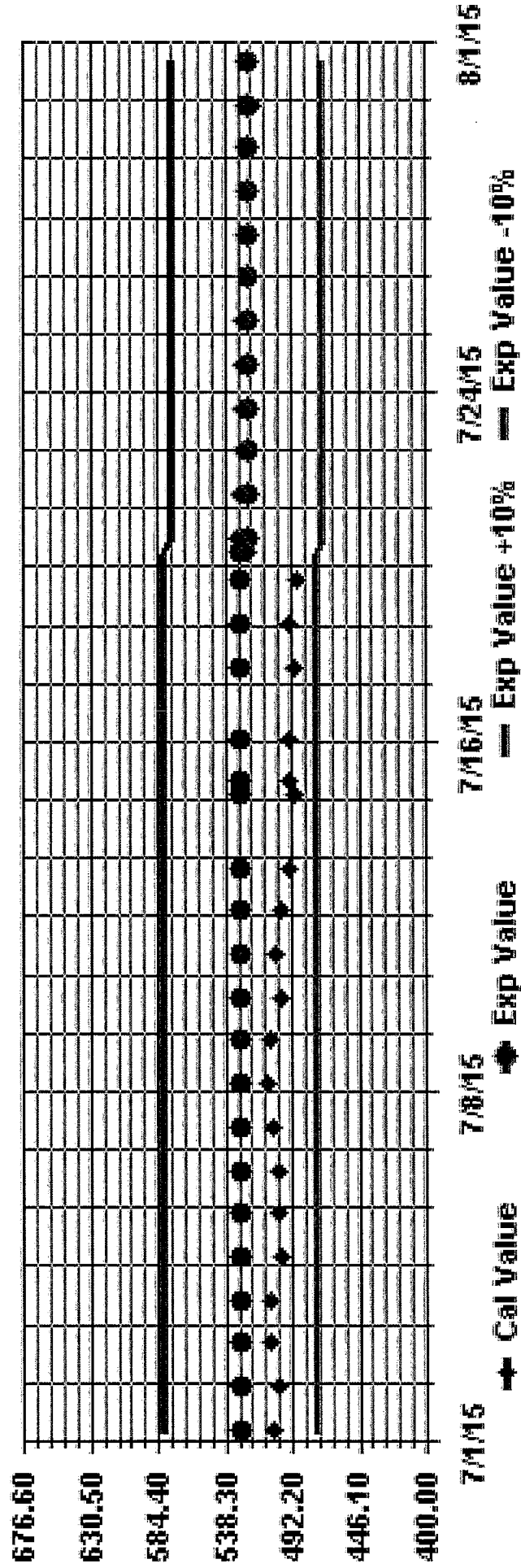
Class Limits (PPB)

-  \geq 210.0
-  $<$ 210.0
-  $<$ 110.0
-  $<$ 50.0

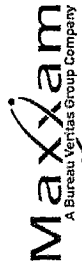
Site : LICA31
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA31 Parameter: NOX_ Sequence: NO2 Phase: SPAN



NITRIC OXIDES

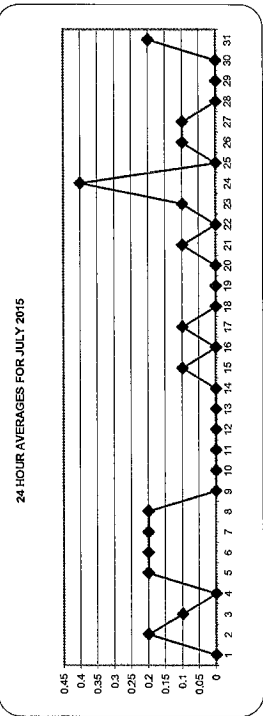


NITRIC OXIDE (NO) hourly averages in ppb

DAY	MST																								DAILY MAX	DAILY AVG	24-HOUR AVG	RDGS	
	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					
1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	24	
2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
3	0.1	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
4	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
6	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	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	0.3	0.1	0.3	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24
8	0.2	0.2	0.2	0.2	0.0	0.1	0.3	0.6	0.5	0.3	0.3	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
9	0.1	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	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
10	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
12	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
13	0.0	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	0.0	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	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
15	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	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
16	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	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	0.1	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	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
18	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	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	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	24
21	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	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	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
24	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	24
26	0.2	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	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	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
28	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	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	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
31	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	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	0.2	0.3	0.2	0.3	0.1	1.1	1.1	1.3	2.3	2.7	1.2	0.4	0.7	0.2	1.2	0.4	0.4	0.2	0.7	0.5	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

STATUS FLAG CODES

C	QUALITY ASSURANCE
Q	RECOVERY
Y	MAINTENANCE
R	DAILY ZERO/SPAN CHECK
X	MACHINE MALFUNCTION
S	POWER FAILURE
O	OPERATOR ERROR
P	OUT FOR REPAIR
G	COLLECTION ERROR



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	184
MAXIMUM 1-HR AVERAGE:	2.7 PPB
MAXIMUM 24-HR AVERAGE:	0.4 PPB
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	0.21
OPERATIONAL TIME:	738 HRS
AMD OPERATION UPTIME:	999.2 %
MONTHLY AVERAGE:	0.1 PPB
ON DAY(S)	9
ON DAY(S) VAR-VARIOUS	24



NITRIC OXIDE MAX instantaneous maximum in ppb

DAY	MST																								DAILY MAX.	24-HOUR AVG.	RDGS.		
	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				24:00	
1	0.5	0.5	0.6	0.8	0.8	0.5	0.7	\$	1.4	1.7	1.1	1.4	1.3	29.1	4.3	0.6	0.8	1.1	1.1	0.8	0.8	0.2	0.2	0.4	0.4	1.3	0.5	24	
2	0.6	-0.3	0.1	0.2	0.2	0.2	\$	1.5	1.5	1.4	0.9	0.8	0.7	0.3	0.8	1.4	0.9	0.4	0.4	0.4	0.4	1.1	0.5	0.7	0.6	0.3	1.5	24	
3	0.6	0.6	0.5	0.5	\$	0.3	0.2	0.1	0.1	0.3	16.9	0.0	0.7	0.4	0.3	0.4	0.2	0.1	0.0	0.1	2.7	0.0	0.0	0.2	16.9	1.1	24		
4	0.3	0.4	0.6	\$	0.8	0.6	0.5	0.7	0.9	0.8	0.9	0.7	0.8	P	P	P	0.7	1.0	0.9	1.5	1.4	1.1	1.1	0.8	1.5	0.8	21		
5	0.0	0.0	\$	0.8	0.3	0.4	1.2	4.7	17.5	1.0	0.6	24.0	0.5	0.2	0.6	18.3	18.7	0.6	0.8	0.6	1.1	1.0	0.4	13.1	0.6	24.0	4.7	24	
6	1.0	\$	0.6	0.3	0.4	1.2	0.7	0.5	0.6	1.1	1.0	1.0	0.8	0.5	0.4	0.4	0.8	1.0	0.8	0.6	0.5	0.5	0.5	\$	1.1	0.8	24		
7	\$	0.9	0.8	0.9	0.8	0.8	0.9	0.9	0.9	1.1	0.8	0.5	0.6	0.7	1.1	0.7	0.9	0.7	0.9	0.8	0.6	\$	1.1	0.8	24				
8	1.2	1.0	1.0	0.7	0.5	0.6	1.0	1.3	1.1	1.0	1.0	0.8	0.5	0.4	0.4	0.8	1.0	0.8	0.6	0.5	0.5	0.5	\$	0.8	1.3	0.8	24		
9	0.6	0.8	0.6	0.7	0.6	0.8	0.7	0.6	0.5	0.5	0.6	0.5	0.5	0.4	0.6	0.6	0.6	1.2	1.2	0.6	1.0	1.2	0.6	\$	0.4	0.1	1.2	0.7	24
10	0.3	0.3	0.3	0.1	0.3	0.2	0.5	0.9	0.6	0.5	0.3	0.2	0.5	0.3	0.2	0.3	0.2	0.4	0.5	0.2	0.1	\$	0.5	0.2	0.4	0.9	0.4	24	
11	R	0.2	0.2	0.3	0.2	0.5	0.4	0.6	0.8	0.5	0.3	0.2	0.4	0.3	0.3	0.3	0.3	0.3	0.6	0.6	\$	0.6	0.6	0.5	0.3	0.8	0.4	23	
12	0.5	0.4	0.6	0.2	0.3	0.5	0.6	0.7	0.7	0.7	0.3	0.3	0.3	0.7	0.5	0.7	0.5	0.7	0.6	\$	0.7	0.7	0.8	0.3	0.8	0.5	24		
13	0.3	0.1	0.3	0.5	0.5	0.5	0.3	0.5	0.5	0.6	0.6	0.9	0.4	0.6	0.4	0.6	1.4	0.6	\$	0.8	0.5	1.4	0.6	0.7	0.5	1.4	0.6	24	
14	0.0	0.2	0.3	0.1	0.5	1.1	0.6	0.3	0.5	0.5	9.7	0.5	0.3	0.7	P	P	P	P	P	P	P	0.5	0.8	0.5	0.9	0.9	9.7	1.0	19
15	0.6	0.8	0.4	0.6	0.6	0.6	0.6	3.9	1.5	\$	0.8	1.6	0.4	0.5	1.3	\$	0.5	0.5	0.5	0.2	0.7	0.4	0.2	0.2	3.9	0.8	24		
16	0.4	0.3	0.2	0.2	0.2	0.2	R	0.3	0.6	0.3	0.5	0.3	0.5	0.5	\$	1.1	1.4	1.0	0.8	0.8	0.7	0.4	0.6	1.4	0.5	2.3	24		
17	0.4	0.6	0.7	0.5	0.3	\$	0.9	0.6	0.5	0.8	0.6	0.4	0.3	0.5	0.7	2.0	0.6	0.7	1.1	0.5	0.5	0.4	0.4	2.0	0.6	24			
18	0.6	0.5	0.5	0.3	\$	0.6	0.8	0.8	0.6	0.6	0.5	0.3	0.2	0.9	0.4	0.4	0.2	0.4	1.1	0.2	0.2	0.2	0.2	1.1	1.1	0.4	24		
19	0.1	0.4	0.1	\$	0.9	0.6	0.5	0.8	0.6	0.4	0.3	0.5	0.7	0.5	0.7	0.6	0.7	0.4	0.4	0.7	0.6	0.5	0.7	0.5	0.9	0.5	24		
20	0.5	0.4	\$	0.5	0.3	0.6	0.6	0.3	0.5	0.4	C	C	C	C	C	C	C	C	C	C	0.3	0.4	0.2	0.2	0.6	0.4	24		
21	0.1	\$	0.9	0.9	0.7	0.7	0.7	2.8	1.1	0.9	0.5	0.6	0.7	0.9	0.3	0.6	0.9	0.4	0.8	0.5	0.7	0.5	0.5	0.7	0.9	2.8	0.8	24	
22	\$	0.4	0.0	0.2	0.3	1.6	0.7	0.7	0.6	0.2	0.0	0.1	0.3	0.4	0.1	0.8	1.0	0.3	0.6	1.1	0.4	0.3	0.0	\$	1.6	0.4	24		
23	0.5	0.4	0.7	0.5	0.5	1.0	2.0	1.5	1.3	0.6	1.0	0.7	0.6	0.8	1.0	0.8	1.2	0.5	41.4	1.0	0.3	0.5	\$	0.6	41.4	2.6	24		
24	0.6	0.4	0.3	0.2	0.4	1.3	3.2	1.7	3.6	3.9	2.2	0.9	0.5	0.7	0.7	0.4	0.4	0.4	0.4	0.4	0.5	0.3	0.4	\$	0.4	0.1	3.9	1.0	24
25	0.4	0.4	0.4	0.1	0.3	0.3	0.6	0.4	0.6	0.7	0.2	0.4	1.1	0.6	0.7	0.7	0.7	0.4	0.8	1.2	\$	0.8	0.8	1.3	0.6	24			
26	0.8	0.5	0.5	0.4	0.7	0.6	0.7	1.0	0.7	0.9	0.9	0.7	1.1	1.2	1.2	0.9	1.3	0.5	1.0	\$	0.8	0.8	0.5	0.4	1.3	0.8	24		
27	0.5	0.6	0.6	0.5	0.6	1.6	1.3	2.1	1.5	0.6	0.5	1.0	0.9	0.8	0.5	0.7	0.6	0.7	\$	1.1	0.7	0.5	0.2	0.2	2.1	0.8	24		
28	0.2	0.5	0.4	0.2	0.1	0.3	0.7	0.7	0.4	0.6	0.7	8.3	8.2	0.4	0.3	0.6	0.3	\$	0.6	0.9	0.6	0.6	0.3	0.4	8.3	1.1	24		
29	0.4	0.4	0.2	0.7	0.3	0.2	0.9	0.7	1.2	0.6	1.5	0.6	0.9	0.5	0.5	0.7	\$	0.8	0.6	0.4	0.4	0.3	0.5	0.3	1.5	0.6	24		
30	0.3	0.3	0.2	0.2	0.2	0.4	0.9	0.2	20.7	0.4	0.6	0.4	0.6	0.4	0.6	1.4	0.2	\$	0.7	0.7	1.0	16.9	1.5	0.2	0.5	20.7	2.1	24	
31	0.1	0.0	0.7	0.2	0.4	3.2	1.7	2.1	2.1	1.5	1.6	1.4	0.6	0.4	0.7	\$	1.2	2.0	0.9	1.3	1.5	1.4	0.7	1.2	0.7	3.2	1.1	24	
HOURLY MAX	1.2	1.0	1.0	0.9	0.9	3.9	4.7	17.5	20.7	14.3	24.0	8.3	29.1	4.3	18.3	18.7	2.0	1.1	41.4	16.9	2.7	1.3	13.1	0.9					
HOURLY AVG	0.4	0.4	0.5	0.4	0.4	0.4	0.9	1.1	1.4	1.5	2.0	0.9	1.9	0.7	1.3	1.4	0.8	0.6	2.1	1.2	0.8	0.5	0.9	0.5					

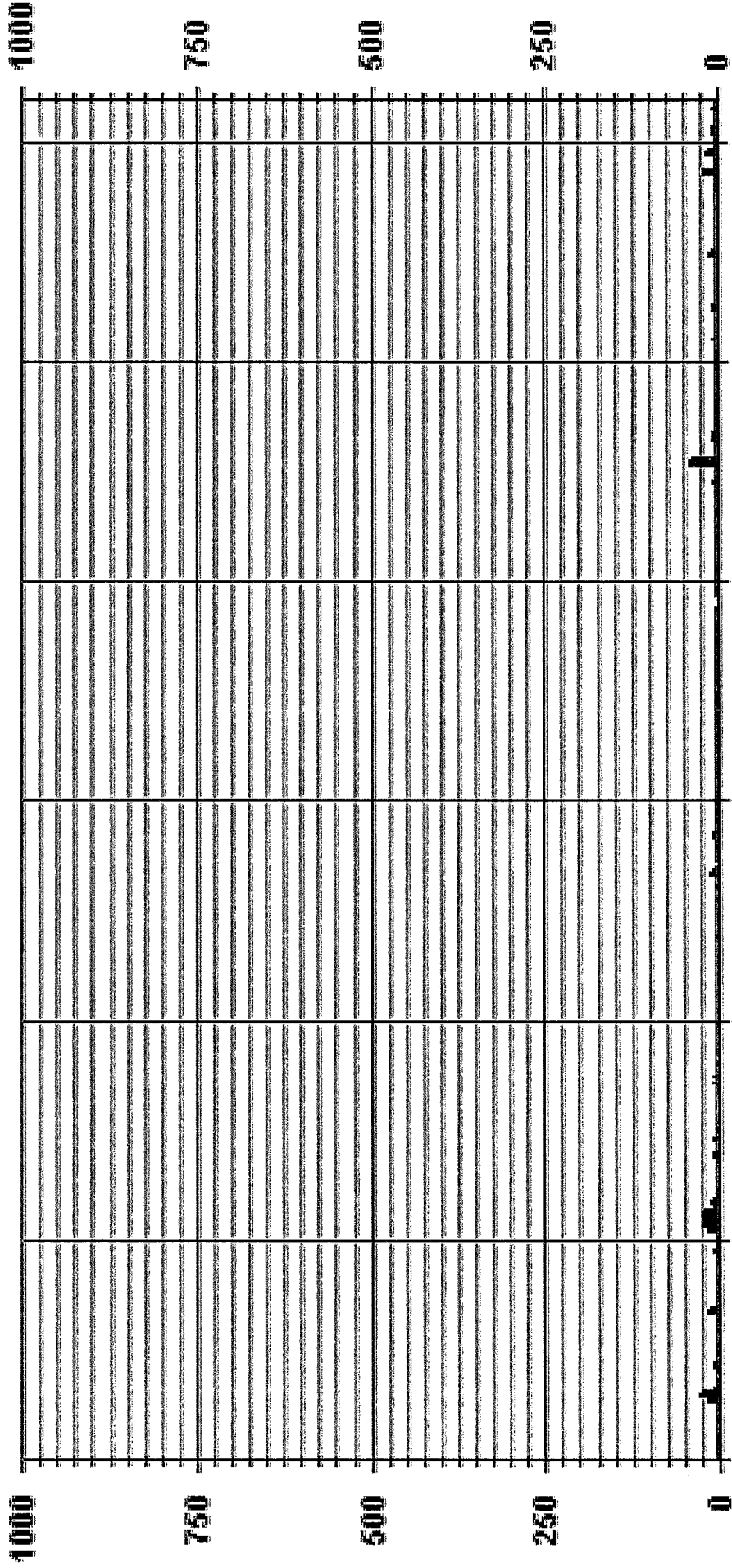
STATUS FLAG CODES

C	-CALIBRATION	O	-QUALITY ASSURANCE
Y	-MAINTENANCE	R	-RECOVERY
S	-DAILY ZERO/SPAN CHECK	X	-MACHINERY/VALVE/JUNCTION
P	-POWER FAILURE	O	-OPERATOR ERROR
G	-OUT FOR REPAIR	K	-COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	680
MAXIMUM INSTANTANEOUS VALUE:	41.4 PPB @ HOUR(S) 18 ON DAY(S) 23
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	2.81
OPERATIONAL TIME:	VAR-VARIOUS
	734 HRS

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA31 - - - - NOMAX PPB

LICA31
 NO_ / WDR Joint Frequency Distribution (Percent)
 July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : NO
 Units : PPS

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 50.0	4.72	1.43	1.86	3.00	2.57	2.43	1.14	2.57	4.58	5.44	8.45	12.03	17.04	19.91	7.44	5.30	100.00			
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
Totals	4.72	1.43	1.86	3.00	2.57	2.43	1.14	2.57	4.58	5.44	8.45	12.03	17.04	19.91	7.44	5.30				

Calm : .00 %

Total # Operational Hours : 698

Distribution By Samples

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 50.0	33	10	13	21	18	17	8	18	32	38	59	84	119	139	52	37	698			
< 110.0																				
< 210.0																				
>= 210.0																				
Totals	33	10	13	21	18	17	8	18	32	38	59	84	119	139	52	37				

Calm : .00 %

Total # Operational Hours : 698

Logger : 31 Parameter : NO_

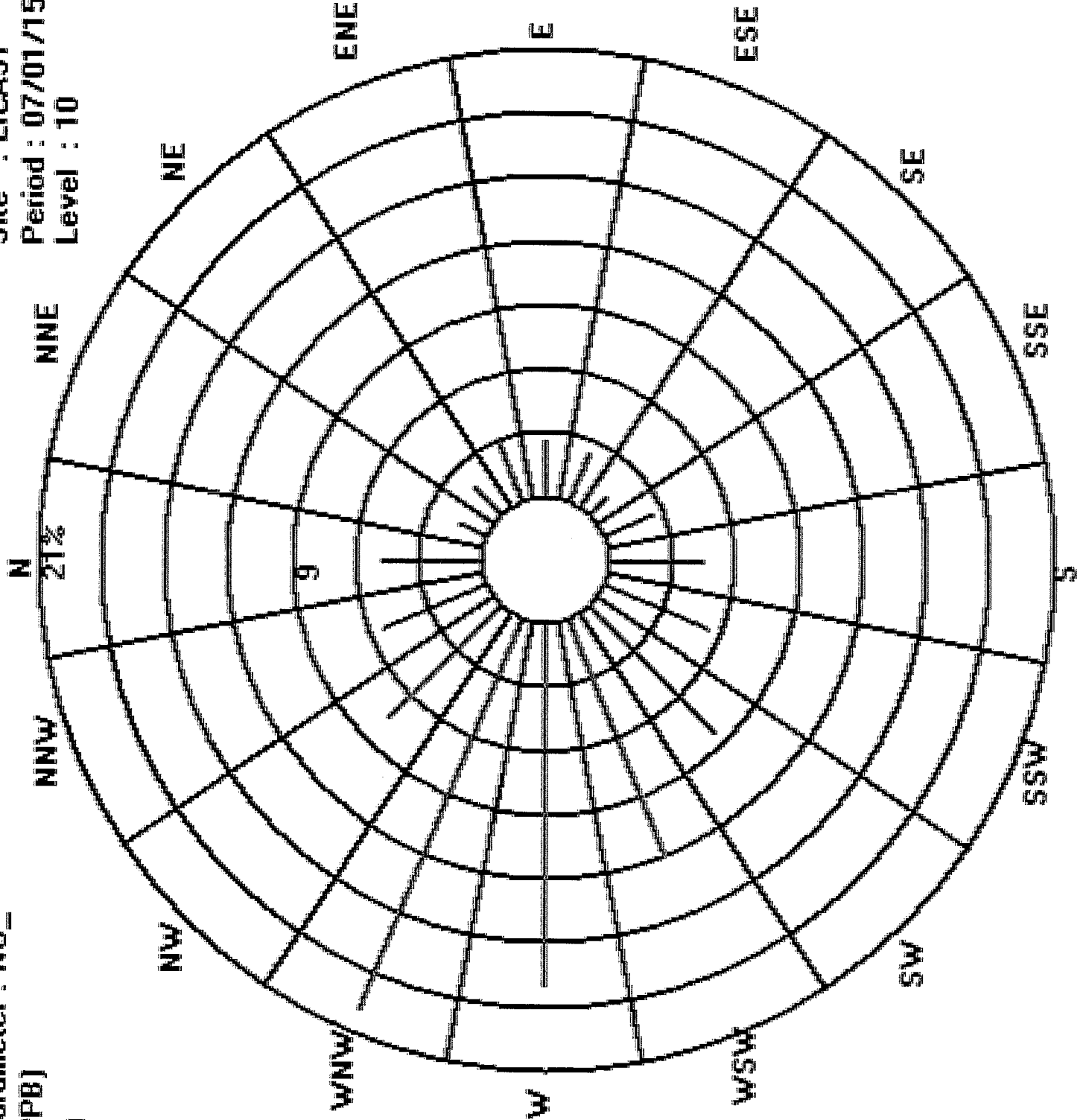
Site : LICA31

Class Limits (PPB)

Period : 07/01/15-07/31/15

Level : 10

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0



NITROGEN DIOXIDE



NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

DAY	DAILY																								24-HOUR AVG.	RDSS.		
	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				
1	1.7	1.8	1.8	1.7	2.6	3.0	S	1.1	1.1	1.4	1.0	1.2	1.2	1.0	0.7	0.6	1.0	0.1	0.2	0.3	1.4	0.9	0.7	0.3	3.0	1.2	24	
2	0.5	0.3	0.5	0.5	0.5	S	0.6	0.7	0.6	0.4	0.1	0.2	0.8	0.5	1.1	1.8	1.5	1.4	2.2	2.3	2.1	2.3	0.9	2.4	2.4	2.4	24	
3	2.2	2.6	3.3	4.4	S	4.6	4.5	3.7	3.5	2.8	2.0	1.5	0.6	0.4	0.3	0.1	0.0	0.1	0.7	1.4	0.7	1.0	1.1	0.7	4.6	1.8	24	
4	0.9	1.1	1.0	S	1.8	2.7	2.5	2.1	1.8	1.5	1.5	0.6	1.5	2.0	2.0	0.9	0.6	0.4	0.7	1.3	1.8	0.8	0.4	2.7	1.3	24		
5	0.1	0.3	S	0.5	0.6	0.6	0.7	0.3	0.3	0.4	0.1	P	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.7	0.6	0.8	0.3	2.2	2.2	24		
6	0.4	S	0.9	1.1	1.4	2.7	2.7	2.5	1.9	0.9	1.8	1.1	1.3	1.3	4.1	2.4	2.2	1.7	1.5	1.8	2.9	2.2	2.6	1.1	4.1	1.9	24	
7	S	0.5	0.6	0.6	0.3	0.3	0.1	0.3	0.1	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	S	0.3	24	
8	1.4	1.3	1.2	1.2	1.2	1.2	1.7	2.4	2.7	2.8	2.6	1.8	1.3	1.3	1.2	1.2	1.5	1.3	1.1	1.3	1.8	1.7	S	2.5	2.8	1.7	24	
9	2.4	1.7	1.3	1.1	1.0	1.2	1.3	1.2	1.5	1.7	1.9	1.7	1.7	1.4	1.1	1.2	2.4	2.1	1.8	2.3	2.9	S	0.4	0.1	2.9	1.5	24	
10	0.7	0.2	0.6	0.7	1.2	2.0	3.1	3.9	4.0	4.1	2.3	2.0	1.6	1.6	1.8	1.7	1.0	1.1	1.7	2.2	S	2.1	2.1	2.3	4.1	1.9	24	
11	2.1	2.1	2.5	1.7	1.3	2.1	1.7	2.2	1.8	1.8	1.6	1.6	1.5	1.1	1.3	0.7	0.6	0.8	0.7	S	1.3	1.1	1.1	1.0	2.5	1.5	24	
12	1.3	2.1	2.0	1.8	1.8	2.2	1.8	1.7	1.2	0.8	0.5	0.2	0.3	0.3	0.4	0.2	0.7	0.8	S	0.9	0.7	0.7	0.6	0.7	2.2	1.0	24	
13	0.7	0.6	0.5	0.7	0.7	0.8	0.8	1.1	1.0	0.9	0.7	0.5	0.6	0.3	0.4	0.6	0.4	S	0.2	0.2	0.2	0.7	0.5	0.7	0.5	1.1	0.6	24
14	0.6	1.1	0.8	1.4	1.5	3.0	2.0	1.3	0.4	S	1.7	2.7	0.0	0.1	0.3	S	0.4	0.4	0.5	0.6	1.2	1.1	1.6	1.6	3.0	1.1	24	
15	1.7	1.8	1.6	0.6	0.4	0.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	S	0.4	0.6	0.4	0.6	0.5	0.6	0.5	0.4	0.7	1.8	0.5	24	
16	0.9	0.7	0.7	0.7	0.6	1.0	0.8	1.1	1.1	1.0	1.2	1.0	0.7	0.5	0.4	0.6	0.6	0.7	0.7	0.7	0.4	0.6	0.6	0.7	0.8	1.2	0.8	24
17	0.6	0.4	0.7	0.4	S	0.8	0.7	1.0	0.7	0.9	0.7	0.6	0.4	0.5	0.4	0.4	0.4	0.5	0.8	0.5	0.8	1.0	0.3	0.3	1.0	0.6	24	
18	0.3	0.5	0.0	S	0.2	0.1	0.1	0.1	0.2	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.1	0.5	0.2	24	
19	0.1	0.5	S	0.5	0.6	0.7	0.5	0.4	0.4	0.7	C	C	C	C	C	C	C	C	C	C	C	C	0.3	0.3	0.1	0.5	0.2	24
20	0.1	0.5	S	0.5	0.6	0.7	0.5	0.4	0.4	0.7	C	C	C	C	C	C	C	C	C	C	C	C	0.3	0.3	0.1	0.5	0.2	24
21	1.1	S	1.6	1.5	1.7	2.0	2.4	2.0	1.5	1.0	0.9	0.7	0.8	0.6	0.6	0.6	0.4	0.8	1.4	1.1	0.9	0.8	1.0	2.4	1.1	24		
22	S	0.6	0.4	0.4	0.5	1.0	0.6	1.0	0.6	0.3	0.0	0.0	0.0	0.0	0.2	1.9	4.2	2.0	0.9	0.8	0.6	0.3	1.0	S	4.2	0.8	24	
23	1.6	1.2	1.4	1.5	1.4	1.5	1.1	0.7	0.4	0.3	0.4	0.3	0.4	0.0	0.1	0.4	0.7	0.8	0.8	1.6	1.3	1.2	1.3	S	1.5	1.6	0.9	24
24	1.8	1.9	2.0	2.3	2.2	2.0	1.9	2.5	4.4	3.9	3.2	1.8	0.9	0.9	1.1	0.6	0.5	0.4	0.4	0.6	1.0	S	1.8	1.8	4.4	1.7	24	
25	3.0	3.4	2.2	1.4	1.1	0.8	0.6	0.7	0.7	0.6	0.1	0.1	0.2	0.0	0.1	0.2	0.1	0.1	0.8	0.7	S	0.3	0.2	0.4	3.4	0.8	24	
26	0.5	0.5	0.5	0.2	0.5	0.5	0.5	0.3	0.4	0.3	0.1	0.1	0.2	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.5	0.7	0.3	24	
27	1.0	1.2	1.2	1.1	1.2	1.1	0.9	0.8	0.5	0.3	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.3	S	0.8	0.8	0.6	0.4	1.2	0.6	24	
28	0.4	0.8	0.9	0.8	0.4	0.6	0.9	0.6	0.1	0.5	0.4	0.3	0.1	0.0	0.1	0.0	0.0	S	0.0	0.4	0.4	0.3	0.2	0.2	0.9	0.4	24	
29	0.4	0.5	0.2	0.2	0.1	0.2	0.5	0.3	0.5	0.4	0.4	0.4	0.2	0.3	0.1	0.1	S	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	24	
30	0.0	0.5	0.5	0.7	0.6	0.7	0.4	0.1	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	1.7	0.7	0.0	1.2	1.8	0.4	24	
31	1.1	1.0	0.1	0.7	0.9	1.9	2.5	4.3	3.1	2.3	0.7	0.5	0.6	0.2	S	0.7	0.9	0.8	3.1	2.0	1.5	1.2	1.2	1.1	4.3	1.4	24	
HOURLY MAX	3.0	3.4	3.3	4.4	2.6	4.6	4.5	4.3	4.4	4.1	3.2	2.7	1.7	2.0	4.1	2.4	4.2	2.1	3.1	2.3	2.9	2.2	2.6	2.5	4.3	1.4	24	
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

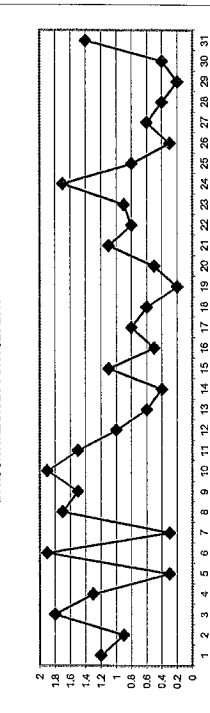
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 2.0 HR: 159 PPB

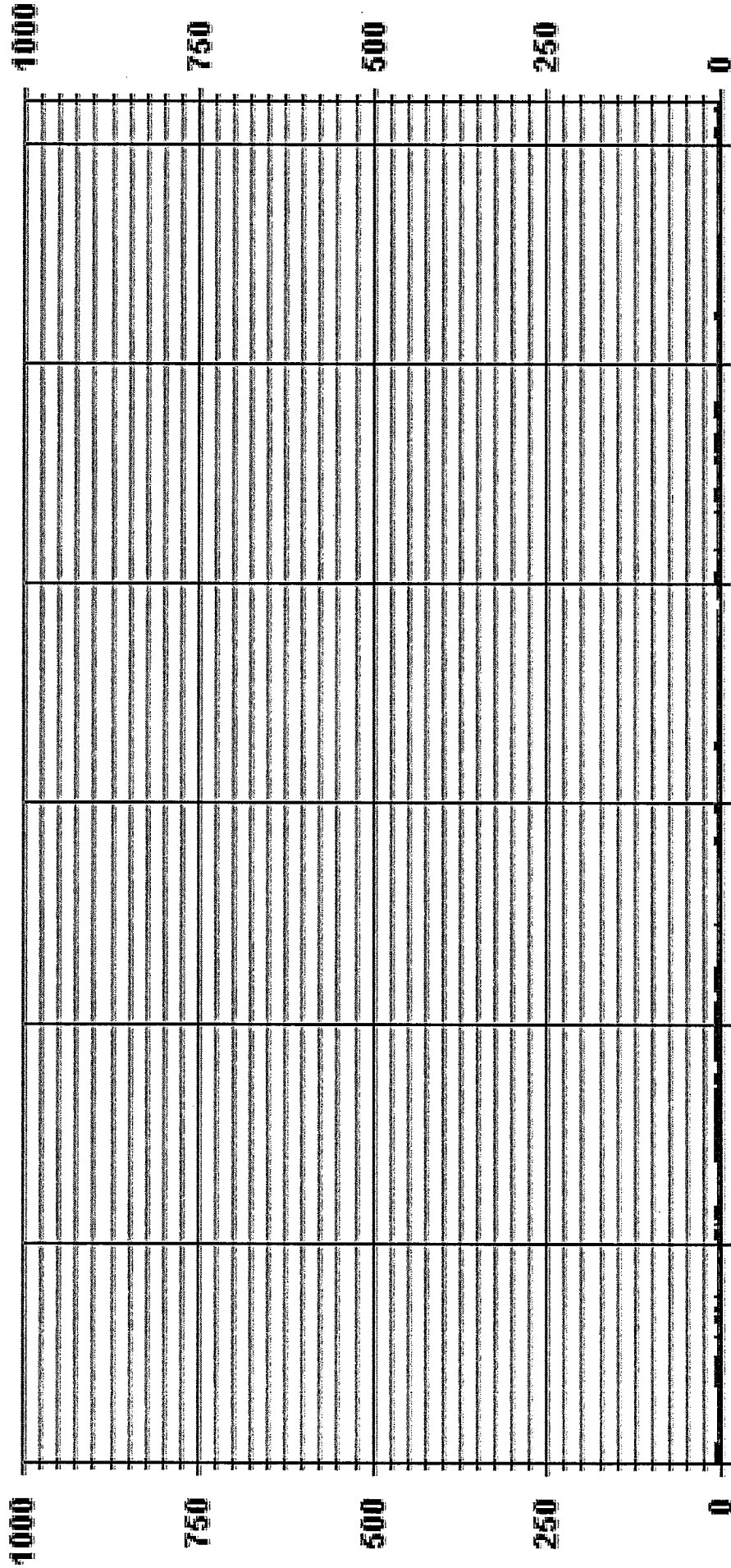
MONTHLY SUMMARY

NUMBER OF EXCEEDENCES	0
NUMBER OF NON-ZERO READINGS:	649
MAXIMUM 1-HR AVERAGE:	4.6
MAXIMUM 24-HR AVERAGE:	1.9
ISZ CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	0.85
PPB @ HOUR(S)	5
ON DAY(S)	3
VAR-VARIOUS	6,10
OPERATIONAL TIME:	788 HRS
AMD OPERATION UPTIME:	99.2 %
MONTHLY AVERAGE:	0.9
PPB	0.9

24 HOUR AVERAGES FOR JULY 2015

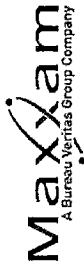


01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA31 NO2_ PPB



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

DAY	MST																								DAILY MAX	DAILY AVG.	24-HOUR RDS.	
	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				0:00
1	2.4	2.2	2.2	2.2	3.6	3.5	S	1.9	2.0	2.4	1.7	2.4	3.8	2.0	1.7	1.9	2.7	1.2	1.1	1.2	4.7	2.2	1.8	1.5	4.7	2.3	24	
2	1.4	1.2	1.4	1.3	1.3	1.3	S	1.4	1.4	1.3	0.9	0.7	0.9	25.5	8.6	0.7	1.7	1.9	3.8	2.1	2.1	2.8	2.9	2.5	25.5	3.0	24	
3	2.6	3.3	4.0	5.1	S	6.0	5.2	4.6	4.4	3.5	3.3	2.2	1.5	1.3	1.0	1.0	1.6	1.1	1.5	3.5	2.7	2.5	1.8	6.0	6.0	24		
4	1.6	1.5	1.6	S	3.0	3.8	3.6	3.0	3.1	2.5	13.2	1.9	2.7	3.0	2.9	2.0	1.6	1.2	1.6	2.4	5.3	1.9	1.9	1.4	13.2	2.9	24	
5	1.4	1.4	S	1.4	1.5	1.7	1.7	1.4	1.3	1.6	1.0	1.3	P	P	1.2	1.1	1.0	2.0	2.3	2.0	2.4	1.5	1.9	2.4	1.6	21		
6	1.5	S	1.6	1.8	2.7	4.1	4.5	10.6	2.6	1.6	28.8	1.8	2.3	2.4	27.7	18.0	3.0	2.4	2.4	3.3	6.1	3.5	19.1	1.8	28.8	6.7	24	
7	S	1.0	1.0	1.1	0.7	0.9	0.6	0.6	0.6	0.9	0.5	0.7	0.6	0.6	0.6	0.7	0.4	0.7	1.0	0.7	0.5	0.6	0.9	S	1.1	0.7	24	
8	1.8	1.9	1.7	1.6	1.8	2.6	3.2	2.9	3.1	3.0	2.6	2.1	1.8	1.6	1.8	2.5	1.8	1.8	1.8	1.9	2.4	2.3	S	3.1	3.2	2.3	24	
9	3.3	2.2	1.6	1.6	1.5	1.7	1.6	1.8	2.1	2.0	2.2	2.1	2.2	2.0	1.3	2.0	4.2	2.7	2.6	3.9	4.8	S	1.9	0.9	4.8	2.3	24	
10	1.7	1.6	1.5	1.8	2.1	2.9	3.6	4.4	4.8	5.3	2.9	2.6	2.3	2.7	2.6	2.7	1.9	2.0	2.7	3.2	S	2.6	3.1	3.2	5.3	2.8	24	
11	R	3.0	3.4	3.0	2.2	3.0	2.5	2.8	2.8	2.3	2.3	2.5	2.3	1.8	2.0	1.5	1.5	1.4	1.5	S	1.6	1.9	1.6	1.9	3.4	2.2	23	
12	2.0	2.9	2.5	2.5	2.4	2.9	2.3	2.0	1.7	1.6	1.0	0.8	1.0	1.0	1.0	0.8	1.4	1.4	S	1.6	1.5	1.4	1.5	1.3	2.9	1.7	24	
13	1.3	1.5	1.2	1.3	1.1	1.3	1.3	1.4	1.3	1.3	1.0	1.0	0.8	0.8	0.9	1.7	0.8	S	0.9	0.7	1.8	1.1	1.2	1.1	1.8	1.2	24	
14	1.5	1.4	1.4	1.3	0.9	1.1	0.9	0.9	0.8	8.5	1.1	0.5	0.6	P	P	P	P	P	P	0.7	0.6	0.9	1.5	1.2	0.9	8.5	1.4	19
15	1.0	1.2	1.2	1.6	2.3	5.3	3.9	2.2	S	S	4.6	4.5	1.2	0.5	2.2	S	1.3	1.3	1.3	1.4	4.0	2.0	2.7	2.6	5.3	2.3	24	
16	2.4	2.6	2.6	1.8	1.3	R	1.1	1.0	0.8	0.7	0.6	1.0	0.8	0.7	S	1.1	1.2	1.0	1.3	1.0	1.2	1.1	1.2	1.2	2.6	1.3	23	
17	1.2	1.3	1.1	1.5	1.4	1.3	1.4	1.4	1.4	1.6	1.7	1.7	1.2	1.0	1.0	1.2	1.2	1.2	1.2	1.1	1.4	1.2	1.4	1.5	1.9	1.3	24	
18	1.2	1.1	1.2	1.1	S	1.2	1.6	1.6	1.6	1.6	1.4	1.4	1.3	1.1	1.2	1.3	1.1	1.3	1.6	1.4	1.9	1.9	1.4	1.4	1.9	1.4	24	
19	1.4	1.4	1.0	S	1.0	0.7	0.5	0.7	0.7	0.8	0.7	0.8	0.5	0.7	0.7	0.7	0.5	0.6	1.1	0.8	0.9	0.8	1.1	0.9	1.4	0.8	24	
20	0.9	1.1	S	1.0	1.3	1.3	1.2	0.7	0.9	1.2	C	C	C	C	C	C	C	C	C	1.7	1.9	2.2	1.9	1.9	2.5	2.5	1.4	24
21	2.7	S	2.0	1.9	2.5	2.3	3.9	2.2	1.3	1.2	1.3	1.2	1.2	1.2	1.0	1.5	1.1	1.0	1.5	3.3	2.6	1.3	1.4	1.4	3.9	1.8	24	
22	S	1.4	1.4	1.3	1.2	2.7	1.3	1.6	1.3	1.3	1.0	1.4	0.8	1.3	1.0	3.7	5.3	3.5	2.3	1.9	1.6	1.6	2.1	S	5.3	1.9	24	
23	1.9	2.1	1.9	2.1	2.2	2.2	1.6	1.4	0.8	1.1	1.2	1.1	0.9	1.0	1.1	1.9	2.2	1.9	20.9	2.4	2.5	2.1	S	2.3	20.9	2.6	24	
24	2.3	2.8	2.7	3.0	2.8	2.4	2.3	3.3	5.2	4.5	3.7	2.8	1.5	1.8	1.5	1.3	1.0	1.0	1.3	1.8	S	2.8	3.0	5.2	2.5	2.4	24	
25	3.9	3.9	3.3	2.6	1.9	1.7	1.2	1.4	1.2	1.5	0.8	1.0	0.7	0.7	0.9	0.9	0.9	1.0	2.0	2.5	S	1.1	0.5	0.9	3.9	1.6	24	
26	1.0	0.9	1.1	0.6	0.8	0.8	0.8	0.5	0.8	0.5	0.7	0.5	0.5	0.5	0.7	0.5	0.8	0.6	0.6	S	0.9	1.8	1.1	1.5	1.8	0.8	24	
27	1.5	1.6	1.6	1.9	1.6	2.4	1.8	1.6	1.5	1.0	0.6	1.0	1.1	0.4	0.5	1.0	0.5	1.3	S	1.9	1.6	1.1	1.2	1.0	2.4	1.3	24	
28	0.9	1.4	1.7	1.4	1.3	1.2	1.2	0.9	0.8	1.1	0.8	0.8	1.1	0.6	0.6	0.5	0.6	S	0.5	0.9	1.1	1.1	0.7	0.9	1.7	1.0	24	
29	0.9	0.9	0.7	0.6	0.7	0.9	0.7	0.9	1.4	0.9	1.3	1.0	7.6	0.7	0.5	0.5	S	1.1	1.1	1.0	0.8	0.8	0.7	0.7	7.6	1.1	24	
30	0.7	1.2	1.2	1.7	1.6	1.3	1.0	1.1	13.1	0.7	0.5	0.7	1.1	0.5	S	1.5	0.8	0.9	20.8	5.9	1.5	2.8	3.1	20.8	2.8	2.4	24	
31	2.9	2.9	1.4	2.2	2.0	4.3	4.2	6.0	4.1	5.0	3.3	1.7	1.9	1.9	S	1.5	3.4	1.5	8.0	4.3	3.7	2.4	2.7	1.5	8.0	3.2	24	
HOURLY MAX	3.9	3.9	4.0	5.1	3.6	6.0	5.2	10.6	13.1	8.5	28.8	4.5	25.5	8.6	27.7	18.0	5.3	3.5	20.9	20.8	6.1	3.5	19.1	3.2				
HOURLY AVG	1.8	1.8	1.8	1.8	1.7	2.3	2.1	2.2	2.3	2.1	2.9	1.5	2.4	1.5	2.2	2.0	1.7	1.4	2.5	2.6	2.4	1.7	2.3	1.7				

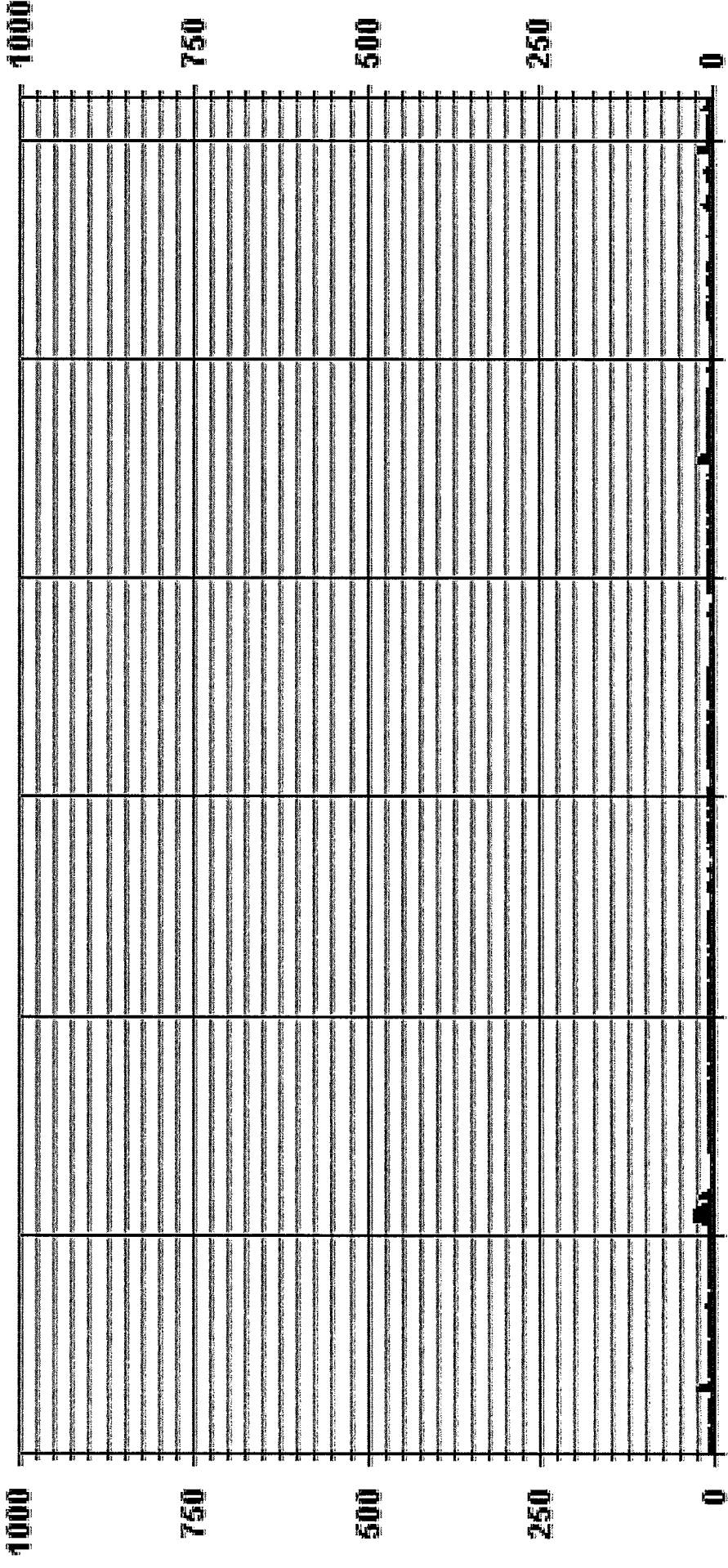
STATUS FLAG CODES

C	QUALITY ASSURANCE
Q	RECOVERY
R	RECOVERY
X	MACHINE MAINTENANCE
S	DAILY ZERO/Span CHECK
O	OPERATOR ERROR
K	COLLECTION ERROR
G	ROUTE FOR REPAIR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	693
MAXIMUM INSTANTANEOUS VALUE:	28.8
PPB @ HOUR(S)	10
ON DAY(S)	6
VAR-VARIOUS	
OPS CALIBRATION TIME:	33
HRS	
MONTHLY CALIBRATION TIME:	8
HRS	
OPERATIONAL TIME:	734
HRS	
STANDARD DEVIATION:	2.52

01 Hour Averages



07/01/15 00:00:07/06/15 00:00:07/11/15 00:00:07/16/15 00:00:07/21/15 00:00:07/26/15 00:00:07/31/15 00:00

— LICA31 NO2MAX PPB

LICAS1
 NO2_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICAS1
 Parameter : NO2
 Units : PPF

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	4.72	1.43	1.86	3.00	2.57	2.43	1.14	2.57	4.58	5.44	8.45	12.03	17.04	19.91	7.44	5.30	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.72	1.43	1.86	3.00	2.57	2.43	1.14	2.57	4.58	5.44	8.45	12.03	17.04	19.91	7.44	5.30	

Calm : .00 %

Total # Operational Hours : 698

Distribution By Samples





Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	33	10	13	21	18	17	8	18	32	38	59	84	119	139	52	37	698
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	33	10	13	21	18	17	8	18	32	38	59	84	119	139	52	37	

Calm : .00 %

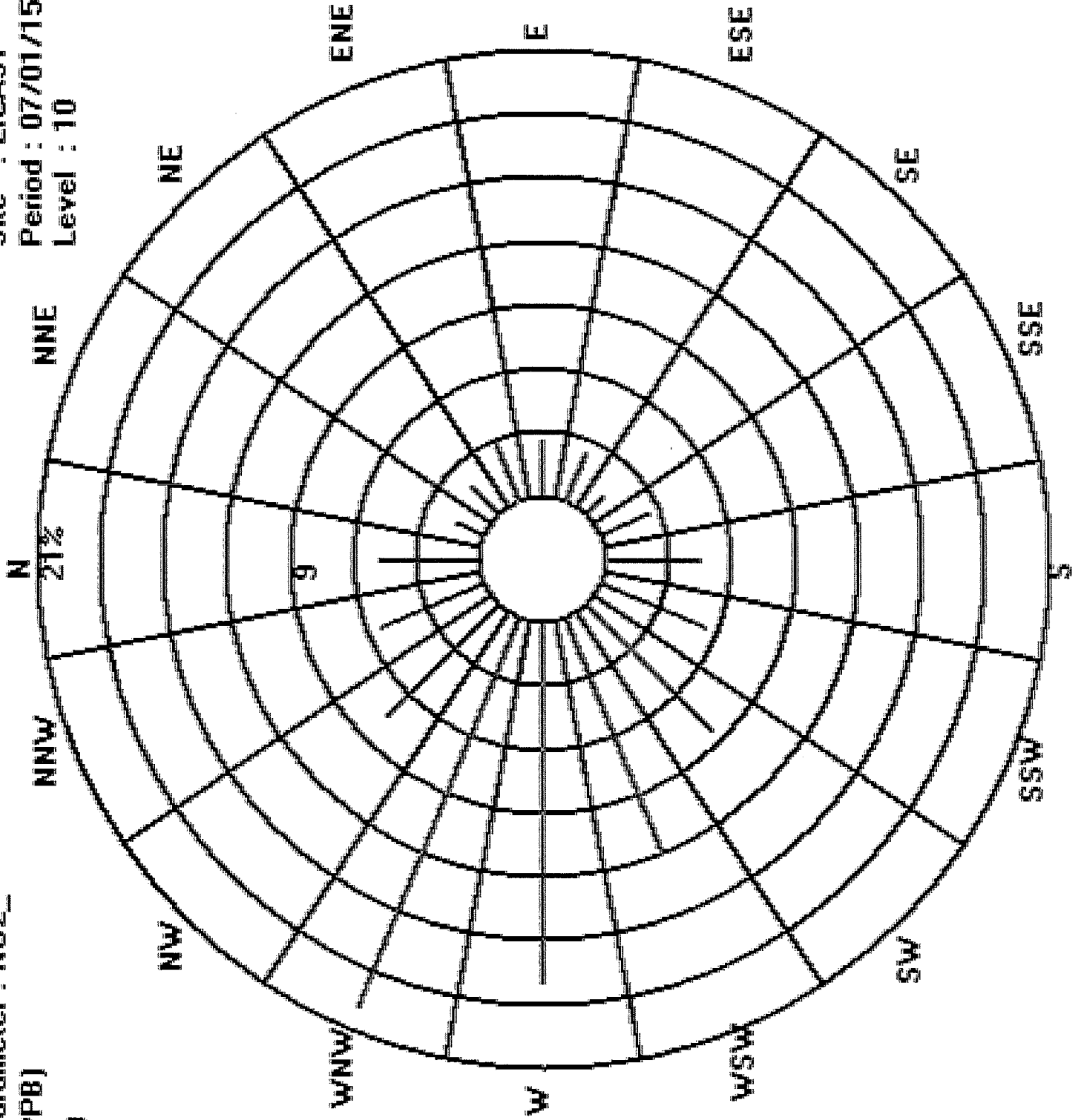
Total # Operational Hours : 698

Logger : 31 Parameter : ND2_

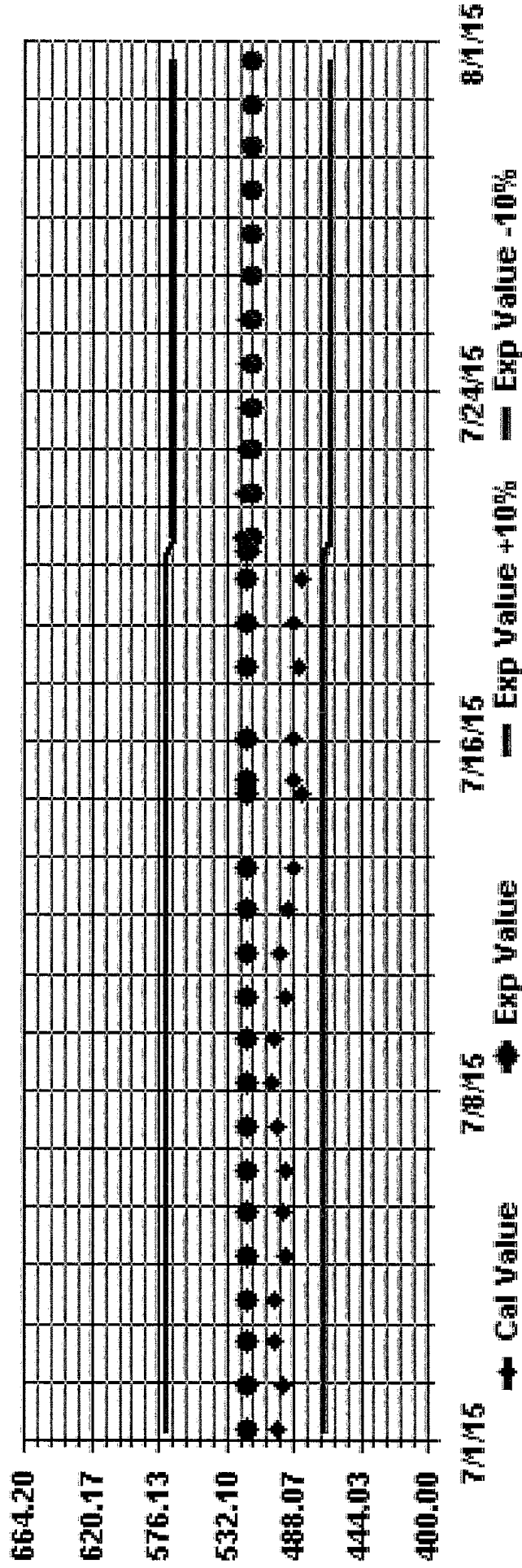
Class Limits (PPB)

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0

Site : LICA31
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA31 Parameter: NO2_ Sequence: NO2 Phase: SPAN



OZONE

OZONE (O3) hourly averages in ppb

MST

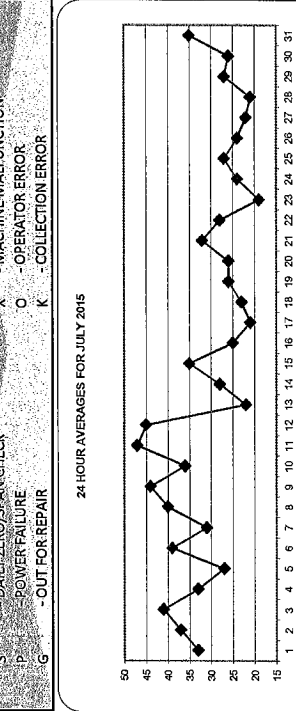
DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	DAILY AVG.	RDGS.			
1	37	38	34	27	23	29	29	31	31	33	37	36	39	39	40	36	34	34	31	32	32	32	27	24	40	32.7	24			
2	45	24	23	21	21	21	21	27	27	32	34	35	38	42	45	48	59	66	54	51	47	45	43	66	40	37.4	24			
3	42	24	39	36	32	28	28	33	38	46	47	37	37	40	43	51	52	49	47	45	45	43	52	66	41.1	24				
4	43	45	45	45	37	34	30	30	32	33	36	37	38	37	38	37	35	34	34	30	24	20	21	45	33.5	24				
5	5	17	17	15	14	13	14	16	23	28	31	34	P	P	P	36	37	37	37	36	35	34	31	37	27.4	22				
6	32	5	29	30	32	17	14	20	24	33	37	42	47	49	52	56	57	54	50	49	48	42	34	57	38.7	24				
7	5	26	24	28	29	34	37	33	32	29	34	44	49	51	52	54	53	51	49	47	46	46	43	30	37	30.6	24			
8	27	26	27	28	31	30	27	27	29	29	34	44	49	51	52	54	53	51	49	47	46	46	43	30	37	30.6	24			
9	40	30	28	24	22	20	19	24	31	37	38	39	41	46	49	48	44	47	70	71	59	68	63	5	35	33	71	44.4	24	
10	36	34	32	39	42	40	36	35	41	44	45	46	46	53	58	61	61	61	61	61	61	61	61	61	61	61	61	61	44.4	24
11	12	49	42	43	43	41	35	35	37	41	43	43	43	48	50	52	51	49	45	47	5	49	51	49	48	38	52	44.7	24	
12	31	28	31	27	25	25	22	20	19	19	18	20	23	25	28	24	22	22	24	22	24	22	24	24	31	22.4	24			
13	17	18	17	17	24	23	23	23	29	30	30	30	31	31	P	P	P	P	P	P	P	P	P	P	36	27.7	20			
14	32	30	29	28	22	15	26	26	32	S	34	41	47	45	46	S	48	46	45	41	38	35	34	48	35.4	24				
15	34	31	28	27	23	26	25	26	33	31	29	28	28	S	24	22	25	22	22	20	17	15	15	34	25.2	24				
16	15	17	21	20	19	23	24	19	19	17	C	C	C	C	C	C	21	23	27	24	24	28	26	22	19	28	21.5	24		
17	25	19	20	S	21	21	21	25	29	29	29	29	29	29	29	30	30	30	30	30	30	30	27	26	27	30	26.1	24		
18	25	24	S	21	16	18	20	22	24	26	26	27	29	38	S	36	37	37	38	38	28	22	20	22	38	26.3	24			
19	27	27	S	28	29	33	30	27	29	33	34	35	36	35	36	36	34	36	35	31	31	29	27	24	36	31.7	24			
20	25	26	23	22	20	21	19	18	24	30	33	32	32	32	32	32	32	33	36	35	31	27	22	S	36	27.7	24			
21	19	19	18	12	10	9	10	14	18	22	24	25	24	24	24	24	25	23	22	20	16	19	14	S	21	25	18.8	24		
22	24	14	15	14	13	8	8	11	16	22	31	34	35	36	36	36	35	33	34	35	33	34	35	S	33	32	36	24.4	24	
23	26	23	20	19	19	20	25	26	31	30	29	29	31	32	31	32	33	31	29	27	S	26	28	23	33	27.0	24			
24	21	21	22	22	20	19	11	13	18	22	25	27	28	30	30	30	32	32	30	S	27	25	23	19	32	24.4	24			
25	20	15	14	17	18	18	16	17	18	20	22	23	24	25	25	26	27	S	26	25	23	21	21	20	27	20.9	24			
26	19	18	19	20	21	20	20	22	25	27	31	36	36	36	36	31	30	S	30	31	30	31	32	31	28	36	27.1	24		
27	20	18	17	18	20	20	20	23	25	27	27	29	31	32	32	S	33	33	33	32	29	30	28	24	33	26.0	24			
28	22	23	28	14	15	14	19	20	27	37	45	48	54	50	S	51	49	46	43	42	41	42	41	35	54	35.4	24			
29	49	45	45	43	42	40	37	37	41	46	49	49	54	53	58	61	70	71	66	68	63	52	51	51	51	51	51	51	51	
30	27.6	25.5	25.5	23.5	23.1	22.5	22.0	23.7	27.1	29.8	32.3	34.4	35.5	36.2	37.3	36.6	37.7	39.2	37.3	35.0	34.3	31.6	30.5	29.1	29.1	29.1	29.1	29.1		
31	27.6	25.5	25.5	23.5	23.1	22.5	22.0	23.7	27.1	29.8	32.3	34.4	35.5	36.2	37.3	36.6	37.7	39.2	37.3	35.0	34.3	31.6	30.5	29.1	29.1	29.1	29.1	29.1	29.1	

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

OBJECTIVE LIMIT:

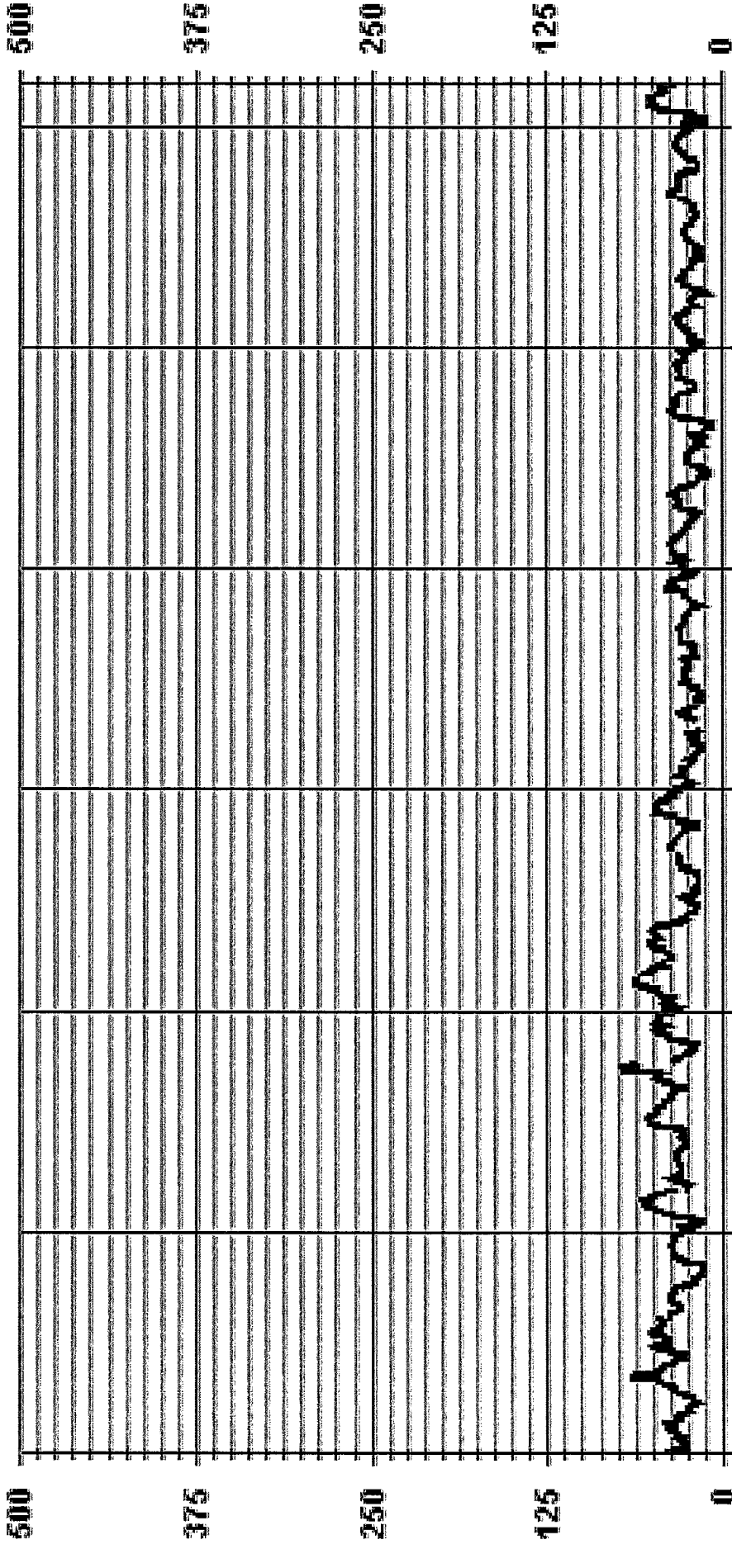
ALBERTA ENVIRONMENT: 82 PPB



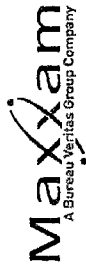
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	700
MAXIMUM 1-HR AVERAGE:	71 PPB
MAXIMUM 24-HR AVERAGE:	47.0 PPB
OPS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	10.76
OPERATIONAL TIME:	738 HRS
AMD OPERATION UPTIME:	99.2 %
MONTHLY AVERAGE:	31 PPB
ON DAY(S)	9
ON DAY(S) VAR-VARIOUS	11

01 Hour Averages



— LICA31 03_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 St. Lina Site - JULY 2015
 JOB # 2833-2015-07-31-C

OZONE MAX instantaneous maximum in ppb

DAY	MST																								24-HOUR AVG.	RDGS.		
	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			0:00	
1	43	42	40	29	26	33	S	33	32	37	35	39	38	40	41	43	42	38	36	34	34	34	32	26	43	36.0	24	
2	26	25	22	22	26	S	28	30	35	36	35	36	36	41	45	46	51	67	71	61	53	50	46	43	71	40.4	24	
3	43	42	39	35	S	29	30	36	45	49	52	51	41	38	39	42	47	52	53	52	48	48	45	45	53	43.5	24	
4	45	46	46	S	39	36	33	34	35	36	39	38	39	39	P	38	38	39	39	36	37	34	27	25	24	46	35.9	24
5	20	19	S	16	15	14	15	18	28	29	35	36	P	38	38	39	39	39	38	36	36	36	36	34	39	29.0	21	
6	33	S	31	31	30	21	18	23	29	37	40	46	48	51	54	55	61	59	58	53	52	50	48	38	61	42.0	24	
7	S	28	26	30	31	36	40	35	34	31	30	30	31	32	32	33	35	34	33	33	38	32	30	S	40	32.5	24	
8	28	27	28	29	32	32	32	32	32	31	37	48	51	53	54	53	54	53	49	48	48	45	S	43	55	41.6	24	
9	41	38	38	38	38	35	33	33	37	39	46	48	51	51	47	56	79	76	69	71	66	S	36	35	79	47.9	24	
10	32	31	26	25	22	22	22	26	36	40	40	41	43	51	52	53	43	48	49	49	S	47	46	46	53	38.7	24	
11	R	36	33	46	44	42	39	37	43	47	47	48	48	52	55	52	49	49	S	58	55	53	53	63	63	49.8	23	
12	50	45	44	44	44	42	40	37	39	44	45	48	52	52	55	52	49	49	S	52	52	51	51	46	55	47.6	24	
13	33	30	35	32	27	28	24	22	20	21	19	24	26	27	30	28	23	S	23	21	19	18	19	19	35	24.7	24	
14	19	20	20	21	26	26	27	30	32	31	32	32	32	P	P	P	P	P	38	38	35	34	33	38	38	29.5	19	
15	33	31	31	30	31	25	32	34	S	S	38	46	49	49	50	S	50	49	47	43	40	39	38	36	50	39.1	24	
16	36	34	29	29	27	R	28	28	28	37	34	31	29	30	29	S	27	25	26	24	23	21	19	16	15	37	27.1	23
17	15	19	24	24	21	28	20	20	17	C	C	C	C	C	C	C	28	28	26	29	29	29	25	22	29	24.0	24	
18	19	18	18	17	S	16	16	19	24	25	27	32	32	32	28	29	29	27	27	27	32	31	32	32	32	25.2	24	
19	28	23	23	S	22	22	21	23	28	31	31	30	31	32	30	31	32	31	31	31	28	28	27	28	32	27.9	24	
20	26	26	S	23	20	24	23	24	26	28	28	30	29	31	S	S	39	40	39	35	32	24	21	24	40	28.2	24	
21	28	S	31	34	36	33	30	31	35	35	37	37	38	37	39	39	36	38	38	34	33	34	32	31	39	34.6	24	
22	S	29	27	24	22	22	20	22	29	35	35	34	33	36	38	36	37	39	37	36	39	30	24	S	39	31.1	24	
23	22	21	20	15	12	11	12	18	21	25	27	26	26	27	28	25	25	25	23	20	25	18	S	25	28	21.6	24	
24	25	17	17	15	14	12	10	10	12	20	26	35	37	39	38	38	38	37	36	35	36	S	34	34	39	26.8	24	
25	29	26	25	22	20	25	27	32	33	33	31	31	33	34	34	34	34	34	31	28	S	29	30	29	34	29.7	24	
26	24	22	21	22	19	20	21	25	26	28	29	32	31	32	31	34	35	32	S	29	27	25	22	35	26.6	24		
27	22	23	24	24	24	23	18	19	22	24	28	29	30	31	31	29	28	28	S	25	24	23	22	31	24.9	24		
28	20	18	16	18	20	20	18	18	19	21	24	24	25	25	26	27	28	S	26	26	24	22	22	28	22.1	24		
29	20	19	20	21	22	21	21	25	26	29	36	38	38	37	34	32	S	33	33	33	32	33	34	32	31	38	29.0	24
30	29	27	21	19	20	21	21	25	27	27	27	28	31	33	33	S	34	34	33	31	32	31	28	24	34	27.9	24	
31	26	29	30	25	18	18	25	23	36	43	47	50	59	52	S	53	53	52	52	48	44	43	44	41	59	39.6	24	
HOURLY MAX	50	46	46	44	42	40	39	45	49	52	52	59	55	62	62	79	76	71	71	66	55	53	53	53	53	53		
HOURLY AVG	29.1	28.0	27.9	26.2	25.7	25.3	24.9	26.5	32.2	34.9	36.8	37.7	38.7	39.7	39.8	40.3	41.8	39.8	37.6	36.6	33.9	32.8	31.8	31.8	31.8			

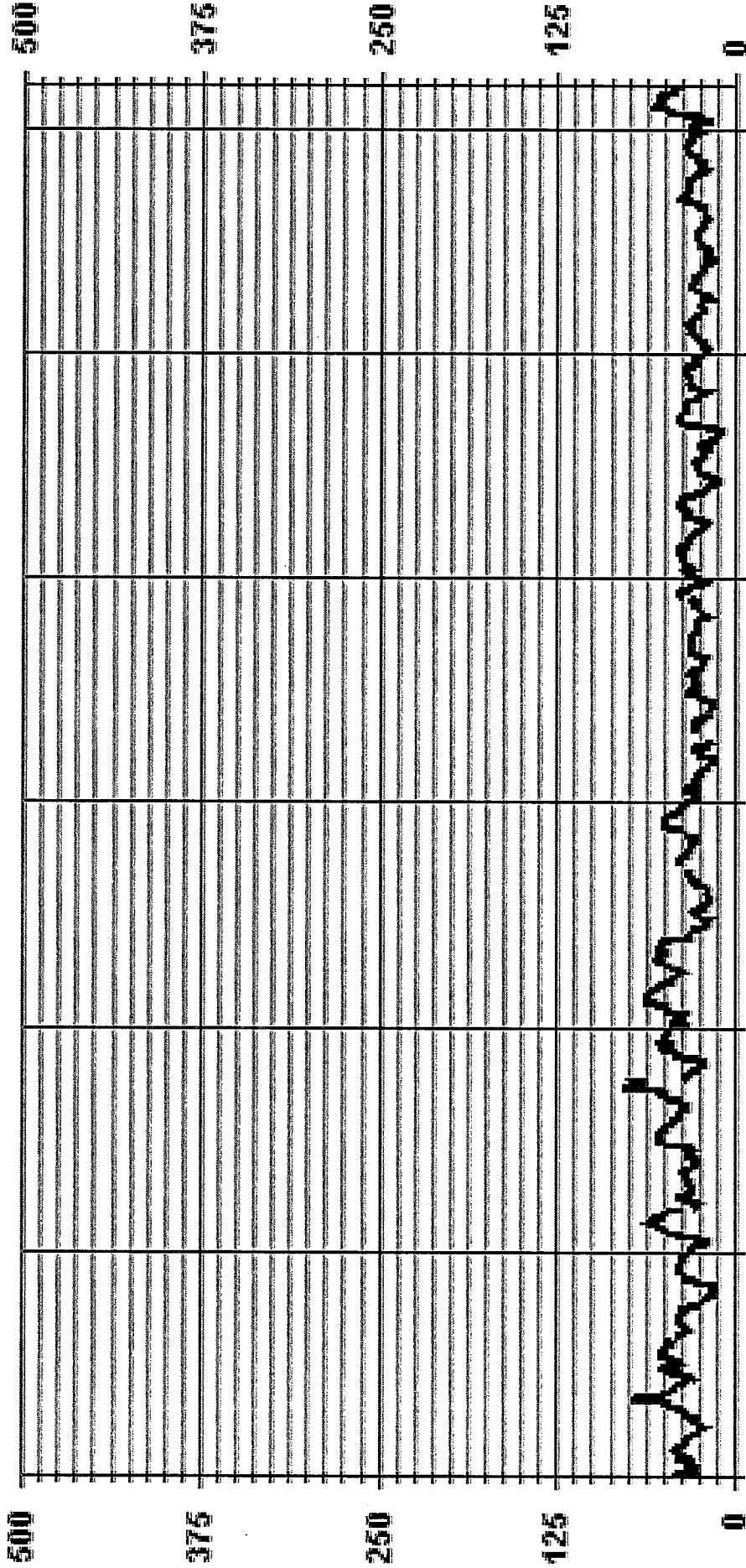
STATUS FLAG CODES

C	QUALITY ASSURANCE
O	RECOVERY
R	MACHINE MAINTENANCE
X	MACHINE MAINTENANCE
O	OPERATOR ERROR
P	POWER FAILURE
G	OUT FOR REPAIR
S	DAILY ZERO/SPAN CHECK
Y	MAINTENANCE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	693
MAXIMUM INSTANTANEOUS VALUE:	79 PPB @ HOUR(S) 16 ON DAY(S) 9
OPERATIONAL TIME:	734 HRS
ISZ CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	11.02
VAR-VARIOUS	

01 Hour Averages



— LICA31 O3MAX PPB

07/01/15 00:00:07/06/15 00:00:07/11/15 00:00:07/16/15 00:00:07/21/15 00:00:07/26/15 00:00:07/31/15 00:00

LiCA31
 O3_ / WDR Joint Frequency Distribution (Percent)
 July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LiCA31
 Parameter : O3
 Units : PPF

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	4.42	1.28	1.85	2.85	2.28	1.85	1.28	2.57	4.14	4.00	7.00	11.85	17.00	19.85	7.00	5.00	94.28
< 110	.00	.00	.00	.14	.28	1.14	.28	.00	.42	1.42	1.42	.14	.00	.00	.42	.00	5.71
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.42	1.28	1.85	3.00	2.57	3.00	1.57	2.57	4.57	5.42	8.42	12.00	17.00	19.85	7.42	5.00	

Calm : .00 %

Total # Operational Hours : 700

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	31	9	13	20	16	13	9	18	29	28	49	83	119	139	49	35	660
< 110				1	2	8	2		3	10	10	1			3		40
< 210																	
>= 210																	
Totals	31	9	13	21	18	21	11	18	32	38	59	84	119	139	52	35	

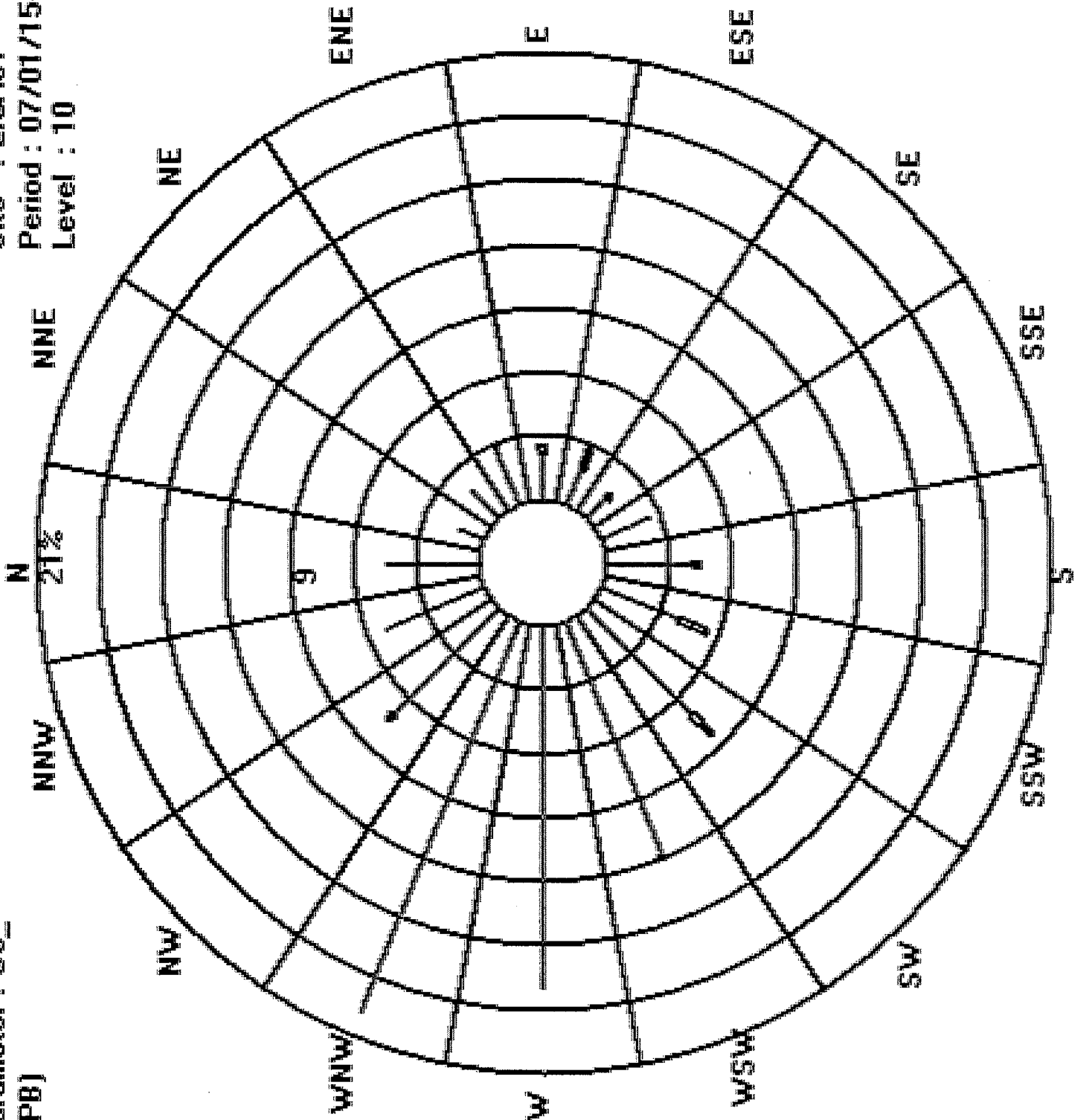
Calm : .00 %

Total # Operational Hours : 700

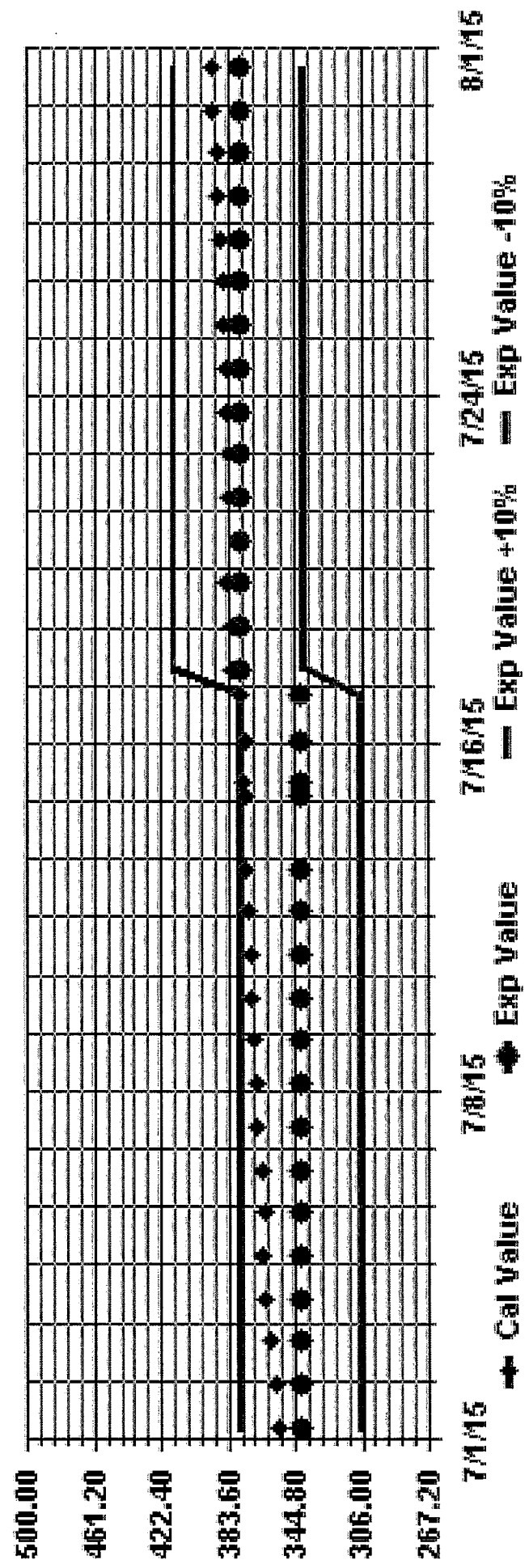
Site : LICA31
Period : 07/01/15-07/31/15
Level : 10

Logger : 31 Parameter : O3_

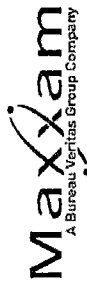
Class Limits (PPB)



Calibration Graph for Site: LICA31 Parameter: O3_ Sequence: O3 Phase: SPAN



PARTICULATE MATTER 2.5



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

DAY	HOUR																								DAILY MAX	24-HOUR AVG.	RDGS.
	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			
1	38	40	41	39	42	39	38	47	48	50	55	39	36	29	26	18	15	14	14	14	24	25	24	55	39.5	24	
2	18	20	20	17	13	12	14	10	11	9	10	8	7	8	3	8	12	14	13	15	14	12	14	20	12.1	24	
3	15	12	11	13	14	17	12	10	13	11	4	8	2	3	1	C	0	8	25	25	31	31	32	32	14.2	24	
4	32	29	33	33	51	126	120	106	92	65	30	20	65	100	104	39	15	20	32	56	53	39	37	16	126	54.7	24
5	14	17	20	18	15	14	11	7	0	0	2	1	P	P	2	4	4	4	4	2	4	8	5	20	7.1	22	
6	4	4	3	2	4	6	6	6	7	0	3	19	39	38	53	45	58	35	26	28	25	23	21	58	20.0	24	
7	27	19	21	5	1	5	0	0	2	3	5	3	4	0	1	2	1	2	2	3	2	2	0	27	4.7	24	
8	4	2	1	4	2	3	12	13	16	16	15	16	18	20	19	13	12	11	12	11	17	13	16	20	11.2	24	
9	16	11	13	13	13	13	34	63	69	74	78	68	54	27	13	15	15	13	17	14	6	3	0	78	27.3	24	
10	14	19	34	51	71	129	163	181	179	154	94	86	72	84	105	107	72	62	140	168	173	175	192	216	114.2	24	
11	0	149	208	123	56	15	47	80	147	178	189	180	174	133	92	35	27	18	16	15	15	17	12	7	208	80.5	24
12	5	7	8	9	11	12	17	14	15	17	16	22	19	19	19	15	12	15	19	16	10	11	13	22	13.8	24	
13	16	12	17	13	17	21	25	25	33	31	24	18	12	8	5	7	4	4	8	5	6	5	3	33	13.5	24	
14	3	3	2	4	4	4	3	3	2	3	2	3	2	3	2	P	P	P	1	3	2	0	3	1	4	2.6	20
15	0	2	3	4	4	5	1	4	0	6	2	1	2	1	2	8	5	4	2	5	6	6	4	6	8	3.5	24
16	6	2	3	4	5	0	3	4	4	0	1	0	1	0	0	3	1	4	1	2	2	0	0	6	6	1.9	24
17	1	7	3	X	X	X	X	X	X	X	X	X	X	X	X	X	C	7	6	4	5	7	2	5	7	4.7	11
18	6	6	4	4	4	3	3	8	5	5	2	1	0	4	3	6	3	3	5	0	5	4	5	0	8	3.7	24
19	0	0	2	4	5	1	2	4	3	1	6	6	2	4	4	4	5	6	4	2	4	6	5	6	6	3.5	24
20	0	5	0	2	4	2	4	2	2	6	2	4	5	6	6	2	4	3	2	2	2	0	4	6	6	3.0	24
21	3	0	0	2	1	3	2	1	3	5	7	7	0	2	2	5	6	2	3	6	5	0	1	7	7	2.8	24
22	2	2	2	4	1	0	4	2	2	2	4	0	5	0	2	3	3	1	3	0	0	0	0	1	7	3.0	24
23	3	2	2	2	1	0	0	7	6	7	3	0	2	2	0	4	3	2	0	3	5	5	6	3	7	2.8	24
24	6	4	1	3	2	5	2	3	4	3	2	0	4	2	0	1	0	4	0	0	2	0	2	6	6	2.2	24
25	0	1	4	0	0	0	0	1	0	2	0	3	4	1	4	1	2	2	0	1	0	0	2	1	4	1.2	24
26	4	3	3	5	1	2	2	2	1	0	1	1	2	1	2	1	0	0	0	0	2	2	5	3	5	1.7	24
27	2	0	0	1	3	0	3	0	2	2	1	4	3	0	2	6	0	3	2	0	2	3	2	3	6	1.8	24
28	0	2	1	0	2	2	1	2	0	0	1	2	0	1	2	0	0	0	0	0	1	2	0	2	2	0.8	24
29	0	2	0	0	2	4	1	1	2	0	1	2	3	0	1	4	3	2	2	0	4	1	1	4	4	1.5	24
30	6	3	2	5	5	6	4	8	6	4	6	2	0	4	5	3	4	4	6	2	7	6	6	8	4.6	24	
31	38	149	208	123	71	129	163	181	179	178	189	180	174	133	105	107	72	62	140	168	173	175	192	216	114.2	24	
HOURLY MAX	8.1	12.5	15.0	12.8	11.6	15.0	16.7	19.3	22.4	21.4	18.5	18.3	18.7	18.4	17.6	13.1	10.1	8.8	11.5	13.4	14.0	13.7	13.7	13.0			

