



Box 8237  
5107W-50th Street  
Bonnyville, AB T9N 2J5  
Phone: (780) 812-2182  
Fax: (780) 812-2186  
Toll Free: 1-877-737-2182  
E-Mail: [lica2@lica.ca](mailto:lica2@lica.ca)  
Website: <http://www.lica.ca>

Alberta Environment  
Monitoring and Science  
Data Management  
Floor 11 Oxbridge Place  
9820 106 Street  
Edmonton Alberta T5K 2J6

August 18, 2015

**RE: June 2015 Ambient Air Monitoring Monthly Reports**

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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 #:2833-2015-06-01- C**

**JUNE 2015**

Prepared for:

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

**Attention: MIKE BISAGA**

DATE: **July 31, 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 JUNE 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 PM2.5.

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

PM 2.5: One 24-hr contravention was recorded this month: concentration of 51 ug/m<sup>3</sup> on June 29. AE Reference number 300140.

THC: One hour of data was invalidated this month as the value was below the background concentration of 1.5 ppm.

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

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	1	VAR	VAR	VAR	VAR	0.3	4	100.0
TRS (PPB)	-	-	-	-	1	4	29, 29	3, 5	0.3 0.3	SE WSW	1.8	29	100.0
THC (PPM)	-	-	-	-	2.1	3.2	24	5	0.6	SSW	2.5	25	99.7
NO2 (PPB)	159	-	0	-	2.1	7.2	9	5	3.5	WSW	3.9	29	100.0
NO (PPB)	-	-	-	-	0.9	11.4	29	6	0.9	W	5.0	15	100.0
NOX (PPB)	-	-	-	-	3.0	15.2	29	6	0.9	W	6.7	15	100.0
O3 (PPB)	82	-	0	-	30	65	28, 28	10, 11	5.7 6.2	W WNW	41.3	3	100.0
PM2.5 (UG/M3)	-	30	-	1	11.0	131.0	29	13	2.3	WSW	51.4	29	93.8
RELATIVE HUMIDITY (%)	-	-	-	-	63.6	100	1, 1	1, 2	2.6 5.2	WSW W	84.5	13	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	16.0	31.5	28, 28	13, 15	10.6 12.4	WNW W	23.0	28	100.0
VECTOR WS (KPH)	-	-	-	-	5.7	24.4	8	17	-	NNW	9.9	8	100.0
VECTOR WD (DEG)	-	-	-	-	W	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

## Exceedence Summary Report

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**SO<sub>2</sub> 1- Hour Exceedences**

No Exceedences Recorded During the Month

**SO<sub>2</sub> 24- Hour Exceedences**

No Exceedences Recorded During the Month

**NO<sub>2</sub> 1- Hour Exceedences**

No Exceedences Recorded During the Month

**PM2.5 24- Hour Exceedences**

DATE	READING (ug/m3)	WS (kph)	WD (deg)
JUNE 29	51	2.3	WSW

### Volatile Organics (VOCs) Data Summary

---

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
JUNE 5,, 2015	7.00	ACETONE
JUNE 11,, 2015	9.90	ACETONE
JUNE 17,, 2015	2.40	ACETONE
JUNE 23,, 2015	4.30	ACETONE
JUNE 29,, 2015	7.50	ACETONE

Note: NA

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

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Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
JUNE 5,, 2015	0.47	2-METHYLNAPHTHALENE
JUNE 11,, 2015	0.16	PHENANTHRENE
JUNE 17,, 2015	0.18	PHENANTHRENE
JUNE 23,, 2015	0.35	PHENANTHRENE
JUNE 29,, 2015	0.97	PHENANTHRENE

Note: NA

### Partisol Sampler Summary

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Sample Collected Date	Concentration (mg)
JUNE 5	0.146
JUNE 11	0.116
JUNE 17	0.063
JUNE 23	0.098
JUNE 29	1.070

Note: NA



**TABLE OF CONTENTS**

<u>Title</u>	<u>Page</u>
<b>1.0 Discussion</b>	<b>4</b>
<b>2.0 Project Personnel</b>	<b>7</b>
<b>3.0 Plant Monthly Required AMD Summary</b>	<b>7</b>
<b>4.0 Calculations and Results</b>	<b>7</b>
<b>5.0 Methods and Procedures</b>	<b>8</b>
<b>Appendix I</b>	<b>Continuous Monitoring Data Results</b>
	Sulphur Dioxide
	Total Reduced Sulphur
	Total Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Ozone
	Particulate Matter 2.5
	Wind Speed
	Wind Direction
	Standard Deviation Wind Direction
	Relative Humidity
	Ambient Temperature
<b>Appendix II</b>	<b>Non-Continuous Monitoring Data Results</b>
	VOC Results
	PAH Results
	Partisol Results
<b>Appendix III</b>	<b>Analyzer Calibration Results</b>
	Sulphur Dioxide
	Total Reduced Sulphur
	Total Hydrocarbon
	Nitrogen Dioxide
	Ozone
	Particulate Matter
	Wind System
	Partisol Sampler
	Calibrators
	Calibration Gases

**Appendix IV**

**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 SO<sub>2</sub>, TRS, THC, NO<sub>x</sub>, NO, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>2.5</sub>, WS, WD, RH and Ambient Temperature. It also includes results for non-continuous parameters 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.

Maintenance was performed on the air conditioning unit on June 1 and June 8. The unit was replaced on June 15.

### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

The routine monthly calibration was performed on June 2. An as found points check was performed prior to the calibration of the sample flow sensor on June 25. A one-point check was performed afterwards to confirm analyzer's functionality. The check result was within the acceptable range.

**TOTAL REDUCED SULPHUR (TRS)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on June 2.

**TOTAL HYDROCARBONS (THC)**

The routine monthly calibration was performed on June 3. The sample flow rate was checked and the analyzer was reset on June 25. Hourly data collected on June 14 at hour 18 was invalidated as the value was below the background concentration of 1.5 ppm.

**NITROGEN DIOXIDE (NO2)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on June 2.

**OZONE (O3)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on June 3.

**PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5)**

Two Teom audits were performed this month: one was completed on June 2, and the other audit was performed on June 19. Both the inlet filter and the FDMS filter were replaced on June 2. Data was corrected using Alberta air quality guideline. If the data was between 0 to  $-3 \text{ ug/m}^3$ , the data was corrected to  $0 \text{ ug/m}^3$ . If the data was below  $-3 \text{ ug/m}^3$ , the data was invalidated. 45 hours of data were invalidated as the data were below  $-3 \text{ ug/m}^3$  this month. One 24-hr contraventions was recorded this month: concentration of  $51 \text{ ug/m}^3$  on June 29.

**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**

No passive results are included in this month's report as the sampling program is based on a two-month sample collection period.

**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 June 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  $\mu\text{g}$  in 2 decimal places.

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

**PARTISOL SAMPLES**

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 June 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, 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 PM2.5.

One 24-hr contraventions was recorded for PM 2.5 this month: concentration of 51 ug/m<sup>3</sup> on June 29. AE Reference number 300140.

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-00210: Ambient TRS Monitoring
- Maxxam AIR SOP-00211: Ambient SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00212: Ambient O<sub>3</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> 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<sub>2.5</sub>) - R&P 1405F Teom Unit
- Relative Humidity - Met One Unit
- Ambient Temperature - Met One Unit
- Datalogger - ESC 8832
- Partisol - R&P 2000H Unit

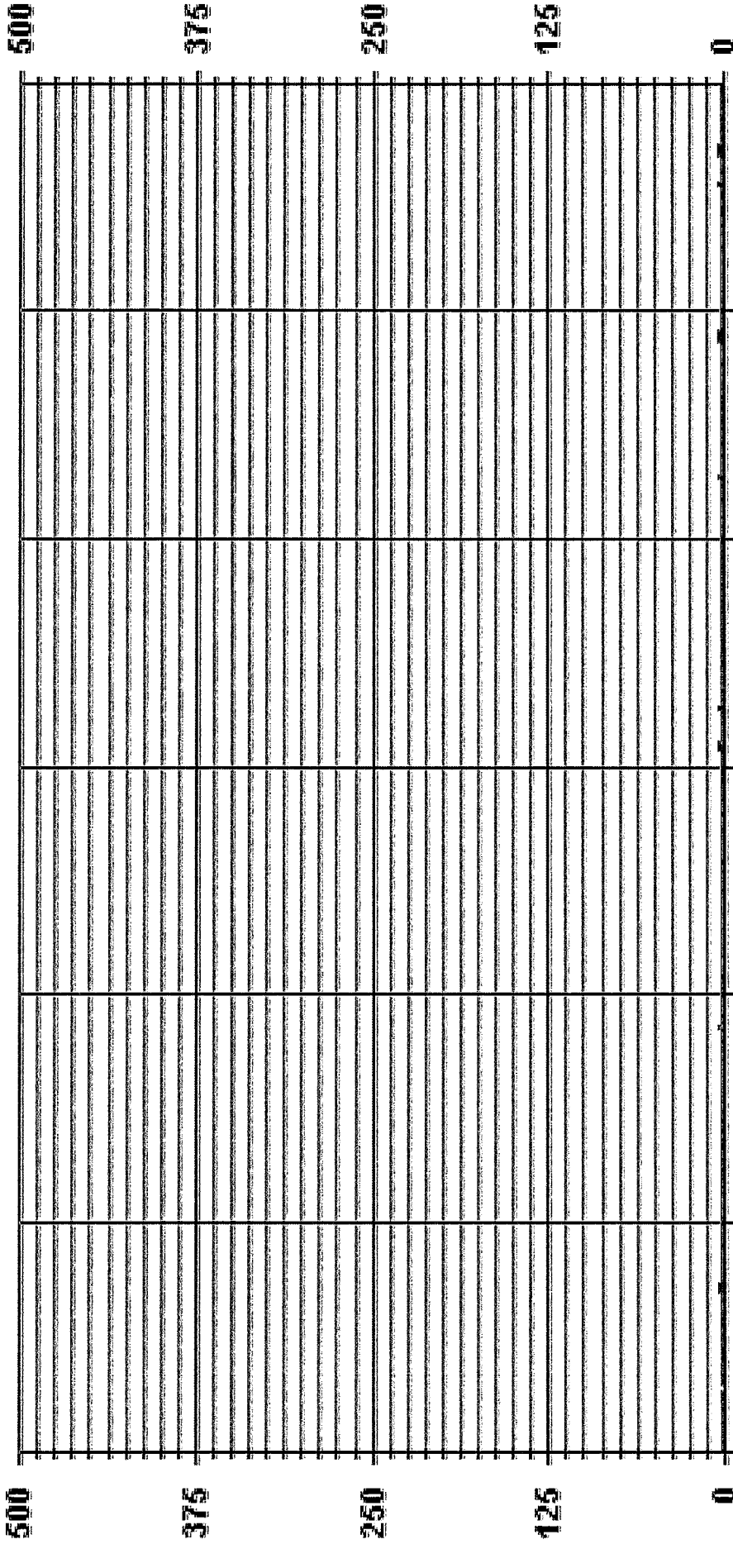
***APPENDIX I***  
***CONTINUOUS MONITORING DATA RESULTS***



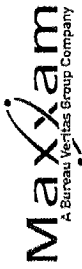
***SULPHUR DIOXIDE***



01 Hour Averages



— LICA 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	DAILY MAX	24-HOUR AVG	RDSS	
1	1	1	1	1	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	1	1	1	1	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
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	1	1	1	1.0	24
4	1	1	1	1	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	1	1	1	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
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	1	1	1	1.0	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	1.0	24
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	1	1	1.1	24
9	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	1.0	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	1.0	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	1.0	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	1.0	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	1.0	24
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	1	1	1.0	24
15	1	1	1	1	1	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
16	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	1.0	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	1	1.1	24
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	1	1.0	24
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	1.0	24
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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	1.0	24
22	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	1.0	24
23	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	1.0	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	1.0	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	1	1	1.0	24
26	0	1	0	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24
27	0	0	0	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.3	24
28	0	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	0.7	24
29	1	0	1	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24
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	1	1	0.7	24
HOURLY MAX	0.9	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9	
HOURLY AVG																													

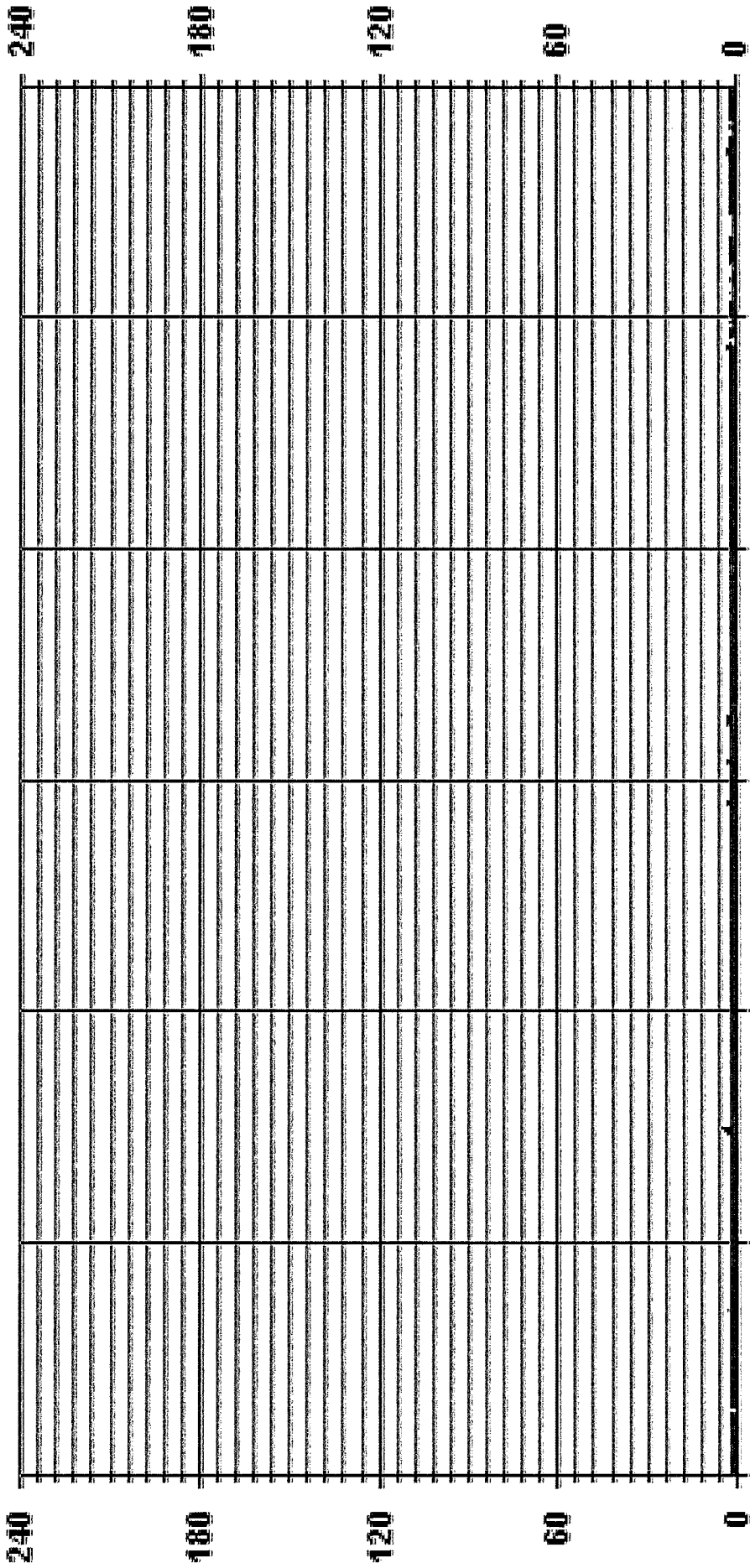
STATUS FLAG CODES

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:	616
MAXIMUM INSTANTANEOUS VALUE:	3 PPB
OPERATIONAL TIME:	720 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	0.34
ON DAY(S)	13
VAR-VARIOUS	

01 Hour Averages



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

— LICA SO2MAX PPB

LICA  
 SO2 / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 01  
 Site Name : LICA  
 Parameter : SO2  
 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	
< 20	2.50	4.41	3.52	3.82	2.50	3.97	9.85	4.41	3.08	3.08	6.91	16.76	15.29	10.29	4.26	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	2.50	4.41	3.52	3.82	2.50	3.97	9.85	4.41	3.08	3.08	6.91	16.76	15.29	10.29	4.26	5.29	

Calm : .00 %

Total # Operational Hours : 680

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	17	30	24	26	17	27	67	30	21	21	47	114	104	70	29	36	680
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	17	30	24	26	17	27	67	30	21	21	47	114	104	70	29	36	

Calm : .00 %

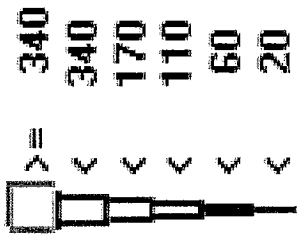
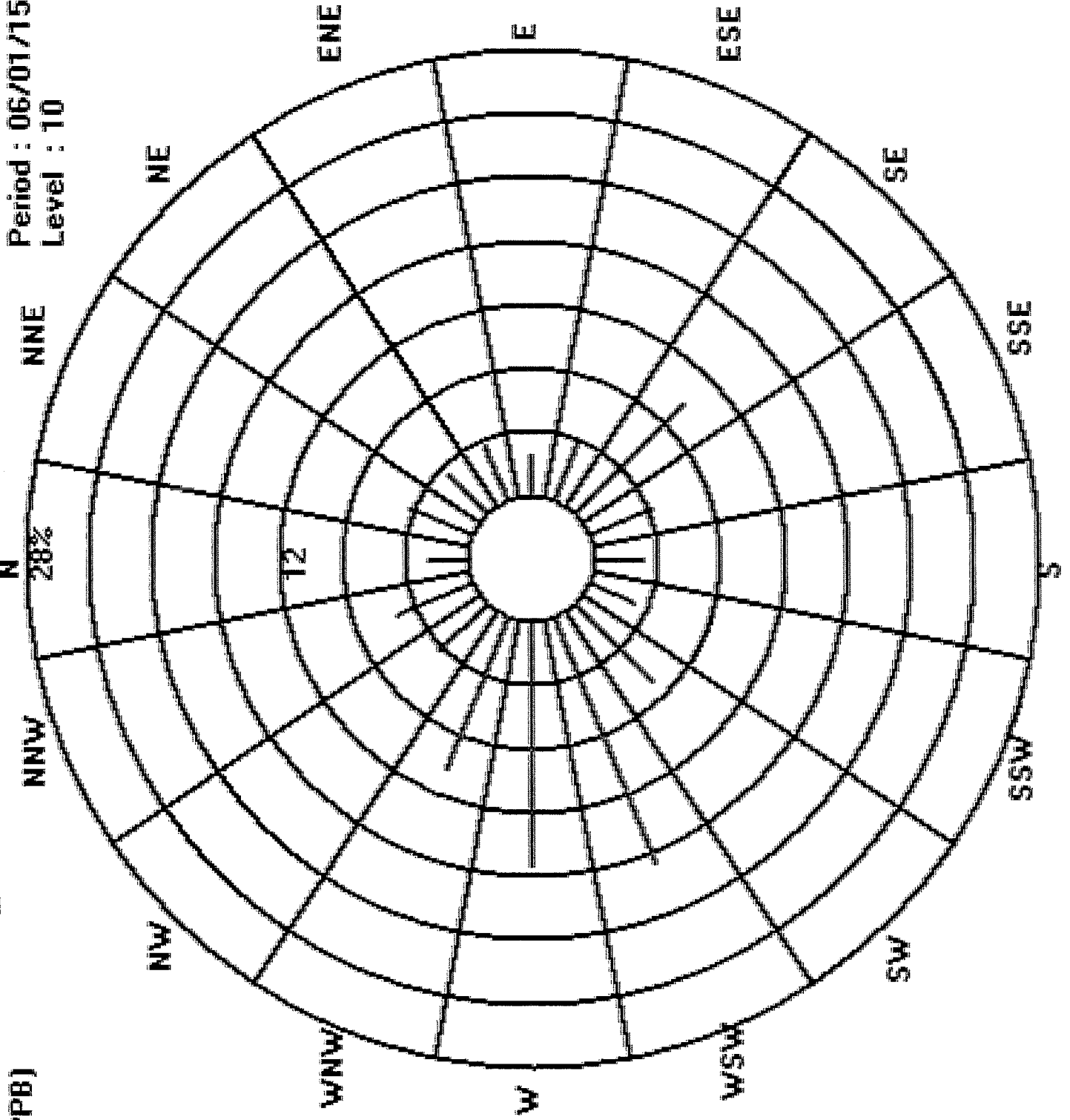
Total # Operational Hours : 680

Logger : 01 Parameter : SO2\_

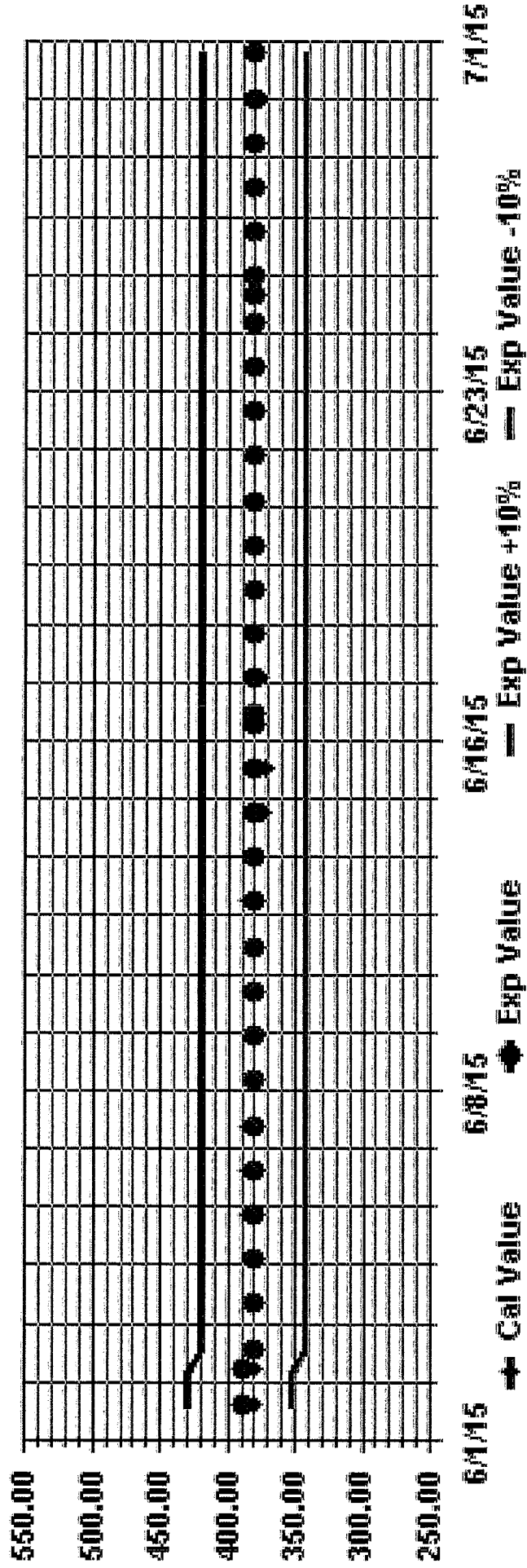
Site : LICA

Period : 06/01/15-06/30/15

Level : 10



Calibration Graph for Site: LICA Parameter: SO2\_ Sequence: SO2 Phase: SPAN





***TOTAL REDUCED SULPHUR***

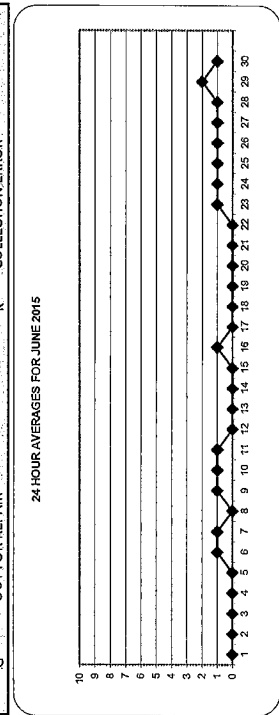


TOTAL REDUCED SULPHUR (TRS) hourly averages in ppb

MST	DAY		DAILY																								24-HOUR AVG	RDGS			
	HOURLY START	HOURLY END	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	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
2	1	0	0	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	1	0.2	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	1	0.0	24
4	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
5	0	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	0	0	1	0.4	24
6	1	2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	24
7	2	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	0	0	1	0.5	24
8	1	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	0	0	2	0.5	24
9	1	3	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.7	24
10	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.7	24
11	0	1	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	0.6	24	
12	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	0	0	1	0.3	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	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	0	0	0	0	0.0	24
15	1	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	0	0	1	0.4	24
16	1	1	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	0	3	0.6	24
17	2	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	0	0	2	0.4	24
18	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
19	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	0	0	0	1	0.3	24
20	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
21	1	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
22	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	0	0	0	1	0.3	24
23	1	1	1	1	1	1	1	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.6	24
24	2	1	1	1	1	1	1	1	1	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.9	24
25	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1.1	24
26	1	2	2	2	2	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.8	24
27	1	2	2	2	2	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1.0	24
28	2	2	2	2	2	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1.0	24
29	2	2	3	3	3	3	3	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.8	24
30	1	0	0	1	2	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.6	24
HOURLY MAX	2	2	3	4	3	4	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3		
HOURLY AVG	0.9	1.0	1.2	1.3	1.4	1.2	1.0	0.8	0.4	0.3	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.9

STATUS FLAG CODES

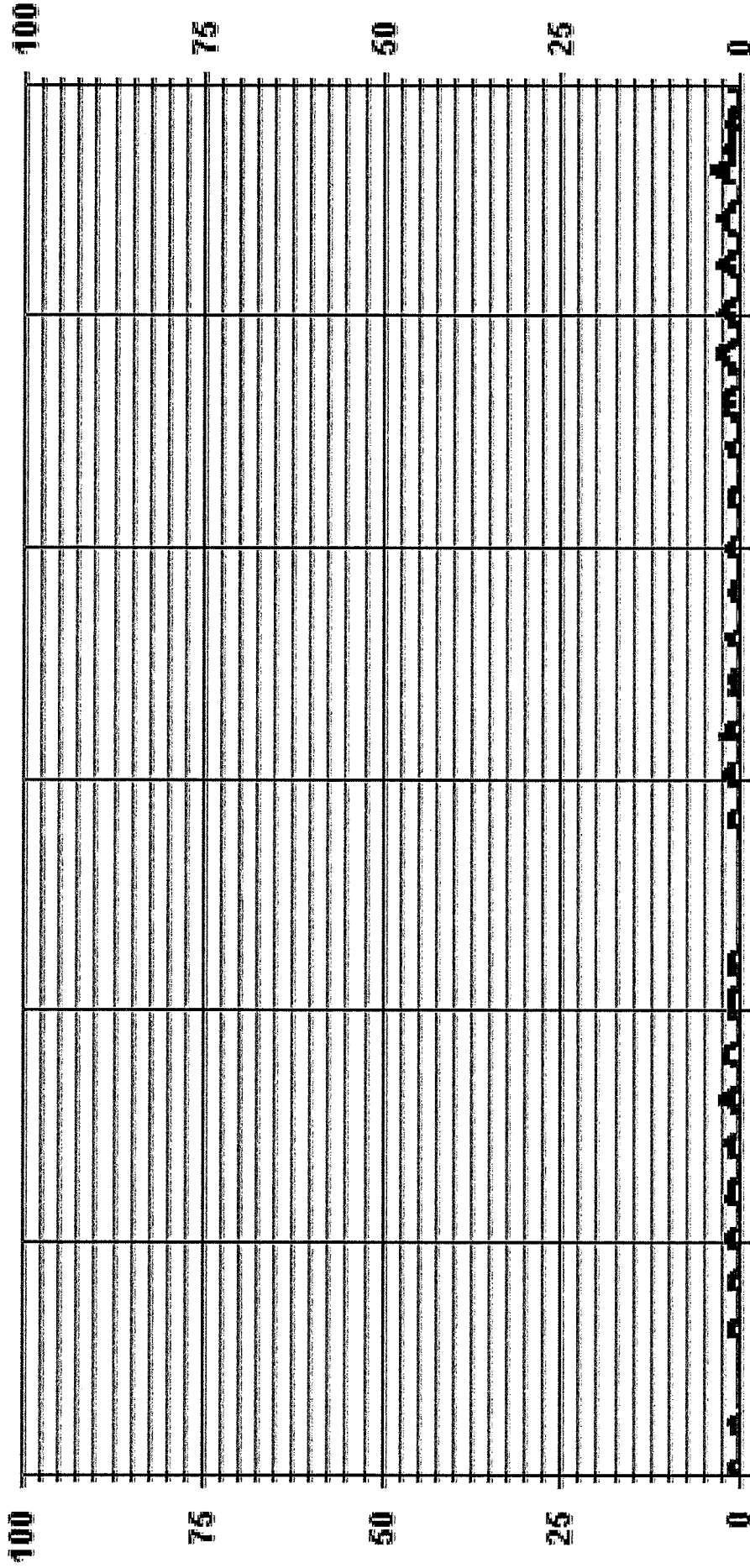
C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR



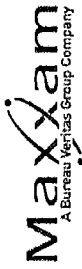
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	265
MAXIMUM 1-HR AVERAGE:	4 PPB
MAXIMUM 24-HR AVERAGE:	1.8 PPB
ISZ CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	0.75
OPERATIONAL TIME:	720 HRS
AMTD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	1 PPB
ON DAY(S)	29, 29
ON DAY(S)	29
VAR-VARIOUS	

# 01 Hour Averages



— LICA TRS\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Cold Lake South Site - JUNE 2015  
JOB # 2833-2015-06-01- C

TOTAL REDUCED SULPHUR 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	ROGGS
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	2
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	3
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
4	1	1	1	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
5	1	1	2	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
6	1	2	3	4	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
7	5	3	2	4	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
8	3	3	4	4	4	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
9	1	3	9	2	8	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
10	13	6	7	8	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
11	1	3	3	4	8	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
12	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
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	4
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	4
15	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
16	2	3	4	4	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
17	7	2	1	3	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
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
19	2	3	3	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
20	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
21	3	4	3	2	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
22	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
23	1	2	5	2	1	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
24	3	5	3	5	4	6	2	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
25	5	4	5	8	4	8	3	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
26	2	7	10	5	8	5	8	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
27	2	4	6	10	8	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
28	8	3	6	7	7	5	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
29	4	2	12	10	9	10	9	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
30	1	1	1	4	12	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
HOURLY MAX	13	7	12	10	12	10	9	4	3	2	3	3	1	3	3	3	2	1	1	1	1	1	1	1	6
HOURLY AVG	2.6	2.5	3.3	3.7	3.9	2.8	2.0	1.4	1.3	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.6	1.8	2.0

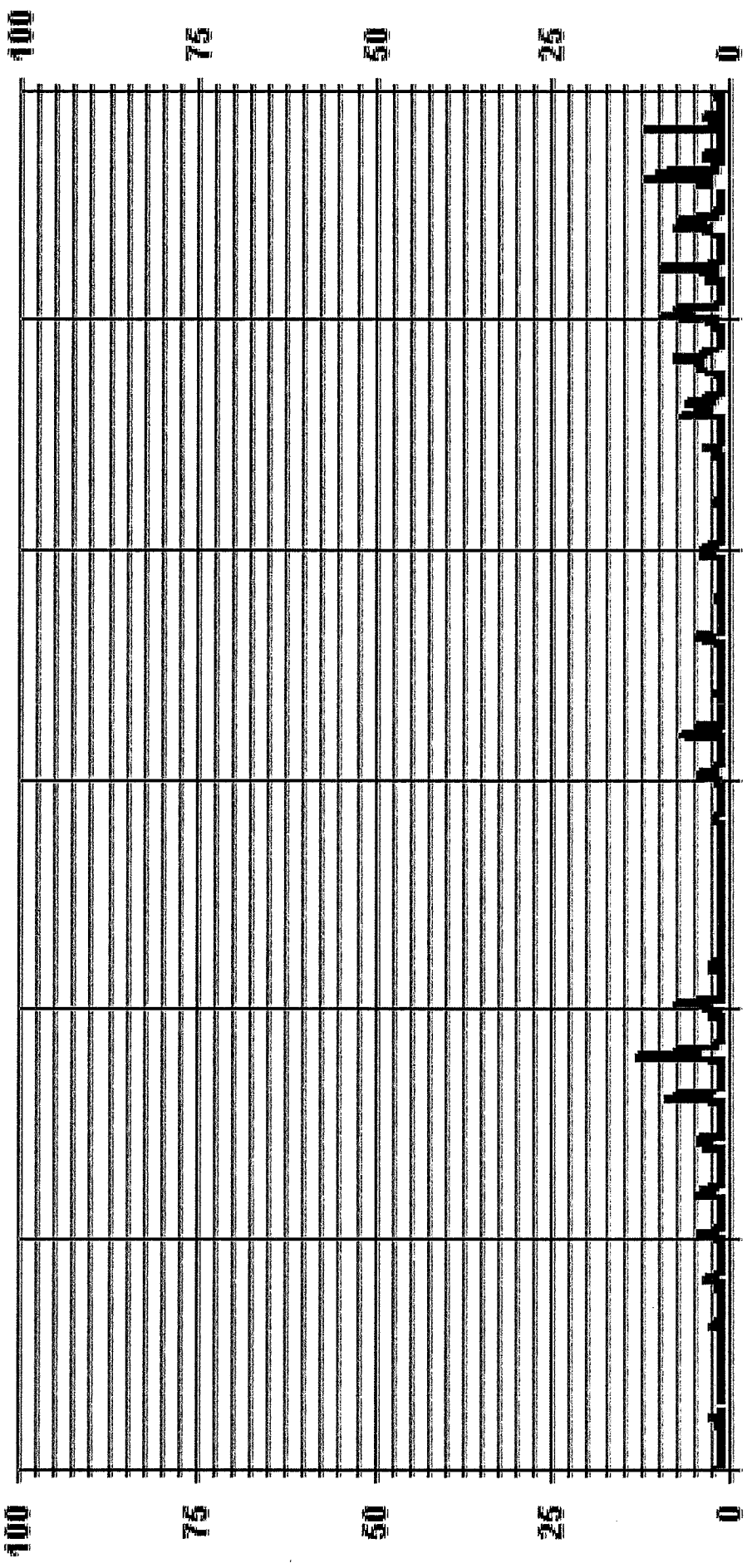
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	683
MAXIMUM INSTANTANEOUS VALUE:	13 PPB @ HOUR(S) 0 ON DAY(S) 10
IZS CALIBRATION TIME:	92 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	1.70
OPERATIONAL TIME:	720 HRS
VAR-VARIOUS	

01 Hour Averages



— LICA TRSMAX PPB

LICA  
TFS\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 01  
Site Name : LICA  
Parameter : TFS  
Units : PFB

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	2.48	4.39	3.51	3.80	2.48	3.66	9.66	3.95	3.07	3.07	7.17	16.25	15.08	9.95	4.09	5.27	97.95
< 10	.00	.00	.00	.00	.00	.29	.14	.43	.00	.00	.00	.58	.14	.29	.14	.00	2.04
< 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	2.48	4.39	3.51	3.80	2.48	3.95	9.80	4.39	3.07	3.07	7.17	16.83	15.22	10.24	4.24	5.27	

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples

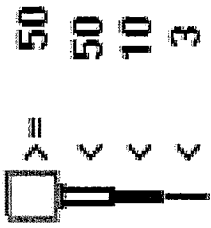
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	17	30	24	26	17	25	66	27	21	21	49	111	103	68	28	36	669
< 10					2	1	3				4	1	1	2	1		14
< 50																	
>= 50																	
Totals	17	30	24	26	17	27	67	30	21	21	49	115	104	70	29	36	

Calm : .00 %

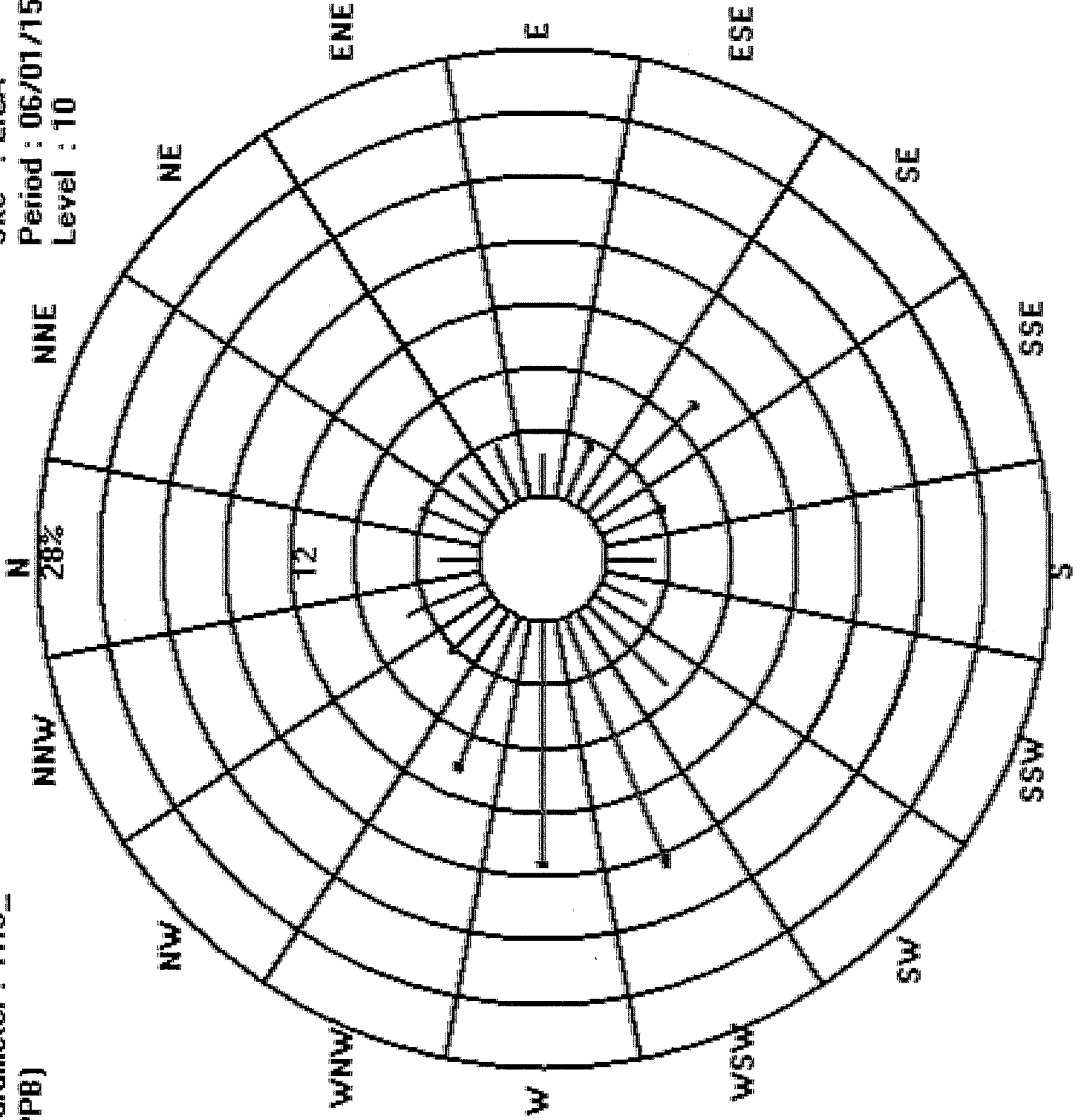
Total # Operational Hours : 683

Logger : 01 Parameter : TRS\_

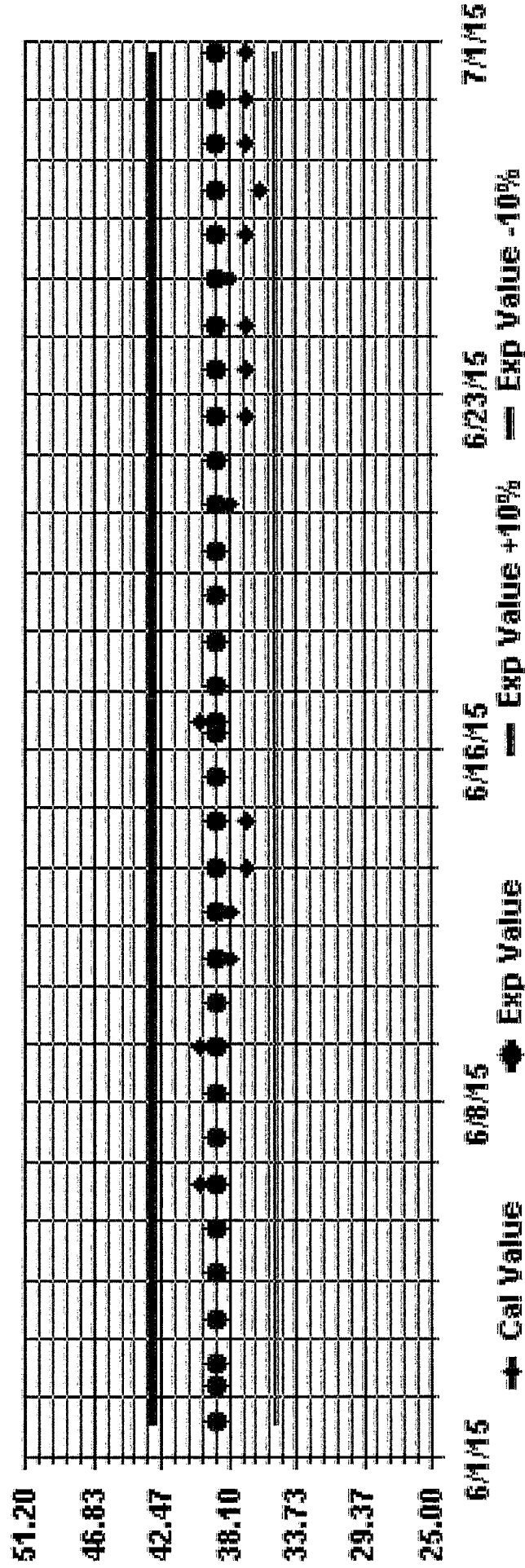
Class Limits (PPB)



Site : LICA  
Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA Parameter: TRS\_ Sequence: TRS Phase: SPAN





***TOTAL HYDROCARBON***



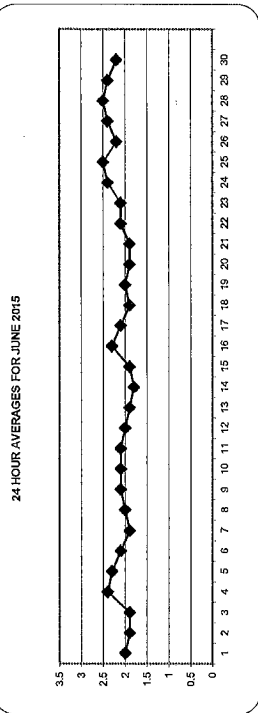
TOTAL HYDROCARBONS (THC) hourly averages in ppm

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	
HR 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	25:00	26:00	27:00	28:00	29:00	30:00
HR 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	25:00	26:00	27:00	28:00	29:00	30:00	
THC	2.0	2.4	2.4	2.3	2.4	2.2	2.1	1.9	2.0	1.9	2.0	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	1.9	1.9	1.9	1.9	
STATUS																															
24-HOUR AVG	2.0	2.4	2.4	2.3	2.4	2.2	2.1	1.9	2.0	1.9	2.0	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	1.9	1.9	1.9	1.9	
24-HOUR MAX	2.9	3.0	3.1	3.0	3.0	3.2	3.0	2.9	2.8	2.7	2.4	2.1	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	
24-HOUR MIN	2.2	2.3	2.3	2.4	2.4	2.4	2.4	2.3	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	

STATUS FLAG CODES

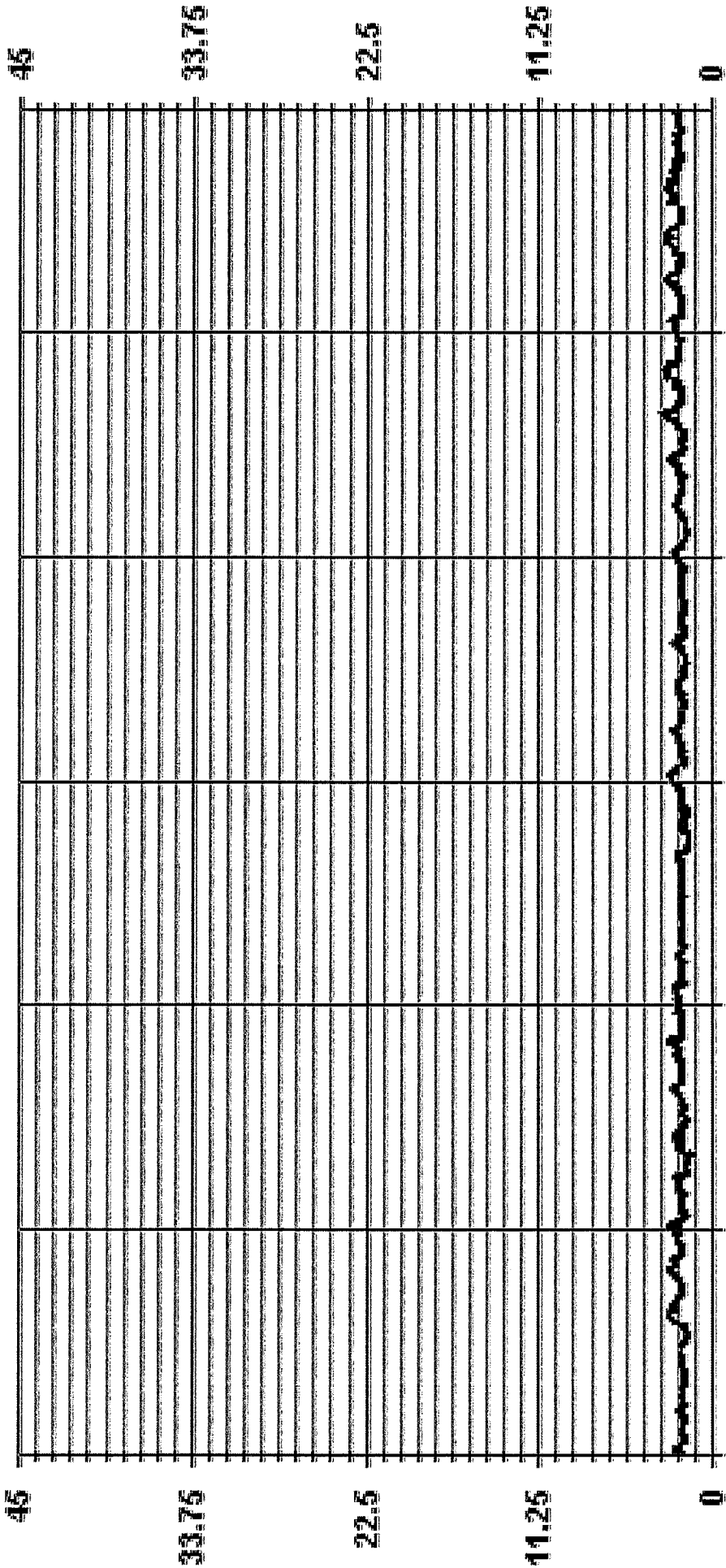
C	-	CALIBRATION	Q	-	QUALITY ASSURANCE
M	-	MAINTENANCE	R	-	RECOVERY
S	-	DAILY ZERO/SPAN CHECK	X	-	MACHINE MALFUNCTION
P	-	POWER FAILURE	O	-	OPERATOR ERROR
G	-	OUT FOR REPAIR	K	-	COLLECTION ERROR



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682	PPM @ HOUR(S)	5	ON DAY(S)	24
MAXIMUM 1-HR AVERAGE:	3.2	PPM		ON DAY(S)	25, 28
MAXIMUM 24-HR AVERAGE:	2.5	PPM		VAR- VARIOUS	
ICS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	718	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	99.7	%
STANDARD DEVIATION:	0.31		MONTHLY AVERAGE:	2.1	PPM