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

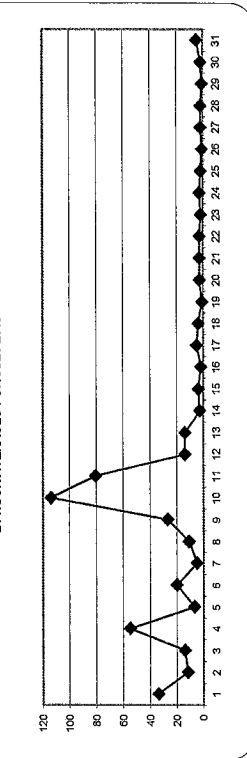
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR: 30 ug/m3

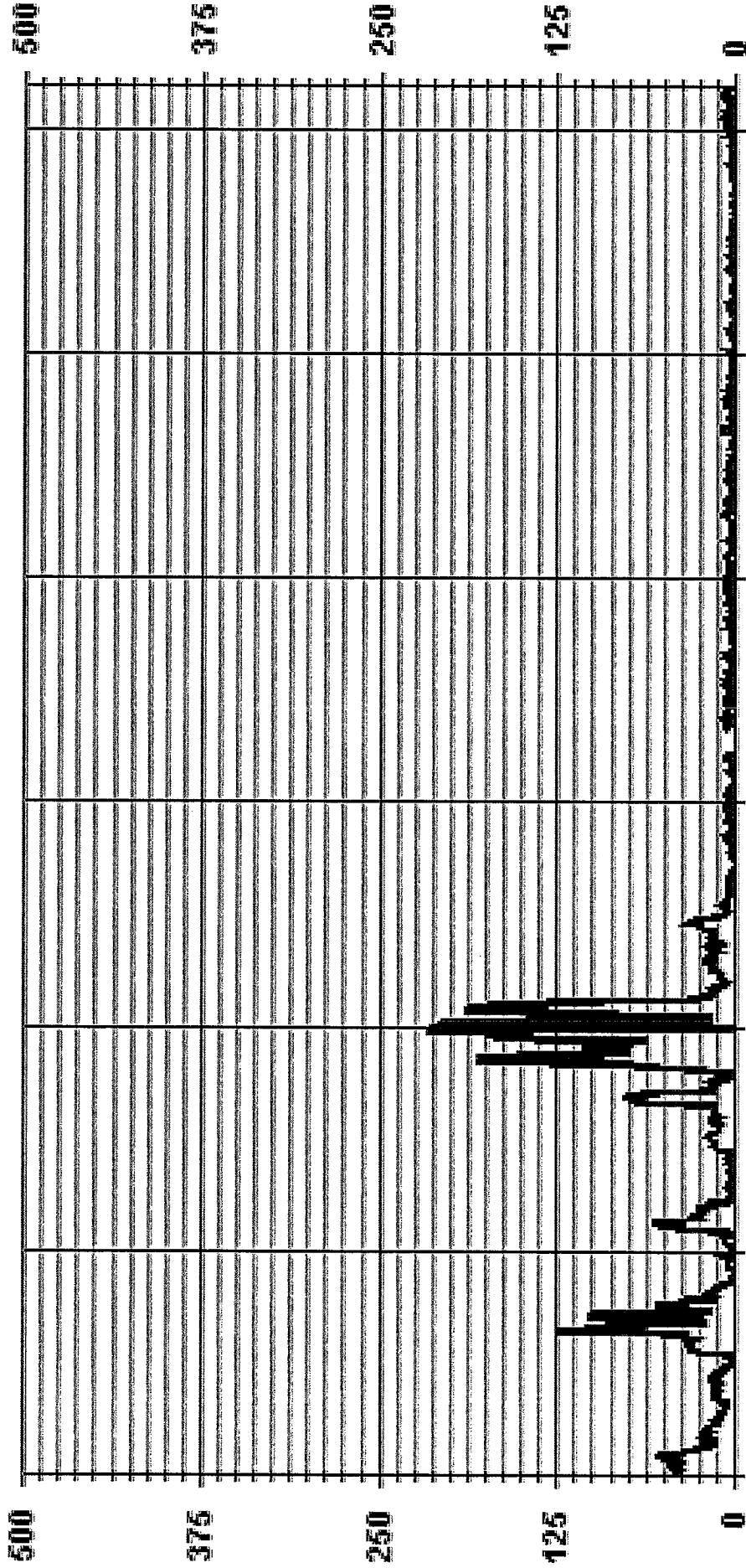
MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:		4	
NUMBER OF NON-ZERO READINGS:	618	ON DAY(S)	10
MAXIMUM 1-HR AVERAGE:	216 ug/m3 @ HOUR(S)	ON DAY(S)	10
MAXIMUM 24-HR AVERAGE:	114.2 ug/m3	VAR- VARIOUS	
MONTHLY CALIBRATION TIME:	2 HRS	OPERATIONAL TIME:	725 HRS
STANDARD DEVIATION:	31.54	AMTD OPERATION UPTIME:	97.4 %
		MONTHLY AVERAGE:	14.9 ug/m3

24 HOUR AVERAGES FOR JULY 2015



01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

-- LICA31 PM2 UGM3 UGM3

LICA31
 PM2 / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : PM2
 Units : UG/M3

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	3.45	.27	.55	.82	2.07	2.76	1.65	2.48	4.42	4.84	8.29	11.47	16.32	17.98	6.50	4.01	87.96
< 60	.41	.13	.41	.00	.00	.13	.00	.00	.13	.55	.27	.55	.69	1.52	.69	.41	5.94
< 80	.00	.13	.13	.55	.00	.13	.00	.27	.00	.00	.00	.00	.00	.00	.27	.00	1.52
< 120	.00	.00	.27	.55	.00	.13	.00	.00	.00	.00	.00	.00	.13	.41	.00	.00	1.52
< 240	.00	.69	.41	1.10	.41	.13	.00	.00	.00	.00	.00	.00	.00	.00	.13	.13	3.04
>= 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.87	1.24	1.79	3.04	2.48	3.31	1.65	2.76	4.56	5.39	8.57	12.03	17.15	19.91	7.60	4.56	

Calm : .00 %

Total # Operational Hours : 723

Distribution By Samples

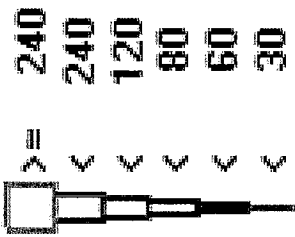
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	25	2	4	6	15	20	12	18	32	35	60	83	118	130	47	29	636
< 60	3	1	3	4	15	20	12	18	32	35	60	83	118	130	47	29	636
< 80	1	1	1	4	15	20	12	18	32	35	60	83	118	130	47	29	636
< 120	2	2	4	4	15	20	12	18	32	35	60	83	118	130	47	29	636
< 240	5	3	3	8	33	44	27	41	72	83	144	195	266	300	105	63	1512
>= 240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	9	13	22	18	24	12	20	33	39	62	87	124	144	55	33	

Calm : .00 %

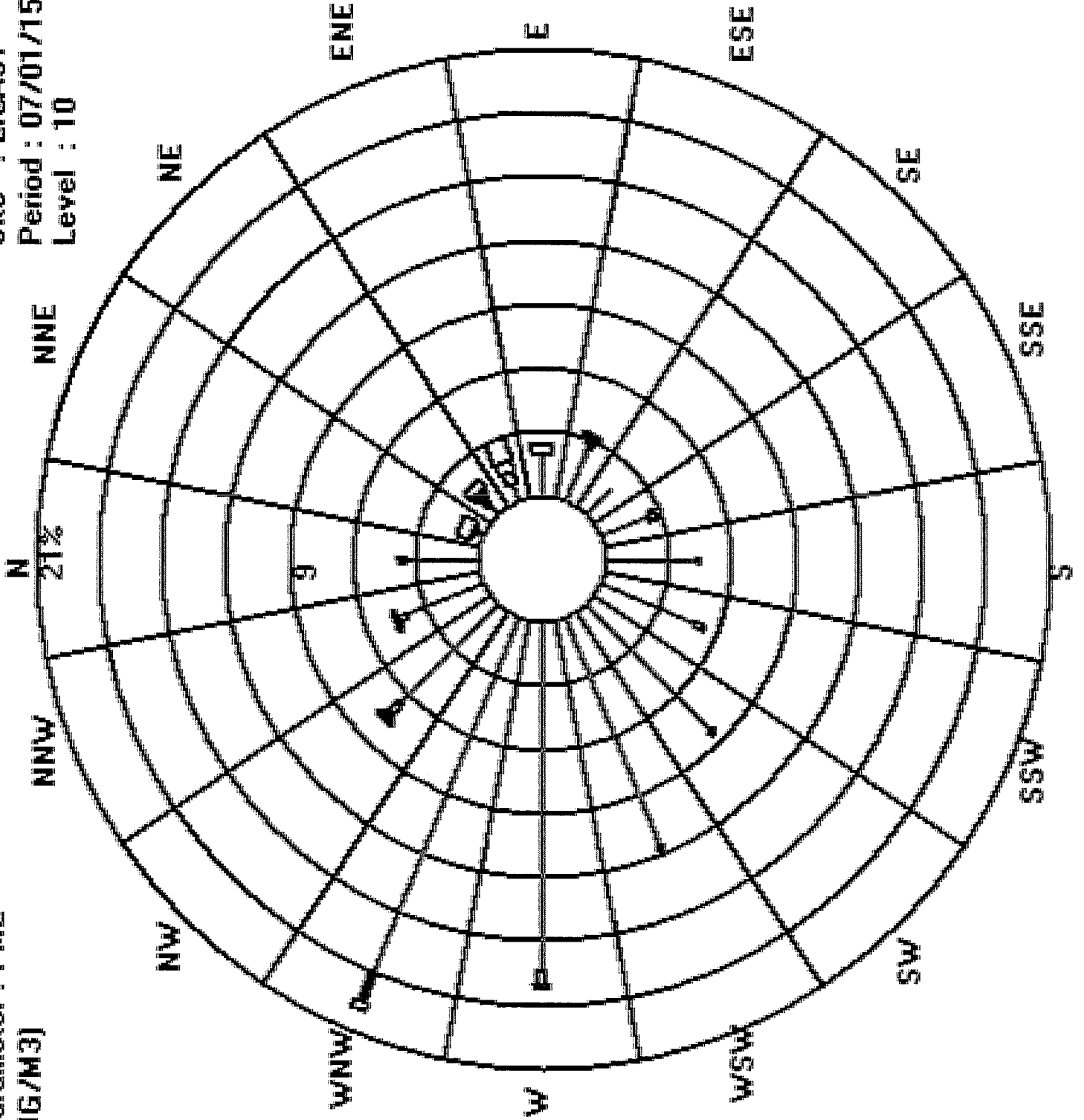
Total # Operational Hours : 723

Logger : 31 Parameter : PM2

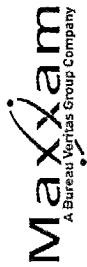
Class Limits (UG/M3)



Site : LICA31
Period : 07/01/15-07/31/15
Level : 10



WIND SPEED



WIND SPEED (WS) hourly averages in km/hr

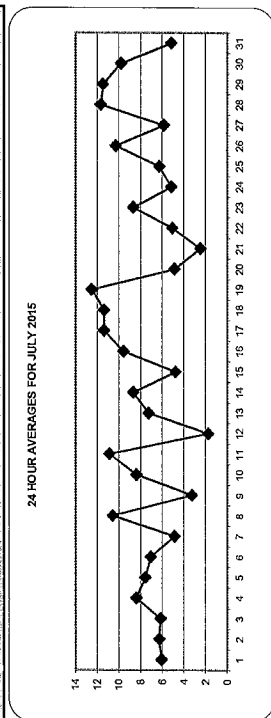
MST

DAY	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 MAX	24-HOUR AVG.	RODS
1	5.4	5.6	5.5	5.0	6.0	6.9	3.9	5.5	4.0	3.5	6.7	8.2	8.6	6.5	10.4	11.0	10.5	8.6	6.6	4.5	4.6	5.8	7.8	8.5	11.0	6.7	24
2	8.4	7.5	8.6	7.2	7.6	5.9	5.2	4.9	5.3	7.0	6.3	7.6	7.3	8.0	7.3	8.3	10.6	10.7	10.0	4.7	5.0	7.1	8.3	8.4	10.7	7.5	24
3	8.5	8.5	10.7	7.5	7.8	8.0	7.8	7.8	10.2	5.1	5.7	7.0	8.1	13.6	15.9	14.5	11.8	15.2	12.6	7.6	7.7	7.3	8.9	9.7	15.9	9.5	24
4	10.2	10.0	9.9	9.0	7.2	5.8	6.1	9.6	8.1	7.9	11.2	9.0	10.8	11.2	12.9	12.2	7.6	10.4	13.7	7.6	4.1	4.1	7.1	7.9	13.7	8.9	24
5	8.1	8.0	7.9	8.0	8.1	6.4	9.9	9.1	13.2	13.8	12.7	11.1	10.7	P	P	8.9	7.6	6.3	6.0	5.4	6.3	6.8	7.7	13.8	8.6	22	
6	7.7	8.3	8.2	8.4	6.6	6.4	5.4	6.3	4.6	9.4	12.2	10.8	11.0	10.9	11.8	11.3	10.6	9.8	6.5	4.9	4.0	5.7	5.3	9.9	12.2	8.2	24
7	10.6	10.3	11.0	12.5	7.1	10.8	10.4	7.9	8.9	8.7	7.8	7.1	7.5	5.8	6.7	8.5	5.6	4.2	1.5	1.8	6.0	7.4	8.6	12.5	7.7	24	
8	8.9	8.9	10.9	13.3	12.1	10.7	8.6	9.1	10.3	9.3	11.1	14.7	16.6	15.7	15.8	12.8	10.7	11.1	11.1	9.5	8.5	7.2	11.2	11.6	16.6	11.2	24
9	8.3	5.5	6.5	5.4	6.3	5.8	2.7	3.8	3.7	2.7	3.8	5.6	8.5	9.8	12.9	18.3	17.6	16.1	16.7	9.1	4.2	7.0	7.6	9.1	18.3	8.2	24
10	7.8	9.7	6.8	5.5	6.9	3.7	7.7	8.6	8.2	7.3	8.5	9.6	10.1	9.2	11.3	11.8	10.4	10.3	10.6	10.2	11.9	12.8	12.1	10.9	12.8	9.2	24
11	7.5	11.5	11.4	13.6	11.6	11.5	12.9	17.1	22.9	22.2	17.9	13.5	12.8	11.6	12.9	14.5	12.5	11.0	11.0	10.5	10.4	9.3	10.0	22.9	13.1	24	
12	8.2	9.1	8.8	7.8	7.5	4.5	4.3	4.7	4.7	6.4	8.6	9.0	8.1	5.0	6.3	2.1	10.5	7.9	8.8	14.3	8.8	7.5	5.0	11.0	14.3	7.5	24
13	10.3	12.3	13.6	8.7	9.1	5.3	5.0	5.7	7.8	6.7	8.7	8.4	6.6	7.2	7.6	6.2	6.9	6.7	5.0	6.3	6.4	7.3	8.7	5.2	13.6	7.6	24
14	2.7	3.5	7.1	8.6	10.1	8.2	9.6	12.4	11.3	11.6	14.3	13.9	12.6	10.9	P	P	P	P	10.6	6.9	6.2	7.8	8.8	7.3	14.3	9.2	20
15	7.2	6.3	4.2	3.0	3.9	5.8	2.7	2.4	2.7	4.5	8.3	12.9	11.4	13.9	7.5	6.5	5.6	5.9	9.3	5.8	7.2	8.2	8.8	6.0	13.9	6.7	24
16	4.9	6.4	7.7	5.5	5.8	13.8	12.0	14.1	13.6	11.5	13.5	12.2	13.7	12.8	12.8	10.9	10.7	12.7	9.0	8.4	10.2	10.8	9.5	7.1	14.1	10.4	24
17	7.3	9.2	10.5	11.0	14.1	14.4	15.1	13.6	18.2	16.6	17.5	17.0	14.1	16.3	12.0	13.0	12.4	11.5	10.8	11.8	7.9	7.2	8.3	9.9	18.2	12.5	24
18	9.3	9.8	10.6	10.0	9.8	9.4	8.0	8.2	7.7	8.9	13.3	16.9	18.6	19.6	20.8	16.2	18.4	16.0	14.8	11.9	13.4	11.8	10.0	5.0	20.8	12.4	24
19	10.8	11.5	14.3	13.2	14.7	15.5	13.2	16.7	14.8	16.0	17.0	15.4	15.5	16.3	14.4	14.8	15.3	13.4	11.1	7.7	5.3	6.6	8.1	7.2	17.0	12.9	24
20	6.9	5.9	5.9	5.6	4.0	2.9	4.4	6.8	5.1	5.6	5.8	5.4	6.0	6.9	8.4	6.9	8.4	12.3	10.2	11.7	11.9	11.7	13.1	13.1	7.6	24	
21	14.7	13.2	7.8	3.6	5.0	4.3	8.8	11.6	8.1	7.4	7.3	5.8	6.5	8.3	3.3	3.2	4.4	4.9	5.6	4.8	5.9	3.6	2.8	3.9	14.7	6.5	24
22	7.5	4.8	4.4	5.7	7.0	5.9	6.9	5.2	5.9	6.0	6.2	6.4	7.6	8.9	3.2	7.8	9.7	9.4	7.1	3.2	4.8	4.0	6.1	8.4	9.7	6.3	24
23	9.1	9.8	8.1	7.3	9.5	8.6	8.8	8.0	11.4	15.4	12.8	15.9	16.7	8.7	9.6	8.9	2.9	5.5	4.7	4.7	5.7	8.7	9.5	16.7	9.1	24	
24	6.5	5.7	5.7	5.6	5.3	4.0	2.8	4.8	5.5	4.7	5.9	7.4	6.6	7.0	7.0	8.0	6.7	7.8	6.4	6.8	9.2	11.0	12.2	8.5	12.2	6.7	24
25	8.7	3.4	4.9	6.4	8.0	8.8	10.9	10.7	9.3	9.8	9.8	7.8	9.4	9.0	6.6	6.4	7.0	6.0	6.3	6.1	11.2	7.6	7.3	4.7	11.2	7.8	24
26	5.0	5.8	9.6	8.1	6.6	9.6	11.8	15.7	13.8	13.6	13.8	11.8	11.5	11.9	15.3	17.8	11.8	11.0	12.7	8.3	7.7	6.0	6.2	6.7	17.8	10.5	24
27	6.7	5.8	6.9	5.6	5.2	5.0	3.5	4.4	6.4	7.7	6.9	5.9	6.8	10.1	9.3	8.9	5.2	5.9	3.7	4.2	4.1	5.9	8.2	8.0	10.1	6.3	24
28	8.0	8.4	8.6	10.6	12.1	12.4	12.9	11.0	10.2	12.9	13.8	14.0	15.4	14.8	14.8	14.0	14.6	14.5	12.8	12.3	10.6	8.7	8.6	8.4	15.4	11.9	24
29	9.9	10.1	11.0	10.9	11.3	11.7	11.9	11.3	10.2	12.5	18.8	16.5	13.3	15.9	13.0	11.5	8.7	9.8	11.1	10.8	9.8	8.5	7.2	18.8	11.7	24	
30	7.4	7.9	8.7	9.4	11.9	11.8	13.3	13.7	12.3	11.9	14.9	15.5	14.5	14.9	13.7	12.4	13.8	10.9	7.1	3.9	3.5	3.6	5.4	6.2	15.5	10.4	24
31	6.0	5.6	5.5	5.1	5.9	4.9	4.8	4.6	4.9	5.9	7.6	5.9	6.9	9.4	10.1	10.8	9.8	8.7	4.1	6.1	6.8	7.5	7.6	6.7	10.8	6.7	24
HOURLY MAX	14.7	13.2	14.3	13.6	14.7	15.5	15.1	17.1	22.9	22.2	17.9	18.8	18.6	19.6	20.8	18.3	18.4	16.1	16.7	14.3	13.4	12.8	12.2	13.1			
HOURLY AVG	8.0	8.0	8.4	8.0	8.2	8.0	8.1	8.9	9.0	9.3	10.6	10.6	10.8	11.2	10.8	10.8	10.4	9.8	9.1	7.4	7.3	7.5	8.2	8.1			

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/Span CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUTSIDE REPAIR	K	COLLECTION ERROR

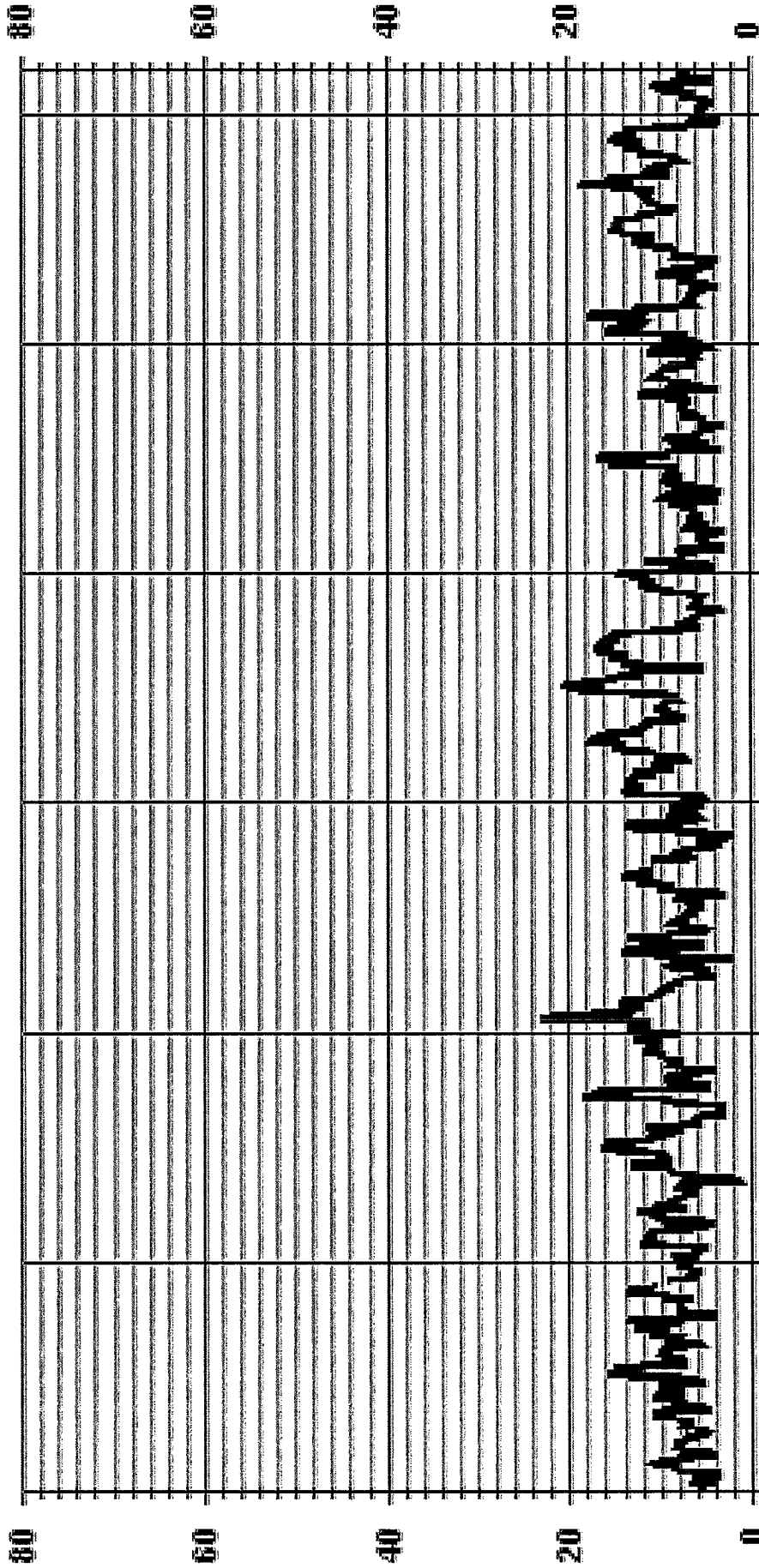
LAST CALIBRATION: August 28, 2014
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

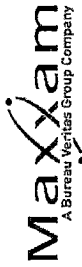
NUMBER OF NON-ZERO READINGS:	738
MAXIMUM 1-HR AVERAGE:	22.9 KPH
MAXIMUM 24-HR AVERAGE:	13.1 KPH
MONTHLY CALIBRATION TIME:	0 HRS
STANDARD DEVIATION:	3.54
OPERATIONAL TIME:	
AMID OPERATION UPTIME:	
MONTHLY AVERAGE:	
ON DAY(S)	8
ON DAY(S) VAR-VARIOUS	11
HRS	738
%	99.2
KPH	9.0

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

-- LICA31 WSP KPH



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

DAY	HOURS																								24-HOUR AVG.	RODGS.		
	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	24:00													
1	10.2	10.2	9.3	6.9	10.6	15.4	13.6	15.8	11.7	18.0	25.9	22.9	20.0	31.4	31.2	27.0	20.9	17.2	14.1	11.1	14.3	14.3	16.7	31.4	16.9	24		
2	16.7	13.2	17.4	13.6	17.2	13.4	15.2	10.9	12.0	15.2	18.7	22.9	29.0	23.5	31.4	31.2	27.0	23.9	17.2	14.1	11.1	14.3	14.3	16.7	31.4	16.9	24	
3	15.6	20.4	27.4	15.8	15.4	18.7	19.1	23.8	22.5	21.2	22.9	24.4	31.2	39.3	41.3	44.8	37.7	42.4	37.1	28.3	16.7	17.1	17.3	18.6	44.8	25.8	24	
4	21.6	22.1	22.1	20.8	20.4	21.0	21.6	31.1	33.6	37.6	39.8	38.4	33.9	P	P	P	36.8	32.2	32.0	28.1	14.0	11.4	11.0	12.9	39.8	25.8	21	
5	24.3	20.7	23.5	22.1	21.0	21.6	31.1	33.6	37.6	39.8	38.4	33.9	P	P	P	36.8	32.2	32.0	28.1	14.0	11.4	11.0	12.9	39.8	25.8	21		
6	12.5	11.7	11.6	14.0	11.5	9.0	8.6	13.2	12.8	32.7	31.0	33.4	34.3	32.2	34.7	32.0	35.7	26.6	15.8	12.3	7.9	10.3	35.5	32.0	35.7	21.3	24	
7	35.2	32.0	39.2	34.8	33.7	38.9	33.4	32.2	30.4	30.4	29.9	26.5	24.7	24.1	32.5	25.9	23.9	17.8	14.5	7.1	4.9	11.0	11.6	14.9	39.2	25.4	24	
8	13.8	13.4	26.7	30.2	26.5	32.9	23.2	26.7	34.2	26.6	32.5	39.7	45.0	40.2	42.1	34.6	30.5	39.3	33.4	27.4	25.2	16.9	23.2	22.9	45.0	29.5	24	
9	23.1	12.3	14.9	13.2	11.4	14.2	10.4	13.0	12.2	12.2	20.9	29.3	32.4	33.4	36.5	44.1	38.2	35.6	32.5	23.1	25.0	22.4	18.9	29.0	44.1	23.3	24	
10	27.9	29.6	20.0	16.6	19.1	20.8	23.0	29.4	25.6	24.2	24.2	25.8	32.1	34.9	34.5	31.2	33.4	35.8	28.8	23.9	30.0	34.2	34.2	26.3	35.8	27.7	24	
11	R	27.8	39.0	42.1	33.6	32.7	37.2	45.4	66.1	59.6	47.8	39.7	38.7	34.5	37.6	40.4	36.9	34.5	33.4	26.7	23.5	22.4	19.1	21.7	66.1	36.5	23	
12	19.3	18.6	16.9	16.9	18.9	13.4	11.1	13.2	15.9	23.8	31.0	32.4	30.2	19.7	18.3	7.8	35.5	15.6	33.8	42.7	25.6	26.3	13.6	26.7	42.7	22.0	24	
13	27.6	26.5	36.1	26.7	28.9	16.9	12.5	16.0	20.1	19.5	27.7	24.1	19.1	18.2	18.9	13.6	14.2	15.2	14.3	13.8	14.4	15.1	18.6	21.5	36.1	20.0	24	
14	10.4	12.7	14.9	20.4	21.9	17.8	18.7	23.9	24.0	31.8	34.7	34.7	35.1	P	P	P	27.6	25.0	23.0	17.5	27.9	15.3	12.5	13.8	14.7	14.5	19.2	24
15	12.1	11.0	9.4	5.9	20.4	19.1	11.0	11.3	14.1	15.6	29.4	31.6	35.4	39.7	29.6	26.2	23.0	17.5	27.9	15.3	12.5	13.8	14.7	14.5	39.7	19.2	24	
16	7.9	15.6	24.9	15.5	17.9	R	31.7	32.0	34.3	28.7	34.6	30.6	33.3	32.2	36.1	31.9	28.2	36.7	31.9	20.9	25.5	25.1	23.0	17.9	36.7	26.4	23	
17	21.4	33.5	36.7	34.1	46.8	43.3	43.5	42.4	47.2	51.1	47.2	45.7	41.3	57.5	49.0	40.7	48.1	34.8	30.0	38.4	21.4	21.6	18.1	21.8	57.5	38.2	24	
18	23.2	21.2	21.9	17.5	18.8	15.5	13.6	16.0	16.3	26.8	26.9	37.5	44.3	41.2	43.0	35.8	37.1	38.0	28.4	23.0	34.8	55.8	44.6	12.3	55.8	28.9	24	
19	19.0	28.4	38.9	31.2	39.6	37.8	42.7	45.3	42.7	48.0	43.3	39.9	46.1	46.2	39.9	41.4	44.7	38.6	25.6	24.5	10.7	13.8	16.4	14.9	48.0	34.2	24	
20	14.0	12.7	11.9	9.8	7.9	6.3	14.3	17.6	15.0	16.1	17.4	21.3	22.5	23.3	31.6	24.0	24.2	30.1	34.0	23.7	28.1	26.9	33.4	34.9	34.9	20.9	24	
21	41.1	39.6	25.4	13.8	14.5	12.9	23.0	28.3	21.1	21.3	20.7	22.9	18.9	22.3	17.6	15.0	22.6	20.6	23.2	9.9	11.2	16.3	14.7	12.2	41.1	20.4	24	
22	17.0	14.0	37.6	13.5	15.8	13.2	16.7	12.7	14.8	18.0	18.3	20.5	21.1	46.0	12.9	21.2	26.7	21.2	16.4	11.2	10.0	12.2	11.3	12.5	15.7	41.8	20.8	24
23	13.8	14.5	12.5	10.3	13.0	14.2	15.6	17.6	22.2	26.1	34.0	31.6	37.9	36.8	31.6	41.8	36.1	15.8	11.8	10.0	12.2	11.3	12.5	15.7	41.8	20.8	24	
24	15.3	11.1	11.6	8.7	7.7	8.0	10.7	14.6	15.7	14.1	22.6	27.4	21.5	29.0	25.9	28.3	26.6	26.8	23.1	13.4	21.2	22.5	25.4	22.4	29.0	18.9	24	
25	19.3	22.3	16.6	24.9	18.2	20.8	29.3	26.4	23.6	27.1	26.5	22.8	24.8	22.8	21.1	21.8	18.9	17.7	16.7	14.2	25.6	22.0	15.3	11.6	29.3	21.3	24	
26	9.8	13.1	24.5	17.3	11.8	19.3	22.2	26.9	31.3	27.9	29.2	29.7	33.4	29.2	35.1	38.8	26.3	44.4	37.4	19.7	16.4	11.6	11.2	11.6	44.4	24.1	24	
27	11.6	11.6	12.7	13.6	9.0	11.6	6.8	11.0	15.4	20.7	17.8	21.8	24.8	29.7	28.5	24.8	16.2	15.6	9.0	7.5	7.9	11.4	14.2	15.8	29.7	15.4	24	
28	17.1	19.7	19.5	22.7	26.3	28.4	30.0	25.4	27.2	31.1	37.1	38.6	42.8	38.6	41.4	38.8	40.1	39.5	31.6	34.2	23.7	18.2	18.8	15.5	42.8	29.4	24	
29	19.7	21.7	20.8	23.5	24.3	20.6	26.5	29.9	27.6	33.3	35.8	49.5	42.7	37.5	40.8	34.6	51.9	22.8	25.0	38.1	20.7	19.7	17.3	12.7	51.9	29.0	24	
30	15.8	15.1	13.6	14.9	17.5	18.1	23.0	23.5	29.7	26.8	34.9	43.6	36.2	39.5	39.9	35.1	42.7	28.1	20.9	10.6	6.8	6.6	8.8	9.0	43.6	23.4	24	
31	10.5	10.5	7.5	10.5	12.1	11.2	8.8	13.0	14.4	18.7	19.8	21.3	27.2	31.8	34.0	34.3	34.9	26.4	18.9	17.8	12.9	12.9	14.5	13.6	34.9	18.2	24	
HOURLY MAX	41.1	39.6	39.2	42.1	46.8	43.3	43.5	45.4	66.1	59.6	47.8	49.5	45.1	57.5	45.0	44.8	51.9	50.9	44.4	42.7	34.8	55.8	44.6	34.9				
HOURLY AVG	18.2	18.9	21.5	18.8	19.7	19.5	20.8	23.3	24.5	26.6	29.2	30.9	32.0	32.9	31.5	32.1	28.9	25.4	20.2	17.9	18.1	18.9	18.2					

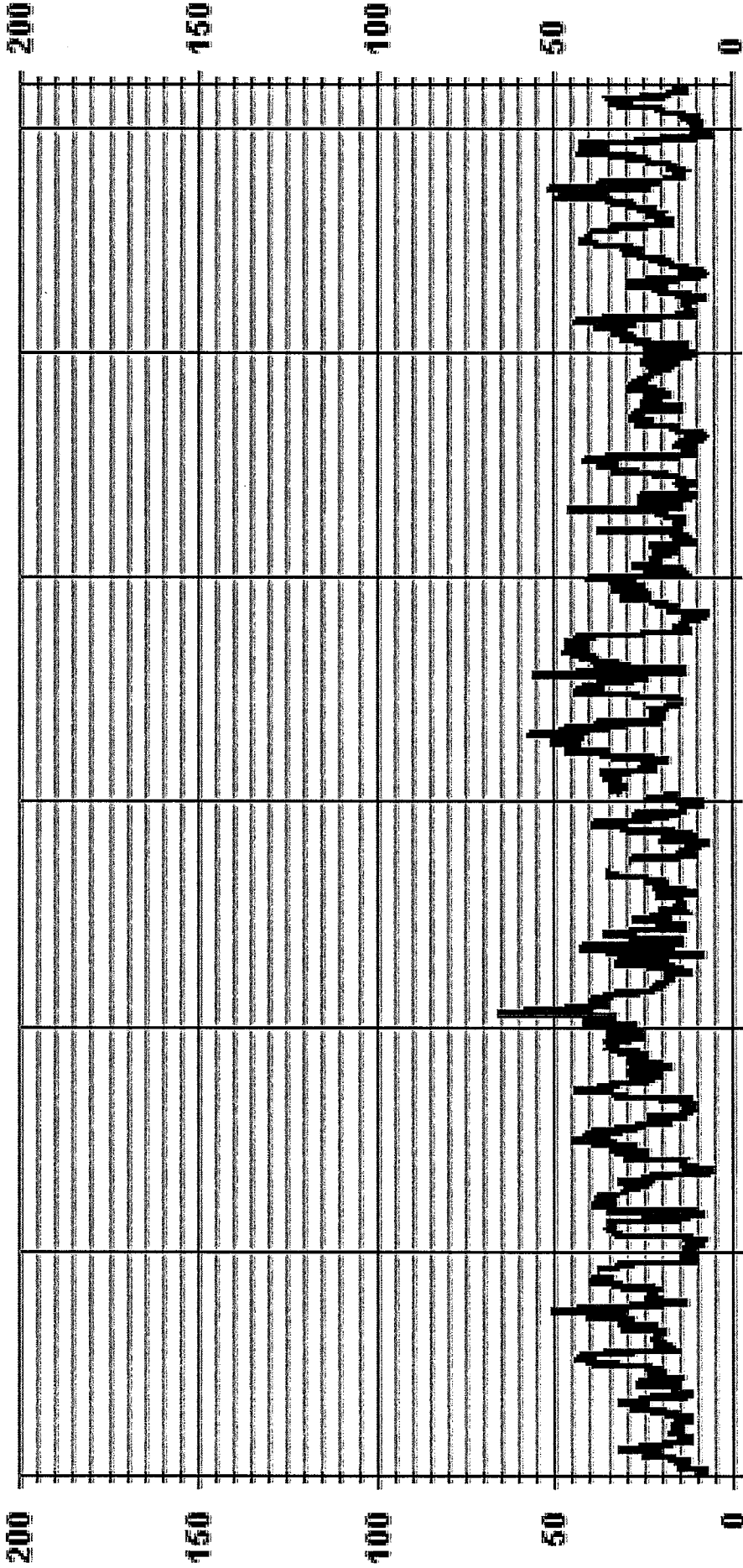
STATUS FLAG CODES

C	QUALITY ASSURANCE	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	66.1	KPH	@ HOUR(S)	8	ON DAY(S)	11
OPERATIONAL TIME:	734	HRS	VAR-VARIOUS			

01 Hour Averages



— LICA31 WSMAX KPH

LIC31
WSP / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 31
Site Name : LIC31
Parameter : WSP
Units : KPH

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	1.35	.27	.54	.81	.40	.40	.54	1.08	1.49	3.25	1.89	2.43	2.71	2.43	1.35	21.54	
< 12.0	2.43	.94	.94	1.62	1.08	2.16	.94	1.76	3.11	3.11	3.92	7.04	11.11	11.78	4.20	2.71	58.94
< 20.0	.81	.13	.27	.54	.67	.27	.40	.27	.67	1.21	2.71	3.25	5.14	.94	1.21	19.10	
< 29.0	.00	.00	.00	.27	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.40	
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	4.60	1.35	1.76	2.98	2.43	3.25	1.62	2.71	4.47	5.28	8.40	11.78	16.80	19.64	7.58	5.28	

Calm : .00 %

Total # Operational Hours : 738

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	10	2	4	4	6	3	3	4	8	11	24	14	18	20	18	10	159
< 12.0	18	7	7	12	8	16	7	13	23	23	29	52	82	87	31	20	435
< 20.0	6	1	2	4	4	5	2	3	2	5	9	20	24	38	7	9	141
< 29.0				2								1					3
< 39.0																	
>= 39.0																	
Totals	34	10	13	22	18	24	12	20	33	39	62	87	124	145	56	39	39

Calm : .00 %

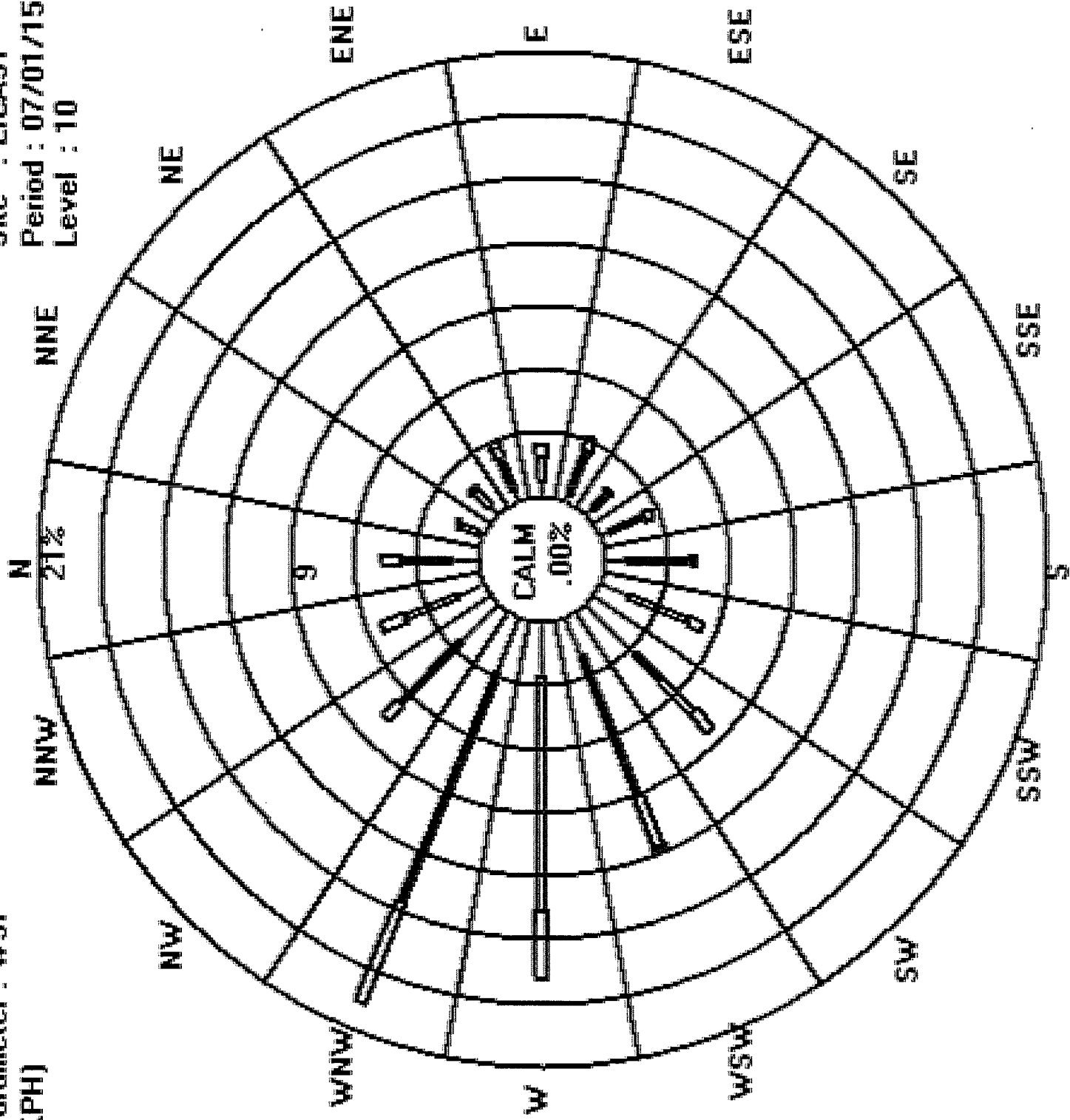
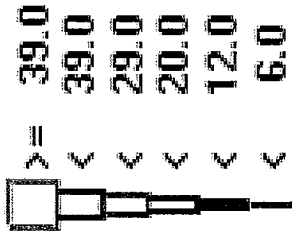
Total # Operational Hours : 738

Logger : 31 Parameter : WSP

Site : LICA31

Class Limits (KPH)

Period : 07/01/15-07/31/15
Level : 10



WIND DIRECTION



WIND DIRECTION (WD) hourly averages

MST
24-HOUR AVG
QUADRANT

DAY	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	0:00
-----	------	------	------	------	------	------	------	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	------

1	W	W	W	W	W	W	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
3	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
4	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
5	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
6	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
7	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
8	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
9	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
10	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
11	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
13	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
15	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
16	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
17	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
18	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
19	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
21	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
22	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
23	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
24	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
26	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
27	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
28	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
29	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
30	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
31	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W

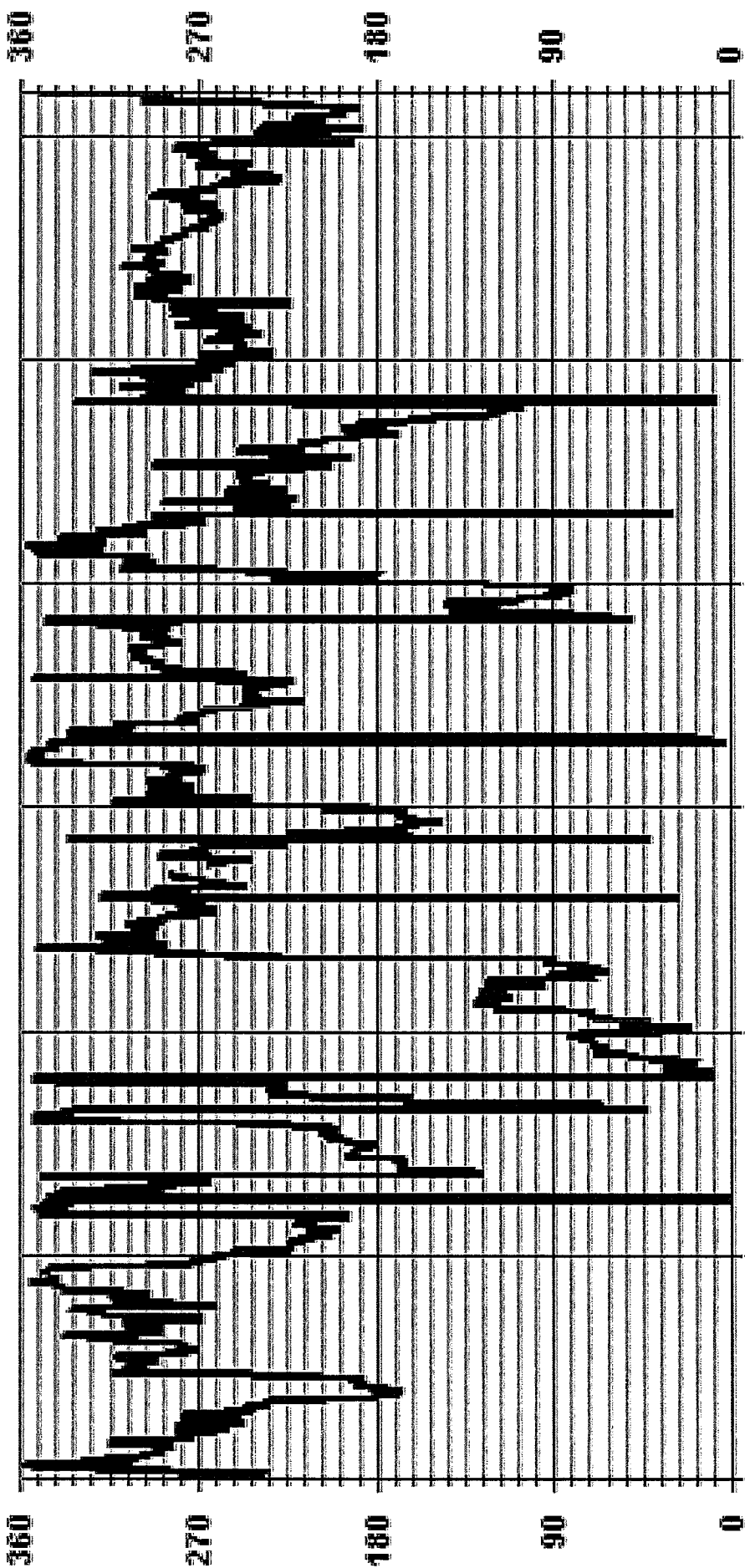
STATUS FLAG CODES

C	- CALIBRATION
Y	- MAINTENANCE
S	- DAILY ZERO SPAN CHECK
P	- POWER FAILURE
G	- OUT FOR REPAIR
Q	- QUALITY ASSURANCE
R	- RECOVERY
X	- MACHINE MALFUNCTION
O	- OPERATOR ERROR
K	- COLLECTION ERROR

LAST CALIBRATION: August 28, 2014
DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS
STANDARD DEVIATION:	80.89	
OPERATIONAL TIME:	738	HRS
AMD OPERATION UPTIME:	95.2	%
MONTHLY AVERAGE:	W	

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA31 WDR DEG

STANDARD DEVIATION WIND DIRECTION



STANDARD DEVIATION WIND DIRECTION (STDWVD) hourly averages in degrees

DAY	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	24:00
1	9	13	8	8	10	14	22	24	24	24	29	24	24	24	18	21	22	20	19	17	19	20	15	12	12
2	11	7	11	16	10	16	16	21	19	27	30	36	40	47	28	21	22	20	20	25	12	21	14	9	7
3	9	12	13	15	13	15	20	24	20	35	33	27	37	30	23	20	20	20	21	21	19	17	13	12	10
4	13	13	15	16	17	21	18	21	23	23	25	26	23	22	22	22	21	22	25	21	21	23	22	16	18
5	19	18	19	18	17	19	21	26	19	21	24	25	26	26	P	32	30	30	27	17	9	9	9	9	
6	7	4	3	5	7	5	9	14	27	24	26	28	27	27	26	26	26	22	20	16	11	8	17	20	
7	20	19	26	21	23	20	23	27	25	29	32	35	41	43	38	36	30	31	30	31	30	51	34	7	
8	8	7	10	10	11	16	19	20	21	24	22	21	23	23	22	20	21	24	23	21	20	16	13	9	
9	17	15	12	14	12	12	12	12	32	50	43	37	30	29	24	16	17	18	13	12	17	22	14	17	
10	18	21	18	17	19	58	21	25	25	28	26	24	25	24	23	23	23	22	19	19	17	20	20	19	
11	41	17	20	21	21	19	19	18	19	19	20	24	24	24	24	24	23	19	20	19	16	15	15	15	
12	14	11	14	12	12	14	19	27	33	32	28	28	28	28	48	27	26	23	11	14	19	24	19	21	
13	23	18	19	26	25	26	18	20	18	21	18	22	26	22	17	23	14	13	18	12	14	14	15	31	
14	35	23	14	14	14	16	14	17	18	21	20	22	20	24	P	P	P	P	P	18	11	5	9	12	
15	9	8	13	16	20	23	13	20	17	18	19	18	18	20	20	18	19	18	20	18	18	16	16	19	
16	8	13	16	20	21	25	20	19	22	19	19	19	28	22	24	22	19	20	18	18	19	16	15	14	
17	21	22	20	21	25	20	19	22	19	19	19	19	28	22	24	22	19	20	18	18	19	16	15	14	
18	15	14	13	12	11	10	10	12	17	23	20	17	16	17	15	14	12	11	12	15	19	23	20	20	
19	8	12	17	17	18	20	19	22	21	20	22	19	20	21	22	21	22	21	19	18	16	11	11	12	
20	13	13	12	11	24	13	20	21	38	31	31	40	36	40	34	23	21	20	18	18	18	18	18	17	
21	18	26	16	22	14	16	20	15	25	23	27	39	30	26	46	55	38	30	19	13	11	16	28	26	
22	16	24	29	15	14	15	14	15	21	25	26	36	26	31	41	53	21	20	11	12	21	22	16	9	
23	5	6	7	10	4	8	11	16	22	19	18	22	17	17	24	24	32	27	16	10	15	12	6	8	
24	14	10	10	8	5	11	18	20	23	25	29	27	34	29	30	25	26	18	12	9	11	13	14	18	
25	14	21	25	17	22	16	17	18	21	24	23	31	30	22	31	31	23	17	17	17	16	12	14	13	
26	8	13	14	13	9	8	10	12	16	15	16	24	24	21	15	14	15	14	18	13	11	10	7	7	
27	7	7	11	10	10	9	12	11	15	17	25	36	31	23	28	23	28	26	11	9	8	10	11	13	
28	12	15	14	14	13	15	16	17	19	20	22	21	24	22	22	23	20	20	18	16	16	14	13	10	
29	13	12	10	12	12	10	12	16	21	19	18	22	22	21	19	20	21	19	20	21	18	15	13	11	
30	13	11	6	4	4	6	7	13	16	20	17	21	22	23	25	24	20	20	19	11	10	7	10	4	
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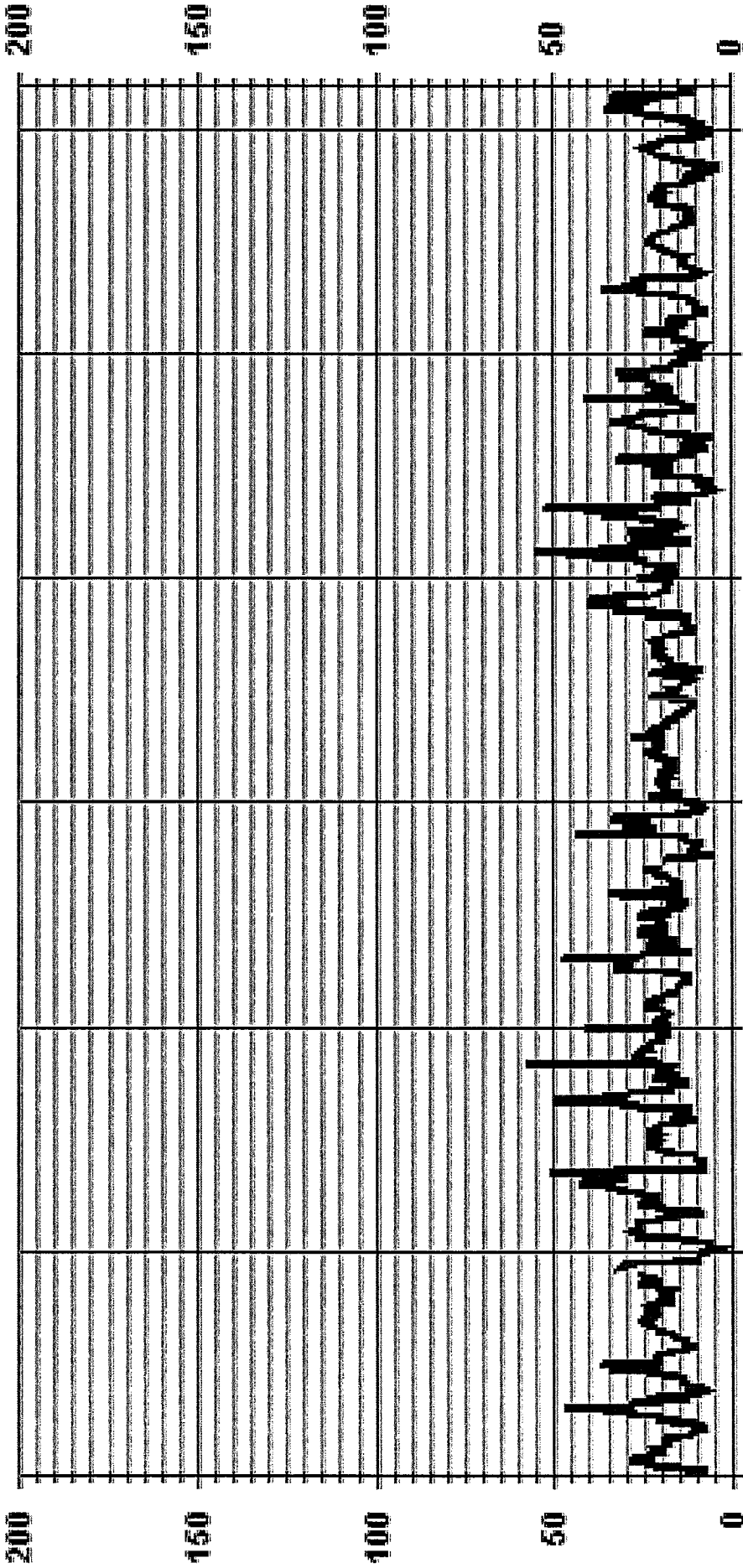
STATUS FLAG CODES

C	-	CALIBRATION	Q	-	QUALITY ASSURANCE
V	-	MAINTENANCE	R	-	RECOVERY
S	-	SCALE ZERO/SPAN CHECK	X	-	MACHINE MALFUNCTION
P	-	POWER FAILURE	O	-	OPERATOR ERROR
G	-	OUT FOR REPAIR	K	-	COLLECTION ERROR

LAST CALIBRATION: August 28, 2014

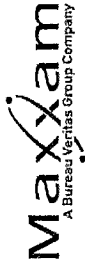
CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 738 HRS

01 Hour Averages



— LICA31 STOWDIR DEG

RELATIVE HUMIDITY



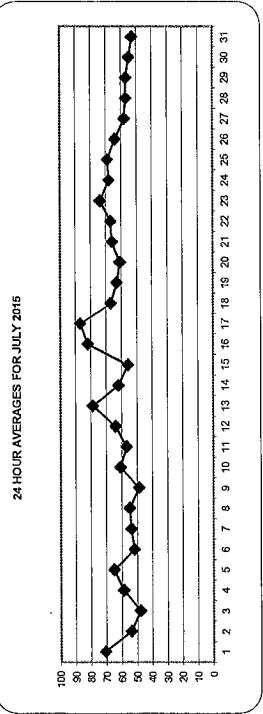
RELATIVE HUMIDITY (RH) hourly averages in %

MST

DAY	HOUR																								DAILY MAX	DAILY AVG	24-HOUR AVG	RDGS.
	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				
1	80	81	83	87	88	85	81	76	73	66	62	62	63	66	58	57	57	60	61	65	66	73	80	81	88	71.3	24	
2	79	83	82	86	84	71	67	59	52	42	33	29	28	30	26	30	32	30	39	49	55	63	68	71	86	53.6	24	
3	72	74	73	76	78	75	68	58	52	45	40	40	40	30	32	29	27	23	23	31	36	43	44	47	78	47.7	24	
4	51	55	53	59	68	70	69	70	61	51	43	40	39	41	39	37	44	49	54	67	80	87	89	89	89	58.5	24	
5	89	89	89	89	90	89	86	84	78	75	69	60	46	P	P	34	36	34	35	41	50	57	58	62	90	65.5	22	
6	62	67	68	66	76	80	73	63	55	44	37	36	34	32	31	35	32	35	44	50	59	66	66	80	52.1	24		
7	70	73	76	76	76	73	66	62	59	50	45	42	41	37	36	35	34	37	41	44	49	55	59	65	76	54.2	24	
8	69	71	72	71	69	69	70	65	59	53	47	43	41	37	38	41	38	38	41	44	50	57	58	72	54.6	24		
9	61	70	73	77	76	76	69	62	54	49	47	44	40	40	41	39	40	54	58	62	62	64	68	88	61.1	24		
10	57	66	79	85	88	85	80	73	67	64	55	50	46	44	40	38	30	32	34	38	46	54	61	63	81	57.3	24	
11	77	80	81	76	66	73	70	67	64	61	57	53	50	42	38	30	32	34	38	46	54	61	63	81	57.3	24		
12	68	76	77	79	82	82	75	68	63	58	53	47	44	40	43	45	56	57	62	63	72	71	75	85	64.2	24		
13	88	89	89	90	91	91	91	90	89	84	81	73	64	60	61	70	73	73	72	72	75	77	78	79	91	79.1	24	
14	80	80	82	83	79	77	69	64	60	56	54	52	54	50	P	P	P	P	P	40	45	56	57	55	83	62.5	20	
15	57	63	67	68	75	75	58	47	35	45	52	50	43	42	42	43	46	52	61	66	67	71	74	75	56.0	24		
16	78	79	80	78	80	87	90	90	86	81	79	82	79	76	72	83	81	74	78	79	88	90	90	91	91	82.1	24	
17	91	91	91	91	91	91	91	90	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	90	91	86.6	24	
18	91	90	90	89	85	75	69	62	58	55	50	46	44	42	45	44	45	44	49	52	56	63	74	88	89	91	66.5	24
19	90	91	89	87	87	85	81	73	66	60	55	53	49	46	45	42	39	42	44	48	58	61	65	65	91	63.4	24	
20	59	72	76	79	85	77	65	66	62	58	59	49	48	45	42	44	47	45	49	57	63	70	72	71	85	61.0	24	
21	70	74	79	83	87	87	76	77	68	63	58	54	54	57	49	45	50	51	55	65	66	67	71	83	87	66.2	24	
22	80	76	80	82	81	77	70	66	59	50	43	42	40	55	74	63	58	68	72	75	83	81	83	87	80	67.0	24	
23	84	85	85	88	90	88	75	69	62	57	53	51	47	44	50	69	83	80	80	84	84	89	89	88	90	73.9	24	
24	85	90	91	91	91	91	86	86	85	73	66	55	48	46	45	43	45	49	53	56	59	64	63	65	91	67.8	24	
25	72	79	87	88	90	89	87	88	79	67	61	53	49	46	43	43	43	43	43	43	43	43	43	43	89	69.3	24	
26	88	88	89	87	88	85	75	70	67	59	52	47	43	42	41	44	43	43	43	43	43	43	43	89	64.5	24		
27	80	78	76	77	78	77	82	73	64	54	43	39	37	38	35	35	37	37	45	48	58	63	66	82	58.2	24		
28	68	79	77	72	72	71	71	64	57	54	52	48	43	39	37	38	37	39	43	49	56	64	67	69	79	56.9	24	
29	69	69	69	68	68	68	61	57	54	49	46	40	39	37	38	41	54	55	53	65	63	61	66	74	74	56.8	24	
30	74	80	82	85	82	76	65	59	55	51	47	41	37	34	33	33	33	35	38	44	50	55	65	69	85	55.1	24	
31	72	67	58	79	81	78	63	57	53	46	39	34	30	30	30	29	30	30	37	51	52	58	65	69	81	53.3	24	
HOURLY MAX	91	91	91	91	91	91	90	90	89	89	89	89	83	76	74	83	83	86	88	87	88	90	90	91	91	81	71.3	24
HOURLY AVG	74.9	77.6	78.8	80.4	81.5	80.1	74.3	69.9	64.4	58.6	54.1	50.2	46.6	44.9	43.6	43.8	46.0	47.2	51.0	56.0	61.9	66.3	69.6	72.6	81	53.3	24	

STATUS FLAG CODES

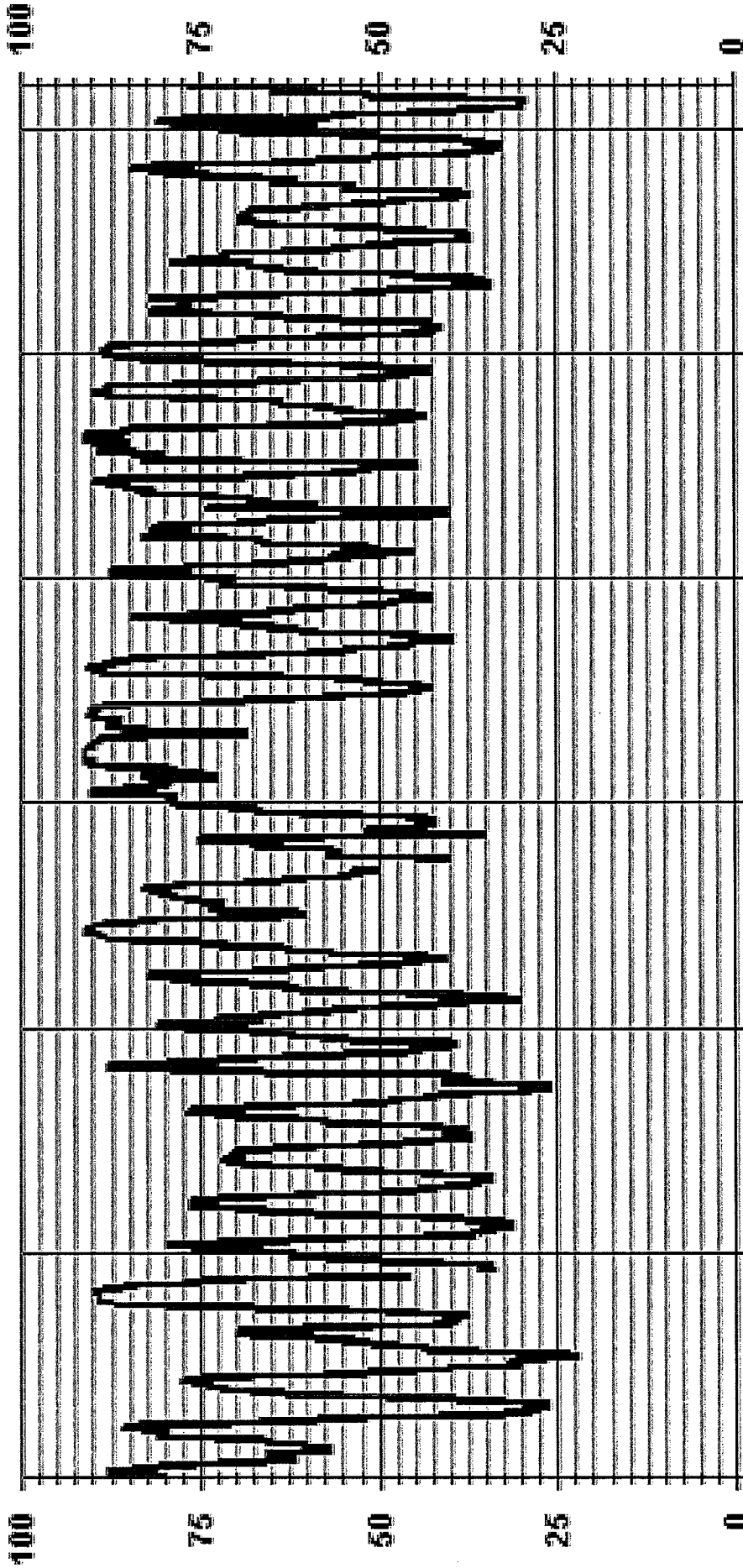
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO / SPAN CHECK	X	- MACHINE/MAJORITY FUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	91	% @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	86.6	%	59	ON DAY(S)	17
STANDARD DEVIATION:	17.74			VAR-VARIOUS	
OPERATIONAL TIME:	738	HRS			
AMTD OPERATION UPTIME:	99.2	%			
MONTHLY AVERAGE:	62	%			

01 Hour Averages



07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA31 RH %FS

BAROMETRIC PRESSURE

BAROMETRIC PRESSURE (BP) hourly averages in millibar

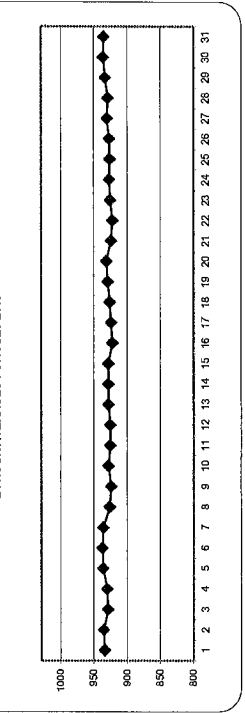
MST

DAY	HOUR START																								DAILY MAX.	24-HOUR AVG.	RDGS.	
	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				0:00
1	933	933	933	933	933	933	934	934	935	936	936	936	936	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937
2	936	936	936	936	936	936	937	937	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938
3	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931
4	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928
5	933	933	933	933	933	933	934	934	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935
6	938	938	938	938	938	938	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937
7	935	935	935	935	935	935	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936
8	931	931	931	931	931	931	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932
9	923	923	923	923	923	923	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924
10	925	925	925	925	925	925	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926
11	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927
12	925	925	925	925	925	925	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926
13	927	927	927	927	927	927	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928
14	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928
15	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929
16	924	924	924	924	924	924	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923	923
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18	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928
19	934	934	934	934	934	934	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935
20	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934
21	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926
22	923	923	923	923	923	923	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922
23	923	923	923	923	923	923	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924
24	926	926	926	926	926	926	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927	927
25	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925
26	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925
27	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929
28	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929
29	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931	931
30	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934	934
31	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937
HOURLY MAX	938	938	938	938	938	938	939	939	940	940	939	939	939	941	941	941	941	941	941	941	941	941	940	939	938	938	938	
HOURLY AVG	929	929	929	929	929	929	930	930	931	931	931	931	931	931	931	931	931	931	931	931	931	930	930	929	929	929	929	

STATUS FLAG CODES

C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

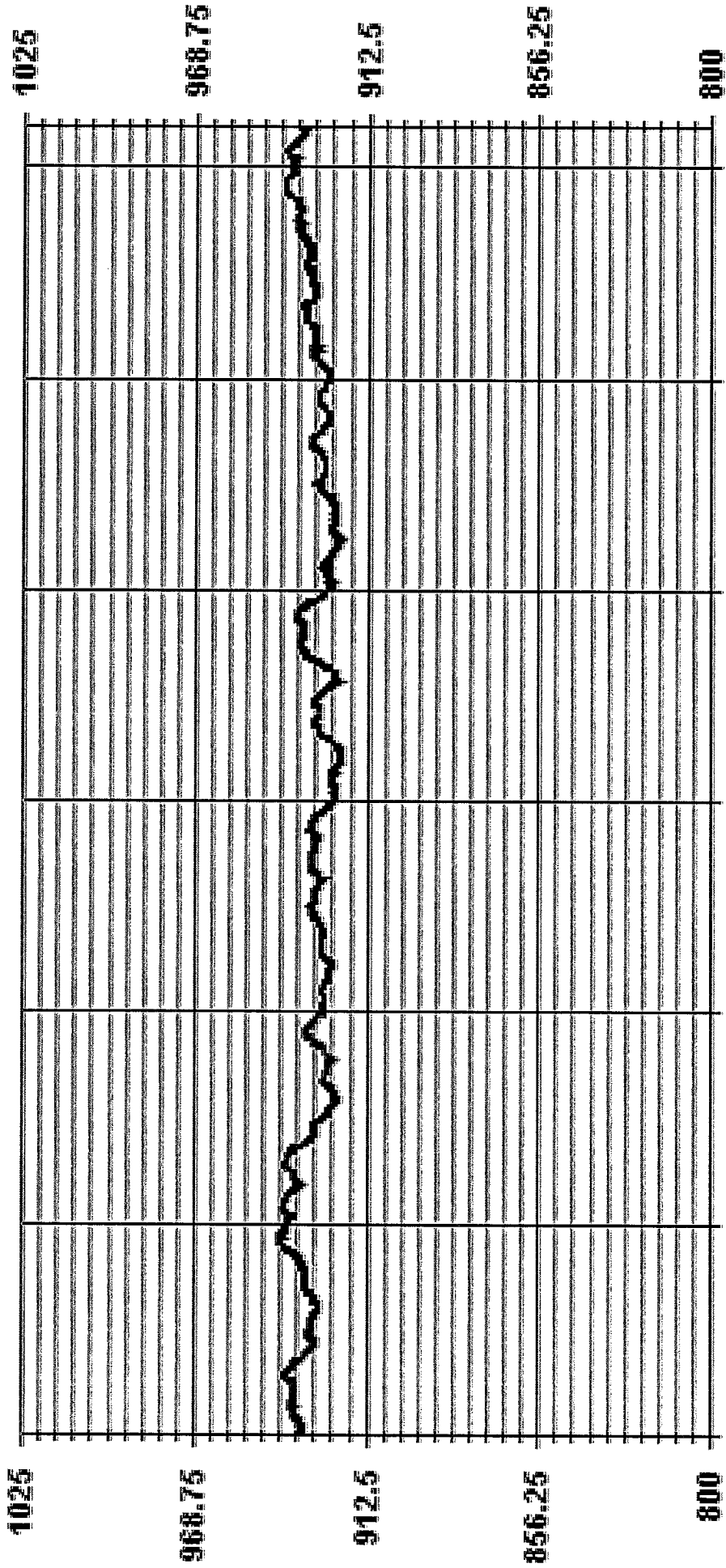
24-HOUR AVERAGES FOR JULY 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	941	MB	@ HOUR(S)	VAR	ON DAY(S)	5
MAXIMUM 24-HR AVERAGE:	938	MB			ON DAY(S)	6
OPERATIONAL TIME: 738 HRS						
AMD OPERATION UPTIME: 99.2 %						
STANDARD DEVIATION:	4.74				MONTHLY AVERAGE:	930 MB

01 Hour Averages

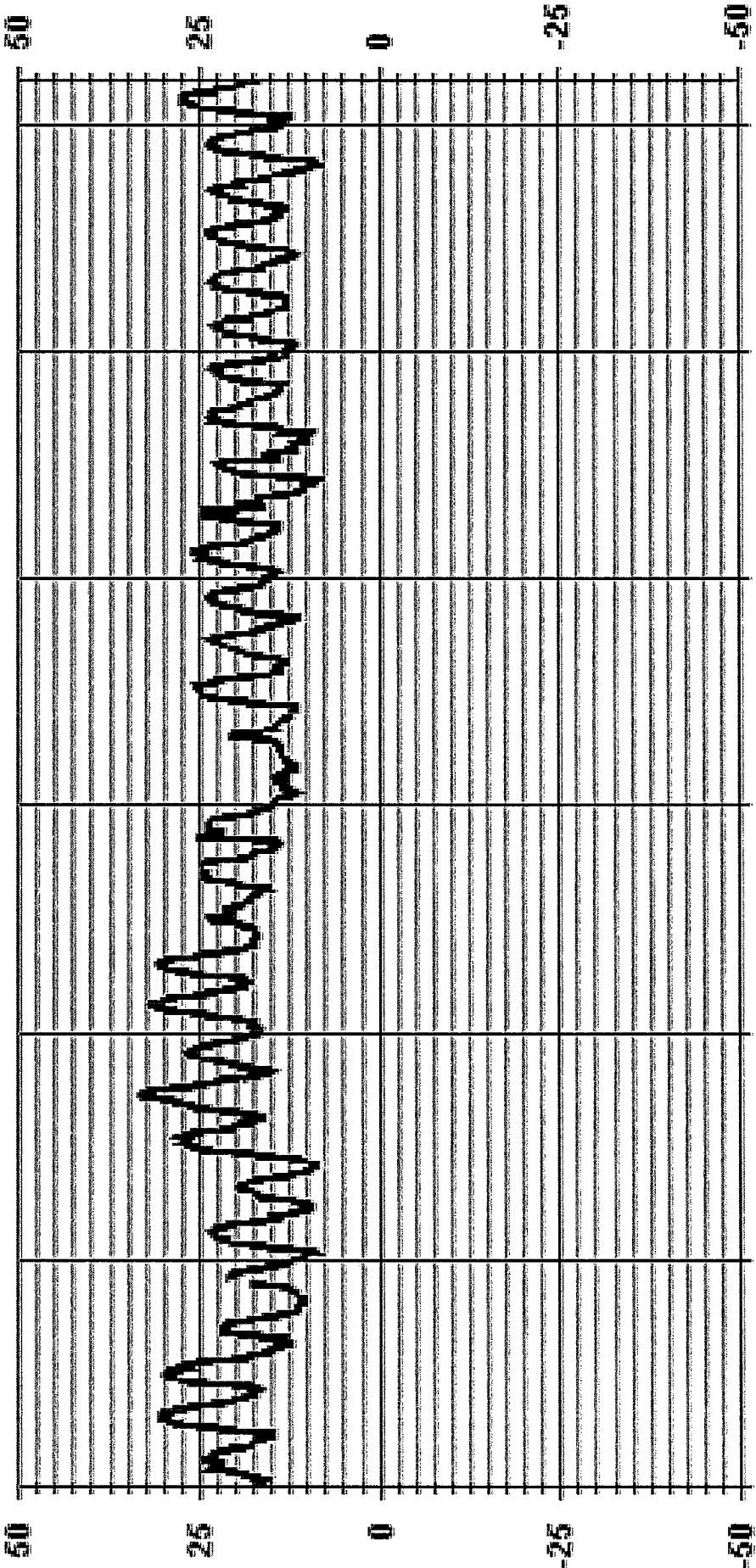


07/01/15 00:0007/06/15 00:0007/11/15 00:0007/16/15 00:0007/21/15 00:0007/26/15 00:0007/31/15 00:00

— LICA31 BP MB

AMBIENT TEMPERATURE

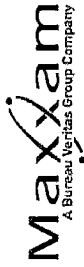
01 Hour Averages



07/01/15 00:00:07/06/15 00:00:07/11/15 00:00:07/16/15 00:00:07/21/15 00:00:07/26/15 00:00:07/31/15 00:00:00

— LICA31 TPX DGC

PRECIPITATION

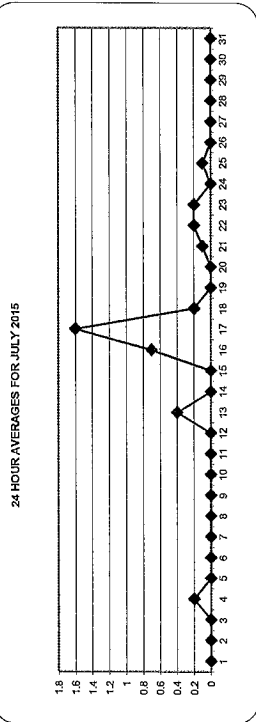


PRECIPITATION hourly averages (mm)

DAY	DAILY																								RDGS.		
	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		24:00	
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	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
2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
3	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	24
4	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
6	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
7	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	24
9	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
10	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	24
12	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
13	0.0	0.0	2.8	2.9	3.2	0.4	0.1	0.5	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	0.0	24
14	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
15	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	24
16	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
17	2.1	3.6	7.5	3.9	0.9	1.1	2.1	2.8	1.4	1.5	3.3	1.6	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
18	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
21	1.5	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
24	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
26	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
27	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
28	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
29	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
31	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	2.1	3.6	7.5	3.9	3.2	1.9	4.2	4.2	1.4	1.6	3.3	1.6	0.0	5.5	0.4	0.9	4.3	2.6	0.1	0.8	2.8	2.3	1.7	1.1			
HOURLY AVG	0.1	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.2	0.0	0.1	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.2	0.1	0.1

STATUS FLAG CODES

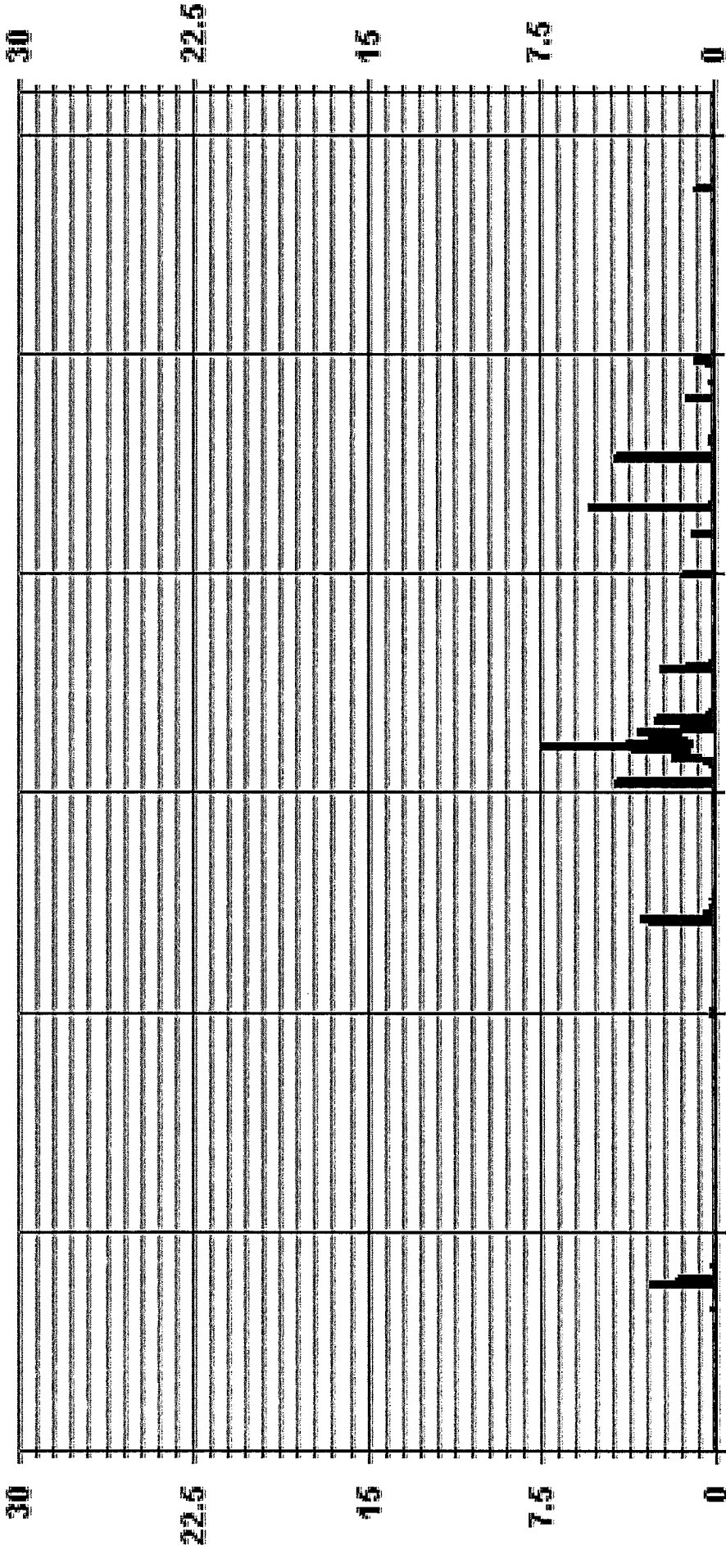
C	CALIBRATION	Q	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	7.5	MM	@ HOUR(S)	2	ON DAY(S)	17
MAXIMUM 24-HR AVERAGE:	1.6	MM			ON DAY(S)	17
MONTHLY TOTAL	91.0	MM			VAR-VARIOUS	
STANDARD DEVIATION:	0.60					
OPERATIONAL TIME:			738 HRS			
AMD OPERATION UPTIME:			99.2 %			
MONTHLY AVERAGE:			0.1 MM			

01 Hour Averages

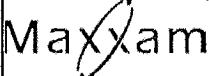


07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA31 PRECIP MM

APPENDIX II
ANALYZER CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E SO2 Analyzer Calibration

Date: 20-Jul-15

Company: LICA

Station Name/Location: St.Lina

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 10:38 - 15:24

Calibration Purpose: Monthly Calibration

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Mar-19

Analyzer:

Serial Number: 468

Last Calibration Date: 9-Jun-15

Previous Cal High Point C.F.: 1.000

Range ppb: 1000

As Found C.F.: 0.963

New C.F.: 0.996

As found:

SLOPE: 0.950

OFFSET: 68.6

HVPS: 532

RCELL TEMP: 50.0

BOX TEMP: 29.2

PMT TEMP: 7.8

IZS TEMP: 40.0

TEST: NA

STABIL: 0.0

PRES: 24.1

SAMP FL: 578

PMT: 68.1

NORM PMT: 74.6

UV LAMP: 1966.2

LAMP RATIO: 79.5

STR. LGT: 32.7

DRK PMT: 17.8

DRK LMP: 3.6

Internal Span: 237

As left:

SLOPE: 0.919

OFFSET: 74.4

HVPS: 532

RCELL TEMP: 50.0

BOX TEMP: 28.7

PMT TEMP: 7.8

IZS TEMP: 40.0

TEST: NA

STABIL: 0.1

PRES: 24.0

SAMP FL: 577

PMT: 65.8

NORM PMT: 74.9

UV LAMP: 1965.8

LAMP RATIO: 79.5

STR. LGT: 34.2

DRK PMT: 17.8

DRK LMP: 3.5

Internal Span: 228.3

Calibrator:

Flow Meter ID's: NA

Make & Model: SABIO 2010 D

Serial #: 11900613

Cal Gas Cylinder I.D. #: BLM002073

Cal Gas Conc. (ppm): 49.5

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5013	0	5013
high	4938	77	5015
mid	4976	38	5014
low	4994	19	5013

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5013	0.0	5013	0	3.0	NA
adjusted zero	5013	0.0	5013	0	0.0	NA
as found high	4938	77.20	5015	762.0	791.0	0.963
adjusted high	4938	77.20	5015	762.0	762.0	1.000
mid	4976	37.70	5014	372.2	374.0	0.995
low	4994	18.90	5013	186.6	188.0	0.993
calibrator zero	5013	0.00	5013	0	1.0	NA
Average C.F. =						0.996

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	Pass/Fail ?
Slope =	1.000	> or = 0.995	PASS
b (Intercept as % of full scale) =	-0.09%	0.85-1.15	PASS
% change in C.F. from last cal	3.67%	± 3% F.S.	PASS
		± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

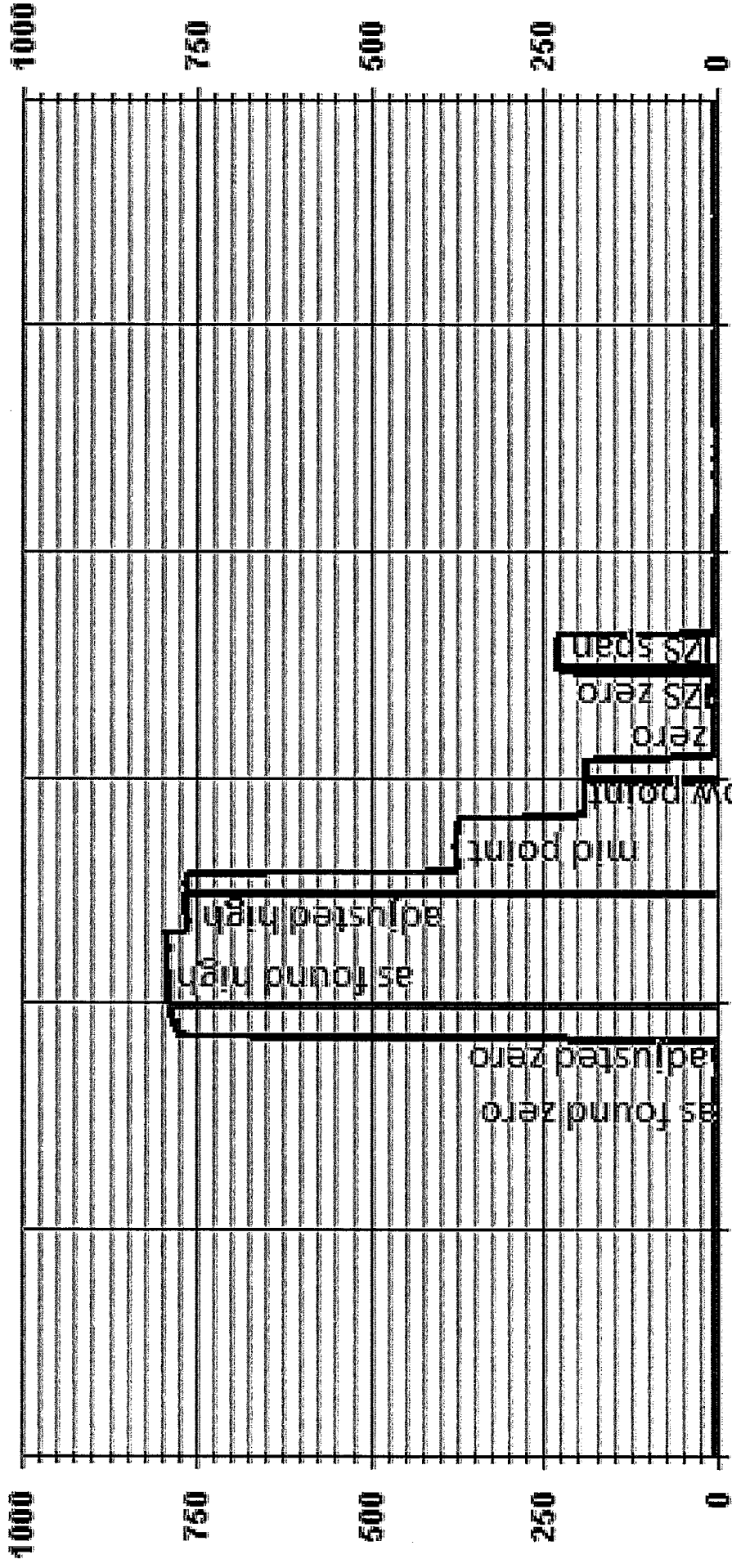
Comments:

Sample filter changed. Zero air charcoal scrubber of the analyzer changed out.