01 Hour Averages





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	2.3	2.6	2.5	2.4	2.4	2.4	2.2	2.3	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.3	2.1	2.0	2.0	1.9	2.0	2.1	2.1	2.1	2.2	2.6	2.2	24		
2	2.2	2.3	2.3	2.0	2.1	2.2	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.3	2.0	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.6	2.1	24		
3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.8	1.7	1.7	2.2	2.1	2.1	2.1	2.1	2.5	3.0	2.1	24	
4	2.7	2.9	2.8	3.0	3.1	3.0	2.7	2.6	2.6	2.6	2.5	2.5	2.4	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.3	2.4	2.9	3.1	2.5	2.4	24		
5	2.6	2.9	3.1	2.9	3.0	2.9	2.7	2.6	2.6	2.5	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.3	2.5	2.5	2.8	2.3	2.6	3.1	2.5	2.4	24		
6	2.9	2.9	2.9	3.1	2.9	2.6	2.4	2.1	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.9	1.6	1.6	2.1	2.1	2.1	2.5	2.4	2.6	3.1	2.3	24		
7	2.5	2.4	2.3	2.4	2.4	2.5	2.3	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.8	1.7	1.9	1.6	1.6	2.2	3.0	2.4	2.7	2.7	3.0	2.1	2.4	24		
8	3.0	3.1	2.7	2.9	2.7	2.3	2.1	2.2	2.2	2.0	2.0	1.8	4.8	4.4	4.1	2.1	2.1	2.2	2.2	1.9	1.9	2.0	2.0	2.1	4.8	2.5	2.4	24		
9	2.2	2.4	2.5	2.5	3.0	2.7	2.6	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	3.0	2.3	24		
10	2.5	2.5	2.5	2.6	2.6	2.9	2.9	2.7	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.2	2.7	2.9	2.3	2.4	24		
11	2.2	2.2	2.3	2.4	2.5	2.5	2.4	2.5	2.4	2.4	2.4	2.3	2.4	2.2	2.0	2.0	2.2	2.2	2.1	2.0	2.8	2.1	2.5	2.1	2.1	2.8	2.3	24		
12	2.0	2.2	2.4	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.2	3.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.0	2.0	2.0	2.0	2.1	2.1	2.4	24	
13	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	3.2	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	3.2	2.1	2.4	24	
14	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.0	1.8	1.7	1.7	1.6	1.5	1.5	1.6	1.6	1.7	1.9	2.0	2.2	1.9	2.4	24	
15	1.9	1.9	1.9	2.0	2.0	2.0	1.7	2.0	2.0	1.8	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.4	24
16	2.7	2.8	2.9	3.2	3.0	3.0	2.8	2.6	2.5	2.5	2.1	2.0	1.9	2.2	2.2	2.2	2.1	2.0	1.9	2.1	2.6	2.4	2.5	2.7	2.6	2.7	2.1	2.4	24	
17	2.2	2.3	2.7	2.6	2.7	2.6	2.3	2.3	2.3	2.3	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.2	2.2	2.0	2.7	2.2	2.4	24	
18	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.2	2.2	2.0	2.7	2.2	2.4	24	
19	3.3	3.6	2.6	2.7	2.7	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.8	1.9	1.9	1.8	1.8	2.2	2.1	2.4	24	
20	1.9	2.4	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	2.0	2.0	2.0	2.0	2.0	2.5	2.1	2.4	24	
21	2.6	2.7	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	24	
22	2.3	2.2	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	2.3	24	
23	2.3	2.5	2.5	2.6	2.8	2.8	2.6	2.8	2.3	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	2.1	2.1	24	
24	2.8	2.8	3.0	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	3.4	3.2	24	
25	3.3	3.5	3.3	3.2	3.3	3.3	3.3	3.3	3.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	24	
26	2.6	2.8	3.0	2.7	2.7	2.6	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	24	
27	2.7	3.0	2.9	2.9	3.2	3.1	3.0	2.9	2.7	2.5	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	24	
28	3.4	3.2	3.3	3.3	3.4	3.3	3.2	3.1	2.8	2.6	2.5	2.3	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.1	2.1	3.4	2.7	2.4	24	
29	2.9	2.7	2.9	3.0	3.0	3.1	3.2	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.2	2.7	2.4	24	
30	2.3	2.2	2.3	2.8	3.0	2.7	2.6	2.4	2.3	2.4	2.6	2.4	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	3.1	2.4	2.4	24	
HOURLY MAX	3.4	3.6	3.5	3.3	3.4	3.4	3.3	3.1	3.0	2.9	2.7	3.2	4.8	4.4	4.4	2.7	2.6	2.6	2.4	3.0	2.9	3.3	3.1	3.4	3.1	2.5	2.5	24		
HOURLY AVG	2.4	2.6	2.6	2.6	2.7	2.6	2.5	2.4	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	24	

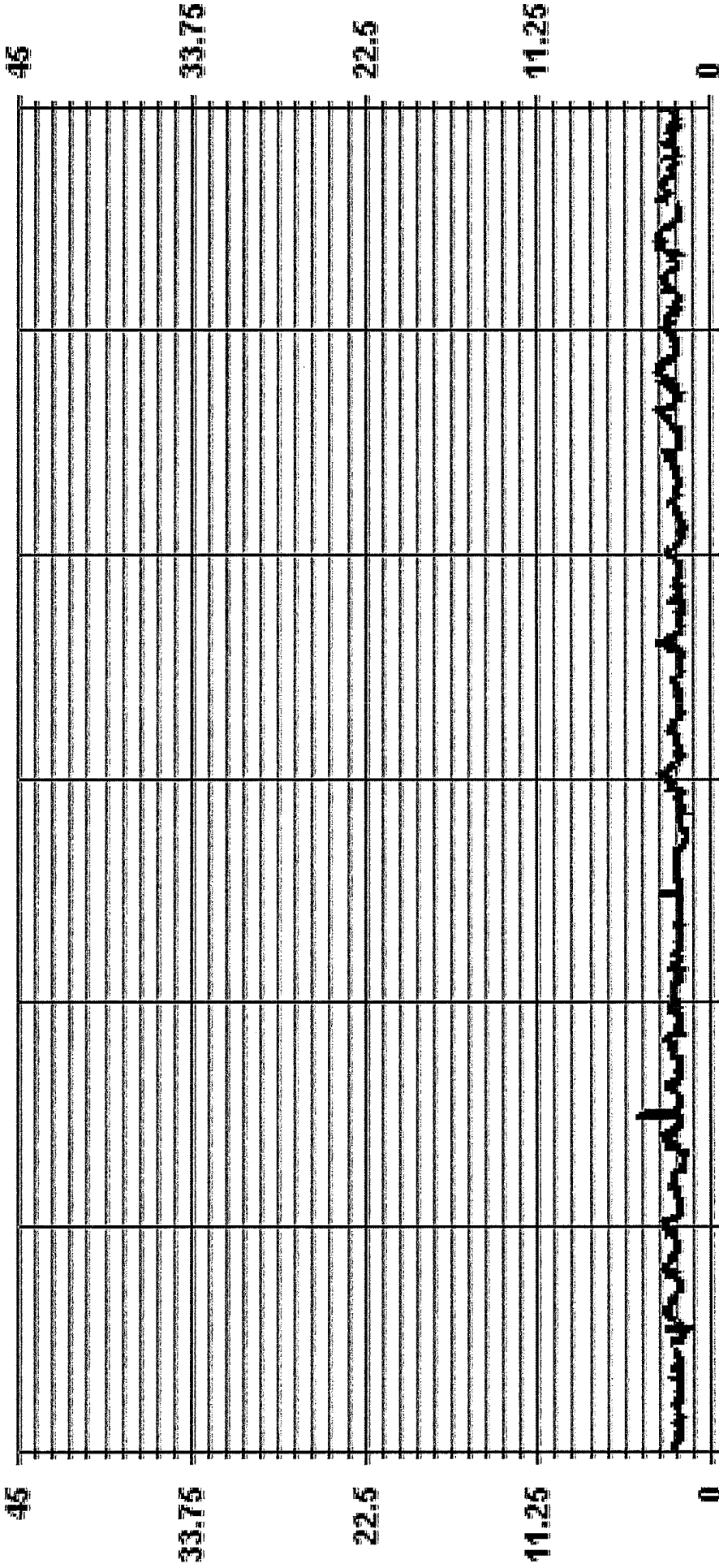
STATUS FLAG CODES

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:	682	PPM	@ HOUR(S)	12	ON DAY(S)	8
MAXIMUM INSTANTANEOUS VALUE:	4.8	PPM	@ HOUR(S)	12	ON DAY(S)	8
IS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	718	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	STANDARD DEVIATION:	0.40		
VAR-VARIOUS						

01 Hour Averages



-- LICA THCMAX PPM

LICA  
 THC / WD Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

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

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	
< 3.0	2.49	4.39	3.51	3.51	2.63	4.25	9.67	3.95	2.93	2.78	6.89	16.56	15.24	9.97	4.25	5.27	98.38
< 10.0	.00	.00	.14	.00	.14	.00	.14	.14	.14	.29	.14	.29	.00	.29	.00	.00	1.61
< 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	2.49	4.39	3.51	3.66	2.63	4.39	9.67	4.10	3.07	3.07	7.03	16.86	15.24	10.26	4.25	5.27	

Calm : .00 %

Total # Operational Hours : 682

Distribution By Samples

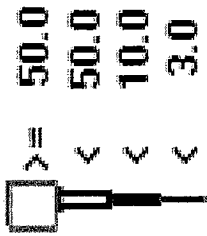
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	17	30	24	24	18	29	66	27	20	19	47	113	104	68	29	36	671
< 10.0				1		1	1	1	1	2	1	2		2			11
< 50.0																	
>= 50.0																	
Totals	17	30	24	25	18	30	66	28	21	21	48	115	104	70	29	36	

Calm : .00 %

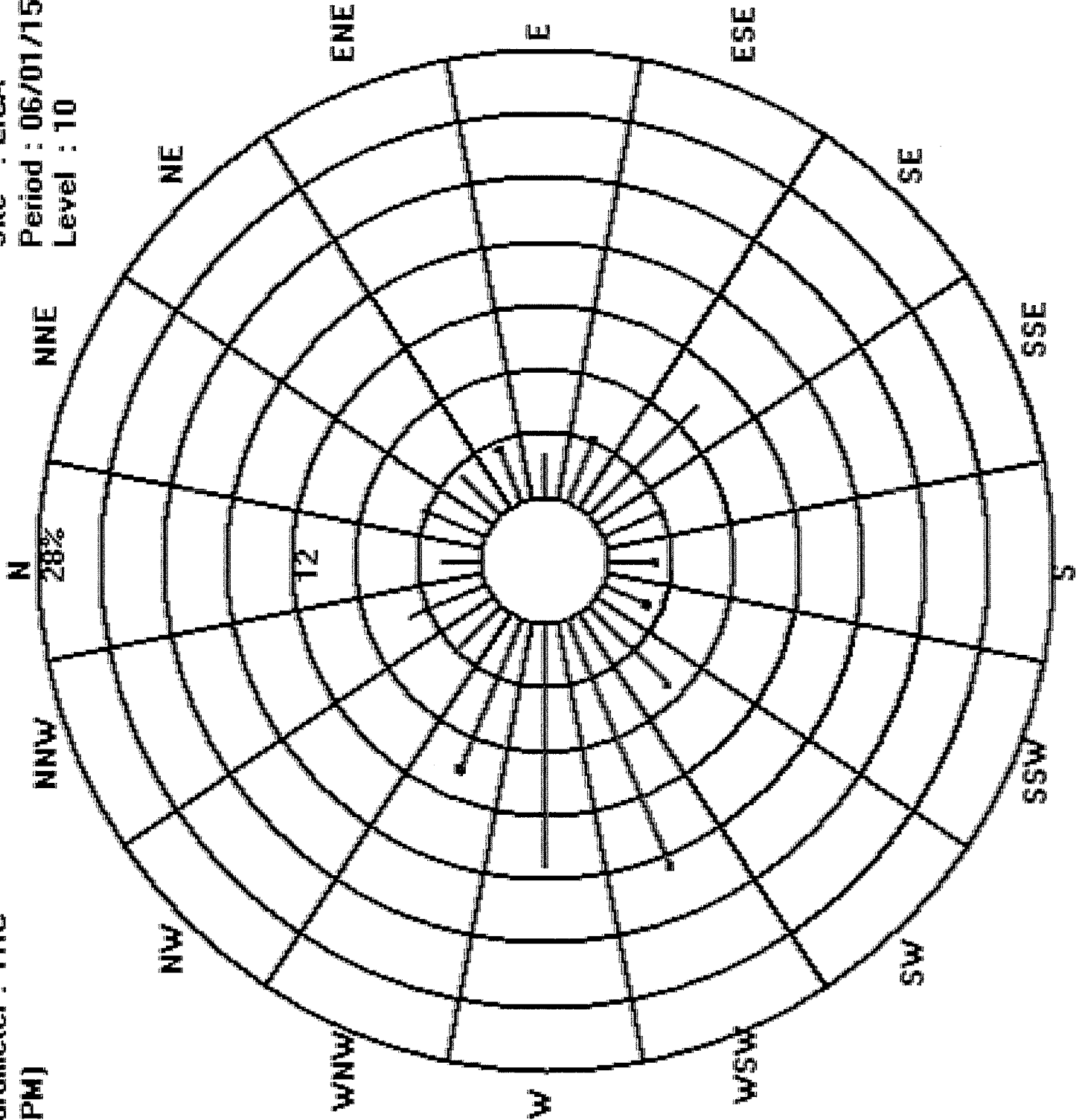
Total # Operational Hours : 682

Logger : 01 Parameter : THC

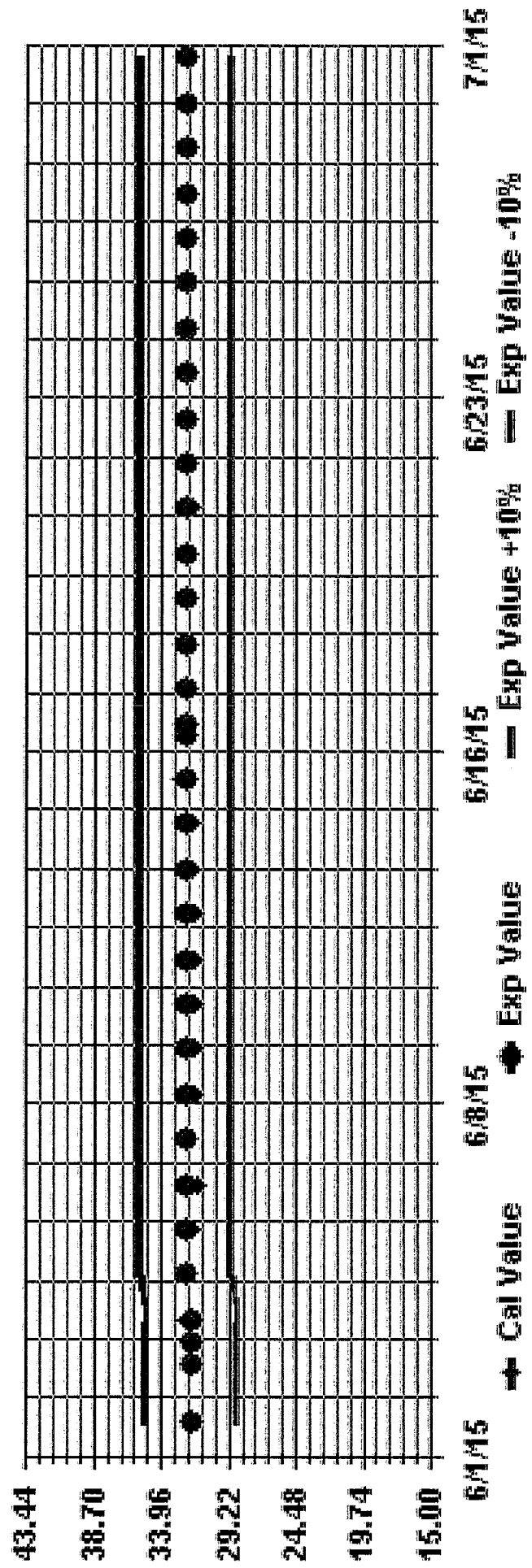
Class Limits (PPM)



Site : LICA  
Period : 06/01/15-06/30/15  
Level : 10



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





***OXIDES OF NITROGEN***



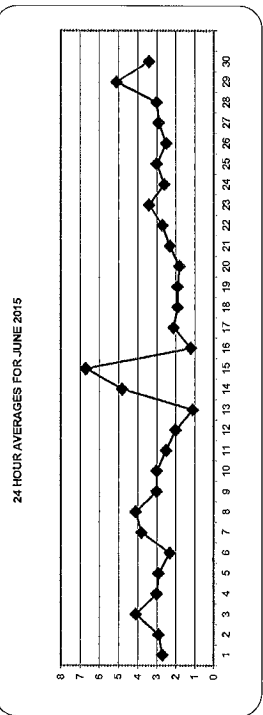
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

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	24:00	
1	3.4	5.8	5.7	4.2	6.6	5.4	4.8	3.4	2.1	1.1	1.5	1.2	1.1	0.9	0.6	0.8	0.7	1.3	\$	0.9	1.7	2.7	3.3	3.1	6.6	2.7
2	2.9	4.9	3.6	2.2	2.0	4.4	2.1	1.5	C	C	C	C	C	C	C	1.6	1.7	2.5	3.3	3.9	3.8	4.6	1.9	\$	4.9	2.9
3	1.3	1.0	1.1	1.8	1.3	1.9	2.7	3.6	3.1	3.4	2.6	1.8	1.9	3.0	3.8	4.9	6.1	7.3	8.4	8.8	9.9	12.0	\$	2.7	12.0	
4	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	2.4	2.5	1.5	1.3	1.3	2.0	3.7	4.6	5.5	7.1	8.4	8.5	8.8	\$	4.2	3.8	
5	2.1	0.2	0.0	0.0	1.6	3.4	7.0	5	2.7	0.7	0.7	2.6	4.5	5.7	8.1	5.8	2.6	1.7	\$	1.5	2.1	3.0	8.1	2.9	2.4	
6	4.4	4.2	3.1	2.2	2.6	5.8	6.6	6.2	5.3	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	1.8	3.2	2.9	2.6	6.6	2.3	
7	3.6	4.5	4.0	4.9	6.4	7.3	6.7	4.8	5.5	3.5	1.5	1.6	0.9	0.9	1.4	1.9	2.5	3.2	\$	1.8	2.3	4.1	6.2	8.2	3.8	
8	7.8	7.6	7.8	7.2	7.1	8.9	7.5	7.1	2.3	1.4	2.3	5.3	6.1	6.1	3.2	0.0	\$	1.1	0.6	0.5	1.1	1.7	2.2	8.9	4.1	
9	3.0	5.0	4.7	5.8	6.4	9.4	6.5	4.9	2.4	1.3	0.6	0.6	1.0	1.3	0.7	0.5	\$	1.2	1.0	1.7	2.2	2.8	2.5	2.9	9.4	
10	3.8	3.5	3.8	3.2	4.1	7.3	9.5	4.3	1.8	1.1	1.2	1.4	1.5	2.8	1.2	\$	1.3	1.1	1.5	2.2	4.1	3.8	2.0	1.4	9.5	
11	1.1	1.1	1.0	1.1	1.7	1.9	4.3	3.9	3.6	3.3	3.1	1.8	3.2	\$	1.8	2.0	1.9	2.2	2.9	1.8	1.9	1.8	1.8	4.9	2.5	
12	1.9	2.2	2.4	3.1	4.1	5.2	3.4	1.7	1.4	1.1	1.7	1.5	1.3	\$	1.2	1.4	1.4	1.1	1.7	1.5	2.0	1.4	1.0	5.2	2.0	
13	1.3	2.3	2.4	4.1	2.1	1.2	1.1	1.3	1.9	0.7	0.5	1.2	\$	0.9	0.9	0.4	0.4	0.5	0.6	0.3	0.5	0.4	0.6	0.3	4.1	
14	0.3	0.2	0.6	0.8	0.8	0.6	0.3	0.3	0.2	0.1	9.1	\$	1.4	3.8	5.1	6.0	7.4	8.6	9.5	10.6	11.5	11.4	11.1	11.5	4.8	
15	11.6	13.0	13.1	11.3	12.3	13.4	13.8	12.6	6.4	7.7	\$	4.4	6.3	4.5	1.3	0.2	2.1	3.8	5.2	5.8	0.6	1.4	2.1	1.4	13.8	
16	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	4.7	5.5	6.1	2.1	\$	1.9	1.7	0.7	0.6	0.3	0.0	0.0	1.2	6.1	
17	0.9	1.0	3.1	3.2	2.8	3.0	4.5	4.2	\$	2.3	1.0	0.8	0.8	1.3	1.5	1.2	1.0	1.1	1.1	1.4	3.4	3.4	0.9	4.5	2.1	
18	0.4	0.4	0.6	0.6	1.0	1.5	2.1	\$	2.0	1.9	1.3	1.6	2.1	2.2	1.7	1.6	2.8	2.0	2.2	2.0	2.2	3.4	4.5	3.8	4.5	
19	2.9	3.2	2.5	2.2	2.4	5.8	\$	1.4	1.3	1.4	1.2	1.0	1.0	0.9	1.1	1.0	1.0	1.1	1.1	1.6	2.6	2.8	2.3	1.7	5.8	
20	0.9	1.3	2.7	2.9	3.2	\$	3.1	1.9	1.3	2.1	2.6	2.4	1.1	0.5	0.6	0.6	0.8	1.6	2.0	2.0	2.2	1.9	2.2	3.2	1.8	
21	2.2	2.3	2.8	4.1	\$	5.3	3.3	2.6	3.0	3.6	1.7	1.1	0.9	0.8	0.9	1.3	1.5	1.4	1.0	1.6	2.3	2.6	3.1	3.3	2.3	
22	3.3	4.1	4.8	\$	6.8	5.4	4.3	3.7	3.8	3.0	2.1	1.7	1.0	1.0	1.2	1.8	2.9	1.2	1.4	1.3	1.8	2.4	1.7	1.3	6.8	
23	1.3	1.6	\$	2.7	5.1	9.8	13.4	7.9	2.1	1.3	0.9	0.9	1.0	1.0	1.1	1.3	1.2	1.5	2.0	3.0	3.0	3.5	3.8	3.3	4.9	
24	2.6	\$	2.5	2.0	3.5	4.4	4.5	4.9	4.6	3.6	2.0	1.2	1.3	1.0	1.0	1.1	1.3	1.2	1.5	2.0	3.0	3.5	3.8	3.3	4.9	
25	\$	3.6	3.3	2.3	3.4	4.1	4.9	4.2	5.2	4.5	2.5	1.6	1.2	1.2	1.5	1.5	2.0	5.0	3.0	1.7	3.7	2.7	2.3	\$	5.2	
26	2.5	1.9	1.7	2.8	3.3	3.2	4.6	7.1	5.5	3.8	1.8	1.3	1.2	1.2	1.1	0.8	0.8	0.9	1.0	1.7	3.7	\$	4.8	7.1	2.5	
27	3.7	3.7	3.8	3.8	4.7	7.4	8.4	6.6	4.0	2.7	1.1	0.8	0.7	0.7	0.9	0.9	1.0	0.9	1.4	2.5	\$	2.3	2.9	8.4	2.9	
28	3.1	2.7	2.8	2.4	4.5	6.2	7.0	6.7	3.8	3.4	2.7	1.8	1.4	1.0	0.7	0.6	0.5	0.7	2.0	2.1	\$	3.6	4.2	5.2	7.0	
29	5.3	4.1	3.3	3.2	3.2	4.2	15.2	11.7	7.7	6.5	4.5	5.0	4.5	5.4	5.3	4.8	3.7	3.1	2.8	\$	3.6	3.6	2.8	3.0	15.2	
30	2.9	2.9	2.9	3.2	3.9	4.0	5.4	7.1	4.7	3.0	4.9	3.1	1.9	1.4	1.9	2.0	2.0	2.3	\$	2.9	2.7	3.4	4.1	5.3	7.1	
HOURLY MAX	11.6	13.0	13.1	11.3	12.3	13.4	15.2	13.4	7.9	7.7	9.1	5.5	6.3	6.1	5.7	7.0	8.1	8.6	9.5	10.6	11.5	12.0	11.3	11.1		
HOURLY AVG	2.8	3.0	3.1	3.0	3.7	4.9	5.3	4.9	3.4	2.6	2.2	1.9	2.0	2.0	1.8	1.8	2.2	2.4	2.5	2.7	3.1	3.3	3.0	3.2		

STATUS FLAG CODES

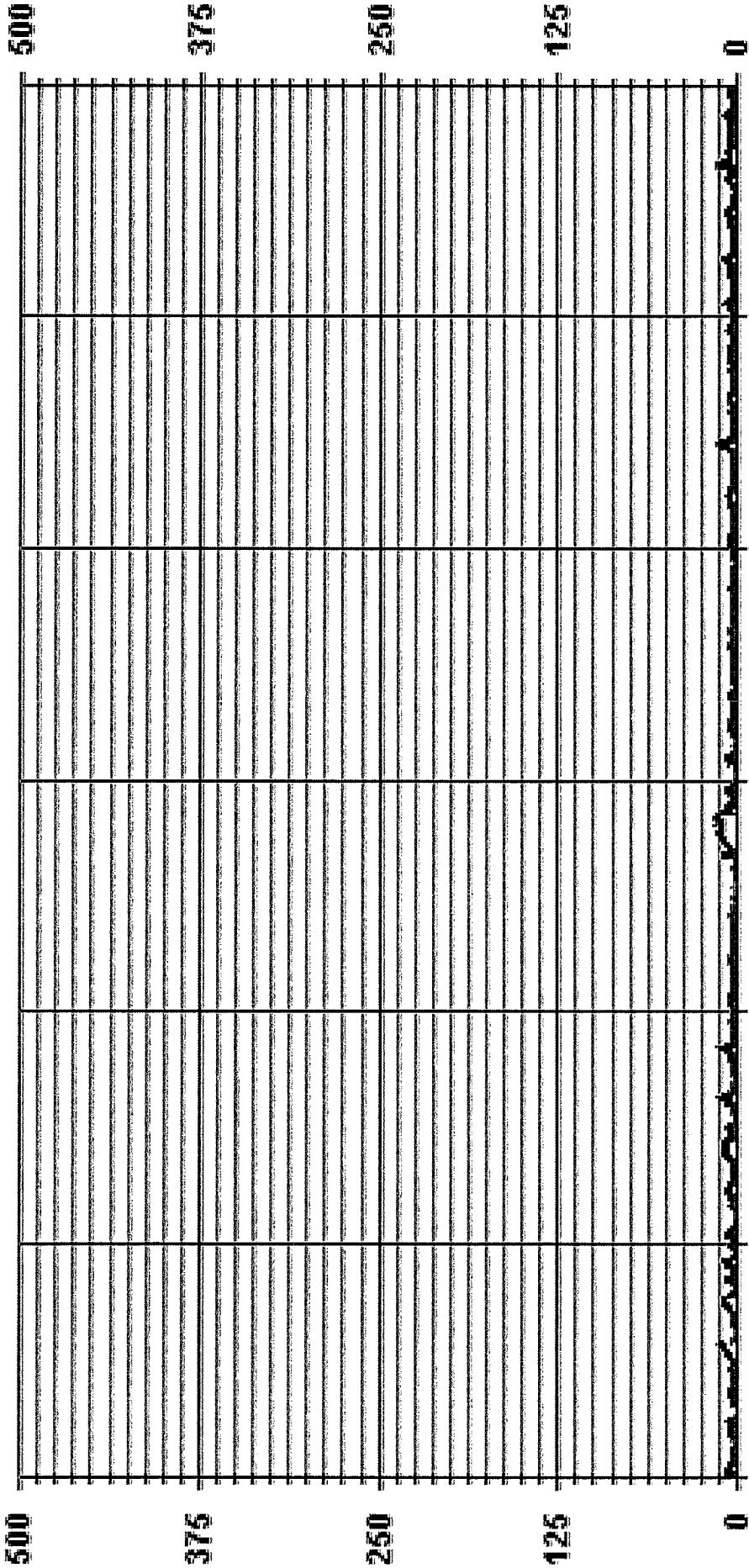
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



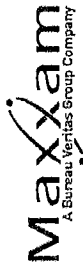
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	650	ON DAY(S)	29
MAXIMUM 1-HR AVERAGE:	15.2	PPB @ HOUR(S)	6
MAXIMUM 24-HR AVERAGE:	6.7	PPB	VAR-VARIOUS
12S CALIBRATION TIME:	34	HRS	720
MONTHLY CALIBRATION TIME:	7	HRS	100.0
STANDARD DEVIATION:	2.53	PPB	3.0
OPERATIONAL TIME:			
AMD OPERATION UPTIME:			
MONTHLY AVERAGE:			

01 Hour Averages



— LICA NOX\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Cold Lake South Site - JUNE 2015  
JOB # 2833-2015-06-01-C

OXIDES OF NITROGEN 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			
1	5.6	7.1	7.1	5.1	7.6	7.6	5.6	4.6	16.6	2.0	2.0	1.6	2.0	1.5	2.6	2.0	1.6	6.1	5	2.5	3.6	4.1	5.1	4.1	16.6	4.7	24	
2	5.0	16.5	8.0	4.5	8.0	11.5	5.6	2.6	2.6	C	C	C	C	C	C	22.0	3.5	5.0	5.0	5.0	12.0	3.5	5	22.0	3.5	22.0	24	
3	3.5	1.5	2.0	3.5	2.0	4.5	3.5	16.5	4.0	24.5	9.5	2.5	4.0	4.5	6.0	11.0	7.5	14.0	10.0	18.5	13.5	15.0	5	4.7	24.5	8.1	24	
4	0.2	0.7	0.0	0.6	0.7	7.6	2.1	S	10.7	55.2	6.2	2.8	2.3	2.8	14.8	7.8	6.8	7.8	10.3	9.8	14.3	5	8.0	8.5	55.2	8.2	24	
5	3.5	3.5	2.0	1.0	17.5	11.5	S	S	23.0	2.5	23.5	1.5	19.0	23.0	8.0	15.0	11.0	8.0	6.0	5.0	5	2.7	2.7	3.7	23.5	9.2	24	
6	6.2	6.2	5.7	4.7	5.2	6.2	7.7	7.2	6.2	4.2	0.7	0.7	0.2	6.7	0.6	9.1	0.0	0.0	0.0	0.0	5	5.1	4.6	4.2	4.6	9.1	4.2	24
7	5.7	6.2	5.7	7.2	7.2	8.7	8.2	8.2	5.7	18.7	2.2	8.2	5.2	3.2	3.2	2.2	4.7	3.7	3	3.0	4.5	7.0	8.5	9.0	18.7	6.4	24	
8	10.0	8.0	9.0	8.5	8.5	10.0	9.5	32.5	5.0	3.0	4.0	7.0	8.0	12.0	8.0	1.5	0.5	5	1.9	0.9	0.9	2.0	3.0	3.0	32.5	6.8	24	
9	5.0	4.5	5.0	5.0	6.0	12.5	12.0	8.5	6.0	3.5	3.4	1.9	7.9	86.4	1.9	S	8.4	3.5	13.9	3.5	6.4	5.5	6.0	2.0	86.4	9.5	24	
10	1.5	1.5	2.0	2.0	4.5	15.0	8.0	14.0	6.5	5.0	6.0	5.5	2.5	86.9	S	8.4	7.9	3.5	6.9	11.5	3.0	2.5	2.5	2.0	86.9	9.1	24	
11	1.4	3.4	4.4	5.4	4.9	1.4	1.9	2.4	13.9	1.9	1.9	S	1.9	6.8	12.3	7.8	1.9	4.9	1.9	4.9	1.9	4.4	1.9	1.4	17.5	4.5	24	
12	1.4	3.4	4.4	5.4	4.9	1.4	1.9	2.4	13.9	1.9	1.9	S	1.9	6.8	12.3	7.8	1.9	4.9	1.9	4.9	1.9	4.4	1.9	1.4	17.5	4.5	24	
13	1.4	3.4	4.4	5.4	4.9	1.4	1.9	2.4	13.9	1.9	1.9	S	1.9	6.8	12.3	7.8	1.9	4.9	1.9	4.9	1.9	4.4	1.9	1.4	17.5	4.5	24	
14	0.9	0.9	1.4	1.4	1.4	0.9	0.4	0.9	0.9	1.4	45.4	S	3.1	10.1	6.6	7.6	9.6	18.1	10.6	12.6	12.1	12.6	12.1	12.1	45.4	8.0	24	
15	12.6	14.6	14.6	12.1	15.1	17.6	15.1	15.1	8.1	9.6	S	5.5	7.5	7.5	2.5	3.5	3.0	5.0	6.0	6.6	5.5	2.0	3.0	2.5	17.6	8.5	24	
16	1.5	1.0	0.0	0.0	13.0	3.0	3.5	0.0	1.5	S	16.5	20.5	10.0	5.5	S	21.0	20.5	3.0	2.0	10.0	1.0	0.5	0.5	4.5	21.0	6.3	24	
17	2.5	1.5	7.5	6.0	4.0	4.0	5.5	8.5	S	3.9	1.4	1.4	8.9	19.4	8.9	4.4	3.9	3.9	6.4	20.9	5.4	5.4	1.4	20.9	5.9	24		
18	0.9	0.9	1.4	1.8	8.8	4.8	4.4	S	2.5	11.0	6.0	2.5	8.0	12.5	4.0	10.5	18.5	3.5	3.0	9.0	3.5	5.5	14.5	9.5	18.5	6.4	24	
19	4.5	7.5	3.5	4.5	4.4	30.4	S	1.9	7.4	10.9	2.9	2.4	2.9	2.4	4.9	3.4	2.9	3.4	4.9	2.4	6.4	4.9	7.9	3.4	30.4	5.7	24	
20	1.4	1.9	2.9	3.4	4.4	S	3.6	2.6	1.6	1.6	3.1	4.6	3.1	1.6	0.6	1.1	2.6	1.6	3.1	4.6	5.6	3.6	3.1	3.6	5.6	2.8	24	
21	3.1	4.6	5.1	5.6	S	8.9	4.5	3.5	4.0	4.0	3.5	2.5	2.0	1.0	1.5	3.5	2.0	3.0	1.5	2.5	3.0	3.5	4.0	4.0	8.9	3.5	24	
22	6.5	5.0	6.0	S	7.5	7.0	6.0	5.5	6.5	4.5	5.0	2.0	2.0	1.5	2.0	6.0	16.5	1.5	1.5	1.5	6.5	3.5	3.0	2.0	16.5	4.7	24	
23	1.5	4.5	S	3.5	13.9	16.4	12.5	20.5	13.5	5.0	3.0	1.5	28.5	2.0	1.5	1.5	1.5	9.5	16.0	3.0	4.0	5.0	3.5	29.5	8.8	24		
24	3.5	S	3.5	3.0	21.5	6.0	6.0	10.5	5.5	6.0	3.5	2.5	3.5	1.5	2.0	5.0	5.0	2.0	2.0	4.0	5.5	4.5	6.0	5.0	21.5	5.1	24	
25	S	5.5	4.5	4.5	6.5	5.5	6.0	8.5	13.5	6.5	4.0	5.0	3.5	3.0	6.0	2.5	4.0	36.0	46.4	4.0	8.0	13.5	4.0	5	46.4	9.1	24	
26	3.9	2.9	3.4	3.9	4.9	4.4	6.9	8.4	22.9	22.9	2.4	1.9	1.9	2.9	3.4	4.4	1.4	0.9	0.9	1.9	2.9	4.9	5	22.9	5.2	24		
27	4.9	5.4	5.4	4.9	15.9	9.4	7.9	9.4	3.9	1.9	0.9	0.9	0.9	0.9	2.9	2.4	1.4	1.4	3.9	4.4	5	10.0	5.5	15.9	4.8	24		
28	5.5	4.0	4.5	3.0	8.0	13.0	8.0	7.5	5.5	4.0	4.0	2.0	2.0	3.0	1.0	1.0	1.5	2.5	2.5	5	5.5	7.0	6.0	13.0	4.4	24		
29	7.0	5.5	5.0	4.5	4.5	13.5	31.0	24.5	12.5	13.0	6.0	6.5	5.5	6.5	7.5	5.5	6.5	3.5	3.5	5	5.0	4.0	3.5	31.0	8.2	24		
30	3.5	4.0	3.5	4.0	5.0	6.0	7.0	8.5	6.0	5.5	7.5	4.0	13.5	2.0	3.0	4.5	3.0	4.5	3.0	4.0	3.0	4.5	5.0	6.5	13.5	5.1	24	
HOURLY MAX	12.6	16.5	14.6	12.1	21.5	30.4	31.0	32.5	23.0	55.2	45.4	20.5	28.5	86.9	19.4	21.0	22.0	36.0	46.4	18.5	20.9	15.0	14.5	29.5				
HOURLY AVG	4.1	4.8	4.6	4.3	8.2	9.1	7.5	9.8	7.9	8.6	6.5	3.7	5.6	10.8	4.4	5.6	6.5	5.6	6.3	5.4	5.8	5.3	5.1	5.5				

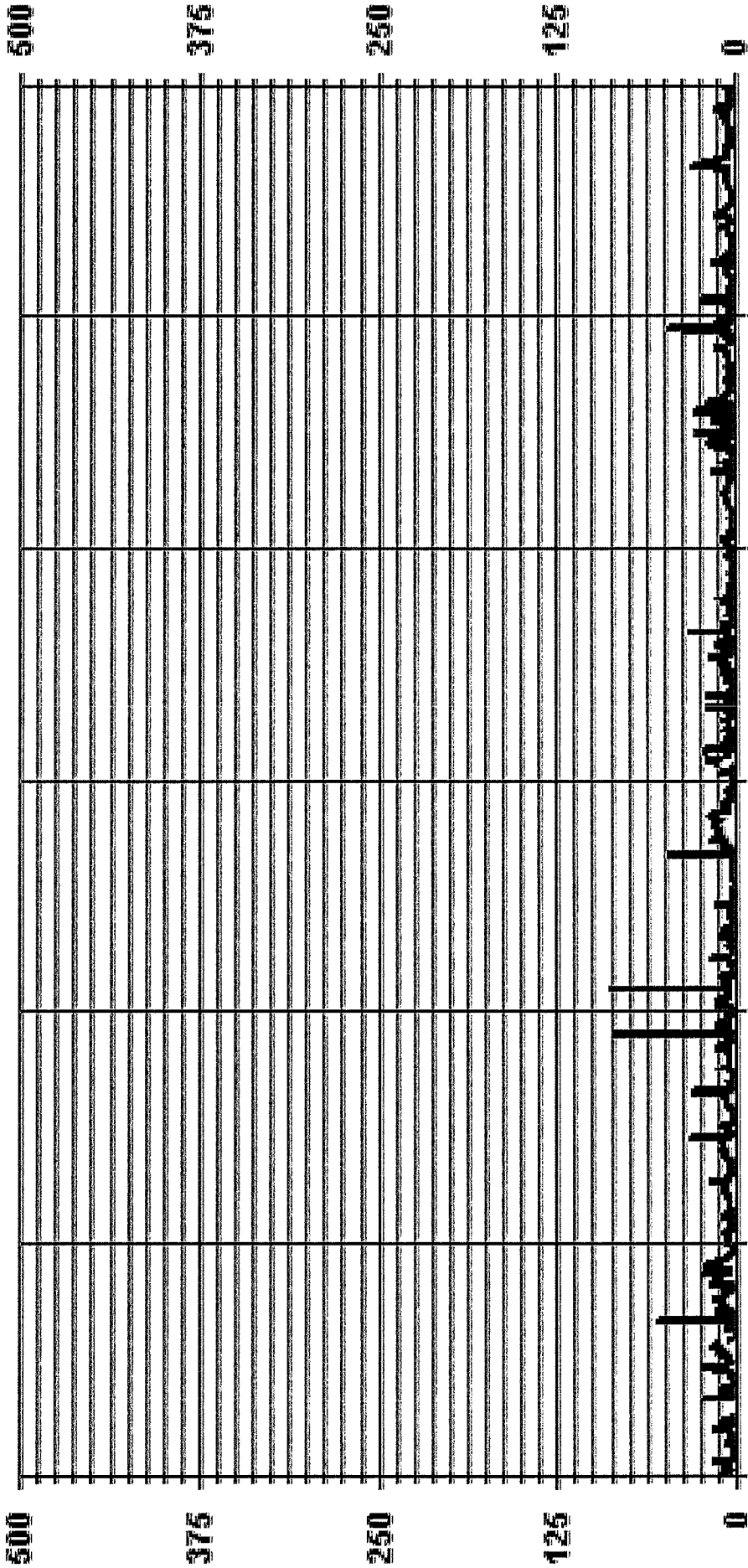
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	670
MAXIMUM INSTANTANEOUS VALUE:	86.9 PPB @ HOUR(S) 13 ON DAY(S) 11
IS CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	7.38
OPERATIONAL TIME:	720 HRS
VAR-VARIOUS	

01 Hour Averages



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

— LICA    - - - NOXMAX    . . . PPB

LICA  
NOX\_ / WD Joint Frequency Distribution (Percent)  
June 2015

Distribution By % Of Samples

Logger Id : 01  
Site Name : LICA  
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	2.50	4.41	3.53	3.82	2.35	3.82	9.72	4.27	3.09	3.09	7.21	16.93	15.31	10.30	4.27	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	2.50	4.41	3.53	3.82	2.35	3.82	9.72	4.27	3.09	3.09	7.21	16.93	15.31	10.30	4.27	5.30	

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	17	30	24	26	16	26	66	29	21	21	49	115	104	70	29	36	679
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	17	30	24	26	16	26	66	29	21	21	49	115	104	70	29	36	

Calm : .00 %

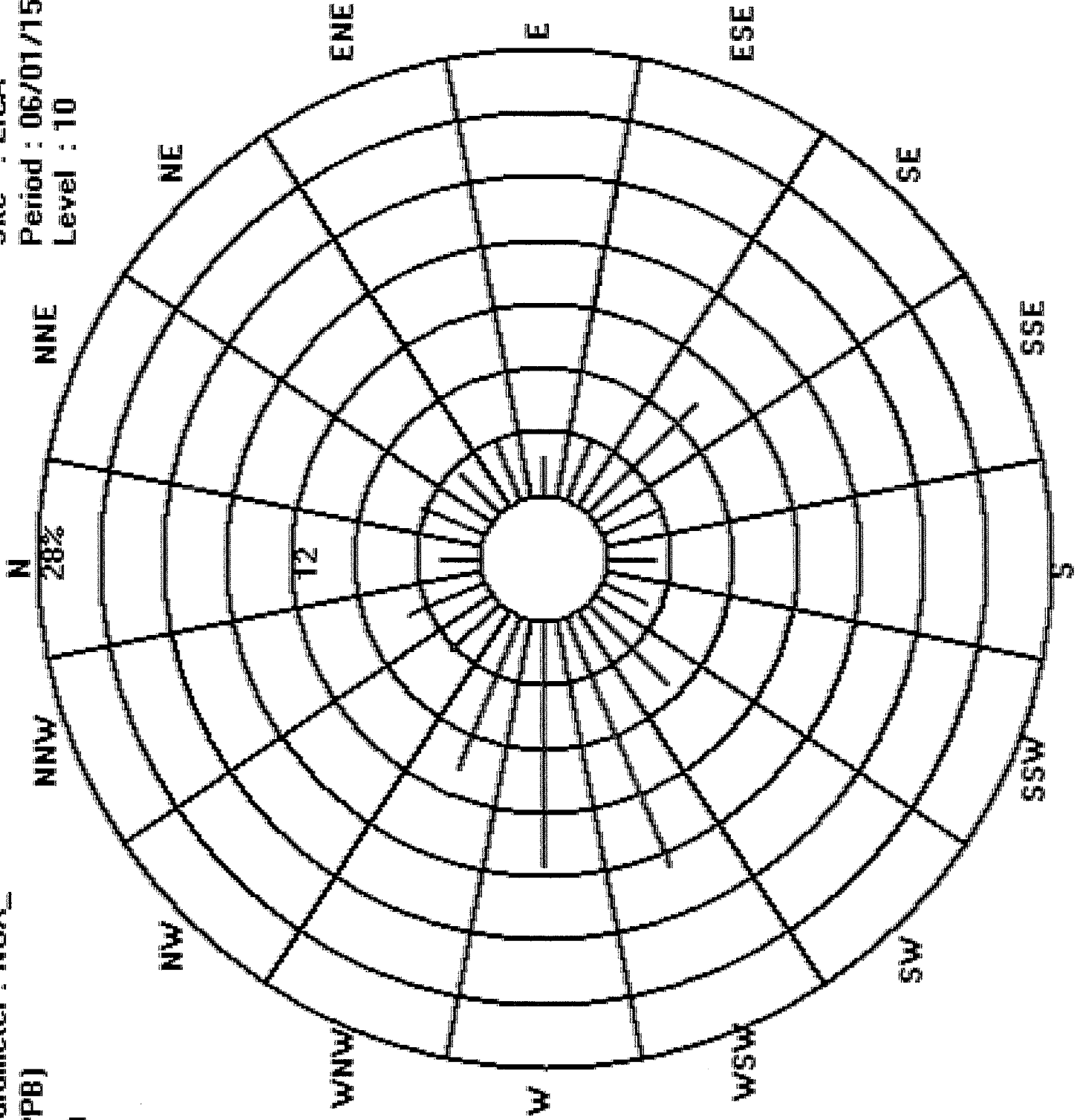
Total # Operational Hours : 679

Logger : 01 Parameter : NDX\_

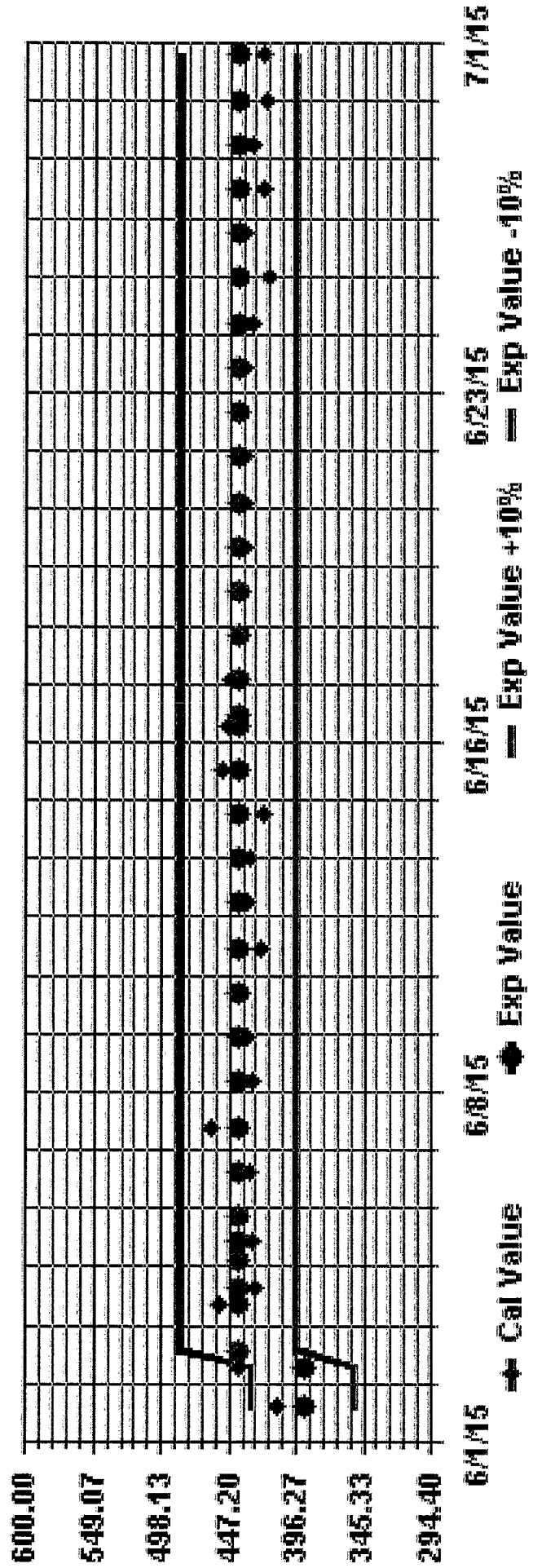
Class Limits (PPB)



Site : LICA  
Period : 06/01/15-06/30/15  
Level : 10

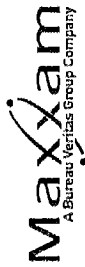


Calibration Graph for Site: LICA Parameter: NOX\_ Sequence: NO2 Phase: SPAM





***NITRIC OXIDES***



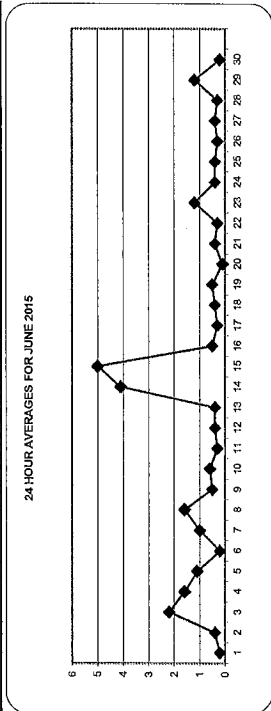
NITRIC OXIDE (NO) hourly averages in ppb