API 100E SO2 Analyzer Calibration

Calculated (ppb)	Indicated (ppb)
0	0
188	188
374	374
762	762

01 Minute Averages



07/20/15 08:00 07/20/15 10:00 07/20/15 12:00 07/20/15 14:00 07/20/15 16:00 07/20/15 18:00

— LICA31 SO2_ PPB

HYDROGEN SULPHIDE

API 101E H2S Analyzer Calibration

Date: 20-Jul-15

Company: LICA

Station Name/Location: St.Lina

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: H2S

Start/End Time (mst): 10:38 - 15:29

Calibration Purpose: Monthly Calibration

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 15-Jul-17

Analyzer:

Serial Number: 509

Last Calibration Date: 9-Jun-15

Previous Cal High Point C.F.: 1.000

Range ppb: 100

As Found C.F.: 1.016

New C.F.: 0.995

As found:

SLOPE: 1.092

OFFSET: 33.6

HVPS: 488

RCELL TEMP: 50.0

BOX TEMP: 30.0

PMT TEMP: 8.0

IZS TEMP: 48.0

TEST: NA

STABIL: 0.0

PRES: 20.5

SAMP FL: 545

PMT: 31.8

NORM PMT: 33.7

UV LAMP: 3112.0

LAMP RATIO: 93.8

STR. LGT: 18.3

DRK PMT: 8.9

DRK LMP: 0.7

Internal Span: 54

As left:

SLOPE: 1.112

OFFSET: 33.8

HVPS: 488

RCELL TEMP: 50.0

BOX TEMP: 29.4

PMT TEMP: 8.0

IZS TEMP: 48.0

TEST: NA

STABIL: 0.1

PRES: 20.5

SAMP FL: 544

PMT: 31.0

NORM PMT: 35.0

UV LAMP: 3114.3

LAMP RATIO: 93.9

STR. LGT: 18.8

DRK PMT: 8.9

DRK LMP: 0.7

Internal Span: 55.07

Calibrator:

Flow Meter ID's: NA

Make & Model: API

Serial #: 830

Cal Gas Cylinder I.D. #: LL36837

Cal Gas Conc. (ppm): 10.0

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4959	39	4998
mid	4980	19	4999
low	4990	11	5001

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5000	0.0	5000	0	0.3	NA
adjusted zero	5000	0.0	5000	0	0.0	NA
as found high	4961	39.00	5000	78.0	76.8	1.016
adjusted high	4961	39.00	5000	78.0	78.0	1.000
mid	4979	19.00	4998	38.0	38.4	0.990
low	4990	11.00	5001	22.0	22.1	0.995
calibrator zero	5000	0.00	5000	0	0.4	NA
Average C.F. =						0.995

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS > or = 0.995	Pass/Fail ?
Slope = <u>1.000</u>	0.85-1.15	PASS
b (Intercept as % of full scale) = <u>-0.12%</u>	± 3% F.S.	PASS
% change in C.F. from last cal = <u>-1.56%</u>	± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: 22 ppb Time gas run (mst): 11:36 - 11:41

Zero corrected analyzer response: 0.2 ppb

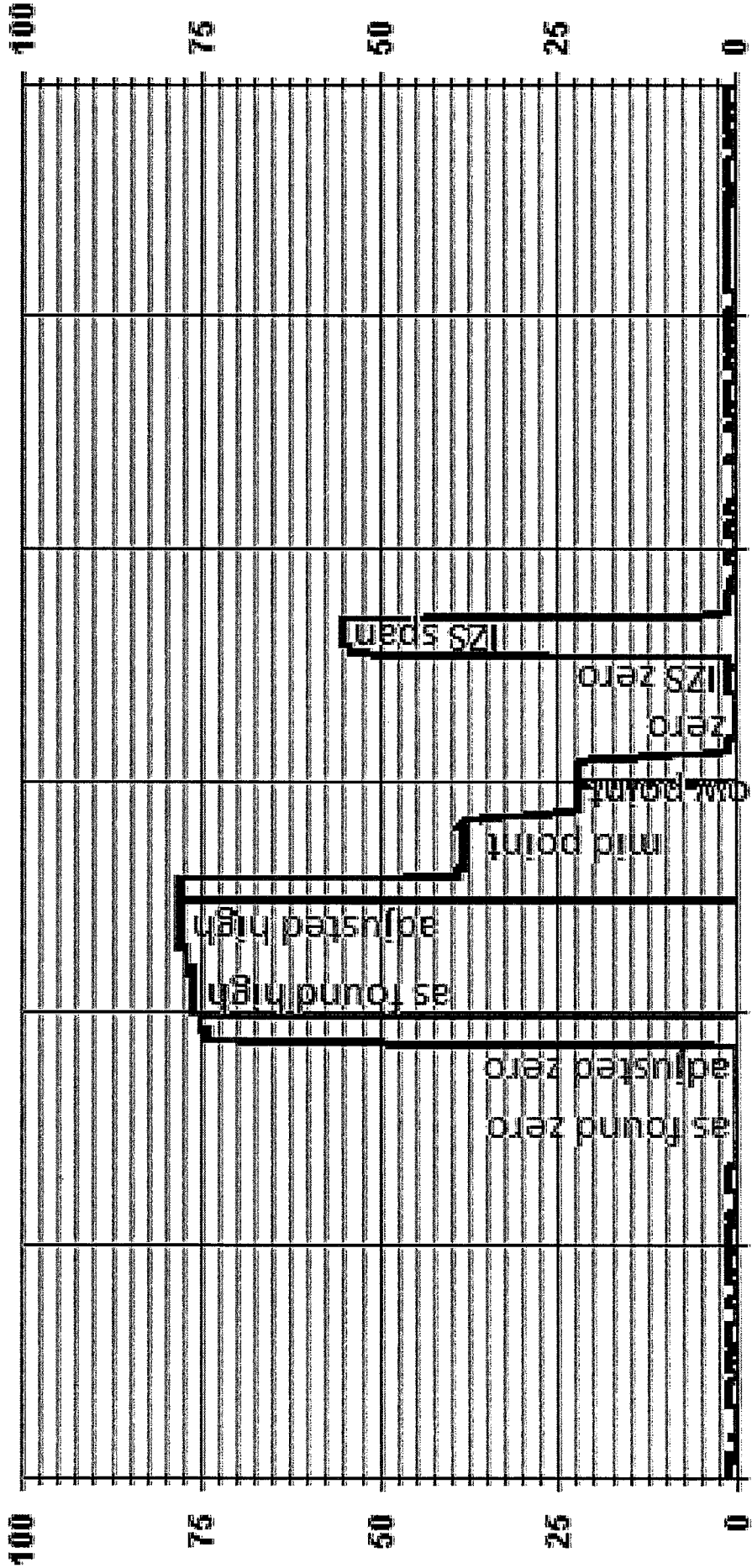
Comments:

Sample filter changed.

API 101E H2S Analyzer Calibration

Calculated Concentration (ppb)	Indicated Concentration (ppb)
0	0
22.1	22.1
38.4	38.4
78.0	78.0

01 Minute Averages



07/20/15 08:00 07/20/15 10:00 07/20/15 12:00 07/20/15 14:00 07/20/15 16:00 07/20/15 18:00

— LICA31 H2S_ PPB

TOTAL HYDROCARBON

Maxxam Thermo 51C THC Analyzer Calibration

Date: 17-Jul-15 Start Time (mst): 10:24
 Company: LICA End Time (mst): 14:57
 Station Name/Location: St. Lina Calibration Purpose: Monthly
 Performed by: Alex Yakupov Cal Gas Expiry Date: 12-Aug-17

Analyzer: 51CLT-77021-384 Range ppm: 50
 Serial Number: 7-Jun-15 As Found C.F.: 0.999
 Last Calibration Date: 1.002 New C.F.: 0.997
 Previous Cal High Point C.F.:

	As found:	As left:
H ₂ cylinder (psi):	<u>80</u>	<u>2100</u>
H ₂ cylinder reg set (psi):	<u>30</u>	<u>32</u>
Span Cylinder (psi):	<u>1000</u>	<u>1000</u>
Span Cylinder Reg Set (psi):	<u>35</u>	<u>35</u>
Zero Air Gen Pressure:	<u>40</u>	<u>40</u>
measurement alarms:	<u>None</u>	<u>None</u>
service alarms:	<u>None</u>	<u>None</u>
FID status:	cnt: <u>1589</u>	cnt: <u>1684</u>
	rng: <u>1</u>	rng: <u>1</u>
	try: <u>1</u>	try: <u>1</u>
	flm: <u>186.1</u>	flm: <u>186.6</u>
	det: <u>125.8</u>	det: <u>125.4</u>
Oven Readings:	Flame: <u>185</u>	Flame: <u>186</u>
	Filter: <u>125</u>	Filter: <u>125</u>
	Base: <u>125</u>	Base: <u>125</u>
	Pump: <u>06.90</u>	Pump: <u>06.92</u>
Voltages:	+5 <u>4.9</u>	+5 <u>4.9</u>
	+15 <u>14.8</u>	+15 <u>14.8</u>
	-15 <u>-14.9</u>	-15 <u>-14.9</u>
	Internal Span: <u>32.6</u>	Internal Span: <u>32.81</u>

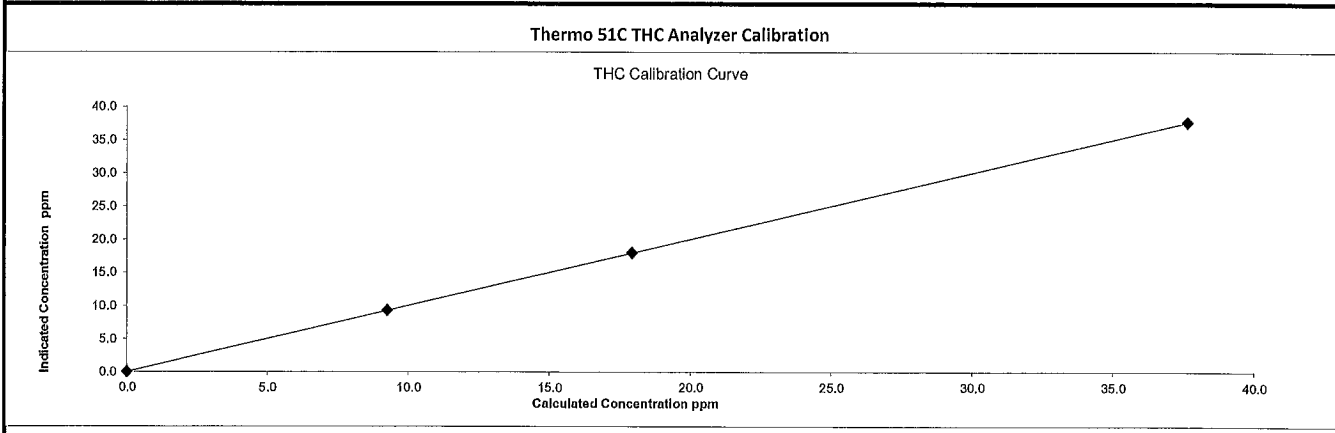
Calibrator:	Flow Meter ID's: <u>NA</u>	Calibrator Flow Targets:			
	Make & Model: <u>API 700</u>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
	Serial #: <u>830</u>	zero	<u>2000</u>	<u>0</u>	<u>2000</u>
	Cal Gas Cylinder I.D. #: <u>LL33674</u>	high	<u>1935</u>	<u>65</u>	<u>2000</u>
	CH ₄ /C ₂ H ₆ Cylinder Conc. (ppm): <u>601.4</u> <u>202.0</u>	mid	<u>1969</u>	<u>31</u>	<u>2000</u>
	CH ₄ as propane/total CH ₄ equilivants (ppm): <u>555.5</u> <u>1156.9</u>	low	<u>1984</u>	<u>16</u>	<u>2000</u>

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppm)	Indicated Concentration (ppm)	Correction Factors
	Diluent	Cal Gas	Total			
as found zero	1999	0.00	1999	0	0.20	NA
adjusted zero	1999	0.00	1999	0	0.00	NA
as found high	1932	65.00	1997	37.66	37.70	0.999
adjusted high	1932	65.00	1997	37.66	37.70	0.999
mid	1969	31.00	2000	17.93	18.00	0.996
low	1984	16.00	2000	9.26	9.30	0.995
calibrator zero	1999	0.00	1999	0	0.10	NA
Average C.F.=						0.997

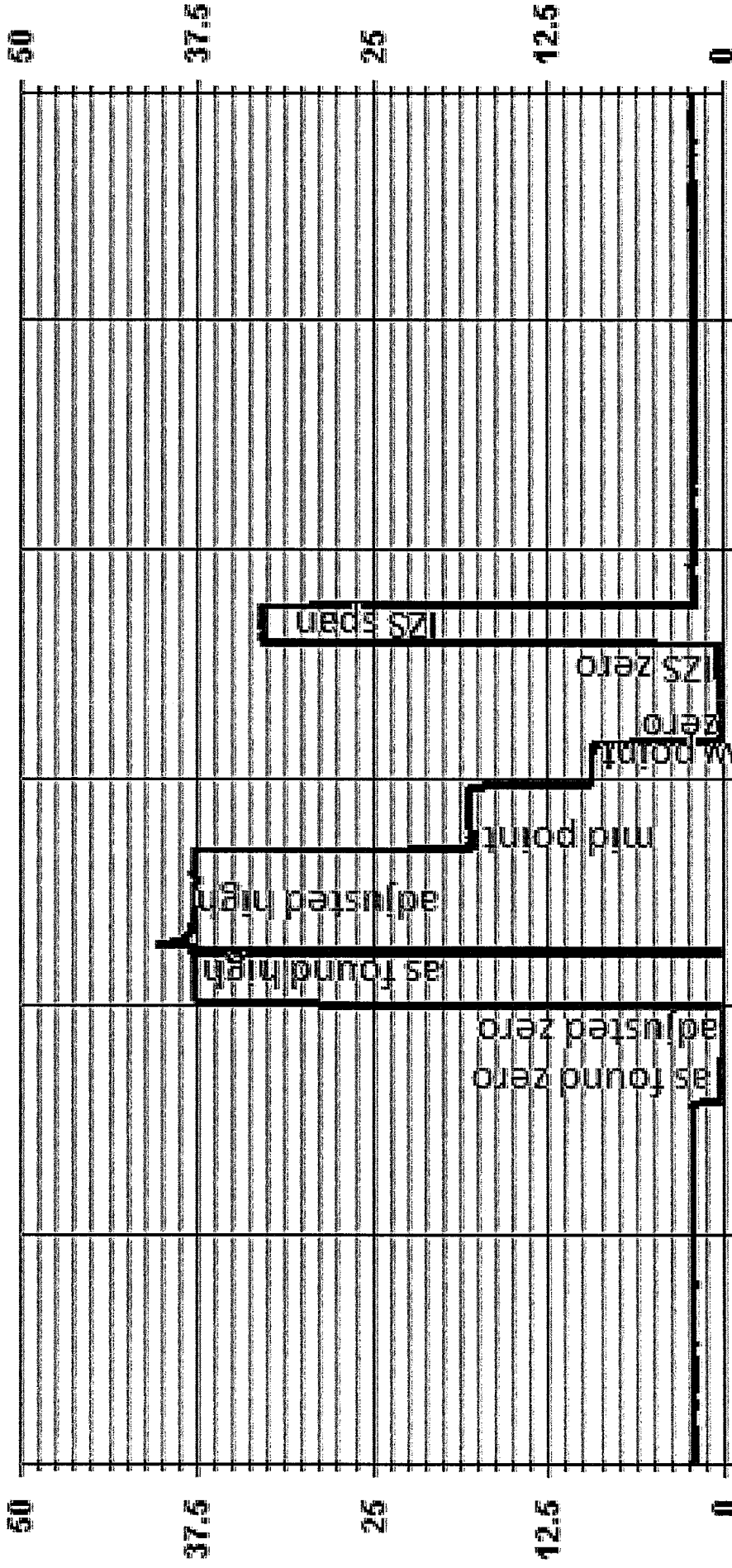
Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>1.001</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>0.046%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0.32%</u>	± 3% F.S.	PASS
		± 15%	PASS

Comments:
 Filter changed. 11:58 - a new H2 Cylinder connected.



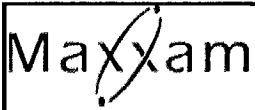
01 Minute Averages



07/17/15 07:30 07/17/15 09:30 07/17/15 11:30 07/17/15 13:30 07/17/15 15:30 07/17/15 17:30

— LICA31 THC PPM

NITROGEN DIOXIDE



API 200E NOx Analyzer Calibration

Date: 20-Jul-15
 Company: LICA
 Station Name/Location: St.Lina
 Performed by: Alex Yakupov

Start Time (mst): 10:38
 End Time (mst): 17:35
 Calibration Purpose: Monthly calibration
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 594
 Last Calibration Date: 9-Jun-15
 Range ppb: 1000

Correction Factors:
 As found C.F. Previous Cal High Point C.F.:
 NO= 1.076 NO= 0.999
 NOx= 1.074 NOx= 0.999
 NO₂= 1.004 NO₂= 1.004

As found:
 NOx SLOPE: 0.881
 NOx OFFS: 1.9
 NO SLOPE: 0.881
 NO OFFS: 0.3
 TEST: NA
 SAMP FLW: 454
 OZONE FL: 78
 PMT: 21.5
 NORM PMT: -0.2
 AZERO: 16.7
 HVPS: 771
 RCELL TEMP: 50.0
 BOX TEMP: 29.5
 PMT TEMP: 6.7
 IZS TEMP: 45.3
 MOLY TEMP: 315.0
 RCEL: 6.8
 SAMP: 26.4
 Internal Span: 527.8/8.6/519

As left:
 NOx SLOPE: 0.948
 NOx OFFS: 2.7
 NO SLOPE: 0.944
 NO OFFS: 0.1
 TEST: NA
 SAMP FLW: 452
 OZONE FL: 78
 PMT: 17.6
 NORM PMT: 0.6
 AZERO: 16.5
 HVPS: 771
 RCELL TEMP: 50.0
 BOX TEMP: 29.4
 PMT TEMP: 6.7
 IZS TEMP: 45.0
 MOLY TEMP: 315.5
 RCEL: 6.9
 SAMP: 26.3
 Internal Span: 522.1/7.3/514.6

Calibrator Flow Targets:

Make & Model: SABIO 2010 D
 Serial #: 11900613
 Cal Gas Cylinder I.D. #: BML002073
 NO Cylinder Conc. (ppm): 50.6
 NOx Cylinder Conc. (ppm): 50.6

point	diluent (cc/min)	cal gas (cc/min)	O ₃ setting (v or ppb)	total (cc/min)
zero	5013	0	0	5013
high	4938	77	500.00	5015
mid	4976	38	280.00	5014
low	4994	19	100.00	5013

Calibration:

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5013	0.0	5013	0	0	0.0	1.0	NA	NA
adjusted zero	5013	0.0	5013	0	0	0.0	0.0	NA	NA
as found high	4938	77.20	5015	778.9	778.9	724	725	1.076	1.074
adjusted high	4938	77.20	5015	778.9	778.9	780	778	0.999	1.001
mid	4976	37.70	5014	380.5	380.5	383	385	0.993	0.988
low	4994	18.90	5013	190.8	190.8	194	195	0.983	0.978
calibrator zero	5013	0.00	5013	0	0	0.0	0.0	NA	NA
Average C.F.=								0.992	0.989

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ Increase	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4938	77.20	5015	0.0	779.0	783.0	3.0	0.0	0.0	
as found NO ₂	4938	77.20	5015	500.0	306.0	780.0	474.0	473.0	471.0	1.004
gpt mid	4938	77.20	5015	280.0	508.0	783.0	274.0	271.0	271.0	1.000
gpt low	4938	77.20	5015	100.0	677.0	783.0	105.0	102.0	102.0	1.000
Average NO ₂ C.F.=										1.001

Linear Regression/Calibration Results:			LIMITS
NO	NOx	NO ₂	
Correlation Coefficient =	1.000	1.000	> or = 0.995
Slope =	1.000	0.998	0.85-1.15
b (Intercept as % of full scale)=	0.16%	0.28%	± 3% F.S.
% change in C.F. from last cal=	-7.69%	-7.54%	+/-15%
NO ₂ converter efficiency		99.9%	>85%

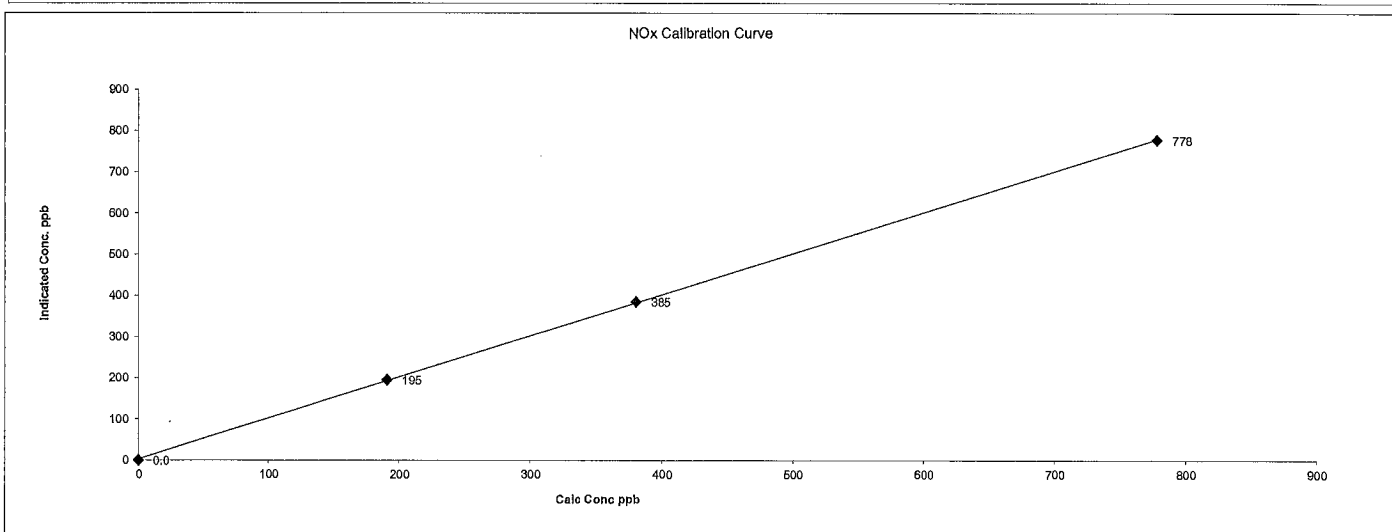
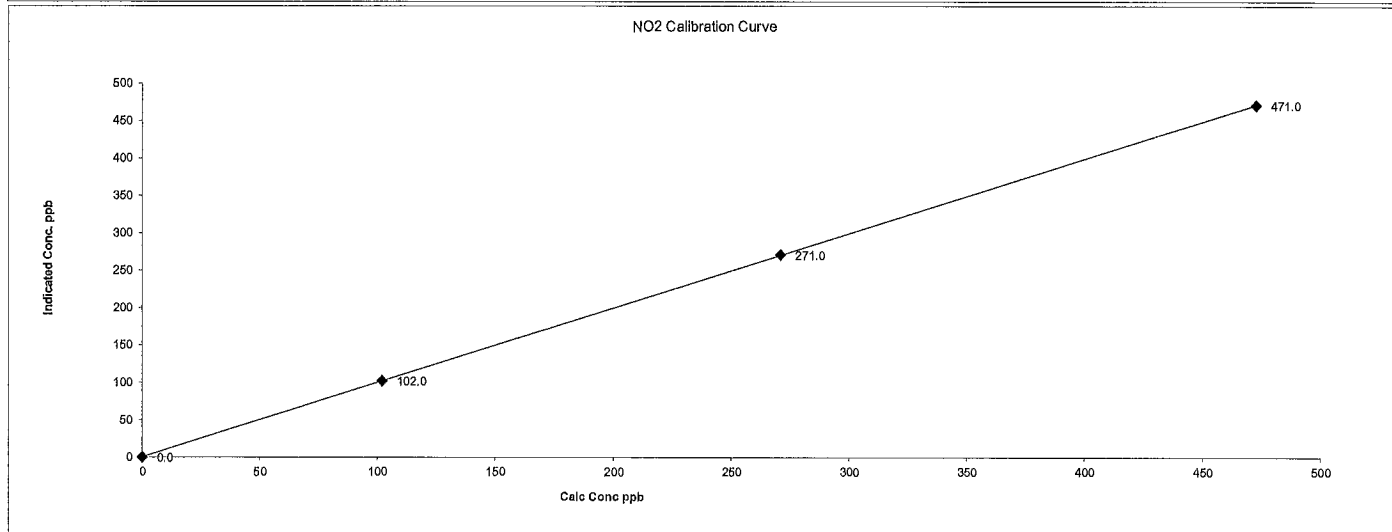
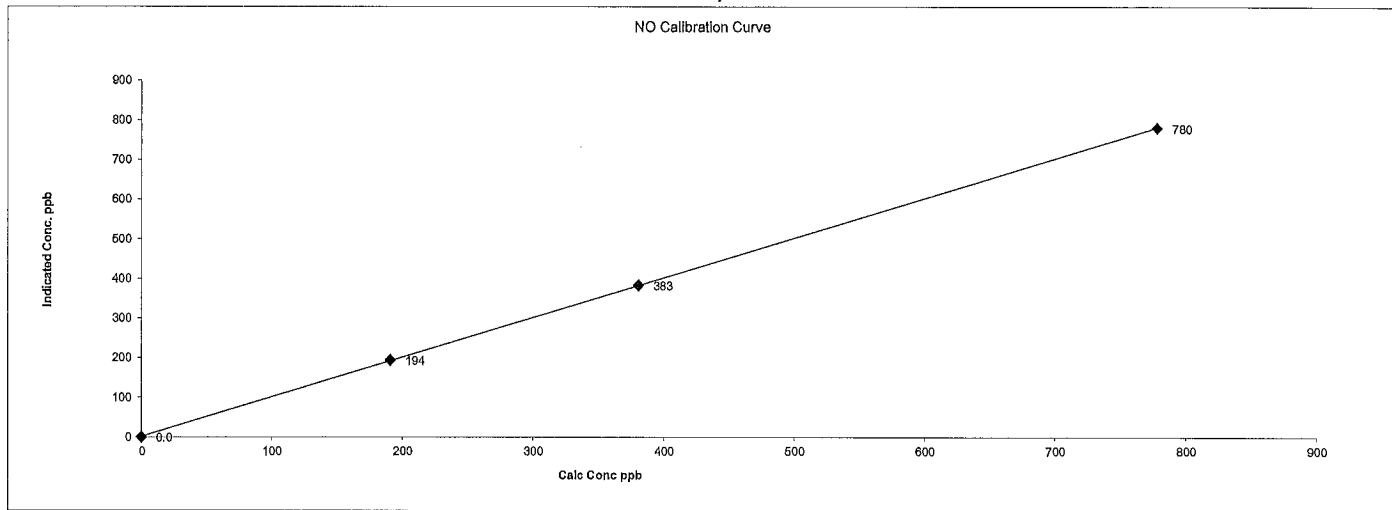
Comments:

No adjustments made for NO₂. Sample Filter changed.

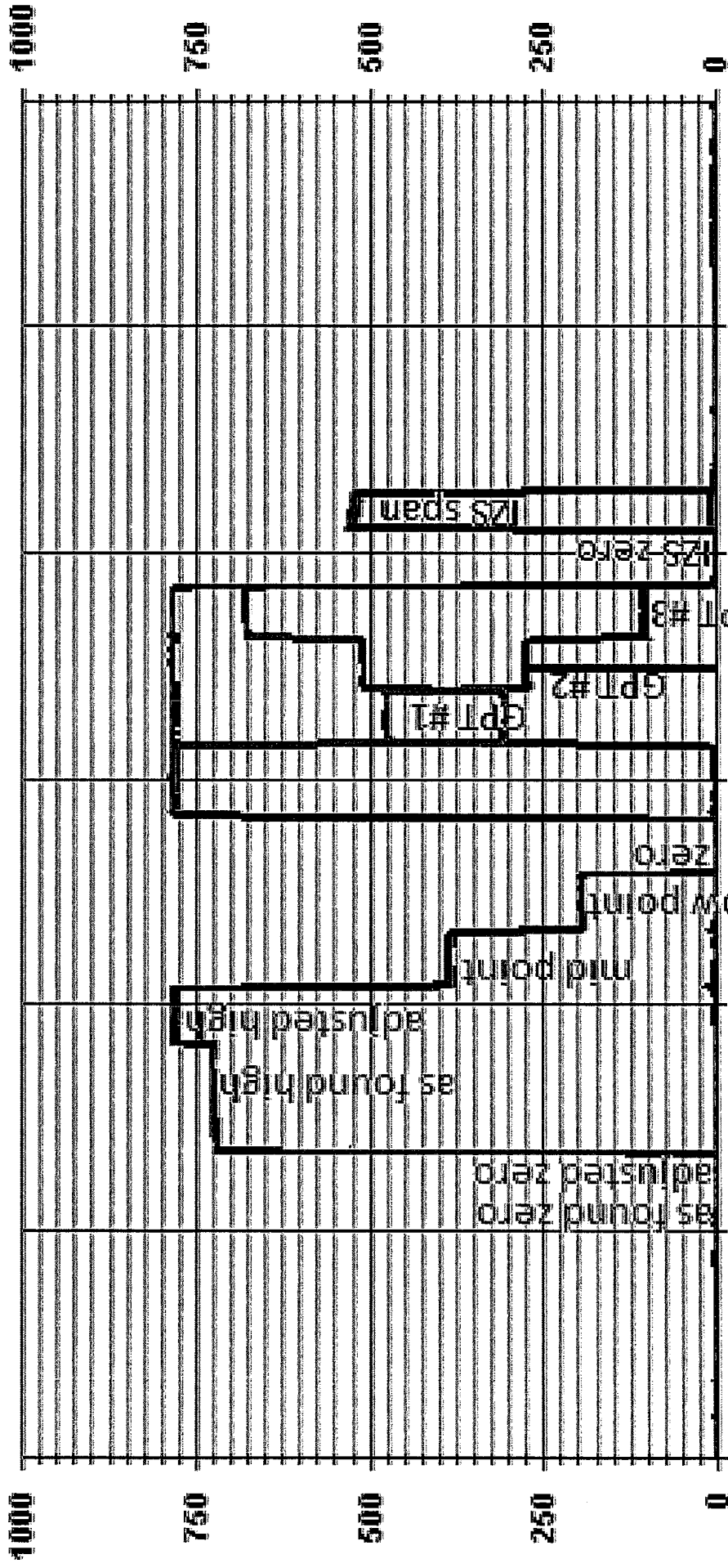
Date: 20-Jul-15
 Company: LICA
 Station Name/Location: St.Lina
 Performed by: Alex Yakupov

Start Time (mst): 10:38
 End Time (mst): 17:35
 Callbration Purpose: Monthly calibration
 Cal Gas Expiry Date: 12-Mar-19

API 200E NOx Analyzer Calibration



01 Minute Averages



07/20/15 09:00 07/20/15 11:00 07/20/15 13:00 07/20/15 15:00 07/20/15 17:00 07/20/15 19:00

— LICA31 NOX_ PPB — LICA31 NO_ PPB — LICA31 NO2_ PPB

OZONE

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: 17-Jul-15	Start Time (mst): 10:24
Company: LICA	End Time (mst): 14:42
Station Name/Location: St.Lina	Calibration Purpose: Monthly Calibration
Performed by: Alex Yakupov	G.P.T. Date: NA

Analyzer: 1002240371	Range ppm: 500
Serial Number: 1002240371	As Found C.F.: 1.003
Last Calibration Date: 10-Jun-15	New C.F.: 0.999
Previous Cal High Point C.F.: 1.000	

	As found:	As left:
Motherboard:	O ₃ Bkg: -0.7	O ₃ Bkg: -0.0
	O ₃ Coef: 0.988	O ₃ Coef: 0.994
	3.3 3.3	3.3 3.3
	15.0 14.8	15.0 14.8
	24.0 23.8	24.0 23.8
Interface Board:	-3.3 -3.2	-3.3 -3.2
	3.3 3.3	3.3 3.3
	5.0 4.9	5.0 4.9
	15.0 14.7	15.0 14.7
	-15.0 -15.0	-15.0 -15.0
Photo Lamp:	9.4 9.4	9.4 9.4
	24.0 23.4	24.0 23.4
O ₃ Lamp:	8.3 8.3	8.3 8.3
	Bench: 27.8	Bench: 27.3
Bench Lamp:	53.6 53.6	53.6 53.6
	O ₃ Lamp: 67.8	O ₃ Lamp: 67.8
Pressure: 673.5	Pressure: 674.3	
Cell A lpm: 0.725	Cell A lpm: 0.725	
Cell B lpm: 0.719	Cell B lpm: 0.720	
O ₃ ppb: 0.5	O ₃ ppb: 0.5	
Cell A ppb: -4.4	Cell A ppb: 3.5	
Cell B ppb: 5.3	Cell B ppb: -2.5	
Cell A int: 59393	Cell A int: 59444	
Cell B int: 71444	Cell B int: 71507	
Internal Span: 341.6	Internal Span: 376.9	

Callibrator: Make & Model: SABIO 2010 D Serial #: 11900613 NOx Gas Cylinder I.D. #: BLM002073 NOx Cylinder Conc. (ppm): 50.6	Callibrator Flow Targets: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>point</th> <th>total flow (cc/min)</th> <th>O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5013</td> <td>0</td> </tr> <tr> <td>high</td> <td>5013</td> <td>380</td> </tr> <tr> <td>mid</td> <td>5013</td> <td>180</td> </tr> <tr> <td>low</td> <td>5013</td> <td>90</td> </tr> </tbody> </table>	point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5013	0	high	5013	380	mid	5013	180	low	5013	90
point	total flow (cc/min)	O ₃ setting (v or ppb)														
zero	5013	0														
high	5013	380														
mid	5013	180														
low	5013	90														

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5013	0.0	5013	0.0	1.0	NA
adjusted zero	5013	0.0	5013	0.0	0.0	NA
as found high	5013	0.00	5013	380.0	379.0	1.003
adjusted high	5013	0.00	5013	380.0	381.0	0.997
mid	5013	0.00	5013	180.0	180.0	1.000
low	5013	0.00	5013	90.0	90.0	1.000
callibrator zero	5013	0.00	5013	0.0	0.0	NA

** copy and paste flows and NO decrease from NOx cal in to calculated concentration**

Average C.F.= 0.999

Linear Regression/Calibration Results:

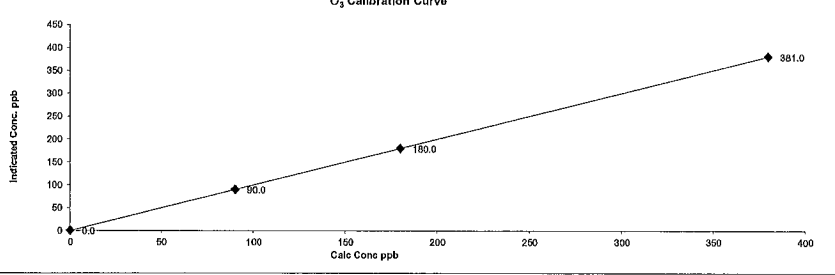
Correlation Coefficient = 1.000	LIMITS	Pass/Fail ?
Slope = 1.003	> or = 0.995	PASS
b (Intercept as % of full scale) = -0.039%	0.85-1.15	PASS
% change in C.F. from last cal = 0%	± 3% F.S.	PASS
	± 15%	PASS

Comments:

Sample Filter changed.

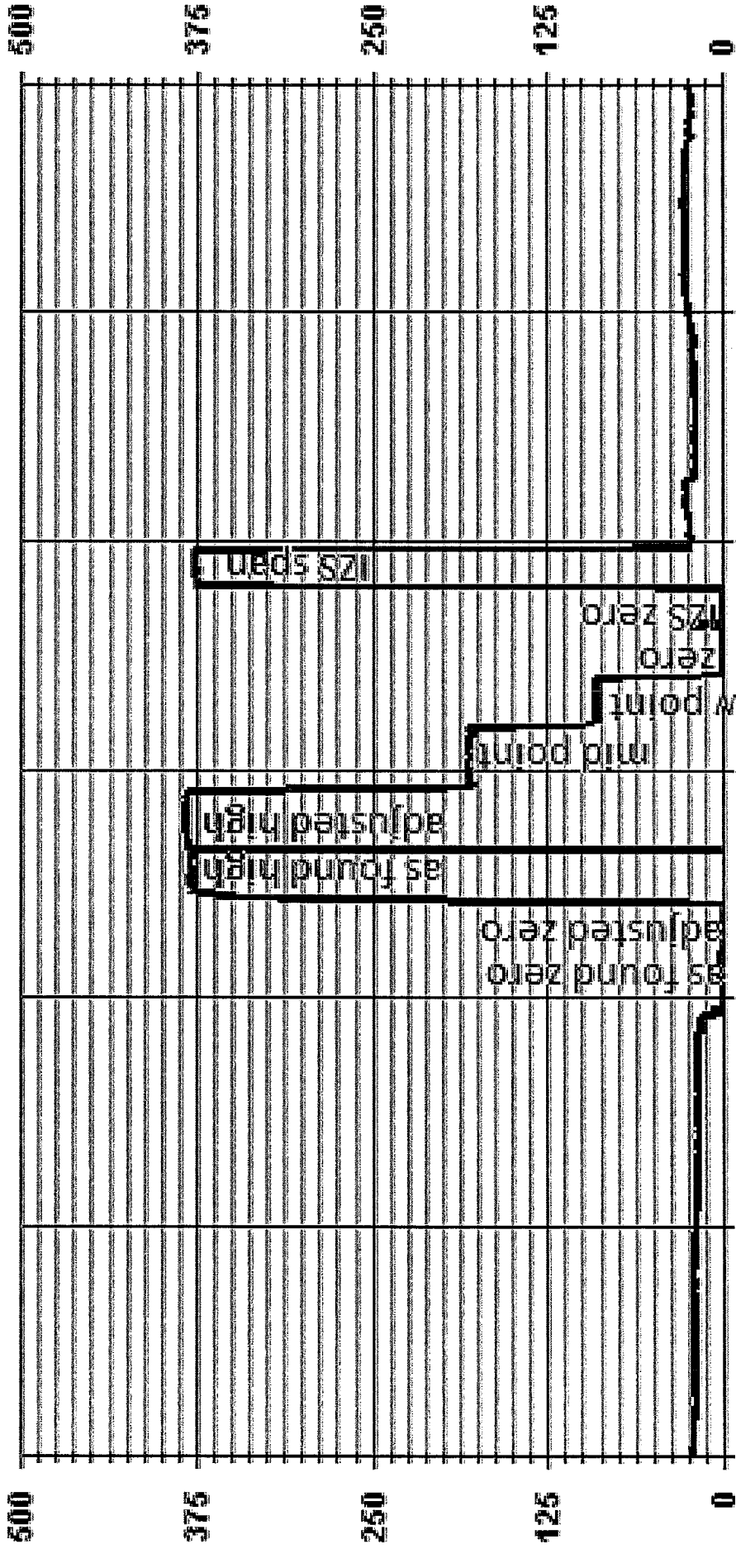
Thermo 49i O₃ Analyzer Calibration

O₃ Calibration Curve



The graph displays a linear relationship between the calculated concentration (x-axis) and the indicated concentration (y-axis) for the O₃ analyzer. The x-axis ranges from 0 to 400 ppb, and the y-axis ranges from 0 to 450 ppb. Four data points are plotted: (0, 0), (90, 90), (180, 180), and (381, 381). A straight line is drawn through these points, demonstrating a strong positive correlation.

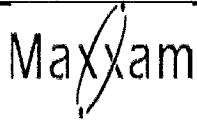
01 Minute Averages



07/17/15 06:40 07/17/15 08:40 07/17/15 10:40 07/17/15 12:40 07/17/15 14:40 07/17/15 16:40

— LICA31 03_ PPB

PARTICULATE MATTER



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 3-Jul-15
 Company: LICA
 Station Name/Location: St Lina
 Previous Audit Date: 19-Jun-15

Parameter: PM 2.5
 Performed by: Alex Yakupov
 Start/End Time (mst): 15:35 - 16:18
 Calibration Purpose: 1st Audit

1400A Information and Status:

Serial Number:	<u>1405A208301003</u>	As Found Filter Loading %:	<u>44.52</u>
Ko Factor:	<u>13125.0</u>	As Left Filter Loading %:	<u>22.46</u>
Ambient Temperature °C:	<u>27.24</u>	As Found Noise:	<u>0.005</u>
Ambient Pressure atm:	<u>0.916</u>	As Left Noise:	<u>0.000</u>
Main Flow Reading lpm:	<u>3.00</u>	Pump Vacuum:	<u>0.37</u>
Aux Flow Reading lpm:	<u>13.66</u>	Warnings:	<u>None</u>

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>FB61291</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>NA</u>	<u>18-Mar-15</u>	<u>18-Mar-15</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.15	0.00	-0.15
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.15	0.00	-0.15
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>26.5</u>	1405F pressure atm:	<u>0.918</u>
reference temperature °C:	<u>27.9</u>	reference pressure:	<u>0.916</u>
difference °C:	<u>1.5</u>	difference:	<u>0.002</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>27.9</u>	1405F pressure atm:	<u>0.916</u>
reference temperature °C:	<u>27.9</u>	reference pressure:	<u>0.916</u>
difference °C:	<u>0.0</u>	difference:	<u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.18</u>	reference total/aux flow lpm: <u>17.65</u>
difference lpm: <u>0.18</u>	difference lpm: <u>0.98</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.16</u>	reference total/aux flow lpm: <u>17.55</u>
difference lpm: <u>0.16</u>	difference lpm: <u>0.88</u>

K_o Audit:

Last K_o audit date: 20-Mar-15
 1405F K_o factor: 13125.0
 Measured K_o factor: 13213.2000
 % difference: 0.67

Comments:



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 17-Jul-15
 Company: LICA
 Station Name/Location: St Lina
 Previous Audit Date: 3-Jul-15

Parameter: PM 2.5
 Performed by: Alex Yakupov
 Start/End Time (mst): 14:16 - 15:22
 Calibration Purpose: 2st Audit

1400A Information and Status:

Serial Number: 1405A208301003 As Found Filter Loading %: 42.68
 Ko Factor: 13125.0 As Left Filter Loading %: 21.44
 Ambient Temperature °C: 21.83 As Found Noise: 0.005
 Ambient Pressure atm: 0.918 As Left Noise: 0.000
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.37
 Aux Flow Reading lpm: 13.67 Warnings: None

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>FB61291</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>NA</u>	<u>18-Mar-15</u>	<u>18-Mar-15</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.15	0.00	-0.15
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.15	0.00	-0.15
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>21.8</u>	1405F pressure atm: <u>0.918</u>
reference temperature °C: <u>20.6</u>	reference pressure: <u>0.917</u>
difference °C: <u>-1.2</u>	difference: <u>0.001</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>20.6</u>	1405F pressure atm: <u>0.917</u>
reference temperature °C: <u>20.6</u>	reference pressure: <u>0.917</u>
difference °C: <u>0.0</u>	difference: <u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm/+/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.09</u>	reference total/aux flow lpm: <u>17.32</u>
difference lpm: <u>0.09</u>	difference lpm: <u>0.65</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm/+/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.06</u>	reference total/aux flow lpm: <u>17.16</u>
difference lpm: <u>0.06</u>	difference lpm: <u>0.49</u>

K_o Audit:

Last K_o audit date: 17-Jul-15
 1405F K_o factor: 13125.0
 Measured K_o factor: 13184.8000
 % difference: 0.46

Comments:

WIND SYSTEM

Mel One Instruments

3206 Main St., Suite 106
Regional Service Center
Rowlett, TX. 75088

Wind Tunnel Calibration

Data Sheet

50.5-6100

NIST Cup Model No. 170.41

Serial No. 3309

NIST Sensor Model No. 50.1B

Serial No. 1263

Average wind speed this test in mps 11.19

WD Setting Degree	WD Output Volts	WD Reading Degree	WD Error +/- 3 Deg	WS Standard mps	WS Output Volts	WS Reading mps	WS Error +/- 0.24 MPS
30.0	0.082	29.5	-0.4	11.21	0.224	11.19	-0.02
40.0	0.154	39.0	-1.0	11.17	0.227	11.33	0.16
120.0	0.231	119.1	-0.9	11.68	0.221	11.06	-0.62
150.0	0.420	151.3	1.3	11.29	0.222	11.11	-0.18
210.0	0.582	209.4	-0.6	11.25	0.223	11.16	-0.09
240.0	0.865	239.4	-0.6	11.19	0.226	11.32	0.14
300.0	0.835	300.5	0.5	11.16	0.224	11.18	0.02
330.0	0.817	330.0	0.0	11.18	0.223	11.15	-0.03

Average wind speed this test in mps 2.21

WD Setting Degree	WD Output Volts	WD Reading Degree	WD Error +/- 3 Deg	WS Standard mps	WS Output Volts	WS Reading mps	WS Error +/- 0.20 MPS
30.0	0.041	28.3	-0.7	2.18	0.042	2.08	-0.10
40.0	0.103	38.5	-1.5	2.20	0.043	2.14	-0.06
120.0	0.132	113.6	-0.4	2.21	0.042	2.08	-0.13
150.0	0.117	150.3	0.3	2.22	0.042	2.07	-0.15
210.0	0.187	210.1	0.1	2.20	0.042	2.12	-0.08
240.0	0.164	239.8	-0.2	2.23	0.042	2.10	-0.13
300.0	0.135	300.8	0.8	2.22	0.043	2.18	-0.04
330.0	0.117	330.0	0.0	2.21	0.043	2.17	-0.04

Instrument condition As Found As Left X

Sensor Model No. 50.5H

Sensor Serial No. H12635

Sensor Output Range 0-50 MPS

Sensor Output Range 0-50 MPS

Customer Mel One Instruments

Sales Order No. 104703

Customer Address 3206 Main St

Calibration Date 08/28/2014

Customer City Rowlett, TX

Calibration by Dustin Dawson

CALIBRATORS

Company: Maxxam **Operator:** Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>830</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>Oct 2013</u>	Temperature (°C)	<u>N/A</u>
SO ₂ Cylinder Conc.	<u>50.3</u>	Barometric Pressure	<u>N/A</u>
SO ₂ Cylinder S/N	<u>LL42475</u>		

Flow Measurements

Pt. No. 1 79.5 Pt. No. 2 39.8 Pt. No. 3 19.9

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
4918	0.800	0.798	0%	± 10%
4960	0.400	0.398	-1%	± 10%
4977	0.200	0.200	0%	± 10%
Absolute Average Percent Difference			0%	± 10%

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

SO ₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9971	0.90-1.10
b (Intercept % of FS)=	0.0000	± 3% F.S.

AENV Standards		SO ₂ Analyzer	
Audit Calibrator		Make/Model	<u>Teco 43C</u>
Make/Model	<u>R&R MFC 201</u>	Serial/AMU Number	<u>AMU 1623</u>
Serial/AMU Number	<u>AMU 1690</u>	Last Calibration Date	<u>Dec 15/14</u>
		Full Scale (ppm)	<u>1.0</u>

COMMENTS: H2S gas was slow to move through the calibrator. Check for contamination inside calibrator. SO2 moves through quickly.

Auditor: Al Clark Date: December 16, 2014
Operator Signature: _____ Location: McIntyre Center Edmonton

Company: Maxxam **Operator:** Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010D</u>	Make/Model	<u>N/A</u>
Serial Number	<u>11900613</u>	Serial Number	<u>N/A</u>
Oven Temperature	<u>N/A</u>	Temperature (°C)	<u>N/A</u>
Last Verification Date	<u>N/A</u>	Barometric Pressure	<u>N/A</u>

Flow Measurements

Pt. No. 1 5000 **Pt. No. 2** 5000 **Pt. No. 3** 5000

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
5013	0.000	0.001		
5013	0.400	0.407	1%	± 10%
5013	0.200	0.204	1%	± 10%
5014	0.100	0.101	0%	± 10%
Absolute Average Percent Difference			1%	± 10%

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

<u>O₃</u>		<u>LIMITS</u>
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0163	0.90-1.10
b (Intercept % of FS)=	0.0800	± 3% F.S.

AENV Standards		Ozone Analyzer	
Audit Calibrator		Make/Model	<u>Teco 49i</u>
Make/Model	<u>Teco 49i PS</u>	Serial/AMU Number	<u>AMU 1843</u>
Serial/AMU Number	<u>AMU 1808</u>	Last Calibration Date	<u>May 21, 2015</u>
Ozone Standard	<u>Primary</u>	Full Scale (ppm)	<u>0.5</u>

COMMENTS: _____

Auditor: Al Clark Date: May 21, 2015
 Operator Signature: *Limin Li* Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: December 15, 2014
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. 702 mmhg

Reference Analyzer:

Make/Model: Teco 45C Serial/AMU Number: 1624
Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
Last Calibration: Date: Dec15/14 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.0000	0.0000	0.0000
5099	38.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

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

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: December 16, 2014
Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-345CGA

Company: Maxxam **Operators name:** Limin Li
Cylinder #: BLM002073 **Conc (PPM)** 50.6/50.6 **Tolerance (%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146I</u>			Make/Model	<u>Bios DG2</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>AMU 1659</u>
Last Verification Date	<u>March 31, 2015</u>			Temp. °C	<u>22.5 C</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>690 mmhg</u>
Cylinder Number	<u>CAL018024</u>				

Reference Analyzer:
Make/Model Teco 42I **Serial/AMU Number:** 1868
Instrument Settings **Zero:** 4.2 **Span:** 1.008 **Range:** 1.0
Last Calibration: **Date:** Mar 31/15 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4976	82.6	0.855	0.848	0.01660	60.242	51.5	51.1
4993	41.0	0.427	0.421	0.00821	121.780	52.0	51.3
4977	20.2	0.213	0.209	0.00406	246.386	52.5	51.5
Average Cylinder Concentration:						52.0	51.3

	<u>NO</u>		<u>NOx</u>
Previous Stated Concentration PPM:	<u>50.6</u>		<u>50.6</u>
Percent variance from Stated:	<u>2.8</u>		<u>1.4</u>

Cylinder gas tolerances based on NO only

- Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____
- <=5% Outside Manufacturer Tolerance. Use manufacturers concentration **Contains 49.5 ppm SO2 in cylinder**
- > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark **Date:** March 31, 2015
Operator Signature: *Al Clark* **Location:** McIntyre Center Edmonton



Praxair Canada, Inc.
 5501-24th Street
 Edmonton, AB T6B 2X6
 Tel: 780-448-0778
 Fax: 780-448-6302

03/27/2014

MAXXAM ANALYTICS INC *NA*
 9372 49TH ST
 EDMONTON, AB T6B 2L7

Work Order No. 20248656
 Customer Reference No.

Product Lot/Batch No. Z582 4 085 02
 Product Part No. NI ME600P2P-AQ

CERTIFICATE OF ANALYSIS
Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Methane	600.0ppm	601.4ppm	U	±1% rel
Propane	200.0ppm	202ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler-Toledo Analytical Balance-ID2sx/USA---
 Hewlett-Packard (Agilent)-6890---GC-FID

Cylinder Style: AQ
 Cylinder Pressure @70F: 2200 psig
 Cylinder Volume: 82.0 ft3
 Valve Outlet Connection: CGA-350
 Cylinder No(s): LL33874

Filling Method: Gravimetric
 Date of Fill: 03/26/2014
 Expiration Date: 03/26/2017

Analyst: Todd Hryniv

The gas calibration cylinder standards prepared by Praxair Canada, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure methods. The calibration standard is used as certified weight Praxair Canada, Inc. Reference Materials which are either prepared by weight traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

All concentrations for concentrations (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

- | | | | |
|---|--|--|--|
| A. Flame Ionization with Methanizer | B. Gas Chromatography with Chloride Ionization Detector | C. Gas Chromatography with Electrode Conductivity Detector | D. Gas Chromatography with Flame Ionization Detector |
| E. Gas Chromatography with Photoacoustic Detector | F. Gas Chromatography with Infrared Detector | G. Gas Chromatography with Methanizer Detector | H. Gas Chromatography with Photoacoustic Detector |
| I. Gas Chromatography with Redox Gas Analyzer | J. Gas Chromatography with Thermal Conductivity Detector | K. Multi Gas Analyzer with Thermal Conductivity Detector | L. Infrared FTIR Analysis |
| M. Moisture Analyzer (MFC) Cell | N. Wet Chemistry of Typical Impurities | O. Detector Tube | P. Specific Vapor Analysis |
| Q. Total Hydrocarbon Analysis | R. Wet Chemistry | S. Detector Tube | T. Isoc |
| U. Gravimetric Analysis | V. Electrochemical | W. Gas Chromatography with Chromatographic Detector | |

IMPORTANT

The information contained herein has been prepared at your request by personnel within Praxair Canada, Inc. While we believe the information is accurate under the terms 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 reliability of the use of the information for any particular 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 liability of Praxair Canada, Inc. extend to the use of the information contained herein beyond the fee established for providing such information.

APPENDIX III
CHAIN OF CUSTODY



Maxxam Analytics - Air Services Group

Project Chain of Custody

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2015-07-31- C</u>
Site: <u>St. Lina Site</u>	Contact: <u>Mike Bisaga</u>

QA Check Complete	<u>msclmka</u>	Date	<u>11 - Aug - 2015</u>
QA Check Review	<u>msclmka</u>	Date	<u>11 - Aug - 2015</u>
Report Complete	<u>msclmka</u>	Date	<u>19 - Aug - 2015</u>
Report Reviewed	<u>E. Tangang</u>	Date	<u>20 - Aug - 15</u>
Report Shipped	_____	Date	_____

Notes

AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
ELK POINT AIRPORT SITE

JOB #:2833-2015-07-35- C

JULY 2015


Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
BOX 8237, 5107W - 50 STREET
BONNYVILLE, ALBERTA
T9N 2J5

Attention: MIKE BISAGA

DATE: August 24, 2015

Prepared by:



Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:



Lily Lin, B.Sc.
Senior Project Manager, Air Services, Maxxam Analytics

SUMMARY

In JULY 2015, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Elk Point Airport Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

SO₂: LICA-owned API 100E, S/N: 467 analyzer was installed onsite on July 24. The analyzer was brought back to Maxxam shop for repair in June 2015.

PM 2.5: 48 hours of data were discarded due to an electrical malfunctioning of the Teom unit. 3 hours of data were invalidated as the data were below -3 ug/m^3 this month. Five 24-hr contraventions were recorded this month: concentrations of 38 ug/m^3 on July 1, 90 ug/m^3 on July 4, 34 ug/m^3 on July 6, 108 ug/m^3 on July 10 and 108 ug/m^3 on July 11. AE Reference numbers 300253, 300395, 302480, 300695 and 300801 respectively.

THC/CH₄/NMHC: The analyzer failed the as found points check on July 9. The issue was fixed on July 10. Data was invalidated back to the last good calibration, which was July 7. 68 hours of data were discarded due to this event.

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 is issuing this completed report to Lakeland Industry & Community Association, Elk Point Airport Site.

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

Lakeland Industry & Community Association Elk Point Airport Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
						1-HOUR				24-HOUR			
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO2 (PPB)	172	48	0	0	0	1	3, 4	VAR	VAR	VAR	0.2	4	100.0
H2S (PPB)	10	3	0	0	0	3	VAR	VAR	VAR	VAR	0.6	6	100.0
THC (PPM)	-	-	-	-	2.2	4.9	3	3	4.5	E	2.8	24	90.7
CH4 (PPM)	-	-	-	-	2.2	4.8	3, 3	3, 4	4.5 3.1	E ENE	2.8	24	90.7
NMHC (PPM)	-	-	-	-	0.01	0.20	VAR	VAR	VAR	VAR	0.13	10	90.7
NO2 (PPB)	159	-	0	-	5.1	23.3	1	0	6	WSW	11.5	6	99.1
NO (PPB)	-	-	-	-	1.3	35.1	6	5	5	WSW	9.3	6	99.1
NOX (PPB)	-	-	-	-	6.5	53	6	1	5.2	W	20.8	6	99.1
O3 (PPB)	82	-	0	-	25	60	9	13	9	SSW	42.8	11	100.0
PM2.5 (UG/M3)	-	30	-	5	16.6	246.0	11	0	14.7	E	108.3	11	93.1
VECTOR WS (KPH)	-	-	-	-	11.7	33.1	19	8	-	WNW	21.9	19	100.0
VECTOR WD (DEG)	-	-	-	-	WNW	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 1- Hour Exceedences

No Exceedences Recorded During the Month

H₂S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 24- Hour Exceedences

DATE	READING (ug/m3)	WS (kph)	WD (deg)
JULY 1	38	8.7	WNW
JULY 4	90	13.5	WNW
JULY 6	34	7.6	SW
JULY 10	108	13.4	NE
JULY 11	108	17.7	N

Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
JULY 5, 2015	3.50	ACETONE
JULY 11, 2015	11.70	ACETONE
JULY 17, 2015	11.40	ACROLEIN
JULY 23, 2015	5.21	n - HEXANE
JULY 29, 2015	3.50	ACETONE

Note: NA

Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
JULY 5, 2015	0.59	RETENE
JULY 11, 2015	1.17	RETENE
JULY 17, 2015	0.29	RETENE
JULY 23, 2015	0.09	PHENANTHRENE
JULY 29, 2015	0.08	PHENANTHRENE

Note: NA

Volatile Organics (VOCs) Data Summary - NMHC Canister System

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
JULY 4, 2015	8.0	ACETONE
JULY 11, 2015	14.30	ACETONE

Note: NA

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Appendix IV

Analytical Results

VOCs Samples

PAHs Samples

NMHC Canister Samples

Chain of Custody

Appendix V

1.0 Discussion

This monthly report consists of data for parameters SO₂, H₂S, THC, CH₄, NMHC, NO_x, NO, NO₂, O₃, PM_{2.5}, WS and WD. It also includes results for non-continuous parameters VOC, PAH and NMHC canister.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) 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 calibration is done a minimum of once a month for each continuous air monitor. In addition 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.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as 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 (greater than 15%).

Hourly data is corrected using daily zero information.

Trailer inspection was conducted on July 6.

SULPHUR DIOXIDE (SO₂)

The routine monthly calibration was performed on July 6. The LICA-owned API 100E, S/N: 467 analyzer was installed back to the trailer following an installation calibration on July 24. This analyzer was brought to Maxxam shop for maintenance in June 2015. The Maxxam-owned API 100E, S/N: 722 analyzer was removed on July 24 following a removal calibration. The analyzer showed a zero drift after the calibration. An as found points check was performed prior to maintenance on July 28. The analog output calibration was performed. A 3-point calibration was performed after the maintenance. No further issues were identified.

HYDROGEN SULPHIDE (H₂S)

The analyzer was working well throughout the month. The routine monthly calibration was performed on July 6.

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

The routine monthly calibration was performed on July 7. The analyzer started spanning low after the calibration. An as found points check was performed on July 9. The analyzer failed the as found points check. Troubleshooting was performed by adjusting the cylinder regulator output to correct the fuel pressure. A post-repair calibration was performed on July 10. No further issues were identified. As the analyzer failed the as found points check on July 9, data was invalidated back to the last good calibration, which was on July 7. 68 hours of data were discarded due to this event.

NITROGEN DIOXIDE (NO₂)

The routine monthly calibration was performed on July 6. The analyzer was put into maintenance mode on July 28 in order to get the Ozone calibration reference points for the Ozone calibration and for a calibrator check.

OZONE (O₃)

The routine monthly calibration was performed on July 7. The analyzer did not span properly on July 23. A shut-down calibration was performed prior to rebuilding the sample pump on July 24. A post-repair calibration was then performed. Following a shut-down calibration on July 28, the UV lamp was adjusted. A post-repair calibration was performed after the adjustment. Hourly maximum data collected on July 6 at hour 13 was invalidated due to a spike.

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM_{2.5})

Two routine Teom audits were performed this month: one was completed on July 3, and the other audit was performed on July 16. Both the inlet filter and the FDMS filter were replaced during the audits. The Teom unit had an electrical malfunction on July 4. Troubleshooting was performed on July 6 followed by a post-maintenance audit. 48 hours of data were discarded due to this event. Data was corrected using Alberta air quality guideline. If the data was between 0 to -3 ug/m³, the data was corrected to 0 ug/m³. If the data was below -3ug/m³, the data was invalidated. 3 hours of data were invalidated as the data were below -3 ug/m³ this month.

Five 24-hr contraventions were recorded this month: concentrations of 38 ug/m³ on July 1, 90 ug/m³ on July 4, 34 ug/m³ on July 6, 108 ug/m³ on July 10 and 108 ug/m³ on July 11. AE Reference numbers 300253, 300395, 302480, 300695 and 300801 respectively.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

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 coming from.

The wind system was working well throughout the month. Hourly maximum data collected on July 24 at hour 7 was invalidated as the wind system was recovering from a short power outage.

VOC SAMPLES

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the VOCs were reported as ppb in 2 decimal places.

Samples were collected on July 5, 11, 17, 23 and 29. Analytical results are included in this report.

PAH SAMPLES

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs were reported as μg in 2 decimal places.

Samples were collected on July 5, 11, 17, 23 and 29. Analytical results are included in this report.

NMHC CANISTER SAMPLES

The sampler is triggered when the 5-minute average concentration of NMHC is above 0.30ppm. Two canisters were collected this month: concentrations of 0.31 ppm on July 4 at 07:20 and 0.30 ppm on July 11 at 12:57.

Analytical results are included in this report.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling team consisted of Alexander Yakupov, Christopher Wesson and Limin Li.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

Five 24-hr contraventions were recorded for PM 2.5 this month: concentrations of 38 ug/m³ on July 1, 90 ug/m³ on July 4, 34 ug/m³ on July 6, 108 ug/m³ on July 10 and 108 ug/m³ on July 11. AE Reference numbers 300253, 300395, 302480, 300695 and 300801 respectively.

The operational uptime for all analyzers and meteorological system were above the 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, and 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006).

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00001 - Methane, Non-Methane Hydrocarbon Analyzer Monitoring
- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canister and Xontech

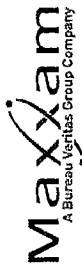
There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzers
- Total Hydrocarbons - Thermo 55i FID Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Teom Unit
- Wind System - RM Young Unit
- Datalogger - ESC 8832

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE



SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

DAY	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	24:00
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
2	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
3	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
4	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
5	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
6	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
7	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
8	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
9	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
10	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
11	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
12	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
13	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
14	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
15	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
16	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
17	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
18	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
19	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
20	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
21	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
22	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
23	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	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
25	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
26	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
27	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
28	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
29	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
30	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
31	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
HOURLY MAX	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
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

STATUS FLAG CODES

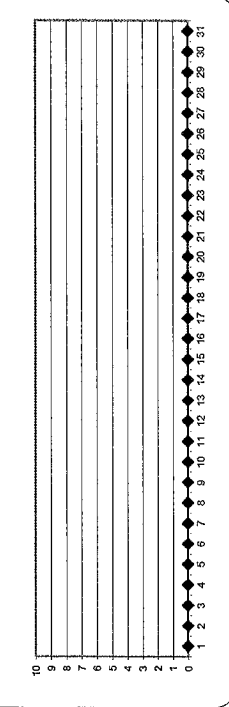
C	-	CALIBRATION	O	-	QUALITY ASSURANCE
V	-	MAINTENANCE	R	-	RECOVERY
S	-	DAILY ZERO/SPAN CHECK	X	-	MACHINE/MALEFUNCTION
P	-	POWER FAILURE	O	-	OPERATOR ERROR
G	-	OUT FOR REPAIR	K	-	COLLECTION ERROR

OBJECTIVE LIMIT: ALBERTA ENVIRONMENT: 1-HR: 172 PPB; 24-HR: 48 PPB

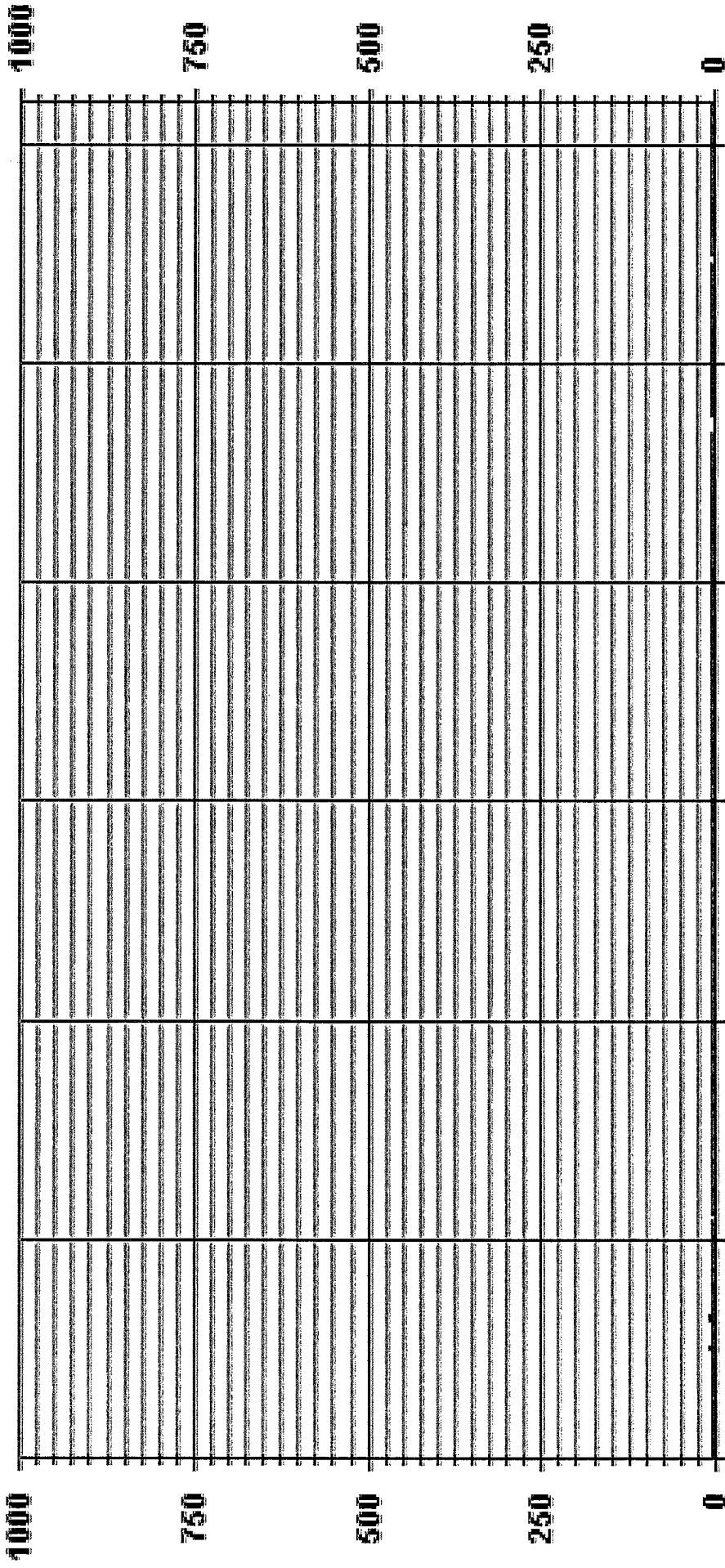
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	6
MAXIMUM 1-HR AVERAGE:	1 PPB
MAXIMUM 24-HR AVERAGE:	0.2 PPB
1/2 CALIBRATION TIME:	34 HRS
MONTHLY CALIBRATION TIME:	21 HRS
STANDARD DEVIATION:	0.09
OPERATIONAL TIME:	744 HRS
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	0 PPB
ON DAY(S) VAR- VARIOUS	3, 4
ON DAY(S) VAR	4

24 HOUR AVERAGES FOR JULY 2015



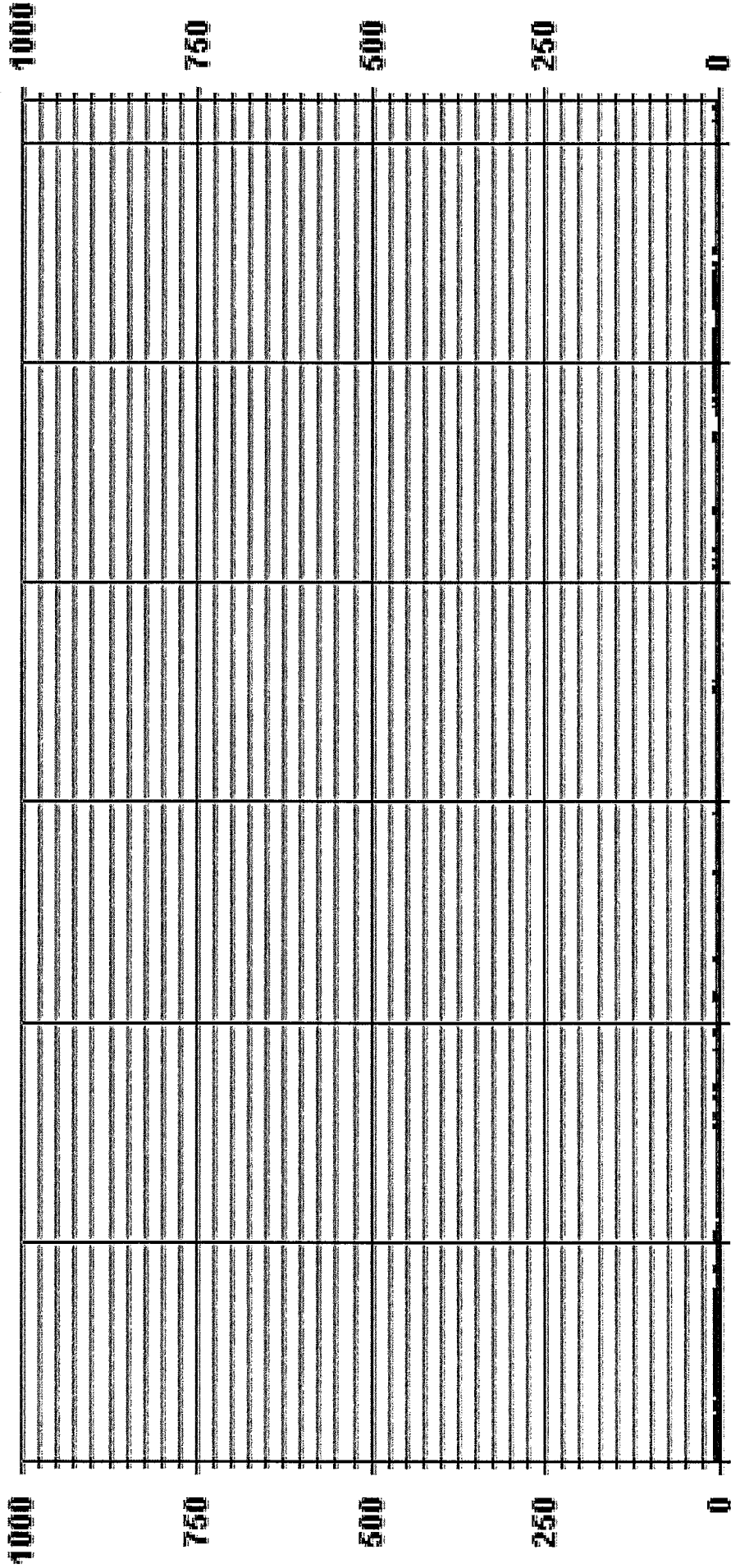
01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 SO2_ PPB

01 Hour Averages



--- LICA35 SO2MAX PPB

SO2_ / WDR Joint Frequency Distribution (Percent)

LICA-ELK

July 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : SO2
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 20	2.75	.87	1.88	2.75	4.20	4.20	1.59	.87	1.59	4.93	4.49	13.93	17.56	21.19	12.48	4.64	100.00			
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
>=	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
Totals	2.75	.87	1.88	2.75	4.20	4.20	1.59	.87	1.59	4.93	4.49	13.93	17.56	21.19	12.48	4.64				

Calm : .00 %

Total # Operational Hours : 689

Distribution By Samples

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 20	19	6	13	19	29	29	11	6	11	34	31	96	121	146	86	32	689			
< 60																				
< 110																				
< 170																				
< 340																				
>=																				
Totals	19	6	13	19	29	29	11	6	11	34	31	96	121	146	86	32				

Calm : .00 %

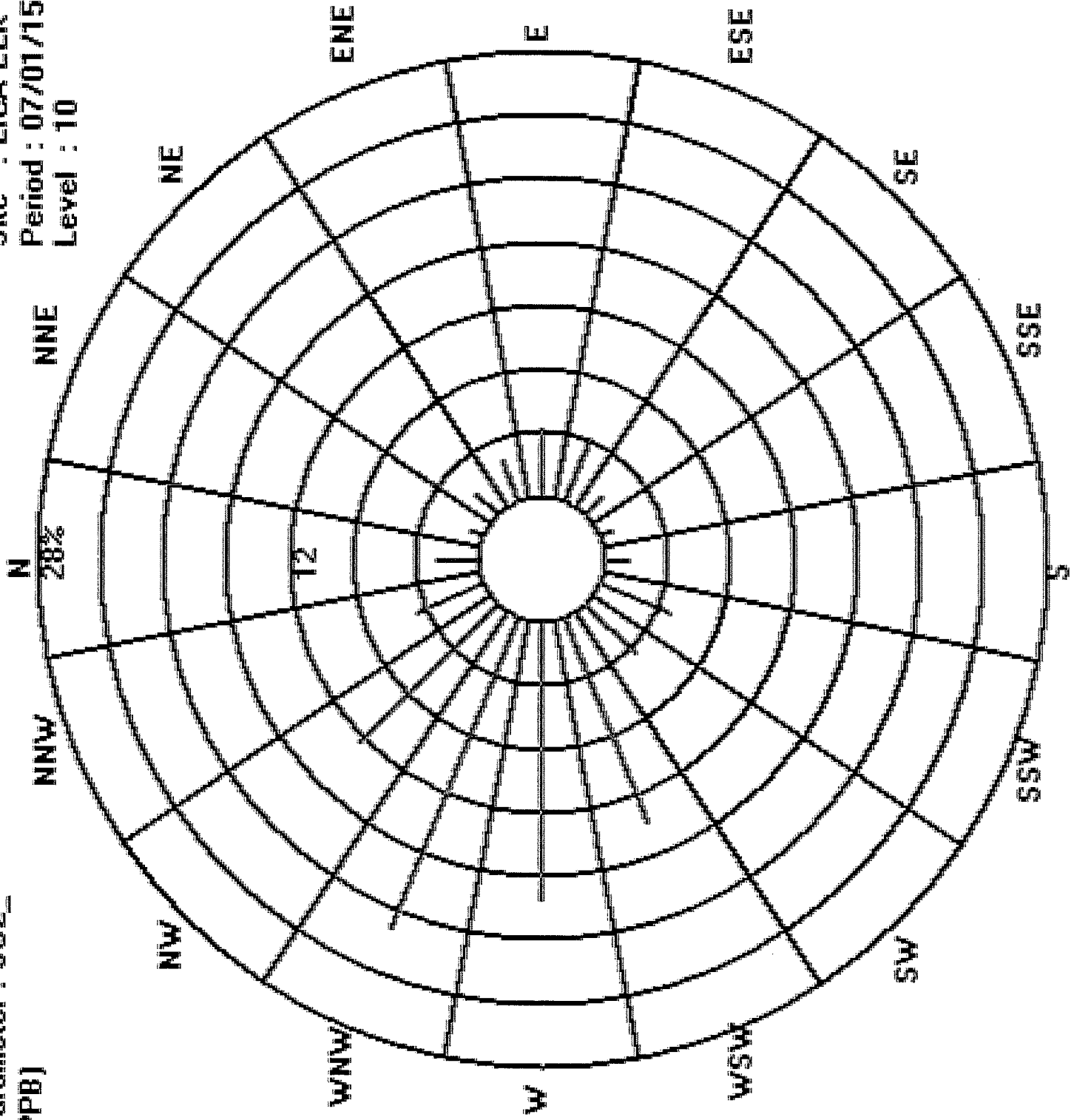
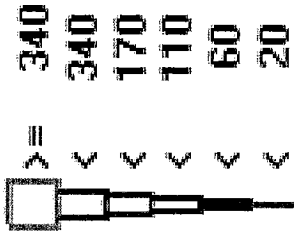
Total # Operational Hours : 689

Logger : 35 Parameter : SO2_

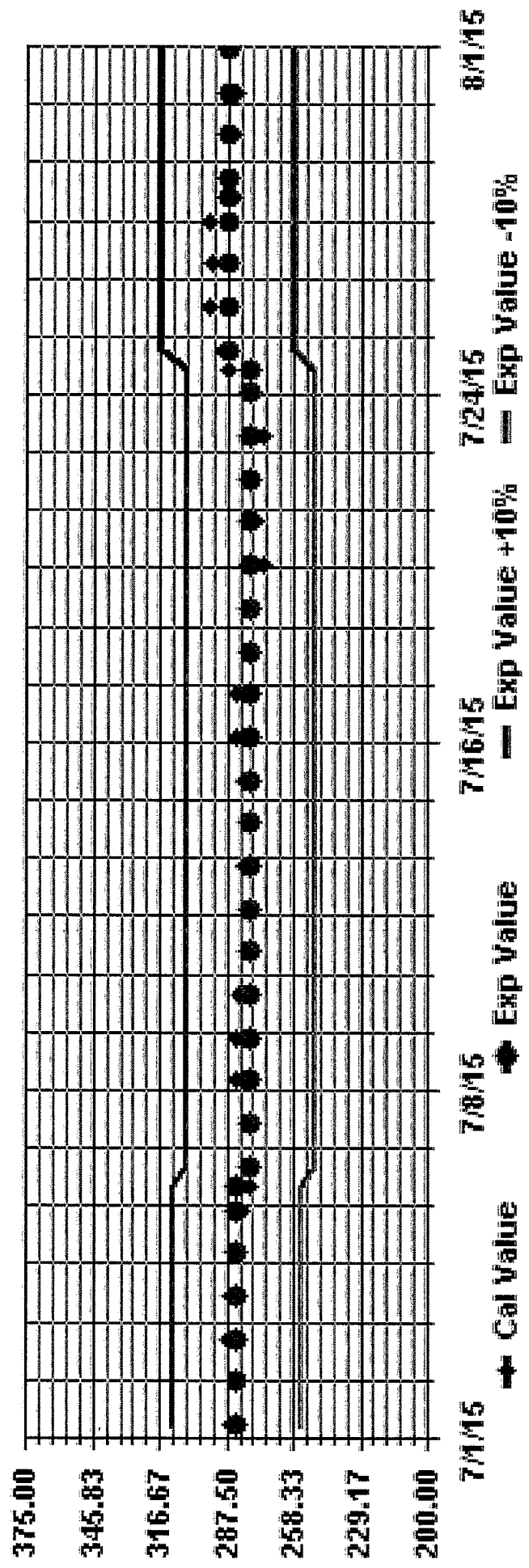
Site : LICA-ELK

Class Limits (PPB)

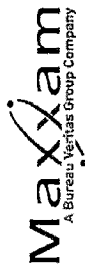
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA35 Parameter: SO2 Sequence: SO2 Phase: SPAN



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

DAY	HOUR																								DAILY MAX.	24-HOUR AVG.	RDGS.	
	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				0:00
1	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
2	0	0	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
3	0	0	0	1	2	5	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24
4	0	0	0	1	5	1	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.4	24	
5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
6	0	0	5	1	2	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.6	24	
7	0	5	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
8	5	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
9	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
10	0	0	0	3	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.4	24	
11	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
12	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
13	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
14	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
15	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	24	
16	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
17	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
18	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
19	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
20	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
21	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
22	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
23	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
24	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
25	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
26	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
27	0	0	0	0	0	0	5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
28	0	0	0	0	5	0	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	0	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	5	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
31	5	0	0	0	1	3	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
HOURLY MAX	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.4	0.4	0.3	0.2	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
HOURLY AVG	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.4	0.4	0.3	0.2	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

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

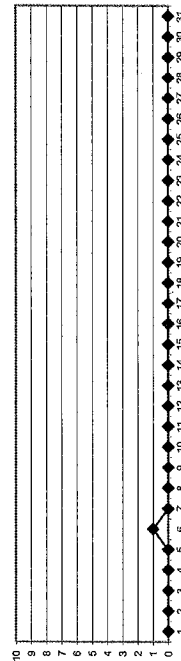
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR: 10 PPB 24-HR: 3 PPB

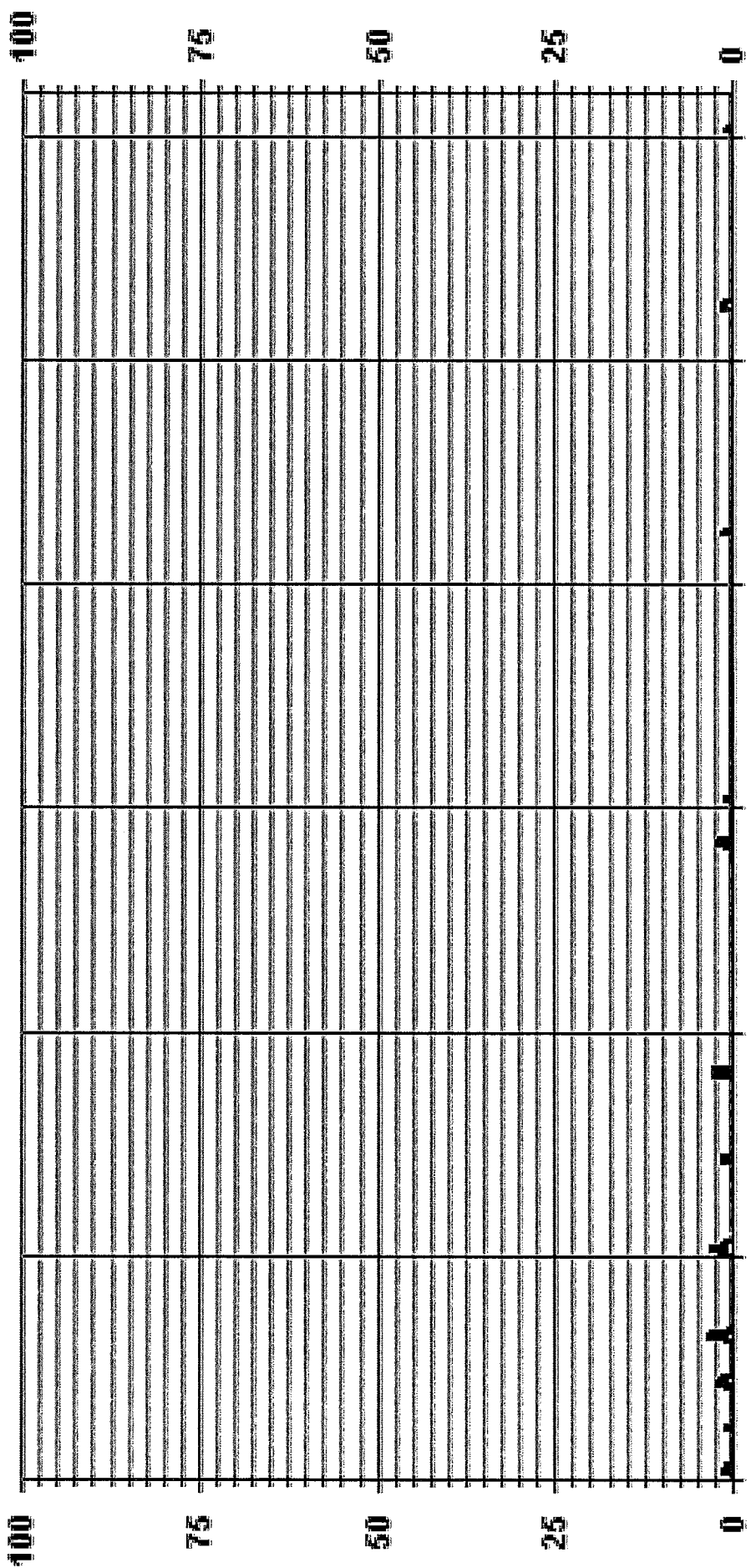
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	38
MAXIMUM 1-HR AVERAGE:	3 PPB
MAXIMUM 24-HR AVERAGE:	0.6 PPB
1ZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	0.37
OPERATIONAL TIME:	744 HRS
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	0 PPB
VAR	6
ON DAY(S)	VAR-VARIOUS

24 HOUR AVERAGES FOR JULY 2015

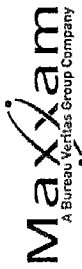


01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 H2S_ PPB



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

HOURLY START	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	24-HOUR		
HOURLY END	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	0:00	MAX	AVG	ROSS	
1	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
2	1	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
3	0	0	1	2	3	5	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.6	24
4	0	0	1	1	1	1	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.6	24
5	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	1	0.1	24
6	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	3	0.9	24
7	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
8	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	1	0.2	24
9	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	2	0.1	24
10	0	0	0	4	2	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.9	24
11	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	1	0.0	24
12	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	1	0.2	24
13	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	1	0.0	24
14	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	1	0.1	24
15	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	3	0.5	24
16	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	2	0.3	24
17	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	2	0.3	24
18	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	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	0	0	0	0	0	0	0	0.0	24
21	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	4	0.3	24
22	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
23	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	1	0.1	24
24	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	3	0.3	24
25	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
26	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	1	0.2	24
27	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	2	0.3	24
28	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	1	0.0	24
29	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	1	0.0	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
31	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	1	0.1	24
HOURLY MAX	1	1	4	2	4	4	4	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
HOURLY AVG	0.1	0.2	0.4	0.6	0.9	0.8	0.7	0.6	0.3	0.2	0.1	0.1	0.0	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	0.1	