MST

DAY	NITRIC OXIDE (NO) hourly averages in ppb																								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	0.2	0.4	0.1	0.0	0.4	0.9	1.2	0.6	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.1	0.3	1.2		
2	0.3	1.0	0.6	0.2	0.2	1.1	0.5	0.4	0.7	0.6	0.8	0.7	0.5	0.8	1.9	2.8	3.7	4.9	6.1	6.9	7.2	6.2	5.5	0.0	1.1		
3	0.2	0.1	0.2	0.0	0.0	0.1	0.4	0.7	0.6	0.8	0.7	0.5	0.8	1.9	2.8	3.7	4.9	6.1	6.9	7.2	6.2	5.5	0.0	1.1			
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	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	0.0	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	0.1	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		
7	0.2	0.5	0.3	0.1	0.4	0.9	1.2	1.7	2.5	1.4	0.3	0.2	0.1	0.2	0.5	1.6	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
8	2.0	2.2	2.5	2.4	2.2	2.5	2.7	3.3	0.3	0.3	0.7	4.0	4.4	4.0	1.9	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
9	0.1	0.2	0.4	0.4	1.0	2.2	1.9	1.6	0.6	0.3	0.0	0.1	0.2	0.3	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
10	0.4	0.4	0.5	1.6	3.5	3.8	1.3	0.4	0.2	0.2	0.2	0.2	0.2	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
11	0.0	0.0	0.0	0.0	0.1	0.6	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
12	0.4	0.4	0.4	0.4	0.5	1.0	1.0	0.4	0.3	0.2	0.4	0.2	0.2	0.2	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4		
13	0.5	0.5	0.7	0.8	0.9	0.8	0.6	0.6	1.0	0.5	0.5	0.7	0.4	0.5	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4		
14	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	5.7	1.2	3.6	4.9	5.7	7.0	8.2	9.1	10.0	10.5	10.3	9.6	9.1	10.5		
15	9.0	9.1	9.3	9.3	9.8	10.6	11.4	10.1	4.1	6.2	3.4	5.4	3.5	0.4	0.0	1.3	2.9	4.0	4.2	0.0	0.0	0.0	0.0	0.0	11.3		
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		
17	0.0	0.0	0.0	0.0	0.2	0.4	1.2	1.3	0.6	0.3	0.2	0.2	0.3	0.5	0.3	0.2	0.3	0.4	0.5	0.6	0.2	0.2	0.2	0.2	0.2		
18	0.0	0.0	0.0	0.1	0.1	0.3	0.6	0.5	0.5	0.5	0.4	0.4	0.7	0.4	0.4	0.9	0.4	0.3	0.2	0.2	0.4	0.4	0.4	0.4	0.4		
19	0.4	0.6	0.3	0.6	0.8	2.1	0.5	0.4	0.6	0.4	0.3	0.2	0.1	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
20	0.4	0.5	0.5	0.4	0.5	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		
21	0.1	0.3	0.0	0.0	0.0	0.0	1.2	1.1	1.1	1.2	1.0	0.4	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		
22	0.7	0.3	0.4	0.5	0.9	1.1	0.9	0.7	0.6	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	0.0	0.0		
23	0.3	0.6	0.5	1.3	3.5	6.3	5.2	6.5	2.3	0.4	0.1	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		
24	0.3	0.3	0.4	0.4	1.8	1.7	1.2	1.4	1.0	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		
25	0.3	0.4	0.5	1.2	1.7	1.1	0.6	0.9	0.5	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
26	0.3	0.1	0.1	0.3	0.7	0.5	0.6	0.7	0.7	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	0.0	0.0		
27	0.2	0.3	0.4	0.4	1.0	1.7	2.1	1.7	0.7	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		
28	0.2	0.3	0.6	0.4	1.1	1.6	1.2	1.0	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		
29	0.4	0.4	0.4	0.6	0.8	2.1	11.4	6.1	2.3	1.2	0.3	0.2	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		
30	0.0	0.0	0.0	0.1	0.1	0.2	0.6	1.0	0.5	0.4	0.6	0.4	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		
HOURLY MAX	9.0	9.1	9.3	9.3	9.8	10.6	11.4	10.1	4.1	6.2	3.4	5.4	3.5	0.4	0.0	1.3	2.9	4.0	4.2	0.0	0.0	0.0	0.0	0.0	11.3		
HOURLY AVG	0.6	0.6	0.6	0.7	1.0	1.6	1.8	1.7	0.9	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	1.0	1.1	1.2	1.1	0.9	0.7	0.6	0.6		

STATUS FLAG CODES

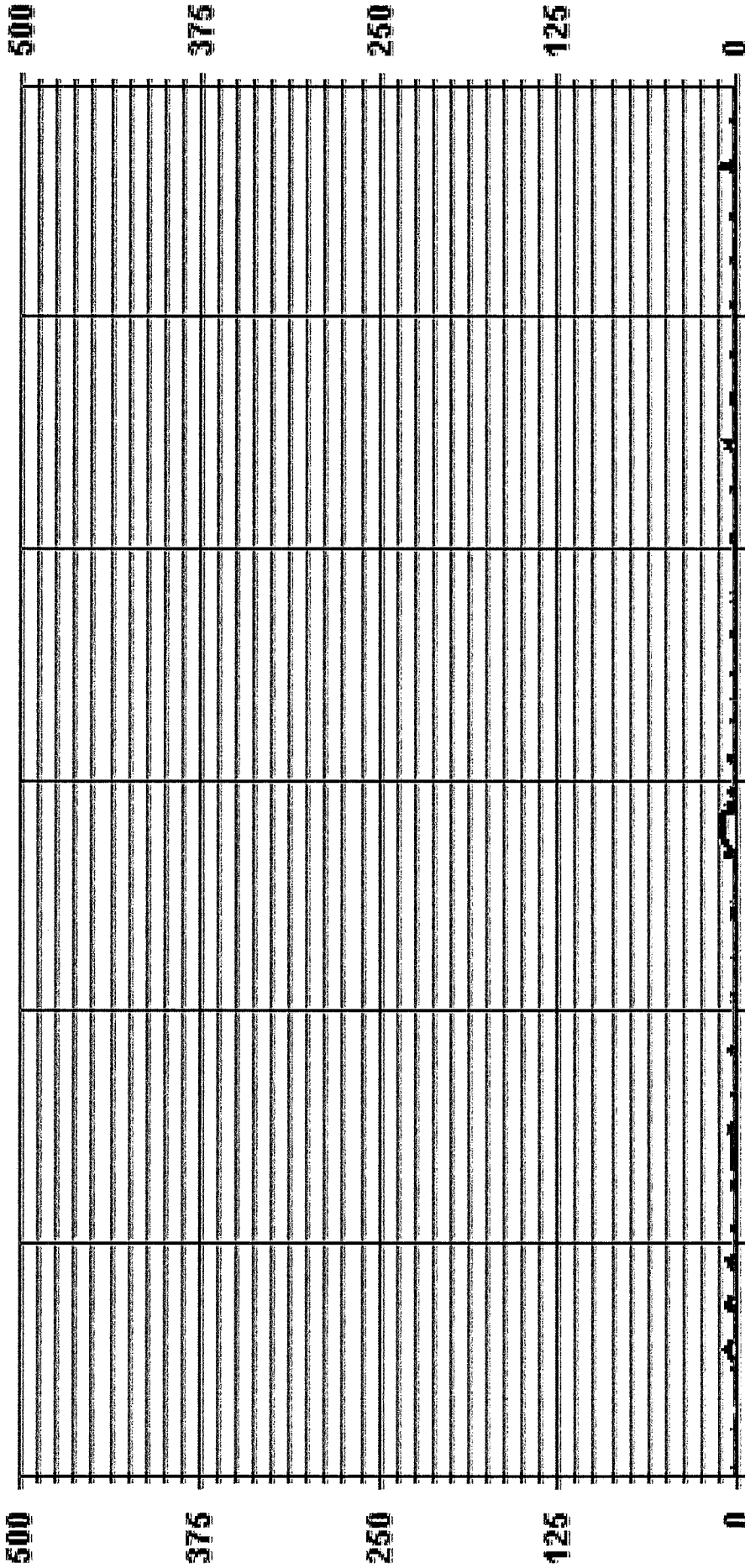
C	- CALIBRATION	Q	- QUALITY ASSURANCE
M	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SANITY CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



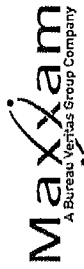
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	470
MAXIMUM 1-HR AVERAGE:	11.4
MAXIMUM 24-HR AVERAGE:	5.0
IS CALIBRATION TIME:	34 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	1.87
OPERATIONAL TIME:	720 HRS
AMTD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	0.9
ON DAY(S)	29
VAR-VARIOUS	15

01 Hour Averages



— LICA NO\_ PPB



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	DAILY MAX	24-HOUR AVG	RDS	
1	1.0	1.0	0.5	1.0	1.0	1.0	2.0	1.5	10.5	0.5	0.5	0.4	0.4	3.0	0.5	0.5	2.0	2.0	0.9	0.5	0.5	0.9	0.4	10.5	1.3	24	
2	1.4	9.4	0.9	1.9	5.9	1.4	1.0	1.0	1.0	6.9	4.0	1.0	1.5	2.5	4.0	5.5	7.0	7.5	9.0	7.5	7.0	3.0	0.5	20.0	3.4	24	
3	0.5	0.5	0.5	1.0	0.5	0.9	0.5	6.9	1.0	6.9	4.0	1.0	1.5	2.5	4.0	5.5	7.0	7.5	9.0	7.5	7.0	3.0	0.5	9.0	3.6	24	
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.4	9.9	1.0	0.5	1.5	21.0	4.5	5.0	6.5	7.5	5.5	5.5	0.2	0.0	21.0	4.2	24	
5	0.0	0.0	0.0	0.0	8.2	3.2	0.0	0.0	0.0	21.1	0.0	11.6	0.1	15.6	7.6	5.1	10.1	7.1	6.6	3.1	0.1	0.0	0.0	0.0	21.1	4.7	24
6	0.6	0.6	0.0	0.1	0.1	0.6	2.1	2.1	2.6	1.1	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.9	0.4	0.5	0.5	0.8	24
7	0.5	1.0	1.0	1.0	1.5	1.5	1.5	3.0	3.0	13.0	0.5	1.5	0.5	1.0	1.5	2.0	2.5	0.4	0.4	0.4	0.4	0.4	0.4	13.0	2.0	24	
8	2.5	2.5	3.0	3.0	3.0	3.0	3.0	22.0	1.5	1.5	3.0	5.0	5.5	4.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.5	0.5	22.0	3.0	24	
9	0.5	0.5	0.5	1.5	3.0	3.0	3.0	12.5	0.9	2.4	0.4	0.4	0.4	0.4	0.4	0.4	1.4	1.4	0.9	0.4	0.4	0.5	1.0	12.5	1.5	24	
10	0.5	1.0	1.0	1.5	3.0	6.5	6.0	5.4	2.9	2.9	1.4	0.9	1.4	22.9	0.4	0.4	1.8	1.3	6.8	0.3	0.3	0.8	0.4	22.9	3.0	24	
11	0.4	0.4	0.4	0.5	0.4	7.4	2.4	6.4	1.4	0.9	2.4	1.4	0.4	11.3	0.4	0.4	3.9	0.8	2.3	3.9	0.8	0.4	0.4	11.3	2.2	24	
12	0.4	0.9	0.9	1.9	4.9	1.4	1.4	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.4	1.9	2.4	2.9	0.4	1.4	0.9	0.5	0.5	4.9	1.3	24	
13	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	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.1	24	
14	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	30.0	0.5	2.8	5.8	6.8	7.8	14.3	9.8	10.8	10.9	10.9	10.4	9.4	30.0	6.1	24	
15	9.4	9.3	9.8	9.9	11.8	13.8	11.8	12.3	5.3	8.8	0.0	4.2	6.3	6.7	1.2	1.2	2.2	3.7	4.7	4.7	3.7	0.2	0.0	13.8	6.1	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	0.0	0.0	0.0	5.6	11.7	1.2	0.7	5.2	0.2	0.2	0.7	18.2	3.1	24
17	0.2	0.2	0.7	0.2	0.7	1.2	2.2	3.7	0.9	0.4	0.4	1.4	5.4	4.9	1.4	1.4	1.4	1.4	5.4	11.8	0.4	0.4	0.4	11.8	2.0	24	
18	0.4	0.4	0.4	0.8	7.3	4.8	2.3	0.0	0.5	6.5	1.0	1.5	15.5	1.0	5.5	11.9	1.0	1.0	0.5	3.0	0.5	0.5	1.5	2.0	15.5	3.2	24
19	1.5	4.0	1.0	2.5	1.4	15.9	0.0	1.5	1.0	6.5	1.5	0.9	0.9	1.5	2.5	1.0	1.0	1.0	2.0	0.5	1.5	1.0	2.5	15.9	2.3	24	
20	0.5	0.5	0.5	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	0.5	24	
21	1.0	2.0	1.4	0.0	0.0	0.0	0.0	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	1.0	24	
22	4.6	1.1	0.6	0.0	0.0	0.0	0.0	2.0	2.0	1.5	1.5	0.5	0.5	0.5	0.5	3.5	5.5	0.5	0.5	0.5	0.5	0.5	0.5	4.6	1.0	24	
23	1.0	2.5	0.0	0.0	8.4	11.9	6.5	9.5	4.5	1.5	1.5	1.0	0.5	0.5	0.5	23.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	23.0	4.6	24	
24	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	24	
25	0.5	1.5	2.0	3.5	2.5	2.0	3.5	2.0	3.5	1.0	0.5	0.5	0.5	15.5	0.5	0.5	7.0	26.5	2.0	2.0	4.0	0.5	0.5	26.5	3.8	24	
26	0.5	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	24	
27	0.5	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	24	
28	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	24	
29	1.5	0.5	1.0	1.5	2.0	9.0	25.5	20.0	5.0	4.0	0.5	0.5	0.5	0.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	25.5	3.4	24	
30	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.5	1.0	0.5	1.0	0.5	10.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10.5	1.0	24	
HOURLY MAX	9.4	9.4	9.8	9.9	22.0	15.9	25.5	22.0	21.1	15.4	30.0	18.2	23.0	22.9	21.0	10.1	20.0	14.3	26.5	10.8	11.8	10.9	10.4	20.0			
HOURLY AVG	1.2	1.5	1.2	1.3	3.7	3.9	3.1	4.7	3.7	3.2	3.4	1.6	3.0	3.6	2.9	2.6	3.2	2.4	3.2	2.2	2.0	1.3	1.2	1.7			

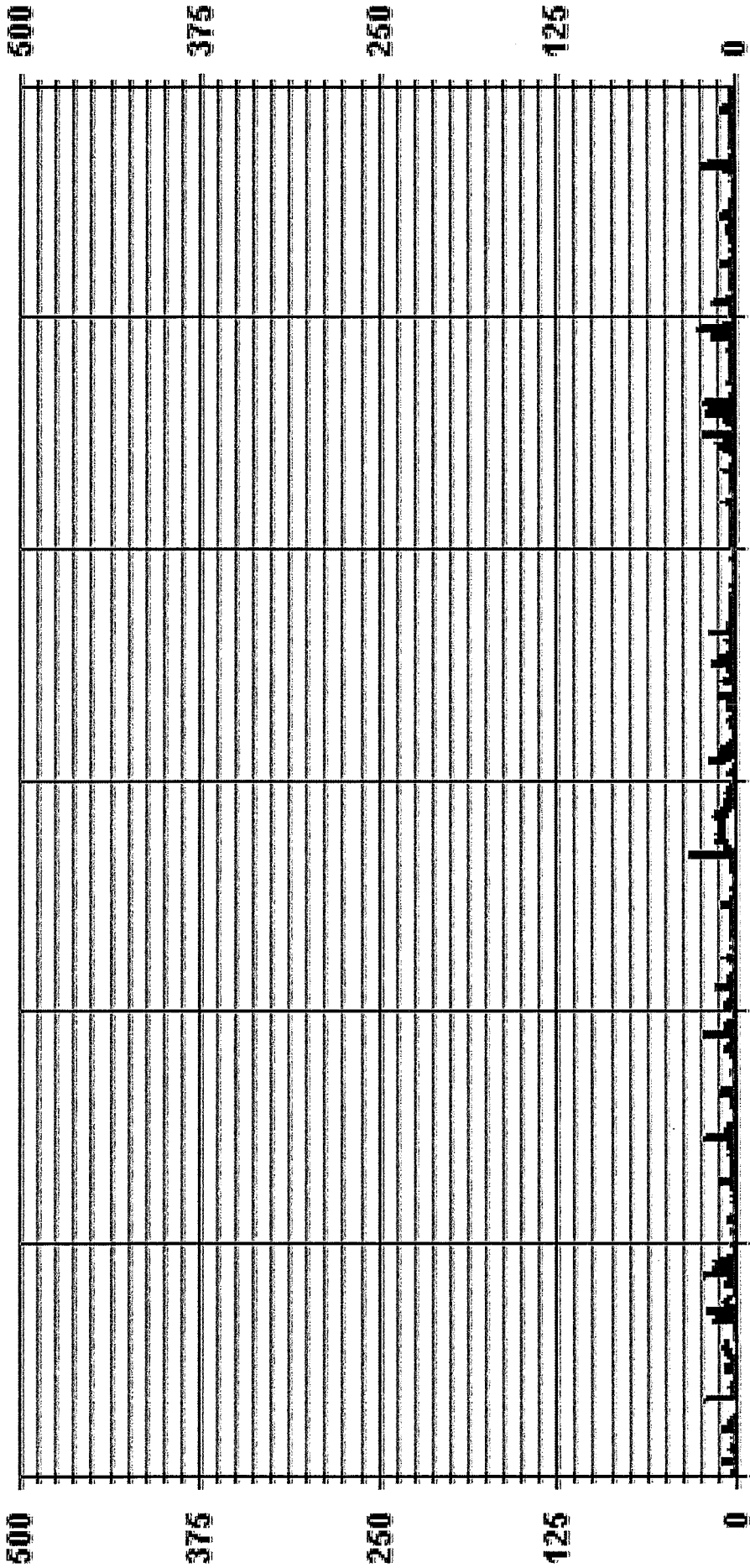
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	625
MAXIMUM INSTANTANEOUS VALUE:	30.0 PPB
OPERATIONAL TIME:	720 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	4.10
ON DAY(S)	14
VAR- VARIOUS	

01 Hour Averages



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

— LICA    NOMAX    PPB

LICA  
NO\_ / WD Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

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

Wind Parameter : WD  
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	2.50	4.41	3.53	3.82	2.35	3.82	9.72	4.27	3.09	3.09	7.21	16.93	15.31	10.30	4.27	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	2.50	4.41	3.53	3.82	2.35	3.82	9.72	4.27	3.09	3.09	7.21	16.93	15.31	10.30	4.27	5.30				

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

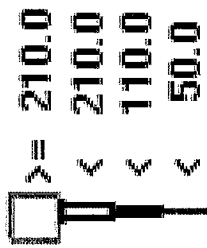
Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 50.0	17	30	24	26	16	26	66	29	21	21	49	115	104	70	29	36	679			
< 110.0																				
< 210.0																				
>= 210.0																				
Totals	17	30	24	26	16	26	66	29	21	21	49	115	104	70	29	36				

Calm : .00 %

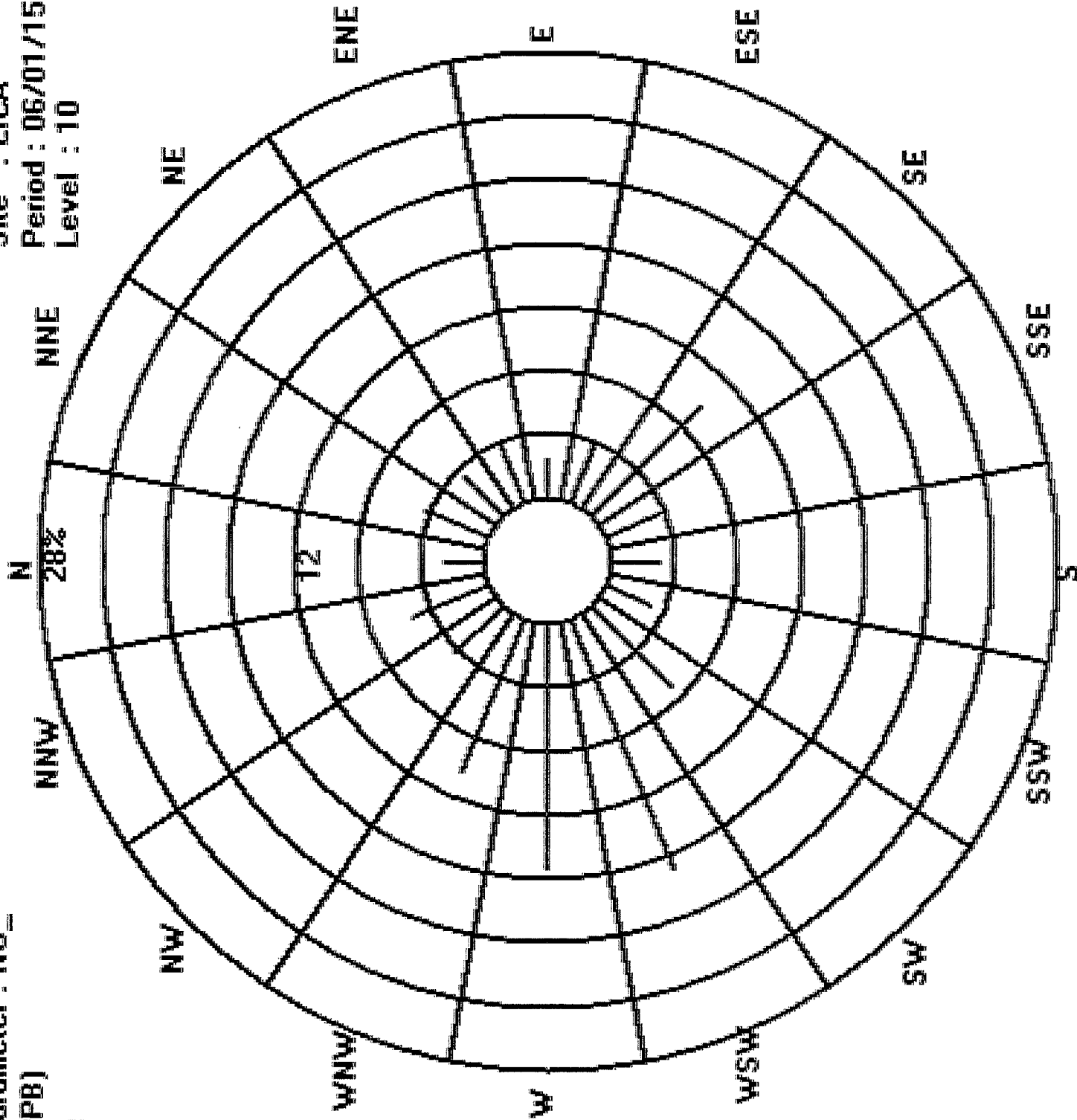
Total # Operational Hours : 679

Logger : 01 Parameter : NO\_

Class Limits (FPB)



Site : LICA  
Period : 06/01/15-06/30/15  
Level : 10

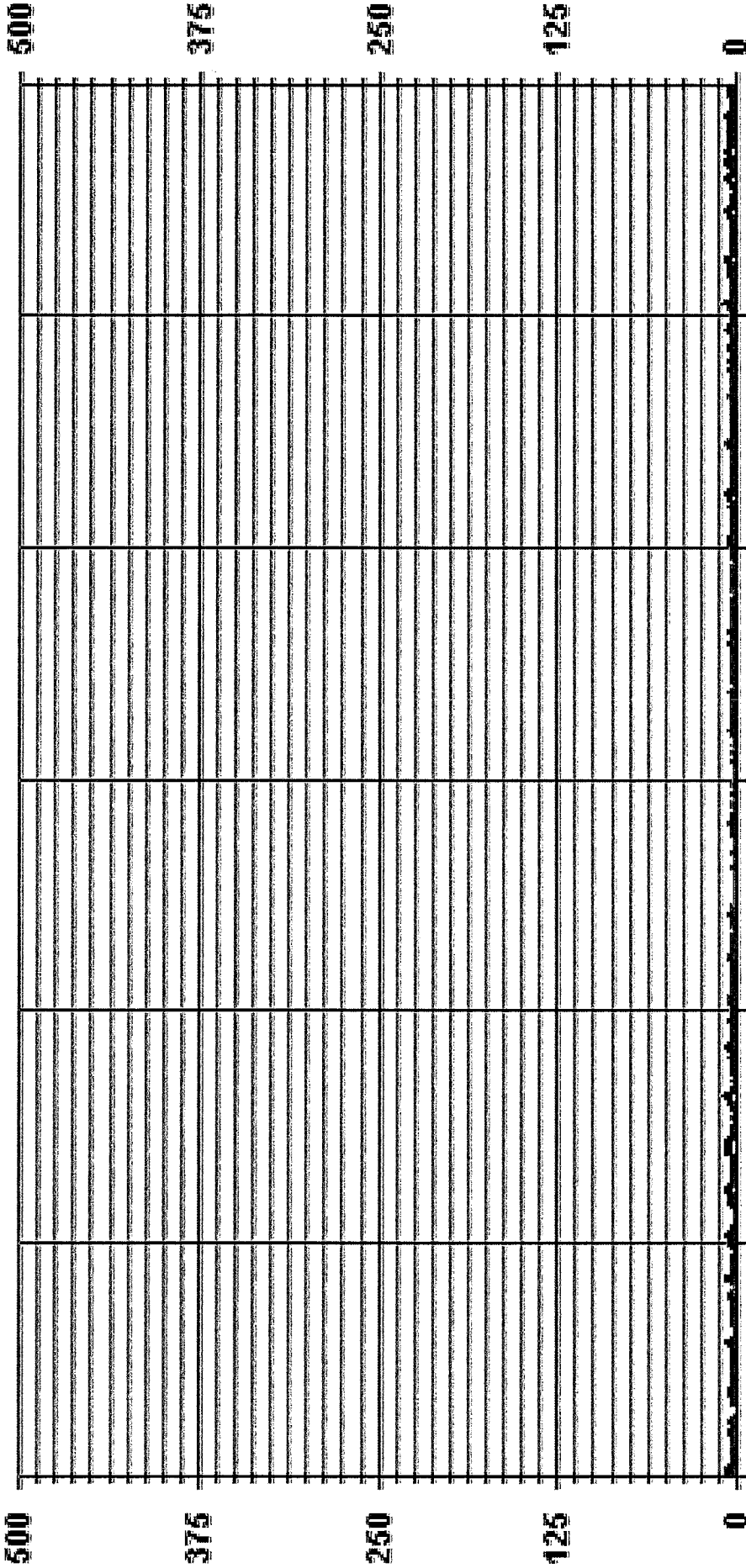


***NITROGEN DIOXIDE***

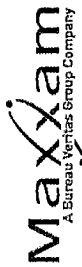




01 Hour Averages



— LICA NO2\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Cold Lake South Site - JUNE 2015  
JOB # 2833-2015-06-01- C

NITROGEN 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	DAILY MAX	24-HOUR AVG	ROGS	
1	5.7	6.6	7.2	5.2	7.2	6.6	4.2	3.2	8.2	1.6	2.1	1.7	2.1	1.6	1.2	1.6	1.2	4.2	1.6	3.6	4.1	4.0	3.5	8.2	3.8	24			
2	3.5	9.0	6.0	3.5	6.0	7.5	4.0	1.6	C	C	C	C	C	C	C	C	C	7.5	3.0	4.5	4.5	9.5	3.0	9.5	5.2	24			
3	3.0	1.5	1.5	2.5	1.5	4.0	3.0	10.0	3.0	22.0	6.0	2.0	3.0	3.0	2.0	5.0	2.5	6.5	2.5	9.5	7.5	8.0	5	5.3	22.0	5.0	24		
4	4.8	4.8	4.3	5.8	4.2	8.2	6.2	S	7.9	38.9	4.9	2.5	2.5	2.0	5.0	4.0	3.0	2.0	3.5	4.0	9.5	S	9.0	9.0	38.9	6.6	24		
5	5.5	5.0	5.0	4.5	10.5	9.5	S	S	11.0	3.5	12.4	2.0	5.0	16.0	4.0	6.0	4.5	2.0	3.5	5.5	S	3.9	3.9	4.9	16.0	6.1	24		
6	5.9	5.4	4.9	3.9	4.9	5.9	5.4	4.9	2.9	2.4	0.9	0.9	3.8	1.3	6.8	0.3	0.8	0.8	S	4.5	4.5	4.0	4.0	6.8	3.5	24			
7	5.0	5.6	5.1	6.6	7.0	7.6	7.1	6.1	3.1	8.1	1.6	6.5	4.1	2.6	2.1	1.1	2.6	1.1	S	3.0	3.5	5.5	5.0	7.5	8.1	4.7	24		
8	8.0	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	6.0	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
9	5.0	6.0	6.0	6.4	7.5	8.0	6.5	18.4	2.9	2.9	0.9	0.9	3.4	1.4	0.9	0.4	S	1.4	0.9	0.9	1.9	3.0	3.0	11.5	4.3	24			
10	4.6	4.6	4.6	4.1	3.6	6.5	7.1	5.6	3.0	2.0	2.0	2.0	6.5	64.5	1.5	S	6.5	2.5	8.0	3.0	6.1	5.0	5.0	2.1	64.5	7.0	24		
11	1.6	1.1	1.6	2.1	4.1	8.6	7.1	8.1	5.1	4.1	4.6	4.6	2.1	76.5	S	5.5	5.0	10.0	5.0	2.0	3.5	2.0	4.0	1.6	1.1	13.6	3.6	24	
12	2.1	2.1	3.1	4.6	13.6	5.1	3.6	1.6	1.5	1.5	3.5	3.0	1.5	S	1.5	5.0	10.0	5.0	2.0	3.5	2.0	4.0	1.6	1.1	13.6	3.6	24		
13	1.1	3.1	4.1	4.6	4.6	1.1	1.6	1.6	6.1	1.6	1.1	2.6	S	1.5	1.5	0.5	0.5	0.5	1.0	0.5	1.0	1.0	1.0	1.0	6.1	1.9	24		
14	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	20.5	S	1.5	4.0	1.0	2.0	4.0	1.5	2.5	2.0	2.0	2.5	3.0	20.5	2.5	24		
15	4.0	6.0	6.0	3.0	4.0	5.5	3.5	3.5	2.5	S	1.8	1.9	4.3	3.3	3.3	1.3	1.8	1.8	2.6	2.6	6.6	3.1	4.6	13.5	7.1	13.5	4.3	24	
16	3.8	3.3	2.3	2.8	7.8	5.8	6.3	3.8	5.3	S	7.5	4.0	5.5	3.5	S	15.4	9.9	2.4	1.4	5.4	0.9	0.4	0.4	3.9	15.4	4.6	24		
17	2.4	1.9	7.4	5.9	3.9	2.9	3.9	4.4	S	2.5	1.5	1.0	7.5	14.0	4.5	3.0	2.5	3.0	2.5	3.0	4.5	8.5	5.0	5.0	14.0	4.2	24		
18	1.0	1.0	1.0	1.4	3.4	1.9	3.0	S	2.0	8.1	2.6	2.1	6.5	8.6	3.1	5.1	8.6	2.6	2.6	6.6	3.1	4.6	13.5	7.1	13.5	4.3	24		
19	4.1	3.6	3.1	2.1	3.0	14.5	S	1.5	6.4	4.5	2.0	2.0	2.0	1.5	4.0	1.9	2.0	3.0	3.5	2.5	5.5	4.5	5.4	3.0	14.5	3.7	24		
20	1.0	2.0	3.0	3.0	4.0	S	3.0	2.5	1.5	2.0	3.0	3.5	3.0	2.0	1.0	1.0	2.5	1.5	1.5	2.5	3.5	4.5	3.5	4.5	2.6	24			
21	3.0	3.0	4.9	5.4	S	7.0	3.1	2.1	3.1	3.1	2.6	2.1	2.1	1.1	1.6	2.6	2.1	2.1	1.6	2.1	3.1	3.6	3.6	4.1	7.0	3.0	24		
22	3.6	5.1	6.1	S	7.0	6.4	4.5	3.5	5.0	4.0	3.0	2.0	1.5	1.5	2.0	3.5	11.9	1.5	1.5	1.5	4.5	3.0	2.0	1.5	11.9	3.7	24		
23	1.5	2.5	S	2.0	5.9	5.4	6.0	14.5	9.0	3.5	2.5	1.0	10.0	1.5	1.5	1.5	1.0	5.5	11.0	3.0	4.0	4.5	3.5	10.0	14.5	4.8	24		
24	3.0	S	3.0	2.0	2.5	4.0	4.0	8.0	4.0	5.0	3.0	3.0	3.0	1.5	1.5	2.5	4.0	2.0	2.0	4.0	5.0	4.5	6.0	4.5	8.0	3.5	24		
25	S	4.4	3.9	2.4	3.4	2.9	4.4	5.4	10.4	5.4	3.4	4.4	2.9	1.9	2.4	1.9	3.9	28.9	19.8	3.4	6.3	9.4	3.4	S	28.9	6.1	24		
26	3.4	2.4	3.4	3.4	3.9	3.9	5.9	7.9	17.4	15.4	2.3	1.4	1.9	2.9	3.4	1.4	0.9	0.9	1.4	2.4	4.4	S	5.5	17.4	4.3	24			
27	4.5	4.5	5.0	4.5	6.4	7.5	7.5	6.0	4.5	3.5	2.0	1.0	1.0	1.0	2.0	2.0	1.5	1.5	3.5	4.5	S	4.5	4.5	7.5	3.7	24			
28	4.5	3.0	3.0	2.5	4.5	5.5	7.0	6.5	5.0	3.5	4.0	2.0	2.0	2.5	1.0	1.0	1.0	1.5	2.5	2.5	S	5.0	6.0	5.5	7.0	3.5	24		
29	6.5	4.5	4.0	3.5	3.0	4.5	7.5	8.0	9.5	9.5	5.5	5.9	5.0	6.0	6.0	5.0	6.0	3.5	3.0	S	4.4	3.9	2.9	3.4	9.5	5.3	24		
30	3.4	3.4	3.4	3.9	4.9	4.9	5.9	7.4	5.4	4.4	5.9	3.4	5.9	1.9	2.9	1.9	3.9	2.9	S	4.0	3.0	4.5	5.0	6.0	7.4	4.3	24		
HOURLY MAX	8.0	9.0	7.4	6.6	13.6	14.5	7.5	18.4	17.4	38.9	20.5	6.5	10.0	76.5	14.0	15.4	11.9	28.9	19.8	9.5	9.5	9.5	13.5	10.0					
HOURLY AVG	3.7	3.9	4.1	3.8	5.1	5.9	4.9	5.9	5.4	6.0	4.1	2.5	3.3	8.3	2.7	3.4	3.9	3.5	3.6	3.7	4.2	4.3	4.1	4.2					

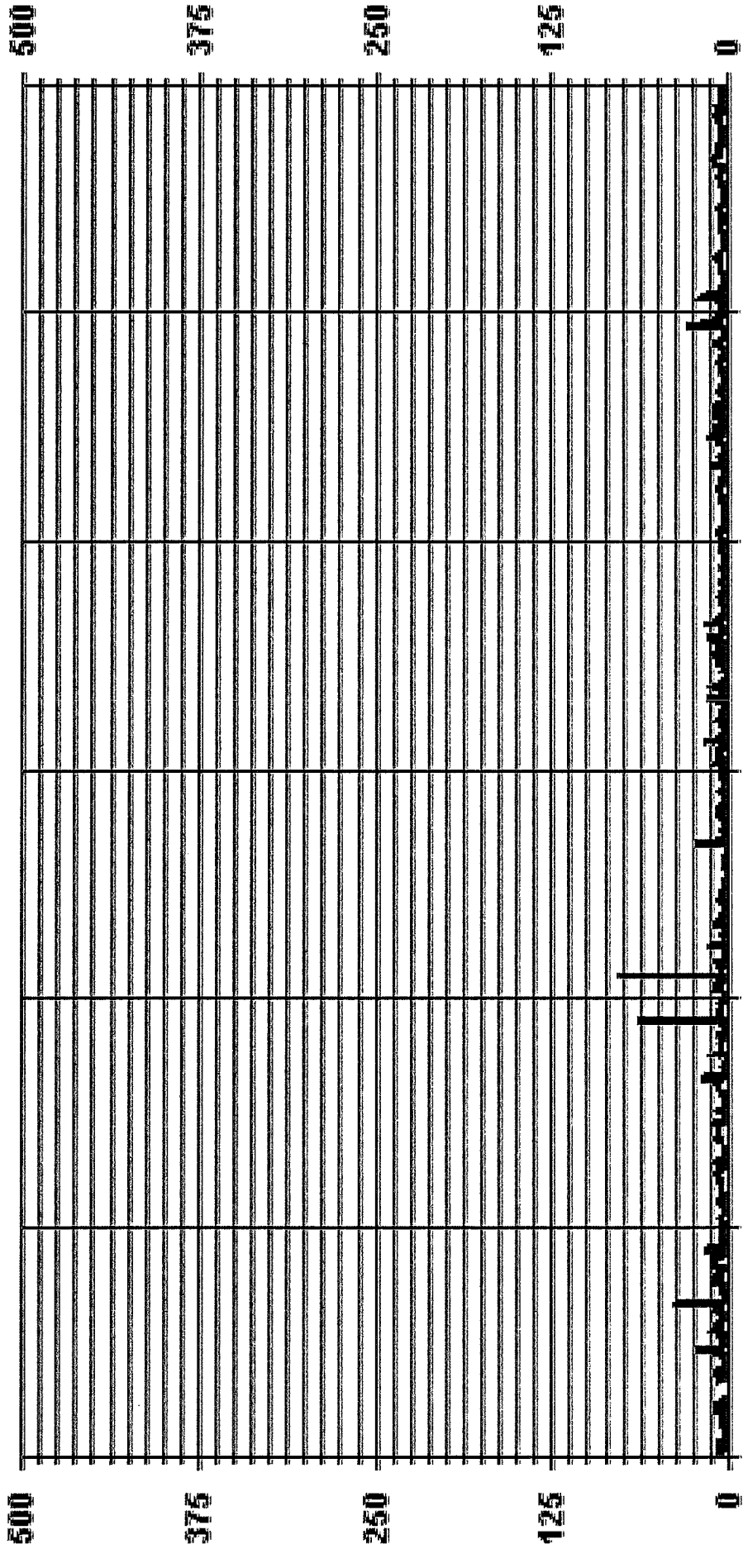
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	677
MAXIMUM INSTANTANEOUS VALUE:	76.5 PPB
@ HOUR(S)	13
ON DAY(S)	11
VAR-VARIOUS	
OPERATIONAL TIME:	720 HRS
IS CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	4.88

# 01 Hour Averages



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

— LICA NO2MAX PPB

LICA  
 NO2\_ / WD Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Limit	Direction																Freq
	N	NNE	NE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	NNW	
< 50.0	2.50	4.41	3.53	3.82	2.35	3.82	9.72	4.27	3.09	3.09	7.21	16.93	15.31	10.30	4.27	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	2.50	4.41	3.53	3.82	2.35	3.82	9.72	4.27	3.09	3.09	7.21	16.93	15.31	10.30	4.27	5.30	

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	NNW	
< 50.0	17	30	24	26	16	26	66	29	21	21	49	115	104	70	29	36	679
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	17	30	24	26	16	26	66	29	21	21	49	115	104	70	29	36	

Calm : .00 %

Total # Operational Hours : 679





Logger : 01 Parameter : NO2\_

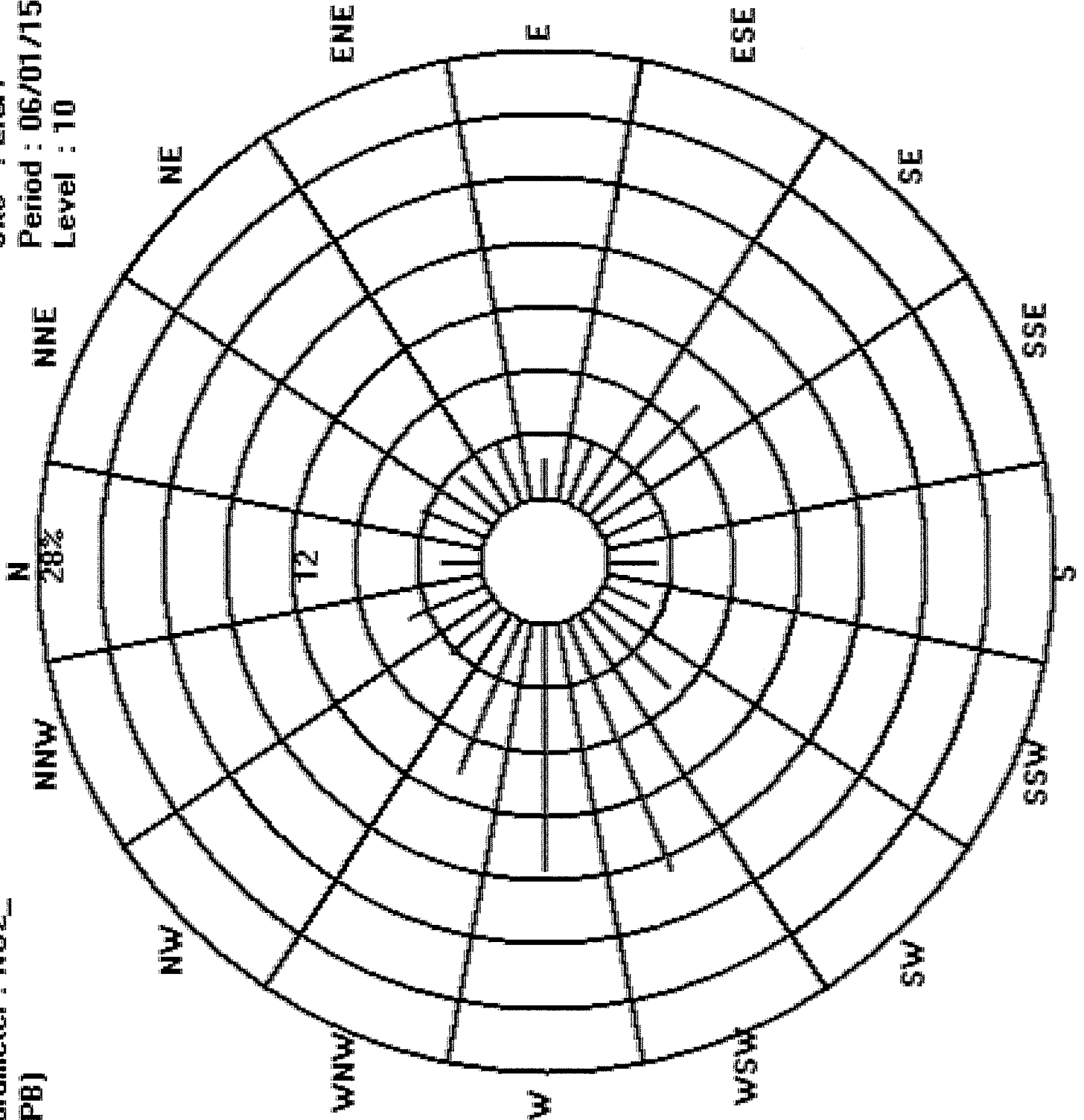
Site : LICA

Period : 06/01/15-06/30/15

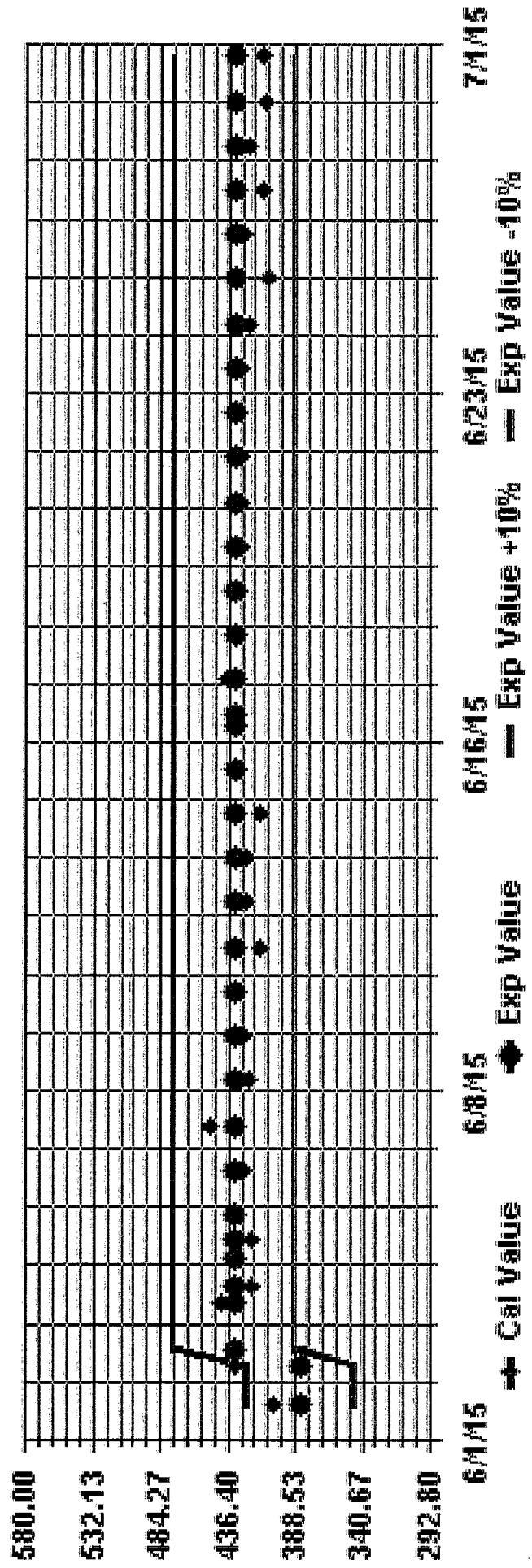
Level : 10

Class Limits (PPB)

-  >= 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

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 AVE.	ROGS.
1	9	8	13	16	13	14	15	19	23	23	24	25	26	29	31	27	26	26	5	27	23	13	10	6	31	19.4	24
2	4	4	21	15	16	23	25	28	28	28	30	32	33	33	35	37	34	30	28	25	22	18	26	5	37	24.3	24
3	25	31	38	31	28	25	26	C	C	C	C	48	49	51	53	55	57	60	57	57	42	29	5	27	60	41.3	24
4	22	13	13	12	11	14	34	5	42	43	49	53	54	55	58	57	55	54	48	38	5	25	20	58	37.6	24	
5	17	19	16	11	8	12	24	31	38	43	49	55	56	55	56	60	61	58	57	49	5	25	21	15	61	36.3	24
6	18	14	9	12	8	20	26	30	35	40	44	45	47	46	45	47	50	49	50	5	44	33	25	20	50	32.9	24
7	19	19	22	20	22	24	35	41	41	44	48	48	48	48	48	48	49	49	5	39	31	25	21	23	50	35.6	24
8	21	18	16	15	14	16	19	23	31	37	38	38	36	36	36	36	41	44	44	44	40	36	33	45	45	31.0	24
9	29	24	16	15	11	16	21	27	35	38	39	36	39	36	38	39	40	39	36	27	20	17	13	40	28.3	24	
10	10	6	5	3	2	5	14	31	39	39	40	43	44	44	44	44	45	44	44	40	30	21	24	28	45	28.0	24
11	31	31	31	27	21	19	32	33	34	37	39	45	54	59	5	61	61	55	52	49	43	39	44	47	61	41.0	24
12	43	27	19	25	28	25	25	30	35	37	37	40	41	5	43	43	44	45	42	38	34	30	38	30	45	34.5	24
13	29	30	35	30	25	25	27	26	27	28	31	31	33	34	36	37	35	36	30	29	29	29	26	37	30.3	24	
14	24	23	21	21	22	22	23	22	22	23	22	22	22	22	23	22	22	22	22	22	21	13	15	13	38	25.3	24
15	14	10	7	8	10	14	21	27	34	41	46	46	47	46	46	46	44	45	44	43	36	32	32	26	47	31.3	24
16	22	16	13	9	6	11	27	33	40	5	52	55	56	57	5	45	41	30	23	22	23	24	23	18	57	29.4	24
17	16	15	12	10	7	19	23	27	5	34	34	35	35	36	37	37	37	36	36	33	27	17	15	26	37	26.3	24
18	28	27	26	25	24	22	22	5	27	34	39	36	36	39	40	39	37	37	37	36	34	26	22	14	40	30.7	24
19	8	4	4	2	3	10	5	26	30	34	35	37	40	40	43	43	43	43	30	31	24	12	6	5	37	26.5	24
20	28	26	28	29	30	5	27	28	29	29	25	25	27	26	28	35	36	36	30	31	24	12	6	5	37	26.5	24
21	2	1	3	9	5	7	9	13	19	21	24	27	27	32	34	32	34	32	34	32	24	24	20	16	34	20.7	24
22	8	11	10	5	9	12	17	22	25	33	41	44	44	42	41	33	27	34	33	30	22	7	5	4	44	24.1	24
23	2	1	5	0	0	2	7	12	27	33	36	38	40	42	43	43	41	39	36	35	21	23	14	9	43	23.7	24
24	4	5	2	1	2	5	16	22	28	37	46	48	49	50	51	52	51	52	44	41	25	19	14	10	52	29.6	24
25	5	7	4	5	4	6	21	34	39	49	56	56	52	52	56	52	47	45	45	41	30	24	14	5	56	33.6	24
26	10	11	10	6	6	13	11	13	18	24	33	41	43	42	41	42	44	44	44	40	41	29	5	16	45	27.1	24
27	16	12	8	6	6	14	21	26	36	42	46	48	46	47	48	49	48	47	47	34	21	5	10	8	49	29.8	24
28	7	4	3	2	2	7	17	29	46	58	65	65	62	51	44	42	36	38	47	41	5	20	13	11	65	30.9	24
29	9	8	6	3	2	2	1	4	9	21	31	34	39	44	52	47	41	36	38	5	23	31	30	28	52	23.4	24
30	27	28	26	19	17	18	16	22	28	26	25	32	38	41	43	43	42	41	41	34	34	31	28	23	43	29.7	24
HOURLY MAX	43	31	35	31	30	25	35	41	46	58	65	65	62	59	58	61	61	60	57	57	44	40	44	47			
HOURLY AVG	17.3	15.4	14.7	13.6	12.3	14.3	20.7	25.0	30.9	34.9	38.5	41.6	42.8	43.0	43.2	43.6	43.0	42.0	41.9	37.5	30.3	24.5	21.5	19.3			