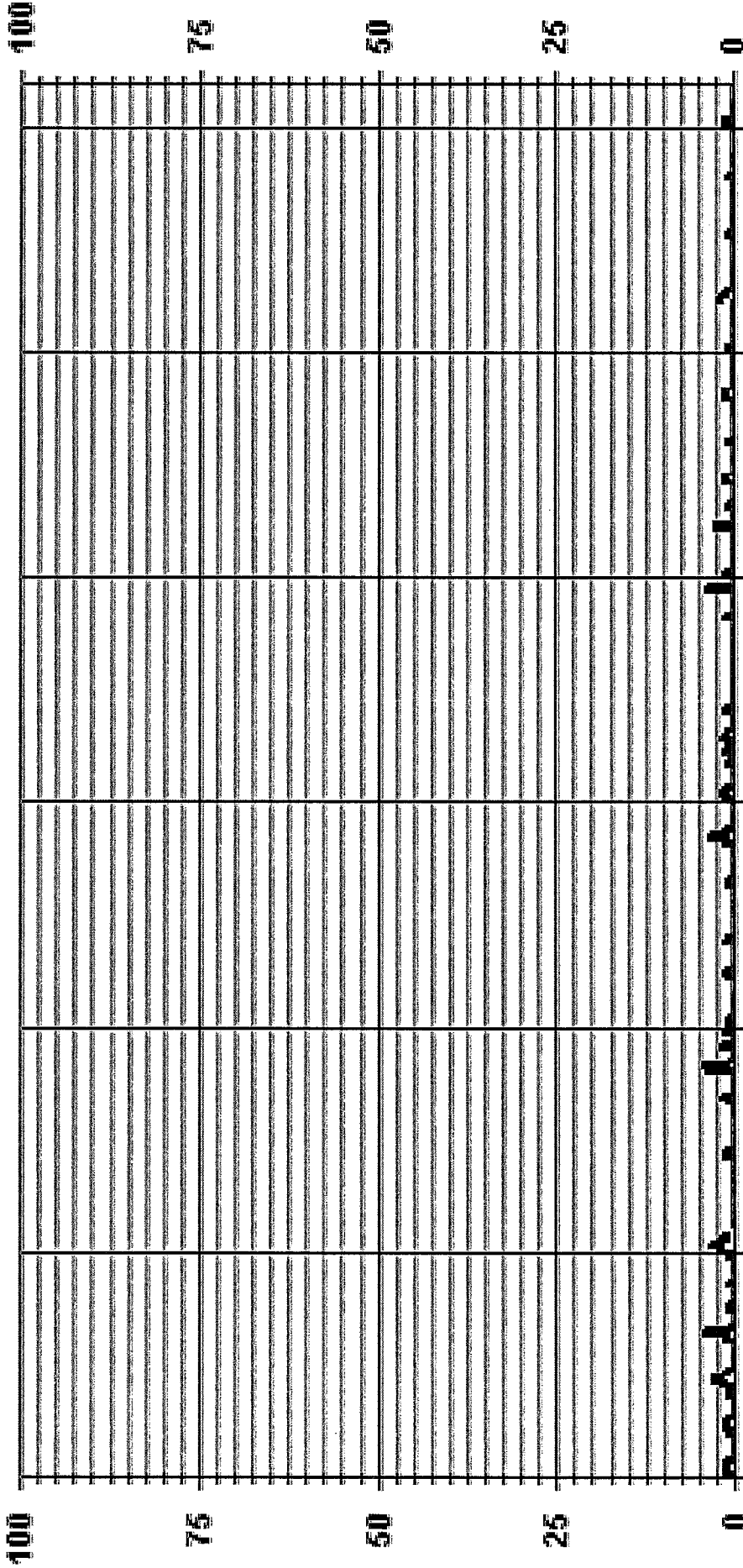
STATUS FLAG CODES

C	-CALIBRATION	O	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	-OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	120
MAXIMUM INSTANTANEOUS VALUE:	4 PPB @ HOUR(S) VAR ON DAY(S) VAR
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	0.61
OPERATIONAL TIME:	744 HRS
VAR-VARIOUS	

01 Hour Averages



07/01/15 00:00:07/06/15 00:00:07/11/15 00:00:07/16/15 00:00:07/21/15 00:00:07/26/15 00:00:07/31/15 00:00

— LICA35 H2SMAX PPB

LICA-ELK
H2S_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : H2S
Units : PPM

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	2.69	.84	1.84	2.69	4.10	4.10	1.98	1.27	1.84	5.24	4.39	13.45	17.13	20.39	12.74	4.53	99.29
< 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.42	.14	.00	.70
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.69	.84	1.84	2.69	4.10	4.10	1.98	1.27	1.84	5.24	4.39	13.59	17.13	20.82	12.88	4.53	

Calm : .00 %

Total # Operational Hours : 706

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	19	6	13	19	29	29	14	9	13	37	31	95	121	144	90	32	701
< 10												1		3	1		5
< 50																	
>= 50																	
Totals	19	6	13	19	29	29	14	9	13	37	31	96	121	147	91	32	

Calm : .00 %

Total # Operational Hours : 706

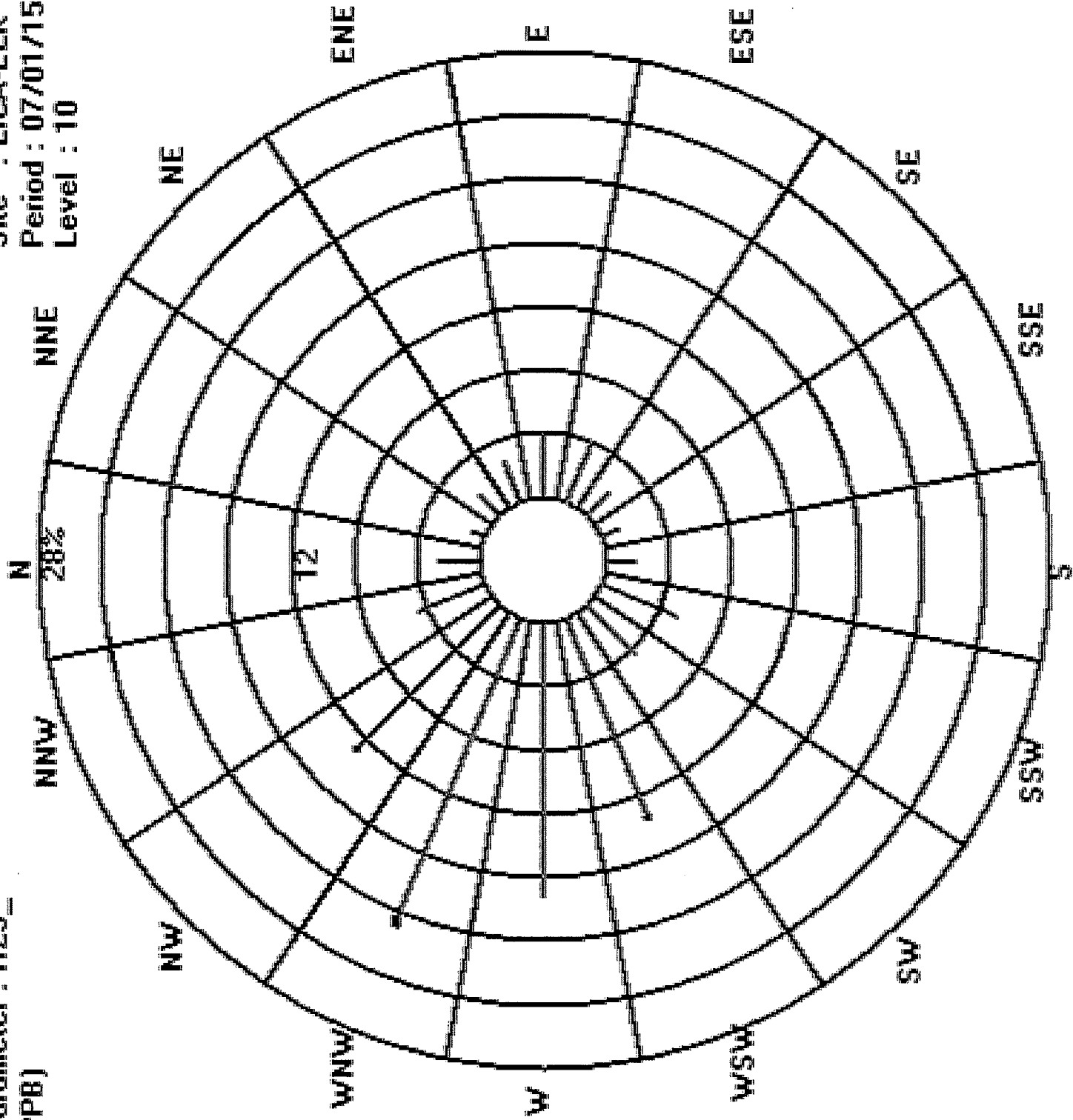
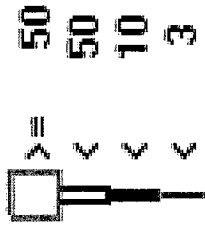
Logger : 35 Parameter : H2S_

Site : LICA-ELK

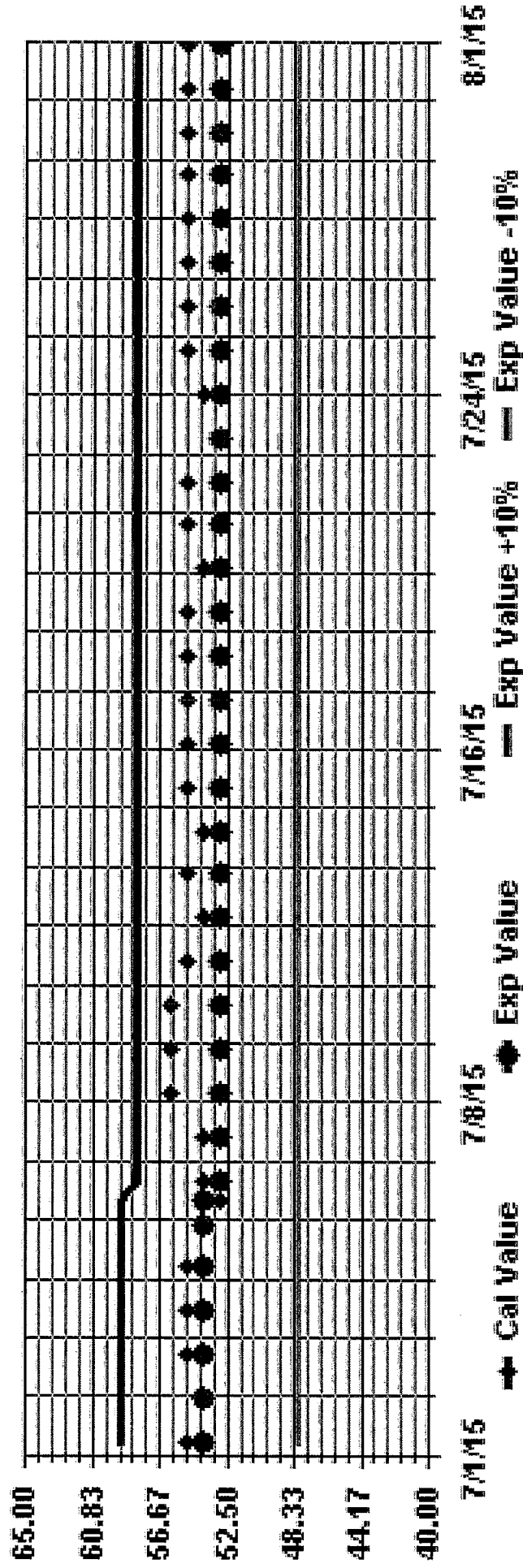
Period : 07/01/15-07/31/15

Level : 10

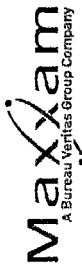
Class Limits (PPB)



Calibration Graph for Site: LICA35 Parameter: H2S_ Sequence: H2S Phase: SPAN



TOTAL HYDROCARBON

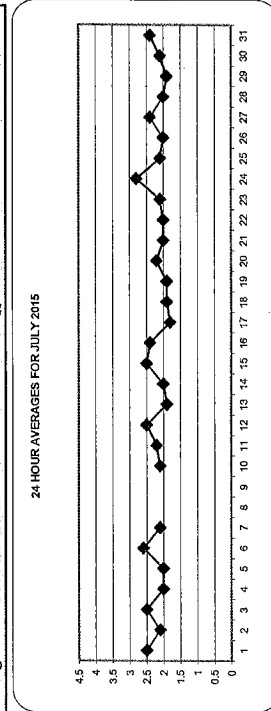


TOTAL HYDROCARBONS (THC) hourly averages in ppm

DAY	24-HOUR AVG.																														
	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	RDGS.						
1	3.8	3.4	3.6	4.2	4.1	3.5	5	2.2	2.1	2.0	2.0	2.0	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.7	4.2	2.6	24				
2	2.5	2.3	2.4	2.5	2.6	2.6	5	2.4	2.2	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.7	2.9	2.9	24				
3	3.3	4.0	4.0	4.9	4.8	5	4.3	2.9	2.3	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	2.2	4.9	2.6	24				
4	2.4	2.3	2.1	2.1	5	2.4	2.5	2.4	2.3	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.2	2.1	2.2	2.5	2.1	24				
5	2.0	2.0	2.0	5	2.0	2.0	5	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.5	2.9	3.0	3.0	24				
6	3.5	4.7	5	3.4	3.7	3.9	3.8	2.8	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.6	3.7	4.7	2.7	24				
7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3.8	2.1	14			
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3.8	2.1	14		
9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3.8	2.1	14	
10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3.8	2.1	14
11	2.4	2.4	2.2	2.3	2.3	2.3	5	5	2.1	2.2	2.1	2.2	2.1	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	5	2.3	2.3	2.3	2.2	2.2	24		
12	3.6	3.0	2.9	3.2	3.7	4.5	3.4	3.0	2.4	2.2	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	5	2.1	1.9	1.9	2.1	4.5	2.5	24		
13	2.8	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	5	1.9	2.0	2.0	2.1	2.8	2.0	24		
14	1.9	2.0	2.1	2.4	2.5	2.9	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	5	1.8	1.9	2.2	2.5	2.6	2.8	2.9	2.1	24
15	2.6	2.8	3.1	3.0	3.3	3.9	3.8	2.7	2.2	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.5	3.2	3.4	3.9	2.5	24		
16	4.3	4.2	3.9	4.4	4.2	4.5	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	4.5	2.5	24			
17	1.9	2.0	2.0	2.2	2.1	1.9	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	4.5	2.5	24			
18	2.0	2.1	2.1	2.1	2.1	2.1	2.3	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.2	1.9	24			
19	1.9	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.3	2.0	24			
20	2.5	2.3	2.6	3.3	3.2	2.9	3.6	2.4	2.0	1.9	1.9	5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.2	3.6	2.3	24				
21	2.3	2.3	2.3	2.0	2.2	2.8	2.5	2.0	1.9	1.9	5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.0	2.8	2.0	24		
22	2.1	1.9	1.9	2.6	2.7	2.4	2.1	2.0	1.9	5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.5	2.6	2.6	2.7	2.1	24		
23	2.5	2.3	2.6	2.8	2.6	2.4	2.1	2.0	1.9	5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	3.2	3.2	2.2	2.2	2.1	24		
24	4.1	4.1	4.3	3.7	4.0	4.6	4.4	5	2.3	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.8	3.1	3.0	4.6	2.8	24		
25	2.8	2.7	2.5	2.7	2.8	2.9	5	2.2	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.9	2.9	2.1	2.1	2.4	24		
26	2.0	2.0	2.0	2.1	2.2	5	2.1	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	3.7	3.7	2.1	2.1	2.4	24		
27	3.1	4.1	3.7	3.6	5	3.2	2.9	2.6	2.2	2.1	2.1	2.0	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.3	2.9	2.1	4.1	2.4	24			
28	2.9	2.8	2.5	5	2.2	2.2	2.0	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.9	2.0	2.0	2.3	24		
29	2.0	2.1	5	2.2	2.0	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.3	2.5	2.5	1.9	24			
30	2.1	5	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.4	3.7	4.0	4.1	2.2	24			
31	S	4.4	3.9	3.2	3.5	3.4	3.3	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.3	2.5	2.5	4.4	2.5	24			
HOURLY MAX	4.3	4.7	4.3	4.9	4.8	4.6	4.4	3.0	2.4	2.2	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.8	3.7	4.0	4.1	2.6	24			
HOURLY AVG	2.7	2.8	2.6	2.8	2.8	2.8	2.6	2.2	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.1	2.3	2.5	2.5	2.6	24			

STATUS FLAG CODES

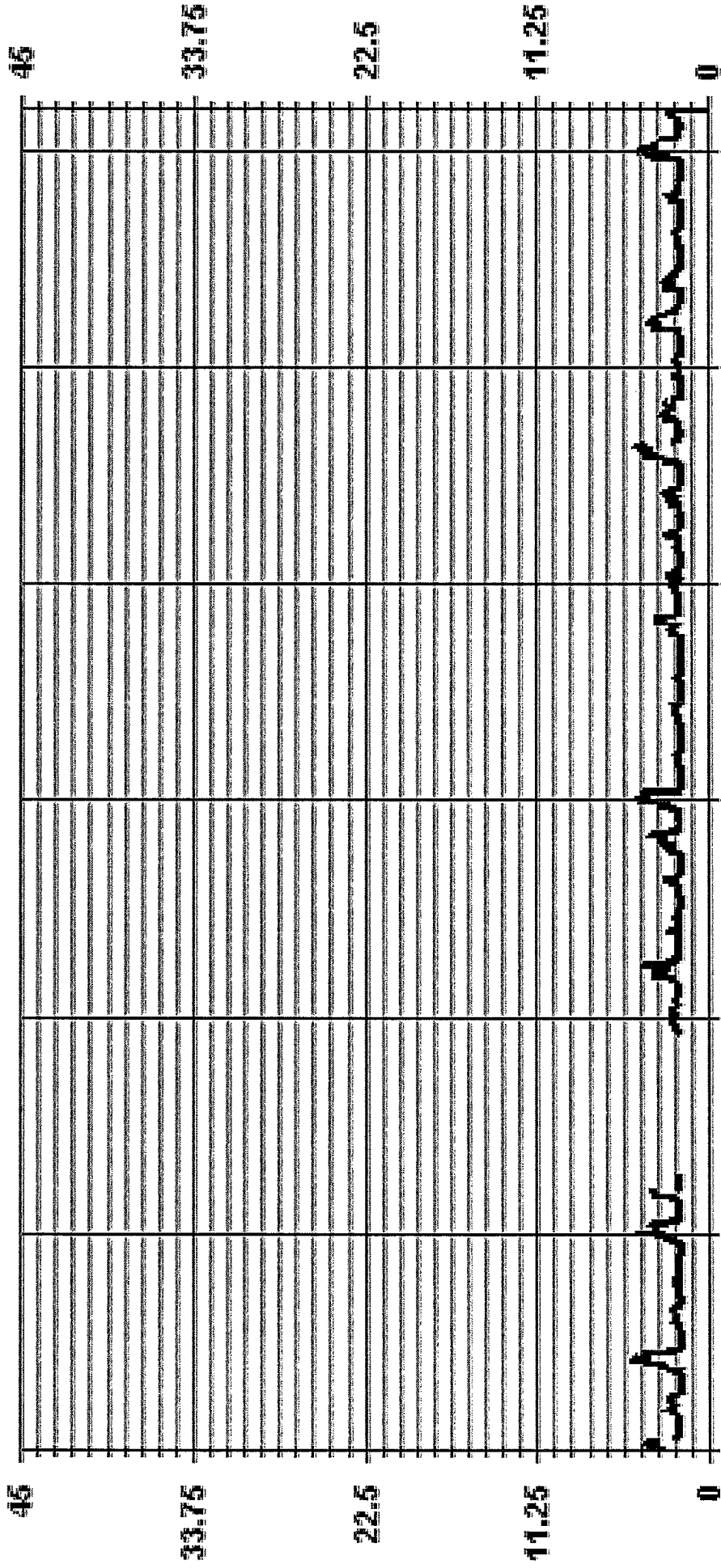
C	QUALITY ASSURANCE
O	RECOVERY
M	MAINTENANCE
S	DAILY ZERO/SPAN CHECK
P	POWER FAILURE
G	OUT FOR REPAIR
X	MACHINE MALFUNCTION
O	OPERATOR ERROR
K	COLLECTION ERROR



MONTHLY SUMMARY

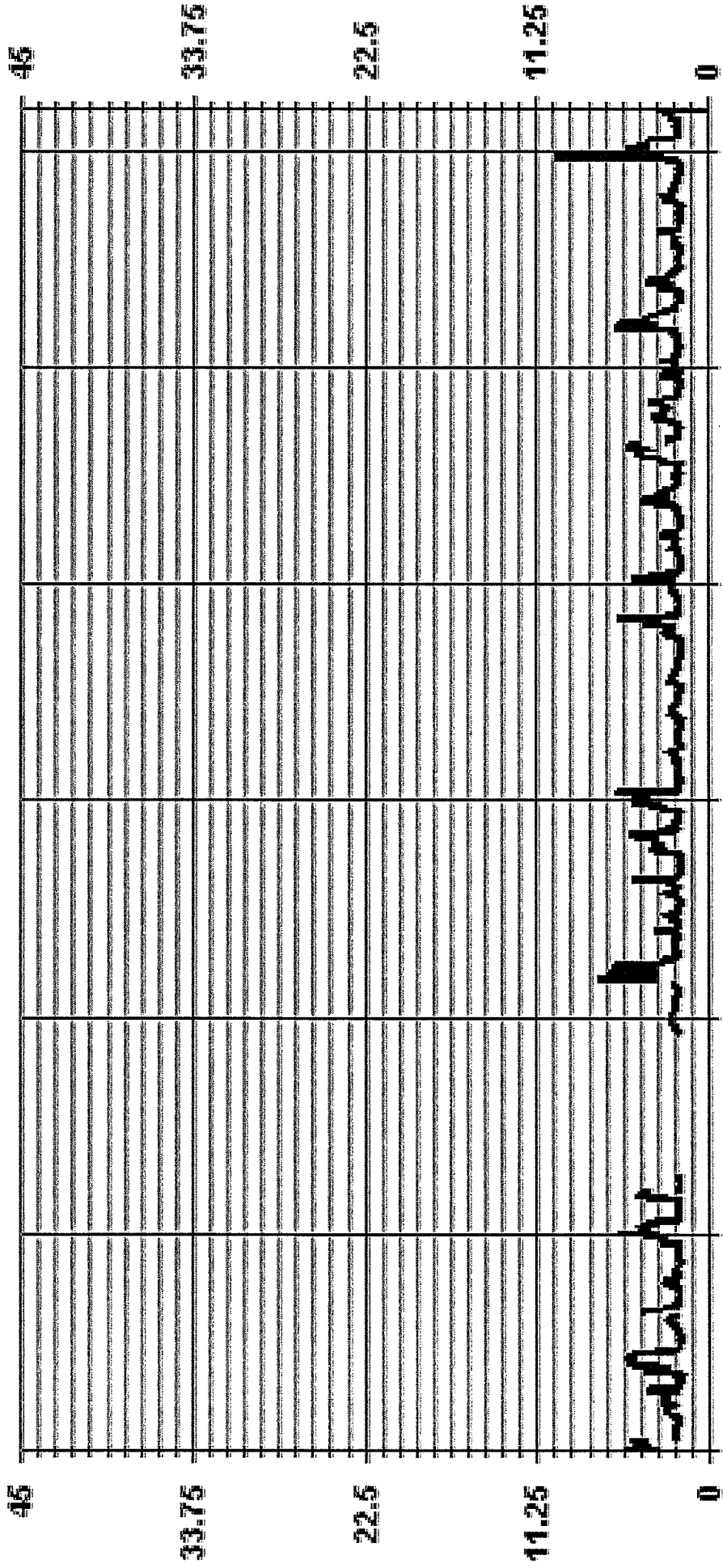
NUMBER OF NON-ZERO READINGS:	632
MAXIMUM 1-HR AVERAGE:	4.9 PPM
MAXIMUM 24-HR AVERAGE:	2.8 PPM
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	11 HRS
STANDARD DEVIATION:	0.62
OPERATIONAL TIME:	675 HRS
AMD OPERATION UPTIME:	90.7 %
MONTHLY AVERAGE:	2.2 PPM
ON DAY(S)	3
ON DAY(S) VAR-VARIOUS	24

01 Hour Averages



— LICA35 THC55 PPM

01 Hour Averages



— LICA35 THC55MAX PPM

THC55 / WDR Joint Frequency Distribution (Percent)
 LICA35
 July 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA35
 Parameter : THC55
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	2.68	.47	.63	1.89	2.53	2.84	1.89	1.26	1.74	3.48	3.95	12.34	17.24	19.30	11.55	4.58	88.44
< 10.0	.15	.00	.15	.63	1.10	1.42	.31	.15	.00	.00	.47	2.37	1.74	1.74	.94	.31	11.55
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.84	.47	.79	2.53	3.63	4.27	2.21	1.42	1.74	3.48	4.43	14.71	18.98	21.04	12.50	4.90	

Calm : .00 %

Total # Operational Hours : 632

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	17	3	4	12	16	18	12	8	11	22	25	78	109	122	73	29	559
< 10.0	1	1	1	4	7	9	2	1		3	15	11	11	6	2	2	73
< 50.0																	
>= 50.0																	
Totals	18	3	5	16	23	27	14	9	11	22	28	93	120	133	79	31	

Calm : .00 %

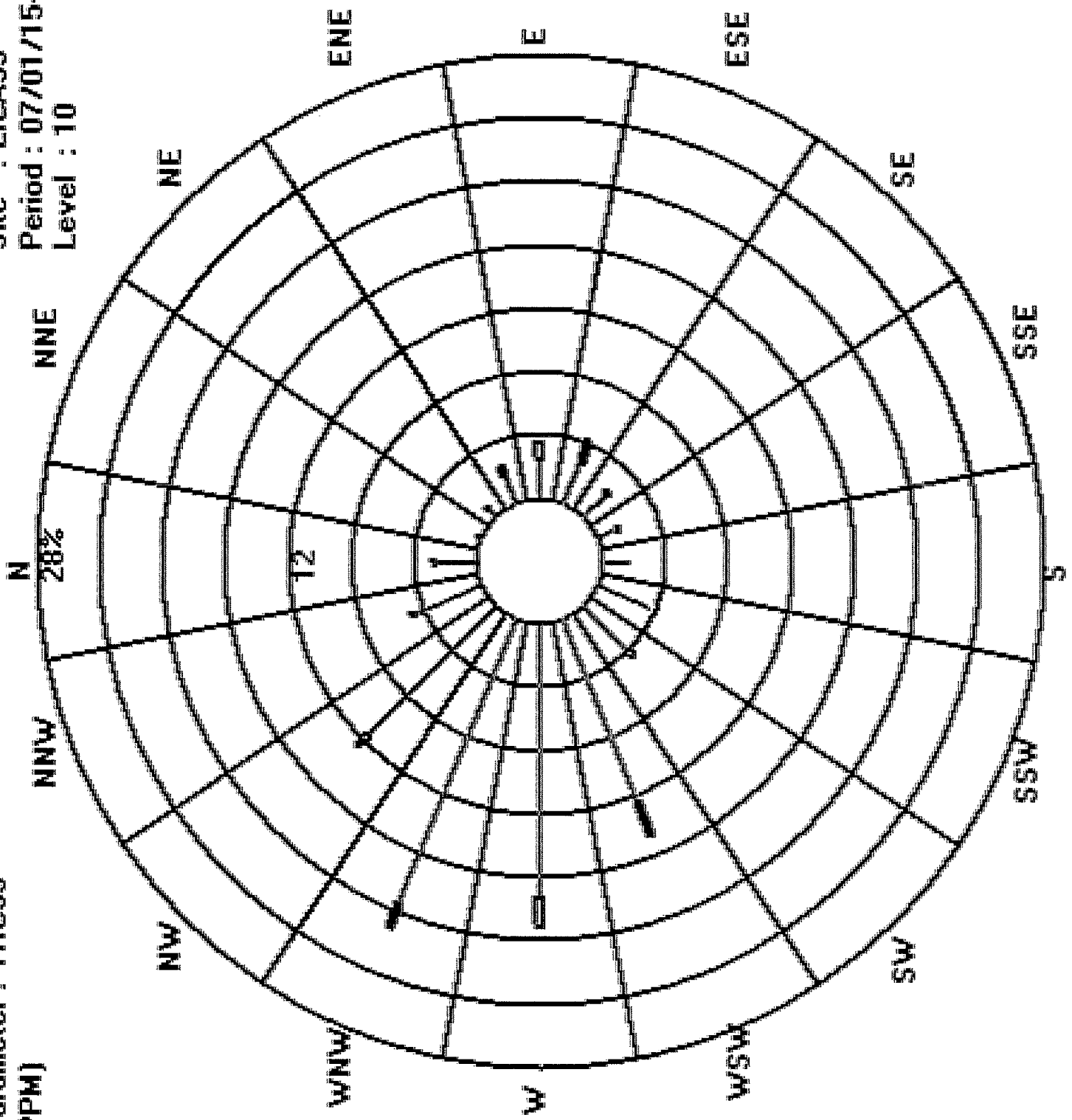
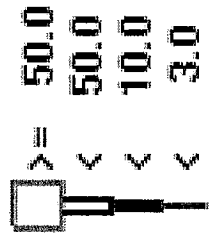
Total # Operational Hours : 632

Logger : 35 Parameter : THC55

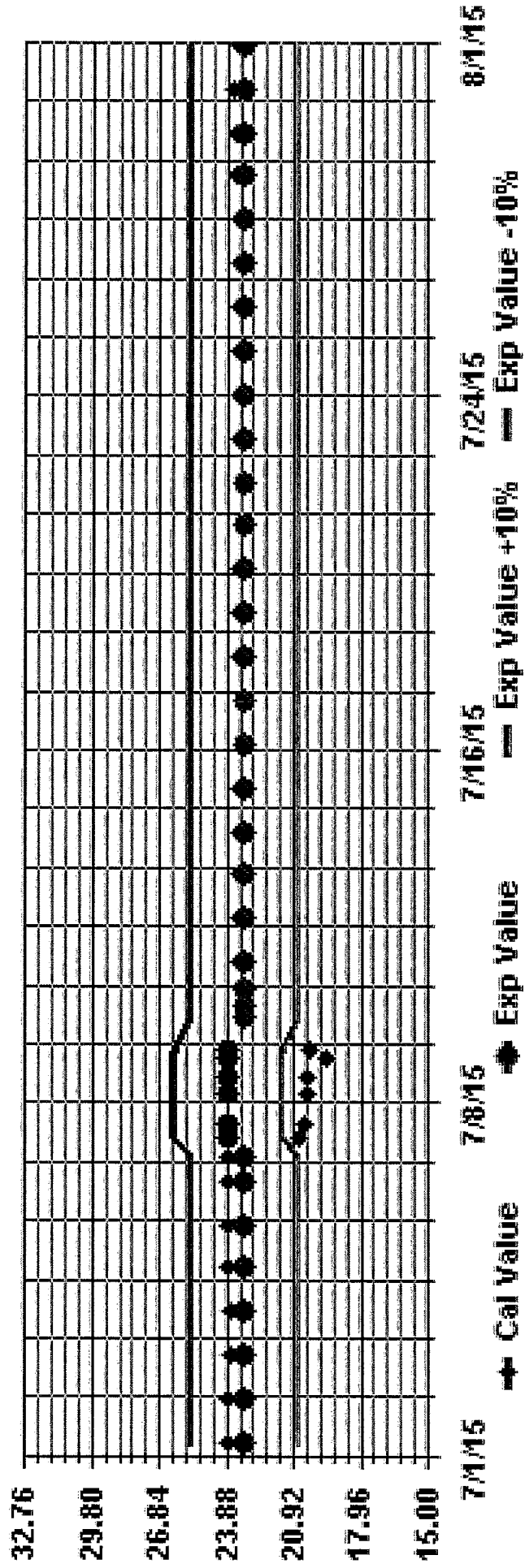
Site : LICA35

Class Limits (PPM)

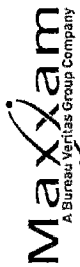
Period : 07/01/15-07/31/15
Level : 10



Calibration Graph for Site: LICA35 Parameter: THC55 Sequence: THC55 Phase: SPAN



METHANE

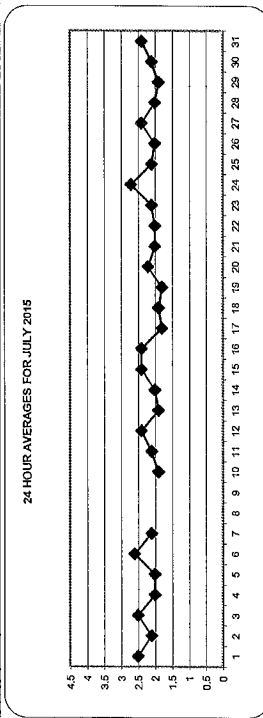


METHANE (CH4) hourly averages in ppm

DAY	HOURS																								DAILY MAX.	24-HOUR AVG.	RDGS.		
	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				0:00	
1	3.7	3.7	3.3	3.5	4.1	4.0	3.4	5	2.2	2.1	2.0	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.4	2.6	4.1	2.6	24	
2	2.5	2.3	2.4	2.4	2.6	2.6	5	2.4	2.2	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.6	2.9	2.9	2.2	24	
3	3.2	3.9	3.9	4.8	4.8	5	4.2	2.9	2.3	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	2.2	4.8	2.5	24	24	
4	2.4	2.3	2.1	2.1	2.1	5	2.4	2.5	2.2	2.1	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.2	2.2	2.1	2.2	2.5	2.1	24	
5	2.0	2.0	2.0	5	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.5	2.8	3.0	3.0	2.0	24	
6	3.5	4.6	5	3.4	3.7	3.9	3.8	2.8	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.6	3.4	4.6	2.6	24	24	
7	3.7	5	5	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.6	3.4	4.6	2.6	24	
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14	
9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14	
10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14	
11	2.2	2.2	2.0	2.1	2.1	2.1	5	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.4	2.6	2.0	2.0	14	
12	3.5	2.9	2.8	3.1	3.5	4.4	3.3	2.9	2.4	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.2	2.6	3.2	3.2	2.1	24	
13	2.7	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24
14	1.9	2.0	2.1	2.3	2.4	2.8	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.2	2.4	2.5	2.7	2.8	2.1	24	
15	2.5	2.7	3.0	2.9	3.2	3.7	3.7	2.6	2.2	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.4	3.1	3.3	3.7	2.5	24	
16	4.2	4.0	3.7	4.2	4.1	4.3	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	24
17	1.9	2.0	2.0	2.2	2.1	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.0	1.8	2.2	1.9	24	
18	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.0	1.8	2.2	1.9	24	
19	1.9	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.0	1.8	2.2	1.9	24	
20	2.4	2.3	2.6	3.2	3.1	2.8	3.5	2.4	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.2	3.5	2.3	2.4	24	
21	2.3	2.3	2.3	2.0	2.2	2.7	2.5	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.1	2.0	2.7	2.0	24	
22	2.1	1.9	1.9	2.6	2.7	2.4	2.1	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.1	2.0	2.7	2.1	24	
23	2.5	2.3	2.6	2.7	2.6	2.3	2.1	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.1	2.0	2.7	2.1	24	
24	4.0	3.9	4.2	3.7	3.9	4.4	4.3	5	2.3	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.7	2.8	3.0	4.4	2.8	24	
25	2.8	2.7	2.5	2.7	2.8	2.8	5	2.2	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.2	2.9	3.7	2.1	24		
26	2.0	2.0	2.0	2.1	2.3	5	2.1	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.2	2.9	3.7	2.1	24		
27	3.1	4.0	3.6	3.5	5	3.2	2.9	2.6	2.2	2.1	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.3	2.9	2.1	2.4	2.4	24		
28	2.9	2.8	2.5	5	2.2	2.2	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.1	2.9	2.0	23	24	
29	2.0	2.1	5	2.2	2.0	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.3	2.5	2.5	1.9	24	24	
30	2.1	5	2.0	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.4	3.7	3.9	4.0	2.2	24	24	
31	5	4.3	3.8	3.2	3.5	3.3	3.3	2.1	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.2	2.3	2.4	4.3	2.4	2.4	24	
HOURLY MAX	4.2	4.6	4.2	4.8	4.8	4.4	4.3	2.9	2.4	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.7	3.7	3.9	4.0	4.3	2.4	24	
HOURLY AVG	2.7	2.7	2.6	2.7	2.8	2.8	2.6	2.2	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.3	2.4	2.6	2.6	2.4	24	

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

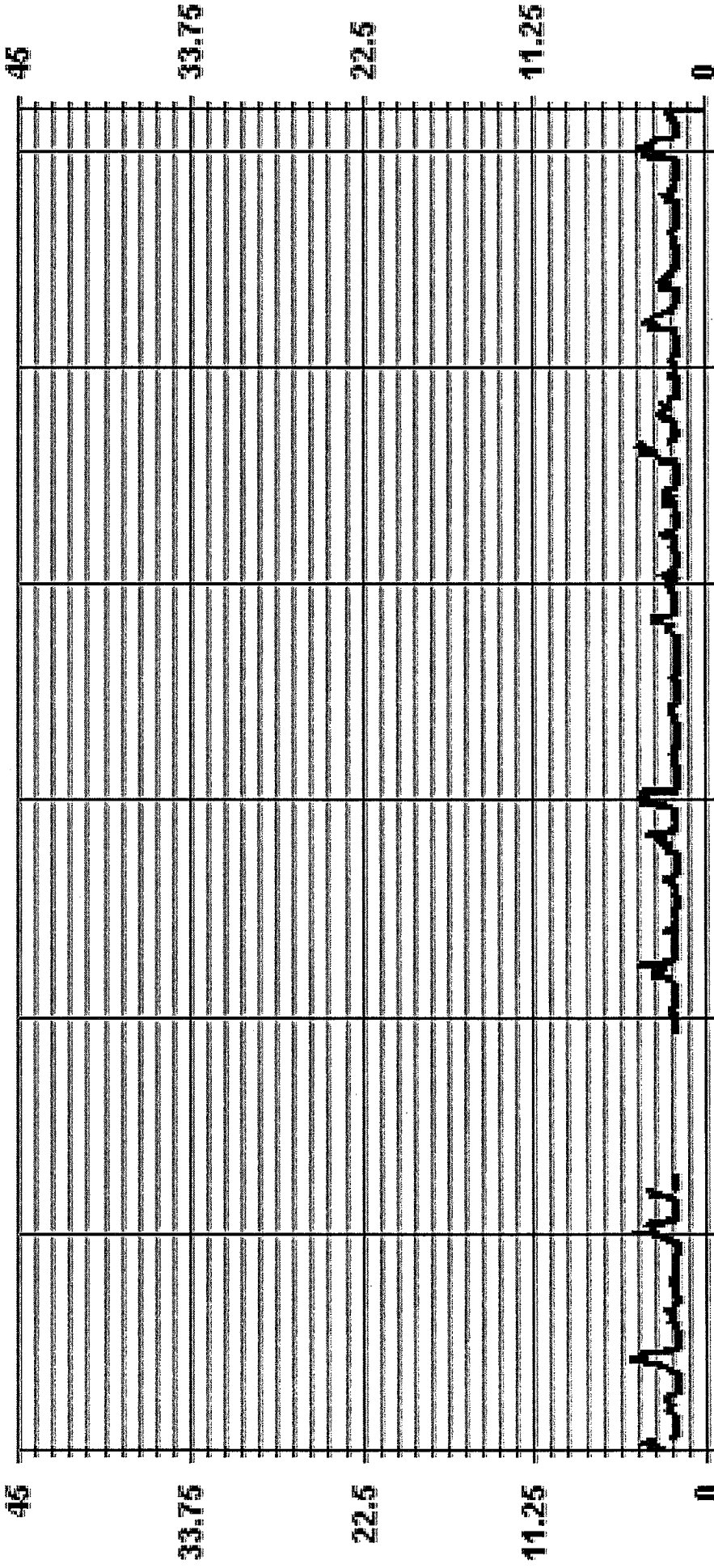
NUMBER OF NON-ZERO READINGS:	632	PPM @ HOUR(S)	3, 4	ON DAY(S)	3, 3
MAXIMUM 1-HR AVERAGE:	4.8	PPM	3, 4	ON DAY(S)	24
MAXIMUM 24-HR AVERAGE:	2.8	PPM		VAR-VARIOUS	
1/2 CALIBRATION TIME:	32	HRS		OPERATIONAL TIME:	675
MONTHLY CALIBRATION TIME:	11	HRS		AMD OPERATION UPTIME:	90.7
STANDARD DEVIATION:	0.59			MONTHLY AVERAGE:	2.2
					PPM

01 Hour Averages

45						45
33.75						33.75
22.5						22.5
11.25						11.25
0						0

07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

01 Hour Averages



— LICA35 METHANE PPM

LICA35
 METHANE / WDR Joint Frequency Distribution (Percent)
 July 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA35
 Parameter : METHANE
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	2.68	.47	.79	2.05	2.53	2.84	1.89	1.26	1.74	3.48	3.95	12.65	17.24	19.30	11.55	4.58	89.08
< 10.0	.15	.00	.00	.47	1.10	1.42	.31	.15	.00	.00	.47	2.05	1.74	1.74	.94	.31	10.91
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.84	.47	.79	2.53	3.63	4.27	2.21	1.42	1.74	3.48	4.43	14.71	18.98	21.04	12.50	4.90	

Calm : .00 %

Total # Operational Hours : 632

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	17	3	5	13	16	18	12	8	11	22	25	80	109	122	73	29	563
< 10.0	1			3	7	9	2	1			3	13	11	11	6	2	69
< 50.0																	
>= 50.0																	
Totals	18	3	5	16	23	27	14	9	11	22	28	93	120	133	79	31	

Calm : .00 %





Total # Operational Hours : 632

Logger : 35 Parameter : METHANE

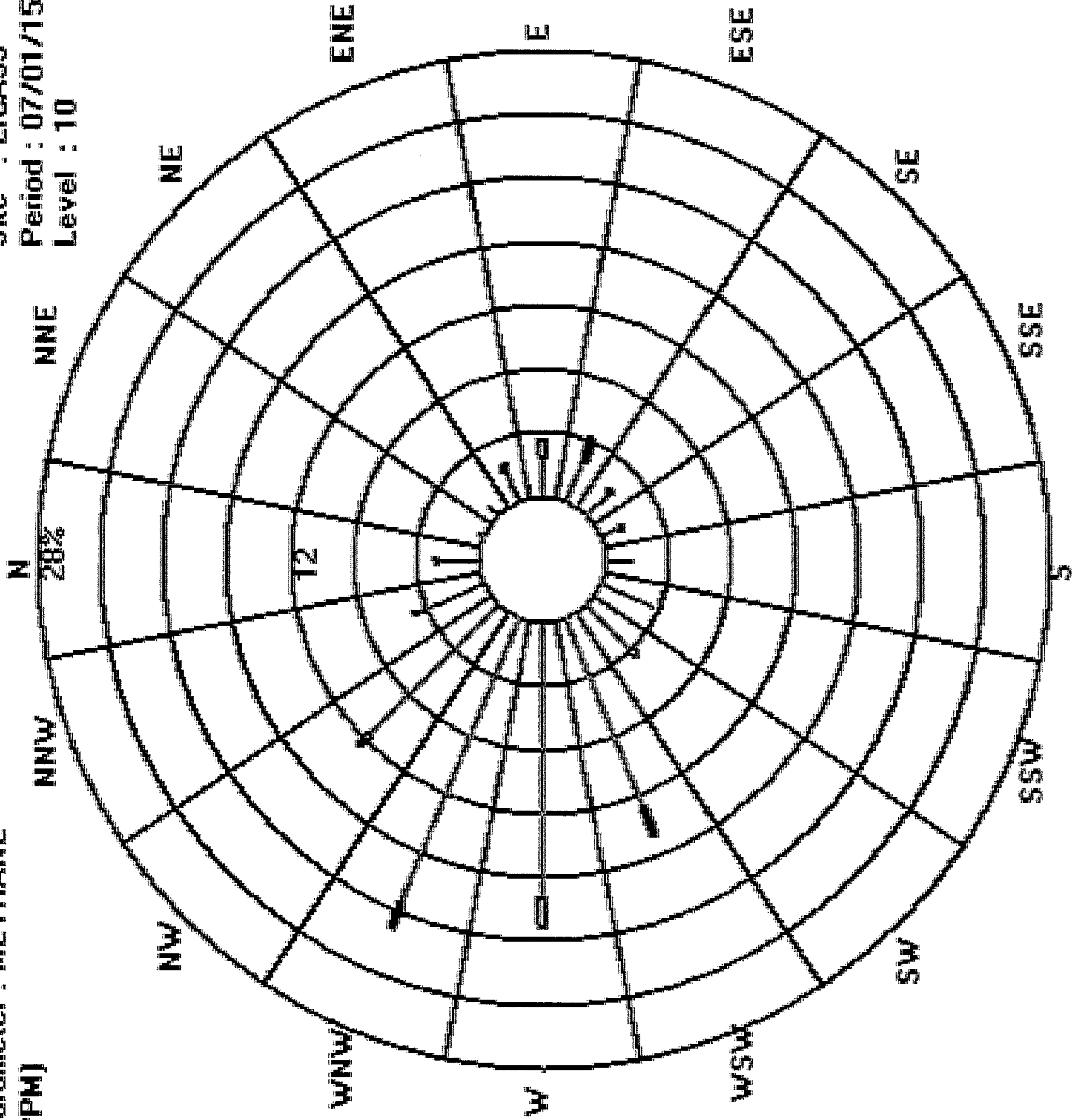
Site : LICA35

Class Limits (PPM)

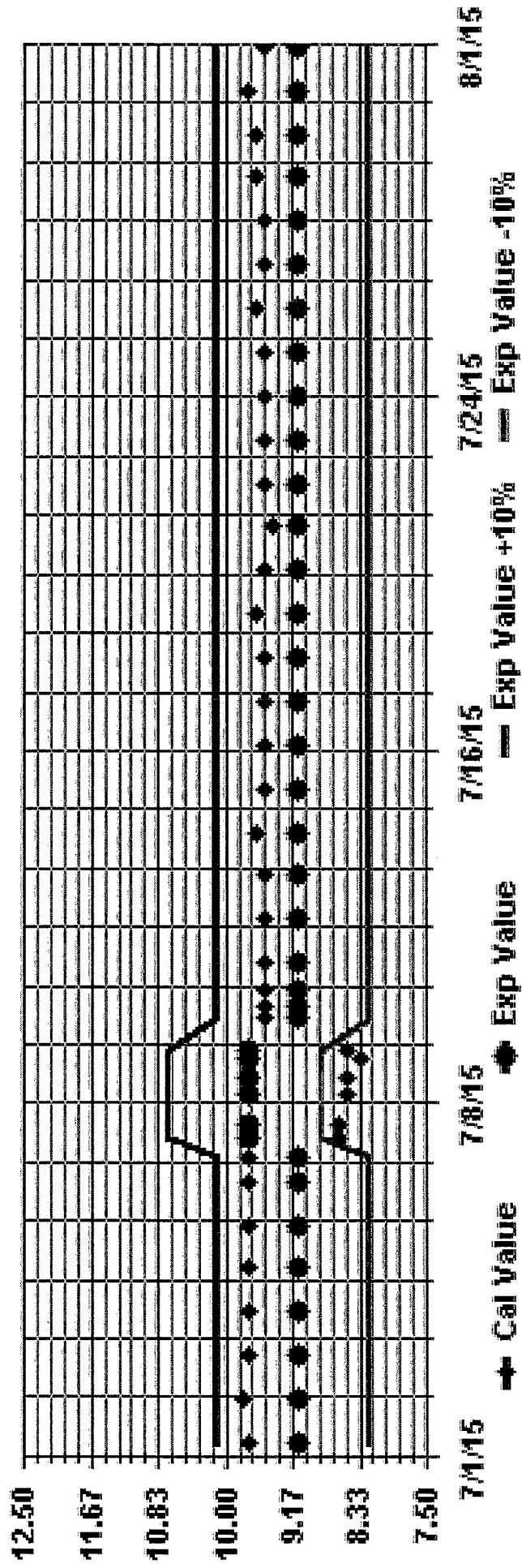
Period : 07/01/15-07/31/15

-  >= 50.0
-  < 50.0
-  < 10.0
-  < 3.0

Level : 10



Calibration Graph for Site: LICA35 Parameter: METHANE Sequence: THC55 Phase: SPAN



NON-METHANE HYDROCARBON



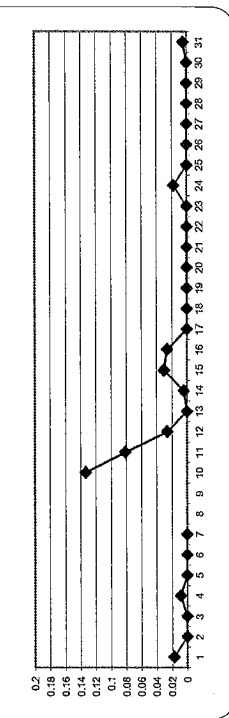
NON-METHANE HYDROCARBONS (NMHC) hourly averages in ppm

DAY	HOURLY START																								DAILY MAX	24-HOUR AVG.	RDGS	
	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				
1	0.00	0.10	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.02	24	
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
HOURLY AVG	0.02	0.03	0.02	0.02	0.03	0.03	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

STATUS FLAG CODES

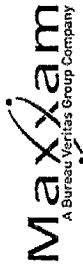
C	-	CALIBRATION	O	-	QUALITY ASSURANCE
Y	-	MAINTENANCE	R	-	RECOVERY
S	-	DAILY ZERO/SPAN CHECK	X	-	MACHINE MALFUNCTION
P	-	POWER FAILURE	O	-	OPERATOR ERROR
G	-	OUT FOR REPAIR	K	-	COLLECTION ERROR

24 HOUR AVERAGES FOR JULY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	47	PPM @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	0.20	PPM	0.13	ON DAY(S)	10
MAXIMUM 24-HR AVERAGE:	0.13	PPM		VAR- VARIOUS	
1ZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	675	HRS
MONTHLY CALIBRATION TIME:	11	HRS	AMD OPERATION UPTIME:	90.7	%
STANDARD DEVIATION:	0.03		MONTHLY AVERAGE:	0.01	PPM



NON-METHANE HYDROCARBONS MAX instantaneous maximum in ppm

MST

DAY	24-HOUR																								RDS			
	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		0:00		
1	0.23	0.23	0.21	0.24	0.63	0.26	0.18	S	0.09	0.11	0.12	0.22	0.17	0.14	0.13	0.00	0.00	0.00	0.14	0.00	0.18	0.13	0.17	0.23	0.63	0.17	24	
2	0.18	0.18	0.22	0.20	0.20	0.19	S	0.22	0.24	0.13	1.68	1.68	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.17	0.22	0.19	0.17	1.68	0.26	24	
3	0.14	0.08	0.00	0.00	S	0.22	0.22	0.86	0.22	0.19	0.13	0.00	0.00	0.08	0.15	0.22	0.11	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.22	0.11	24	
4	0.00	0.15	0.01	S	0.16	0.10	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.09	24	
5	0.13	0.27	S	0.15	0.00	0.17	0.17	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	0.12	0.32	0.06	24		
6	0.18	S	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	X	X	X	X	X	0.26	0.13	0.18	0.16	0.27	0.09	24	
7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0.18	0.03	14	
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14	
9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14	
10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14	
11	0.33	0.31	0.31	0.34	0.34	0.32	S	S	0.30	0.28	0.26	0.29	0.24	0.15	0.11	0.15	0.15	0.15	0.18	0.16	S	0.25	0.24	0.28	0.34	0.24	24	
12	0.22	0.23	0.25	0.24	0.33	0.30	0.21	0.19	0.21	0.24	0.17	0.19	0.16	0.24	0.20	0.20	0.18	0.23	S	0.21	0.14	0.24	0.18	0.33	0.22	24		
13	0.29	0.18	0.16	0.20	0.17	0.14	0.09	0.15	0.13	0.37	0.18	0.10	0.15	0.10	0.12	0.00	0.00	0.00	S	0.17	0.35	0.24	0.16	0.37	0.16	24		
14	0.13	0.19	0.20	0.20	0.24	0.22	0.14	0.22	0.14	0.10	0.10	0.10	0.08	0.00	0.00	0.00	0.00	0.08	S	0.00	0.22	0.25	0.21	0.20	0.25	0.12	24	
15	0.20	0.20	0.25	0.26	0.29	0.28	0.26	0.22	0.13	0.00	0.09	0.16	0.10	0.00	0.20	0.00	0.00	S	0.14	0.02	0.15	0.17	0.35	0.24	0.31	0.35	0.17	24
16	0.32	0.31	0.31	0.30	0.28	0.34	0.15	0.15	0.16	0.15	0.11	0.15	0.00	0.12	0.13	S	0.00	0.00	0.00	0.00	0.13	0.00	0.22	0.17	0.34	0.15	24	
17	0.09	0.20	0.21	0.16	0.16	0.19	0.00	0.16	0.00	0.15	0.17	0.22	0.22	0.28	S	0.00	0.00	0.00	0.18	0.10	0.17	0.28	0.16	0.17	0.28	0.13	24	
18	0.19	0.15	0.22	0.20	0.23	0.21	0.21	0.06	0.00	0.00	0.00	0.00	0.10	0.12	S	0.00	0.00	0.00	0.00	0.00	0.16	0.17	0.22	0.22	0.22	0.06	24	
19	0.00	0.15	0.20	0.13	0.13	0.04	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.18	0.22	0.22	0.06	24	
20	0.23	0.14	0.21	0.28	0.28	0.28	0.20	0.23	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.06	0.28	0.10	0.06	24	
21	0.00	0.10	0.00	0.00	0.17	0.19	0.15	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.10	0.09	0.19	0.06	24	
22	0.12	0.18	0.19	0.19	0.20	0.16	0.12	0.00	0.12	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.17	0.22	0.17	0.22	0.12	24	
23	0.26	0.12	0.20	0.22	0.19	0.18	0.00	S	0.04	0.00	0.08	0.00	0.00	0.10	0.10	0.12	0.00	0.00	0.00	0.19	0.20	0.13	0.21	0.22	0.26	0.11	24	
24	0.28	0.27	0.30	0.19	0.25	0.31	0.24	S	0.15	0.08	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.07	0.13	0.14	0.20	0.31	0.14	24	
25	0.16	0.22	0.12	0.14	0.26	0.19	S	0.18	0.07	0.12	0.16	0.21	0.14	0.15	0.08	0.00	0.00	0.00	0.00	0.00	0.13	0.14	0.13	0.00	0.26	0.12	24	
26	0.13	0.06	0.00	0.00	0.07	S	0.19	0.15	0.10	0.00	0.09	0.14	0.17	0.10	0.16	0.15	0.13	0.13	0.15	0.15	0.00	0.15	0.06	0.17	0.20	0.11	24	
27	0.16	0.23	0.16	0.19	S	0.19	0.15	0.10	0.00	0.09	0.14	0.14	0.10	0.00	0.14	0.11	0.15	0.17	0.10	0.00	0.08	0.19	0.15	0.07	0.23	0.12	24	
28	0.23	0.16	0.14	S	0.12	0.11	0.00	0.00	0.00	0.10	0.12	0.11	0.12	0.18	0.14	0.10	Y	0.11	0.16	0.14	0.00	0.00	0.07	0.02	0.23	0.10	23	
29	0.00	0.10	S	0.00	0.00	0.00	0.00	0.00	0.16	0.12	0.09	0.00	0.00	0.12	0.13	0.11	0.00	0.14	0.00	0.00	0.10	0.13	0.07	0.11	0.16	0.07	24	
30	0.19	S	0.00	0.00	0.03	0.08	0.15	0.00	0.00	0.12	0.11	0.09	0.03	0.20	0.12	0.00	0.00	0.00	0.00	0.00	0.11	0.21	0.19	0.24	0.24	0.09	24	
31	S	0.23	0.22	0.20	0.19	0.18	0.18	0.15	0.16	0.15	0.17	0.19	0.16	0.17	0.14	0.21	0.17	0.17	0.18	0.18	0.19	0.18	0.16	S	0.23	0.18	24	
HOURLY MAX	0.33	0.31	0.31	0.34	0.63	0.34	0.26	0.86	0.30	0.37	1.68	1.68	0.24	0.28	0.20	0.22	0.20	0.23	0.25	0.26	0.35	0.35	0.32	0.31	0.31	0.17		
HOURLY AVG	0.17	0.19	0.16	0.17	0.20	0.18	0.14	0.13	0.09	0.10	0.15	0.16	0.08	0.08	0.09	0.07	0.06	0.09	0.08	0.07	0.14	0.15	0.16	0.16	0.17	0.17		

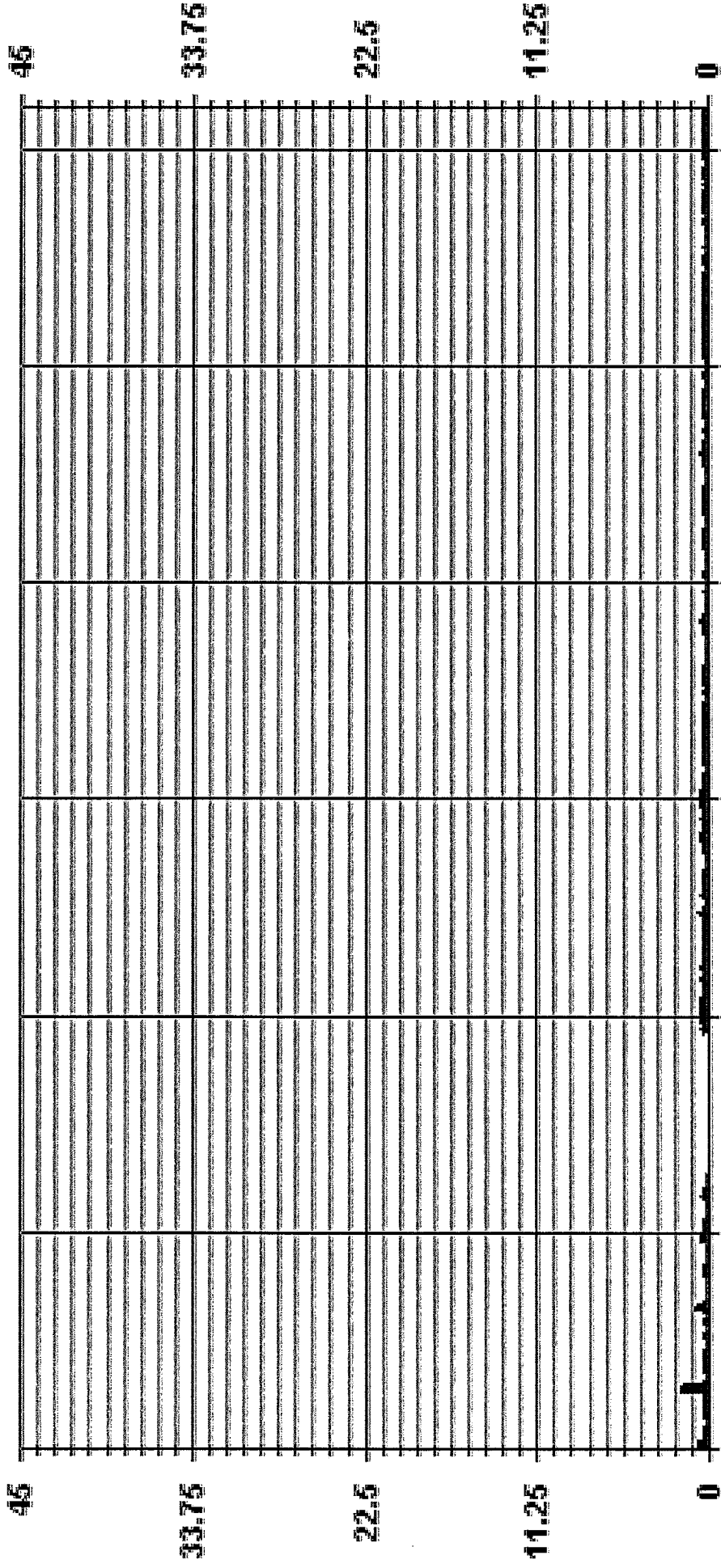
STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
D	DAILY ZERO/SKIPCHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUTSIDE REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	449	PPM	@ HOUR(S)	10, 11	ON DAY(S)	2, 2
MAXIMUM INSTANTANEOUS VALUE:	1.68	PPM	@ HOUR(S)	10, 11	ON DAY(S)	2, 2
VAR-VARIOUS						
15 CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	675	HRS	
MONTHLY CALIBRATION TIME:	11	HRS	STANDARD DEVIATION:	0.13		

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 NMHC MAX PPM

LICA35
 NMHC / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA35
 Parameter : NMHC
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< .2	2.84	.47	.79	2.53	3.63	4.27	2.21	1.42	1.74	3.48	4.43	14.71	18.98	21.04	12.50	4.90	100.00
< .5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 1.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 2.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 4.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 4.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.84	.47	.79	2.53	3.63	4.27	2.21	1.42	1.74	3.48	4.43	14.71	18.98	21.04	12.50	4.90	

Calm : .00 %

Total # Operational Hours : 632

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< .2	18	3	5	16	23	27	14	9	11	22	28	93	120	133	79	31	632
< .5																	
< 1.0																	
< 2.0																	
< 4.0																	
>= 4.0																	
Totals	18	3	5	16	23	27	14	9	11	22	28	93	120	133	79	31	632

Calm : .00 %

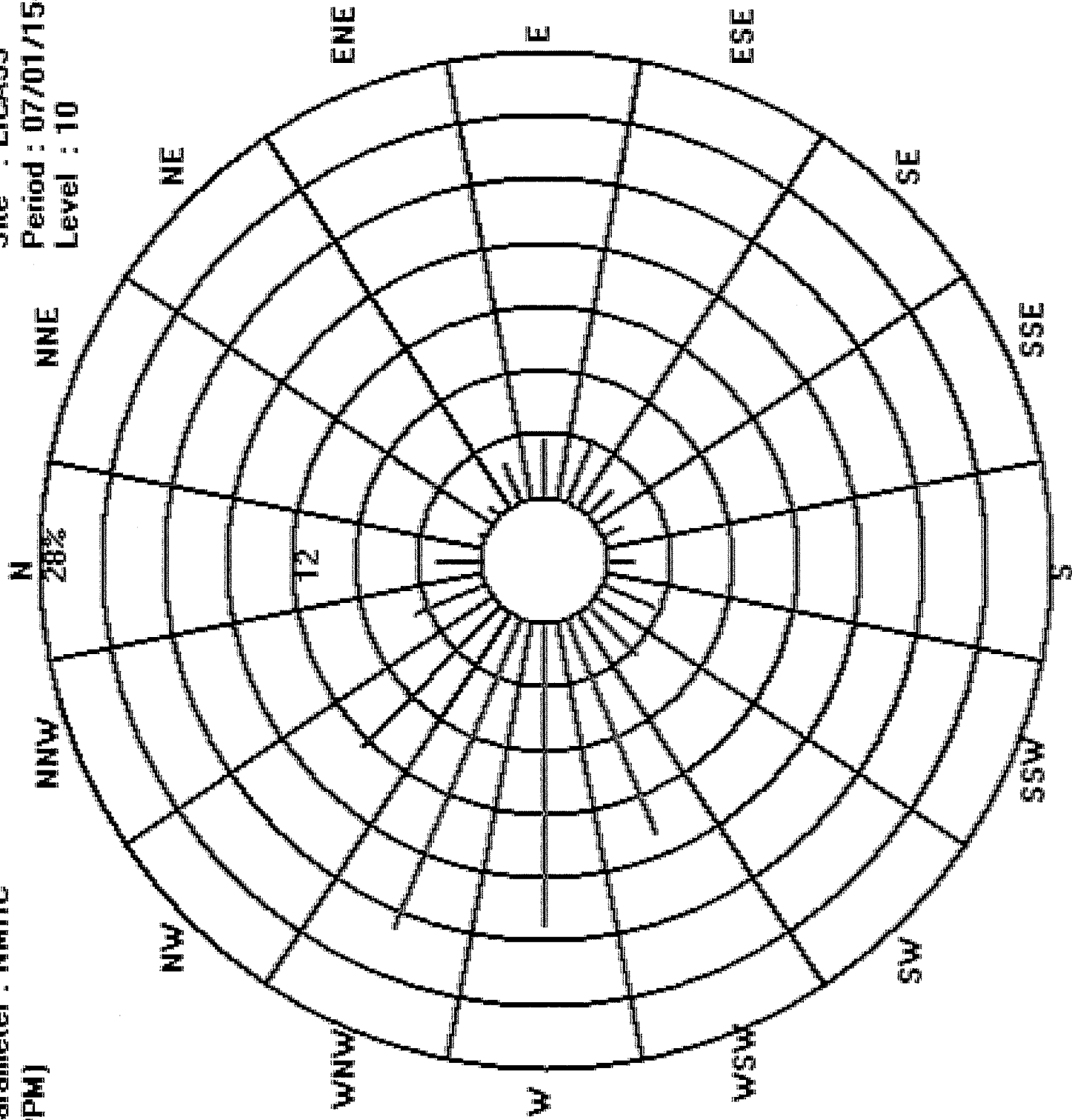
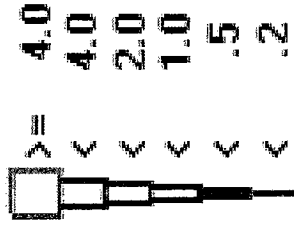
Total # Operational Hours : 632

Logger : 35 Parameter : NMHC

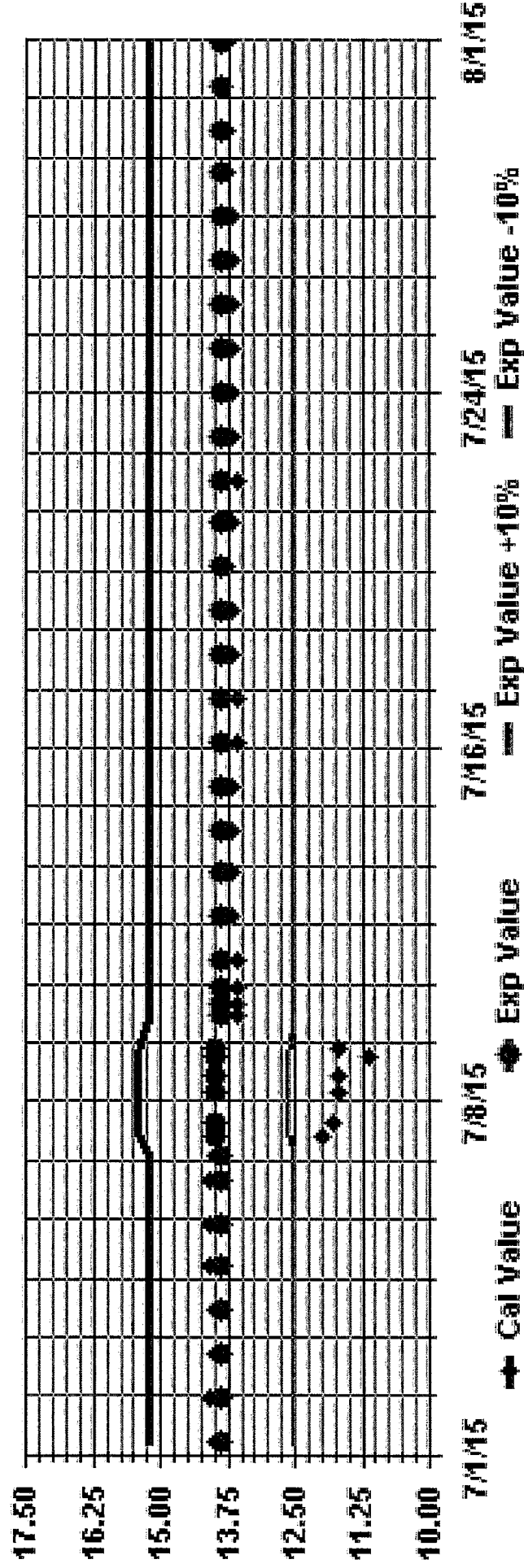
Site : LICA35

Class Limits (PPM)

Period : 07/01/15-07/31/15
Level : 10

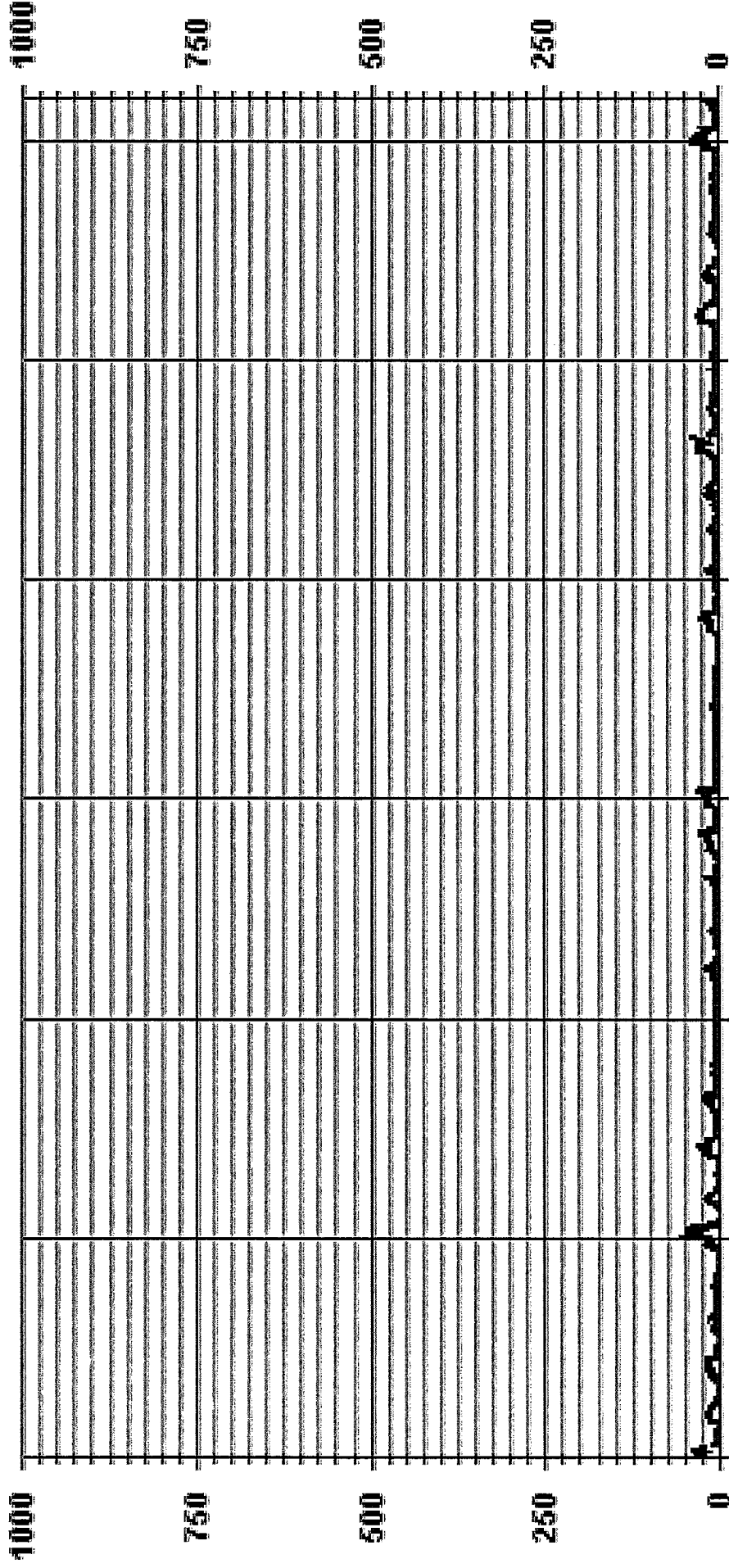


Calibration Graph for Site: LICA35 Parameter: NMHC Sequence: THC55 Phase: SPAN



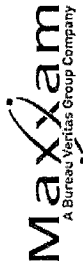
OXIDES OF NITROGEN

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 NOX_ PPB



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RODS	
	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				
1	36.9	32.2	39.1	29.4	39.6	41.4	28.5	\$	7.1	6.8	6.4	4.1	3.1	4.0	5.4	3.4	2.5	2.3	4.4	8.7	18.0	18.1	20.7	19.7	41.4	16.6	24	
2	18.3	22.0	19.7	15.7	16.8	13.5	\$	8.1	7.2	2.3	9.6	4.4	1.2	1.3	1.2	1.5	1.7	3.9	3.3	11.6	18.3	9.3	21.0	18.7	22.0	10.0	24	
3	12.1	52.1	19.8	19.1	22.1	\$	22.5	19.3	8.6	6.1	3.9	3.4	7.6	2.7	2.4	1.2	1.4	1.9	4.2	6.1	6.5	6.5	9.3	15.7	52.1	10.8	24	
4	14.0	11.1	11.4	6.4	\$	23.9	25.9	17.8	9.1	6.0	3.3	2.3	20.9	1.8	2.7	3.2	3.7	4.7	2.4	6.6	13.4	19.4	10.8	15.6	25.9	10.3	24	
5	13.2	11.4	5.7	\$	3.2	3.9	3.3	1.7	1.2	1.1	1.1	1.3	1.6	0.8	1.0	1.1	1.1	0.9	1.0	2.7	25.2	58.0	27.6	17.7	58.0	8.1	24	
6	35.8	76.7	\$	37.1	51.0	62.1	52.9	37.6	8.9	6.3	4.0	C	C	C	C	C	C	C	5.5	8.4	72.3	20.3	21.2	21.5	76.7	32.6	24	
7	18.1	\$	3.6	2.3	2.0	1.7	1.8	2.0	1.6	1.6	1.7	2.0	1.6	1.8	1.6	1.7	1.6	22.3	1.9	1.9	9.3	73.2	73.1	18.8	73.2	10.7	24	
8	13.5	15.2	18.0	28.4	15.5	32.4	26.3	6.7	4.7	4.0	3.6	4.0	4.4	4.1	5.1	3.6	4.3	4.3	6.1	10.5	12.4	11.3	\$	10.8	45.8	12.1	24	
9	9.1	7.5	4.5	5.7	7.2	6.6	5.3	4.0	3.8	3.8	3.8	3.3	3.3	3.3	3.3	6.5	3.6	3.7	4.8	4.9	5.1	\$	5.3	5.2	9.1	5.1	24	
10	8.1	7.2	4.3	4.5	3.7	4.3	3.6	\$	3.0	2.5	2.8	2.8	2.9	2.4	2.5	2.4	2.6	3.2	4.1	\$	9.6	9.4	15.4	15.4	4.8	4.8	24	
11	14.3	9.2	8.1	21.5	21.2	24.0	10.6	6.6	5.6	3.0	2.4	1.9	1.6	1.8	1.8	4.1	3.7	4.8	3.7	\$	5.9	2.7	3.7	10.4	24.0	7.5	24	
12	21.4	9.0	5.0	3.5	3.9	3.6	4.2	4.7	8.4	9.0	3.4	3.0	2.7	2.8	2.8	2.5	2.8	5.2	\$	5.5	5.8	11.1	13.3	6.4	21.4	6.1	24	
13	4.9	6.5	8.2	10.9	13.8	19.4	10.7	5.3	3.0	2.8	2.6	3.5	5.8	2.5	2.3	1.8	1.7	\$	5.4	7.2	12.9	25.3	20.6	25.5	41.1	14.9	24	
14	12.6	17.6	20.1	19.0	24.6	32.8	41.1	23.6	10.7	6.4	8.0	5.2	6.4	5.4	3.5	3.5	3.5	\$	5.4	7.2	12.9	25.3	20.6	25.5	41.1	14.9	24	
15	20.6	13.7	22.3	26.9	26.3	47.6	7.0	4.7	5.5	3.0	2.5	2.3	2.1	2.6	3.1	\$	2.6	2.2	2.3	3.3	4.7	6.9	4.2	4.0	47.6	9.6	24	
16	5.1	7.2	6.7	8.6	6.7	3.4	2.3	2.7	2.1	2.3	2.0	1.8	1.8	2.1	\$	2.7	2.4	2.3	2.3	3.6	2.9	3.4	5.1	8.6	3.6	3.6	24	
17	5.7	8.2	10.4	10.6	10.0	11.4	7.3	5.0	4.6	3.4	2.5	2.6	2.4	\$	2.1	1.9	1.9	3.2	3.6	12.5	11.8	8.1	8.6	3.9	12.5	6.2	24	
18	8.1	9.3	6.0	3.8	1.5	1.7	1.7	1.7	1.3	1.6	1.4	1.3	\$	1.4	1.1	1.2	1.4	1.7	2.0	1.9	14.3	20.2	17.1	17.3	20.2	5.2	24	
19	16.8	14.2	15.6	44.6	43.4	25.8	38.0	13.1	3.7	2.4	2.0	\$	2.4	2.2	2.1	2.6	2.5	2.6	4.6	3.7	10.4	9.8	9.6	4.0	44.6	12.0	24	
20	8.3	5.7	6.2	4.8	9.8	15.0	19.9	11.5	3.7	3.3	\$	1.9	1.7	1.9	1.9	2.0	2.0	2.2	2.1	3.8	3.8	5.0	5.9	19.9	5.4	24		
21	5.7	3.3	3.3	11.1	15.0	10.8	4.8	4.7	2.2	\$	1.8	1.6	1.7	2.0	2.9	6.3	8.3	9.3	7.8	5.5	11.1	23.2	22.2	22.5	23.2	8.1	24	
22	14.9	15.0	19.3	23.2	16.9	11.2	11.0	6.2	\$	5.0	2.8	2.9	3.3	8.3	3.9	3.6	3.7	5.0	7.1	9.7	13.7	12.1	18.2	26.3	26.3	10.5	24	
23	37.7	42.7	30.0	19.3	22.3	48.7	48.9	\$	15.3	13.4	5.8	4.7	4.5	4.0	3.3	3.8	3.5	3.8	5.5	13.2	14.4	17.5	14.4	16.0	48.9	17.1	24	
24	9.2	8.0	6.5	11.6	11.2	22.1	\$	10.6	3.2	3.0	2.8	2.4	2.5	2.2	2.1	2.2	2.3	1.9	2.0	2.8	15.2	4.8	3.6	4.2	22.1	5.9	24	
25	6.3	6.6	7.0	8.6	8.3	\$	8.3	5.4	3.7	3.1	3.3	3.3	2.5	2.7	2.5	2.1	2.2	2.3	4.1	9.1	9.4	12.9	23.8	44.0	44.0	7.9	24	
26	21.1	44.2	28.0	26.9	\$	25.5	27.2	15.4	7.6	7.1	6.0	5.6	5.6	3.5	2.4	2.4	2.3	2.1	2.2	2.3	4.1	9.1	9.4	19.7	27.5	9.5	24	
27	30.3	22.2	16.5	\$	11.7	11.3	6.6	6.9	Y	Y	Y	Y	3.4	Y	Y	Y	2.7	2.9	2.3	2.3	11.1	12.6	10.4	7.6	30.3	10.1	17	
28	8.2	24.3	\$	10.0	15.5	6.8	6.0	4.0	2.6	2.4	2.3	2.5	2.5	2.4	2.6	2.6	4.0	2.2	3.2	10.7	10.2	10.5	12.8	24.3	6.6	24		
29	10.2	\$	6.7	7.4	9.5	8.2	10.3	4.7	2.9	2.8	3.2	2.6	3.6	2.3	2.2	2.1	2.2	2.3	2.7	4.5	19.8	49.6	18.0	50.1	50.1	9.9	24	
30	\$	48.5	47.3	30.3	26.6	22.4	28.1	7.4	5.7	4.0	3.5	3.2	3.1	3.7	3.3	4.7	4.1	5.4	12.8	11.9	12.8	20.1	9.4	\$	48.5	14.5	24	
31	37.7	76.7	47.3	44.6	51.0	62.1	52.9	37.6	15.3	13.4	9.6	5.6	20.9	8.3	6.5	8.3	22.3	12.8	13.2	73.2	73.2	73.1	50.1	50.1	50.1	50.1	15.7	
HOURLY MAX	15.2	20.2	15.3	16.5	16.6	19.2	16.7	9.1	5.4	4.3	3.6	3.0	3.8	2.9	2.8	2.9	2.9	4.1	3.9	6.0	14.2	18.2	15.1	15.7				
HOURLY AVG																												

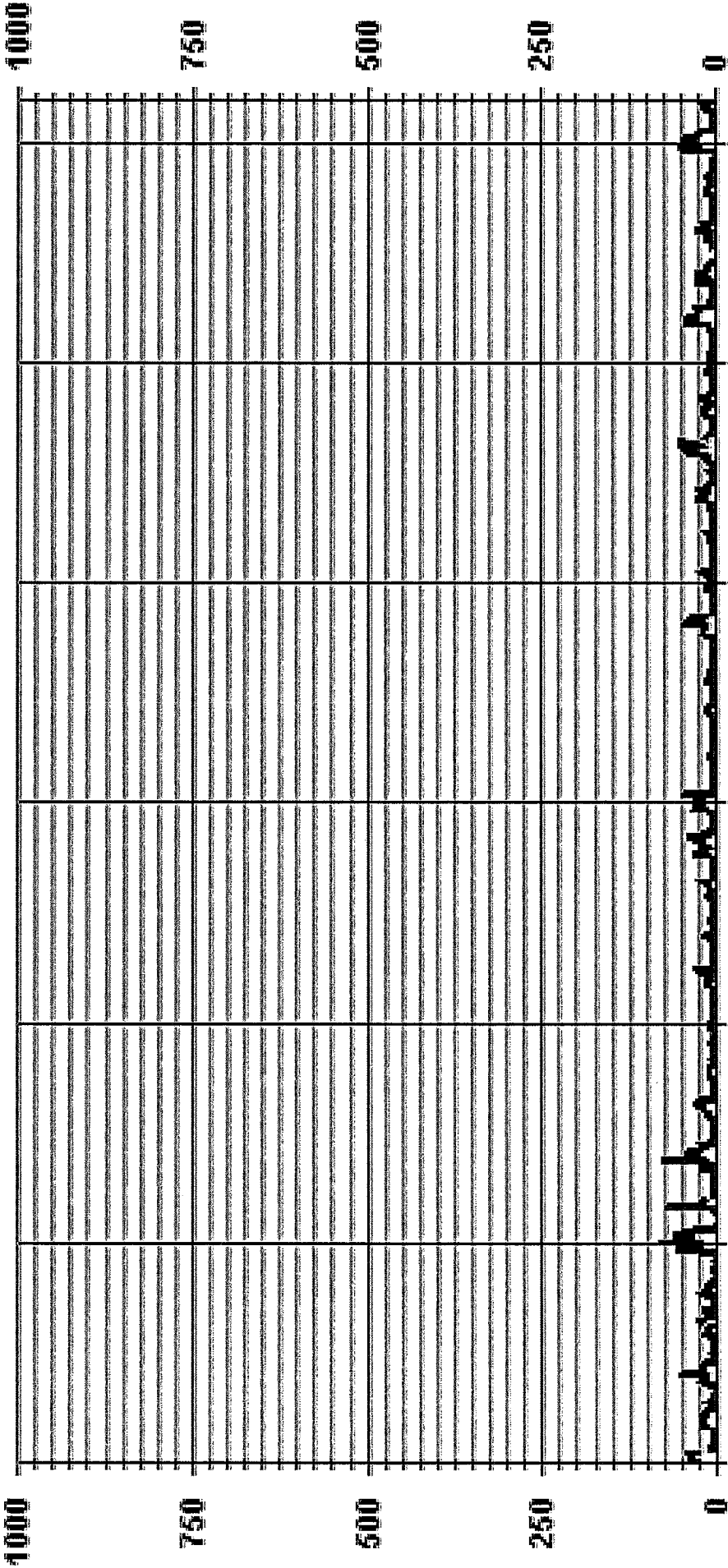
STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/Span CHECK	X	MACHINEMALFUNCTION
P	POWER FAILURE	IO	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	695
MAXIMUM INSTANTANEOUS VALUE:	76.7
PPB @ HOUR(S)	1
ON DAY(S)	6
VAR-VARIOUS	
ISZ CALIBRATION TIME:	35
HRS	
MONTHLY CALIBRATION TIME:	7
HRS	
STANDARD DEVIATION:	11.35
OPERATIONAL TIME:	737
HRS	

01 Hour Averages



— LICA35 NOXMAX PPB

LICA-ELK
NOX_ / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : NOX
Units : PPF

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.72	.86	1.72	2.72	4.16	4.16	2.00	1.29	1.86	5.02	4.44	13.77	17.21	20.80	12.48	4.59	99.85
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.14
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.72	.86	1.72	2.72	4.16	4.16	2.00	1.29	1.86	5.02	4.44	13.77	17.36	20.80	12.48	4.59	

Calm : .00 %

Total # Operational Hours : 697

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	19	6	12	19	29	29	14	9	13	35	31	96	120	145	87	32	696
< 110.0													1				1
< 210.0																	
>= 210.0																	
Totals	19	6	12	19	29	29	14	9	13	35	31	96	121	145	87	32	

Calm : .00 %





Total # Operational Hours : 697

Logger : 35 Parameter : NOX_

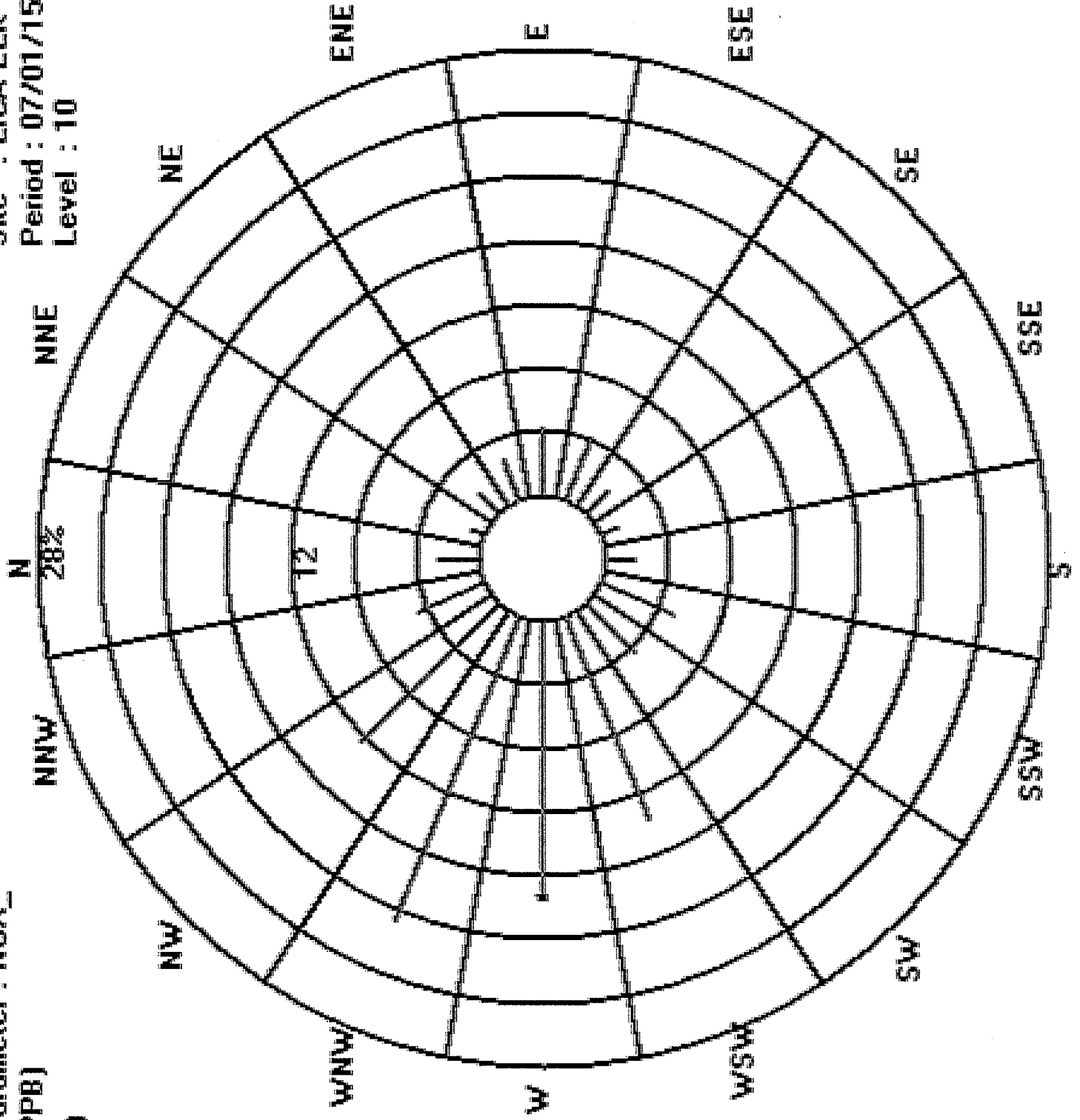
Site : LICA-ELK

Class Limits (PPB)

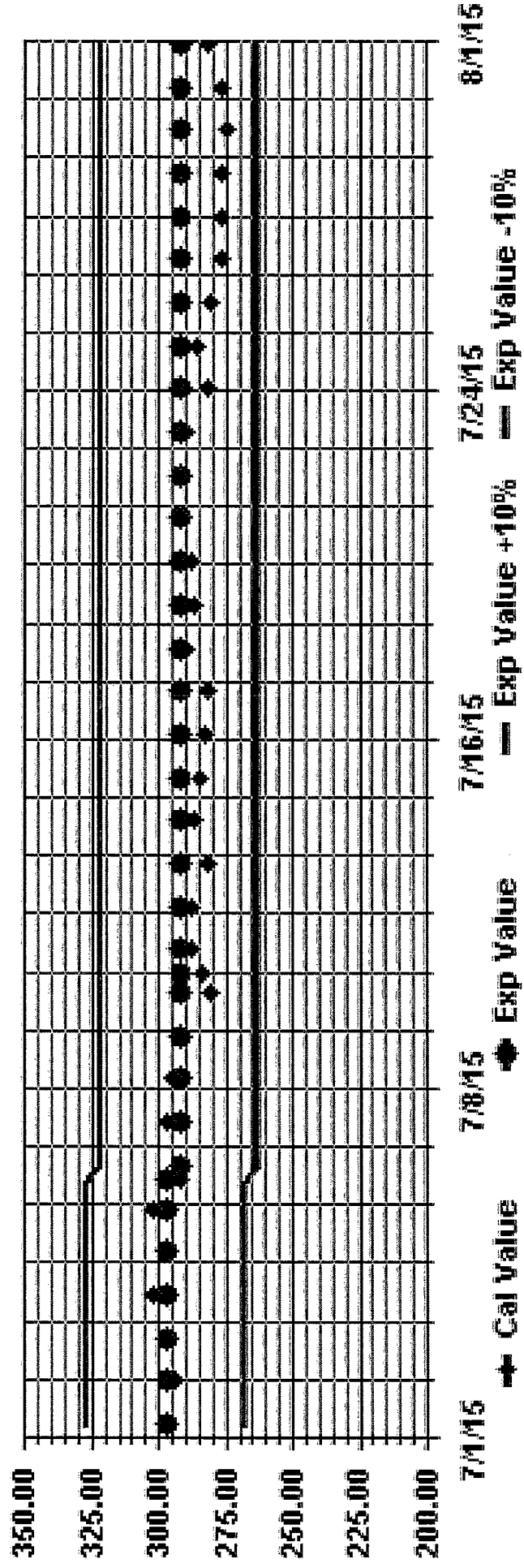
Period : 07/01/15-07/31/15

-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0

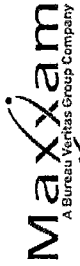
Level : 10



Calibration Graph for Site: LICA35 Parameter: NOX_ Sequence: NO2 Phase: SPAN



NITRIC OXIDES



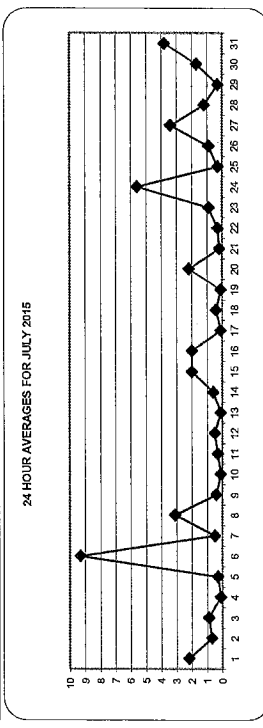
NITRIC OXIDE (NO) hourly averages in ppb

MST

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS			
	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						
1	2.0	3.8	7.4	2.8	6.6	14.2	5.8	5	2.4	1.2	0.9	0.8	0.4	0.3	0.5	0.5	0.5	0.3	0.2	0.3	0.2	0.8	0.5	0.5	0.9	14.2	2.2	24		
2	0.6	0.9	1.1	1.2	2.6	3.5	5	24	1.2	0.1	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.2	0.0	0.0	0.7	24		
3	0.2	1.0	0.9	1.3	3.0	5	7.7	3.3	1.4	0.6	0.2	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.1	0.0	0.1	7.7	0.9	24
4	0.1	0.7	0.3	5	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	0.0	0.0	0.0	0.0	0.0	0.1	24		
5	0.1	0.7	0.3	5	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	0.0	0.0	0.0	0.0	0.0	0.0	24		
6	4.6	31.2	5	10.9	23.1	35.1	27.9	7.0	1.2	0.9	0.4	C	C	C	C	C	C	C	1.3	0.8	2.2	0.5	0.8	0.7	35.1	9.3	24			
7	5	0.5	0.3	0.1	0.0	0.2	0.1	0.2	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	24		
8	5	12.6	17.3	12.2	8.0	6.2	5.8	2.3	0.8	0.5	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	24		
9	0.0	0.1	0.4	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
10	0.1	0.4	0.1	0.2	0.1	0.3	0.2	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	24		
11	0.3	0.2	0.2	0.1	0.0	0.3	0.1	0.1	5	0.4	0.2	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.3	5	0.5	0.3	0.2	0.5	0.3	24		
12	0.2	0.2	0.3	0.8	2.1	3.1	1.1	0.7	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	5	0.2	0.0	0.0	0.0	0.0	24		
13	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	0.0	0.0	0.0	0.0	0.1	0.1	0.1	5	0.1	0.1	0.9	0.8	0.2	0.3	0.1	24
14	0.0	0.1	0.2	0.5	2.0	6.3	1.6	0.8	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	
15	0.0	0.2	1.0	0.9	4.3	9.5	14.9	6.4	1.3	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.5	1.4	0.9	2.2	14.9	2.0	24		
16	2.9	1.0	3.4	7.9	6.6	19.2	0.4	0.2	0.3	0.4	0.4	0.2	0.4	0.3	0.2	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.2	19.2	2.0	24		
17	0.1	0.4	0.3	0.8	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5	0.3	0.1	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.2	0.8	0.1	24	
18	0.3	0.2	0.5	0.6	0.7	1.8	1.1	0.7	0.6	0.4	0.2	0.5	0.3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.8	0.4	24	
19	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	24	
20	0.4	0.2	0.6	8.9	14.9	7.7	15.1	1.4	0.2	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	0.0	0.0	0.0	0.0	0.0	24	
21	0.0	0.0	0.0	0.0	0.0	1.5	3.8	0.2	0.0	0.0	5	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	
22	0.0	0.0	0.0	0.1	0.9	0.7	0.2	0.2	0.0	5	0.1	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.4	0.2	0.4	0.2	0.0	1.0	0.5	1.1	0.1	0.3	24	
23	0.2	0.3	1.2	2.3	1.1	2.0	1.9	1.3	5	0.6	0.3	0.4	0.3	0.6	0.3	0.3	0.2	0.1	0.4	0.3	0.9	0.6	1.0	3.3	3.3	0.9	24			
24	15.7	18.2	11.4	5.4	9.3	22.7	30.5	5	3.4	1.6	0.7	0.8	0.8	0.7	0.5	0.6	0.3	0.5	0.7	0.7	0.6	1.2	0.9	0.7	30.5	5.6	24			
25	0.3	0.2	0.4	0.5	0.7	1.4	5	0.7	0.2	0.2	0.3	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.7	0.1	0.0	0.0	1.4	0.3	24		
26	0.2	0.1	0.3	0.4	0.5	5	1.1	0.5	0.1	0.1	0.0	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.4	0.2	0.5	5.1	9.9	0.9	24			
27	3.9	17.4	11.6	11.8	5	8.4	10.5	3.7	1.6	1.1	0.7	0.5	0.3	0.1	0.0	0.2	0.2	0.1	0.1	0.1	1.7	4.5	0.3	0.2	17.4	3.4	24			
28	6.5	2.7	2.0	5	0.9	1.0	0.6	0.4	Y	Y	Y	1.0	Y	Y	0.6	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.7	0.5	0.1	6.5	1.1	24		
29	0.3	2.7	5	0.7	1.2	0.6	0.5	0.2	0.1	0.0	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	2.7	0.3	24	
30	0.2	5	0.8	0.3	0.5	1.0	1.2	0.6	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.5	0.3	1.7	10.2	2.7	16.7	1.7	24			
31	5	24.8	21.6	7.6	8.8	7.9	9.9	0.5	0.3	0.2	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	24.8	3.8	24		
HOURLY MAX	15.7	31.2	21.6	12.2	23.1	35.1	30.5	7.0	3.4	1.6	0.8	0.8	1.0	0.7	0.5	0.6	0.6	0.9	1.3	0.8	2.2	10.2	5.1	16.7						
HOURLY AVG	1.4	4.1	2.9	2.8	3.4	5.5	5.0	1.2	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	1.0	0.7	1.4				

STATUS FLAG CODES

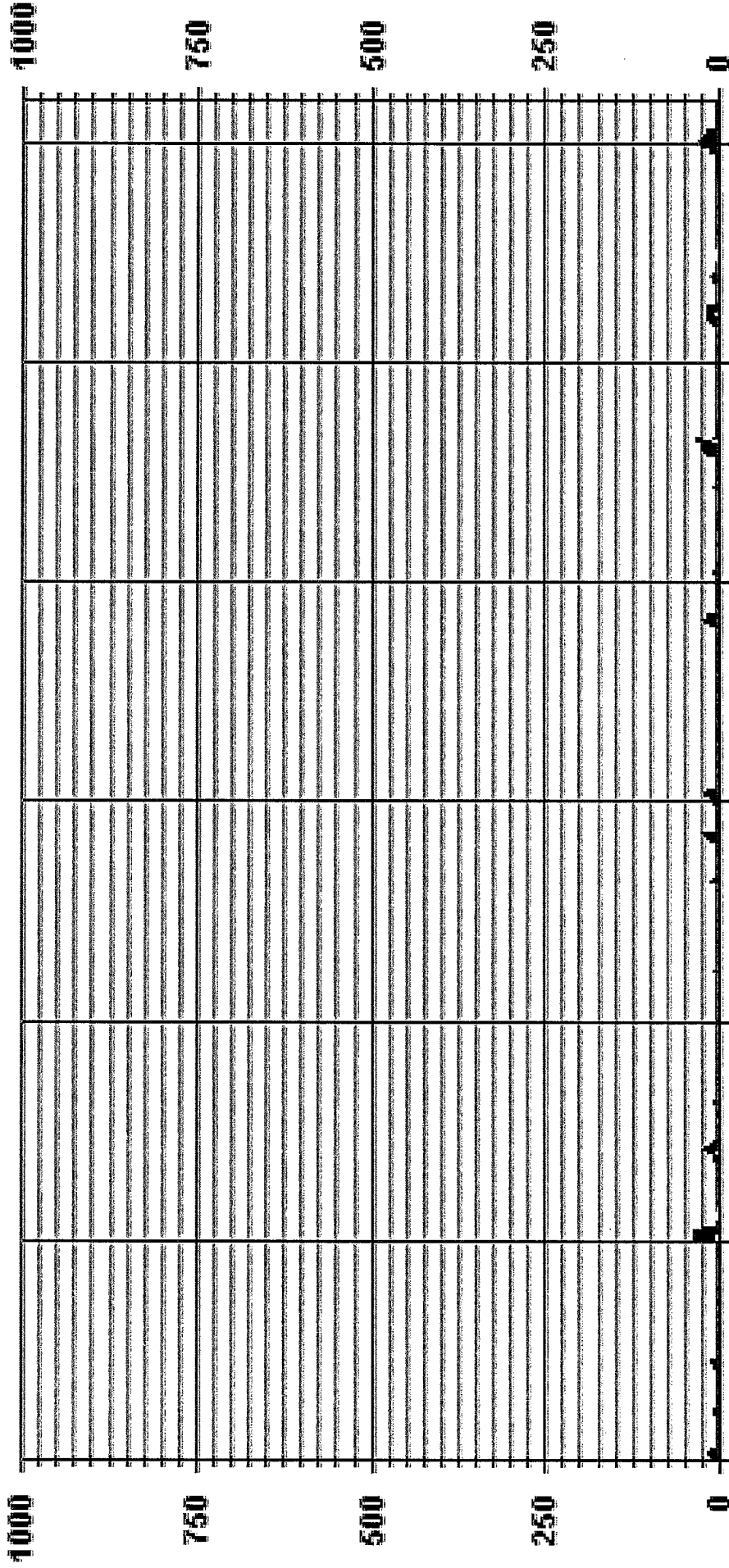
C	CALIBRATION	O	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE/ALERTING
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR



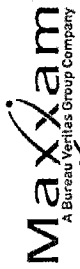
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	505	ON DAY(S)	6
MAXIMUM 1-HR AVERAGE:	35.1 PPB	@ HOUR(S)	5
MAXIMUM 24-HR AVERAGE:	9.3 PPB	ON DAY(S)	6
IS CALIBRATION TIME:	34 HRS	OPERATIONAL TIME:	737 HRS
MONTHLY CALIBRATION TIME:	7 HRS	AMD OPERATION UPTIME:	95.1 %
STANDARD DEVIATION:	3.87	MONTHLY AVERAGE:	1.3 PPB

01 Hour Averages



— LICA35 NO_ PPB



NITRIC OXIDE MAX instantaneous maximum in ppb

MST

DAY	0000	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	24000	25000	DAILY MAX	24-HOUR AVG	RDGS
1	7.7	8.8	14.8	8.5	16.5	24.0	10.0	3.2	1.9	1.6	1.6	1.1	0.8	1.1	1.3	1.1	0.8	0.8	1.2	1.0	1.8	2.4	1.4	2.2	24.0	4.9	24		
2	1.2	3.4	4.0	3.1	4.8	6.3	5	3.2	2.6	0.8	7.1	1.8	0.5	0.6	0.5	0.6	1.0	0.7	0.9	0.8	1.3	0.8	0.9	1.0	7.1	2.1	24		
3	1.0	23.6	2.3	5.6	8.5	5	10.6	7.1	2.5	1.6	1.0	0.9	1.6	0.8	0.8	0.6	0.6	0.8	1.0	0.8	0.6	0.8	0.7	0.8	23.6	3.2	24		
4	1.2	0.8	1.0	0.5	5	2.9	3.6	11.8	0.6	0.6	0.4	6.2	0.8	0.6	0.5	0.5	0.8	0.5	0.8	0.5	1.5	3.2	1.6	2.6	11.8	1.9	24		
5	2.7	2.7	1.3	5	0.5	0.7	0.8	1.0	0.4	0.6	0.7	0.6	0.6	0.3	0.3	0.5	0.7	0.4	0.4	0.7	3.7	31.8	3.8	2.4	31.8	2.5	24		
6	17.0	50.5	5	20.1	37.7	48.5	38.8	21.7	2.3	1.7	1.0	C	C	C	C	C	C	C	C	2.3	1.6	43.2	1.2	1.5	1.4	50.5	18.2	24	
7	1.3	5	22.2	32.0	17.2	14.2	7.6	8.2	4.4	1.5	1.2	1.1	1.1	0.6	0.7	0.4	0.5	0.7	15.9	0.7	0.7	0.9	55.2	55.0	2.1	55.2	6.3	24	
8	0.6	0.8	2.7	5.3	1.5	8.8	6.1	0.6	0.4	0.3	0.4	0.5	0.5	0.8	0.7	0.5	0.4	0.2	0.4	0.5	1.0	1.0	1.0	5	32.0	5.5	24		
9	0.8	1.0	0.9	1.0	0.8	1.0	1.0	0.9	0.7	0.9	1.0	0.7	0.6	0.5	1.1	0.8	0.8	0.8	1.0	1.1	0.7	5	1.0	0.9	1.1	0.9	24		
10	1.0	1.0	1.0	0.8	0.8	0.8	0.8	0.8	5	1.1	0.9	1.0	0.9	1.0	0.8	0.9	0.9	1.0	1.1	0.7	5	1.1	1.0	1.0	1.1	0.9	24		
11	1.0	1.0	1.0	0.8	0.8	0.8	0.8	0.8	5	1.1	0.9	1.0	0.9	1.0	0.8	0.9	0.9	1.0	1.1	0.7	5	0.8	0.6	0.5	0.8	1.5	24		
12	0.9	1.0	1.0	3.0	3.7	8.6	1.9	1.6	1.1	1.1	0.9	0.8	0.5	0.7	0.5	0.8	1.0	1.0	0.9	5	0.8	0.6	0.5	0.8	8.6	1.5	24		
13	1.9	0.5	0.4	0.4	0.5	0.3	0.8	0.8	0.9	1.0	0.7	0.7	0.5	0.6	0.5	0.7	0.9	0.8	5	0.8	0.7	1.3	2.0	1.1	2.0	0.8	24		
14	0.8	0.6	1.1	2.1	4.7	10.0	3.8	1.8	0.6	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.5	5	0.8	0.9	8.0	8.0	1.1	1.0	10.0	2.2	24		
15	0.6	1.0	2.4	3.8	8.5	21.0	28.3	9.2	2.8	1.1	1.3	0.8	0.7	1.2	0.7	0.5	5	1.5	1.3	1.3	1.1	4.7	2.1	5.4	28.3	4.4	24		
16	5.3	1.9	8.5	11.3	13.7	32.6	1.0	0.9	1.1	0.9	1.1	0.8	1.0	1.1	0.8	5	1.2	0.7	0.9	0.8	0.9	0.9	0.7	0.9	32.6	3.9	24		
17	0.9	1.1	0.9	1.7	0.9	0.7	0.9	1.0	0.6	0.7	0.6	0.5	0.5	0.8	5	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.6	1.0	1.7	0.8	24		
18	1.0	0.8	1.3	1.5	1.7	3.7	1.9	1.5	1.4	1.1	1.0	1.0	0.9	5	0.9	0.6	0.6	0.6	0.8	1.0	1.0	0.7	0.9	0.6	3.7	1.2	24		
19	0.4	0.5	0.2	0.2	0.3	0.4	0.8	0.6	0.6	0.9	0.5	0.8	5	0.5	0.3	0.3	0.6	0.6	0.6	0.6	1.5	4.2	1.7	1.5	4.2	0.8	24		
20	2.5	1.1	1.9	32.6	31.3	15.1	27.1	6.1	0.9	0.6	0.8	5	0.7	0.3	0.6	0.3	0.4	0.2	0.6	0.3	0.2	0.3	0.1	0.4	32.6	5.4	24		
21	0.7	0.3	0.4	0.1	1.1	3.3	7.0	2.2	0.6	0.6	5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.5	0.3	0.6	0.4	0.5	0.1	7.0	1.0	24	
22	0.4	0.1	0.5	0.9	2.1	2.4	0.9	0.9	0.7	5	0.9	0.7	0.5	0.7	0.7	1.0	0.9	1.3	0.8	1.0	1.4	3.6	1.6	2.1	11.0	2.4	24		
23	1.2	1.2	3.9	5.4	2.2	3.2	3.8	2.3	5	1.9	0.9	1.0	1.0	2.0	0.9	0.8	0.9	0.8	1.0	1.4	3.6	1.6	2.1	11.0	2.4	24			
24	23.3	28.9	16.8	8.7	14.5	40.3	40.1	5	4.9	3.3	1.3	1.5	1.5	1.5	1.2	1.3	1.0	1.3	1.5	2.6	1.9	4.5	2.4	1.8	40.3	9.0	24		
25	1.1	0.7	1.0	1.2	1.3	10.7	5	2.4	0.7	0.9	0.9	0.7	0.8	0.7	0.5	0.8	0.9	0.8	0.8	0.9	3.2	0.7	0.4	0.4	10.7	1.4	24		
26	0.9	1.0	0.7	1.1	1.3	5	2.1	1.5	0.7	0.6	0.7	1.1	0.8	0.8	0.5	0.6	0.4	0.9	1.2	0.7	1.9	9.5	24.7	2.4	24				
27	6.5	32.8	15.7	15.1	5	13.3	19.0	5.9	2.3	2.3	1.4	1.2	1.0	0.7	0.6	0.8	0.8	0.8	0.8	0.7	4.0	12.0	1.1	1.0	32.8	6.1	24		
28	16.7	6.9	3.0	5	2.7	2.4	2.0	1.9	Y	Y	Y	Y	1.6	Y	Y	1.3	1.0	0.9	0.8	1.3	1.3	1.3	1.3	0.8	16.7	2.9	17		
29	1.2	10.5	5	2.1	4.9	1.5	1.3	0.9	1.0	0.8	0.8	1.0	0.5	0.9	0.7	0.8	0.9	0.9	0.6	0.6	0.9	1.0	1.0	1.0	10.5	1.6	24		
30	1.1	5	1.4	0.8	1.4	1.8	2.3	1.3	1.0	0.8	1.1	1.0	1.2	1.2	0.7	1.0	1.2	1.0	1.1	1.1	5.4	32.4	4.3	32.4	4.2	24			
31	5	32.5	32.7	16.1	13.3	12.1	17.5	1.2	1.1	0.8	1.1	0.9	0.9	0.9	0.8	0.8	0.7	0.7	1.1	1.1	1.1	2.2	0.8	5	32.7	6.4	24		
HOURLY MAX	23.3	50.5	32.7	32.6	37.7	48.5	40.1	21.7	4.9	3.3	7.1	1.8	6.2	2.0	1.3	1.3	1.3	15.9	2.3	2.6	43.2	55.2	55.0	32.3					
HOURLY AVG	3.5	8.2	5.4	5.9	6.8	9.8	8.4	3.4	1.3	1.1	1.1	0.9	1.0	0.8	0.7	0.7	0.8	1.3	0.9	0.9	3.1	6.1	6.1	3.4	3.6				

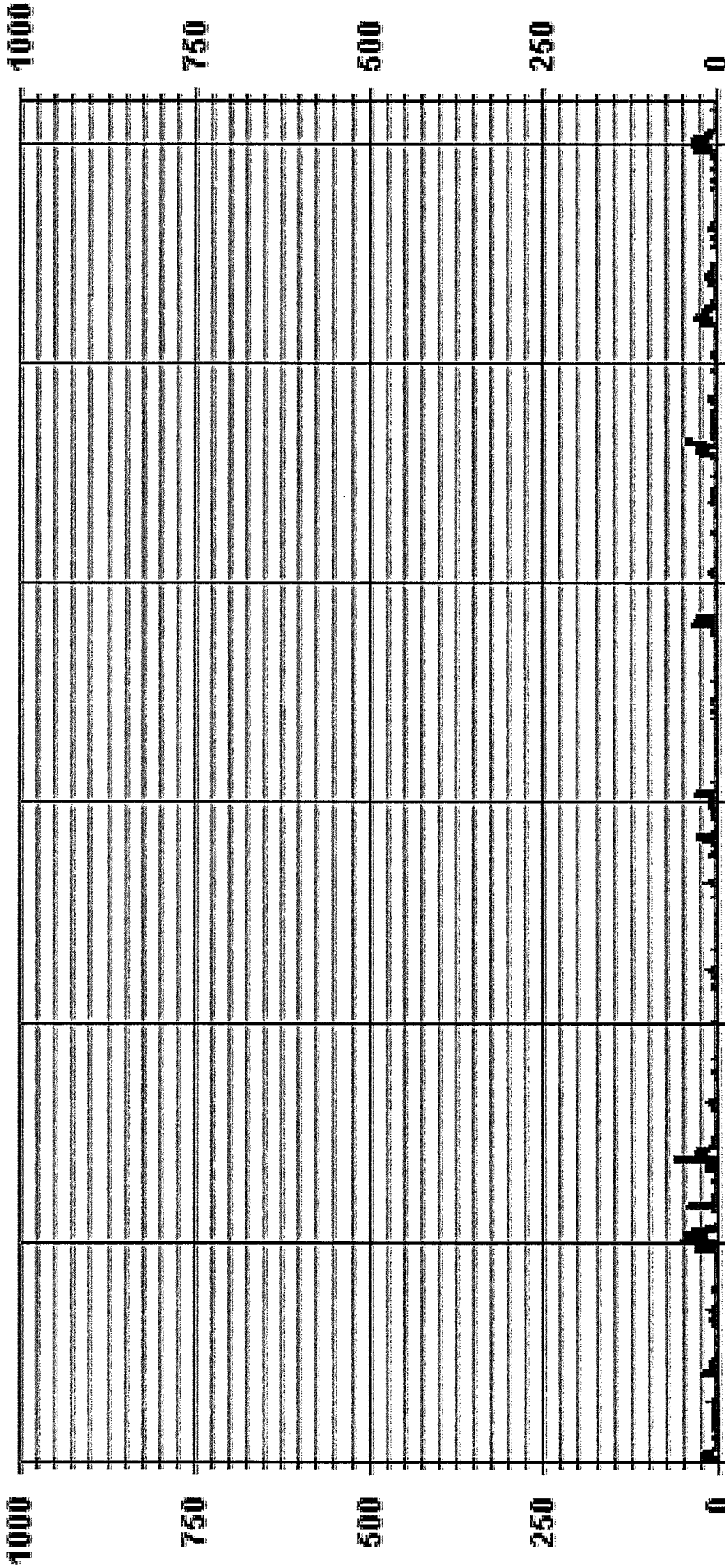
STATUS FLAG CODES

C	CALIBRATION	O	QUALITY ASSURANCE
Y	RECOVERY	R	RECOVERY
S	MAINTENANCE	X	MACHINE MALFUNCTION
Z	DAILY ZERO/SPAN CHECK	O	OPERATOR ERROR
P	POWER FAILURE	K	COLLECTION ERROR
G	SOUTH FOR REPAIR		

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	695
MAXIMUM INSTANTANEOUS VALUE:	55.2 PPB @ HOUR(S) 21 ON DAY(S) 7
IZS CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	737 HRS
STANDARD DEVIATION:	7.28
VAR-VARIOUS	

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 NOMAX PPB

LIICA-ELK
 NO_ / WDR Joint Frequency Distribution (Percent)
 July 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LIICA-ELK
 Parameter : NO
 Units : PPB
 Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.72	.86	1.72	2.72	4.16	4.16	2.00	1.29	1.86	5.02	4.44	13.77	17.36	20.80	12.48	4.59	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.72	.86	1.72	2.72	4.16	4.16	2.00	1.29	1.86	5.02	4.44	13.77	17.36	20.80	12.48	4.59	

Calm : .00 %

Total # Operational Hours : 697

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	19	6	12	19	29	29	14	9	13	35	31	96	121	145	87	32	697
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	19	6	12	19	29	29	14	9	13	35	31	96	121	145	87	32	

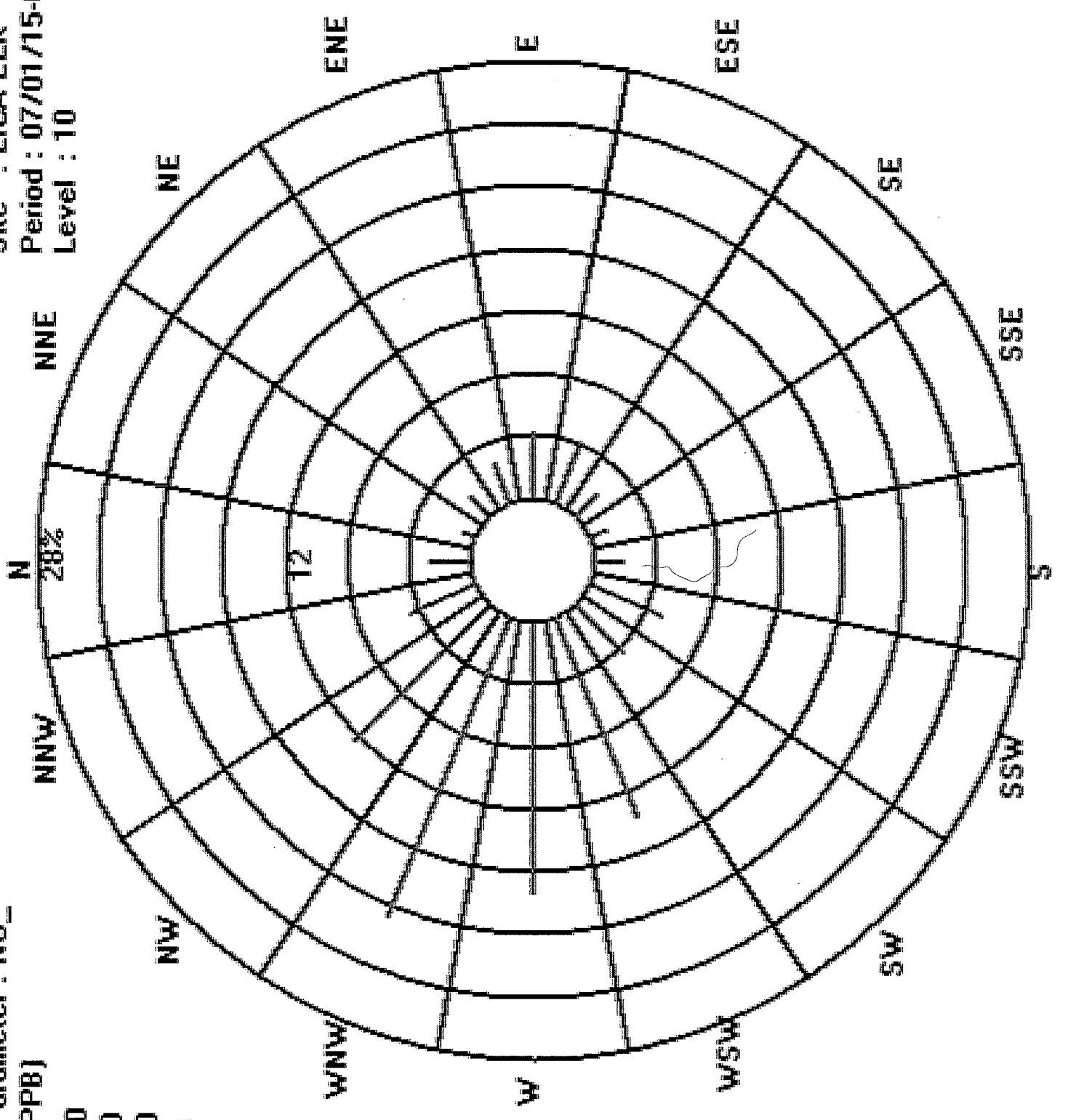
Calm : .00 %

Total # Operational Hours : 697

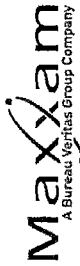
Site : LICA-ELK
Period : 07/01/15-07/31/15
Level : 10

Logger : 35 Parameter : NO_
Class Limits (PPB)

- >= 210.0
- < 210.0
- < 110.0
- < 50.0



NITROGEN DIOXIDE



NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

DAY	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 MAX	24-HOUR AVG	RDSS	
1	23.3	21.2	22.4	19.1	19.6	17.1	17.1	5	5.1	4.8	3.9	2.6	2.1	2.5	3.2	2.0	1.5	1.3	2.0	4.2	11.1	11.7	13.7	16.1	23.3	9.9	24	
2	15.3	12.6	13.0	11.1	7.3	5	4.5	3.6	1.2	0.9	0.7	0.6	0.7	0.2	0.3	0.5	0.6	0.7	1.4	1.6	5.6	10.2	6.4	12.8	11.9	15.3	5.8	24
3	10.6	15.8	16.4	12.7	12.1	5	11.5	8.4	5.3	3.2	2.1	1.9	3.0	1.7	1.5	0.6	0.7	0.8	0.7	1.2	3.2	3.9	5.5	11.0	16.4	5.8	24	
4	9.4	7.4	4.7	3.8	5	13.3	8.7	7.0	7.5	3.4	2.4	1.5	1.5	1.1	1.7	2.1	2.2	1.6	1.1	3.2	6.3	7.4	5.7	6.6	13.3	4.8	24	
5	4.3	5.1	2.6	5	1.6	1.5	1.6	0.9	0.3	0.4	0.4	0.2	0.9	0.2	0.1	0.3	0.4	0.2	0.3	0.4	10.3	17.7	15.9	12.7	17.7	3.4	24	
6	14.9	21.8	5	15.6	14.4	14.6	15.5	11.5	5.3	4.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	4.4	10.3	13.4	18.5	14.7	21.8	11.5	24
7	13.3	5	1.8	1.3	1.1	1.0	0.8	0.7	0.7	0.6	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	2.0	1.2	1.1	2.9	11.3	15.6	3.3	24
8	5	14.0	11.8	9.5	7.1	7.8	10.1	7.2	4.5	3.5	3.4	3.0	2.9	2.3	2.3	2.3	2.3	2.3	2.3	3.4	3.2	4.0	5.2	5	14.0	5.5	24	
9	10.1	11.9	11.1	15.2	8.5	16.7	15.9	4.1	3.8	3.2	2.8	3.0	3.4	3.5	3.3	2.3	2.8	2.9	4.0	6.2	7.4	6.4	5	16.7	6.8	24		
10	5.3	4.3	3.4	4.0	5.1	4.4	3.5	3.1	2.9	2.8	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	3.6	3.8	4.1	5	4.2	4.1	5.3	3.5	24
11	5.1	4.5	3.2	3.7	3.1	3.2	2.6	2.4	5	1.9	1.6	1.7	1.6	1.2	1.3	1.4	1.5	1.7	2.6	5	3.7	1.9	2.6	5.7	15.4	4.6	24	
12	8.9	7.5	6.2	9.9	15.4	11.3	7.0	5.3	3.1	1.8	1.3	1.2	0.8	0.9	0.9	2.5	2.3	2.9	2.3	5	3.7	1.9	2.6	5.7	15.4	4.6	24	
13	10.5	5.7	3.6	2.5	2.2	2.1	2.2	3.4	5.1	4.8	2.5	2.1	2.0	2.2	2.0	1.8	1.6	2.0	5	3.5	4.5	3.7	6.2	3.8	10.5	3.5	24	
14	3.0	4.2	5.4	8.1	8.0	8.3	4.1	3.1	2.2	1.8	1.7	1.6	2.0	1.5	1.4	1.0	1.0	5	2.0	4.4	10.7	14.9	12.0	13.2	14.9	5.0	24	
15	11.0	13.5	15.0	13.8	12.1	10.7	12.3	12.3	6.1	3.8	5.0	4.0	4.2	3.2	2.5	2.6	5	3.0	2.8	3.9	6.9	13.0	15.0	16.2	16.2	8.4	24	
16	13.4	11.0	11.9	13.1	11.5	13.9	3.2	3.3	3.0	1.3	1.2	1.1	1.1	1.1	1.7	5	1.2	1.3	1.2	1.7	2.1	3.1	2.7	2.8	13.9	4.7	24	
17	3.0	5.1	4.8	6.4	4.7	2.0	1.6	1.5	1.5	1.6	1.3	1.2	1.2	1.4	1.4	1.4	1.3	1.7	1.0	2.1	2.5	4.8	6.2	5.1	3.4	11.8	5.0	24
18	4.0	5.6	7.0	7.7	7.4	6.7	3.6	3.1	2.7	1.8	1.6	1.4	1.5	1.2	1.1	1.2	1.8	2.1	5.0	7.5	5.5	5.5	3.9	1.4	7.7	3.7	24	
19	4.1	5.2	3.5	1.3	0.8	1.1	1.0	0.9	0.8	0.7	0.5	0.6	5	0.9	0.5	0.6	0.8	0.8	1.2	1.2	5.6	11.3	12.2	12.1	12.2	2.9	24	
20	11.8	9.7	10.6	11.0	11.7	9.7	9.4	4.2	2.4	1.7	1.4	1.4	1.4	1.3	1.3	1.7	1.0	2.1	2.5	4.8	6.2	5.1	3.4	11.8	5.0	24		
21	5.6	4.5	4.7	3.1	4.8	11.4	11.8	4.7	2.6	2.3	5	1.2	1.1	1.0	1.2	1.1	1.2	1.1	1.4	1.5	2.2	2.6	2.3	3.5	11.8	3.3	24	
22	3.7	2.0	2.4	8.6	10.8	5.7	3.6	2.6	1.5	5	1.0	1.0	1.1	0.9	1.7	3.6	5.5	6.5	5.6	4.1	5.5	13.5	12.8	15.8	5.2	24		
23	11.2	8.2	11.6	14.0	11.2	6.9	4.8	3.8	5	3.0	1.9	1.7	2.1	3.7	2.8	2.5	2.6	3.2	4.1	5.7	7.1	9.4	12.6	14.1	14.1	6.4	24	
24	14.4	12.5	11.6	10.0	8.5	7.9	8.7	5	8.9	6.0	3.7	3.2	2.4	2.2	1.9	2.3	2.1	2.4	3.3	4.8	8.9	9.8	10.2	9.9	14.4	6.8	24	
25	7.6	6.5	5.1	7.4	7.9	6.2	5	3.7	2.2	2.1	1.7	1.4	1.6	1.4	1.2	1.2	1.0	1.0	1.6	7.7	3.1	2.3	2.6	7.9	3.4	24		
26	4.0	3.7	4.1	6.2	6.5	5	5.7	3.0	2.6	2.3	2.2	1.7	1.7	1.7	1.6	1.3	1.5	1.5	2.4	4.8	6.2	8.0	14.0	18.0	4.6	24		
27	15.0	13.5	11.4	11.4	5	9.9	8.7	7.9	4.7	4.0	4.5	4.2	3.8	1.8	1.5	1.3	1.5	1.2	1.1	2.3	13.4	13.8	7.8	9.8	15.0	6.7	24	
28	12.5	14.4	13.1	5	6.6	7.0	3.8	3.2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.6	1.5	1.2	4.4	9.9	6.6	6.0	14.4	5.9	17
29	5.2	8.7	5	6.7	6.5	4.7	3.5	2.6	1.7	1.5	1.5	1.7	1.7	1.7	1.6	1.2	1.1	1.1	1.1	1.1	1.2	2.3	9.0	15.0	12.9	17.3	4.8	24
30	7.3	5	4.4	5.2	6.7	6.1	6.4	2.9	1.5	1.7	1.6	1.5	1.8	1.2	1.2	1.1	1.1	1.1	1.1	1.2	2.3	9.0	15.0	12.9	17.3	4.8	24	
31	5	15.0	14.6	13.4	12.7	10.0	10.7	4.7	4.5	2.7	2.4	2.2	2.4	2.4	2.4	2.4	2.4	2.9	4.0	7.3	8.3	9.3	12.3	6.4	15.0	7.0	24	
HOURLY MAX	23.3	21.8	22.4	19.1	19.6	17.1	17.1	12.3	8.9	6.0	5.0	4.2	4.2	3.7	3.3	3.6	5.5	6.5	7.3	8.3	13.4	17.7	18.5	18.0	15.0	7.0	24	
HOURLY AVG	9	9	8	8	8	8	7	4	3	3	2	2	2	2	2	2	2	2	2	3	7	8	9	10	10	10	10	

ALBERTA ENVIRONMENT: 159 PPB

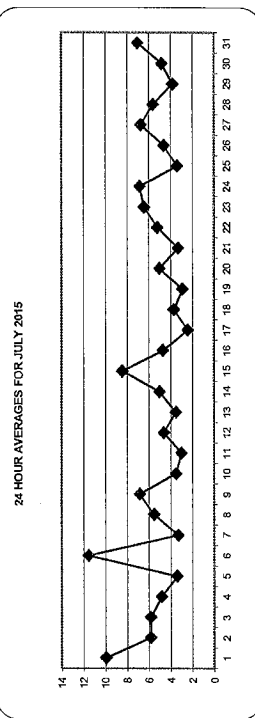
OBJECTIVE LIMIT:

STATUS FLAG CODES

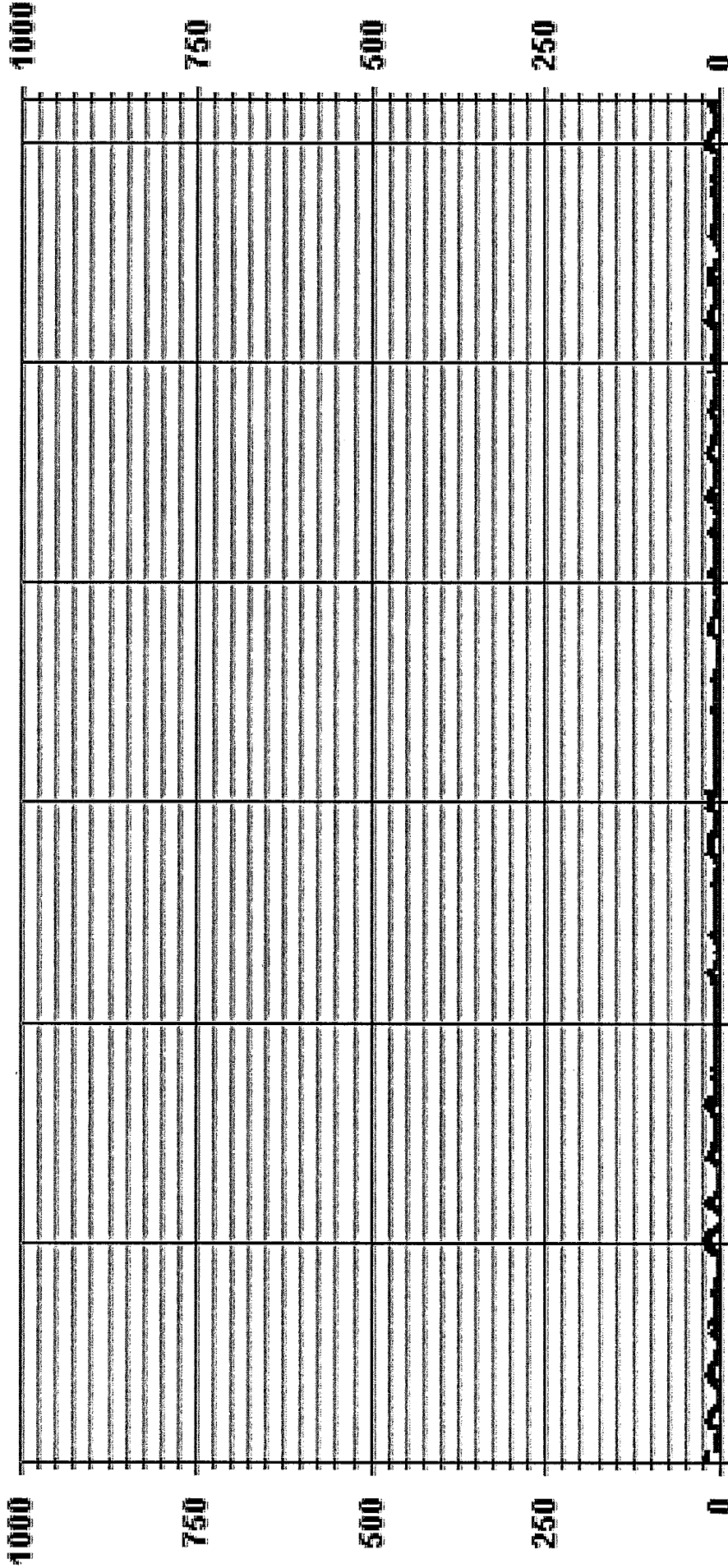
- C - CALIBRATION
- M - MAINTENANCE
- S - DAILY ZERO/SPAN CHECK
- P - POWER FAILURE
- G - OUTFOR REPAIR
- Q - QUALITY ASSURANCE
- R - RECOVERY
- X - MACHINE/MALFUNCTION
- O - OPERATOR ERROR
- K - COLLECTION ERROR

MONTHLY SUMMARY

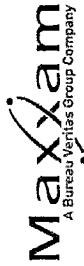
NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	696
MAXIMUM 1-HR AVERAGE:	23.3 PPB @ HOUR(S)
MAXIMUM 24-HR AVERAGE:	11.5 PPB
1ZS CALIBRATION TIME:	34 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	4.56
OPERATIONAL TIME:	737 HRS
AMD OPERATION UPTIME:	95.1 %
MONTHLY AVERAGE:	5.1 PPB
ON DAY(S)	1
ON DAY(S) VAR-VARIOUS	6



01 Hour Averages



— LICA35 NO2_ PPB



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

DAY	HOURS																								DAILY MAX	DAILY AVG	RDGS	
	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300					
1	29.8	25.5	24.8	22.0	23.8	19.6	21.8	\$	5.7	5.8	5.3	3.6	2.9	3.4	4.6	3.1	2.1	2.0	4.0	8.2	16.9	17.1	19.8	18.4	29.8	12.6	24	
2	17.9	18.7	16.2	13.7	13.4	8.7	\$	5.4	5.0	2.1	3.4	2.8	1.1	1.0	1.1	1.3	3.4	2.6	11.1	17.8	8.8	20.7	17.9	20.7	8.5	24		
3	11.6	32.5	19.1	15.5	14.0	\$	13.1	12.6	6.8	5.0	3.1	2.9	5.9	2.2	2.2	1.1	1.4	1.3	1.4	3.8	5.8	6.2	9.3	15.6	32.5	8.4	24	
4	13.6	11.3	11.3	6.5	\$	21.5	22.4	10.9	8.7	5.8	3.2	2.6	15.6	1.8	2.4	3.1	3.6	4.1	2.0	6.8	12.0	16.5	9.3	14.3	22.4	9.1	24	
5	10.8	8.7	4.7	\$	3.8	3.7	3.1	1.9	1.3	1.3	1.1	1.7	1.2	1.3	1.1	1.0	1.2	1.2	3.0	22.0	30.4	24.5	16.6	30.4	6.4	24		
6	18.9	27.9	\$	18.3	17.3	17.2	17.6	16.2	7.3	5.6	3.7	C	C	C	C	C	C	C	5.5	8.9	34.1	21.4	22.0	22.3	34.1	16.5	24	
7	18.7	\$	2.8	1.9	1.7	1.7	1.3	1.4	1.0	1.1	1.3	1.5	1.5	1.4	1.4	1.5	1.5	7.2	1.7	1.6	8.7	18.7	21.1	17.0	21.1	5.1	24	
8	\$	16.2	14.3	11.1	8.6	9.3	11.7	9.8	5.3	4.5	4.5	4.0	3.8	3.8	3.3	3.7	5.3	4.5	4.1	4.2	5.2	8.5	10.6	\$	16.2	7.1	24	
9	13.6	14.8	15.7	24.2	15.5	23.9	20.5	6.5	4.4	4.2	3.5	3.8	4.4	4.2	4.6	3.6	4.0	4.5	5.9	10.5	11.8	10.4	\$	9.9	24.2	9.8	24	
10	8.8	6.9	4.2	4.9	6.9	5.8	4.8	3.7	3.4	3.5	3.7	3.0	3.4	3.5	5.9	5.6	3.4	3.4	4.4	4.5	4.9	\$	4.9	4.9	8.8	4.7	24	
11	7.9	6.9	4.2	4.4	3.7	4.1	3.3	\$	2.4	2.2	2.2	2.3	2.3	1.9	2.1	2.1	2.1	2.1	2.1	2.6	3.8	\$	8.9	8.9	15.4	4.5	24	
12	14.2	9.2	7.5	19.1	18.4	15.6	9.0	6.1	5.0	2.6	2.2	1.8	1.8	1.4	1.7	3.8	3.1	4.2	3.3	\$	5.2	2.0	3.1	9.6	19.1	6.5	24	
13	19.0	8.4	4.3	3.1	3.4	2.9	3.7	4.1	7.3	7.7	2.6	2.2	2.1	2.3	2.2	2.0	2.0	4.3	\$	4.9	5.2	9.7	11.0	5.4	19.0	5.2	24	
14	4.8	6.0	7.7	9.0	8.9	9.5	6.5	3.5	2.5	2.2	2.3	2.8	5.3	2.0	1.9	1.5	1.4	\$	4.7	6.5	21.2	21.7	15.8	18.4	21.7	7.2	24	
15	12.6	16.7	18.0	17.2	16.1	11.7	13.8	15.4	7.9	5.6	6.9	4.9	5.7	4.3	3.7	3.5	\$	4.6	3.8	6.3	12.3	21.0	18.7	20.4	21.0	10.9	24	
16	16.0	12.3	13.9	15.9	14.1	16.8	6.3	3.9	5.2	2.4	2.0	2.0	1.6	2.2	2.9	\$	1.8	1.6	2.0	3.4	4.8	6.4	3.9	3.6	16.8	6.3	24	
17	4.4	6.4	6.0	7.3	6.7	3.1	2.3	2.4	2.1	2.1	1.8	2.0	1.8	1.8	\$	2.2	2.0	2.2	1.9	1.9	3.3	2.7	3.4	4.8	7.3	3.2	24	
18	5.4	7.6	9.2	9.2	8.9	7.9	3.8	3.4	2.7	2.2	2.1	2.0	\$	1.7	1.7	2.6	3.2	11.8	11.5	7.4	8.0	3.5	11.8	5.4	24	24		
19	8.3	9.0	5.8	3.5	1.4	1.6	1.5	1.4	1.3	1.2	1.1	1.2	\$	1.4	1.5	1.5	1.5	1.6	2.0	2.2	13.2	16.3	15.7	16.2	16.3	4.8	24	
20	15.1	13.2	13.8	12.4	14.4	11.0	10.7	7.2	3.2	2.4	2.0	\$	2.1	2.4	2.1	2.3	2.3	2.4	3.9	3.5	10.5	9.9	9.6	4.4	15.1	7.0	24	
21	7.8	5.6	6.0	5.2	8.6	12.2	13.1	9.2	3.7	3.1	\$	1.6	1.5	1.7	1.5	1.6	1.6	2.0	2.2	2.1	3.6	3.7	5.5	6.0	13.1	4.7	24	
22	5.4	3.0	3.0	10.7	13.2	8.1	3.8	3.8	1.8	\$	4.3	2.7	2.6	2.8	6.6	3.3	3.0	3.4	4.8	6.3	8.6	10.2	10.8	16.4	15.4	8.5	24	
23	14.1	11.8	16.0	18.1	14.9	8.0	7.1	4.4	\$	11.0	11.0	4.9	4.3	3.9	3.4	3.1	3.1	4.4	12.3	13.3	13.6	13.4	14.7	15.3	8.9	24	24	
24	15.3	14.4	13.4	10.8	9.6	9.5	9.9	\$	8.3	3.0	2.8	2.7	2.4	2.1	2.2	1.8	1.9	1.9	1.7	2.1	2.8	12.5	4.8	3.7	4.3	12.5	5.1	24
25	8.8	7.7	6.2	11.1	10.5	11.5	\$	6.8	4.3	3.9	3.1	3.0	2.9	2.4	2.4	2.3	2.0	2.2	2.4	3.6	8.2	8.9	11.1	18.6	21.0	6.2	24	
26	6.2	6.1	6.5	7.9	7.4	\$	8.3	10.1	9.9	6.0	5.8	5.4	5.1	5.1	3.4	2.3	2.2	2.4	2.3	2.8	3.4	17.1	16.8	9.4	12.5	17.1	8.4	24
27	16.3	16.0	12.8	13.0	\$	12.4	10.1	9.9	6.0	5.8	5.4	5.1	5.1	3.4	2.3	2.2	2.4	2.3	2.8	3.4	17.1	16.8	9.4	12.5	17.1	8.4	24	
28	15.8	16.1	14.8	\$	9.1	9.4	5.4	5.3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.9	1.9	10.0	11.7	9.6	7.6	16.1	7.8	17	
29	7.5	14.0	\$	8.0	10.8	5.9	5.2	3.6	2.8	2.4	2.3	2.4	2.5	2.4	2.5	2.6	3.7	2.6	3.2	10.3	10.0	10.0	12.3	14.0	5.6	24	24	
30	9.7	\$	5.8	7.0	8.2	6.8	8.1	4.0	2.5	2.3	2.8	2.4	2.9	1.9	1.8	1.9	1.9	1.9	1.9	4.0	16.1	18.1	15.3	18.5	6.3	24	24	
31	\$	16.3	16.4	15.5	14.2	11.7	13.4	7.0	5.6	4.2	3.1	3.0	3.6	4.1	3.2	4.6	4.0	5.3	12.7	11.6	12.5	18.7	9.3	\$	18.7	9.1	24	
HOURLY MAX	29.8	32.5	24.8	24.2	23.8	23.9	22.4	16.2	11.0	11.0	6.9	5.1	15.6	6.6	5.9	5.6	7.7	8.3	12.7	12.3	34.1	30.4	24.5	22.3				
HOURLY AVG	12.4	12.7	10.5	11.3	10.6	10.0	9.0	6.3	4.5	3.8	3.0	2.7	3.3	2.6	2.5	2.6	2.6	3.3	3.6	5.7	11.7	12.7	12.4	12.8				

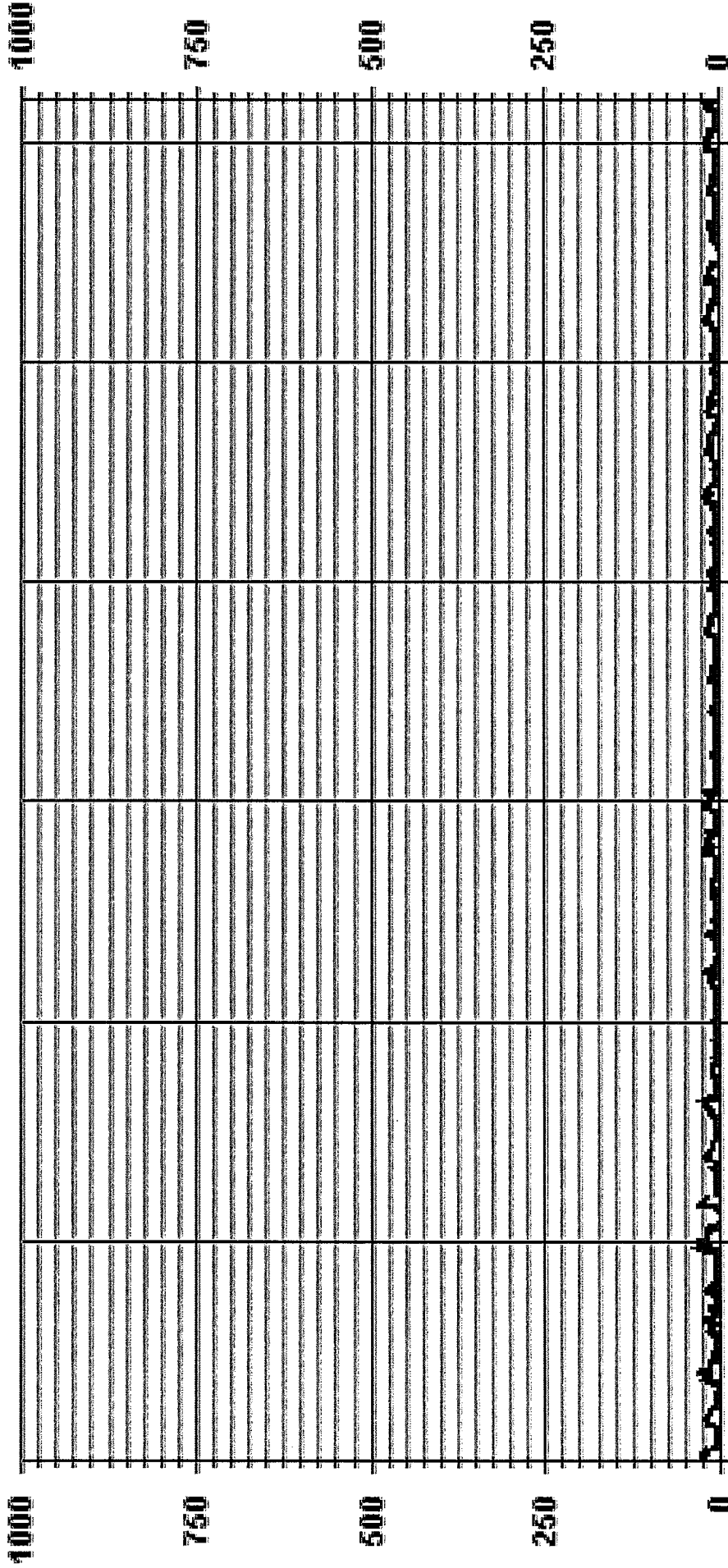
STATUS FLAG CODES

C	CALIBRATION	O	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SRAN CHECK	X	MACHINE/ALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT OF REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	685
MAXIMUM INSTANTANEOUS VALUE:	34.1
PPB @ HOUR(S)	20
ON DAY(S)	6
VAR-VARIOUS	
IS CALIBRATION TIME:	35
MONTHLY CALIBRATION TIME:	7
STANDARD DEVIATION:	6.01
OPERATIONAL TIME:	
HRS	
HRS	757

01 Hour Averages



— LICA35 NO2MAX PPB

LICA-ELK
 NO2_ / WDR Joint Frequency Distribution (Percent)
 July 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : NO2
 Units : PPF

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 50.0	2.72	.86	1.72	2.72	4.16	4.16	2.00	1.29	1.86	5.02	4.44	13.77	17.36	20.80	12.48	4.59	100.00			
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
Totals	2.72	.86	1.72	2.72	4.16	4.16	2.00	1.29	1.86	5.02	4.44	13.77	17.36	20.80	12.48	4.59				

Calm : .00 %

Total # Operational Hours : 697

Distribution By Samples

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 50.0	19	6	12	19	29	29	14	9	13	35	31	96	121	145	87	32	697			
< 110.0																				
< 210.0																				
>= 210.0																				
Totals	19	6	12	19	29	29	14	9	13	35	31	96	121	145	87	32				

Calm : .00 %





Total # Operational Hours : 697

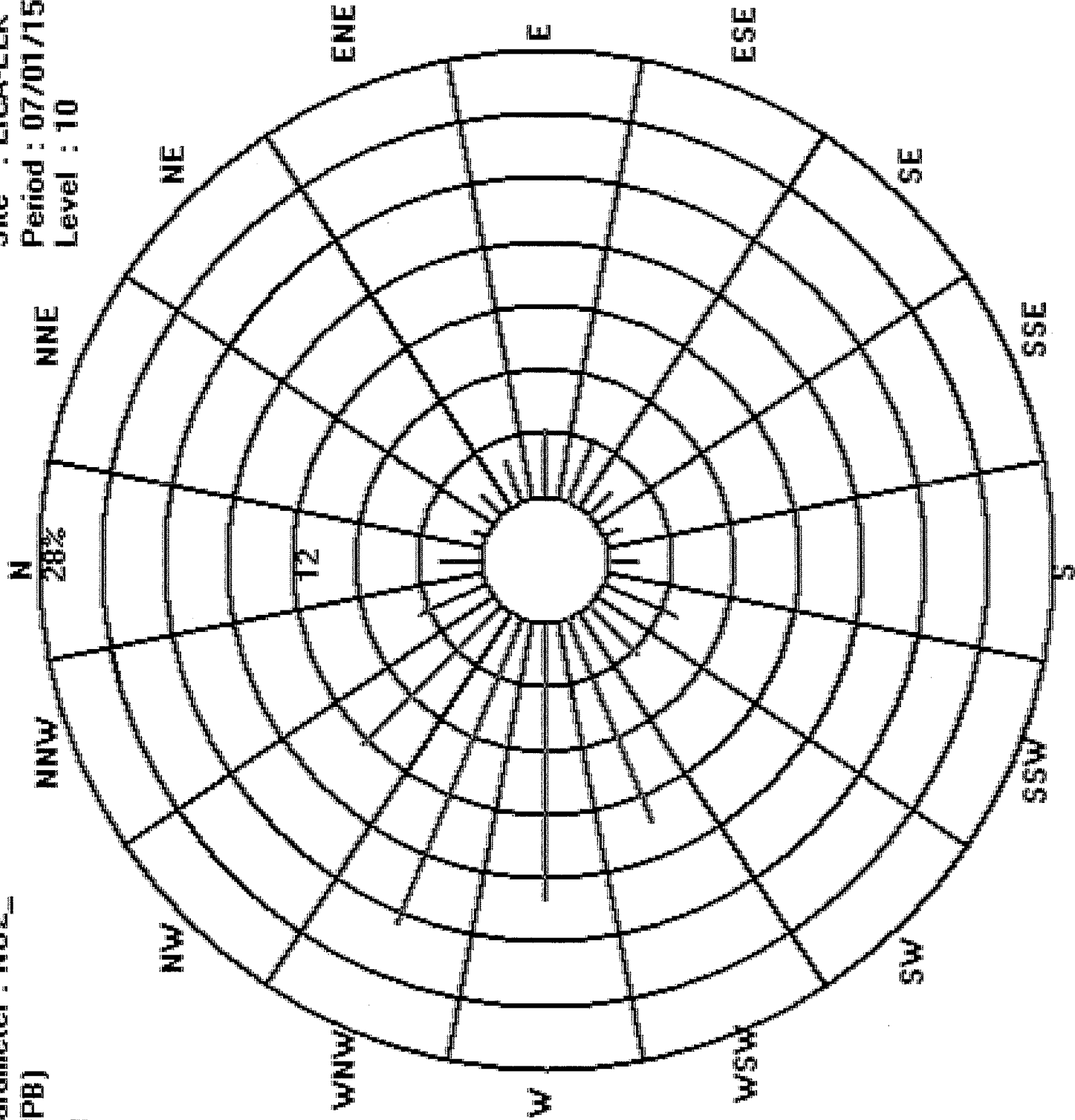
Logger : 35 Parameter : NO2_

Site : LICA-ELK

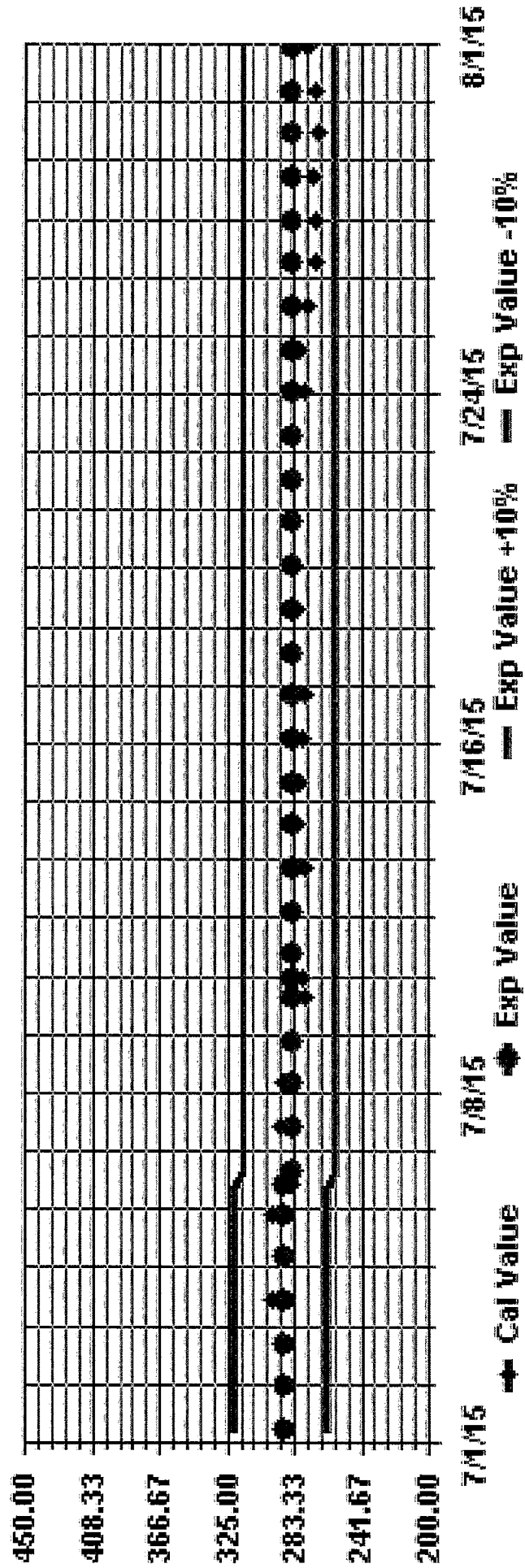
Class Limits (PPB)

Period : 07/01/15-07/31/15
Level : 10

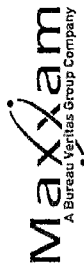
-  ≥ 210.0
-  < 210.0
-  < 110.0
-  < 50.0



Calibration Graph for Site: LICA35 Parameter: NO2_ Sequence: NO2 Phase: SPAN



OZONE



OZONE (O3) hourly averages in ppb

DAY	HOURS																								DAILY MAX.	24-HOUR AVG.	RDGS.
	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			
1	11	6	4	5	4	4	8	5	33	35	40	42	43	46	39	45	44	41	43	34	23	19	14	9	46	25.7	24
2	11	13	9	8	7	10	5	19	27	33	35	36	37	40	42	43	45	45	51	50	42	39	25	20	51	29.7	24
3	18	9	7	6	5	5	13	30	41	51	54	52	42	51	50	37	37	37	48	43	43	43	32	20	54	34.0	24
4	33	34	36	38	5	32	37	41	44	44	44	44	41	41	44	45	42	36	38	32	23	18	20	17	45	35.8	24
5	20	17	17	5	16	16	16	17	21	24	25	25	24	33	37	37	39	39	38	35	19	12	15	6	39	23.8	24
6	3	1	1	1	1	1	1	1	22	25	30	36	39	33	42	50	56	55	49	34	21	15	16	56	25.9	24	
7	9	5	27	24	23	26	31	38	39	36	C	C	C	C	C	33	33	32	33	28	10	6	4	39	25.8	24	
8	5	0	0	1	4	11	25	32	39	44	48	50	50	51	51	51	51	48	44	40	39	35	5	52	32.5	24	
9	29	26	24	14	20	12	16	31	39	44	46	49	56	60	59	49	46	47	54	49	43	39	5	29	60	38.3	24
10	28	22	24	25	19	17	19	33	36	38	38	38	38	40	43	47	49	57	52	46	46	42	42	57	46	35.1	24
11	39	38	38	35	34	32	33	36	37	38	40	41	46	56	59	58	55	55	55	52	5	38	37	31	59	42.8	24
12	30	25	25	13	12	13	23	25	22	18	30	38	45	45	46	40	41	38	35	5	40	45	46	40	46	32.0	24
13	26	33	31	30	35	41	43	38	31	32	35	36	38	39	35	30	29	29	5	19	17	17	15	15	43	30.2	24
14	16	13	10	6	3	4	11	17	25	31	33	34	37	36	37	40	39	5	37	32	22	17	17	13	40	23.0	24
15	16	12	6	6	2	3	6	12	26	32	33	36	34	36	39	45	5	45	46	42	30	18	9	7	46	23.5	24
16	3	3	2	0	1	4	25	20	20	26	34	34	32	33	30	5	28	26	25	22	19	17	15	34	19.3	24	
17	13	9	8	6	13	26	30	35	33	31	30	30	28	32	5	32	30	26	25	27	24	20	21	21	35	23.9	24
18	18	14	11	10	9	9	12	16	23	29	28	27	32	5	33	31	28	28	26	26	25	21	29	33	22.3	24	
19	25	23	19	18	21	20	21	21	23	28	29	30	5	29	30	29	29	29	27	27	20	12	11	9	30	23.1	24
20	10	10	8	1	1	5	5	18	26	29	31	5	35	38	36	38	38	36	38	35	28	24	22	23	38	23.3	24
21	20	20	19	22	16	10	12	26	30	38	5	42	41	42	43	43	43	43	43	43	42	36	30	27	43	31.0	24
22	25	26	23	10	5	12	17	21	26	5	36	40	36	34	26	24	24	27	31	29	14	16	12	40	24.1	24	
23	12	12	8	5	6	6	8	9	5	18	23	23	23	20	23	22	25	21	19	12	9	6	2	25	14.6	24	
24	0	0	0	0	0	0	1	5	14	23	C	C	C	C	C	C	C	C	C	28	19	16	12	28	8.9	24	
25	14	15	15	11	9	8	5	14	21	25	28	28	28	28	28	28	29	30	29	26	15	17	20	30	21.1	24	
26	19	19	16	10	7	5	10	16	18	19	21	24	26	26	25	26	26	26	27	24	19	13	3	2	27	18.3	24
27	1	1	0	1	5	1	2	5	9	14	15	19	23	24	25	26	26	26	22	5	4	11	9	26	12.8	24	
28	4	3	2	5	8	8	12	14	C	C	C	C	C	C	C	C	C	17	18	19	15	9	12	11	19	10.9	24
29	11	6	5	8	10	11	12	15	17	18	21	23	25	27	26	24	24	23	24	24	18	16	15	27	18.1	24	
30	14	5	16	13	12	11	13	19	23	23	22	24	26	27	27	28	28	28	28	24	24	12	3	1	28	18.5	24
31	5	0	0	1	0	1	6	21	24	29	33	35	40	41	40	39	39	37	32	30	23	15	18	41	22.9	24	
HOURLY MAX	39	38	38	38	35	41	43	41	44	51	54	52	56	60	59	58	56	55	57	52	46	45	46	42			
HOURLY AVG	16.5	14.1	14.0	11.3	10.3	12.0	15.7	21.9	26.7	29.8	32.3	34.5	35.9	37.3	37.7	37.1	36.3	35.3	36.1	33.3	25.8	20.7	19.2	16.8			

STATUS FLAG CODES

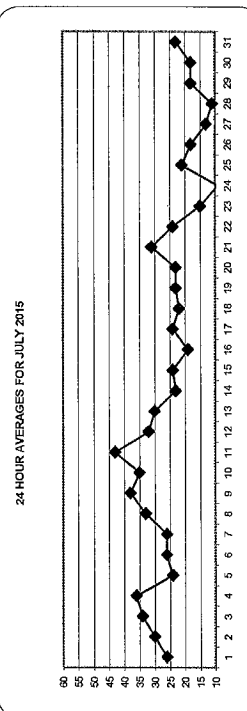
C	QUALITY ASSURANCE	Q	RECOVERY
Y	MAINTENANCE	R	MACHINE MALFUNCTION
S	DAILY ZERO/SPAN CHECK	X	OPERATOR ERROR
P	POWER FAILURE	O	COLLECTION ERROR
G	OUT FOR REPAIR	K	

ALBERTA ENVIRONMENT: 15-1-HR: 282; 24-HR: 282; 3-PB: 282

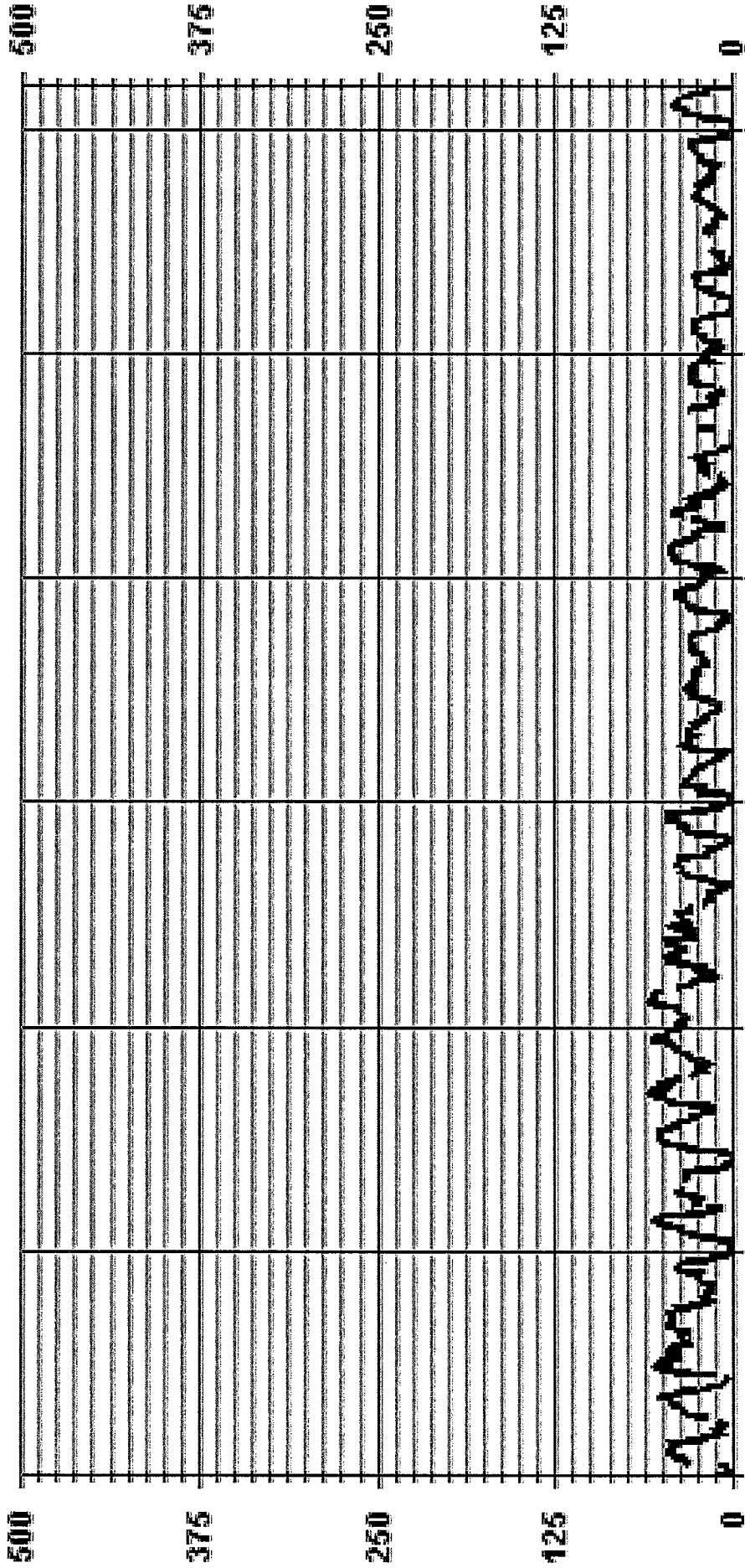
OBJECTIVE LIMIT:

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	674
MAXIMUM 1-HR AVERAGE:	60 PPB @ HOUR(S)
MAXIMUM 24-HR AVERAGE:	42.8 PPB
1/2 CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	23 HRS
STANDARD DEVIATION:	13.88
ON DAY(S)	9
ON DAY(S) VAR-VARIOUS	11
OPERATIONAL TIME:	744 HRS
AMTD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	25 PPB

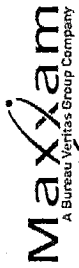


01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 03_ PPB



MST

OZONE MAX instantaneous maximum in ppb

Elk Point Airport Site - JULY 2015
JOB # 2833-2015-07-35-C

DAY	HOUR																								DAILY MAX	24-HOUR AVG	RDGS	
	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300				
1	20	15	10	11	7	8	15	5	35	38	45	45	46	48	46	46	44	46	44	46	41	32	24	20	14	48	30.6	24
2	17	18	12	10	13	13	5	23	32	35	44	38	39	42	43	43	45	49	54	55	48	44	34	28	34	55	35.9	24
3	25	19	11	9	9	5	18	37	47	55	56	60	48	59	58	39	38	38	43	51	47	46	45	38	60	60	38.0	24
4	38	38	39	42	5	49	42	56	46	46	45	43	42	47	47	47	45	38	41	40	32	23	25	21	56	40.7	24	
5	22	21	20	5	17	18	21	22	25	26	27	26	38	39	40	40	41	39	38	30	24	25	18	41	27.6	24	24	
6	8	2	5	2	7	2	4	20	24	29	34	37	42	X	C	C	35	35	34	34	34	33	21	22	59	30.1	23	
7	17	5	28	27	25	29	36	42	41	38	C	C	C	C	C	35	35	34	34	34	33	23	16	8	42	28.7	24	
8	5	1	1	0	2	7	18	31	37	42	47	53	62	62	62	57	50	53	56	53	47	44	5	32	62	43.0	24	
9	34	31	29	24	24	24	18	27	34	42	47	53	62	62	62	40	40	43	45	48	53	60	56	49	48	60	37.8	24
10	32	24	27	28	24	21	22	29	31	33	35	38	40	40	43	45	48	53	60	56	49	5	48	44	60	37.8	24	
11	42	40	39	37	36	33	35	39	38	40	42	43	52	59	60	60	58	59	59	55	5	42	40	37	60	45.4	24	
12	36	33	31	26	22	23	28	28	28	27	36	45	47	47	49	52	44	42	40	5	44	49	49	47	52	38.0	24	
13	42	35	34	32	39	46	46	46	43	35	36	37	40	41	43	34	31	31	31	21	20	21	19	17	46	34.2	24	
14	18	17	13	10	7	8	14	23	30	35	36	37	44	41	41	43	41	5	40	35	33	22	25	21	44	27.6	24	
15	21	16	11	10	4	4	13	20	31	34	40	40	39	39	42	48	5	48	48	47	41	32	14	14	48	28.5	24	
16	7	7	6	1	4	23	31	21	23	28	37	37	33	35	32	5	30	28	27	27	24	22	19	16	37	22.5	24	
17	15	11	11	8	20	33	33	39	37	33	32	31	31	37	5	34	34	29	27	30	30	22	23	23	39	27.1	24	
18	20	20	14	13	14	11	14	18	31	31	30	30	35	5	36	35	30	30	30	30	28	27	24	33	36	25.4	24	
19	30	26	24	21	22	21	22	22	27	30	31	31	31	5	30	31	30	30	30	29	26	22	15	12	31	25.7	24	
20	13	12	11	5	3	7	10	23	28	31	32	5	40	40	39	40	39	38	40	38	34	26	25	25	40	26.0	24	
21	23	25	23	24	20	13	21	30	34	44	5	44	44	45	44	44	46	44	44	44	44	42	35	30	29	47	34.6	24
22	31	30	28	14	10	17	20	24	28	5	42	41	41	40	36	31	28	28	32	35	35	20	23	18	42	28.3	24	
23	17	17	13	12	8	8	9	11	11	23	25	25	24	24	24	24	25	27	23	22	20	12	10	6	27	17.8	24	
24	1	1	1	0	1	1	2	5	16	31	C	C	C	C	C	C	C	C	C	33	23	19	16	14	33	11.4	24	
25	16	16	18	15	11	10	5	20	26	30	32	32	32	31	32	31	32	32	32	30	28	20	19	20	24	32	24.2	24
26	21	20	20	12	9	5	12	20	22	25	26	29	30	30	30	30	30	30	29	28	22	18	8	4	30	22.0	24	
27	4	5	1	4	5	3	4	9	11	17	19	21	25	27	28	28	28	28	27	25	19	10	14	14	28	16.1	24	
28	11	4	3	5	9	11	13	16	C	C	C	C	C	C	C	C	C	C	C	21	20	13	15	13	21	13.1	24	
29	13	11	5	11	14	13	15	18	21	22	24	26	30	30	30	30	27	27	26	25	26	23	19	22	16	30	21.3	24
30	17	5	17	17	13	13	18	22	25	26	25	28	29	30	30	31	31	30	29	26	24	8	5	3	31	21.6	24	
31	5	1	1	2	1	2	18	26	31	36	41	43	51	48	48	46	45	44	42	40	31	22	21	5	51	29.1	24	
HOURLY MAX	42	40	39	42	39	49	46	56	50	55	56	60	62	62	62	60	59	59	60	56	49	49	49	49	47			
HOURLY AVG	21.1	17.8	17.1	14.7	13.6	16.0	19.9	26.4	30.4	33.3	35.8	37.7	39.4	40.7	41.3	40.3	38.9	38.8	38.7	37.0	32.2	26.1	23.6	21.1				

STATUS FLAG CODES

C	CALIBRATION	Q	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/Span CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUTFOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	684
MAXIMUM INSTANTANEOUS VALUE:	62
PPB	62
@ HOUR(S)	VAR
ON DAY(S)	9
VAR-VARIOUS	
OPERATIONAL TIME:	743
HRS	HRS
MONTHLY CALIBRATION TIME:	24
HRS	HRS
STANDARD DEVIATION:	13.95

01 Hour Averages

500	500	500	500	500	500	500
375	375	375	375	375	375	375
250	250	250	250	250	250	250
125	125	125	125	125	125	125
0	0	0	0	0	0	0

07/01/15 00:00/06/15 00:00/11/15 00:00/16/15 00:00/21/15 00:00/26/15 00:00/31/15 00:00

— LICA35 O3MAX PPB

O3_ / WDR Joint Frequency Distribution (Percent)

LICA-ELK

JULY 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : O3
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	2.76	.87	1.88	2.61	4.06	3.63	1.45	.87	1.45	3.63	4.65	13.37	17.29	20.78	11.77	4.50	95.63
< 110	.00	.00	.00	.14	.14	.58	.43	.00	.43	1.45	.14	.58	.29	.00	.14	.00	4.36
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.76	.87	1.88	2.76	4.21	4.21	1.88	.87	1.88	5.08	4.79	13.95	17.58	20.78	11.91	4.50	

Calm : .00 %

Total # Operational Hours : 688

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	19	6	13	18	28	25	10	6	10	25	32	92	119	143	81	31	658
< 110				1	1	4	3		3	10	1	4	2		1		30
< 210																	
>= 210																	
Totals	19	6	13	19	29	29	13	6	13	35	33	96	121	143	82	31	

Calm : .00 %

Total # Operational Hours : 688

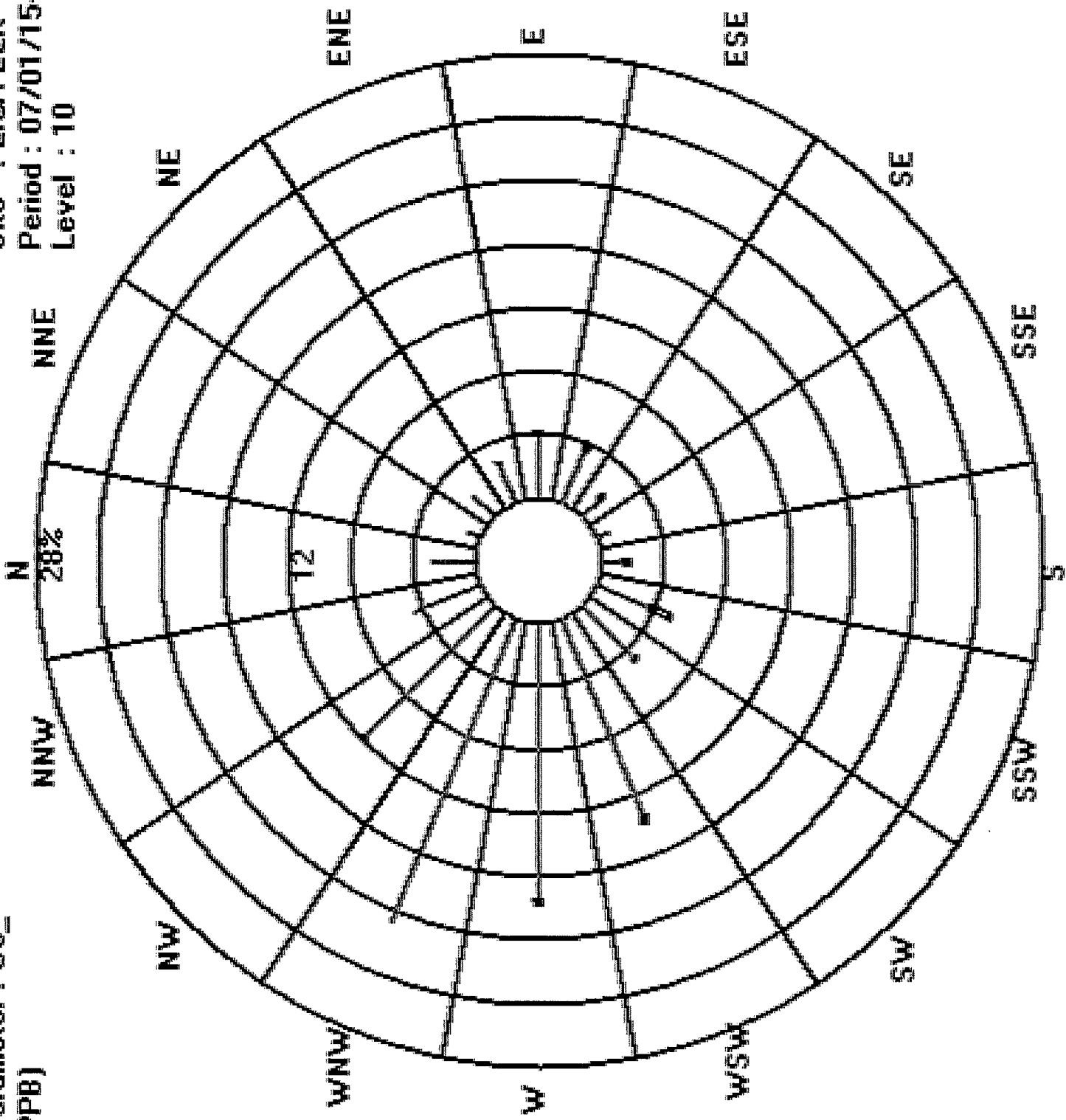
Logger : 35 Parameter : O3_

Site : LICA-ELK

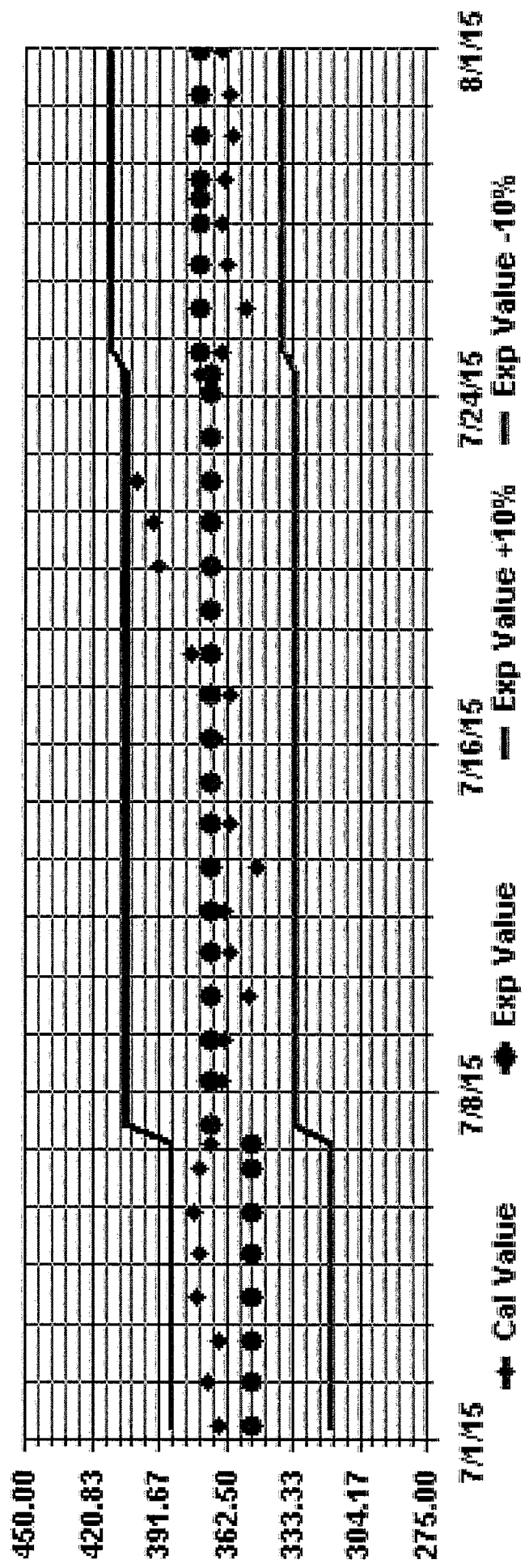
Class Limits (PPB)