STATUS FLAG CODES

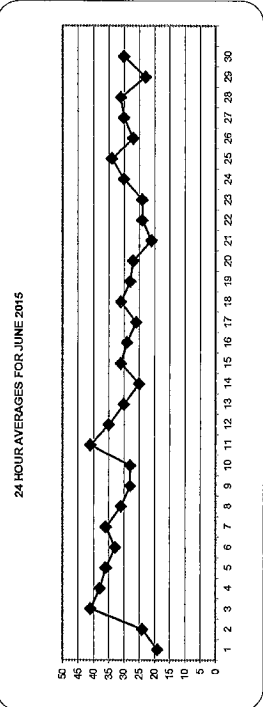
- C - CALIBRATION
- Y - MAINTENANCE
- S - DAILY ZERO/SPAN CHECK
- P - POWER FAILURE
- G - OUT FOR REPAIR
- Q - QUALITY ASSURANCE
- R - RECOVERY
- X - MACHINE MALFUNCTION
- O - OPERATOR ERROR
- K - COLLECTION ERROR

OBJECTIVE LIMIT:

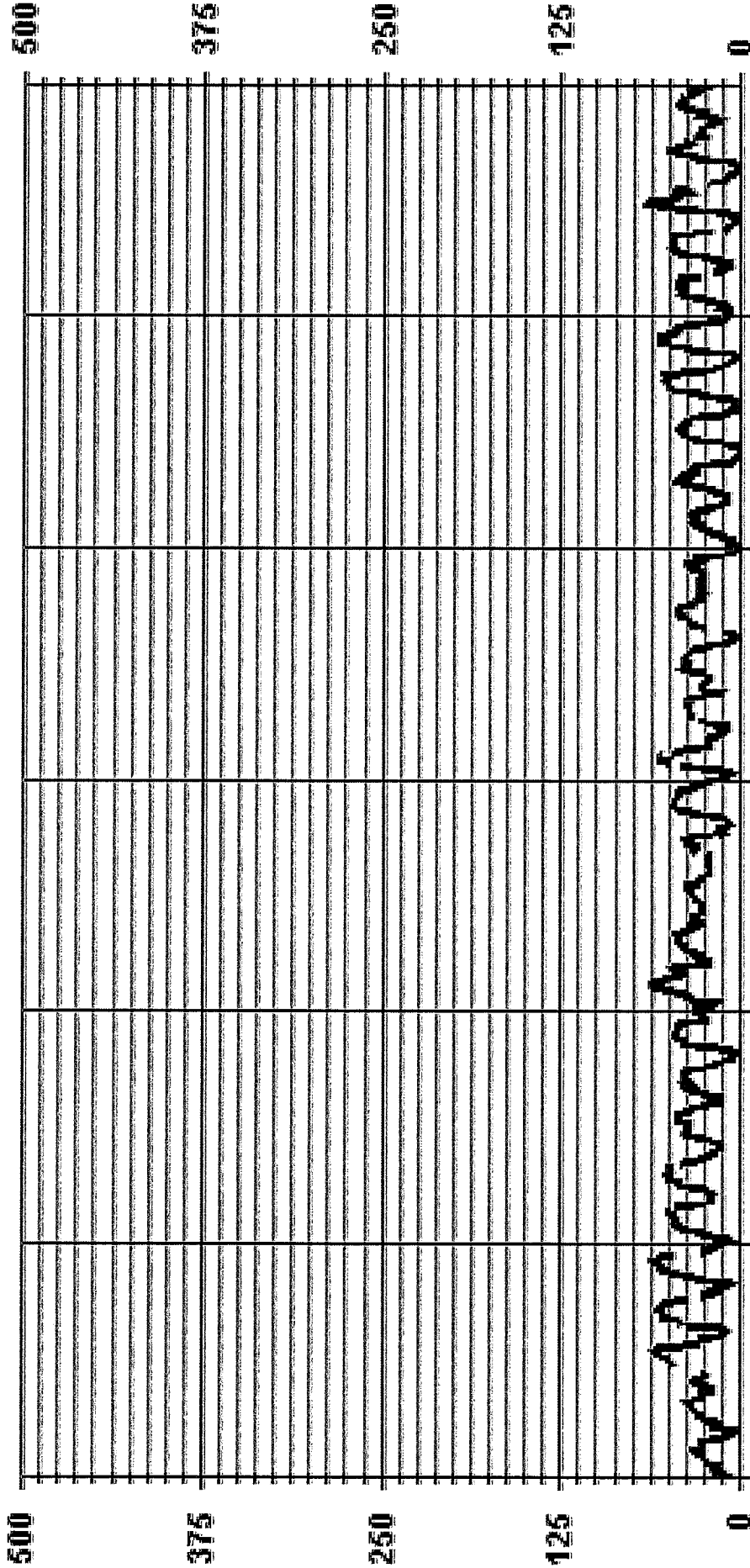
ALBERTA ENVIRONMENT: 1-HR: 82 ; 3-PB

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	681	ON DAY(S)	28, 28
MAXIMUM 1-HR AVERAGE:	65 PPB	@ HOUR(S)	10, 11
MAXIMUM 24-HR AVERAGE:	41.3 PPB	VAR- VARIOUS	3
OPS CALIBRATION TIME:	33 HRS	OPERATIONAL TIME:	720 HRS
MONTHLY CALIBRATION TIME:	4 HRS	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	14.51	MONTHLY AVERAGE:	30 PPB

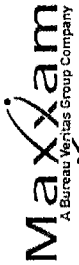


01 Hour Averages



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

-- LICA 03\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Cold Lake South Site - JUNE 2015  
JOB # 2833-2015-06-01-C

OZONE MAX instantaneous maximum in ppb

MST

DAY	HOUR																								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	13	12	17	17	15	15	17	22	25	25	26	29	34	34	29	28	27	5	28	28	19	13	8	34	22.0	24		
2	6	7	20	22	20	20	25	29	30	29	34	34	35	39	40	36	33	30	29	24	22	30	5	40	27.3	24		
3	29	34	35	33	31	28	29	C	C	C	C	C	55	57	60	62	61	60	55	36	5	32	62	44.4	24			
4	26	25	15	16	16	34	39	5	44	46	53	55	56	58	59	58	57	56	52	46	5	38	27	59	42.3	24		
5	20	27	22	15	13	16	16	33	36	47	46	56	59	58	59	63	63	61	59	56	5	31	24	19	63	40.9	24	
6	24	24	19	13	16	18	22	28	35	38	43	45	48	48	47	46	49	52	51	51	5	47	39	30	25	52	36.3	24
7	24	23	28	27	27	31	39	43	43	47	50	52	53	52	51	51	51	5	43	36	29	26	26	53	39.3	24		
8	24	22	19	18	19	18	21	27	36	39	39	37	38	37	38	49	5	46	47	46	43	39	36	49	33.8	24		
9	32	26	20	20	16	17	26	33	38	40	41	38	42	38	40	40	40	42	41	38	35	23	22	17	42	31.5	24	
10	13	9	7	6	4	9	19	38	41	40	42	45	46	46	46	5	46	47	47	42	38	28	31	32	47	31.4	24	
11	33	32	33	29	27	27	35	36	38	39	45	52	60	61	61	64	62	53	52	48	50	48	50	64	45.1	24		
12	48	39	33	35	31	28	27	34	38	40	40	42	43	43	44	45	47	47	45	41	37	35	35	33	48	38.6	24	
13	30	36	38	32	27	28	28	28	28	31	33	33	33	37	36	39	39	37	38	34	31	32	32	28	39	38.0	24	
14	25	25	23	23	23	24	24	24	24	25	29	36	34	33	36	39	39	39	39	39	27	19	18	17	39	28.0	24	
15	16	16	11	14	16	19	23	31	39	46	5	49	49	48	49	48	46	47	46	47	47	40	38	31	49	35.5	24	
16	30	20	20	14	11	15	34	37	45	5	56	57	59	59	5	53	45	37	25	23	25	25	24	22	59	33.5	24	
17	19	18	16	17	12	22	25	31	36	36	37	37	37	38	38	38	38	38	37	36	32	21	25	28	39	29.4	24	
18	29	28	27	26	25	24	23	5	31	40	40	38	38	42	41	41	39	39	39	40	32	33	18	42	33.6	24		
19	16	6	7	3	7	16	5	28	32	36	38	39	44	43	45	46	44	44	44	42	38	35	33	31	46	31.2	24	
20	31	30	30	31	32	5	29	29	31	32	28	27	28	34	39	40	39	39	32	35	28	19	11	9	40	29.7	24	
21	3	4	7	11	5	9	11	16	22	23	29	29	29	36	37	37	38	35	37	35	29	27	23	18	38	23.7	24	
22	14	13	13	5	10	15	20	24	30	38	44	46	46	46	44	43	36	37	35	33	32	12	18	8	46	28.3	24	
23	6	4	5	1	1	6	10	18	31	38	40	40	40	44	45	45	45	41	40	38	27	29	22	15	45	27.4	24	
24	8	5	4	3	6	11	22	26	33	44	52	51	52	54	54	54	53	55	52	38	26	18	18	55	34.2	24		
25	5	10	6	8	5	11	36	36	47	56	66	60	60	59	61	56	52	50	47	46	40	33	21	5	66	39.4	24	
26	15	17	16	9	13	20	15	18	22	31	39	45	46	46	46	46	47	47	43	39	5	26	47	31.7	24			
27	21	16	13	7	11	20	24	32	41	45	49	50	49	50	50	51	50	49	50	45	26	5	12	11	51	33.6	24	
28	11	8	5	5	4	11	22	40	54	65	68	69	67	56	48	45	39	48	49	46	5	25	18	16	69	35.6	24	
29	12	10	9	5	4	2	7	13	26	37	40	47	56	56	55	48	42	41	5	31	34	31	31	56	27.8	24		
30	29	29	29	24	23	19	22	27	32	29	38	44	45	46	45	44	44	44	44	44	44	44	44	44	44	46	33.3	24
HOURLY MAX	48	39	38	35	32	34	39	43	54	65	68	69	67	61	63	64	62	61	60	55	50	48	50	29	50	23.6		
HOURLY AVG	20.9	19.5	18.5	16.8	16.1	18.5	24.4	29.1	34.8	38.5	42.3	44.3	45.9	46.3	45.4	46.5	46.0	45.0	44.1	41.3	36.0	30.0	26.4	28.6	21.6			

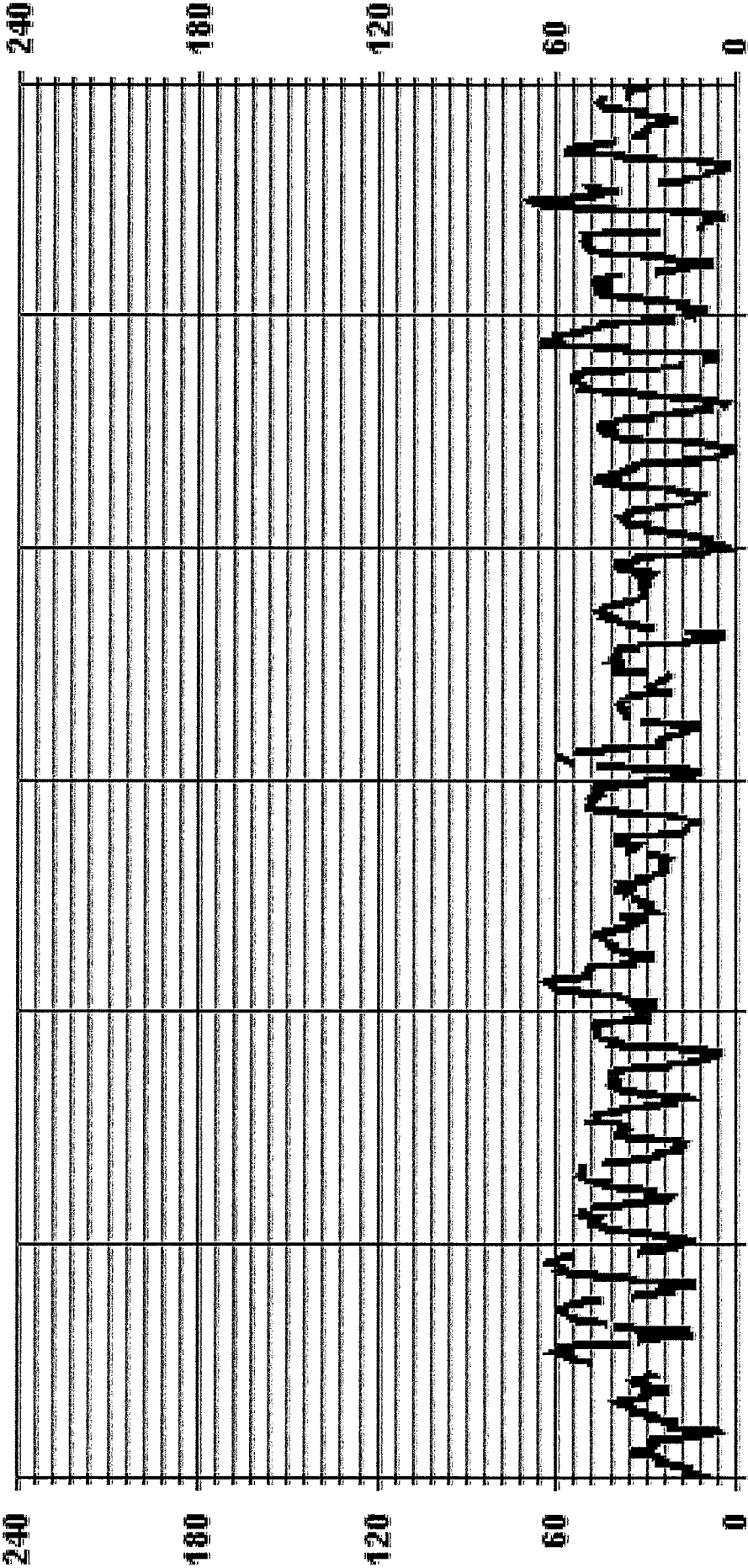
STATUS FLAG CODES

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:	682
MAXIMUM INSTANTANEOUS VALUE:	69 PPB @ HOUR(S) 11 ON DAY(S) 28
OPERATIONAL TIME:	720 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	14.54
OPERATIONAL TIME:	VARIOUS

01 Hour Averages



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

— LICA O3MAX PPB

LIICA  
 O3\_ / WD Joint Frequency Distribution (Percent)  
 June 2015

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

Wind Parameter : WD  
 Instrument Height : 10 Meters

Distribution By % Of Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	2.48	4.24	3.51	3.66	2.48	4.09	7.75	3.51	2.63	2.48	6.58	15.37	14.64	9.07	4.09	5.12	91.80
< 110	.00	.14	.00	.14	.00	.29	1.90	.58	.43	.58	.58	1.46	.58	1.17	.14	.14	8.19
< 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	2.48	4.39	3.51	3.80	2.48	4.39	9.66	4.09	3.07	3.07	7.17	16.83	15.22	10.24	4.24	5.27	

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples

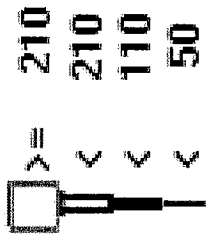
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	17	29	24	25	17	28	53	24	18	17	45	105	100	62	28	35	627
< 110	1	1	1	1	1	2	13	4	3	4	4	10	4	8	1	1	56
< 210																	
>= 210																	
Totals	17	30	24	26	17	30	66	28	21	21	49	115	104	70	29	36	

Calm : .00 %

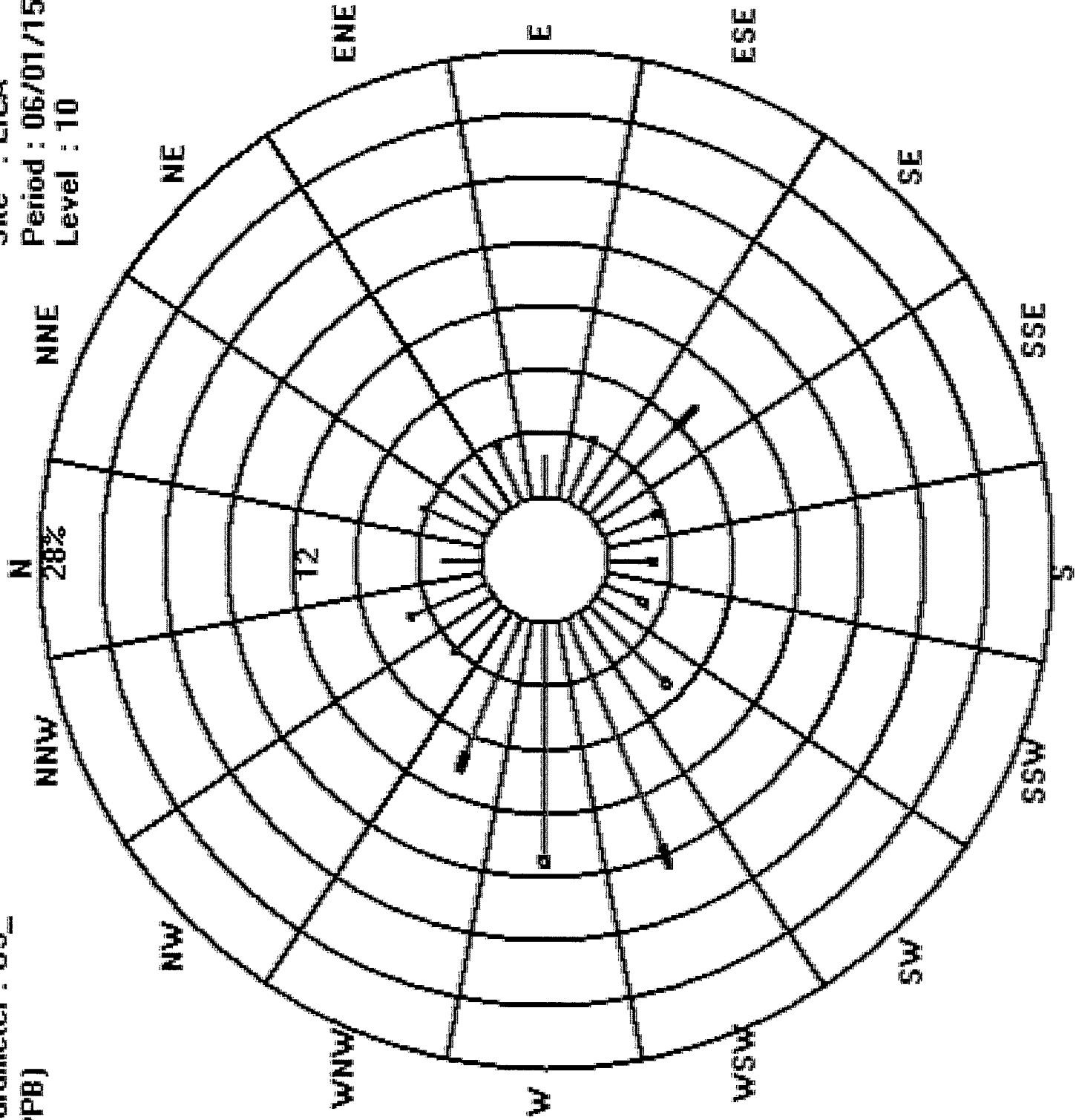
Total # Operational Hours : 683

Logger : 01 Parameter : D3\_

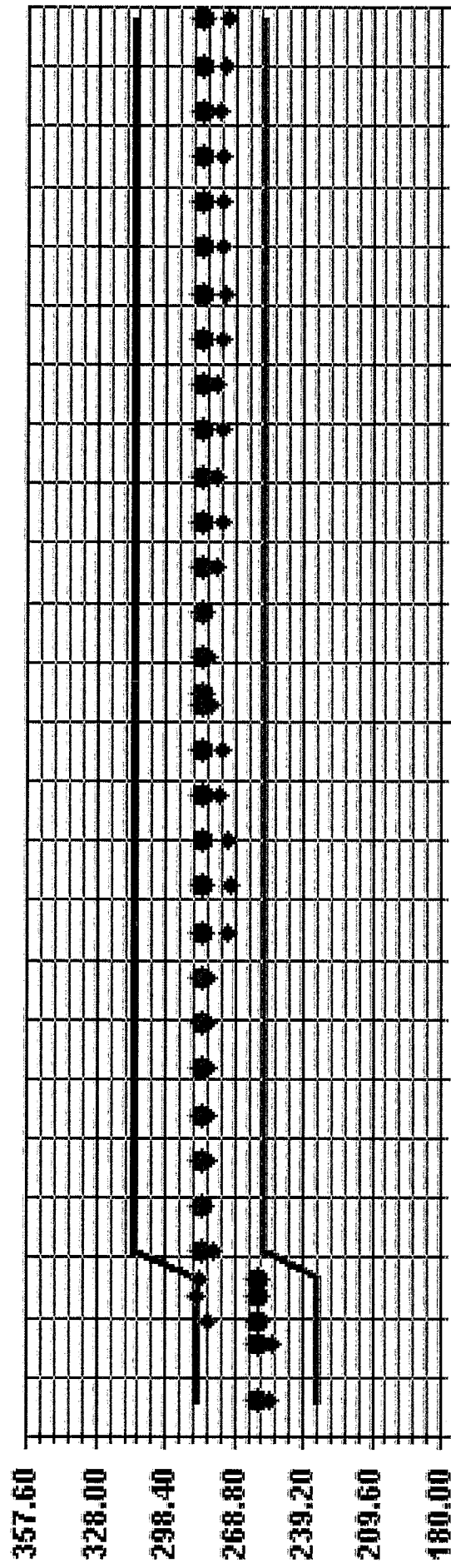
Class Limits (PPB)



Site : LICA  
Period : 06/01/15-06/30/15  
Level : 10



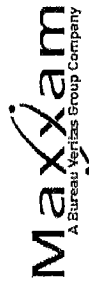
Calibration Graph for Site: LICA Parameter: O3\_ Sequence: O3\_ Phase: SPAN



6/11/15 6/16/15 6/23/15 7/11/15  
 + Cal Value ● Exp Value — Exp Value +10% — Exp Value -10%