Period : 07/01/15-07/31/15

-  >= 210
-  < 210
-  < 110
-  < 50



Calibration Graph for Site: LICA35 Parameter: O3_ Sequence: O3 Phase: SPAN



PARTICULATE MATTER 2.5

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

HOUR START	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	24:00	ROGS.		
HOUR END	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	0:00	DAILY MAX.	24-HOUR AVG.		
DAY																												
1	34	39	42	43	42	38	36	37	40	38	43	76	64	65	56	42	33	28	24	24	22	13	22	16	76	38.2	24	
2	15	20	18	21	17	13	20	19	15	11	12	10	15	12	10	9	9	9	9	9	11	13	13	15	16	21	13.9	24
3	12	12	18	19	13	13	16	17	11	7	8	C	C	C	0	5	6	4	6	11	26	25	35	37	37	14.2	24	
4	43	40	34	38	57	104	113	169	189	111	X	X	X	X	X	X	X	X	X	X	X	X	X	X	189	89.8	10	
5	X	X	X	X	X	X	X	X	X	X	X	X	C	C	C	25	27	35	52	48	40	29	28	31	26	52	33.9	14
6	X	X	X	X	X	X	X	X	X	X	5	5	3	1	5	0	4	7	2	X	5	0	3	2	31	7.8	23	
7	31	27	24	19	16	6	5	3	3	4	5	5	3	1	5	0	4	7	2	X	5	0	3	2	31	7.8	23	
8	0	3	1	0	2	3	3	3	7	11	16	13	15	17	12	14	21	17	12	10	12	12	18	8	21	9.6	24	
9	10	18	4	7	12	18	18	18	54	70	77	71	64	59	57	26	13	10	9	15	20	11	13	13	77	28.6	24	
10	19	5	14	46	49	54	82	97	106	113	115	134	119	102	109	112	112	178	178	142	195	239	215	239	107.7	24		
11	246	241	194	178	182	175	167	178	191	197	178	160	123	47	18	21	18	20	12	15	14	6	11	8	246	108.3	24	
12	10	10	12	4	13	9	20	14	18	16	21	20	17	16	12	16	14	16	16	15	17	16	17	14	21	14.7	24	
13	17	12	14	12	17	11	6	8	15	10	16	15	20	25	23	18	6	6	4	6	6	3	6	3	25	11.6	24	
14	3	3	1	4	6	8	10	9	3	5	8	4	7	4	4	2	0	5	2	6	3	0	0	9	10	4.4	24	
15	1	6	8	4	4	2	6	4	4	0	4	0	0	C	0	3	0	4	5	3	0	1	1	6	8	3.5	24	
16	3	9	4	4	2	6	4	4	0	4	0	0	0	C	0	3	0	4	5	3	0	1	1	9	9	2.5	24	
17	0	2	1	0	5	0	5	3	8	7	12	13	16	17	12	12	13	3	8	6	4	0	6	4	17	6.5	24	
18	7	2	6	9	5	5	7	5	6	3	7	2	6	7	9	8	10	6	6	0	6	6	12	0	12	5.8	24	
19	5	4	3	7	3	0	1	3	4	8	3	7	2	0	7	5	6	0	0	0	1	4	1	0	8	3.1	24	
20	1	0	3	5	1	18	4	6	5	7	4	4	4	2	5	5	4	5	5	6	8	10	8	8	18	5.3	24	
21	6	11	5	9	10	7	6	4	4	1	3	4	3	4	4	3	6	8	9	8	5	7	5	6	11	5.8	24	
22	8	9	6	7	5	9	4	2	4	4	2	7	6	6	7	9	0	5	8	3	9	3	0	4	9	5.3	24	
23	7	4	4	1	6	2	2	2	6	9	4	0	2	0	2	2	2	5	1	3	4	0	1	7	9	3.2	24	
24	0	6	0	4	1	5	1	2	12	3	2	3	2	4	1	7	4	10	2	2	4	4	2	4	12	3.5	24	
25	10	2	2	4	1	5	4	1	1	1	6	4	5	3	0	0	2	X	0	6	0	5	5	10	3.1	23		
26	0	0	0	0	0	2	1	6	2	3	6	5	0	4	0	4	0	2	0	1	2	2	4	1	6	1.9	24	
27	6	0	0	0	3	5	1	3	2	6	3	3	2	1	5	3	2	0	2	0	3	3	5	10	10	3.0	24	
28	0	6	2	3	4	2	0	0	6	7	2	4	0	2	5	2	1	2	0	6	1	2	3	0	7	2.5	24	
29	2	5	2	4	4	0	2	6	5	5	1	4	1	5	1	0	2	3	1	3	0	0	1	7	7	2.7	24	
30	2	7	0	0	X	0	0	4	4	0	0	5	3	0	0	3	8	5	4	3	4	3	2	1	8	2.5	23	
31	0	0	2	3	3	2	3	4	2	8	8	4	5	2	4	5	2	3	5	3	6	8	4	5	8	3.8	24	
HOURLY MAX	246	241	194	178	182	175	167	178	191	197	178	160	134	119	102	109	112	112	178	178	142	195	239	215	239	215		
HOURLY AVG	17.2	17.3	14.6	15.8	17.3	17.9	17.8	21.3	24.8	28.1	20.0	20.3	19.3	16.8	13.4	12.8	12.1	12.0	13.2	13.4	13.0	13.1	16.0	15.3	16.0	15.3		

STATUS FLAG CODES

C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- IV MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

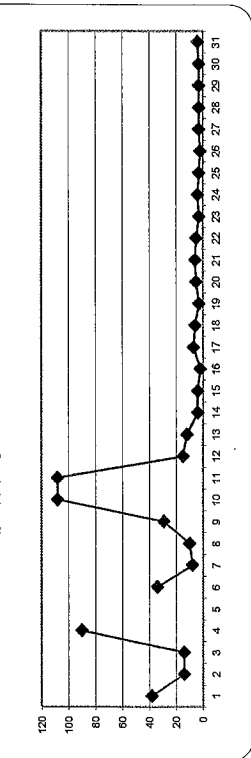
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR: 30 ug/m3

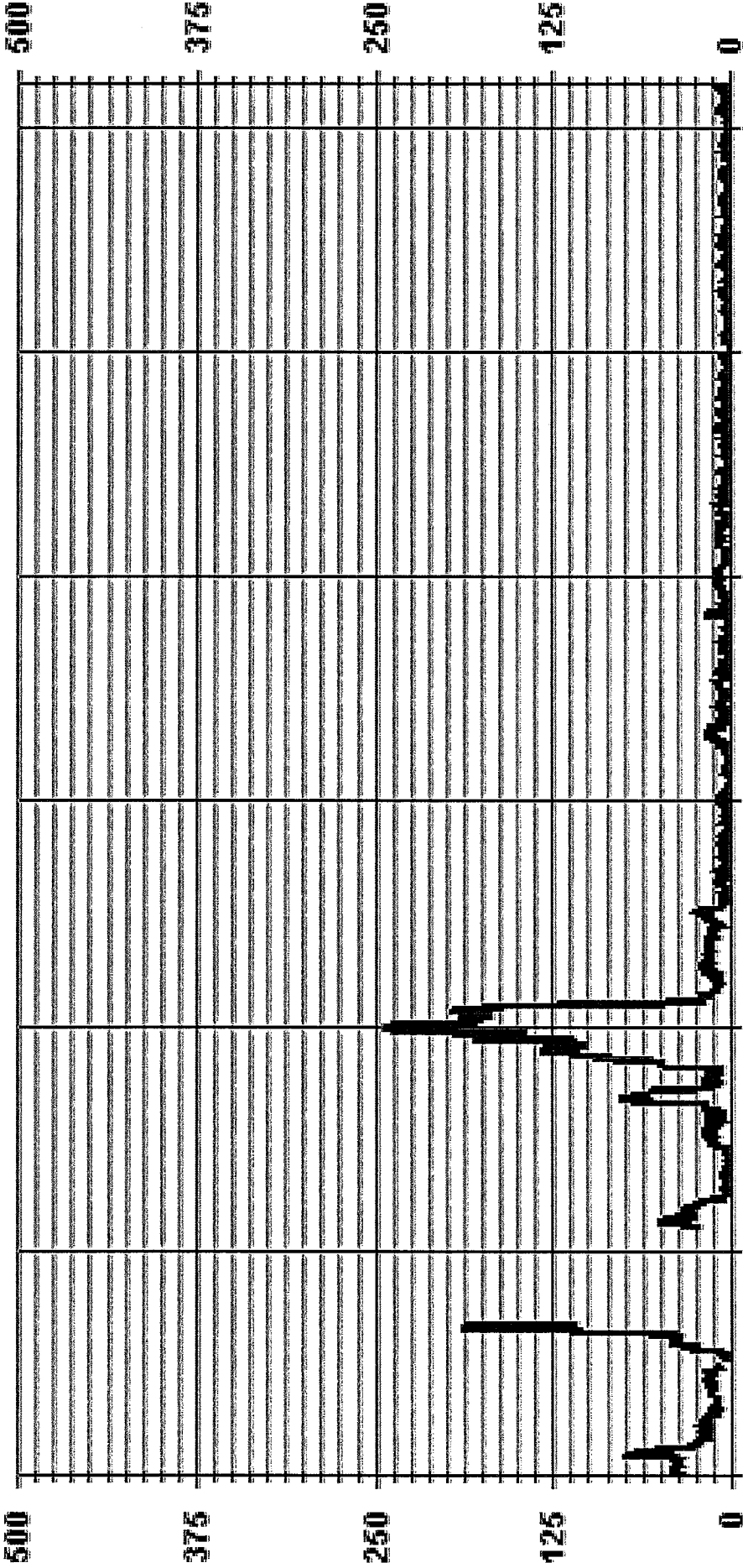
MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	5			
NUMBER OF NON-ZERO READINGS:	613			
MAXIMUM 1-HR AVERAGE:	246 ug/m3 @ HOUR(S)	0	ON DAY(S)	11
MAXIMUM 24-HR AVERAGE:	108.3 ug/m3		ON DAY(S)	11
			VAR- VARIOUS	
MONTHLY CALIBRATION TIME:	6 HRS	OPERATIONAL TIME:	683 HRS	
STANDARD DEVIATION:	35.74	AMD OPERATION UPTIME:	95.1 %	
		MONTHLY AVERAGE:	16.6 ug/m3	

24 HOUR AVERAGES FOR JULY 2015



01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 PM2 UG/M3

LICA-ELK
 PM2 / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : PM2
 Units : UC/M3

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	1.89	.29	.43	1.60	3.05	3.93	2.32	1.16	1.60	4.80	4.65	12.80	16.30	19.65	10.62	3.49	88.64
< 60	.00	.14	.14	.00	.00	.14	.00	.14	.14	.72	.00	1.16	.72	.87	.87	.14	5.24
< 80	.00	.00	.00	.29	.00	.14	.00	.00	.14	.00	.00	.00	.14	.00	.29	.00	1.01
< 120	.14	.29	.58	.14	.29	.00	.00	.00	.00	.00	.00	.00	.14	.14	.00	.00	1.89
< 240	.14	.00	.72	.72	.87	.14	.00	.00	.00	.00	.00	.00	.00	.14	.14	.00	2.91
>= 240	.00	.00	.00	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.29
Totals	2.18	.72	1.89	2.76	4.51	4.36	2.32	1.31	1.89	5.53	4.65	13.97	17.32	20.81	12.08	3.63	

Calm : .00 %

Total # Operational Hours : 687

Distribution By Samples

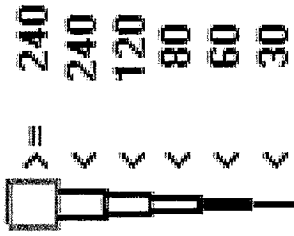
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	13	2	3	11	21	27	16	8	11	33	32	88	112	135	73	24	609
< 60	1	1	1	2	1	1	1	1	1	5	8	5	6	6	1	1	36
< 80				2	1	1			1		1	1	1	2	2		7
< 120	1	2	4	1	2				1	1	1	1	1	1	1	1	13
< 240	1	5	5	5	6	1						1	1	1	1	1	20
>= 240				2													2
Totals	15	5	13	19	31	30	16	9	13	38	32	96	119	143	83	25	

Calm : .00 %

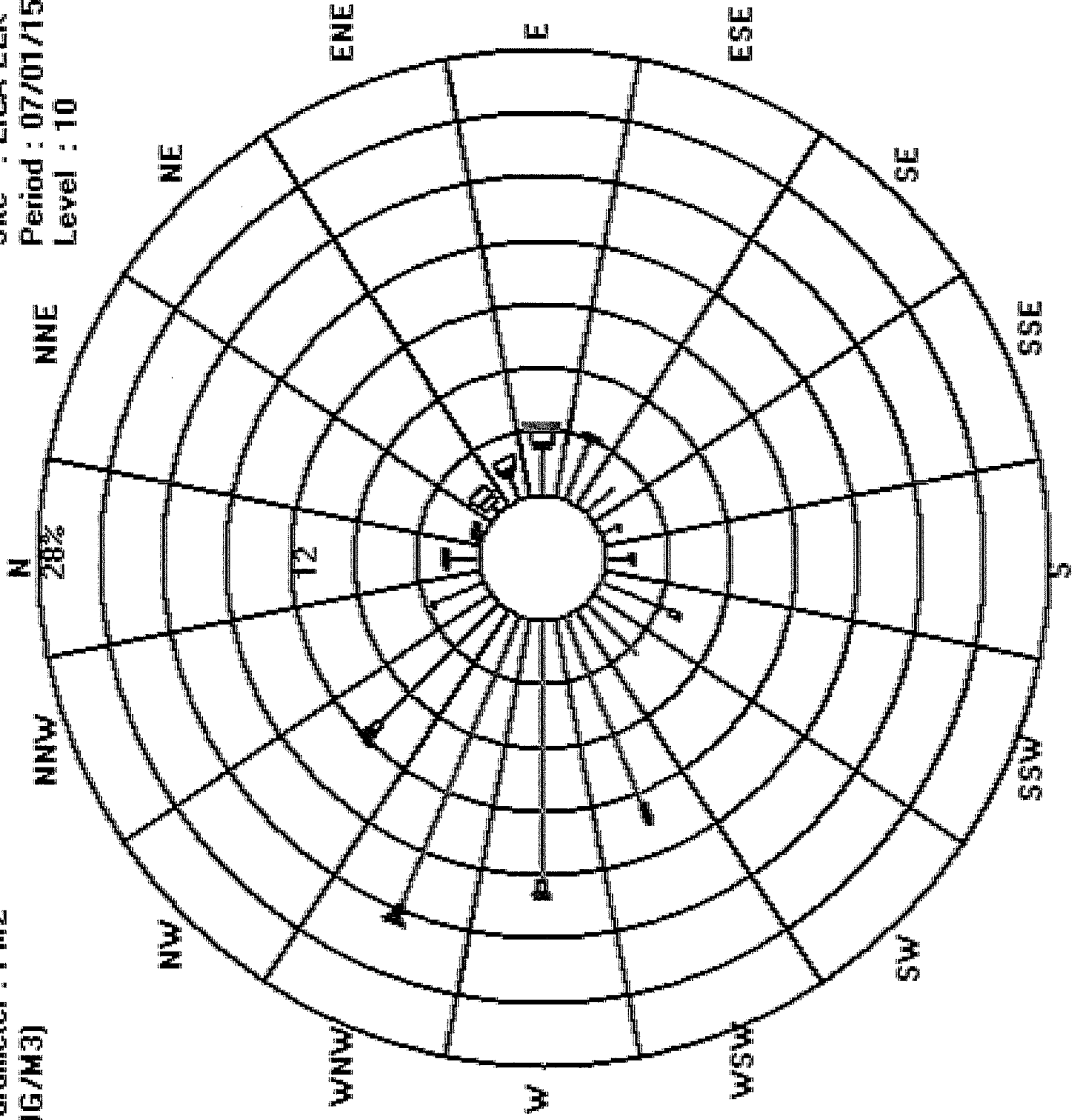
Total # Operational Hours : 687

Logger : 35 Parameter : PM2

Class Limits (UG/M3)



Site : LICA-ELK
Period : 07/01/15-07/31/15
Level : 10



WIND SPEED



WIND SPEED (WS) hourly averages in km/hr

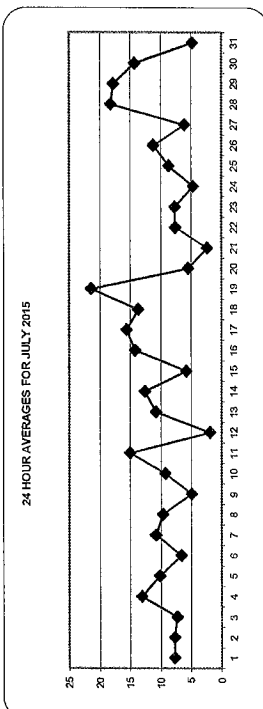
MST

DAY	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 MAX	24-HOUR AVG	RDGS	
1	6.0	5.0	4.2	3.1	2.5	3.8	3.8	5.6	5.6	3.8	6.7	12.4	14.3	14.0	18.1	17.1	18.0	13.6	12.9	9.5	8.1	7.6	5.6	3.9	18.1	8.7	24	
2	6.3	9.7	7.8	12.7	7.5	10.4	7.4	5.6	7.1	8.9	10.9	8.6	11.0	8.7	11.2	11.4	10.5	13.1	10.8	6.7	5.9	5.6	2.4	0.9	13.1	8.4	24	
3	0.4	1.5	3.6	4.5	3.1	2.7	4.8	5.1	9.0	11.2	13.9	18.5	15.7	14.8	22.3	22.2	25.0	10.3	7.8	12.4	11.7	13.3	10.3	10.9	25.0	10.6	24	
4	8.8	9.3	12.3	14.0	11.3	7.2	10.2	9.5	12.4	8.6	11.6	15.7	20.0	19.4	17.9	22.0	26.2	18.3	19.1	10.2	8.8	8.8	10.3	11.4	26.2	13.5	24	
5	12.4	11.4	13.6	15.9	15.2	13.4	11.6	15.8	17.6	18.8	17.4	17.6	12.3	17.1	13.2	14.1	13.7	11.3	8.2	3.5	4.1	5.4	3.2	2.3	18.8	12.0	24	
6	2.8	5.2	5.8	6.4	6.1	5.0	7.6	6.2	6.2	7.2	7.8	10.3	11.0	13.1	12.4	14.0	13.7	13.0	10.5	7.0	5.7	2.4	1.3	1.9	14.0	7.6	24	
7	7.5	11.4	11.4	7.8	21.0	21.5	19.5	16.8	16.5	16.6	14.7	13.0	14.1	11.6	9.8	11.3	11.7	9.4	12.8	8.5	2.7	1.8	2.0	11.5	11.4	24		
8	0.4	1.5	1.1	3.4	6.1	7.6	7.3	7.9	12.2	12.4	14.5	17.8	20.6	20.8	20.3	17.6	15.8	13.6	13.5	10.9	11.0	11.8	10.7	13.9	20.8	11.4	24	
9	9.0	10.9	5.2	9.3	9.9	6.6	4.9	6.6	6.6	5.6	4.8	5.6	6.5	9.0	11.7	15.2	12.0	15.4	15.4	11.1	7.9	6.5	7.6	8.9	15.4	8.8	24	
10	9.4	9.9	10.1	4.8	6.8	10.9	3.4	7.9	13.4	15.6	15.9	14.8	15.9	15.0	17.4	19.8	21.4	20.8	15.2	11.9	14.2	14.0	17.1	21.4	13.4	24		
11	14.7	13.6	12.7	8.8	9.6	11.0	15.1	18.2	21.0	20.2	20.5	21.7	26.2	29.3	30.2	30.1	24.0	20.6	18.8	20.4	17.3	9.5	7.5	4.1	30.2	17.7	24	
12	2.5	1.2	2.1	0.1	2.1	3.9	5.2	3.7	5.0	8.6	12.2	11.6	12.8	9.5	6.8	13.9	12.7	12.9	16.2	10.2	14.9	18.3	3.7	2.4	18.3	8.0	24	
13	6.4	14.1	18.0	16.2	16.8	18.8	10.0	3.6	7.3	4.5	4.3	4.9	7.3	10.2	15.0	19.7	17.6	14.9	15.6	10.3	3.0	6.7	12.9	15.5	19.7	11.4	24	
14	8.3	9.4	7.0	6.8	4.4	8.2	10.0	12.8	14.4	14.5	14.2	18.8	23.8	20.9	20.5	21.5	17.3	20.1	17.7	11.3	8.3	10.5	7.3	3.6	23.8	13.0	24	
15	9.7	11.9	9.0	8.1	1.5	0.9	4.2	1.8	4.2	10.9	17.1	11.6	13.4	12.4	9.9	5.0	5.5	10.6	9.3	5.0	5.2	3.1	1.2	0.8	17.1	7.2	24	
16	3.9	2.8	2.0	1.0	5.9	7.1	20.3	20.0	17.7	19.7	21.7	24.5	24.0	22.7	21.3	20.0	22.4	19.5	19.9	18.7	13.9	16.6	12.1	11.8	24.5	15.4	24	
17	9.9	7.4	7.7	8.4	10.1	14.2	14.8	17.2	19.1	22.8	28.1	27.9	25.5	22.5	22.7	15.4	17.7	22.4	25.1	20.3	18.6	13.9	13.5	11.1	28.1	17.3	24	
18	10.8	11.7	14.7	13.7	10.1	9.0	9.2	9.0	11.1	12.2	12.1	15.3	19.5	26.1	23.7	21.5	21.1	17.3	11.9	12.0	15.7	15.8	14.7	13.7	26.1	14.7	24	
19	8.5	8.7	15.1	25.7	27.2	29.4	27.6	29.1	33.1	32.8	32.5	32.4	27.8	30.0	28.4	26.3	24.0	23.2	19.0	17.5	14.8	14.3	16.1	17.6	19.2	9.3	24	
20	10.7	7.2	7.7	3.0	5.3	5.6	3.4	4.6	5.6	4.8	5.0	4.2	4.0	7.4	6.8	10.4	13.1	15.0	19.2	17.5	14.8	14.3	16.1	17.6	19.2	9.3	24	
21	18.9	9.6	20.6	13.4	3.2	3.8	1.5	5.3	6.7	5.9	8.3	6.2	6.6	3.8	6.3	6.1	7.8	10.2	10.4	9.1	5.8	10.4	11.4	14.4	20.6	8.6	24	
22	4.9	7.1	3.7	7.7	10.4	13.0	10.3	3.7	2.2	6.6	9.8	7.3	8.4	10.5	14.8	25.3	5.8	7.1	7.2	9.9	6.4	5.6	9.8	10.4	25.3	8.7	24	
23	7.2	7.3	8.2	8.2	7.4	6.8	9.4	10.8	7.7	9.3	13.3	14.0	14.7	8.6	8.8	9.1	12.3	16.5	2.2	1.1	2.0	5.7	6.3	5.6	16.5	8.4	24	
24	4.9	2.9	1.2	0.5	1.0	0.6	1.0	4.6	8.3	6.6	8.3	7.2	7.5	7.0	10.1	12.2	11.7	9.7	9.9	8.5	9.2	8.6	10.0	9.4	12.2	6.7	24	
25	9.7	8.2	4.8	6.6	2.2	4.1	11.3	22.3	22.1	18.9	17.4	14.4	14.1	16.7	17.5	16.3	16.3	11.8	9.6	5.2	4.2	14.0	18.8	14.6	11.6	22.3	12.1	24
26	11.8	9.6	8.6	8.6	3.5	5.1	7.6	12.9	14.0	14.3	15.6	15.4	17.7	16.7	17.5	16.3	16.3	16.8	12.5	7.9	8.9	7.9	7.0	8.0	17.7	11.7	24	
27	3.9	3.1	1.6	4.0	5.9	5.7	7.0	7.4	8.9	4.4	7.5	7.2	6.5	7.9	8.9	7.5	8.0	9.6	7.7	9.3	7.9	11.9	9.5	7.2	11.9	7.0	24	
28	9.2	9.8	12.2	14.7	14.0	14.7	14.5	15.9	21.5	20.4	22.3	25.1	29.1	28.0	26.8	27.9	28.6	27.7	23.2	18.3	13.9	14.2	6.9	12.2	29.1	18.3	24	
29	13.6	11.6	14.5	12.5	13.7	13.3	14.9	15.6	20.0	21.6	23.1	28.9	29.2	27.9	24.4	29.6	28.6	20.9	23.1	14.5	10.1	14.7	9.1	5.4	29.6	18.4	24	
30	8.3	12.8	11.9	7.9	8.2	8.8	12.5	17.1	18.5	15.9	18.9	25.0	24.9	27.2	25.4	25.1	21.6	23.4	18.1	8.3	4.0	5.0	2.9	3.8	27.2	14.8	24	
31	6.1	4.8	3.1	3.9	3.0	3.9	5.3	8.0	6.4	11.0	7.4	6.0	7.2	8.7	14.8	14.7	13.3	13.5	7.9	1.5	1.3	5.2	8.0	4.0	14.3	7.0	24	
HOURLY MAX	18.9	14.1	20.6	25.7	27.2	29.4	27.6	29.1	33.1	32.8	32.5	32.4	29.2	30.0	30.2	30.1	28.6	27.7	25.1	20.4	18.6	18.8	16.1	17.6				
HOURLY AVG	8.0	8.1	8.4	8.4	8.2	8.9	9.5	10.7	12.3	12.7	14.1	15.0	15.8	16.0	16.4	17.3	16.4	15.5	13.9	10.6	9.1	9.7	8.5	8.2				

STATUS FLAG CODES

C	CALIBRATION	O	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZER0/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

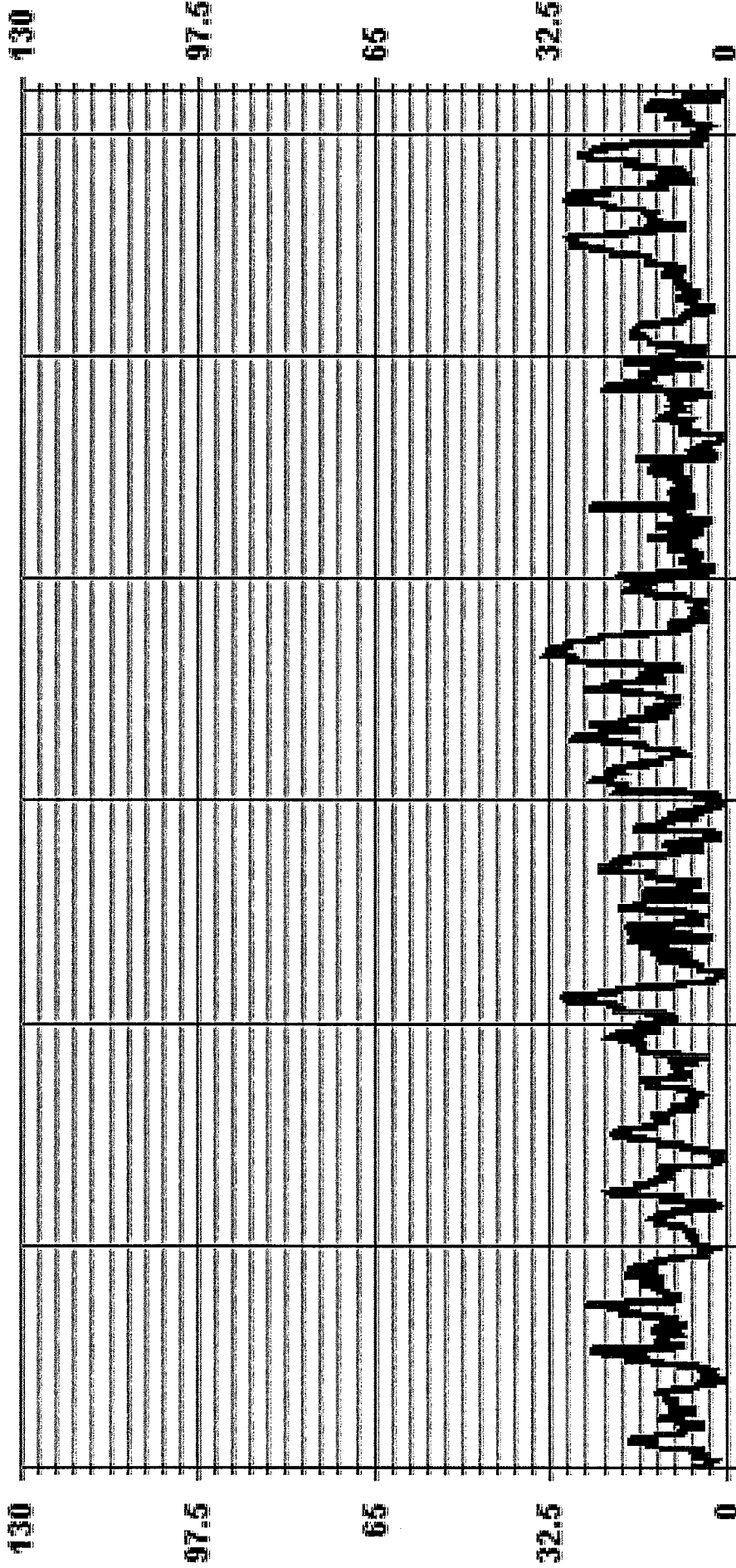
LAST CALIBRATION: February 21, 2014
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

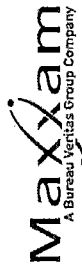
NUMBER OF NON-ZERO READINGS:	744
MAXIMUM 1-HR AVERAGE:	33.1 KPH
MAXIMUM 24-HR AVERAGE:	21.9 KPH
MONTHLY CALIBRATION TIME:	0 HRS
STANDARD DEVIATION:	6.77
OPERATIONAL TIME:	744 HRS
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	11.7 KPH

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 WSP KPH



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

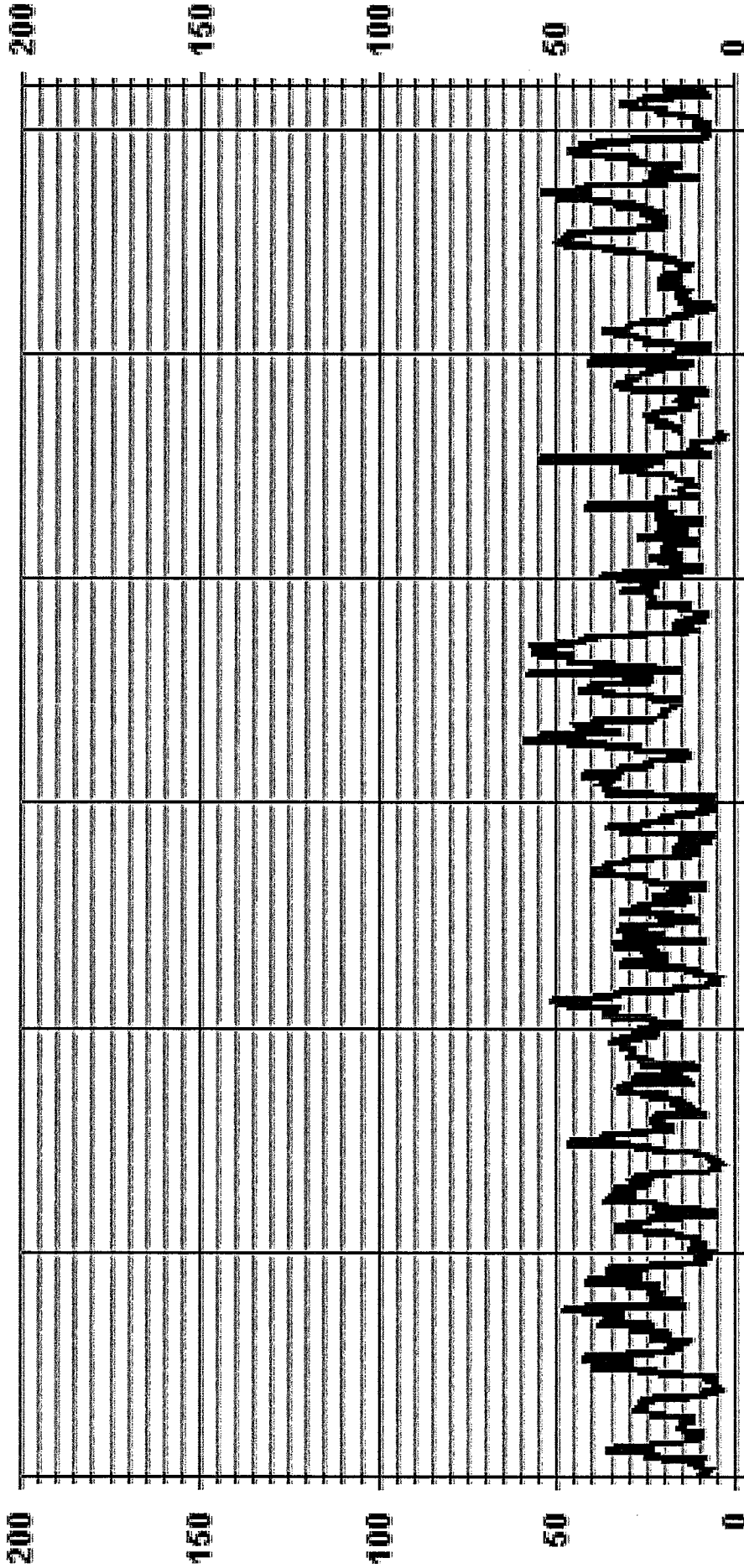
DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS
	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00			
1	10.5	8.2	8.8	7.7	7.0	8.4	9.5	11.3	10.2	9.8	20.2	21.1	25.7	24.2	28.0	36.4	34.3	23.9	23.5	14.7	11.3	11.5	13.7	8.2	36.4	16.2	24
2	10.9	14.9	13.6	16.7	13.7	15.8	13.7	10.6	15.8	19.4	23.3	24.1	28.6	25.1	27.3	26.1	24.6	27.1	23.5	13.4	8.8	8.9	5.3	4.0	28.6	17.3	24
3	4.4	5.0	6.3	7.3	5.5	5.6	7.7	15.1	21.3	27.4	29.6	40.2	34.5	27.9	36.9	39.4	42.9	28.6	31.4	23.6	16.8	19.3	16.2	15.1	42.9	21.2	24
4	14.0	13.7	19.9	23.5	17.3	20.8	18.2	29.8	24.1	24.5	23.0	37.5	37.2	36.7	31.0	36.9	42.6	32.0	48.9	43.0	13.0	16.4	15.3	17.5	48.9	26.5	24
5	24.2	20.0	23.4	24.3	23.9	23.2	20.8	30.0	30.2	41.6	34.8	36.8	26.1	31.3	28.8	29.1	36.6	24.5	16.0	10.6	7.5	9.1	11.6	7.1	41.6	23.8	24
6	6.7	8.6	9.5	12.9	9.8	7.7	10.3	10.7	12.1	13.9	16.7	24.9	25.9	32.9	33.2	29.2	30.1	23.8	24.6	15.9	7.8	6.0	5.1	8.9	33.2	16.1	24
7	22.3	18.4	22.7	22.9	36.9	35.8	34.8	30.9	27.8	30.5	34.2	30.7	27.6	28.4	23.4	26.1	28.6	22.7	24.7	18.6	7.8	4.5	4.3	5.0	36.9	23.7	24
8	3.2	3.6	5.4	6.9	8.2	10.3	11.8	19.8	22.9	27.6	29.0	47.3	39.6	37.6	37.1	33.6	29.5	24.8	21.3	16.7	17.8	22.7	19.8	23.7	47.3	21.7	24
9	20.4	22.9	7.9	16.7	14.9	11.6	12.3	12.6	17.8	14.9	15.6	21.7	21.0	26.7	32.7	31.9	32.7	31.8	29.2	26.4	13.2	13.8	29.1	14.8	32.7	20.5	24
10	16.7	15.6	20.5	11.4	10.7	26.7	23.5	24.3	27.0	30.1	27.7	29.6	27.4	29.4	30.8	30.7	30.9	35.6	33.2	26.5	21.7	23.1	21.0	27.1	35.6	25.1	24
11	26.4	21.9	22.2	14.5	22.3	23.5	33.4	33.4	36.6	34.7	34.0	37.1	46.6	48.8	48.5	52.0	40.7	35.3	33.4	32.8	32.2	17.8	13.4	6.9	52.0	31.2	24
12	8.2	3.5	5.5	4.6	5.6	8.8	11.7	10.2	13.7	23.4	25.4	31.9	29.2	26.2	18.1	25.0	21.4	22.4	25.9	21.2	33.5	33.8	24.4	7.5	33.8	18.4	24
13	21.9	19.0	12.8	13.7	7.7	15.9	20.5	23.8	24.9	25.1	30.2	33.3	40.7	37.4	35.4	36.8	34.5	31.4	30.1	23.0	13.0	12.3	13.4	8.9	40.7	23.4	24
14	17.9	15.0	12.8	13.7	7.7	15.9	20.5	23.8	24.9	25.1	30.2	33.3	40.7	37.4	35.4	36.8	34.5	31.4	30.1	23.0	13.0	12.3	13.4	8.9	40.7	23.4	24
15	16.5	16.3	15.0	14.3	5.6	13.0	15.5	5.3	12.6	32.5	29.8	28.5	35.9	26.9	24.3	16.3	20.5	20.3	17.6	12.3	11.3	7.4	4.7	6.4	35.9	17.0	24
16	8.1	10.0	18.1	5.2	11.9	22.2	35.9	31.6	35.4	37.1	34.5	37.4	36.5	35.2	33.9	31.4	42.9	32.5	33.0	24.1	25.8	23.6	23.2	42.9	27.5	24	
17	17.1	14.2	13.2	12.1	19.0	27.1	27.0	35.7	35.9	46.9	59.7	54.6	49.6	55.1	42.1	31.0	40.5	43.5	44.2	36.5	40.2	23.6	22.3	19.8	59.7	33.8	24
18	20.1	19.4	19.8	18.5	17.5	17.2	16.1	16.1	22.4	22.8	24.5	33.0	36.8	43.5	41.5	39.2	40.1	32.3	24.3	22.5	26.2	29.3	58.8	40.4	58.8	28.4	24
19	14.8	21.6	32.9	39.0	45.6	47.0	44.7	45.9	54.9	56.6	51.5	55.9	56.3	50.2	46.4	43.7	42.5	38.6	30.6	25.9	13.3	11.5	12.3	13.5	56.6	37.3	24
20	17.6	12.1	14.6	7.8	9.4	10.5	6.6	11.6	14.6	14.7	14.2	24.7	21.7	24.1	21.8	23.0	23.9	24.3	32.1	26.3	23.6	20.6	24.5	26.6	32.1	18.8	24
21	32.8	28.3	37.7	32.3	14.8	13.1	8.3	13.1	15.5	18.3	21.1	13.8	23.8	14.6	17.4	19.1	18.8	20.3	17.6	17.9	9.6	18.1	17.3	27.4	37.7	19.6	24
22	22.7	20.4	13.6	13.6	20.1	21.5	16.4	9.5	8.6	19.0	22.3	19.8	18.9	21.1	32.2	42.2	26.6	19.0	20.0	20.6	15.6	10.0	15.2	14.9	42.2	19.3	24
23	15.7	14.8	11.5	12.2	11.1	13.8	16.1	18.2	16.7	26.2	26.2	32.0	26.8	30.3	23.0	19.9	55.5	35.7	19.7	6.1	11.6	12.2	10.7	11.3	55.5	19.9	24
24	9.1	11.9	6.1	3.9	4.6	3.5	4.6	R	16.5	16.3	21.4	21.4	19.7	20.8	24.2	24.7	23.2	21.7	20.9	16.4	12.6	11.8	13.2	11.9	24.7	14.8	23
25	15.5	15.0	12.2	11.7	8.0	8.3	29.1	32.1	33.9	30.9	28.9	26.8	28.2	26.8	23.9	24.1	20.2	19.9	13.7	10.6	41.3	32.7	30.3	19.5	41.3	22.7	24
26	17.3	16.7	16.2	14.9	6.3	8.8	16.2	25.0	24.8	27.0	28.2	33.0	33.7	37.3	30.6	29.1	29.2	27.4	19.1	18.9	17.8	13.2	11.6	12.2	37.3	21.4	24
27	7.7	7.7	5.6	11.1	12.1	15.4	13.6	16.7	14.7	13.8	15.8	13.6	15.0	21.2	18.6	19.0	17.2	21.6	14.9	19.7	15.2	15.1	13.2	12.7	21.6	14.6	24
28	15.4	15.7	16.1	19.0	19.1	24.6	22.7	27.6	33.4	37.2	39.5	47.8	49.3	48.2	45.7	47.9	47.4	42.5	39.9	27.9	20.0	18.6	23.3	19.1	49.3	31.2	24
29	21.3	18.4	24.6	19.7	26.4	22.1	25.2	31.1	30.4	34.1	39.8	44.0	50.2	44.5	39.9	54.4	45.2	42.6	41.3	26.5	18.4	22.4	18.3	9.6	54.4	31.3	24
30	16.9	24.0	20.2	20.3	15.6	15.9	25.1	29.2	27.9	28.1	36.4	45.4	40.6	46.5	41.8	42.2	35.7	39.3	30.0	17.2	9.3	7.9	7.4	7.9	46.5	26.3	24
31	8.1	7.2	7.0	11.8	9.1	9.1	9.7	14.7	14.6	21.1	21.6	18.7	26.4	29.5	32.2	27.4	25.2	26.1	17.7	7.6	8.0	20.1	14.3	9.1	32.2	16.5	24
HOURLY MAX	32.8	28.3	37.7	39.0	45.6	47.0	44.7	45.9	54.9	56.6	59.7	55.9	56.3	55.1	48.5	54.4	55.5	43.5	48.9	43.0	41.3	33.8	58.8	40.4			
HOURLY AVG	15.6	15.2	15.9	15.4	15.1	17.4	18.9	21.9	23.2	26.6	28.1	31.6	32.1	32.6	31.4	32.2	32.7	29.0	26.7	21.0	17.3	16.5	17.2	14.9			

STATUS FLAG CODES

C	QUALITY ASSURANCE
M	RECOVERY
S	MAINTENANCE
D	SPARE/SPAN CHECK
P	POWER FAILURE
G	OUT FOR REPAIR
O	QUALITY ASSURANCE
R	RECOVERY
X	MACHINE/MALFUNCTION
O	OPERATOR ERROR
K	COLLECTION ERROR

MONTHLY SUMMARY			
MAXIMUM INSTANTANEOUS VALUE:	KPH	@ HOUR(S)	ON DAY(S)
59.7	10	10	17
OPERATIONAL TIME:			743 HRS
VAR-VARIOUS			

01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 WSMAX KPH

LICA-ELK
WSP / WDR Joint Frequency Distribution (Percent)

July 2015

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : WSP
Units : KPH

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	.26	.40	.40	1.34	1.61	1.34	.53	.53	.94	1.34	2.41	2.55	3.22	2.01	.94	20.43	
< 12.0	.94	.00	.26	.67	.80	.67	1.07	.53	.53	1.88	8.60	6.58	6.45	4.70	.67	36.96	
< 20.0	1.07	.40	.94	.40	1.20	1.20	.26	.13	.80	2.01	.80	2.95	5.37	5.64	4.30	1.74	29.30
< 29.0	.40	.00	.13	.13	.53	.40	.26	.00	.13	.26	.00	.00	2.01	4.56	1.61	1.07	11.55
< 39.0	.00	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00	.00	.26	.67	.40	.00	1.74
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.68	.80	1.74	2.55	4.16	4.03	2.15	1.20	2.01	5.10	4.70	13.97	16.80	20.56	13.03	4.43	

Calm : .00 %

Total # Operational Hours : 744

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	2	3	3	10	12	10	4	4	4	7	10	18	19	24	15	7	152
< 12.0	7	2	5	6	6	5	8	4	4	14	19	64	49	48	35	5	275
< 20.0	8	3	7	3	9	9	2	1	6	15	6	22	40	42	32	13	218
< 29.0	3	1	1	4	4	3	2	1	2	2	15	34	12	8	8	86	
< 39.0																	13
>= 39.0																	
Totals	20	6	13	19	31	30	16	9	15	38	35	104	125	153	97	33	

Calm : .00 %

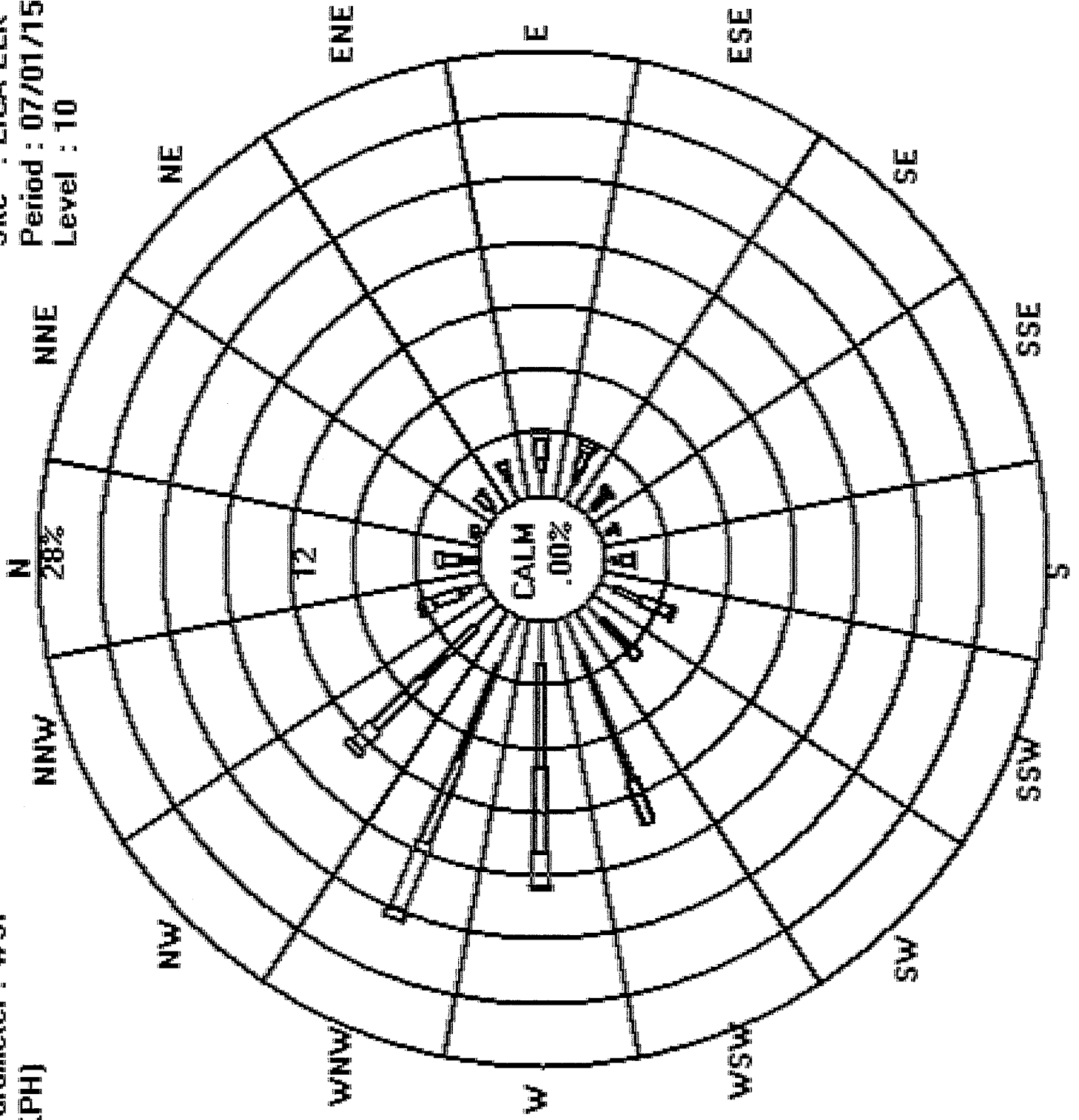
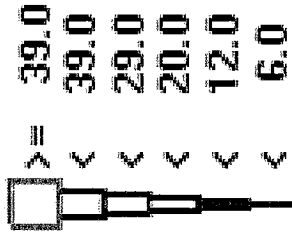
Total # Operational Hours : 744

Logger : 35 Parameter : WSP

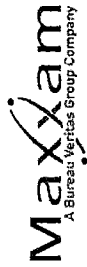
Site : LICA-ELK

Class Limits (KPH)

Period : 07/01/15-07/31/15
Level : 10



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 Elk Point Airport Site - JULY 2015
 JOB # 2833-2015-07-35 - C

WIND DIRECTION (WD) hourly averages

DAY	24-HOUR AVG QUADRANT																								RDS			
	0:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00	5:00-6:00	6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	18:00-19:00	19:00-20:00	20:00-21:00	21:00-22:00	22:00-23:00	23:00-0:00				
1	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WNN	24	
2	W	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
3	WSW	E	ESE	E	ENE	E	ESE	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
4	W	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
5	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
6	W	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
7	W	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
8	ESE	E	ESE	E	ESE	E	ESE	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
9	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
10	WNNW	WNNW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
11	E	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	24
12	E	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	24
13	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
14	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	24
15	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
16	ESE	E	SW	ESE	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	WNNW	24
17	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
18	WNNW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
19	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	WSW	W	24
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21	ESE	SSE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	24
22	ENE	NW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
23	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	24
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27	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
28	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
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30	WSW	SW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	24
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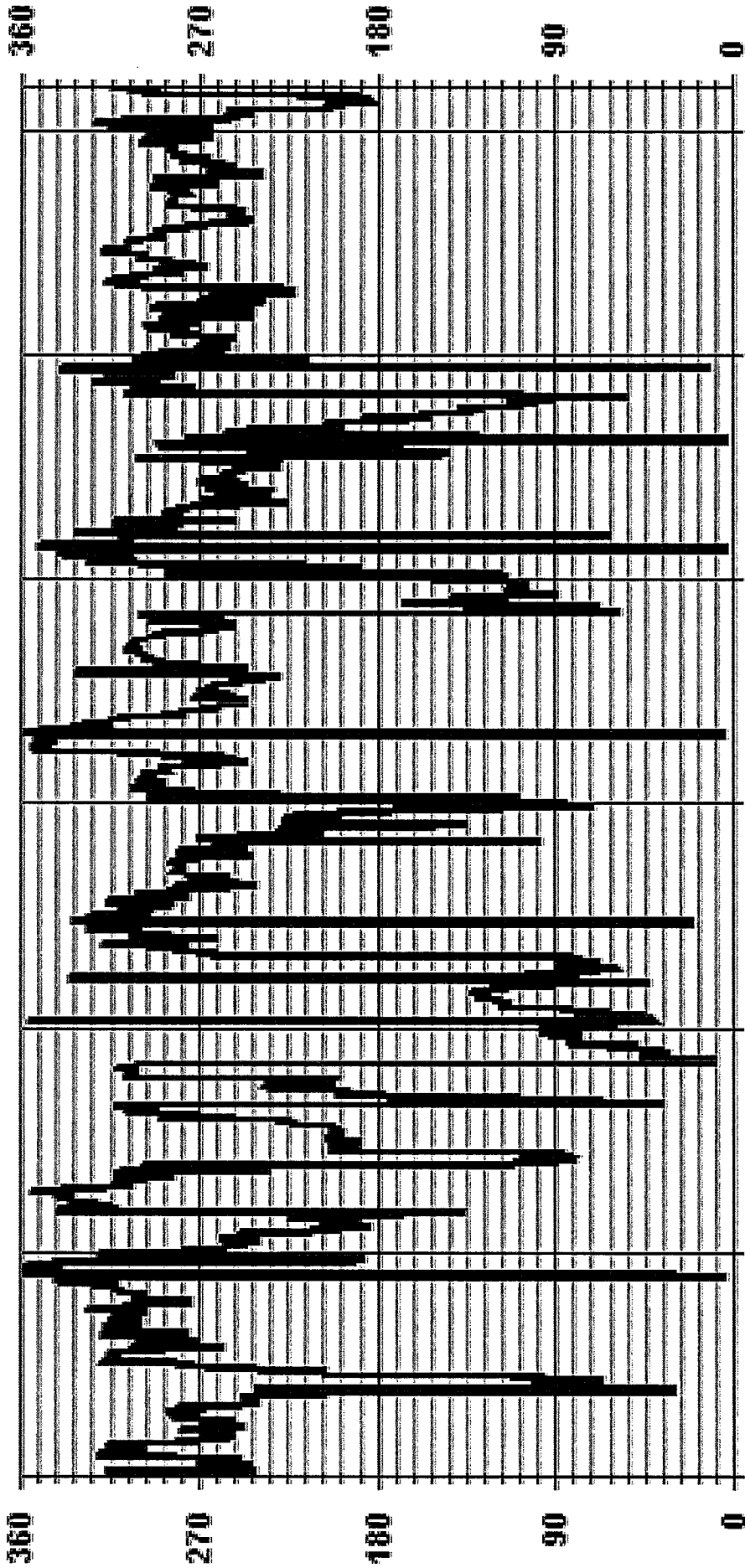
STATUS FLAG CODES

C	CALIBRATION	TO	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/Span CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

LAST CALIBRATION: February 21, 2014
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME: 0 HRS
 STANDARD DEVIATION: 81.01
 OPERATIONAL TIME: 744 HRS
 AMD OPERATION UPTIME: 100.0 %
 MONTHLY AVERAGE: WNNW

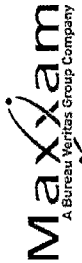
01 Hour Averages



07/01/15 00:00 07/06/15 00:00 07/11/15 00:00 07/16/15 00:00 07/21/15 00:00 07/26/15 00:00 07/31/15 00:00

— LICA35 WDR DEG

STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 Elk Point Airport Site - JULY 2015
 JOB # 2833-2015-07-35-C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

MST

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
1	7	13	10	14	19	15	16	15	15	23	24	14	13	9	8	10	11	9	8	5	7	8	5	7	6	7	6	7	10	10		
2	6	7	7	4	8	10	17	19	19	21	20	27	23	27	23	25	22	17	15	7	9	8	5	7	9	8	53	33	6	7	10	6
3	20	47	20	21	31	39	12	19	20	20	20	21	18	15	10	13	10	11	11	8	7	10	11	11	8	7	7	10	6	6	9	6
4	9	9	6	7	8	19	8	10	12	23	20	19	17	15	14	11	8	9	12	17	6	8	9	6	8	9	6	8	9	6	6	6
5	8	7	8	8	8	9	10	10	12	11	12	11	12	17	17	22	24	21	26	16	25	19	26	28	36	36	36	36	36	36	36	36
6	9	5	7	12	6	10	5	9	18	17	21	22	26	26	27	24	18	18	15	10	3	25	61	37	37	37	37	37	37	37	37	37
7	11	7	8	14	10	9	11	13	11	18	24	25	19	31	30	25	21	24	13	11	10	15	27	23	23	23	23	23	23	23	23	23
8	50	37	47	34	5	7	12	19	19	20	18	20	17	16	17	16	12	11	10	10	11	10	11	10	11	10	11	10	10	10	10	10
9	14	11	9	9	6	5	12	12	31	42	55	35	59	34	50	21	21	16	13	10	6	32	16	4	4	4	4	4	4	4	4	4
10	4	5	11	12	5	9	59	27	18	17	15	18	21	18	17	15	12	13	10	11	10	7	7	6	6	6	6	6	6	6	6	6
11	6	7	8	11	17	16	14	14	14	14	14	13	12	14	11	15	13	10	9	7	8	13	13	13	13	13	13	13	13	13	13	13
12	8	14	12	22	15	11	17	24	34	23	23	24	20	30	24	19	13	14	8	15	11	9	47	24	24	24	24	24	24	24	24	24
13	21	6	7	8	13	11	41	38	46	26	27	18	20	19	13	12	11	9	6	7	44	9	6	6	6	6	6	6	6	6	6	6
14	10	8	13	10	9	6	13	13	14	13	19	18	12	14	12	14	13	10	9	7	8	3	8	17	17	17	17	17	17	17	17	17
15	8	4	9	10	41	11	15	22	21	16	13	22	15	17	19	19	20	19	15	11	9	30	31	26	26	26	26	26	26	26	26	26
16	16	42	16	37	12	21	8	8	10	10	8	9	9	8	8	7	8	8	9	7	6	7	6	7	11	11	11	11	11	11	11	11
17	11	11	10	6	7	10	12	13	11	12	12	12	13	15	16	17	14	10	8	10	9	8	10	9	8	8	8	8	8	8	8	8
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20	7	8	12	18	10	8	11	24	26	49	43	57	40	35	36	29	15	15	9	7	6	10	8	8	10	9	6	6	6	6	6	6
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22	52	25	34	10	8	6	8	36	44	30	21	35	29	13	11	8	43	16	12	9	8	6	7	7	7	7	7	7	7	7	7	7
23	18	13	6	8	9	11	13	13	22	28	22	21	18	12	17	16	13	8	29	48	33	15	17	17	17	17	17	17	17	17	17	17
24	15	23	56	26	9	12	46	19	17	31	21	16	18	16	15	9	13	11	21	13	10	5	4	4	4	4	4	4	4	4	4	4
25	7	27	19	14	36	18	9	8	10	13	11	16	18	16	15	9	13	11	21	13	10	11	11	11	11	11	11	11	11	11	11	11
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28	6	6	3	4	3	5	9	9	10	11	11	12	13	10	10	8	7	6	4	4	4	4	4	4	4	4	4	4	4	4	4	4
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31	7	9	13	17	23	15	13	15	20	17	31	40	39	36	18	16	13	10	15	28	9	15	28	9	17	17	17	17	17	17	17	17

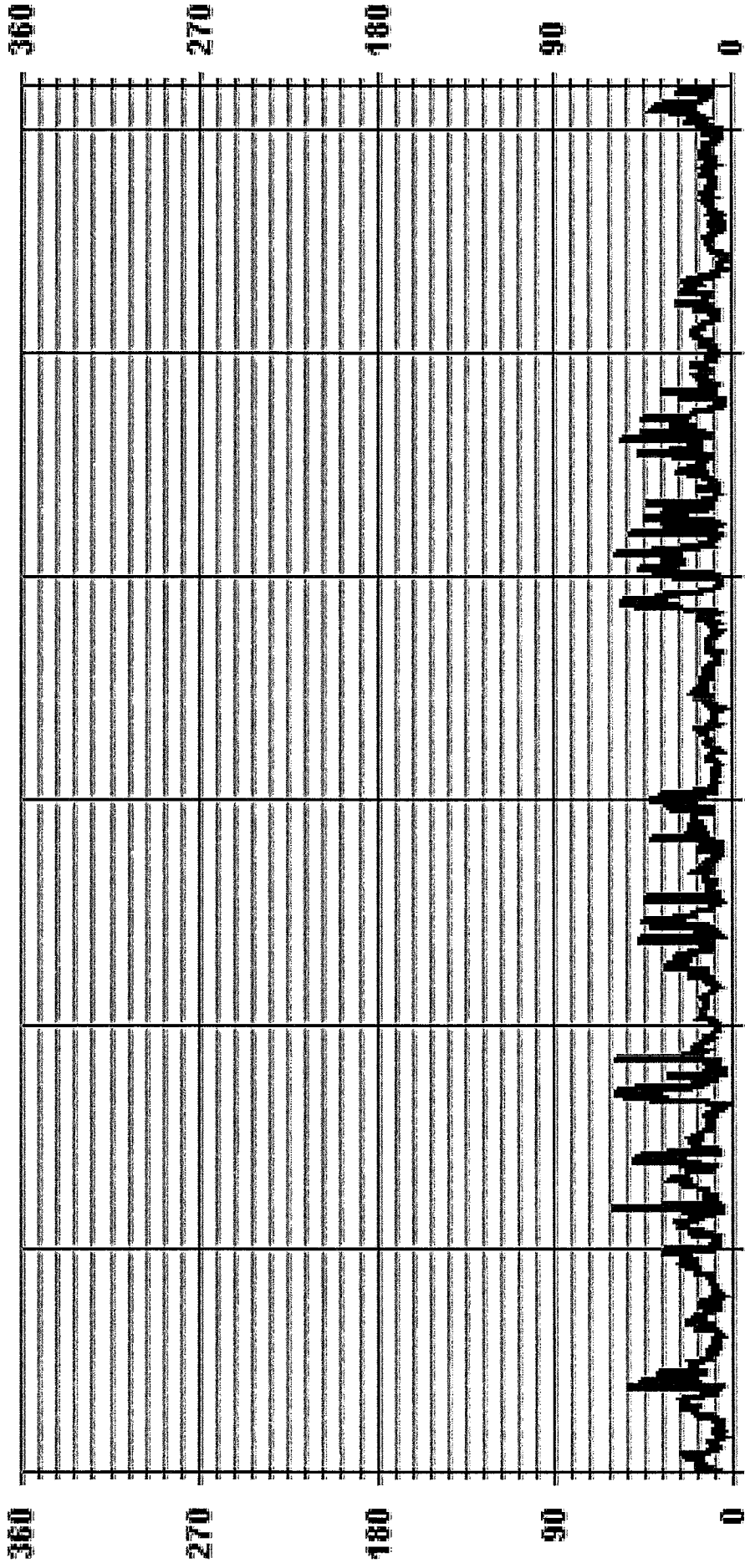
STATUS FLAG CODES

C	QUALITY ASSURANCE
O	RECOVERY
R	MAINTENANCE
S	MAINTENANCE
Y	MAINTENANCE
P	POWER FAILURE
G	OUT FOR REPAIR
	OPERATOR ERROR
	COLLECTION ERROR

LAST CALIBRATION: February 21, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 744 HRS

01 Hour Averages



— LICA35 STOWDIR DEG

APPENDIX II
NON-CONTINUOUS MONITORING DATA RESULTS

VOC RESULTS

Sample ID: 15070044-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/EP/July 5, 2015

Priority: Normal

Maxxam

VOC Sample Collection Data Sheet

Client: LICA
Location: Elk Point Airport
Station ID: LICA 35
Field Sample ID: LICA/VOC/EP/July 5, 2015

Sampler S/N: 6200
Canister ID: 1531
Canister Installation Date/Time: July 3, 2015 @ 12:22
Canister Removal Date/Time: July 7, 2015 @ 16:07

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 5, 2015	00:00	00:00
	July 5, 2015	July 6, 2015
		24.0

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	4.94	24

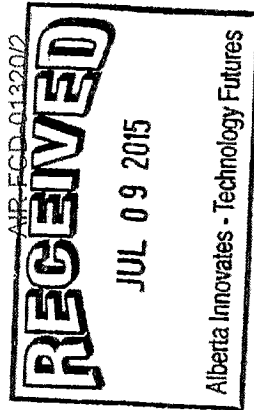
Canister Information	
Initial Canister Vacuum (inHg)	19.8
Final Canister Pressure (psig)	

Canister valve open prior to sampling?: YES / NO
Timer set to 0.00 minutes prior to sampling? YES / NO
Canister valve closed prior to disconnection?: YES / NO

Comments:

Technician Signature: _____
Sample in - by Alex Yakupov
Sample out by Alex Yakupov

Date: July 7, 2015



Volatile Organics Data Results

Date: JULY 5, 2015
Canister ID: 1531

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.01
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.09
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.10
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	0.05
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.05
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.02
Acetone	3.5
Acrolein	< 0.3
Benzene	0.29
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.11
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.61
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	0.7
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.23

Volatile Organics Data Results

Date: JULY 5, 2015
Canister ID: 1531

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	< 0.02
Freon-12	0.55
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.15
Isopentane	0.33
Isoprene	0.47
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.04
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.4
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.07
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.40
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.05
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.18
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15070216-002

Customer ID: LICA

Cust Samp ID: LICAVOC/EP/July 11,

AIR FCD-01320/2

Maxxam

VOC Sample Collection Data Sheet

Priority: Normal

Client: LICA Sampler S/N: 6200
 Location: Elk Point Airport Canister ID: 1516
 Station ID: LICA 35 Canister Installation Date/Time: July 7, 2015 @ 16:08
 Field Sample ID: LICA/VOC/EP/July 11, 2015 Canister Removal Date/Time: July 16, 2015 @ 13:46

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 11, 2015	00:00	00:00
	July 11, 2015	July 12, 2015
		24.0

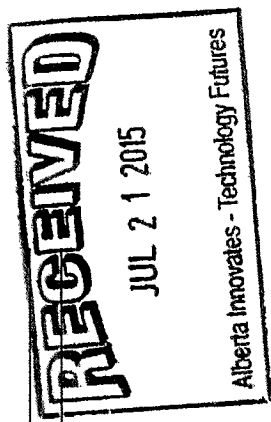
Flow Settings		
Meter Reading (scm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	4.94	24

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
28.8	18.0

Canister valve open prior to sampling?: YES ~~NO~~
 Timer set to 0.00 minutes prior to sampling? YES ~~NO~~
 Canister valve closed prior to disconnection?: YES ~~NO~~

Comments: _____

Technician Signature: Sample in - by Alex Yakushev
Sample out - by Alex Yakushev
 Date: July 16, 2015



Volatile Organics Data Results

Date: JULY 11, 2015
Canister ID: 1516

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.24
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.12
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.03
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	0.07
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.03
Acetone	11.7
Acrolein	0.8
Benzene	1.30
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.82
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	< 0.02
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.03
cis-2-Pentene	< 0.02
Cyclohexane	0.03
Cyclopentane	0.02
Dibromochloromethane	< 0.01
Ethanol	1.7
Ethyl acetate	< 0.4
Ethylbenzene	0.05
Freon-11	0.28

Volatile Organics Data Results

Date: JULY 11, 2015
Canister ID: 1516

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.02
Freon-12	< 0.02
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.03
Isopentane	0.49
Isoprene	2.41
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.08
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	1.4
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.06
Methylcyclopentane	0.05
Methylene chloride	< 0.3
n-Butane	1.16
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	0.02
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.01
o-Xylene	0.04
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.52
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15070304-001

Customer ID: LICA

Cust Samp ID: LICAVOC/EP/July 17,

Priority: Normal

Maxxam

VOC Sample Collection Data Sheet

Client: LICA

Location: Elk Point Airport

Station ID: LICA 35

Field Sample ID: LICA/VOC/EP/July 17, 2015

Sampler S/N: 6200

Canister ID: 135699

Canister Installation Date/Time: July 16, 2015 @ 13:47

Canister Removal Date/Time: July 22, 2015 @ 13:06

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 17, 2015	00:00	24:00
	July 17, 2015	July 18, 2015

Flow Settings	
Meter Reading (sccm)	Pump Pressure Setting (psig)
10.0	4.94
	24

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
28.0	18.8

1 psi
JAR

Canister valve open prior to sampling?: YES / NO
 Timer set to 0:00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection? YES / NO

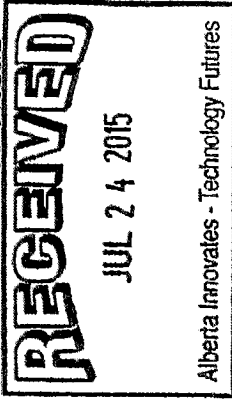
Comments:

Technician Signature:

Sample in - by Alex Yampov
Sample out - by Alex Yampov

Date: July 22, 2015

AIR FCD-01320/2



Volatile Organics Data Results

Date: JULY 17, 2015
Canister ID: 55629

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.05
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.02
Acetone	7.5
Acrolein	11.4
Benzene	0.15
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.39
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.77
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.03
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.2
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.28

Volatile Organics Data Results

Date: JULY 17, 2015
Canister ID: S5629

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.02
Freon-12	0.65
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.11
Isopentane	0.11
Isoprene	0.52
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.04
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.04
Methylcyclopentane	0.02
Methylene chloride	< 0.3
n-Butane	0.20
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.10
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.02
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15070377-003

Customer ID: LICA

Cust Samp ID: LICAVOC/EP/July 23,

Priority: Normal

Maxxam

VOC Sample Collection Data Sheet

Client: LICA

Location: Elk Point Airport

Station ID: LICA 35

Field Sample ID: LICA/VOC/EP/July 23, 2015

Sampler S/N: 6200

Canister ID: 2647

Canister Installation Date/Time: July 22, 2015 @ 13:08

Canister Removal Date/Time: July 28, 2015 @ 13:23

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 23, 2015	00:00	00:00
	July 23, 2015	July 24, 2015
		24.0

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	20.0

20psi
JMR

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	4.94	24

Canister valve open prior to sampling? YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection? YES / NO

Comments:

Technician Signature:

Sample in - by Alex Yampour
Sample out - by Alex Yampour

Date: July 28, 2015

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JUL 30 2015

Volatile Organics Data Results

Date: JULY 23, 2015
Canister ID: 2647

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.01
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.08
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.11
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	0.03
2-Methylpentane	0.40
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.34
Acetone	3.9
Acrolein	< 0.3
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.13
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	< 0.02
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.06
Cyclopentane	0.02
Dibromochloromethane	< 0.01
Ethanol	0.9
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.27

Volatile Organics Data Results

Date: JULY 23, 2015
Canister ID: 2647

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	< 0.02
Freon-12	0.63
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.46
Isopentane	0.37
Isoprene	0.53
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.04
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.09
Methylcyclopentane	0.60
Methylene chloride	0.4
n-Butane	0.59
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.05
n-Hexane	5.21
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.02
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.08
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15080014-003

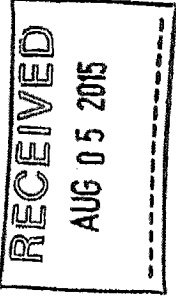
Customer ID: LICA

Cust Samp ID: LICA/VOC/EP/ July 29, 2015

AIR FCD-01320/2

Maxxam

VOC Sample Collection Data Sheet



Client: LICA
 Location: ELL Point Airport
 Station ID: LICA 35
 Field Sample ID: LICA/voc/EP/ July 29, 2015

Sampler SIN: 6200
 Canister ID: 35611
 Canister Installation Date/Time: July 28, 2015 @ 13:25
 Canister Removal Date/Time: July 31, 2015 @ 14:42

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 29, 2015	00:00	00:00
	July 29, 2015	July 30, 2015
		24.0

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	20.0

20psi
JMP

Flow Settings		
Meter Reading (scm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	4.94	24

Canister valve open prior to sampling?: YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection?: YES / NO

Comments:

Technician Signature: Sample in - by Alex Yankov
Sample out - by Alex Yankov

Date: July 31, 2015

Volatile Organics Data Results

Date: JULY 29, 2015
Canister ID: S5611

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.01
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.04
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.02
Acetone	3.5
Acrolein	< 0.3
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.03
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	< 0.02
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	0.01
Dibromochloromethane	< 0.01
Ethanol	0.6
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.29

Volatile Organics Data Results

Date: JULY 29, 2015
Canister ID: S5611

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	< 0.02
Freon-12	0.62
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.22
Isopentane	0.15
Isoprene	0.78
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.05
Methylcyclopentane	0.03
Methylene chloride	< 0.3
n-Butane	0.28
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.05
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.06
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

PAH RESULTS

Sample ID: 15070044-002

Customer ID: LICA

Cust Smp ID: LICAPUF/EP/July 5, 2015

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: TE 03
 Location: Elk Point Airport Motor S/N: 1139
 Station ID: LICA 35 Installation Date/Time: July 3, 2015 @ 12:27
 Field Sample ID: LICA/PUF/EP/July 5, 2015 Removal Date/Time: July 7, 2015 @ 15:53

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
July 5, 2015	00:00	00:00
	July 5, 2015	July 6, 2015
		24

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
NA	NA	NA	NA

Set Flow Rate (slpm): 230
 Date of Last Calibration: 20 - sept - 11

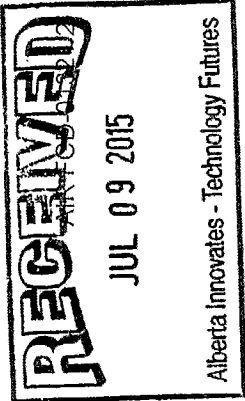
Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
711	229	13.50
		Volume (Vstd m ³)
		330.20

Time set correctly prior to sampling? YES NO
 Timer set correctly prior to sampling? YES NO
 Sampling data saved to memory card after sampling? YES NO

Comments:

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

Date: July 7, 2015



Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 5, 2015
PUF S/N: TE03

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.05
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.04
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.04
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.02
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.06
Fluorene	0.08
Indeno(1,2,3-cd)pyrene	0.03
Naphthalene	0.04
Perylene	0.04
Phenanthrene	0.36
Pyrene	0.04
Retene	0.59

Sample ID: 15070216-003

Customer ID: LICA

Cust Samp ID: LICAPUF/EP/July 11, 2015

AIR FCD-01321/2

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: TE-05
 Location: Elk Point Airport Motor S/N: 1139
 Station ID: LICA 35 Installation Date/Time: July 7, 2015 @ 15:54
 Field Sample ID: LICA/PUF/EP/July 11, 2015 Removal Date/Time: July 16, 2015 @ 13:41

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 11, 2015	00:00	00:00	24.0
	July 11, 2015	July 12, 2015	

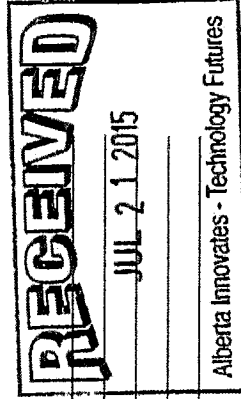
PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
NA	NA	NA	NA

Set Flow Rate (slpm): 230
 Date of Last Calibration: 22 - Sept - 11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
703	229	23.80
		Volume (Vstd m ³)
		330.22

Time set correctly prior to sampling? YES/NO
 Timer set correctly prior to sampling? YES/NO
 Sampling data saved to memory card after sampling? YES (NO)

Comments:



Technician Signature: _____
 Sample in - by Alex Yanyupov
 Sample out - by Alex Yanyupov

Date: July 16, 2015

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 11, 2015
PUF S/N: TE05

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.05
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.04
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.04
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.03
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.08
Fluorene	0.06
Indeno(1,2,3-cd)pyrene	0.07
Naphthalene	0.04
Perylene	0.05
Phenanthrene	0.80
Pyrene	0.04
Retene	1.17

Sample ID: 15070304-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/July 17, 2015

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA

Location: Elk Point Airport

Station ID: LICA 35

Field Sample ID: LICA/PUF/EP/July 17, 2015
A.Y.

Puf+ SIN: TE-08

Motor SIN: 1139

Installation Date/Time: July 16, 2015 @ 13:42

Removal Date/Time: July 22, 2015 @ 12:55

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 17, 2015	00:00	00:00	24.0
	July 17, 2015	July 18, 2015	

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
NA	NA	NA	NA

Set Flow Rate (slpm): 230

Date of Last Calibration: 22 - Sept - 11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
702	229	14.60
		Volume (Vstd m ³)
		330.20

Time set correctly prior to sampling? YES/NO

Timer set correctly prior to sampling? YES/NO

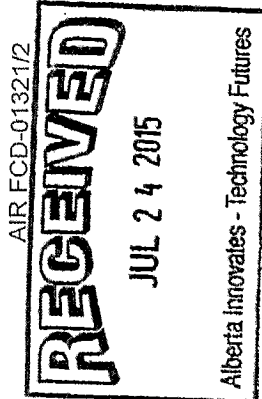
Sampling data saved to memory card after sampling? YES/NO

Comments:

Technician Signature:

Sample in - by Alex Yanespor
Sample out - by Alex Yanespor

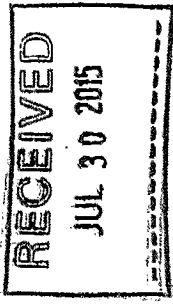
Date July 22, 2015



Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 17, 2015
PUF S/N: TE08

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.04
Fluorene	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.21
Pyrene	0.02
Retene	0.29



Sample ID: 15070377-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/July 23, 2015

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA
 Location: Elk Point Airport
 Station ID: LICA 35
 Field Sample ID: LICA/PUF/EP/July 23, 2015

Puf+ SIN: TE-04
 Motor SIN: 1139
 Installation Date/Time: July 22, 2015 @ 12:56
 Removal Date/Time: July 28, 2015 @ 13:45

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 23, 2015	00:00	00:00	24.0
	July 23, 2015	July 24, 2015	

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
NA	NA	NA	NA

Set Flow Rate (slpm): 230

Date of Last Calibration: 22 Sept - 11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
702	229	14.6°
		Volume (Vstd m ³)
		330.20

Time set correctly prior to sampling? YES / NO
 Timer set correctly prior to sampling? YES / NO
 Sampling data saved to memory card after sampling? YES NO

Comments:

Technician Signature: Sample in- by Alex Yampor
Sample out- by Alex Yampor
 Date: July 28, 2015

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 23, 2015
PUF S/N: TE04

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.05
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.01
Fluorene	0.02
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.09
Pyrene	0.01
Retene	< 0.01

Sample ID: 15080014-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/ July 29, 2015

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA

Location: Elk Point Airport

Station ID: LICA 35

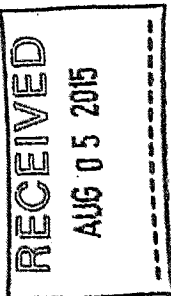
Field Sample ID: LICA/PUF/EP/ July 19, 2015

Puf+ S/N: 9702

Motor S/N: 1139

Installation Date/Time: July 28, 2015 @ 13:46

Removal Date/Time: July 31, 2015 @ 14:37



Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 29, 2015	00:00	July 30, 2015	24.0

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
NA	NA	NA	NA

Set Flow Rate (slpm): 230

Date of Last Calibration: 22. sept. 11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
708	229	17.4
		Volume (Vstd m ³)
		330.19

Time set correctly prior to sampling? YES / NO
 Timer set correctly prior to sampling? YES / NO
 Sampling data saved to memory card after sampling? YES NO

Comments: No form for a "green tag" provided.

Technician Signature: _____

Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

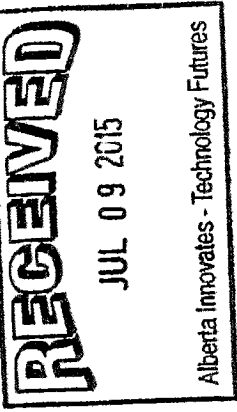
Date: July 31, 2015

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JULY 29, 2015
PUF S/N: 9702

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.04
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.01
Fluorene	0.02
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.08
Pyrene	0.02
Retene	0.01

NMHC CANISTER RESULTS



Sample ID: 15070044-003

Customer ID: LICA
Cust Samp ID: LICAVOC/EP/July 4, 2015
Priority: Normal

Maxxam Analytics Inc.

Canister Collection Data Sheet

Client: LICA
Location: ELK Point Airport
Station ID: Lica 35
Field Sample ID: LICAVOC/ELK 1 July 04, 2015
Canister ID: H 2802
Canister Installation Date/Time: July 3, 2015 (MST) @ 11:51
Canister Removal Date/Time: July 6, 2015 (MST) @ 16:26

Date and Time Information
Sample Date and time (MST)
<u>July 04, 2015 @ 07:20 am</u>

Canister Information	
Initial Canister Vacuum (inHg)	<u>-28.0</u>
Final Canister Pressure (psig)	<u>-0.4</u>

A.Y.

Canister valve open after to connection? YES

Canister valve closed prior to disconnection? YES

Comments: NMHC - canister

Technician Signature: Sample in - by Alex Yakupov
Sample out by Alex Yakupov
Date: July 6, 2015

Volatile Organics Data Results (NMHC Canister System)

Date: JULY 4, 2015
Canister ID: H2802

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.9
1,2,4-Trimethylbenzene	0.09
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	< 0.01
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.06
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	0.17
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.50
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.23
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.42
2,4-Dimethylpentane	0.19
2-Methylheptane	0.05
2-Methylhexane	< 0.01
2-Methylpentane	0.17
3-Methylheptane	< 0.02
3-Methylhexane	0.19
3-Methylpentane	0.07
Acetone	8.0
Acrolein	1.6
Benzene	1.70
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.89
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.13
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	3.0
Ethyl acetate	< 0.4
Ethylbenzene	0.20
Freon-11	0.26

Volatile Organics Data Results (NMHC Canister System)

Date: JULY 4, 2015
Canister ID: H2802

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.02
Freon-12	0.37
Hexachloro-1,3-butadiene	< 0.54
Isobutane	0.23
Isopentane	1.17
Isoprene	1.55
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.36
m-Diethylbenzene	< 0.04
m-Ethyltoluene	0.13
Methyl butyl ketone	< 0.54
Methyl ethyl ketone	1.1
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.08
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.30
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.94
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.40
n-Hexane	< 0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.05
o-Xylene	0.14
p-Diethylbenzene	0.05
p-Ethyltoluene	< 0.08
Styrene	0.37
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	1.61
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	0.05
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15070216-001

AIR FCD-01320/2

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/July 11, 2015

Maxxam

VOC Sample Collection Data Sheet

Client: LICA
 Location: Elk Point Airport
 Station ID: LICA 35
 Field Sample ID: LICA/VOC/ELK/July 11, 2015

Sampler SIN: 1/9
 Canister ID: 2660
 Canister Installation Date/Time: July 6, 2015 @ 16:28
 Canister Removal Date/Time: July 16, 2015 @ 12:57

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
July 11, 2015	00:55	n/a	n/a

Flow Settings		
Meter Reading (scm)	Pot Set Pt	Pump Pressure Setting (psig)
n/a	n/a	1/9

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
28.0	0.0

Canister valve open prior to sampling?: YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO - n/a
 Canister valve closed prior to disconnection?: YES / NO

Comments: NMHC - canister

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Technician Signature: _____
Sample in - by Alex Yanupor
Sample out - by Alex Yanupor
 Date: July 16, 2015

Volatile Organics Data Results (NMHC Canister System)

Date: JULY 11, 2015
Canister ID: 2660

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.9
1,2,4-Trimethylbenzene	0.06
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.03
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.45
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.05
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.18
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.03
2-Methylhexane	< 0.01
2-Methylpentane	0.11
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.04
Acetone	14.3
Acrolein	1.6
Benzene	2.62
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	< 0.02
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.06
Cyclopentane	0.03
Dibromochloromethane	< 0.01
Ethanol	3.5
Ethyl acetate	< 0.4
Ethylbenzene	0.16
Freon-11	0.28


Volatile Organics Data Results (NMHC Canister System)

Date: JULY 11, 2015
Canister ID: 2660

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.02
Freon-12	0.58
Hexachloro-1,3-butadiene	< 0.54
Isobutane	0.32
Isopentane	1.27
Isoprene	1.93
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.23
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.09
Methyl butyl ketone	< 0.54
Methyl ethyl ketone	2.2
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.08
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.08
Methylcyclopentane	0.05
Methylene chloride	< 0.3
n-Butane	1.03
n-Decane	< 0.07
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	0.07
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.04
o-Xylene	0.12
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.08
Styrene	0.25
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	1.60
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.05
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

APPENDIX III
ANALYZER CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E SO2 Analyzer Calibration

Date: 6-Jul-15

Company: LICA

Station Name/Location: Elk Point

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 11:29 - 15:53

Calibration Purpose: Monthly

Converter Make & Model: na

Converter Serial #: na

Cal Gas Expiry Date: 12-Mar-19

Analyzer:

Serial Number: 722

Last Calibration Date: 11-Jun-15

Previous Cal High Point C.F.: 0.998

Range ppb: 1000

As Found C.F.: 0.988

New C.F.: 0.997

As found:

SLOPE: 1.006

OFFSET: 52.8

HVPS: 579

RCELL TEMP: 50.0

BOX TEMP: 29.5

PMT TEMP: 8.2

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 27.6

SAMP FL: 583

PMT: 78.6

NORM PMT: 50.2

UV LAMP: 2022.4

LAMP RATIO: 92.3

STR. LGT: 26.6

DRK PMT: 33.2

DRK LMP: 2.4

Internal Span: 283

As left:

SLOPE: 0.990

OFFSET: 49.8

HVPS: 579

RCELL TEMP: 50.0

BOX TEMP: 29.1

PMT TEMP: 8.2

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 27.6

SAMP FL: 582

PMT: 77.6

NORM PMT: 50.8

UV LAMP: 2019.8

LAMP RATIO: 92.2

STR. LGT: 24.6

DRK PMT: 32.9

DRK LMP: 2.4

Internal Span: 277.2

Callibrator:

Flow Meter ID's: na

Make & Model: SABIO 2010 D

Serial #: 11900613

Cal Gas Cylinder I.D. #: BLM002073

Cal Gas Conc. (ppm): 49.5

Callibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5013	0	5013
high	4938	77	5015
mid	4976	38	5014
low	4994	19	5013

Callibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5013	0.0	5013	0	-2.0	NA
adjusted zero	5013	0.0	5013	0	0.0	NA
as found high	4938	77.20	5015	762.0	771.0	0.988
adjusted high	4938	77.20	5015	762.0	762.0	1.000
mid	4976	37.70	5014	372.2	373.0	0.998
low	4994	18.90	5013	186.6	188.0	0.993
callibrator zero	5013	0.00	5013	0	0.0	NA
Average C.F.=						0.997

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>1.001</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>-0.07%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0.97%</u>	± 3% F.S.	PASS
		± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

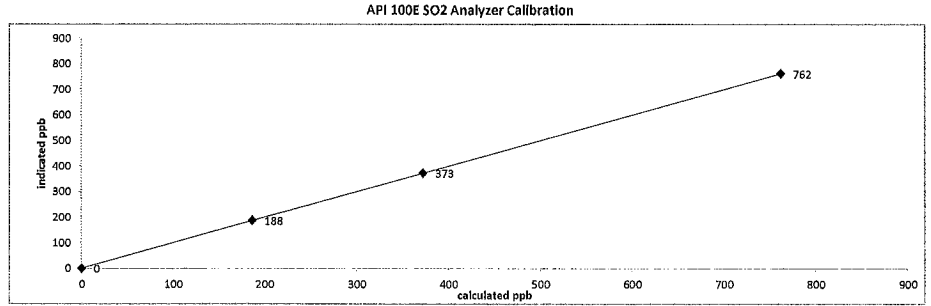
run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: NA Time gas run (mst): NA

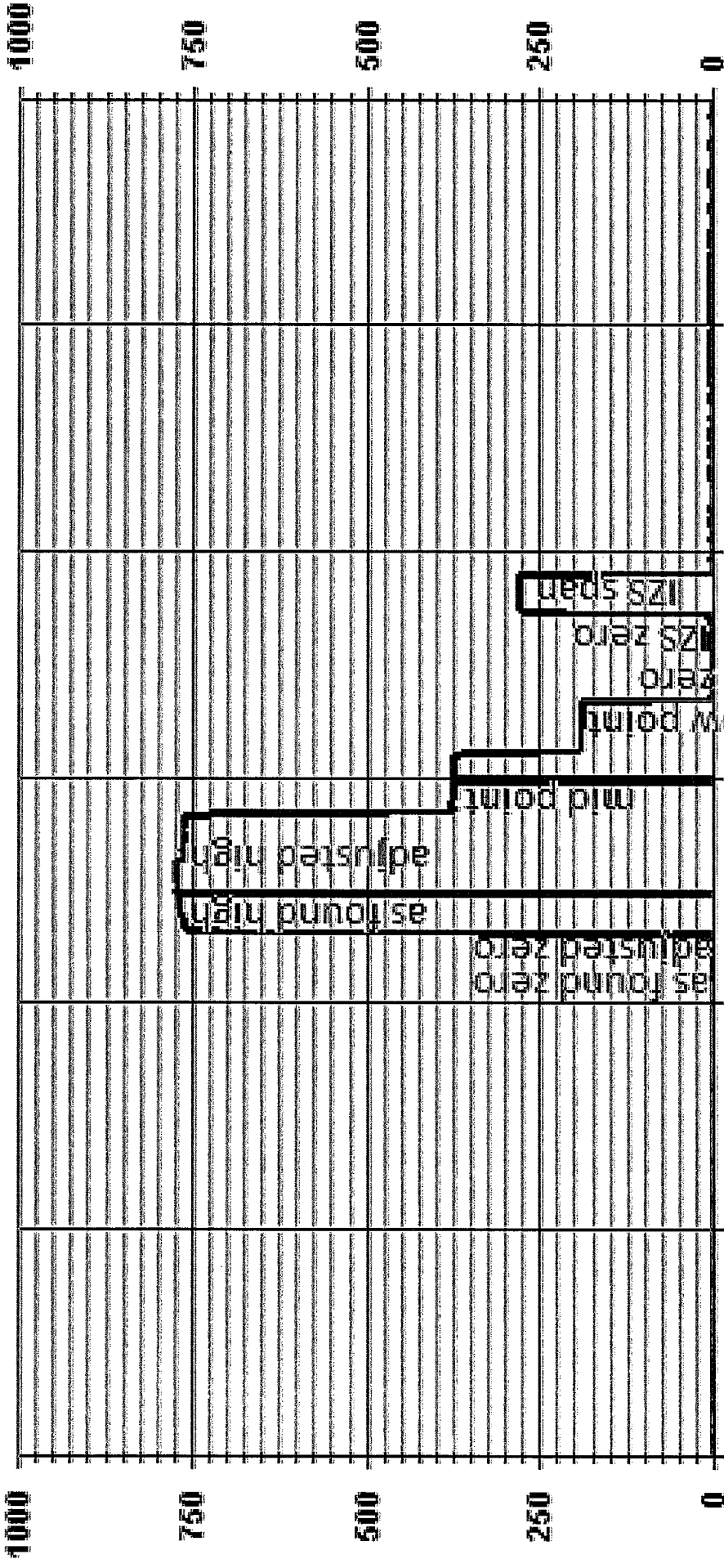
Zero corrected analyzer response: NA

Comments:

Filter Changed.

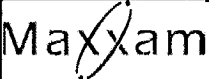


01 Minute Averages



07:06/15 08:00 07:06/15 10:00 07:06/15 12:00 07:06/15 14:00 07:06/15 16:00 07:06/15 18:00

— LICA35 SO2_ PPB



API 100E SO2 Analyzer Calibration

Date: 24-Jul-15

Company: LICA

Station Name/Location: Elk Point

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 10:19 - 12:50

Calibration Purpose: Removal

Converter Make & Model: na

Converter Serial #: na

Cal Gas Expiry Date: 12-Mar-19

Analyzer:

Serial Number: 722

Last Calibration Date: 6-Jul-15

Previous Cal High Point C.F.: 1.000

Range ppb: 1000

As Found C.F.: 1.025

New C.F.: NA

As found:

SLOPE: 0.990

OFFSET: 49.8

HVPS: 579

RCELL TEMP: 50.0

BOX TEMP: 25.3

PMT TEMP: 8.2

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 27.3

SAMP FL: 581

PMT: 70.2

NORM PMT: 53.2

UV LAMP: 1910.6

LAMP RATIO: 87.2

STR. LGT: 24.6

DRK PMT: 26.1

DRK LMP: 2.5

Internal Span: 277.2

As left:

SLOPE: NA

OFFSET: NA

HVPS: NA

RCELL TEMP: NA

BOX TEMP: NA

PMT TEMP: NA

IZS TEMP: NA

TEST: NA

STABIL: NA

PRES: NA

SAMP FL: NA

PMT: NA

NORM PMT: NA

UV LAMP: NA

LAMP RATIO: NA

STR. LGT: NA

DRK PMT: NA

DRK LMP: NA

Internal Span: NA

Calibrator:

Flow Meter ID's: na

Make & Model: API 700

Serial #: 830

Cal Gas Cylinder I.D. #: BLM002073

Cal Gas Conc. (ppm): 49.5

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4920	79	4999
mid	4960	39	4999
low	4980	19	4999

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	4999	0.0	4999	0	0.0	NA
as found high	4920	78.80	4999	780.3	761.0	1.025
mid	4957	38.30	4995	379.5	369.0	1.029
low	4978	19.20	4997	190.2	184.0	1.034
Average C.F. =						1.029

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS	Pass/Fail ?
Slope = <u>1.025</u>	> or = 0.995	PASS
b (Intercept as % of full scale) = <u>0.09%</u>	0.85-1.15	PASS
% change in C.F. from last cal = <u>-2.54%</u>	± 3% F.S.	PASS
	± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

****run converter efficiency test immediately following zero adjust****

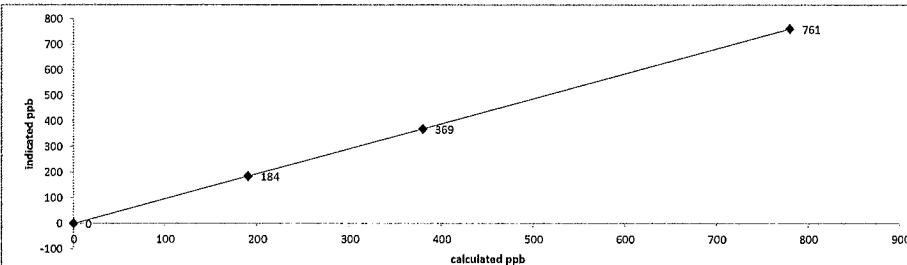
SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

Comments:

Removal calibration performed to exchange the analyzer for an SO2 analyzer (a client's analyzer, which was repaired)

API 100E SO2 Analyzer Calibration



The graph plots 'Indicated ppb' on the y-axis (ranging from -100 to 800) against 'calculated ppb' on the x-axis (ranging from 0 to 900). A linear regression line is drawn through four data points: (0, 0), (184, 184), (369, 369), and (761, 761). The points are labeled with their respective values.

Maxxam API 100E SO2 Analyzer Calibration

Date: 24-Jul-15
 Company: LICA
 Station Name/Location: Elk Point
 Performed by: Alex Yakupov
 Application H₂S/TRS/SO₂: SO₂

Start/End Time (mst): 13:21 - 20:10
 Calibration Purpose: Installation
 Converter Make & Model: NA
 Converter Serial #: NA
 Cal Gas Expiry Date: 12-Mar-19

Analyzer:
 Serial Number: 467
 Last Calibration Date: 24-Jul-15
 Previous Cal High Point C.F.: NA

Range ppb: 1000
 As Found C.F.: NA
 New C.F.: 0.999

As found:		As left:	
SLOPE:	NA	SLOPE:	1.076
OFFSET:	NA	OFFSET:	109.5
HVPS:	NA	HVPS:	512
RCELL TEMP:	NA	RCELL TEMP:	50.0
BOX TEMP:	NA	BOX TEMP:	32.7
PMT TEMP:	NA	PMT TEMP:	8.1
IZS TEMP:	NA	IZS TEMP:	45.0
TEST:	NA	TEST:	NA
STABIL:	NA	STABIL:	0.1
PRES:	NA	PRES:	24.4
SAMP FL:	NA	SAMP FL:	620
PMT:	NA	PMT:	130.0
NORM PMT:	NA	NORM PMT:	110.6
UV LAMP:	NA	UV LAMP:	3024.2
LAMP RATIO:	NA	LAMP RATIO:	100.6
STR. LGT:	NA	STR. LGT:	58.9
DRK PMT:	NA	DRK PMT:	38.0
DRK LMP:	NA	DRK LMP:	3.1
Internal Span:	NA	Internal Span:	287.2

Calibrator:

Flow Meter ID's:	NA	Calibrator Flow Targets:			
Make & Model:	API 700	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
Serial #:	830	zero	5000	0	5000
Cal Gas Cylinder I.D. #:	BLM002073	high	4922	78	5000
Cal Gas Conc. (ppm):	49.5	mid	4960	39	4999
		low	4980	19	4999

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	4999	0.0	4999	0	2.0	NA
adjusted high	4922	78.80	5001	780.0	783.0	0.999
mid	4958	38.30	4996	379.5	382.0	0.999
low	4978	19.20	4997	190.2	192.0	1.001
calibrator zero	4999	0.00	4999	0	2.0	NA
Average C.F. =						0.999

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	Pass/Fail ?
Slope =	0.999	> or = 0.995	PASS
b (Intercept as % of full scale) =	-0.18%	0.85-1.15	PASS
% change in C.F. from last cal	NA	± 3% F.S.	PASS
		± 15%	NA

Converter Efficiency Check for H₂S/TRS application:

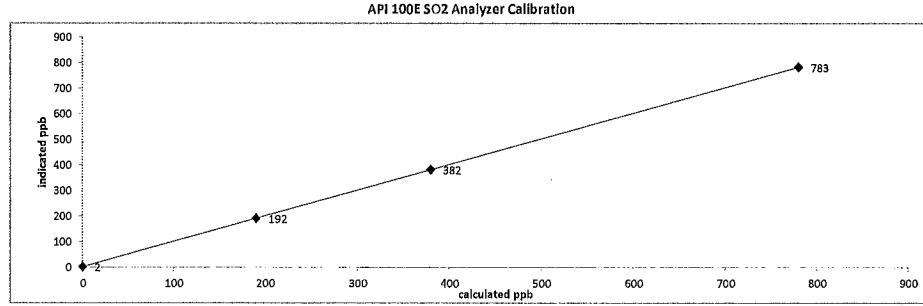
****run converter efficiency test immediately following zero adjust****

SO₂ High Point gas concentration: NA Time gas run (mst): NA

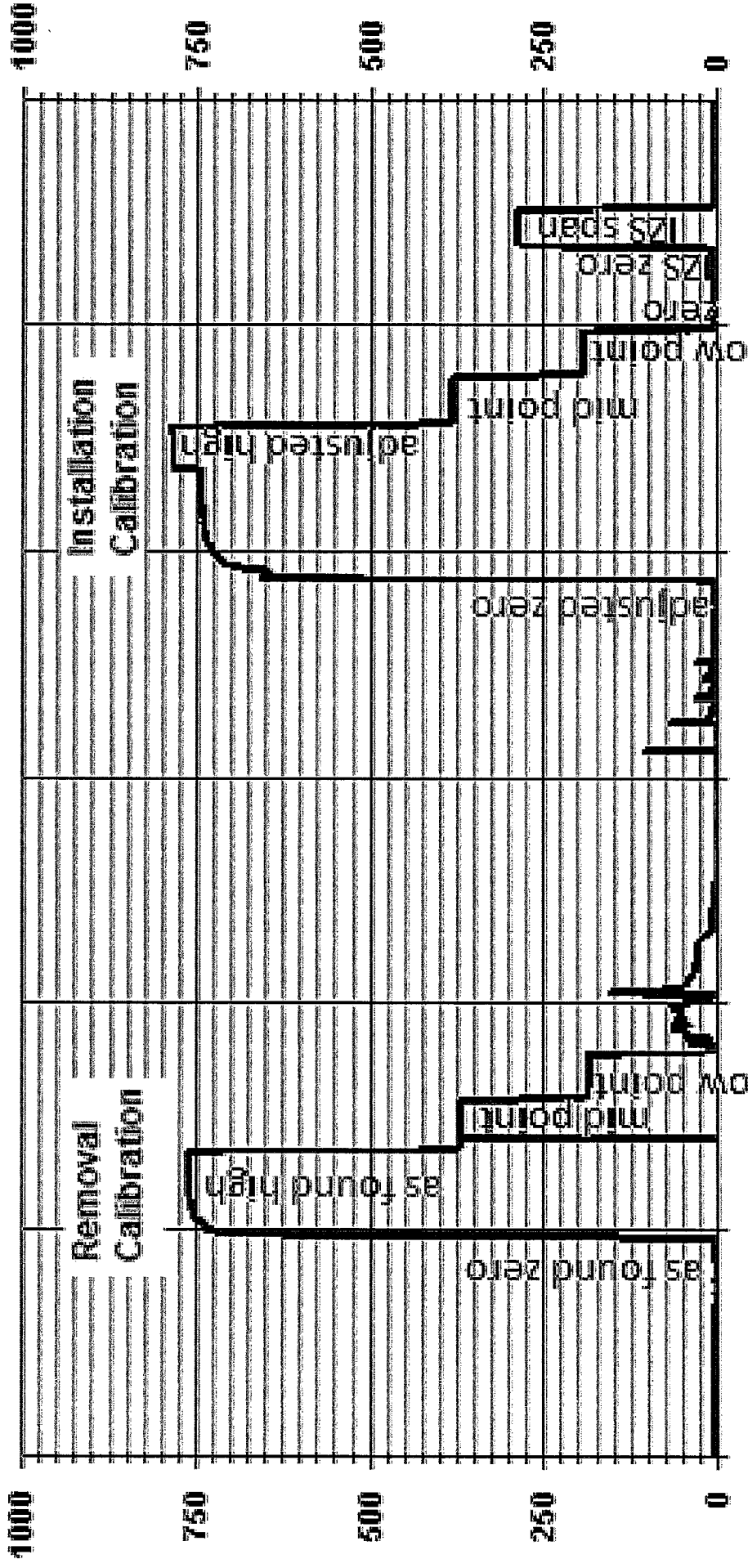
Zero corrected analyzer response: NA

Comments:

Sample filter changed. Analog output voltage adjusted/calibrated



01 Minute Averages



— LICA35 SO2_ PPB

API 100E SO2 Analyzer Calibration

Date: 28-Jul-15

Company: LICA

Station Name/Location: Elk Point

Performed by: Limin Li

Application H₂S/TRS/SO₂: SO2

Start/End Time (mst): 08:30-14:30

Calibration Purpose: Maintenance

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 25-Dec-18

Analyzer:

Serial Number: 467

Last Calibration Date: 24-Jul-15

Previous Cal High Point C.F.: 1.000

Range ppb: 1000

As Found C.F.: 0.982

New C.F.: 0.999

As found:

SLOPE: 1.076

OFFSET: 109.5

HVPS: 512

RCELL TEMP: 50.0

BOX TEMP: 32.7

PMT TEMP: 8.1

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 24.4

SAMP FL: 620

PMT: 130.0

NORM PMT: 110.6

UV LAMP: 3024.2

LAMP RATIO: 100.6

STR. LGT: 58.9

DRK PMT: 38.0

DRK LMP: 3.1

Internal Span: 287.2

As left:

SLOPE: 1.091

OFFSET: 112.5

HVPS: 512

RCELL TEMP: 50.0

BOX TEMP: 32.7

PMT TEMP: 8.1

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 24.4

SAMP FL: 620

PMT: 130.0

NORM PMT: 110.6

UV LAMP: 3024.2

LAMP RATIO: 100.6

STR. LGT: 58.9

DRK PMT: 38.0

DRK LMP: 3.1

Internal Span: 287.2

Calibrator:

Flow Meter ID's: NA

Make & Model: API 700

Serial #: 829

Cal Gas Cylinder I.D. #: BLM002756T

Cal Gas Conc. (ppm): 49.9

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4922	78	5000
mid	4962	38	5000
low	4981	19	5000

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	4998	0.0	4998	0	0.0	NA
adjusted zero	4998	0.0	4998	0	0.0	NA
as found high	4921	78.10	4999	779.6	794.0	0.982
adjusted high	4921	78.10	4999	779.6	780.0	1.000
mid	4963	38.00	5001	379.2	379.0	1.000
low	4979	19.00	4998	189.7	190.0	0.998
calibrator zero	4999	0.00	4999	0	0.0	NA
Average C.F. =						0.999

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS	Pass/Fail ?
Slope = <u>1.000</u>	> or = 0.995	PASS
b (Intercept as % of full scale) = <u>0.00%</u>	0.85-1.15	PASS
% change in C.F. from last cal = <u>1.82%</u>	± 3% F.S.	PASS
	± 15%	NA

Converter Efficiency Check for H₂S/TRS application:

****run converter efficiency test immediately following zero adjust****

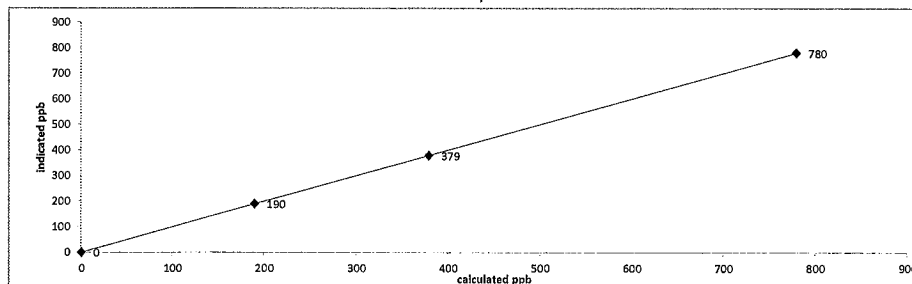
SO₂ High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

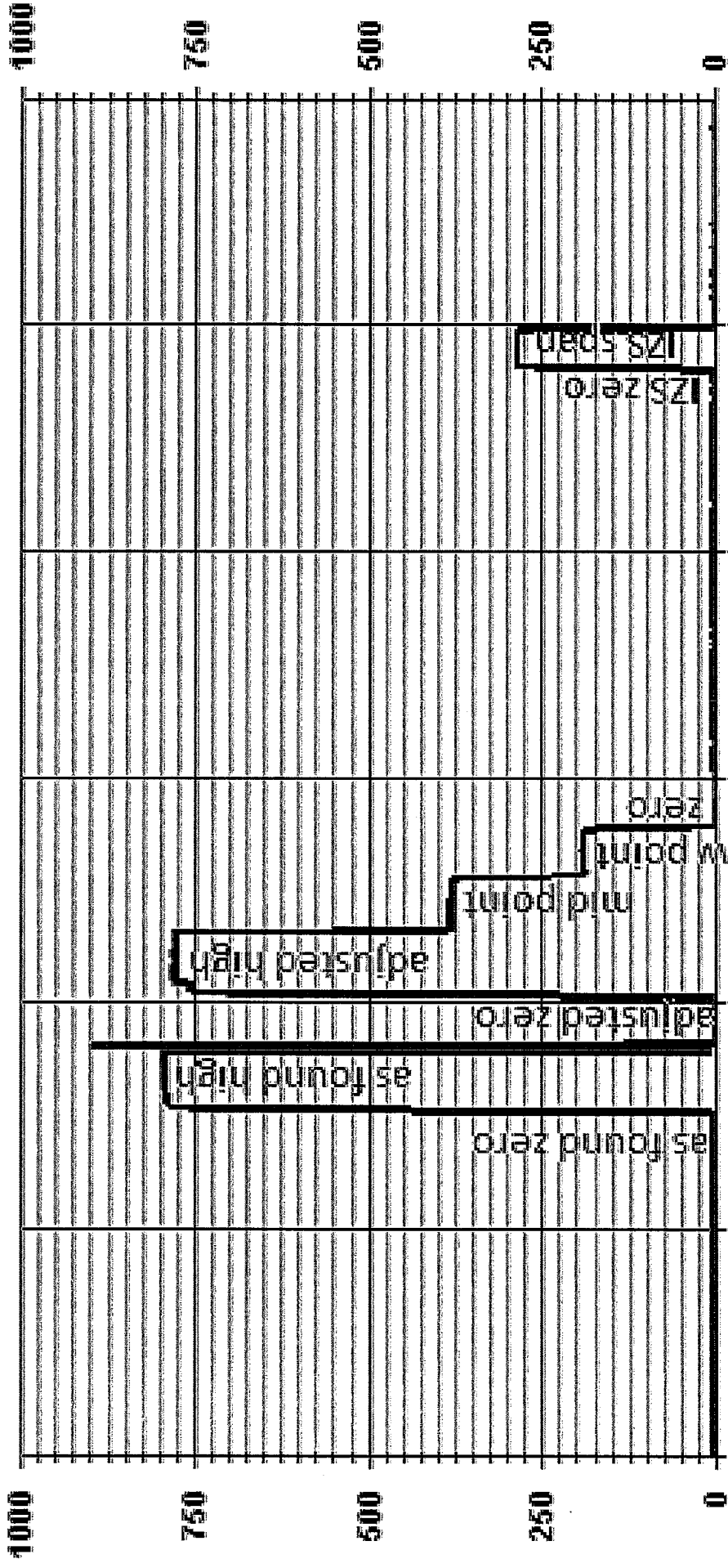
Comments:

Perform as founds, adjust analog outputs so analyzer has a better match with the logger, then calibrate.

API 100E SO2 Analyzer Calibration



01 Minute Averages



07/28/15 07:00 07/28/15 09:00 07/28/15 11:00 07/28/15 13:00 07/28/15 15:00 07/28/15 17:00

— LICA35 SO2_ PPB

HYDROGEN SULPHIDE

Maxxam

API 101E H2S Analyzer Calibration

Date: 6-Jul-15

Company: LICA

Station Name/Location: Elk Point

Performed by: Alex Yakupov

Application H₂S/TRS/SO₂: H2S

Start/End Time (mst): 11:29 - 15:47

Calibration Purpose: Monthly

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 15-Jul-17

Analyzer:

Serial Number: 510

Last Calibration Date: 11-Jun-15

Previous Cal High Point C.F.: 1.001

Range ppb: 100

As Found C.F.: 1.007

New C.F.: 0.999

As found:

SLOPE: 1.207

OFFSET: 27.2

HVPS: 526

RCELL TEMP: 50.0

BOX TEMP: 34.2

PMT TEMP: 8.3

I2S TEMP: 45.0

TEST: NA

STABIL: 0.0

PRES: 22.4

SAMP FL: 579

PMT: 57.3

NORM PMT: 27.2

UV LAMP: 3099.8

LAMP RATIO: 97.7

STR. LGT: 16.6

DRK PMT: 36.8

DRK LMP: -1.9

Internal Span: 53.64

As left:

SLOPE: 1.185

OFFSET: 26.5

HVPS: 526

RCELL TEMP: 50.0

BOX TEMP: 34.4

PMT TEMP: 8.3

I2S TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 22.3

SAMP FL: 577

PMT: 56.1

NORM PMT: 28.3

UV LAMP: 3097.7

LAMP RATIO: 97.6

STR. LGT: 15.7

DRK PMT: 36.1

DRK LMP: -1.9

Internal Span: 53.14

Calibrator:

Flow Meter ID's: na

Make & Model: API 700

Serial #: 830

Cal Gas Cylinder I.D. #: LL36837

Cal Gas Conc. (ppm): 10.0

Calibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	5000	39	5039
mid	5000	19	5019
low	5000	11	5011

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5000	0.0	5000	0	-0.7	NA
adjusted zero	5000	0.0	5000	0	0.0	NA
as found high	4958	39.00	4997	78.0	77.5	1.007
adjusted high	4958	39.00	4997	78.0	78.0	1.001
mid	4980	19.00	4999	38.0	38.1	0.998
low	4990	11.00	5001	22.0	22.0	1.000
calibrator zero	5000	0.00	5000	0	0.0	NA
Average C.F.=						0.999

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>1.000</u>	> or = 0.995	PASS
b (Intercept as % of full scale)=	<u>-0.02%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-0.61%</u>	± 3% F.S.	PASS
		± 15%	PASS

Converter Efficiency Check for H₂S/TRS application:

run converter efficiency test immediately following zero adjust

SO₂ High Point gas concentration: 20 ppb Time gas run (mst): 12:28 - 12:35

Zero corrected analyzer response: 0.3 ppb

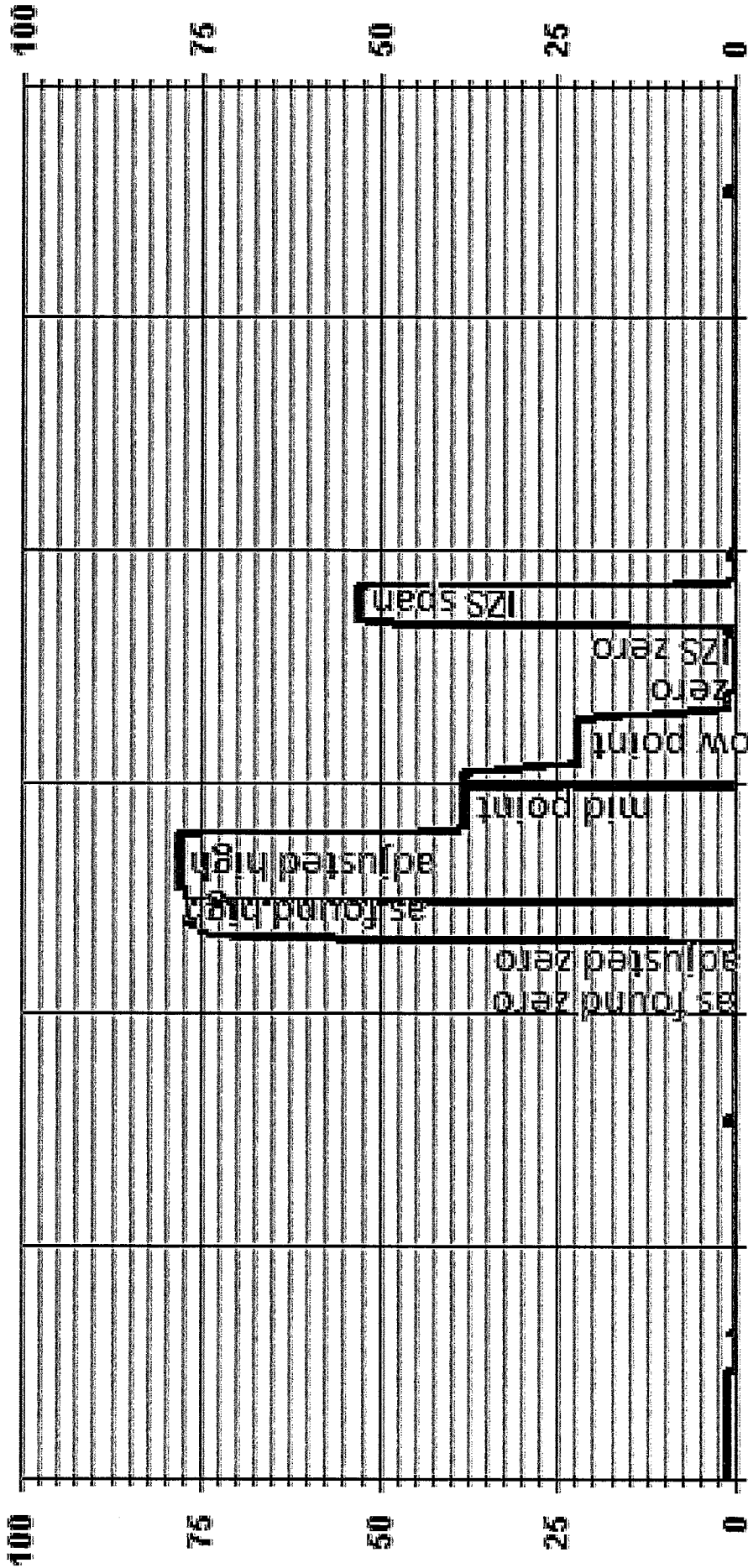
Comments:

Filter changed.

API 101E H2S Analyzer Calibration

Calculated Concentration (ppb)	Indicated Concentration (ppb)
0	0
22	22
38.1	38.1
78	78

01 Minute Averages



07/06/15 08:00 07/06/15 10:00 07/06/15 12:00 07/06/15 14:00 07/06/15 16:00 07/06/15 18:00

— LICA35 H2S_ PPB

TOTAL HYDROCARBON

Thermo 55I Methane/Non-Methane Analyzer Calibration

Date: 7-Jul-15

Company: LICA

Station Name: Elk Point

Performed by: Alex Yakupov

Start Time (mst): 10:24

End Time (mst): 14:09

Calibration Purpose: monthly

Cal Gas Expiry Date: 26-Mar-17

Analyzer & Diagnostics:

Serial Number: 1236656107

Last Calibration Date: 12-Jun-15

As found C.F.

CH₄= 1.011

NMHC= 1.014

THC= 0.996

Previous Cal High Point C.F.

CH₄= 1.001

NMHC= 1.003

THC= 0.996

Analyzer Range

CH₄= 20

NMHC= 20

THC= 40

Mother Board Voltages:

3.3: 3.3

5.0: 4.9

15.0: 14.9

24.0: 24.0

-3.3: -3.2

Interface Board Voltages:

3.3: 3.3

5.0: 5.0

15.0: 15.0

24.0: 23.6

-15.0: -15.1

Bias Supply: -293.2

Temperatures:

Detector Oven: 175.0

Filter: 175.0

Column Oven: 75.0

Flame: 379.1

Internal: 34.2

Pressures cylinder/reg.:

Carrier: 1500 | 50

Fuel: 400 | 45.0

Air: 45 | 32.2

FID Status:

Status: LIT

Counts: 24480

Flame: 376.4

Det Base: 175.0

Flame and Power Stats:

Last Power On: May 05 2015 @ 05:38

Flameouts: 40

Det Oven at Start: 170.1

Col Oven at Start: 74.5

Calibration History>1:

Time: June 12, 2015

Type: SPAN

Status: Good

Check/Adjust: Adjust

CH₄ Span Conc: 15.53

Calibration History cnt'd>1:

CH₄ SP Ratio: 0.000713

CH₄ RT: 12.2

CH₄ PK IDX: 21

CH₄ PK HT: 21775

NM Span Conc: 14.34

NM SP Ratio: 0.000153

NM Peak Area: 93631

Date: July 07, 2015

Time: 12:25

CH₄ PK HT: 0

CH₄ RT: 12.2

CH₄ Baseline: 1802

CH₄ LOD: 56

CH₄ SD: 18

CH₄ CONC: 0.00

NM PK HT: 0

NM Peak Area: 0

NM CONC: 0

NM Base Start: 1740

NM Base End: 1759

NM LOD: 16

NM Start IDX: 16

NM End IDX: 47

NM Max Slope: 7.6e-01

NM Min Slope: -7.1e-01

NM PT Count: 0

Previous CH₄: 9.19

Previous NMHC: 13.9

Previous THC: 23.11

New CH₄: 9.78

New NMHC: 14.04

New THC: 23.85

Daily Zero/Span Values:

Calibrator and Gas Information:

Make & Model: API 700

Serial #: 830

Cal Gas Cylinder I.D. #: IL33674

CH₄ Cylinder Conc.= 601.4 | 202.0 =C₃H₈ Cylinder Conc.

CH₄ as C₃H₈= 555.5 | 1156.9 =total CH₄ equivalent

Calibrator Flow Targets: (cc/min):

point	diluent	cal gas	total flow
zero	2000	0	2000
high	2000	53	2053
mid	2000	25	2025
low	2000	12	2012

Calibration Data:

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
20 min as found zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
20 min as found high point	2000	53.00	2053	15.53	14.34	29.87	15.35	14.15	30.00	1.011	1.014	0.996
20 min adjusted high	2000	53.00	2053	15.53	14.34	29.87	15.56	14.36	30.00	0.998	0.999	0.996
20 min mid	2000	25.00	2025	7.42	6.86	14.28	7.47	6.95	14.00	0.994	0.987	1.020
20 min low	2000	12.00	2012	3.59	3.31	6.90	3.62	3.40	7.00	0.991	0.974	0.986
20 min callibrator zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
Average C.F.=										0.994	0.987	1.000

Linear Regression/Calibration Results:

	CH ₄	NMHC	THC
Correlation Coefficient=	1.000	1.000	1.000
Slope=	1.002	1.000	1.003
b (Intercept as % of full scale)=	0.08%	0.25%	-0.11%
% change in C.F. from last cal=	-1.03%	1.04%	-0.05%

LIMITS

> or = 0.995

0.85-1.15

± 3% F.S.

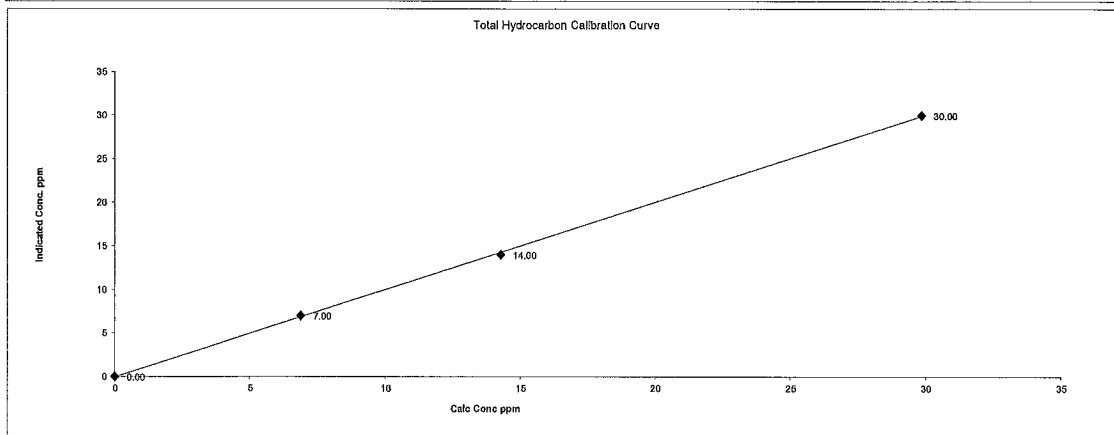
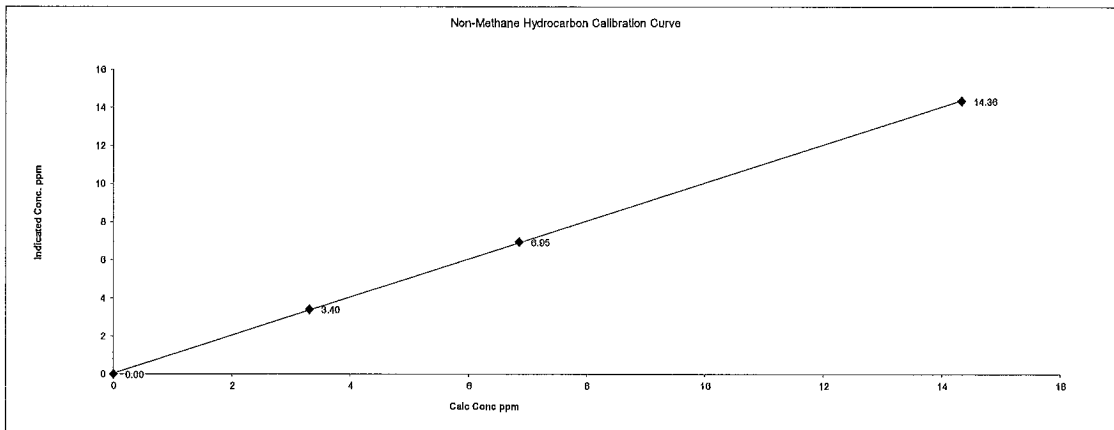
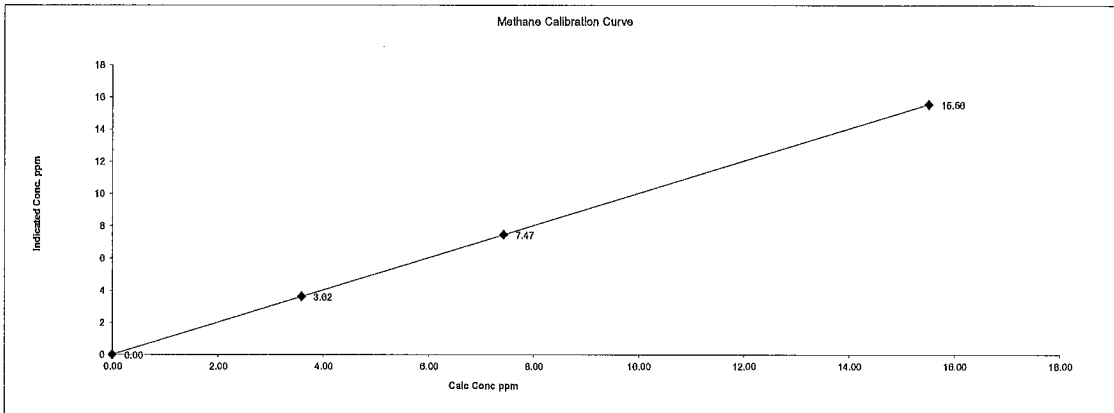
+/-15%

Comments:

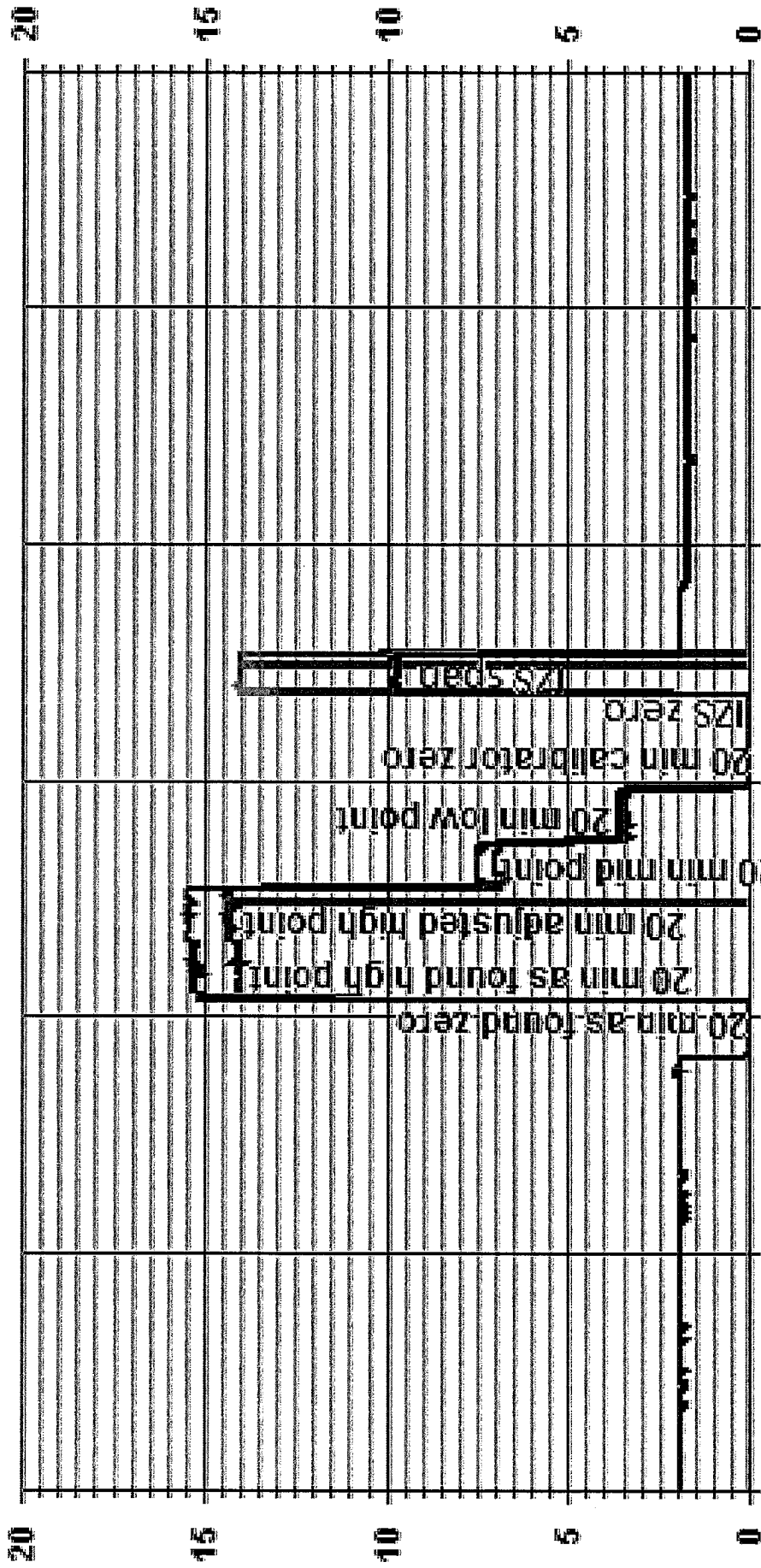
No zero adjustment made. Filter changed. A new H2 gas cylinder connected.

Date:	7-Jul-15	Start Time (mst):	10:24
Company:	LICA	End Time (mst):	14:09
Station Name:	Elk Point	Calibration Purpose:	monthly
Performed by:	Alex Yakupov	Cal Gas Expiry Date:	26-Mar-17

Thermo 55C Methane/Non-Methane Analyzer Calibration



01 Minute Averages



07/07/15 07:00 07/07/15 09:00 07/07/15 11:00 07/07/15 13:00 07/07/15 15:00 07/07/15 17:00

— LICA35 METHANE PPM — LICA35 NMHC PPM

Thermo 551 Methane/Non-Methane Analyzer Calibration

Date: 9-Jul-15

Company: LICA

Station Name: Elk Point

Performed by: Alex Yakupov

Start Time (mst): 16:02

End Time (mst): 17:26

Calibration Purpose: As Found

Cal Gas Expiry Date: 26-Mar-17

Analyzer & Diagnostics:

Serial Number: 1236656107

Last Calibration Date: 7-Jul-15

As found C.F.

CH₄= 1.153

NMHC= 1.229

THC= 1.195

Previous Cal High Point C.F.

CH₄= 0.998

NMHC= 0.999

THC= 0.996

Analyzer Range

CH₄= 20

NMHC= 20

THC= 40

Mother Board Voltages:

3.3: 3.3

5.0: 4.9

15.0: 14.9

24.0: 24.0

-3.3: -3.2

Interface Board Voltages:

3.3: 3.3

5.0: 5.0

15.0: 15.0

24.0: 23.4

-15.0: -15.1

Bias Supply: -293.5

Temperatures:

Detector Oven: 175.1

Filter: 175.1

Column Oven: 75.2

Flame: 334.3

Internal: 37.3

Pressures cylinder/reg.:

Carrier: 1500 | 50

Fuel: 400 | 45.0

Air: 45 | 32.2

FID Status:

Status: LIT

Counts: 13319

Flame: 334.3

Det Base: 175.0

Flame and Power Stats:

Last Power On: May 05 2015 @ 05:38

Flameouts: 40

Det Oven at Start: 170.1

Col Oven at Start: 74.5

Calibration History>1:

Time: July 07, 2015

Type: SPAN

Status: Good

Check/Adjust: Adjust

CH₄ Span Conc: 15.53

Calibration History>1:

CH₄ SP Ratio: 0.000724

CH₄ RT: 12.2

CH₄ PK IDX: 21

CH₄ PK HT: 21456

NM Span Conc: 14.34

NM SP Ratio: 0.000156

NM Peak Area: 91903

Date: July 09, 2015

Time: 18:02

CH₄ PK HT: 0

CH₄ RT: 8.0

CH₄ Baseline: 921

CH₄ LOD: 56

CH₄ SD: 18

CH₄ CONC: 0.00

NM PK HT: 0

NM Peak Area: 0

NM CONC: 0

NM Base Start: 886

NM Base End: 906

NM LOD: 18

NM Start IDX: 16

NM End IDX: 92

NM Max Slope: 9.7e-01

NM Min Slope: -4.0e-01

NM PT Count: 0

Previous CH₄: 9.78

Previous NMHC: 14.04

Previous THC: 23.85

New CH₄: 9.78

New NMHC: 14.04

New THC: 23.85

Daily Zero/Span Values:

Calibrator and Gas Information:

Make & Model: API 700

Serial #: 830

Cal Gas Cylinder I.D. #: LL33674

CH₄ Cylinder Conc.= 601.4 | 202.0 =C₂H₆ Cylinder Conc.

CH₄ as C₂H₆= 555.5 | 1156.9 =total CH₄ equivalent

Calibrator Flow Targets: (cc/mln):

point	diluent	cal gas	total flow
zero	2000	0	2000
high	2000	53	2053
mid	2000	25	2025
low	2000	12	2012

Calibration Data:

Calibrator Flow Rates (cc/mln)				Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
Point	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
20 mln as found zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
20 mln as found high point	2000	53.00	2053	15.53	14.34	29.87	13.47	11.67	25.00	1.153	1.229	1.195

Average C.F.=

Linear Regression/Calibration Results:

Correlation Coefficient =

Slope =

b (Intercept as % of full scale)=

% change in C.F. from last cal=

CH ₄	NMHC	THC
-13.41%	18.71%	16.63%

LIMITS

> or = 0.995

0.85-1.15

± 3% F.S.

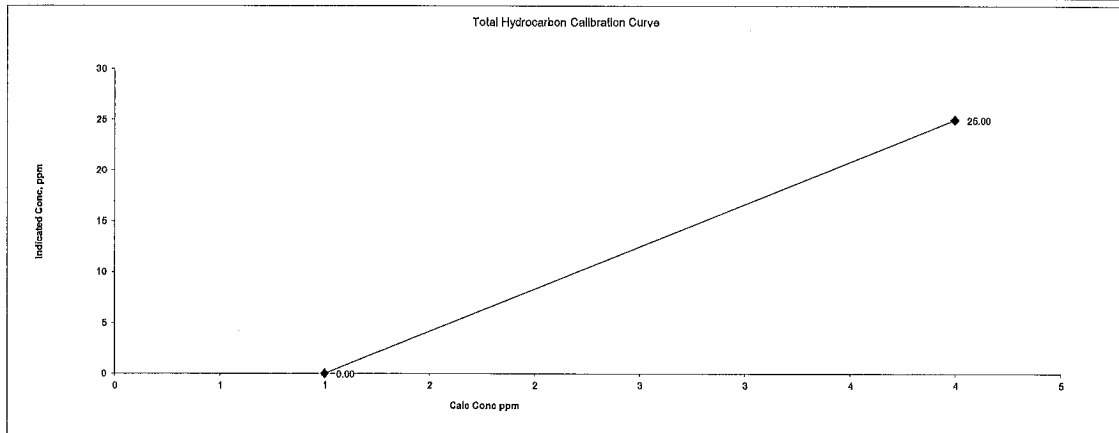
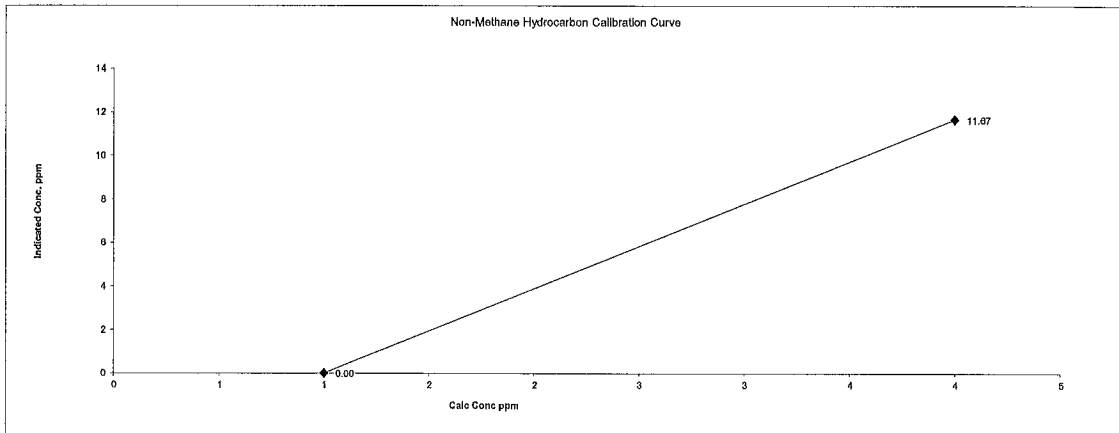
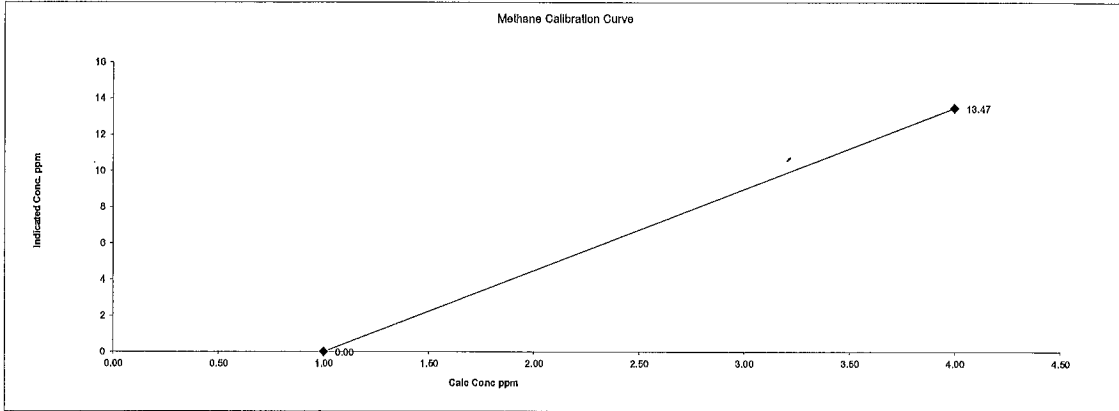
+/-15%

Comments:

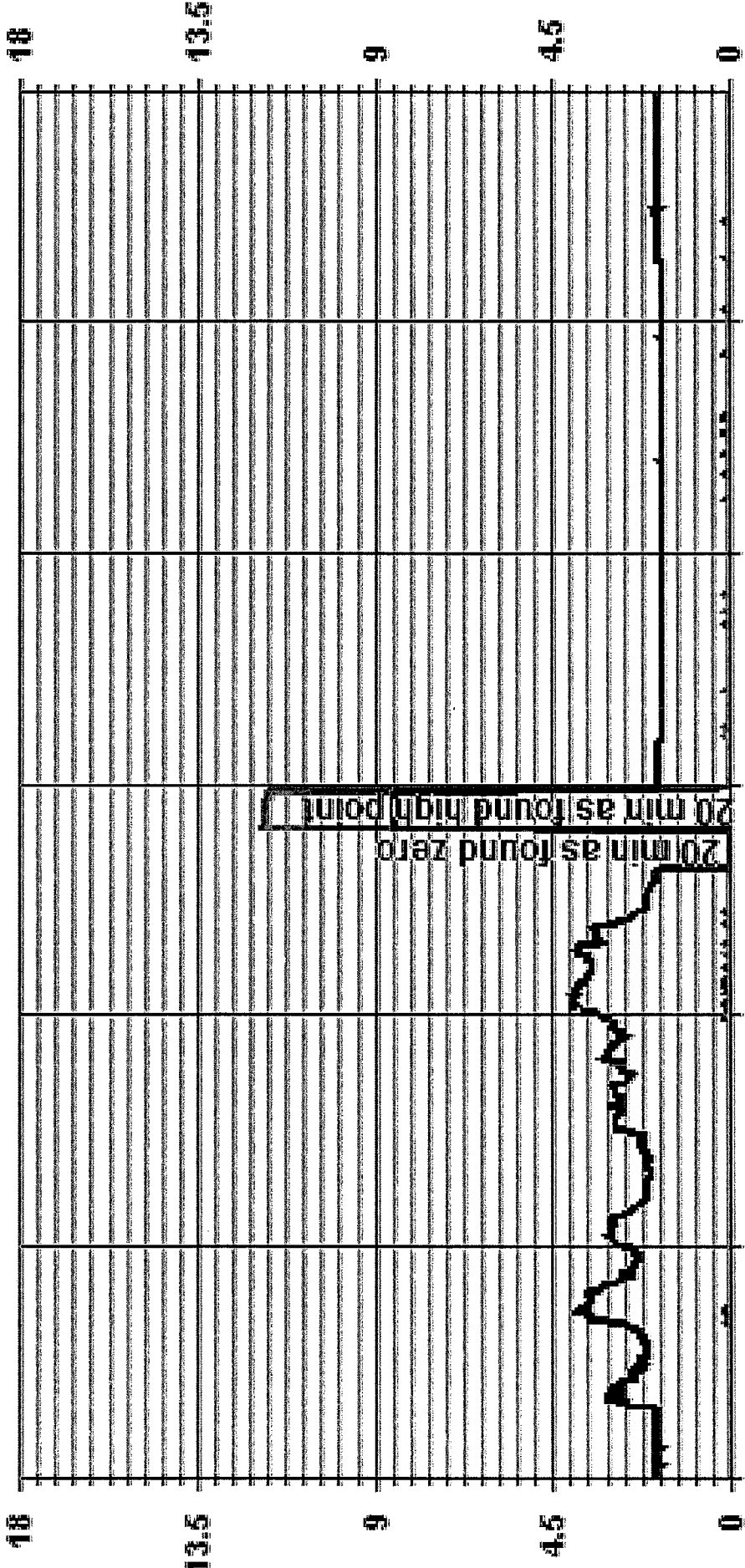
"As Found" calibration required as SPAN readings were low (drift over 10%). "As Found" failed. 17:36 - The analyzer left on "M" for troubleshooting to follow.

Date:	9-Jul-15	Start Time (mst):	16:02
Company:	LICA	End Time (mst):	17:26
Station Name:	Elk Point	Calibration Purpose:	As Found
Performed by:	Alex Yakupov	Cal Gas Expiry Date:	26-Mar-17

Thermo 55C Methane/Non-Methane Analyzer Calibration



01 Minute Averages



07/09/15 01:55 07/09/15 03:55 07/09/15 05:55 07/09/15 07:55 07/09/15 09:55 07/09/15 11:55

— LICA35 METHANE PPM — LICA35 NMHC PPM

Maxxam

Thermo 55C Methane/Non-Methane Analyzer Calibration

Date: 10-Jul-15 **Start Time (mst):** 13:07
Company: LICA **End Time (mst):** 16:27
Station Name: Elk Point **Calibration Purpose:** Post-Repair
Performed by: Chris Wesson **Cal Gas Expiry Date:** 9-Jan-21

Analyzer & Diagnostics:

Serial Number: 1236656107 Last Calibration Date: NA	As found C.F. CH ₄ = NA NMHC= NA THC= NA	Previous Cal High Point C.F. CH ₄ = NA NMHC= NA THC= NA	Analyzer Range CH ₄ = 20 NMHC= 20 THC= 40
--	---	--	--

Mother Board Voltages: 3.3: 3.3 5.0: 4.9 15.0: 14.9 24.0: 24.0 -3.3: -3.2	Calibration History cnt'd>1: CH ₄ SP Ratio: 0.000724 CH ₄ RT: 12.2 CH ₄ PK IDX: 21 CH ₄ PK HT: 21456 NM Span Conc: 14.34 NM SP Ratio: 0.000156 NM Peak Area: 91903	Run History>1: Date: 10-Jul-2015 Time: 13:05 CH ₄ PK HT: 0 CH ₄ RT: 8.0 CH ₄ Baseline: 2287 CH ₄ LOD: 35 CH ₄ SD: 11 CH ₄ CONC: 0.00 NM PK HT: 0 NM Peak Area: 0 NM CONC: 0.00 NM Base Start: 2232 NM Base End: 2239 NM LOD: 13 NM Start IDX: 10 NM End IDX: 91 NM Max Slope: 1.9e-01 NM Min Slope: -7.0E-01 NM PT Count: 0 Previous CH ₄ : 9.78 Previous NMHC: 14.04 Previous THC: 23.85 New CH ₄ : 9.19 New NMHC: 13.9 New THC: 23.11
---	---	--

Interface Board Voltages: 3.3: 3.3 5.0: 5.0 15.0: 15.0 24.0: 23.6 -15.0: -15.1	Temperatures: Bias Supply: -293.1 Detector Oven: 175.0 Filter: 175.0 Column Oven: 75.2 Flame: 337.3 Internal: 34.3	Pressures cylinder/reg.: Carrier: 2000 50 Fuel: 2000 50 Air: NA 45
--	---	--

FID Status: Status: LIT Counts: ~13408 Flame: 337.3 Det Base: 175.0	Flame and Power Stats: Last Power On: 05May2015@05:38 Flameouts: 40 Det Oven at Start: 170.1 Col Oven at Start: 74.5	Daily Zero/Span Values: Time: 07Jul2015@13:18 Type: SPAN Status: GOOD Check/Adjust: Adjust CH ₄ Span Conc: 15.53
--	---	---

Calibrator and Gas Information: Make & Model: Sablo 2010 Serial #: 17100415 Cal Gas Cylinder I.D. #: LL19272 CH ₄ Cylinder Conc.: 880.0 304.0 =C ₃ H ₈ Cylinder Conc. CH ₄ as C ₃ H ₈ : 836.0 1716.0 =total CH ₄ equivalent	Calibrator Flow Targets: (cc/min): <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>point</th> <th>diluent</th> <th>cal gas</th> <th>total flow</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>3000</td> <td>0</td> <td>3000</td> </tr> <tr> <td>high</td> <td>2950</td> <td>50</td> <td>3000</td> </tr> <tr> <td>mid</td> <td>2975</td> <td>25</td> <td>3000</td> </tr> <tr> <td>low</td> <td>2987</td> <td>12.5</td> <td>3000</td> </tr> </tbody> </table>	point	diluent	cal gas	total flow	zero	3000	0	3000	high	2950	50	3000	mid	2975	25	3000	low	2987	12.5	3000
point	diluent	cal gas	total flow																		
zero	3000	0	3000																		
high	2950	50	3000																		
mid	2975	25	3000																		
low	2987	12.5	3000																		

Calibration Data:

Calibrator Flow Rates (cc/min)				Calculated			Indicated			Correction Factors:		
Point	Diluent	Cal Gas	Total Flow	CH ₄ (ppm)	NMHC (ppm)	THC (ppm)	CH ₄ (ppm)	NMHC (ppm)	THC (ppm)	CH ₄	NMHC	THC
20 min adjusted zero	3011	0.00	3011	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
20 min adjusted high	2962	50.20	3012	14.67	13.93	28.60	14.66	13.95	28.62	1.000	0.999	0.999
20 min mid	2986	25.20	3011	7.36	7.00	14.36	7.42	7.02	14.44	0.993	0.997	0.995
20 min low	2998	13.10	3011	3.83	3.64	7.47	3.86	3.71	7.57	0.992	0.980	0.986
20 min callibrator zero	3011	0.00		0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA

Average C.F.= 0.995 0.992 0.993

Linear Regression/Calibration Results:

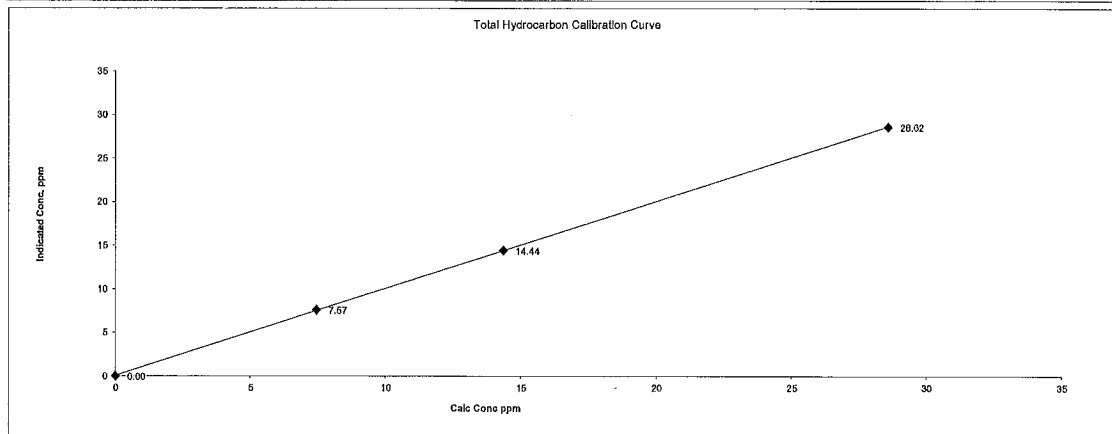
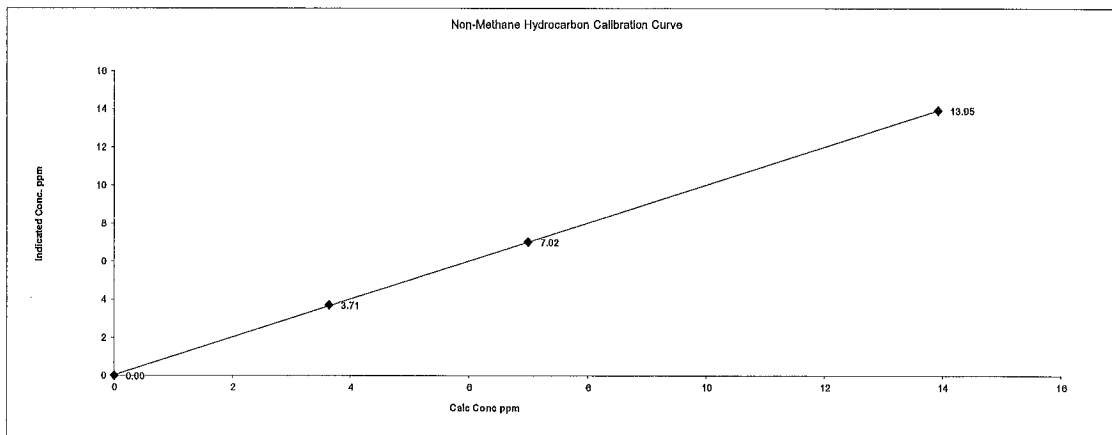
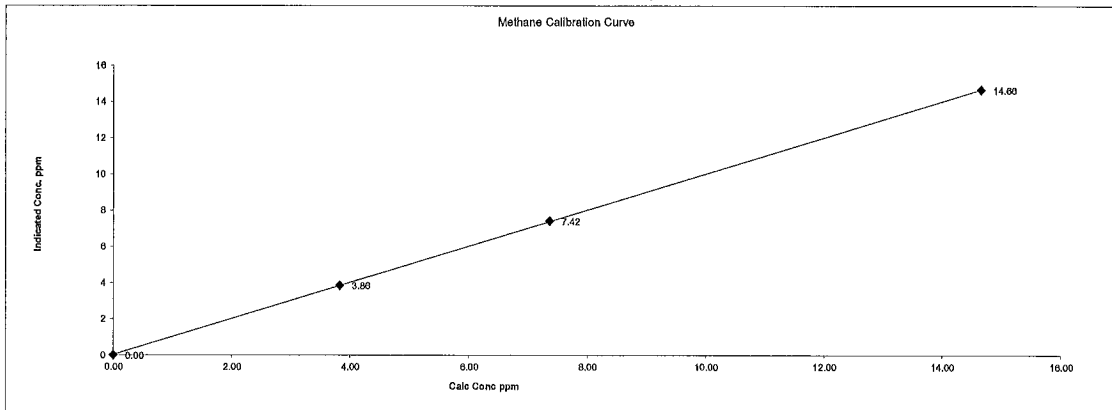
Correlation Coefficient = Slope = b (Intercept as % of full scale) = % change in C.F. from last cal =	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>CH₄</th> <th>NMHC</th> <th>THC</th> </tr> </thead> <tbody> <tr> <td>1.000</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>0.999</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>0.12%</td> <td>0.15%</td> <td>0.13%</td> </tr> <tr> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	CH ₄	NMHC	THC	1.000	1.000	1.000	0.999	1.000	1.000	0.12%	0.15%	0.13%	n/a	n/a	n/a	LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. +/-15%
CH ₄	NMHC	THC															
1.000	1.000	1.000															
0.999	1.000	1.000															
0.12%	0.15%	0.13%															
n/a	n/a	n/a															

Comments:

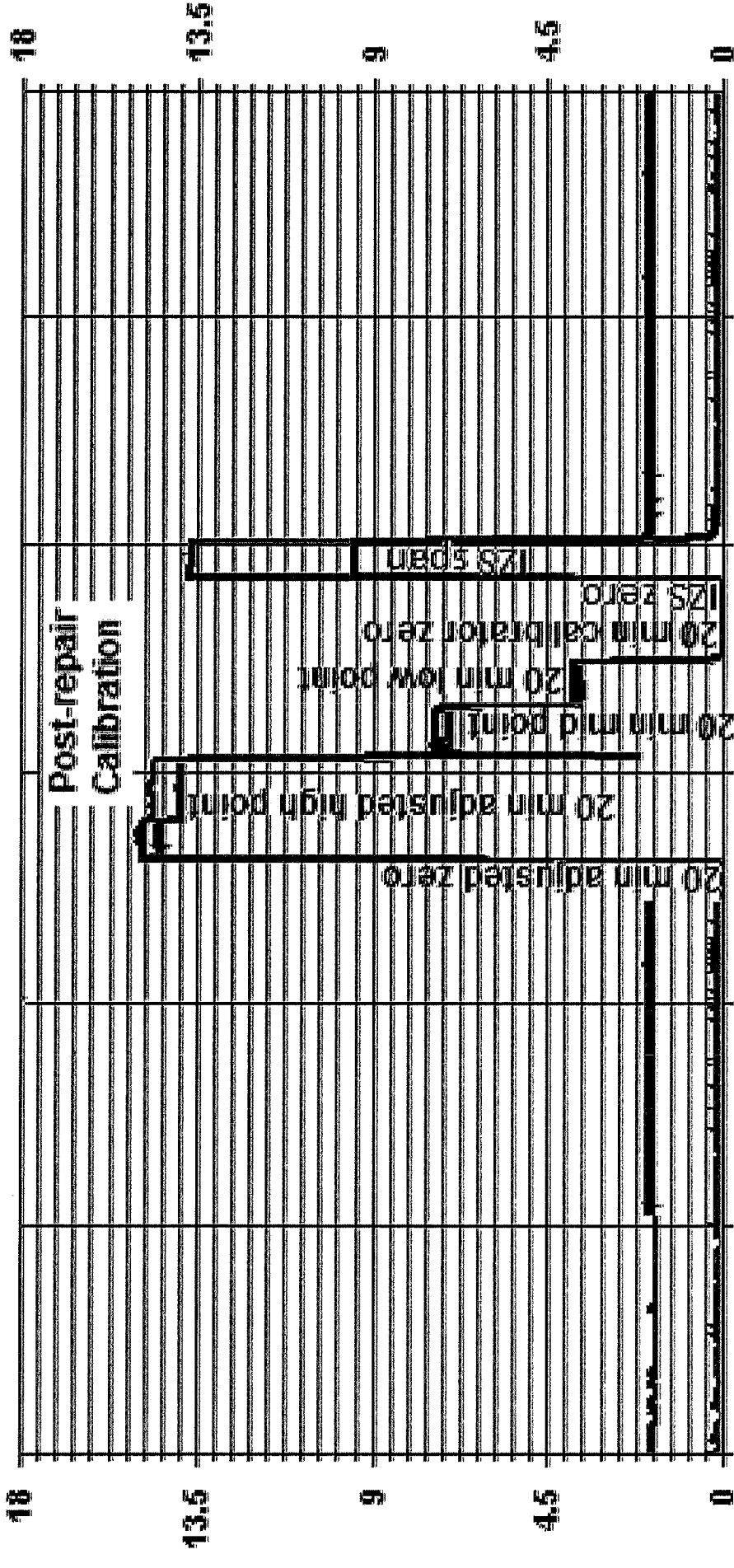
Internal pressures: Carrier=31.1, Fuel=40.3, Air=32.4

Date:	10-Jul-15	Start Time (mst):	13:07
Company:	LICA	End Time (mst):	16:27
Station Name:	Elk Point	Calibration Purpose:	Post-Repair
Performed by:	Chris Wesson	Cal Gas Expiry Date:	9-Jan-21

Thermo 55C Methane/Non-Methane Analyzer Calibration

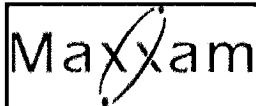


01 Minute Averages



— LICA35 METHANE PPM — LICA35 NMHC PPM

NITROGEN DIOXIDE



API 200E NOx Analyzer Calibration

Date: 6-Jul-15
 Company: LICA
 Station Name/Location: Elk Point
 Performed by: Alex Yakupov

Start Time (mst): 11:29
 End Time (mst): 17:54
 Calibration Purpose: Monthly Calibration
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 592
 Last Calibration Date: 11-Jun-15
 Range ppb: 1000

Correction Factors:
 As found C.F. Previous Cal High Point C.F.:
 NO= 0.969 NO= 0.998
 NOx= 0.971 NOx= 0.998
 NO₂= 0.998 NO₂= 1.000

As found:
 NOx SLOPE: 1.068
 NOx OFFS: 3.3
 NO SLOPE: 1.070
 NO OFFS: -0.0
 TEST: 127.5
 SAMP FLW: 486
 OZONE FL: 75
 PMT: 17.2
 NORM PMT: 0.1
 AZERO: 17.7
 HVPS: 637
 RCELL TEMP: 50.0
 BOX TEMP: 29.7
 PMT TEMP: 6.9
 IZS TEMP: 40.2
 MOLY TEMP: 316.2
 RCEL: 7.5
 SAMP: 27.4
 Internal Span: 297/6.7/291

As left:
 NOx SLOPE: 1.037
 NOx OFFS: 3.4
 NO SLOPE: 1.035
 NO OFFS: -0.2
 TEST: 127.5
 SAMP FLW: 485
 OZONE FL: 75
 PMT: 17.9
 NORM PMT: 3.1
 AZERO: 17.6
 HVPS: 637
 RCELL TEMP: 50.0
 BOX TEMP: 29.2
 PMT TEMP: 6.9
 IZS TEMP: 40.0
 MOLY TEMP: 316.3
 RCEL: 7.5
 SAMP: 27.4
 Internal Span: 292.3/7.6/285.7

Calibrator Flow Targets:

Make & Model: SABIO 2010 D
 Serial #: 11900613
 Cal Gas Cylinder I.D. #: BLM002073
 NO Cylinder Conc. (ppm): 50.6
 NOx Cylinder Conc. (ppm): 50.6

point	diluent (cc/min)	cal gas (cc/min)	O ₃ setting (v or ppb)	total (cc/min)
zero	5013	0	0	5013
high	4938	77	500.00	5015
mid	4976	38	280.00	5014
low	4994	19	100.00	5013

Calibration:

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5013	0.0	5013	0	0	0.0	1.0	NA	NA
adjusted zero	5013	0.0	5013	0	0	0.0	0.0	NA	NA
as found high	4938	77.20	5015	778.9	778.9	804	802	0.969	0.971
adjusted high	4938	77.20	5015	778.9	778.9	780	780	0.999	0.999
mid	4976	37.70	5014	380.5	380.5	384	384	0.991	0.991
low	4994	18.90	5013	190.8	190.8	196	196	0.973	0.973
calibrator zero	5013	0.00	5013	0	0	0.0	0.0	NA	NA
Average C.F.=								0.988	0.988

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ increase	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4938	77.20	5015	0.0	780.0	781.0	2.0	0.0	0.0	
as found NO ₂	4938	77.20	5015	500.0	296.0	782.0	487.0	484.0	485.0	0.998
gpt mid	4938	77.20	5015	280.0	504.0	782.0	279.0	276.0	277.0	0.996
gpt low	4938	77.20	5015	100.0	679.0	781.0	103.0	101.0	101.0	1.000
Average NO ₂ C.F.=										0.998

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	1.000	1.002	0.85-1.15
b (Intercept as % of full scale)=	0.26%	0.26%	0.00%	± 3% F.S.
% change in C.F. from last cal=	2.93%	2.69%	0.21%	+/-15%
NO ₂ converter efficiency			100.2%	>85%

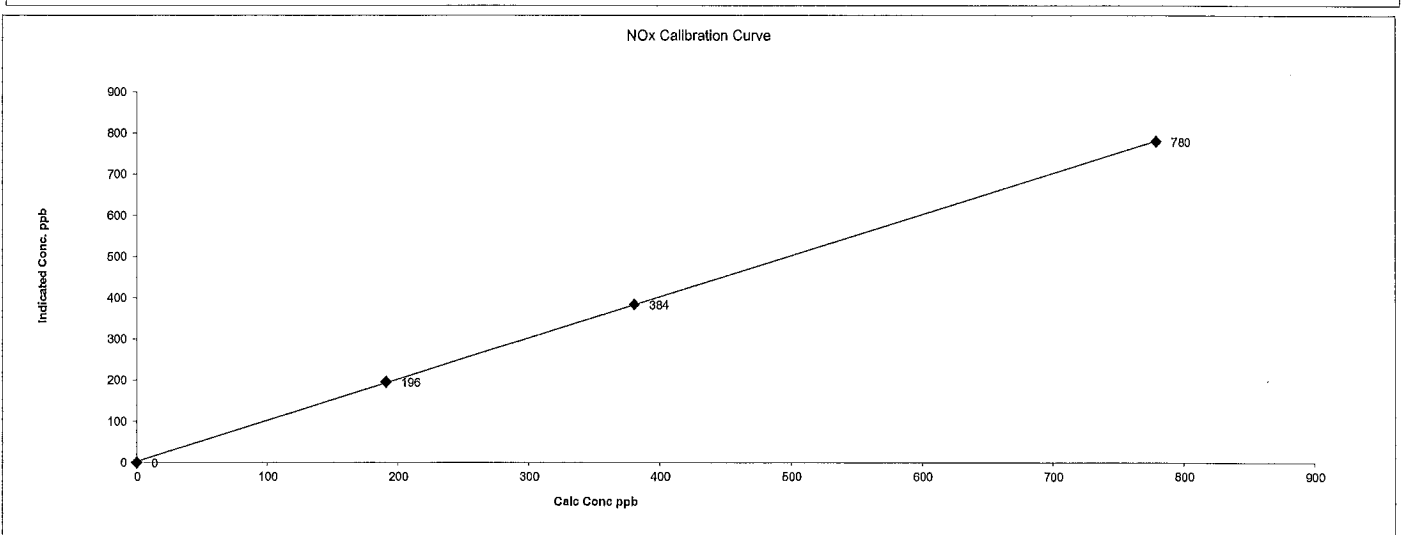
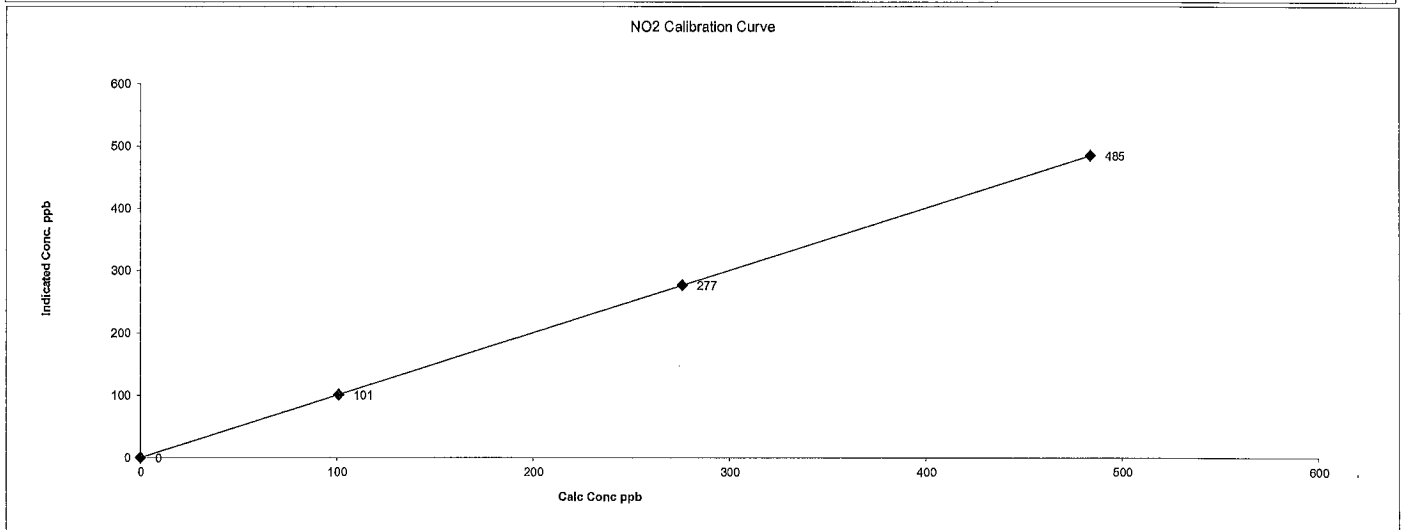
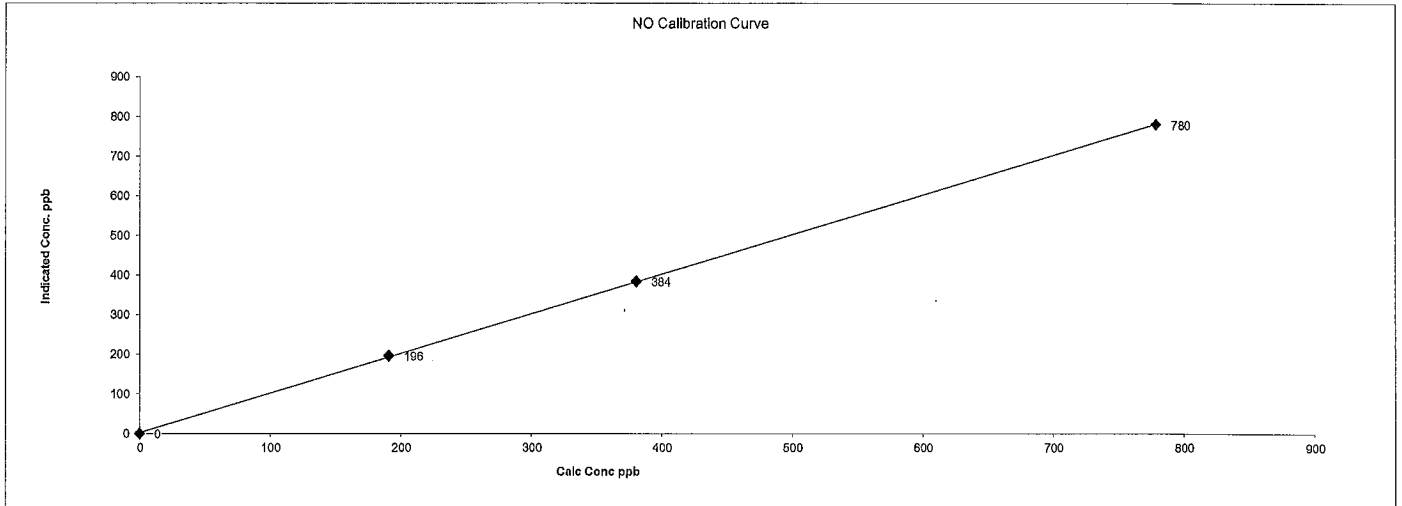
Comments:

Filter Changed. No NO2 adjustment made.

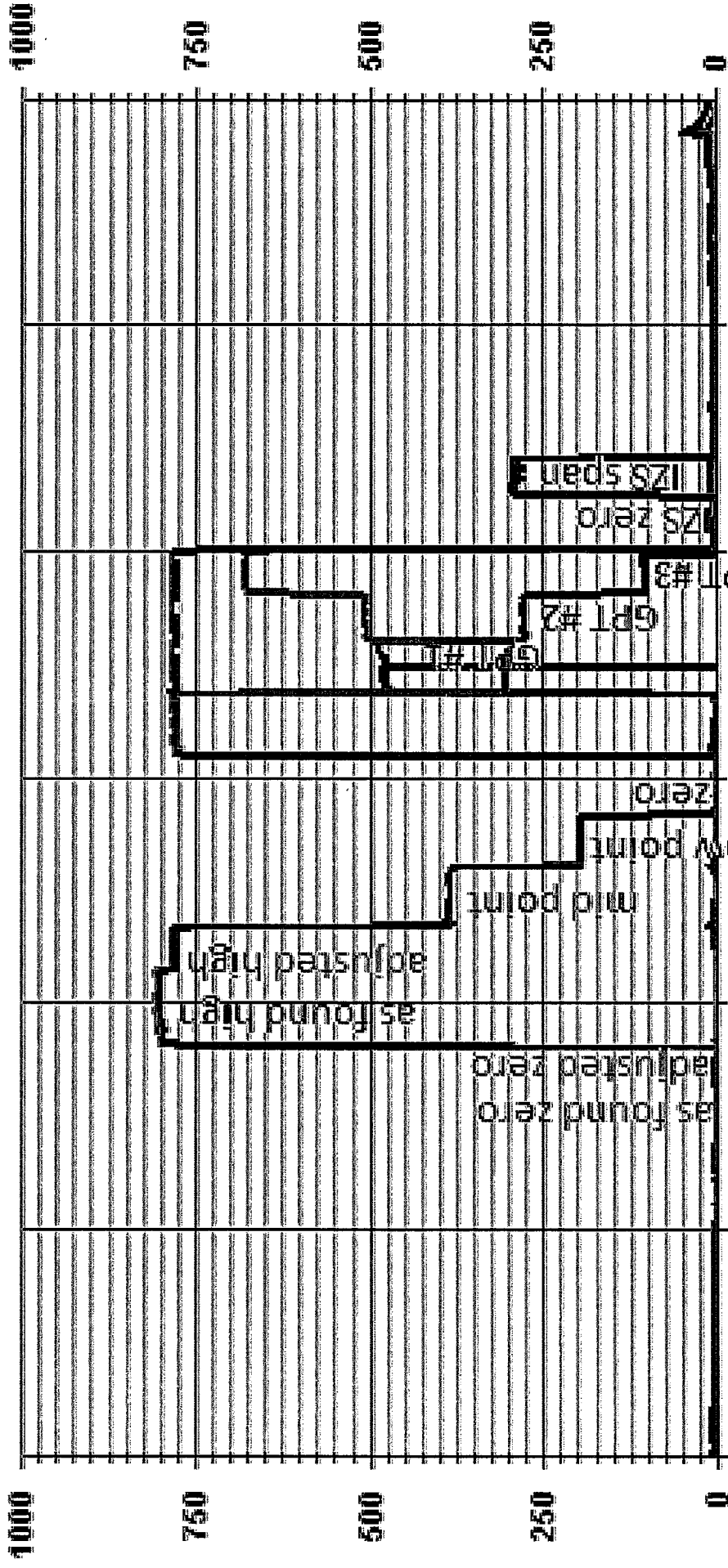
Date: 6-Jul-15
Company: LICA
Station Name/Location: Elk Point
Performed by: Alex Yakupov

Start Time (mst): 11:29
End Time (mst): 17:54
Calibration Purpose: Monthly Calibration
Cal Gas Expiry Date: 12-Mar-19

API 200E NOx Analyzer Calibration



01 Minute Averages



07/06/15 09:00 07/06/15 11:00 07/06/15 13:00 07/06/15 15:00 07/06/15 17:00 07/06/15 19:00

— LICA35 NOX_ PPB — LICA35 NO_ PPB — LICA35 NO2_ PPB

OZONE

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: <u>7-Jul-15</u>	Start Time (mst): <u>10:24</u>	
Company: <u>LICA</u>	End Time (mst): <u>14:36</u>	
Station Name/Location: <u>Elk Point</u>	Calibration Purpose: <u>Monthly</u>	
Performed by: <u>Alex Yakupov</u>	G.P.T. Date: <u>NA</u>	

Analyzer:

Serial Number: <u>1002240372</u>	Range ppm: <u>500</u>
Last Calibration Date: <u>12-Jun-15</u>	As Found C.F.: <u>0.987</u>
Previous Cal High Point C.F.: <u>1.000</u>	New C.F.: <u>1.002</u>

	As found:	As left:
Motherboard:	O ₂ Bkg: <u>-0.3</u>	O ₂ Bkg: <u>0.2</u>
	O ₃ Coef: <u>1.015</u>	O ₃ Coef: <u>0.989</u>
	3.3 <u>3.3</u>	3.3 <u>3.3</u>
	15.0 <u>15.0</u>	15.0 <u>15.0</u>
Interface Board:	24.0 <u>23.9</u>	24.0 <u>24.0</u>
	-3.3 <u>-3.2</u>	-3.3 <u>-3.2</u>
	3.3 <u>3.3</u>	3.3 <u>3.3</u>
	5.0 <u>5.0</u>	5.0 <u>5.0</u>
	15.0 <u>14.9</u>	15.0 <u>14.9</u>
	-15.0 <u>-15.1</u>	-15.0 <u>-15.1</u>
Photo Lamp	<u>9.8</u>	Photo Lamp <u>9.8</u>
	24.0 <u>23.6</u>	24.0 <u>23.6</u>
O ₃ Lamp	<u>9.4</u>	O ₃ Lamp <u>9.4</u>
Bench:	<u>30.6</u>	Bench: <u>30.7</u>
Bench Lamp:	<u>54.1</u>	Bench Lamp: <u>54.1</u>
O ₃ Lamp:	<u>68.2</u>	O ₃ Lamp: <u>68.2</u>
Pressure:	<u>702.7</u>	Pressure: <u>702.7</u>
Cell A lpm:	<u>0.750</u>	Cell A lpm: <u>0.750</u>
Cell B lpm:	<u>0.760</u>	Cell B lpm: <u>0.759</u>
O ₃ ppb:	<u>32.5</u>	O ₃ ppb: <u>0.6</u>
Cell A ppb:	<u>34.5</u>	Cell A ppb: <u>0.6</u>
Cell B ppb:	<u>30.6</u>	Cell B ppb: <u>0.6</u>
Cell A Int:	<u>45013</u>	Cell A Int: <u>45027</u>
Cell B Int:	<u>41727</u>	Cell B Int: <u>41673</u>
Internal Span:	<u>351.3</u>	Internal Span: <u>369.4</u>

Calibrator:

Make & Model: <u>SABIO 2010 D</u> Serial #: <u>11900613</u> NOx Gas Cylinder I.D. #: <u>BLM002073</u> NOx Cylinder Conc. (ppm): <u>50.6</u>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">point</th> <th style="text-align: center;">total flow (cc/min)</th> <th style="text-align: center;">O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">zero</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">high</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">380</td> </tr> <tr> <td style="text-align: center;">mid</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">180</td> </tr> <tr> <td style="text-align: center;">low</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">90</td> </tr> </tbody> </table>	point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5013	0	high	5013	380	mid	5013	180	low	5013	90
point	total flow (cc/min)	O ₃ setting (v or ppb)														
zero	5013	0														
high	5013	380														
mid	5013	180														
low	5013	90														

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5013	0.0	5013	0.0	0.4	NA
adjusted zero	5013	0.0	5013	0.0	0.0	NA
as found high	5013	0.00	5013	380.0	385.0	0.987
adjusted high	5013	0.00	5013	380.0	380.0	1.000
mid	5013	0.00	5013	180.0	179.0	1.006
low	5013	0.00	5013	90.0	90.0	1.000
calibrator zero	5013	0.00	5013	0.0	0.0	NA
Average C.F.=						1.002

Linear Regression/Calibration Results:

	LIMITS	Pass/Fail ?
Correlation Coefficient = <u>1.000</u>	> or = 0.995	PASS
Slope = <u>1.000</u>	0.85-1.15	PASS
b (Intercept as % of full scale) = <u>-0.043%</u>	± 3% F.S.	PASS
% change in C.F. from last cal = <u>1%</u>	± 15%	PASS

Comments:

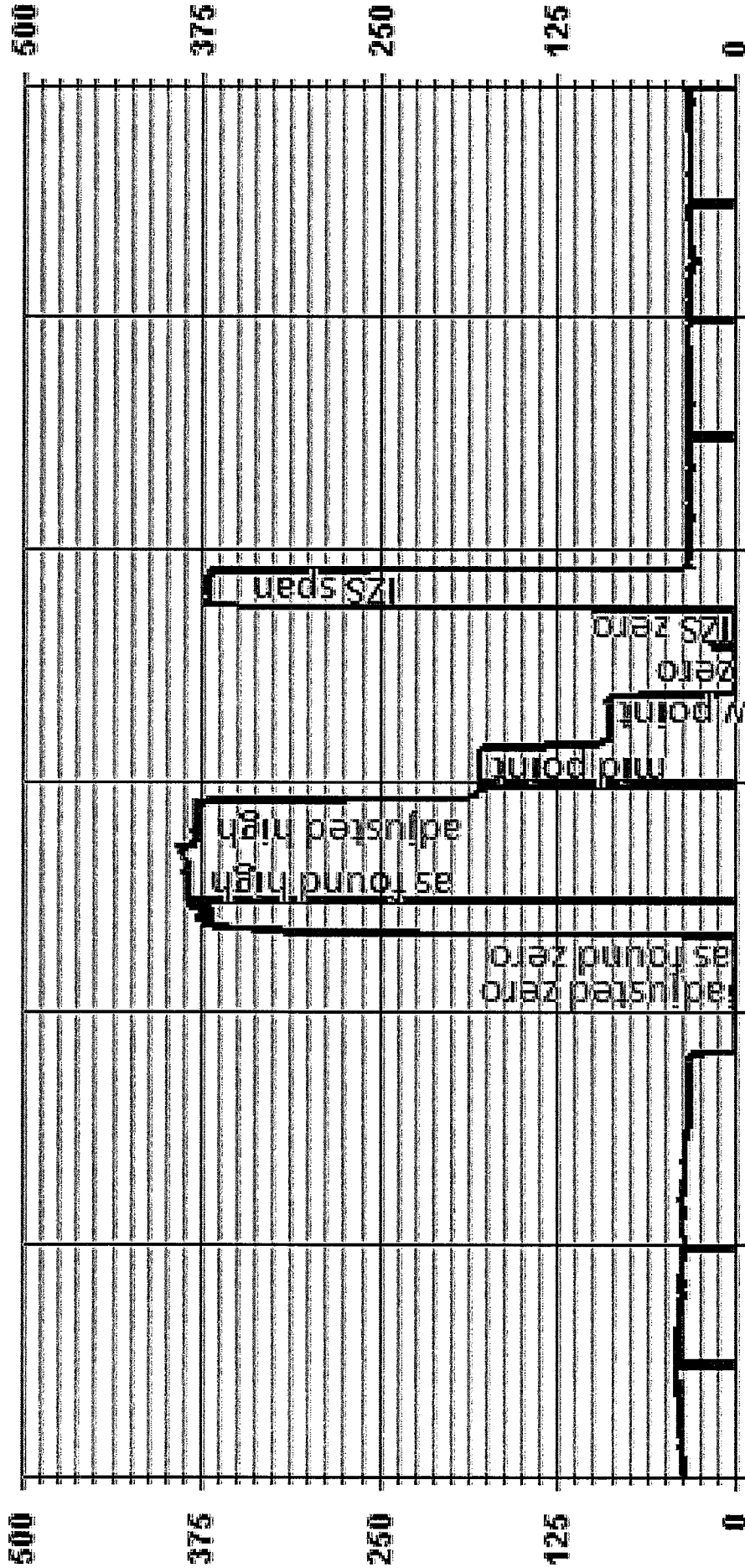
Filter changed.

Thermo 49i O₃ Analyzer Calibration

O₃ Calibration Curve

The graph displays a linear relationship between the calculated concentration (Calc Conc ppb) on the x-axis and the indicated concentration (Indicated Conc. ppb) on the y-axis. Both axes range from 0 to 400. Four data points are plotted and labeled: (0, 0.0), (90, 90.0), (179, 179.0), and (385, 385.0). A straight line of best fit is drawn through these points, showing a slope of 1.000.

01 Minute Averages



07/07/15 07:00 07/07/15 09:00 07/07/15 11:00 07/07/15 13:00 07/07/15 15:00 07/07/15 17:00

— LICA35 03_ PPB

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: 24-Jul-15	Start Time (mst): 10:19
Company: LICA	End Time (mst): 12:38
Station Name/Location: Elk Point	Calibration Purpose: Shutdown
Performed by: Alex Yakupov	G.P.T. Date: NA

Analyzer: Serial Number: 1002240372 Last Calibration Date: 7-Jul-15 Previous Cal High Point C.F.: 1.000	Range ppm: 500 As Found C.F.: 0.999 New C.F.: NA
--	--

	As found:	As left:
Motherboard:	O ₃ Bkg: 0.2	O ₃ Bkg: NA
	O ₃ Coef: 0.989	O ₃ Coef: NA
	3.3 3.3	3.3 NA
	15.0 15.0	15.0 NA
	24.0 24.0	24.0 NA
	-3.3 -3.2	-3.3 NA
Interface Board:	3.3 3.3	3.3 NA
	5.0 5.0	5.0 NA
	15.0 14.9	15.0 NA
	-15.0 -15.2	-15.0 NA
	Photo Lamp 9.8	Photo Lamp NA
	24.0 23.5	24.0 NA
	O ₃ Lamp 9.4	O ₃ Lamp NA
	Bench: 26.3	Bench: NA
	Bench Lamp: 54.0	Bench Lamp: NA
	O ₃ Lamp: 68.1	O ₃ Lamp: NA
	Pressure: 696.5	Pressure: NA
	Cell A lpm: 0.746	Cell A lpm: NA
	Cell B lpm: 0.758	Cell B lpm: NA
	O ₃ ppb: -0.3	O ₃ ppb: NA
	Cell A ppb: 2.0	Cell A ppb: NA
	Cell B ppb: -2.6	Cell B ppb: NA
	Cell A Int: 45332	Cell A Int: NA
	Cell B Int: 42213	Cell B Int: NA
	Internal Span: 369.4	Internal Span: NA

Calibrator: Make & Model: SABIO 2010 D Serial #: 11900613 NOx Gas Cylinder I.D. #: BLM002073 NOx Cylinder Conc. (ppm): 50.6	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <caption>Calibrator Flow Targets:</caption> <thead> <tr> <th>point</th> <th>total flow (cc/min)</th> <th>O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5013</td> <td>0</td> </tr> <tr> <td>high</td> <td>5013</td> <td>380</td> </tr> <tr> <td>mid</td> <td>5013</td> <td>180</td> </tr> <tr> <td>low</td> <td>5013</td> <td>90</td> </tr> </tbody> </table>	point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5013	0	high	5013	380	mid	5013	180	low	5013	90
point	total flow (cc/min)	O ₃ setting (v or ppb)														
zero	5013	0														
high	5013	380														
mid	5013	180														
low	5013	90														

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5013	0.0	5013	0.0	-0.4	NA
as found high	5013	0.00	5013	380.0	380.0	0.999
mid	5013	0.00	5013	180.0	180.0	0.998
low	5013	0.00	5013	90.0	89.0	1.007

copy and paste flows and NO decrease from NOx cal in to calculated concentration Average C.F.= 1.001

Linear Regression/Calibration Results:

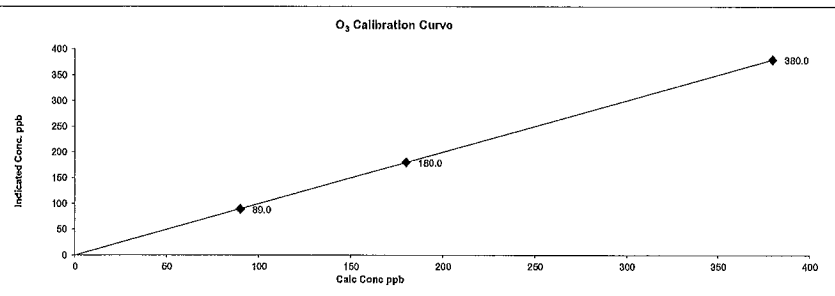
Correlation Coefficient = 1.000	LIMITS > or = 0.995	PASS
Slope = 1.002	0.85-1.15	PASS
b (Intercept as % of full scale) = -0.126%	± 3% F.S.	PASS
% change in C.F. from last cal = 0%	± 15%	PASS

Comments:

Shutdown calibration performed to clean reaction cells and repair pump.

Thermo 49i O₃ Analyzer Calibration

O₃ Calibration Curve



The graph displays a linear relationship between the calculated concentration (x-axis) and the indicated concentration (y-axis) for the O₃ analyzer. The x-axis ranges from 0 to 400 ppb, and the y-axis ranges from 0 to 400 ppb. Three data points are plotted: (80.0, 80.0), (180.0, 180.0), and (380.0, 380.0). A straight line is drawn through these points, demonstrating a strong linear correlation.

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: 24-Jul-15 **Start Time (mst):** 14:23
Company: LICA **End Time (mst):** 18:35
Station Name/Location: Elk Point **Calibration Purpose:** Post-repair
Performed by: Alex Yakupov **G.P.T. Date:** NA

Analyzer:
Serial Number: 1002240372 **Range ppm:** 500
Last Calibration Date: 7-Jul-15 **As Found C.F.:** 1.003
Previous Cal High Point C.F.: 1.000 **New C.F.:** 1.006

	As found:	As left:
Motherboard:	O ₃ Bkg: NA	O ₃ Bkg: -0.3
	O ₃ Coef: NA	O ₃ Coef: 0.994
	3.3 NA	3.3 3.3
	15.0 NA	15.0 15.0
	24.0 NA	24.0 24.0
	-3.3 NA	-3.3 -3.2
Interface Board:	3.3 NA	3.3 3.3
	5.0 NA	5.0 5.0
	15.0 NA	15.0 14.9
	-15.0 NA	-15.0 -15.2
	Photo Lamp NA	Photo Lamp 9.8
	24.0 NA	24.0 23.5
	O ₃ Lamp NA	O ₃ Lamp 5.8
	Bench: NA	Bench: 28.9
	Bench Lamp: NA	Bench Lamp: 54.0
	O ₃ Lamp: NA	O ₃ Lamp: 68.2
	Pressure: NA	Pressure: 693.5
	Cell A lpm: NA	Cell A lpm: 0.750
	Cell B lpm: NA	Cell B lpm: 0.755
	O ₃ ppb: NA	O ₃ ppb: 0.2
	Cell A ppb: NA	Cell A ppb: 4.0
	Cell B ppb: NA	Cell B ppb: -3.7
	Cell A int: NA	Cell A int: 46229
	Cell B int: NA	Cell B int: 43492
	Internal Span: NA	Internal Span: 374.4

Calibrator: Make & Model: SABIO 2010 D Serial #: 11900613 NOx Gas Cylinder I.D. #: BLM002073 NOx Cylinder Conc. (ppm): 50.6	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Calibrator Flow Targets:</th> </tr> <tr> <th style="text-align: center;">point</th> <th style="text-align: center;">total flow (cc/min)</th> <th style="text-align: center;">O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">zero</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">high</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">380</td> </tr> <tr> <td style="text-align: center;">mid</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">180</td> </tr> <tr> <td style="text-align: center;">low</td> <td style="text-align: center;">5013</td> <td style="text-align: center;">90</td> </tr> </tbody> </table>	Calibrator Flow Targets:			point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5013	0	high	5013	380	mid	5013	180	low	5013	90
Calibrator Flow Targets:																			
point	total flow (cc/min)	O ₃ setting (v or ppb)																	
zero	5013	0																	
high	5013	380																	
mid	5013	180																	
low	5013	90																	

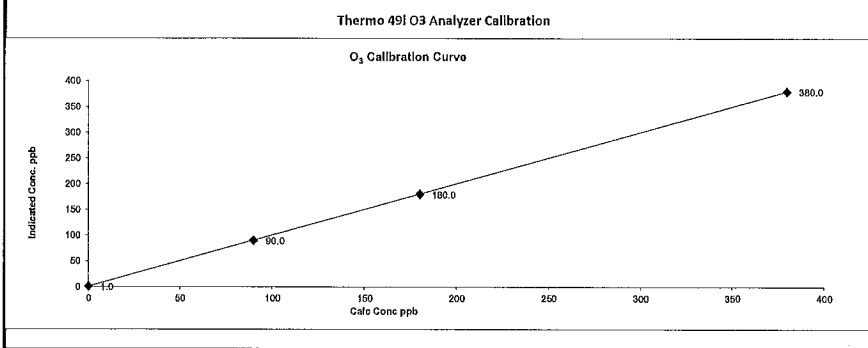
Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	5013	0.0	5013	0.0	1.0	NA
adjusted high	5013	0.00	5013	380.0	380.0	1.003
mid	5013	0.00	5013	180.0	180.0	1.006
low	5013	0.00	5013	90.0	90.0	1.011
calibrator zero	5013	0.00	5013	0.0	0.0	NA
** copy and paste flows and NO decrease from NOx cal in to calculated concentration**						Average C.F.= 1.006

Linear Regression/Calibration Results:

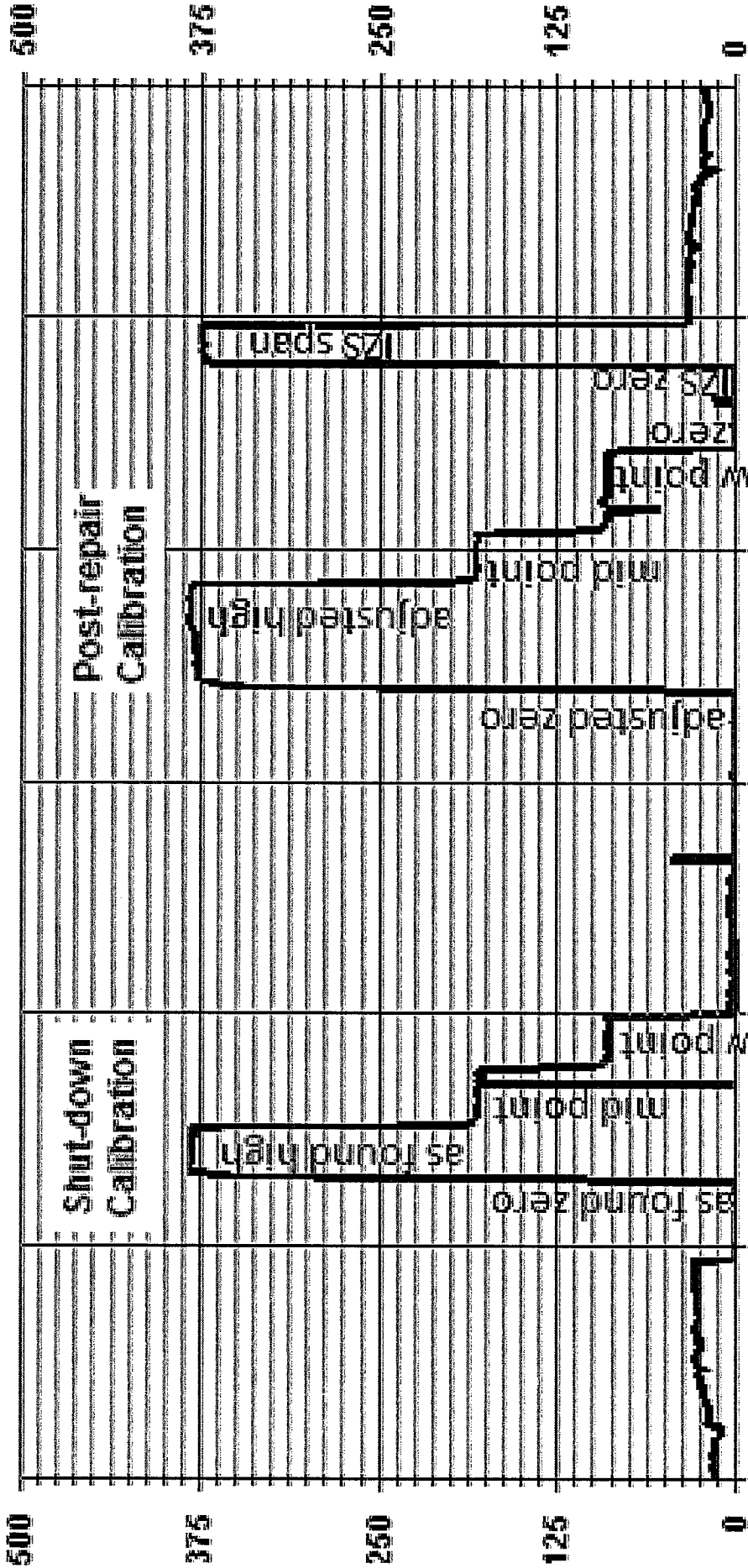
Correlation Coefficient = 1.000	LIMITS	Pass/Fail ?
Slope = 0.998	> or = 0.995	PASS
b (Intercept as % of full scale) = 0.117%	0.85-1.15	PASS
% change in C.F. from last cal = NA	± 3% F.S.	PASS
	± 15%	NA

Comments:

Filter changed. ZS check pump rebuilt. Reaction cells cleaned/windows of the optical bench cleaned.



01 Minute Averages



07/24/15 08:35 07/24/15 10:35 07/24/15 12:35 07/24/15 14:35 07/24/15 16:35 07/24/15 18:35

— LICA35 03_ PPB

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: 28-Jul-15	Start Time (mst): 10:00
Company: LICA	End Time (mst): 12:00
Station Name/Location: Elk Point	Calibration Purpose: Shutdown
Performed by: L/min LI	G.P.T. Date: 28-Jul-15

Analyzer:

Serial Number: 1002240372	Range ppm: 500
Last Calibration Date: 24-Jul-15	As Found C.F.: 0.927
Previous Cal High Point C.F.: 1.000	New C.F.: NA

	As found:	As left:
Motherboard:	O ₃ Bkg: -0.3	O ₃ Bkg: NA
	O ₃ Coef: 0.994	O ₃ Coef: NA
	3.3 3.3	3.3 NA
	15.0 15.0	15.0 NA
	24.0 24.0	24.0 NA
Interface Board:	-3.3 -3.2	-3.3 NA
	3.3 3.3	3.3 NA
	5.0 5.0	5.0 NA
	15.0 14.9	15.0 NA
	-15.0 -15.2	-15.0 NA
Photo Lamp	9.8	NA
	24.0 23.5	24.0 NA
O ₃ Lamp	9.4	NA
	Bench: 30.3	NA
Bench Lamp:	54.0	NA
	O ₃ Lamp: 68.2	NA
Pressure: 694.4	NA	
Cell A lpm: 0.750	NA	
Cell B lpm: 0.756	NA	
O ₃ ppb: 13	NA	
Cell A ppb: 15.2	NA	
Cell B ppb: 10.7	NA	
Cell A Int: 46259	NA	
Cell B Int: 43402	NA	
Internal Span: 374.4	NA	

Calibrator:

Make & Model: SABIO 2010 Serial #: 17200415 NOx Gas Cylinder I.D. #: BLM002756T NOx Cylinder Conc. (ppm): 50.7	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">point</th> <th style="text-align: center;">total flow (cc/min)</th> <th style="text-align: center;">O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">zero</td> <td style="text-align: center;">5000</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">high</td> <td style="text-align: center;">5000</td> <td style="text-align: center;">420</td> </tr> <tr> <td style="text-align: center;">mid</td> <td style="text-align: center;">5000</td> <td style="text-align: center;">210</td> </tr> <tr> <td style="text-align: center;">low</td> <td style="text-align: center;">5000</td> <td style="text-align: center;">100</td> </tr> </tbody> </table>	point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5000	0	high	5000	420	mid	5000	210	low	5000	100
point	total flow (cc/min)	O ₃ setting (v or ppb)														
zero	5000	0														
high	5000	420														
mid	5000	210														
low	5000	100														

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5030	0.0	5030	0.0	0.0	NA
as found high	5030	0.00	5030	381.0	411.0	0.927
mid	5030	0.00	5030	183.0	202.0	0.906
low	5030	0.00	5030	80.0	92.0	0.870
Average C.F.=						0.901

copy and paste flows and NO decrease from NOx cal in to calculated concentration

Linear Regression/Calibration Results:

	LIMITS	Pass/Fail ?
Correlation Coefficient = 1.000	> or = 0.995	PASS
Slope = 1.077	0.85-1.15	PASS
b (Intercept as % of full scale) = 0.617%	± 3% F.S.	PASS
% change in C.F. from last cal = 7%	± 15%	PASS

Comments:

This calibration is a shut down calibration. Following this sgut down calibration, the UV lamp will be adjusted.

Thermo 49i O₃ Analyzer Calibration

O₃ Calibration Curve

Calc Conc (ppb)	Indicated Conc (ppb)
0.0	0.0
92.0	92.0
202.0	202.0
411.0	411.0

Maxxam Thermo 49i O₃ Analyzer Calibration

Date: <u>28-Jul-15</u> Company: <u>LICA</u> Station Name/Location: <u>Elk Point</u> Performed by: <u>Limin Li</u>	Start Time (mst): <u>13:58</u> End Time (mst): <u>17:00</u> Calibration Purpose: <u>Post-repair</u> G.P.T. Date: <u>28-Jul-15</u>
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Analyzer: Serial Number: <u>1002240372</u> Last Calibration Date: <u>24-Jul-15</u> Previous Cal High Point C.F.: <u>1.000</u>	Range ppm: <u>500</u> As Found C.F.: <u>NA</u> New C.F.: <u>1.001</u>
--	---

	As found:		As left:	
Motherboard:	O ₃ Bkg:	<u>-0.3</u>	O ₃ Bkg:	<u>0</u>
	O ₃ Coef:	<u>0.994</u>	O ₃ Coef:	<u>0.992</u>
	3.3	<u>3.3</u>	3.3	<u>3.3</u>
	15.0	<u>15.0</u>	15.0	<u>15.0</u>
Interface Board:	24.0	<u>24.0</u>	24.0	<u>24.0</u>
	-3.3	<u>-3.2</u>	-3.3	<u>-3.2</u>
	3.3	<u>3.3</u>	3.3	<u>3.3</u>
	5.0	<u>5.0</u>	5.0	<u>5.0</u>
Photo Lamp:	15.0	<u>14.9</u>	15.0	<u>14.9</u>
	-15.0	<u>-15.2</u>	-15.0	<u>-15.2</u>
	9.8	<u>9.8</u>	9.8	<u>9.8</u>
	24.0	<u>23.5</u>	24.0	<u>23.5</u>
O ₃ Lamp:	9.4	<u>9.4</u>	9.4	<u>9.4</u>
	30.3	<u>30.3</u>	30.3	<u>30.3</u>
	54.0	<u>54.0</u>	54.0	<u>54.0</u>
	68.2	<u>68.2</u>	68.2	<u>68.2</u>
Bench:	694.4	<u>694.4</u>	694.4	<u>694.4</u>
	0.750	<u>0.750</u>	0.750	<u>0.750</u>
	0.756	<u>0.756</u>	0.756	<u>0.756</u>
	13	<u>13</u>	13	<u>13</u>
Cell A ppm:	15.2	<u>15.2</u>	15.2	<u>15.2</u>
	10.7	<u>10.7</u>	10.7	<u>10.7</u>
	46259	<u>46259</u>	104877	<u>104877</u>
	43402	<u>43402</u>	98908	<u>98908</u>
Internal Span:	374.4	<u>374.4</u>	374.4	<u>374.4</u>

Calibrator: Make & Model: <u>SABIO 2010 D</u> Serial #: <u>11900613</u> NOx Gas Cylinder I.D. #: <u>NA</u> NOx Cylinder Conc. (ppm): <u>NA</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Calibrator Flow Targets:</th> </tr> <tr> <th>point</th> <th>total flow (cc/min)</th> <th>O₃ setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5000</td> <td>0</td> </tr> <tr> <td>high</td> <td>5000</td> <td>380</td> </tr> <tr> <td>mid</td> <td>5000</td> <td>180</td> </tr> <tr> <td>low</td> <td>5000</td> <td>90</td> </tr> </tbody> </table>	Calibrator Flow Targets:			point	total flow (cc/min)	O ₃ setting (v or ppb)	zero	5000	0	high	5000	380	mid	5000	180	low	5000	90
Calibrator Flow Targets:																			
point	total flow (cc/min)	O ₃ setting (v or ppb)																	
zero	5000	0																	
high	5000	380																	
mid	5000	180																	
low	5000	90																	

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	5015	0.0	5015	0.0	0.0	NA
adjusted high	5015	0.00	5015	380.0	380.0	1.000
mid	5015	0.00	5015	180.0	180.0	1.000
low	5015	0.00	5015	90.0	89.6	1.004
calibrator zero	5015	0.00	5015	0.0	0.0	NA

Average C.F.:= 1.001

copy and paste flows and NO decrease from NOx cal In to calculated concentration

Linear Regression/Calibration Results:			
Correlation Coefficient =	<u>1.000</u>	LIMITS > or = 0.995	PASS
Slope =	<u>1.000</u>	0.85-1.15	PASS
b (Intercept as % of full scale)=	<u>-0.032%</u>	± 3% F.S.	PASS
% change in C.F. from last cal	<u>NA</u>	± 15%	NA

Comments:

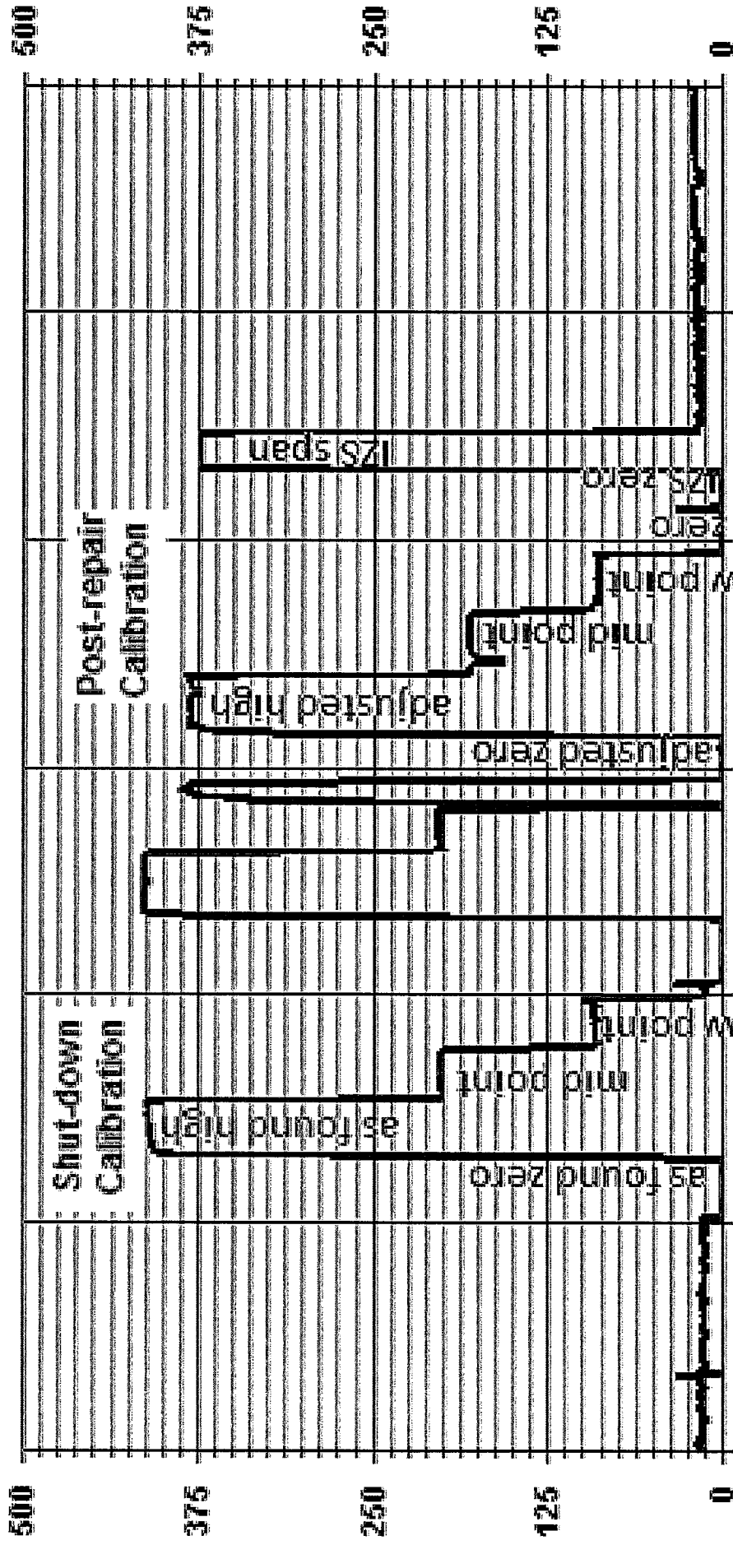
Adjust UV lamp.

Thermo 49i O₃ Analyzer Calibration

O₃ Calibration Curve

Calc Conc (ppb)	Indicated Conc (ppb)
0.0	0.0
80.0	80.0
180.0	180.0
380.0	380.0

01 Minute Averages



— LICA35 03_ PPB

PARTICULATE MATTER



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 3-Jul-15
 Company: LICA
 Station Name/Location: Elk Point
 Previous Audit Date: 19-Jun-15

Parameter: PM 2.5
 Performed by: Alex Yakupov
 Start/End Time (mst): 12:59 - 14:15
 Calibration Purpose: Monthly Audit #1

1400A Information and Status:

Serial Number:	<u>1405A207691003</u>	As Found Filter Loading %:	<u>51.05</u>
Ko Factor:	<u>15634</u>	As Left Filter Loading %:	<u>16.13</u>
Ambient Temperature °C:	<u>28.96</u>	As Found Noise:	<u>0.003</u>
Ambient Pressure atm:	<u>0.924</u>	As Left Noise:	<u>0.000</u>
Main Flow Reading lpm:	<u>3.00</u>	Pump Vacuum:	<u>0.37</u>
Aux Flow Reading lpm:	<u>13.66</u>	Warnings:	<u>None</u>

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>FB61291</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>NA</u>	<u>18-Mar-15</u>	<u>18-Mar-15</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	0.06	0.00	0.06
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.45	0.00	-0.45
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	0.06	0.00	0.06
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.45	0.00	-0.45
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>29.0</u>	1405F pressure atm:	<u>0.924</u>
reference temperature °C:	<u>28.0</u>	reference pressure:	<u>0.925</u>
difference °C:	<u>-1.0</u>	difference :	<u>-0.001</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>28.0</u>	1405F pressure atm:	<u>0.925</u>
reference temperature °C:	<u>28.0</u>	reference pressure:	<u>0.925</u>
difference °C:	<u>0.0</u>	difference :	<u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm		total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%	
1405F main flow lpm:	<u>3.00</u>	1400A total/aux flow lpm:	<u>16.66</u>
reference main flow lpm:	<u>3.17</u>	reference total/aux flow lpm:	<u>17.57</u>
difference lpm:	<u>0.17</u>	difference lpm:	<u>0.91</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm		total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%	
1405F main flow lpm:	<u>3.00</u>	1400A total/aux flow lpm:	<u>16.66</u>
reference main flow lpm:	<u>3.10</u>	reference total/aux flow lpm:	<u>17.40</u>
difference lpm:	<u>0.10</u>	difference lpm:	<u>0.74</u>

K_o Audit:

Last K_o audit date: 20-Mar-15
 1405F K_o factor: 15634
 Measured K_o factor: 15712.9000
 % difference: 0.50

Comments:



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 6-Jul-15
 Company: LICA
 Station Name/Location: Elk Point
 Previous Audit Date: 3-Jul-15

Parameter: PM 2.5
 Performed by: Alex Yakupov
 Start/End Time (mst): 10:07 - 10:57
 Calibration Purpose: Post-maintenance

1400A Information and Status:

Serial Number:	<u>1405A207691003</u>	As Found Filter Loading %:	<u>25.93</u>
Ko Factor:	<u>15634</u>	As Left Filter Loading %:	<u>25.82</u>
Ambient Temperature °C:	<u>18.03</u>	As Found Noise:	<u>0.001</u>
Ambient Pressure atm:	<u>0.932</u>	As Left Noise:	<u>0.000</u>
Main Flow Reading lpm:	<u>3.00</u>	Pump Vacuum:	<u>0.37</u>
Aux Flow Reading lpm:	<u>13.66</u>	Warnings:	<u>None</u>

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>FB61291</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>NA</u>	<u>18-Mar-15</u>	<u>18-Mar-15</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	0.55	0.00	0.55
	limit	0.15	0.55	0.15	0.55
Bypass Flow	actual	0.00	-0.70	0.00	-0.70
	limit	0.60	-0.70	0.60	-0.70

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	0.55	0.00	0.55
	limit	0.15	0.55	0.15	0.55
Bypass Flow	actual	0.00	-0.70	0.00	-0.70
	limit	0.60	-0.70	0.60	-0.70

As found temperature and pressure:

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>18.6</u>	1405F pressure atm:	<u>0.932</u>
reference temperature °C:	<u>18.7</u>	reference pressure:	<u>0.937</u>
difference °C:	<u>0.1</u>	difference :	<u>-0.005</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>18.7</u>	1405F pressure atm:	<u>0.937</u>
reference temperature °C:	<u>18.7</u>	reference pressure:	<u>0.937</u>
difference °C:	<u>0.0</u>	difference :	<u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm/+/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.66</u>
reference main flow lpm: <u>3.16</u>	reference total/aux flow lpm: <u>17.47</u>
difference lpm: <u>0.16</u>	difference lpm: <u>0.81</u>

As left flows (same as above if as found adequate):

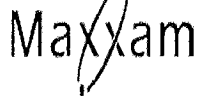
main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm/+/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.66</u>
reference main flow lpm: <u>3.03</u>	reference total/aux flow lpm: <u>16.81</u>
difference lpm: <u>0.03</u>	difference lpm: <u>0.15</u>

K_o Audit:

Last K_o audit date: 20-Mar-15
 1405F K_o factor: 15634
 Measured K_o factor: 15712.9000
 % difference: 0.50

Comments:

Maintenance required because the analog outputs locked at 79 ug/m3 (on July 5, 2015 at 10:00). The screen was "frozen". The instrument was locked up and had to be re-started. Flow rated were calibrated and audited.



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 16-Jul-15
 Company: LICA
 Station Name/Location: Elk Point
 Previous Audit Date: 3-Jul-15

Parameter: PM 2.5
 Performed by: Alex Yakupov
 Start/End Time (mst): 13:18 - 14:09
 Calibration Purpose: Monthly Audit #2

1400A Information and Status:

Serial Number:	<u>1405A207691003</u>	As Found Filter Loading %:	<u>39.41</u>
Ko Factor:	<u>15634</u>	As Left Filter Loading %:	<u>18.68</u>
Ambient Temperature °C:	<u>16.90</u>	As Found Noise:	<u>0.004</u>
Ambient Pressure atm:	<u>0.922</u>	As Left Noise:	<u>0.000</u>
Main Flow Reading lpm:	<u>3.00</u>	Pump Vacuum:	<u>0.37</u>
Aux Flow Reading lpm:	<u>13.67</u>	Warnings:	<u>None</u>

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>FB61291</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>NA</u>	<u>18-Mar-15</u>	<u>18-Mar-15</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	-0.01	0.56	0.00	0.55
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.70	0.00	-0.70
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	-0.01	0.56	0.00	0.55
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-0.70	0.00	-0.70
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>17.6</u>	1405F pressure atm:	<u>0.923</u>
reference temperature °C:	<u>18.8</u>	reference pressure:	<u>0.924</u>
difference °C:	<u>1.2</u>	difference :	<u>-0.001</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>18.8</u>	1405F pressure atm:	<u>0.924</u>
reference temperature °C:	<u>18.8</u>	reference pressure:	<u>0.924</u>
difference °C:	<u>0.0</u>	difference :	<u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.11</u>	reference total/aux flow lpm: <u>17.20</u>
difference lpm: <u>0.11</u>	difference lpm: <u>0.53</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.06</u>	reference total/aux flow lpm: <u>16.89</u>
difference lpm: <u>0.06</u>	difference lpm: <u>0.22</u>

K_o Audit:

Last K_o audit date: 16-Jul-15
 1405F K_o factor: 15634
 Measured K_o factor: 15757.7000
 % difference: 0.79

Comments:

WIND SYSTEM



Meteorological Sensor Audit

Station Information

Company:	<u>LICA</u>	Performed By:	<u>Chris Wesson/Kevin Hope</u>
Location:	<u>Elk Point</u>	Reason:	<u>Bi-annual audit</u>
Audit Date:	<u>21-Feb-14</u>	Start Time (mst):	<u>15:10</u>
Previous Audit Date:	<u>24-Nov-11</u>	End Time (mst):	<u>15:40</u>

Wind Speed

Sensor make:	<u>RM Young</u>	Sensor height:	<u>10M</u>
Sensor model:	<u>5103VK</u>	Serial Number:	<u>56589</u>
Calibrator:	<u>RM Young</u>	Variable speed motor:	<u>CA 03309</u>
Voltage range:	<u>0 - 1</u>	Output signal range:	<u>0 - 200 KPH</u>

Wind Speed Audit Data

RPM	Wind Speed Actual	Indicated WS - CW	Indicated WS-CCW	Correction Factor
0	0.0	0.02	0.03	-
1000	17.6	17.79	17.75	0.99
2000	35.28	35.54	35.53	0.99
3000	52.92	53.29	53.31	0.99
4000	70.56	71.08	71.08	0.99
5000	88.2	88.88	88.91	0.99
6000	105.84	106.6	106.7	0.99
7000	123.48	124.4	124.5	0.99
8000	141.12	142.2	142.2	0.99
9000	158.76	160	160.1	0.99
10000	176.4	177.8	177.8	0.99
Average Correction Factor:				0.99

Wind Direction

Sensor make:	<u>RM Young</u>	Sensor height:	<u>10M</u>
Sensor model:	<u>5103VK</u>	Serial Number:	<u>56589</u>
Calibrator:	<u>RM Young</u>	Variable speed motor:	<u>CA03309</u>
Voltage range:	<u>0 - 1</u>	Output signal range:	<u>0 - 360</u>

Wind Direction Audit Data

Wind Direction	Indicated	Correction Factor
0	355.0	NA
45	43.1	1.04
90	89.5	1.01
135	135.5	1.00
180	181.2	0.99
225	226.1	1.00
270	270.1	1.00
315	312.3	1.01
360	354.7	1.01
Average Correction Factor:		1.01

Remarks:

CALIBRATORS

Company: Maxxam

Operator: Limin Li

Calibrator:
 Make/Model API 700
 Serial Number 830
 Last Verification Date Oct 2013
 SO₂ Cylinder Conc. 50.3
 SO₂ Cylinder S/N LL42475

Flow Measurement Device:
 Make/Model N/A
 Serial Number N/A
 Temperature (°C) N/A
 Barometric Pressure N/A

Flow Measurements

Pt. No. 1 79.5 Pt. No. 2 39.8 Pt. No. 3 19.9

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
4918	0.800	0.798	0%	± 10%
4960	0.400	0.398	-1%	± 10%
4977	0.200	0.200	0%	± 10%
Absolute Average Percent Difference			0%	± 10%

LINEAR REGRESSION ANALYSIS

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

SO₂ **LIMITS**
 Correlation= 1.0000 ≥ 0.995
 m (Slope)= 0.9971 0.90-1.10
 b (Intercept % of FS)= 0.0000 ± 3% F.S.

AENV Standards

Audit Calibrator
 Make/Model R&R MFC 201
 Serial/AMU Number AMU 1690

SO₂ Analyzer

Make/Model Teco 43C
 Serial/AMU Number AMU 1623
 Last Calibration Date Dec 15/14
 Full Scale (ppm) 1.0

COMMENTS: H2S gas was slow to move through the calibrator. Check for contamination inside calibrator. SO2 moves through quickly.

Auditor: Al Clark

Date: December 16, 2014

Operator Signature: _____

Location: McIntyre Center Edmonton



Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-028A

Company Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>17100415</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>New</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>BLM0027561</u>	Barometric Pressure	<u>N/A</u>
NO/NOX Concentration	<u>50.7/50.7</u>		

Dilution Flow (sccm)		
Pt. #1	<u>5000</u>	Pt. #3 <u>5000</u>
Pt. #2	<u>5000</u>	
Gas Flow (sccm)		
Pt. #1	<u>80</u>	Pt. #3 <u>20</u>
Pt. #2	<u>40</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%	
5016	79.1	0.800	0.800	0.811	-0.011	0.800	1%	0%
5016	39.7	0.401	0.401	0.405	-0.005	0.400	1%	0%
5015	19.9	0.201	0.201	0.203	-0.003	0.200	1%	0%
Absolute Average Percent Difference							1%	0%

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)= 1.0139	0.90-1.10	m (Slope)= 1.0003
b (Intercept % of FS)= #DIV/0!	± 3% F.S.	b (Intercept % of FS)= #DIV/0!

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5016	0.000	0.000	0.809	-0.013	0.796	NO ₂	% Diff. Limit
5016	0.500	0.484	0.325	0.469	0.794	0	± 10%
5016	0.300	0.278	0.531	0.263	0.794	0	± 10%
5016	0.100	0.090	0.719	0.076	0.765	0	± 10%
Absolute Average Percent Difference						0	± 10%

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

NO ₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 0.9960	0.90-1.10
b (Intercept % of FS)= #DIV/0!	± 3% F.S.

AENV Standards Audit Calibrator	NO _x Analyzer
Make/Model <u>Teco 1461</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 21, 2015</u>
	Full Scale (ppm) _____

COMMENTS: Contains 49.9 ppm SO2

Auditor: Al Clark Date: May 21, 2015

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

Company: Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010D</u>	Make/Model	<u>N/A</u>
Serial Number	<u>11900613</u>	Serial Number	<u>N/A</u>
Oven Temperature	<u>N/A</u>	Temperature (°C)	<u>N/A</u>
Last Verification Date	<u>N/A</u>	Barometric Pressure	<u>N/A</u>

Flow Measurements

Pt. No. 1 5000 Pt. No. 2 5000 Pt. No. 3 5000

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
5013	0.000	0.001		
5013	0.400	0.407	1%	± 10%
5013	0.200	0.204	1%	± 10%
5014	0.100	0.101	0%	± 10%
Absolute Average Percent Difference			1%	± 10%

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

O_3		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0163	0.90-1.10
b (Intercept % of FS)=	0.0800	± 3% F.S.

AENV Standards		Ozone Analyzer	
Audit Calibrator		Make/Model	<u>Teco 49i</u>
Make/Model	<u>Teco 49i PS</u>	Serial/AMU Number	<u>AMU 1843</u>
Serial/AMU Number	<u>AMU 1808</u>	Last Calibration Date	<u>May 21, 2015</u>
Ozone Standard	<u>Primary</u>	Full Scale (ppm)	<u>0.5</u>

COMMENTS: _____

Auditor: Al Clark Date: May 21, 2015
 Operator Signature: *Limin Li* Location: McIntyre Center Edmonton

Company Maxxam Operator: Limln Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>829</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>NEW</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>April 2104</u>	Barometric Pressure	<u>N/A</u>
NO/NOx Concentration	<u>50.8/50.8</u>		

Dilution Flow (sccm)
Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)
Pt. #1 80 Pt. #2 40 Pt. #3 20

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4921	78.7	0.800	0.800	0.847	-0.016	0.830	6%	4%
4961	39.3	0.400	0.400	0.422	-0.008	0.415	5%	4%
4977	19.6	0.200	0.200	0.213	-0.004	0.208	6%	4%
Absolute Average Percent Difference							6%	4%

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)=	1.0580	0.90-1.10		m (Slope)=	1.0373
b (Intercept % of FS)=	0.0200	± 3% F.S.		b (Intercept % of FS)=	0.0200

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
4921	0.000	0.000	0.848	-0.015	0.833	NO ₂	% Diff. Limit
4921	0.520	0.578	0.270	0.537	0.807	-4%	± 10%
4921	0.280	0.318	0.530	0.292	0.822	-3%	± 10%
4921	0.100	0.121	0.727	0.105	0.832	-1%	± 10%
Absolute Average Percent Difference						3%	± 10%

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

NO ₂		LIMITS	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9530	0.90-1.10	
b (Intercept % of FS)=	-1.2556	± 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>April 1, 2015</u>
		Full Scale (ppm)	<u>1.0</u>

COMMENTS: Cylinder contains 49.7 ppm SO₂.

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: April 1, 2015
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: December 15, 2014
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. 702 mmhg

Reference Analyzer:

Make/Model: Teco 45C Serial/AMU Number: 1624
Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
Last Calibration: Date: Dec15/14 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	132.442	10.0
5099	39.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

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

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: December 16, 2014
Location: McIntyre Center Edmonton



Praxair Canada, Inc.
 9501-34th Street
 Edmonton, AB T6B 2X6
 Tel: 780-440-0778
 Fax: 780-440-5302

03/27/2014

MAXXAM ANALYTICS INC "NA"
 9372 49TH ST
 EDMONTON, AB T6B 2L7

Work Order No. 20248656
 Customer Reference No.

Product Lot/Batch No. Z582 4 085 02
 Product Part No. NI ME600P2P-AQ

CERTIFICATE OF ANALYSIS
Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Methane	600.0ppm	601.4ppm	U	±1% rel
Propane	200.0ppm	202ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler-Toledo Analytical Balance-ID2ax/USA--
 Hewlett-Packard (Agilent)-6890--GC-FID

Cylinder Style: AQ
 Cylinder Pressure @70F: 2200 psig
 Cylinder Volume: 82.0 ft³
 Valve Outlet Connection: CGA-350
 Cylinder No(s): LL33874

Filling Method: Gravimetric
 Date of Fill: 03/28/2014
 Expiration Date: 03/26/2017

Analyst: Todd Hryniv

The gas composition cylinder standard prepared by Praxair Canada, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The laboratory standard provided is certified against Praxair Canada, Inc. Reference Materials which are either prepared by gravimetric methods to the National Institute of Standards and Technology (NIST) Measurement Canada, or against NIST Standard Reference Material when available.

Only the information for the composition (i.e. % of total gas) for the product is provided. All other information is as shown unless otherwise noted.

<input type="checkbox"/> All of the above	<input type="checkbox"/> Gas Chromatography with Thermal Conductivity Detector	<input type="checkbox"/> Gas Chromatography with Electrode Conductivity Detector	<input type="checkbox"/> Gas Chromatography with Flame Ionization Detector
<input type="checkbox"/> Gas Chromatography with Thermal Conductivity Detector	<input type="checkbox"/> Gas Chromatography with Hydrogen Ionization Detector	<input type="checkbox"/> Gas Chromatography with Wetted Wall Cell Detector	<input type="checkbox"/> Gas Chromatography with Photoacoustic Detector
<input type="checkbox"/> Gas Chromatography with Reduced Gas Analysis Detector	<input type="checkbox"/> Gas Chromatography with Thermal Conductivity Detector	<input type="checkbox"/> Static Gas Analysis with Thermal Conductivity Detector	<input type="checkbox"/> Infrared (FTIR or NDIR)
<input type="checkbox"/> Mass Spectrometry (MS or GC/MS) and Photoacoustic Cell/Infrared Detector	<input type="checkbox"/> Infrared (FTIR or NDIR)	<input type="checkbox"/> Paramagnetic	<input type="checkbox"/> Synchrotron Radiation
	<input type="checkbox"/> Wet Chemical Analysis	<input type="checkbox"/> Detector Tube	<input type="checkbox"/> Other
	<input type="checkbox"/> Other	<input type="checkbox"/> Gas Chromatography with Mass Spectrometry Detector	

IMPORTANT:

The information contained herein has been prepared at your request by personnel within Praxair Canada, Inc. When we believe the information is accurate within the limits of the analytical methods employed and is confined to the scope of the specific analysis performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is provided with the understanding that any use of the information is at the sole discretion and risk of the user. Praxair Canada, Inc. disclaims any liability of Praxair Canada, Inc. arising out of the use of the information contained herein, provided the user is notified of the information.



Calibration Gas Audit

CH₄ / C₃H₈ Cylinder Gas

File No. 2015-031CGA

Company: Maxxam **Operators name:** Limin Li
Cylinder #: LL19272 **Conc CH4 (PPM)** 880/304 **Tolerance (%)** 2 **Certified By:** Praxair

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&R MFC 201</u>			Make/Model	<u>Bios DC2</u>
Serial Number	<u>AMU 1691</u>			Serial Number	<u>AMU 1650</u>
Last Verification Date	<u>May 21, 2015</u>			Temp. °C	<u>24.0 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>999.2</u>	B.P.	<u>703 mmhg</u>
Cylinder Number	<u>D751932</u>				
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF0037998</u>				

Reference Analyzer:
Make/Model Teco 55C **Serial/AMU Number:** 1643
Instrument Settings **Zero:** N/A **Span:** N/A **Range:** 20
Last Calibration: **Date:** May 21/15 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH ₄	C ₃ H ₈			CH ₄	C ₃ H ₈
2600	0.0	0.00	0.00	0.02005	49.883	886	304
2569	51.5	17.77	16.76	0.02005	49.883	886	304
3549	22.3	5.56	5.27	0.00628	159.148	885	305
3523	10.4	2.63	2.49	0.00295	338.750	891	307
Average Cylinder Concentration:						887	305

	<u>CH₄</u>		<u>C₃H₈</u>
Previous Stated Concentration PPM:	<u>880</u>		<u>304</u>
Percent variance from Stated:	<u>0.8</u>		<u>0.4</u>

Cylinder gas tolerances based on CH₄ only

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

Auditor: Al Clark **Date:** May 21, 2015
Operator Signature: *Al Clark* **Location:** McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-345CGA

Company: Maxxam Operator's name: Limin Li
Cylinder #: BLM002073 Conc (PPM) 50.6/50.6 Tolerance (%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model Teco 146I
Serial Number AMU 1809
Last Verification Date March 31, 2015
Gas Type NO Conc. 48.79
Cylinder Number CAL018024

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 42I Serial/AMU Number: 1868
Instrument Settings Zero: 4.2 Span: 1.008 Range: 1.0
Last Calibration: Date: Mar 31/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000	0.01660	60.242	51.5	51.1
4976	82.6	0.855	0.848	0.01660	60.242	51.5	51.1
4993	41.0	0.427	0.421	0.00821	121.780	52.0	51.3
4977	20.2	0.213	0.209	0.00406	246.386	52.5	51.5
Average Cylinder Concentration:						52.0	51.3

NO NOx

Previous Stated Concentration PPM: 50.6 50.6

Percent variance from Stated: 2.8 1.4

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration Contains 49.5 ppm SO2 in cylinder

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

Auditor: Al Clark Date: March 31, 2015
Operator Signature: *Al Clark* Location: Mcintyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-343CGA

Company: Maxxam **Operators name:** Limin Li
Cylinder #: BLM002756T **Conc (PPM)** 50.7/50.7 **Tolerance (%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:

Make/Model Teco 146i
 Serial Number AMU 1809
 Last Verification Date March 31, 2015
 Gas Type NO Conc. 48.79
 Cylinder Number CAL018024

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 42i Serial/AMU Number: 1868
 Instrument Settings Zero: 4.2 Span: 1.008 Range: 1.0
 Last Calibration: Date: Mar 31/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4976	82.6	0.842	0.822	0.01660	60.242	50.7	49.5
4993	41.0	0.420	0.410	0.00821	121.780	51.1	49.9
4977	20.2	0.208	0.205	0.00406	246.386	51.2	50.5
Average Cylinder Concentration:						51.0	50.0

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>50.7</u>	<u>50.7</u>
Percent variance from Stated: <u>0.7</u>	<u>1.4</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration Contains 49.9 ppm SO2 in cylinder
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: March 31, 2015
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-344CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: BLM002073 Concentration PPM: 49.5 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: AI Clark

Calibrator Flows (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.0000	0.0000	0.000
4976	82.6	0.801	0.01660	60.242	48.3
4993	41.0	0.396	0.00821	121.780	48.2
4977	20.2	0.193	0.00406	246.386	47.6
Average Cylinder Concentration:					48.0

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 3.0

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: AI Clark
 Operator Signature: *AI Clark*

Date: March 31, 2015
 Location: McIntyre Center Edmonton



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	0.01660	60.242	49.5
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: *Limin Li*

Date: March 31, 2015
 Location: McIntyre Center Edmonton

APPENDIX IV
ANALYTICAL RESULTS

VOCs

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 5, 2015</p> <p>CANISTER ID: 1531</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	10-Jul-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Jul-15
1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	10-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
2,2,4-Trimethylpentane	I	0.09	ppbv	0.01	AC-058	10-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	10-Jul-15
2,3-Dimethylbutane	I	0.10	ppbv	0.02	AC-058	10-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
2,4-Dimethylpentane	I	0.05	ppbv	0.01	AC-058	10-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 5, 2015</p> <p>CANISTER ID: 1531</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
2-Methylpentane	I	0.05	ppbv	0.01	AC-058	10-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
3-Methylpentane	I	0.02	ppbv	0.01	AC-058	10-Jul-15
Acetone		3.5	ppbv	0.4	AC-058	10-Jul-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Jul-15
Benzene	I	0.29	ppbv	0.01	AC-058	10-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
Carbon disulfide	I	0.11	ppbv	0.01	AC-058	10-Jul-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	10-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Chloromethane		0.61	ppbv	0.02	AC-058	10-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Jul-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070044-001 MATRIX: Ambient Air CLIENT SAMPLE ID: LICA/VOC/EP/July 5, 2015 CANISTER ID: 1531 DESCRIPTION: Elk Point Airport DATE SAMPLED: 05-Jul-15 0:00 DATE RECEIVED: 09-Jul-15 REPORT CREATED: 11-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		0.7	ppbv	0.3	AC-058	10-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Ethylbenzene	I	0.02	ppbv	0.01	AC-058	10-Jul-15
Freon-11	I	0.23	ppbv	0.02	AC-058	10-Jul-15
Freon-113	I	0.07	ppbv	0.01	AC-058	10-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Freon-12		0.55	ppbv	0.02	AC-058	10-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	10-Jul-15
Isobutane	I	0.15	ppbv	0.02	AC-058	10-Jul-15
Isopentane		0.33	ppbv	0.03	AC-058	10-Jul-15
Isoprene		0.47	ppbv	0.01	AC-058	10-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
m,p-Xylene	I	0.04	ppbv	0.03	AC-058	10-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	10-Jul-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	10-Jul-15
Methyl ethyl ketone		0.4	ppbv	0.3	AC-058	10-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	10-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Jul-15
Methylcyclohexane	I	0.07	ppbv	0.01	AC-058	10-Jul-15
Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Jul-15
n-Butane		0.40	ppbv	0.03	AC-058	10-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Jul-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given
 T Value reported is less than the laboratory method detection limit
 U Compound was analyzed for but not detected
 I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 5, 2015</p> <p>CANISTER ID: 1531</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	10-Jul-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
n-Hexane	I	0.05 ppbv	0.01	AC-058	10-Jul-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	10-Jul-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	10-Jul-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	10-Jul-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	10-Jul-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
o-Xylene	I	0.01 ppbv	0.01	AC-058	10-Jul-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	10-Jul-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	10-Jul-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	10-Jul-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	10-Jul-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	10-Jul-15
Toluene	I	0.18 ppbv	0.01	AC-058	10-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	10-Jul-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	10-Jul-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	10-Jul-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070216-002</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 11, 2015</p> <p>CANISTER ID: 1516</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 21-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	25-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	25-Jul-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	25-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1-Butene	I	0.24	ppbv	0.02	AC-058	25-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,2,4-Trimethylpentane	I	0.12	ppbv	0.01	AC-058	25-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,3,4-Trimethylpentane	I	0.03	ppbv	0.01	AC-058	25-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,4-Dimethylpentane	I	0.07	ppbv	0.01	AC-058	25-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070216-002</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 11, 2015</p> <p>CANISTER ID: 1516</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 21-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2-Methylpentane	I	0.07	ppbv	0.01	AC-058	25-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
3-Methylpentane	I	0.03	ppbv	0.01	AC-058	25-Jul-15
Acetone		11.7	ppbv	0.4	AC-058	25-Jul-15
Acrolein		0.8	ppbv	0.3	AC-058	25-Jul-15
Benzene		1.30	ppbv	0.01	AC-058	25-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
Carbon disulfide		0.82	ppbv	0.01	AC-058	25-Jul-15
Carbon tetrachloride	I	0.10	ppbv	0.01	AC-058	25-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Chloroform	I	0.02	ppbv	0.02	AC-058	25-Jul-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
cis-2-Butene	I	0.03	ppbv	0.02	AC-058	25-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Cyclohexane	I	0.03	ppbv	0.02	AC-058	25-Jul-15
Cyclopentane	I	0.02	ppbv	0.01	AC-058	25-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given
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U Compound was analyzed for but not detected
I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070216-002</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 11, 2015</p> <p>CANISTER ID: 1516</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 21-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Ethanol		1.7 ppbv	0.3	AC-058	25-Jul-15
Ethyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	25-Jul-15
Ethylbenzene	I	0.05 ppbv	0.01	AC-058	25-Jul-15
Freon-11	I	0.28 ppbv	0.02	AC-058	25-Jul-15
Freon-113	I	0.08 ppbv	0.01	AC-058	25-Jul-15
Freon-114	I	0.02 ppbv	0.02	AC-058	25-Jul-15
Freon-12	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50 ppbv	0.5	AC-058	25-Jul-15
Isobutane	I	0.03 ppbv	0.02	AC-058	25-Jul-15
Isopentane		0.49 ppbv	0.03	AC-058	25-Jul-15
Isoprene		2.41 ppbv	0.01	AC-058	25-Jul-15
Isopropyl alcohol	K, T, U	< 0.4 ppbv	0.4	AC-058	25-Jul-15
Isopropylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
m,p-Xylene	I	0.08 ppbv	0.03	AC-058	25-Jul-15
m-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	25-Jul-15
m-Ethyltoluene	K, T, U	< 0.08 ppbv	0.08	AC-058	25-Jul-15
Methyl butyl ketone	K, T, U	< 0.50 ppbv	0.5	AC-058	25-Jul-15
Methyl ethyl ketone		1.4 ppbv	0.3	AC-058	25-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4 ppbv	0.4	AC-058	25-Jul-15
Methyl methacrylate	K, T, U	< 0.07 ppbv	0.07	AC-058	25-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Jul-15
Methylcyclohexane	I	0.06 ppbv	0.01	AC-058	25-Jul-15
Methylcyclopentane	I	0.05 ppbv	0.02	AC-058	25-Jul-15
Methylene chloride	K, T, U	< 0.3 ppbv	0.3	AC-058	25-Jul-15
n-Butane		1.16 ppbv	0.03	AC-058	25-Jul-15
n-Decane	K, T, U	< 0.06 ppbv	0.06	AC-058	25-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	25-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	25-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	25-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	25-Jul-15
n-Nonane	I	0.02	ppbv	0.01	AC-058	25-Jul-15
o-Ethyltoluene	I	0.01	ppbv	0.01	AC-058	25-Jul-15
o-Xylene	I	0.04	ppbv	0.01	AC-058	25-Jul-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	25-Jul-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Toluene		0.52	ppbv	0.01	AC-058	25-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	25-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	25-Jul-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	25-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1-Butene	I	0.05	ppbv	0.02	AC-058	25-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15

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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
3-Methylpentane	I	0.02	ppbv	0.01	AC-058	25-Jul-15
Acetone		7.5	ppbv	0.4	AC-058	25-Jul-15
Acrolein		11.4	ppbv	0.3	AC-058	25-Jul-15
Benzene	I	0.15	ppbv	0.01	AC-058	25-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
Carbon disulfide		0.39	ppbv	0.01	AC-058	25-Jul-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	25-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Chloroform	I	0.02	ppbv	0.02	AC-058	25-Jul-15
Chloromethane		0.77	ppbv	0.02	AC-058	25-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Cyclohexane	I	0.03	ppbv	0.02	AC-058	25-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070304-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 17, 2015</p> <p>CANISTER ID: S5629</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 17-Jul-15 0:00</p> <p>DATE RECEIVED: 24-Jul-15</p> <p>REPORT CREATED: 19-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.2	ppbv	0.3	AC-058	25-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Ethylbenzene	I	0.02	ppbv	0.01	AC-058	25-Jul-15
Freon-11	I	0.28	ppbv	0.02	AC-058	25-Jul-15
Freon-113	I	0.08	ppbv	0.01	AC-058	25-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Freon-12		0.65	ppbv	0.02	AC-058	25-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	25-Jul-15
Isobutane	I	0.11	ppbv	0.02	AC-058	25-Jul-15
Isopentane	I	0.11	ppbv	0.03	AC-058	25-Jul-15
Isoprene		0.52	ppbv	0.01	AC-058	25-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
m,p-Xylene	I	0.04	ppbv	0.03	AC-058	25-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	25-Jul-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	25-Jul-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	25-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
Methylcyclohexane	I	0.04	ppbv	0.01	AC-058	25-Jul-15
Methylcyclopentane	I	0.02	ppbv	0.02	AC-058	25-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
n-Butane	I	0.20	ppbv	0.03	AC-058	25-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	25-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070304-001 MATRIX: Ambient Air CLIENT SAMPLE ID: LICA/VOC/EP/July 17, 2015 CANISTER ID: S5629 DESCRIPTION: Elk Point Airport DATE SAMPLED: 17-Jul-15 0:00 DATE RECEIVED: 24-Jul-15 REPORT CREATED: 19-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	25-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	25-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	25-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	25-Jul-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
o-Xylene	I	0.01	ppbv	0.01	AC-058	25-Jul-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	25-Jul-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Toluene	I	0.10	ppbv	0.01	AC-058	25-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
trans-2-Butene	I	0.02	ppbv	0.01	AC-058	25-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15

Qualifiers K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit	Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca
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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070377-003 MATRIX: Ambient Air CLIENT SAMPLE ID: LICA/VOC/EP/July 23, 2015 CANISTER ID: 2647 DESCRIPTION: Elk Point Airport DATE SAMPLED: 23-Jul-15 0:00 DATE RECEIVED: 30-Jul-15 REPORT CREATED: 11-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	01-Aug-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	01-Aug-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	01-Aug-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	01-Aug-15
1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	01-Aug-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	01-Aug-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
1-Butene	I	0.08	ppbv	0.02	AC-058	01-Aug-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
2,3-Dimethylbutane	I	0.11	ppbv	0.02	AC-058	01-Aug-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given
 T Value reported is less than the laboratory method detection limit
 U Compound was analyzed for but not detected
 I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead
On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455
E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070377-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/July 23, 2015</p> <p>CANISTER ID: 2647</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 23-Jul-15 0:00</p> <p>DATE RECEIVED: 30-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
2-Methylhexane	I	0.03	ppbv	0.01	AC-058	01-Aug-15
2-Methylpentane		0.40	ppbv	0.01	AC-058	01-Aug-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
3-Methylhexane	I	0.03	ppbv	0.02	AC-058	01-Aug-15
3-Methylpentane		0.34	ppbv	0.01	AC-058	01-Aug-15
Acetone		3.9	ppbv	0.4	AC-058	01-Aug-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	01-Aug-15
Benzene	I	0.04	ppbv	0.01	AC-058	01-Aug-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
Carbon disulfide	I	0.13	ppbv	0.01	AC-058	01-Aug-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	01-Aug-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Chloroform	I	0.02	ppbv	0.02	AC-058	01-Aug-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Cyclohexane	I	0.06	ppbv	0.02	AC-058	01-Aug-15
Cyclopentane	I	0.02	ppbv	0.01	AC-058	01-Aug-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070377-003 MATRIX: Ambient Air CLIENT SAMPLE ID: LICA/VOC/EP/July 23, 2015 CANISTER ID: 2647 DESCRIPTION: Elk Point Airport DATE SAMPLED: 23-Jul-15 0:00 DATE RECEIVED: 30-Jul-15 REPORT CREATED: 11-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		0.9	ppbv	0.3	AC-058	01-Aug-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Ethylbenzene	I	0.02	ppbv	0.01	AC-058	01-Aug-15
Freon-11	I	0.27	ppbv	0.02	AC-058	01-Aug-15
Freon-113	I	0.07	ppbv	0.01	AC-058	01-Aug-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Freon-12		0.63	ppbv	0.02	AC-058	01-Aug-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	01-Aug-15
Isobutane		0.46	ppbv	0.02	AC-058	01-Aug-15
Isopentane		0.37	ppbv	0.03	AC-058	01-Aug-15
Isoprene		0.53	ppbv	0.01	AC-058	01-Aug-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
m,p-Xylene	I	0.04	ppbv	0.03	AC-058	01-Aug-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	01-Aug-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	01-Aug-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	01-Aug-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	01-Aug-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	01-Aug-15
Methylcyclohexane	I	0.09	ppbv	0.01	AC-058	01-Aug-15
Methylcyclopentane		0.60	ppbv	0.02	AC-058	01-Aug-15
Methylene chloride		0.4	ppbv	0.3	AC-058	01-Aug-15
n-Butane		0.59	ppbv	0.03	AC-058	01-Aug-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	01-Aug-15

Qualifiers K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit	Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
n-Heptane	I	0.05	ppbv	0.01	AC-058	01-Aug-15
n-Hexane		5.21	ppbv	0.01	AC-058	01-Aug-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	01-Aug-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	01-Aug-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	01-Aug-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	01-Aug-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
o-Xylene	I	0.02	ppbv	0.01	AC-058	01-Aug-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	01-Aug-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Toluene	I	0.08	ppbv	0.01	AC-058	01-Aug-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	01-Aug-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	01-Aug-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	01-Aug-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	01-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/ July 29, 2015</p> <p>CANISTER ID: S5611</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Aug-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	08-Aug-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Aug-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Aug-15
1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	08-Aug-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Aug-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2,2-Dimethylbutane	I	0.01	ppbv	0.01	AC-058	08-Aug-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/ July 29, 2015</p> <p>CANISTER ID: S5611</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	08-Aug-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	08-Aug-15
2-Methylpentane	I	0.04 ppbv	0.01	AC-058	08-Aug-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
3-Methylhexane	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
3-Methylpentane	I	0.02 ppbv	0.01	AC-058	08-Aug-15
Acetone		3.5 ppbv	0.4	AC-058	08-Aug-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	08-Aug-15
Benzene	I	0.04 ppbv	0.01	AC-058	08-Aug-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	08-Aug-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	08-Aug-15
Carbon disulfide	I	0.03 ppbv	0.01	AC-058	08-Aug-15
Carbon tetrachloride	I	0.10 ppbv	0.01	AC-058	08-Aug-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Chloroform	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Chloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	08-Aug-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Aug-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Cyclohexane	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Cyclopentane	I	0.01 ppbv	0.01	AC-058	08-Aug-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	08-Aug-15

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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Ethanol		0.6 ppbv	0.3	AC-058	08-Aug-15
Ethyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	08-Aug-15
Ethylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	08-Aug-15
Freon-11	I	0.29 ppbv	0.02	AC-058	08-Aug-15
Freon-113	I	0.09 ppbv	0.01	AC-058	08-Aug-15
Freon-114	K, T, U	< 0.02 ppbv	0.02	AC-058	08-Aug-15
Freon-12		0.62 ppbv	0.02	AC-058	08-Aug-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50 ppbv	0.5	AC-058	08-Aug-15
Isobutane	I	0.22 ppbv	0.02	AC-058	08-Aug-15
Isopentane	I	0.15 ppbv	0.03	AC-058	08-Aug-15
Isoprene		0.78 ppbv	0.01	AC-058	08-Aug-15
Isopropyl alcohol	K, T, U	< 0.4 ppbv	0.4	AC-058	08-Aug-15
Isopropylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	08-Aug-15
m,p-Xylene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Aug-15
m-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Aug-15
m-Ethyltoluene	K, T, U	< 0.08 ppbv	0.08	AC-058	08-Aug-15
Methyl butyl ketone	K, T, U	< 0.50 ppbv	0.5	AC-058	08-Aug-15
Methyl ethyl ketone	K, T, U	< 0.3 ppbv	0.3	AC-058	08-Aug-15
Methyl isobutyl ketone	K, T, U	< 0.4 ppbv	0.4	AC-058	08-Aug-15
Methyl methacrylate	K, T, U	< 0.07 ppbv	0.07	AC-058	08-Aug-15
Methyl tert butyl ether	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Aug-15
Methylcyclohexane	I	0.05 ppbv	0.01	AC-058	08-Aug-15
Methylcyclopentane	I	0.03 ppbv	0.02	AC-058	08-Aug-15
Methylene chloride	K, T, U	< 0.3 ppbv	0.3	AC-058	08-Aug-15
n-Butane	I	0.28 ppbv	0.03	AC-058	08-Aug-15
n-Decane	K, T, U	< 0.06 ppbv	0.06	AC-058	08-Aug-15

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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/EP/ July 29, 2015</p> <p>CANISTER ID: S5611</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
n-Hexane	I	0.05	ppbv	0.01	AC-058	08-Aug-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	08-Aug-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Aug-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Aug-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Aug-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
o-Xylene	I	0.01	ppbv	0.01	AC-058	08-Aug-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Aug-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Toluene	I	0.06	ppbv	0.01	AC-058	08-Aug-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Aug-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Aug-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Aug-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Aug-15

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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070044-002 MATRIX: Air Filter CLIENT SAMPLE ID: LICA/PUF/EP/July 5, 2015 CANISTER ID: TE 03 DESCRIPTION: Elk Point Airport DATE SAMPLED: 05-Jul-15 0:00 DATE RECEIVED: 09-Jul-15 REPORT CREATED: 11-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.03 ug/Filter	0.01	NA-017	02-Aug-15
2-Methylnaphthalene		0.05 ug/Filter	0.01	NA-017	02-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
7,12-Dimethylbenz(a)anthracene		0.01 ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Anthracene		0.04 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(b,j,k)fluoranthene		0.04 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Chrysene		0.02 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	02-Aug-15
Fluoranthene		0.06 ug/Filter	0.01	NA-017	02-Aug-15
Fluorene		0.08 ug/Filter	0.01	NA-017	02-Aug-15
Indeno(1,2,3-cd)pyrene		0.03 ug/Filter	0.01	NA-017	02-Aug-15
Naphthalene		0.04 ug/Filter	0.01	NA-017	02-Aug-15
Perylene		0.04 ug/Filter	0.01	NA-017	02-Aug-15
Phenanthrene		0.36 ug/Filter	0.01	NA-017	02-Aug-15
Pyrene		0.04 ug/Filter	0.01	NA-017	02-Aug-15

Qualifiers K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/July 5, 2015</p> <p>CANISTER ID: TE 03</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 05-Jul-15 0:00</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Retene		0.59	ug/Filter	0.01	NA-017	02-Aug-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given

T Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070216-003</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/July 11, 2015</p> <p>CANISTER ID: TE 05</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 21-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.03	ug/Filter	0.01	NA-017	02-Aug-15
2-Methylnaphthalene		0.05	ug/Filter	0.01	NA-017	02-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
7,12-Dimethylbenz(a)anthracene		0.01	ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Acridine	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Anthracene		0.04	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(b,j,k)fluoranthene		0.04	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Chrysene		0.03	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	02-Aug-15
Fluoranthene		0.08	ug/Filter	0.01	NA-017	02-Aug-15
Fluorene		0.06	ug/Filter	0.01	NA-017	02-Aug-15
Indeno(1,2,3-cd)pyrene		0.07	ug/Filter	0.01	NA-017	02-Aug-15
Naphthalene		0.04	ug/Filter	0.01	NA-017	02-Aug-15
Perylene		0.05	ug/Filter	0.01	NA-017	02-Aug-15
Phenanthrene		0.80	ug/Filter	0.01	NA-017	02-Aug-15
Pyrene		0.04	ug/Filter	0.01	NA-017	02-Aug-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given
T Value reported is less than the laboratory method detection limit
U Compound was analyzed for but not detected
I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead
On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455
E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070216-003</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/July 11, 2015</p> <p>CANISTER ID: TE 05</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 11-Jul-15 0:00</p> <p>DATE RECEIVED: 21-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		1.17 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070304-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/July 17, 2015</p> <p>CANISTER ID: TE-08</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 17-Jul-15 0:00</p> <p>DATE RECEIVED: 24-Jul-15</p> <p>REPORT CREATED: 19-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.02 ug/Filter	0.01	NA-017	09-Aug-15
2-Methylnaphthalene		0.03 ug/Filter	0.01	NA-017	09-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Chrysene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Fluoranthene		0.04 ug/Filter	0.01	NA-017	09-Aug-15
Fluorene		0.07 ug/Filter	0.01	NA-017	09-Aug-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Naphthalene		0.03 ug/Filter	0.01	NA-017	09-Aug-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Phenanthrene		0.21 ug/Filter	0.01	NA-017	09-Aug-15
Pyrene		0.02 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070304-002</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/July 17, 2015</p> <p>CANISTER ID: TE-08</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 17-Jul-15 0:00</p> <p>DATE RECEIVED: 24-Jul-15</p> <p>REPORT CREATED: 19-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.29 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070377-004</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/July 23, 2015</p> <p>CANISTER ID: TE-04</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 23-Jul-15 0:00</p> <p>DATE RECEIVED: 30-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.03 ug/Filter	0.01	NA-017	09-Aug-15
2-Methylnaphthalene		0.05 ug/Filter	0.01	NA-017	09-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Chrysene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Fluoranthene		0.01 ug/Filter	0.01	NA-017	09-Aug-15
Fluorene		0.02 ug/Filter	0.01	NA-017	09-Aug-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Naphthalene		0.02 ug/Filter	0.01	NA-017	09-Aug-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15
Phenanthrene		0.09 ug/Filter	0.01	NA-017	09-Aug-15
Pyrene		0.01 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070377-004</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/July 23, 2015</p> <p>CANISTER ID: TE-04</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 23-Jul-15 0:00</p> <p>DATE RECEIVED: 30-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-004</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/ July 29, 2015</p> <p>CANISTER ID: 9702</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.02	ug/Filter	0.01	NA-017	09-Aug-15
2-Methylnaphthalene		0.04	ug/Filter	0.01	NA-017	09-Aug-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Acridine	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Chrysene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Fluoranthene		0.01	ug/Filter	0.01	NA-017	09-Aug-15
Fluorene		0.02	ug/Filter	0.01	NA-017	09-Aug-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Naphthalene		0.03	ug/Filter	0.01	NA-017	09-Aug-15
Perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	09-Aug-15
Phenanthrene		0.08	ug/Filter	0.01	NA-017	09-Aug-15
Pyrene		0.02	ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15080014-004</p> <p>MATRIX: Air Filter</p> <p>CLIENT SAMPLE ID: LICA/PUF/EP/ July 29, 2015</p> <p>CANISTER ID: 9702</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 29-Jul-15 0:00</p> <p>DATE RECEIVED: 05-Aug-15</p> <p>REPORT CREATED: 13-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.01 ug/Filter	0.01	NA-017	09-Aug-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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NMHC CANISTER

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/ELK/July 4, 2015</p> <p>CANISTER ID: H2802</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 04-Jul-15 7:20</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.9	ppbv	0.8	AC-058	10-Jul-15
1,2,4-Trimethylbenzene	I	0.09	ppbv	0.03	AC-058	10-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Jul-15
1,2-Dichloroethane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
1,3,5-Trimethylbenzene	I	0.06	ppbv	0.02	AC-058	10-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
1-Hexene	I	0.17	ppbv	0.02	AC-058	10-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
2,2,4-Trimethylpentane		0.50	ppbv	0.01	AC-058	10-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
2,3,4-Trimethylpentane	I	0.23	ppbv	0.01	AC-058	10-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
2,3-Dimethylpentane		0.42	ppbv	0.02	AC-058	10-Jul-15
2,4-Dimethylpentane	I	0.19	ppbv	0.01	AC-058	10-Jul-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given
T Value reported is less than the laboratory method detection limit
U Compound was analyzed for but not detected
I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/ELK/July 4, 2015</p> <p>CANISTER ID: H2802</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 04-Jul-15 7:20</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.05 ppbv	0.01	AC-058	10-Jul-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
2-Methylpentane	I	0.17 ppbv	0.01	AC-058	10-Jul-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
3-Methylhexane	I	0.19 ppbv	0.02	AC-058	10-Jul-15
3-Methylpentane	I	0.07 ppbv	0.01	AC-058	10-Jul-15
Acetone		8.0 ppbv	0.4	AC-058	10-Jul-15
Acrolein		1.6 ppbv	0.3	AC-058	10-Jul-15
Benzene		1.70 ppbv	0.01	AC-058	10-Jul-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	10-Jul-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
Carbon disulfide	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
Carbon tetrachloride	I	0.10 ppbv	0.01	AC-058	10-Jul-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
Chloroform	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
Chloromethane		0.89 ppbv	0.02	AC-058	10-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	10-Jul-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	10-Jul-15
Cyclohexane	I	0.13 ppbv	0.02	AC-058	10-Jul-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	10-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/ELK/July 4, 2015</p> <p>CANISTER ID: H2802</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 04-Jul-15 7:20</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		3.0	ppbv	0.3	AC-058	10-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Ethylbenzene	I	0.20	ppbv	0.01	AC-058	10-Jul-15
Freon-11	I	0.26	ppbv	0.02	AC-058	10-Jul-15
Freon-113	I	0.08	ppbv	0.01	AC-058	10-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Freon-12		0.37	ppbv	0.02	AC-058	10-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.54	ppbv	0.5	AC-058	10-Jul-15
Isobutane	I	0.23	ppbv	0.02	AC-058	10-Jul-15
Isopentane		1.17	ppbv	0.03	AC-058	10-Jul-15
Isoprene		1.55	ppbv	0.01	AC-058	10-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
m,p-Xylene		0.36	ppbv	0.03	AC-058	10-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Jul-15
m-Ethyltoluene	I	0.13	ppbv	0.08	AC-058	10-Jul-15
Methyl butyl ketone	K, T, U	< 0.54	ppbv	0.5	AC-058	10-Jul-15
Methyl ethyl ketone		1.1	ppbv	0.3	AC-058	10-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Methyl methacrylate	K, T, U	< 0.08	ppbv	0.07	AC-058	10-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Jul-15
Methylcyclohexane	I	0.30	ppbv	0.01	AC-058	10-Jul-15
Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Jul-15
n-Butane		0.94	ppbv	0.03	AC-058	10-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Jul-15

Qualifiers

K Off-scale low. Actual value is known to be less than the value given
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U Compound was analyzed for but not detected
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Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070044-003</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/ELK/July 4, 2015</p> <p>CANISTER ID: H2802</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 04-Jul-15 7:20</p> <p>DATE RECEIVED: 09-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
n-Heptane		0.40	ppbv	0.01	AC-058	10-Jul-15
n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	10-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Jul-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
o-Ethyltoluene	I	0.05	ppbv	0.01	AC-058	10-Jul-15
o-Xylene	I	0.14	ppbv	0.01	AC-058	10-Jul-15
p-Diethylbenzene	I	0.05	ppbv	0.04	AC-058	10-Jul-15
p-Ethyltoluene	K, T, U	< 0.08	ppbv	0.07	AC-058	10-Jul-15
Styrene		0.37	ppbv	0.04	AC-058	10-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Toluene		1.61	ppbv	0.01	AC-058	10-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
Trichloroethylene	I	0.05	ppbv	0.04	AC-058	10-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>
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<p>RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>LABORATORY SAMPLE ID: 15070216-001</p> <p>MATRIX: Ambient Air</p> <p>CLIENT SAMPLE ID: LICA/VOC/ELK/July 11, 2015</p> <p>CANISTER ID: 2660</p> <p>DESCRIPTION: Elk Point Airport</p> <p>DATE SAMPLED: 11-Jul-15 0:55</p> <p>DATE RECEIVED: 21-Jul-15</p> <p>REPORT CREATED: 11-Aug-15</p> <p>REPORT VERSION: Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	25-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.9	ppbv	0.8	AC-058	25-Jul-15
1,2,4-Trimethylbenzene	I	0.06	ppbv	0.03	AC-058	25-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	25-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
1,3,5-Trimethylbenzene	I	0.03	ppbv	0.02	AC-058	25-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
1-Butene		0.45	ppbv	0.02	AC-058	25-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,2,4-Trimethylpentane	I	0.05	ppbv	0.01	AC-058	25-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2,3,4-Trimethylpentane	I	0.18	ppbv	0.01	AC-058	25-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15

<p>Qualifiers</p> <p>K Off-scale low. Actual value is known to be less than the value given</p> <p>T Value reported is less than the laboratory method detection limit</p> <p>U Compound was analyzed for but not detected</p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</p>	<p>Certified By: Graham Knox, Team Lead</p> <p>On behalf of: PJ Pretorius, Portfolio Manager, EAS</p> <p>Inquiries: (780) 632 8455</p> <p>E-mail: EAS.Results@albertainnovates.ca</p>
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RESULTS TO: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8 INVOICE TO: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	LABORATORY SAMPLE ID: 15070216-001 MATRIX: Ambient Air CLIENT SAMPLE ID: LICA/VOC/ELK/July 11, 2015 CANISTER ID: 2660 DESCRIPTION: Elk Point Airport DATE SAMPLED: 11-Jul-15 0:55 DATE RECEIVED: 21-Jul-15 REPORT CREATED: 11-Aug-15 REPORT VERSION: Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.03	ppbv	0.01	AC-058	25-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
2-Methylpentane	I	0.11	ppbv	0.01	AC-058	25-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
3-Methylpentane	I	0.04	ppbv	0.01	AC-058	25-Jul-15
Acetone		14.3	ppbv	0.4	AC-058	25-Jul-15
Acrolein		1.6	ppbv	0.3	AC-058	25-Jul-15
Benzene		2.62	ppbv	0.01	AC-058	25-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
Carbon tetrachloride	I	0.10	ppbv	0.01	AC-058	25-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
cis-2-Butene	I	0.02	ppbv	0.02	AC-058	25-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Cyclohexane	I	0.06	ppbv	0.02	AC-058	25-Jul-15
Cyclopentane	I	0.03	ppbv	0.01	AC-058	25-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15

Qualifiers K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit	Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		3.5	ppbv	0.3	AC-058	25-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Ethylbenzene	I	0.16	ppbv	0.01	AC-058	25-Jul-15
Freon-11	I	0.28	ppbv	0.02	AC-058	25-Jul-15
Freon-113	I	0.08	ppbv	0.01	AC-058	25-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	25-Jul-15
Freon-12		0.58	ppbv	0.02	AC-058	25-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.54	ppbv	0.5	AC-058	25-Jul-15
Isobutane	I	0.32	ppbv	0.02	AC-058	25-Jul-15
Isopentane		1.27	ppbv	0.03	AC-058	25-Jul-15
Isoprene		1.93	ppbv	0.01	AC-058	25-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	25-Jul-15
m,p-Xylene	I	0.23	ppbv	0.03	AC-058	25-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	25-Jul-15
m-Ethyltoluene	K, T, U	< 0.09	ppbv	0.08	AC-058	25-Jul-15
Methyl butyl ketone	K, T, U	< 0.54	ppbv	0.5	AC-058	25-Jul-15
Methyl ethyl ketone		2.2	ppbv	0.3	AC-058	25-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	25-Jul-15
Methyl methacrylate	K, T, U	< 0.08	ppbv	0.07	AC-058	25-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Jul-15
Methylcyclohexane	I	0.08	ppbv	0.01	AC-058	25-Jul-15
Methylcyclopentane	I	0.05	ppbv	0.02	AC-058	25-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	25-Jul-15
n-Butane		1.03	ppbv	0.03	AC-058	25-Jul-15
n-Decane	K, T, U	< 0.07	ppbv	0.06	AC-058	25-Jul-15

Qualifiers

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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	25-Jul-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
n-Hexane	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	25-Jul-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	25-Jul-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	25-Jul-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	25-Jul-15
n-Nonane	I	0.07 ppbv	0.01	AC-058	25-Jul-15
o-Ethyltoluene	I	0.04 ppbv	0.01	AC-058	25-Jul-15
o-Xylene	I	0.12 ppbv	0.01	AC-058	25-Jul-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	25-Jul-15
p-Ethyltoluene	K, T, U	< 0.08 ppbv	0.07	AC-058	25-Jul-15
Styrene	I	0.25 ppbv	0.04	AC-058	25-Jul-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	25-Jul-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	25-Jul-15
Toluene		1.60 ppbv	0.01	AC-058	25-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	25-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	25-Jul-15
trans-2-Butene	I	0.05 ppbv	0.01	AC-058	25-Jul-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	25-Jul-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	25-Jul-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	25-Jul-15

Qualifiers K Off-scale low. Actual value is known to be less than the value given T Value reported is less than the laboratory method detection limit U Compound was analyzed for but not detected I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit	Certified By: Graham Knox, Team Lead On behalf of: PJ Pretorius, Portfolio Manager, EAS Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca
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APPENDIX V
CHAIN OF CUSTODY



Maxxam Analytics - Air Services Group

Project Chain of Custody

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2015-07-35- C</u>
Site: <u>Elk Point Airport Site</u>	Contact: <u>Mike Bisaga</u>

QA Check Complete	<u>msdmh</u>	Date	<u>11 - Aug - 2015</u>
QA Check Review	<u>msdmh</u>	Date	<u>11 - Aug - 2015</u>
Report Complete	<u>msdmh</u>	Date	<u>24 - Aug - 2015</u>
Report Reviewed	<u>E. Tangang</u>	Date	<u>25 - Aug - 2015</u>
Report Shipped	_____	Date	_____

Notes