***PARTICULATE MATTER 2.5***





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

MST

DAY	HOUR																								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	16	18	15	16	15	12	21	58	21	8	11	14	7	15	10	16	4	10	4	3	8	4	2	5	58	13.0	24
2	9	7	7	7	9	5	6	4	6	8	1	3	5	3	3	0	X	3	5	6	3	8	7	6	9	5.4	23
3	4	6	6	5	6	4	6	5	10	18	42	20	0	8	7	1	5	13	6	X	0	0	X	0	42	7.8	22
4	8	4	10	11	8	8	5	4	6	12	13	2	5	9	10	13	17	0	3	0	0	0	0	3	17	6.3	24
5	0	2	0	15	14	17	16	11	11	4	15	5	9	4	2	3	12	1	13	X	4	12	0	7	17	7.7	23
6	14	9	16	13	12	17	19	19	7	38	41	29	19	24	33	31	29	22	8	14	26	13	20	28	41	20.9	24
7	8	12	12	9	8	7	12	13	9	20	25	34	41	42	51	64	58	22	6	8	1	10	3	2	64	19.9	24
8	2	2	0	5	7	6	3	0	10	4	12	0	0	11	X	0	21	32	11	26	30	36	19	36	10.3	23	
9	8	4	0	5	12	14	29	32	19	33	22	43	28	17	26	22	27	22	33	28	33	23	5	10	43	20.6	24
10	10	10	8	14	17	12	20	28	34	23	27	22	28	27	18	21	31	26	29	27	24	9	12	34	20.8	24	
11	13	14	7	8	10	15	10	12	12	10	11	7	3	9	1	17	8	12	7	10	8	6	4	0	17	8.9	24
12	5	8	7	9	8	7	6	4	2	1	5	4	5	5	6	6	6	6	8	5	4	1	2	9	5.2	24	
13	5	5	4	4	3	2	2	2	3	1	0	1	0	2	0	1	1	0	1	3	3	3	0	4	5	2.1	24
14	1	3	0	1	3	0	1	X	5	0	0	0	0	1	2	X	X	X	X	X	X	X	X	X	5	1.4	12
15	X	X	X	X	X	X	8	11	0	X	1	9	5	3	7	X	0	0	3	3	X	X	X	0	11	3.6	14
16	0	0	9	9	11	9	10	11	10	3	7	3	3	1	16	4	12	3	0	2	4	2	0	2	16	5.5	24
17	3	0	3	3	2	3	6	6	2	7	1	2	2	3	4	2	0	6	2	2	4	9	6	7	9	3.5	24
18	1	3	0	4	1	4	4	4	4	5	11	7	10	5	4	3	3	0	5	7	4	6	4	5	11	4.3	24
19	4	8	5	8	10	4	4	8	0	C	7	6	5	4	5	8	5	5	7	7	7	1	0	1	10	5.2	24
20	15	13	8	4	13	8	6	9	9	0	10	2	0	6	3	X	2	X	16	7	13	11	6	2	16	7.4	22
21	6	8	9	10	14	7	8	6	8	0	X	0	1	10	4	15	8	9	0	12	0	6	2	1	15	6.3	23
22	16	14	10	10	10	12	19	2	16	X	2	0	0	X	5	7	X	4	X	X	X	X	0	19	8.5	15	
23	9	1	14	9	2	4	4	3	2	0	X	X	0	0	4	2	9	7	12	10	9	10	8	14	5.7	21	
24	8	9	11	4	11	8	7	X	0	3	2	X	0	5	0	1	5	12	10	13	12	13	5	14	7.0	22	
25	11	13	17	15	2	9	12	7	14	6	14	12	25	6	9	6	7	15	8	5	9	8	13	8	25	10.5	24
26	13	14	12	1	4	5	9	9	4	7	6	2	4	13	5	5	7	1	4	4	6	10	7	14	6.9	24	
27	13	11	12	16	8	10	7	8	1	15	3	2	5	0	6	9	8	10	5	12	10	6	11	16	7.9	24	
28	12	7	15	22	28	12	11	7	10	4	0	6	0	4	5	6	6	4	49	57	55	43	42	36	57	18.4	24
29	34	30	31	35	28	34	31	33	2	56	94	114	128	131	128	126	84	34	9	10	3	5	X	3	131	51.4	23
30	2	3	10	7	15	18	10	15	14	10	7	9	16	19	19	19	21	25	25	19	30	31	33	41	41	17.4	24
HOURLY MAX	34	30	31	35	28	34	31	58	34	56	94	114	128	131	128	126	84	34	49	57	55	43	42	41			
HOURLY AVG	8.6	8.2	8.9	9.6	9.7	9.4	10.4	11.8	8.4	11.0	13.9	13.2	12.6	12.9	14.0	16.0	13.0	10.9	11.0	11.6	11.1	8.8	8.7				

OBJECTIVE LIMIT: 24-HR 30 ug/m3

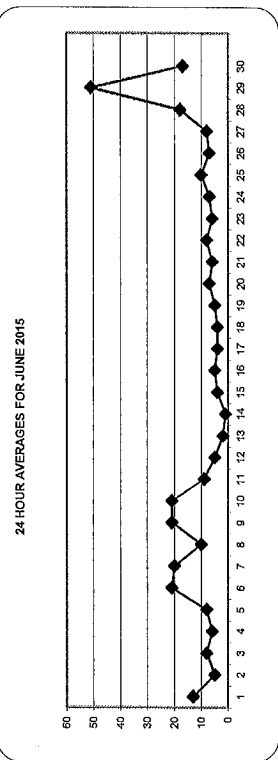
ALBERTA ENVIRONMENT: 24-HR 30 ug/m3

STATUS FLAG CODES

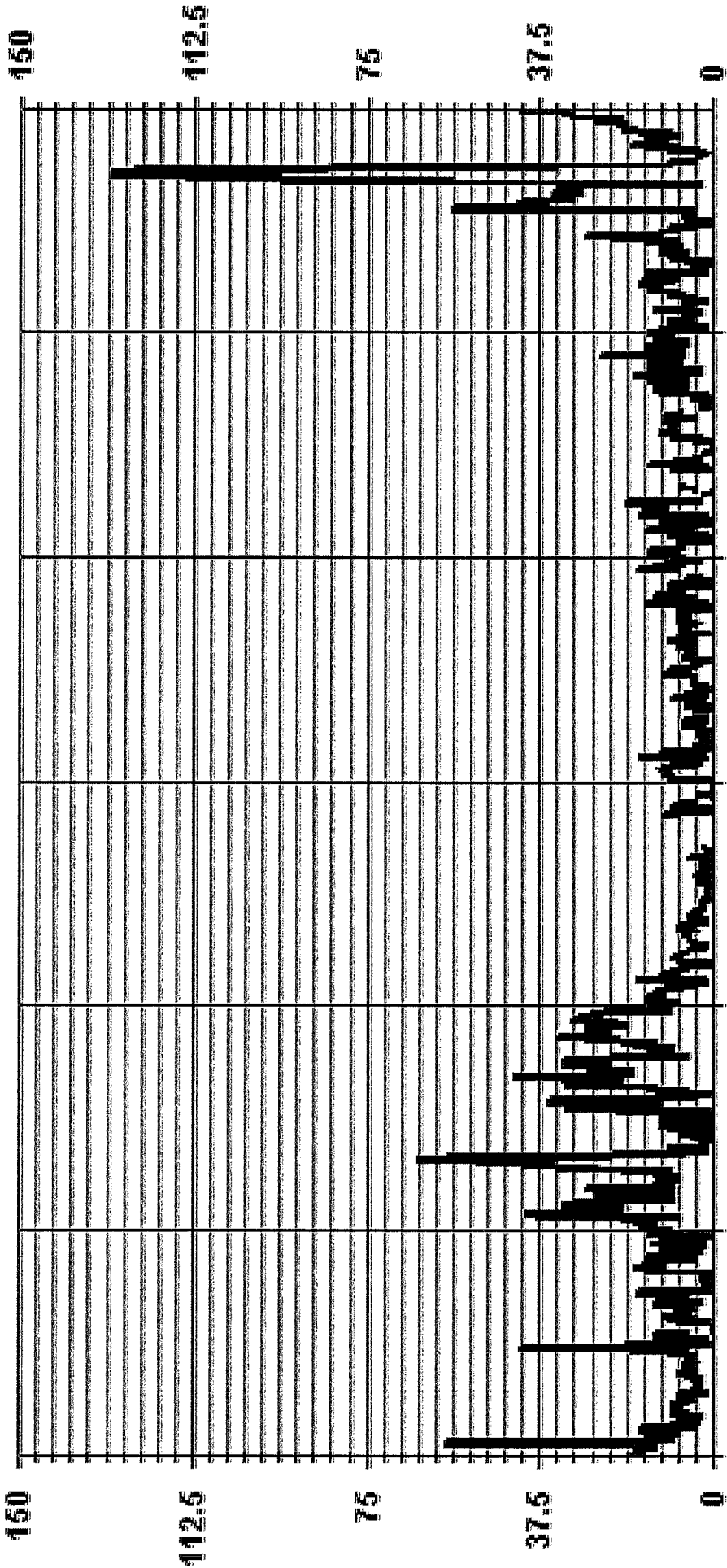
- C - CALIBRATION
- Y - MAINTENANCE
- S - DAILY ZERO/SPAN CHECK
- FP - POWER FAILURE
- G - OUT FOR REPAIR
- O - QUALITY ASSURANCE
- R - RECOVERY
- X - MACHINE MALFUNCTION
- 0 - OPERATOR ERROR
- K - COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	1
NUMBER OF NON-ZERO READINGS:	611
MAXIMUM 1-HR AVERAGE:	131 ug/m3 @ HOUR(S) 13
MAXIMUM 24-HR AVERAGE:	51.4 ug/m3 VAR-VARIOUS
MONTHLY CALIBRATION TIME:	2 HRS
STANDARD DEVIATION:	14.76
OPERATIONAL TIME:	675 HRS
AMID OPERATION UPTIME:	95.8 %
MONTHLY AVERAGE:	11.0 ug/m3
ON DAY(S)	29
ON DAY(S)	29



# 01 Hour Averages



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

— LICA PM2 UG/M3

LICA  
 PM2 / WD Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 01  
 Site Name : LICA  
 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	2.08	4.01	2.97	3.26	2.82	4.45	9.95	4.30	3.12	2.22	5.79	16.04	14.41	8.17	4.16	5.05	92.86
< 60	.29	.00	.14	.00	.00	.00	.29	.44	.14	.29	.29	.74	.59	2.08	.59	.00	5.94
< 80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.14
< 120	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.29	.00	.00	.44
< 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.29	.00	.14	.00	.00	.00	.14	.59
>= 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.37	4.01	3.12	3.26	2.82	4.45	10.25	4.75	3.26	2.82	6.24	16.93	15.00	10.69	4.75	5.20	

Calm : .00 %

Total # Operational Hours : 673

Distribution By Samples

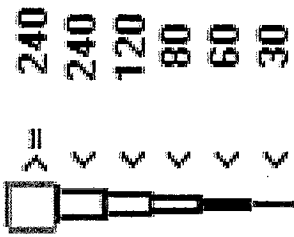
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	14	27	20	22	19	30	67	29	21	15	39	108	97	55	28	34	625
< 60	2	1				2	3	3	1	2	2	5	4	14	4		40
< 80														1			1
< 120											1			2			3
< 240										2		1				1	4
>= 240																	
Totals	16	27	21	22	19	30	69	32	22	19	42	114	101	72	32	35	

Calm : .00 %

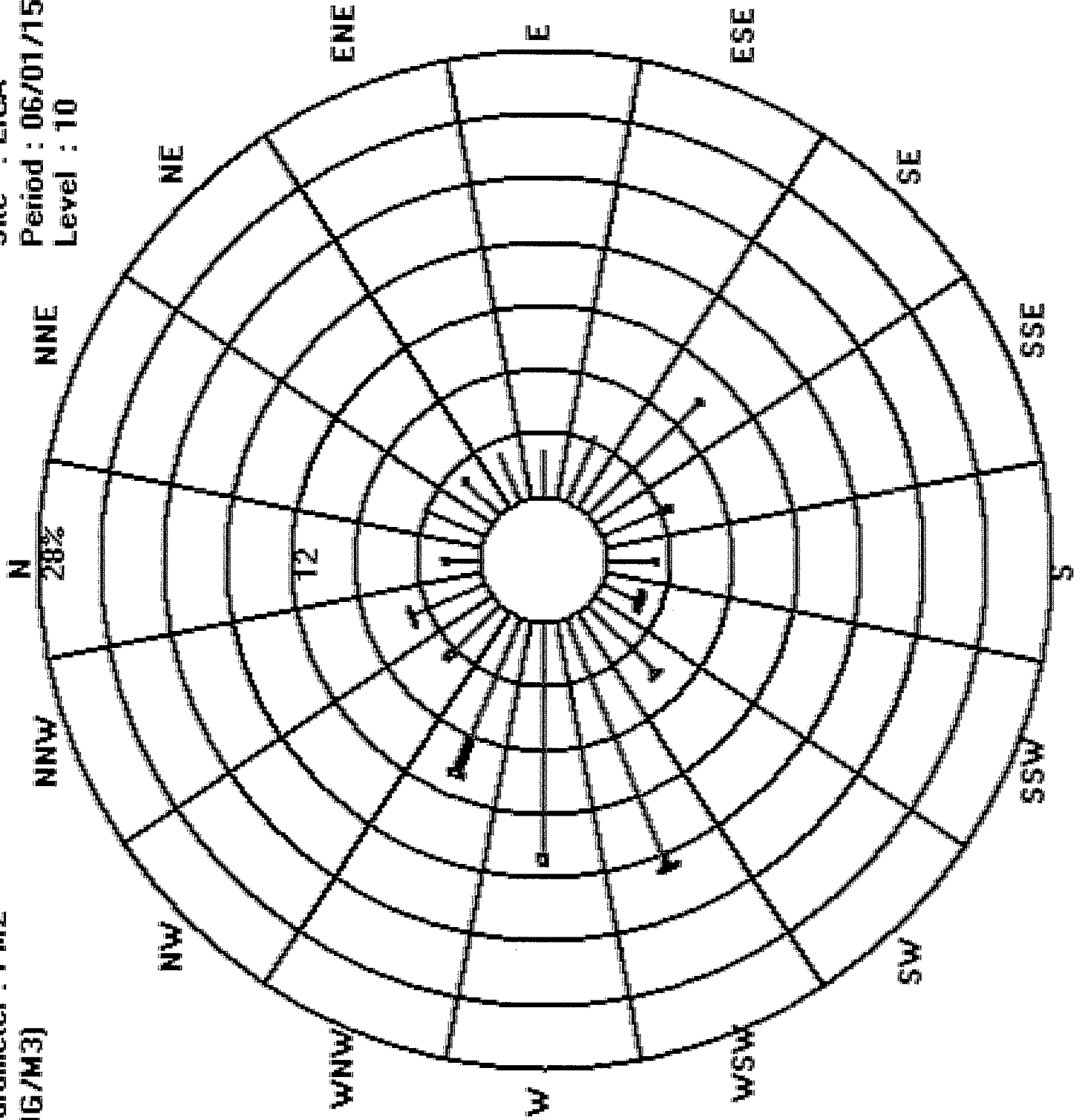
Total # Operational Hours : 673

Logger : 01 Parameter : PM2

Class Limits (UG/M3)



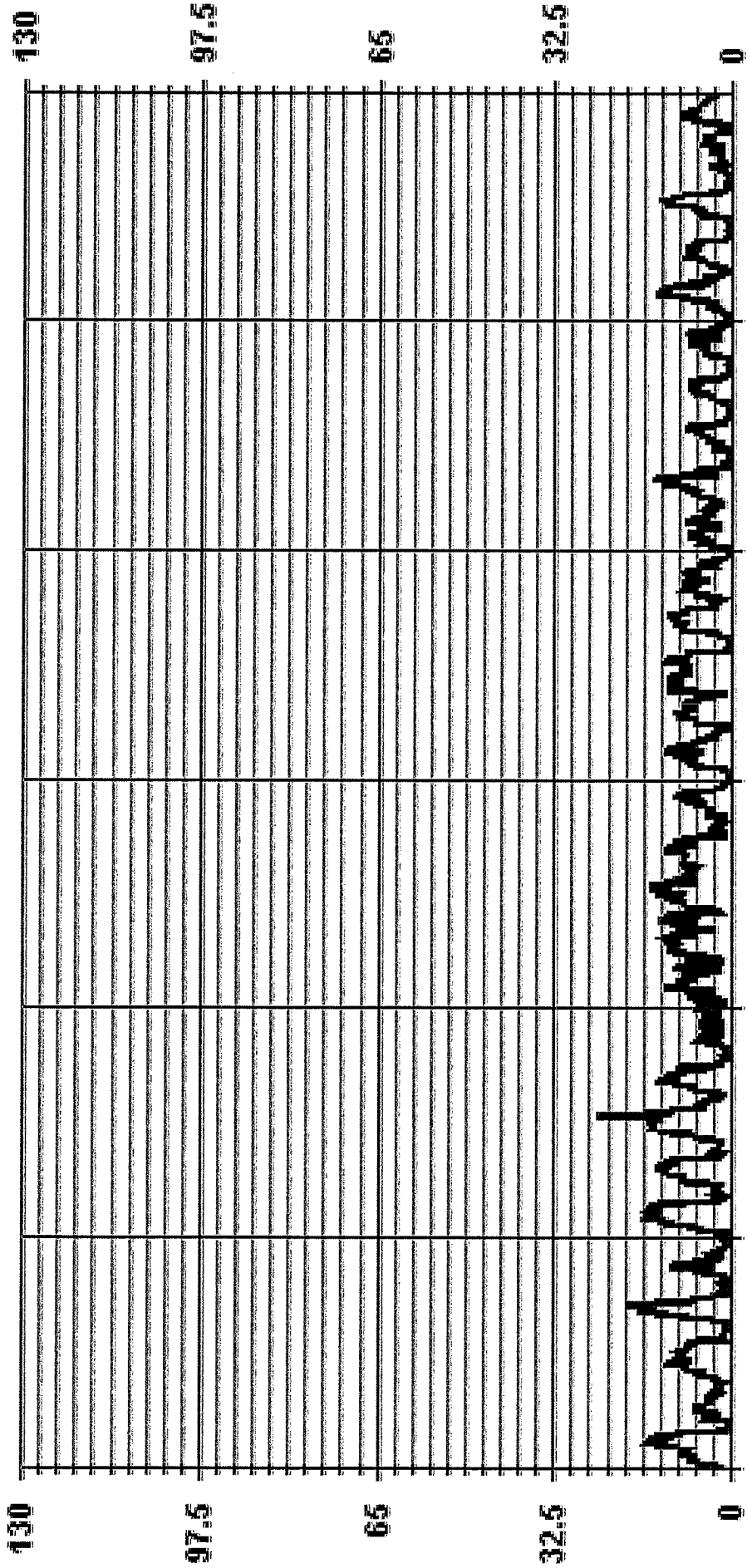
Site : LICA  
Period : 06/01/15-06/30/15  
Level : 10



***WIND SPEED***



01 Hour Averages



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

— LICA    - - - WSP    . . . KPH



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

Table with columns: HOUR/START, HOUR/END, DAY, and multiple columns for hourly wind speed measurements (0000-0100 to 2300-0100). Includes a 24-HOUR AVG. column and RDS. column.

STATUS FLAG CODES

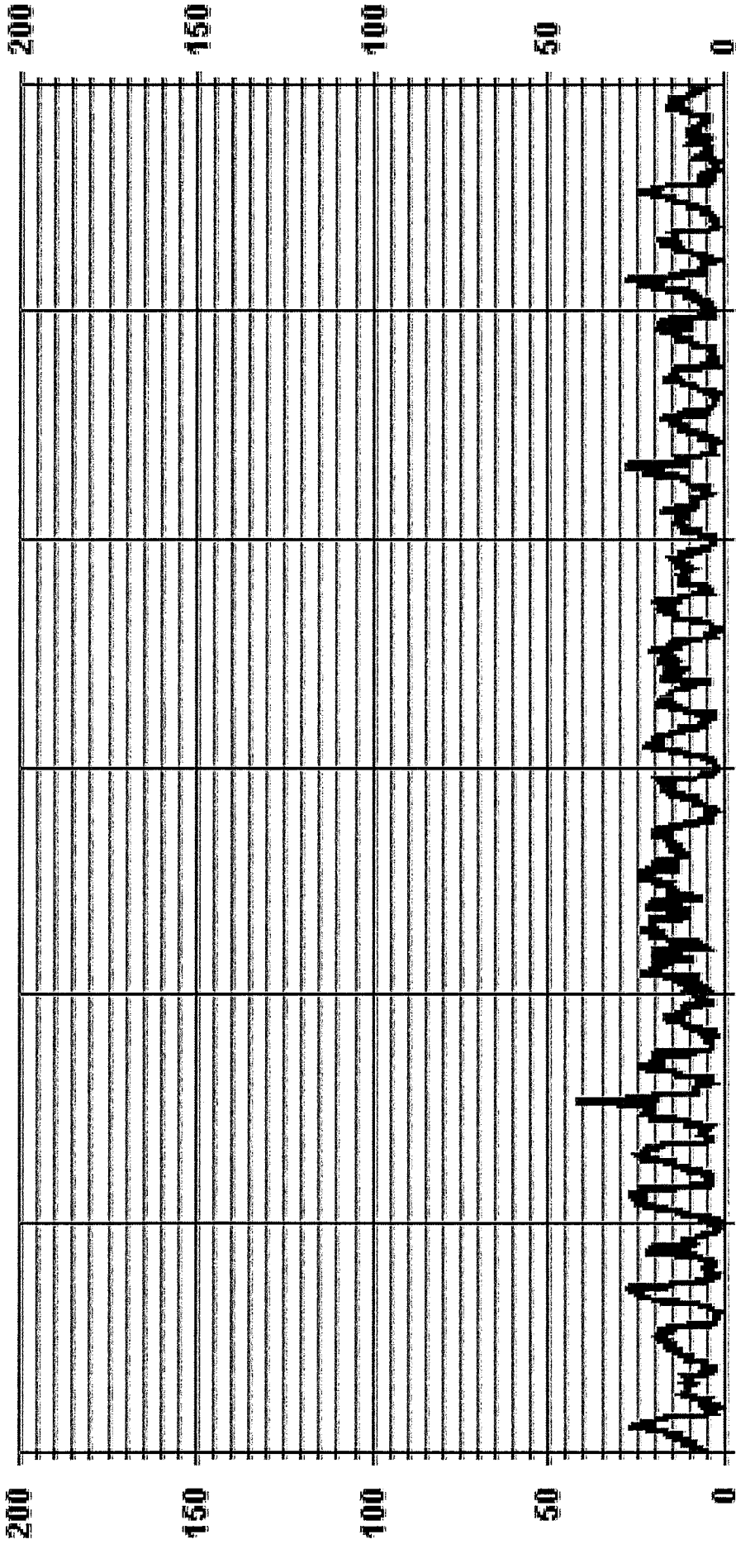
Legend table for status flag codes: C - CALIBRATION, Y - MAINTENANCE, S - DAILY ZERO/Span CHECK, P - POWER FAILURE, G - GUT FOR REPAIR, Q - QUALITY ASSURANCE, R - RECOVERY, X - MACHINE MALFUNCTION, O - OPERATOR ERROR, K - COLLECTION ERROR.

MONTHLY SUMMARY

Summary table with rows: MAXIMUM INSTANTANEOUS VALUE: (42.0 KPH @ HOUR(S) 17 ON DAY(S) 8), OPERATIONAL TIME: (720 HRS), VAR-VARIOUS.



01 Hour Averages



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

-- LICA WSMAX KPH

LICA  
WSP / WD Joint Frequency Distribution (Percent)

June 2015

Distribution By % of Samples

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

Wind Parameter : WD  
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				
< 6.0	.55	1.80	1.11	1.94	2.08	3.47	3.33	2.77	2.63	3.05	5.97	11.52	6.11	2.91	1.52	1.25	52.08			
< 12.0	1.66	2.22	2.22	1.38	.13	.83	4.86	1.66	.27	.13	.55	4.16	7.22	5.00	2.22	2.91	37.50			
< 20.0	.13	.27	.00	.00	.00	.00	1.38	.00	.00	.00	.00	.55	1.80	2.22	.55	.69	7.63			
< 29.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	.13			
< 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	2.36	4.30	3.33	3.33	2.22	4.30	9.58	4.44	2.91	3.19	6.52	16.25	15.13	10.13	4.30	5.00				

Calm : 2.63 %

Total # Operational Hours : 720

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				
< 6.0	4	13	8	14	15	25	24	20	19	22	43	83	44	21	11	9	375			
< 12.0	12	16	16	10	1	6	35	12	2	1	4	30	52	36	16	21	270			
< 20.0	1	2					10				4	13	16	4	5	55				
< 29.0																1	1			
< 39.0																				
>= 39.0																				
Totals	17	31	24	24	16	31	69	32	21	23	47	117	109	73	31	36				

Calm : 2.63 %

Total # Operational Hours : 720

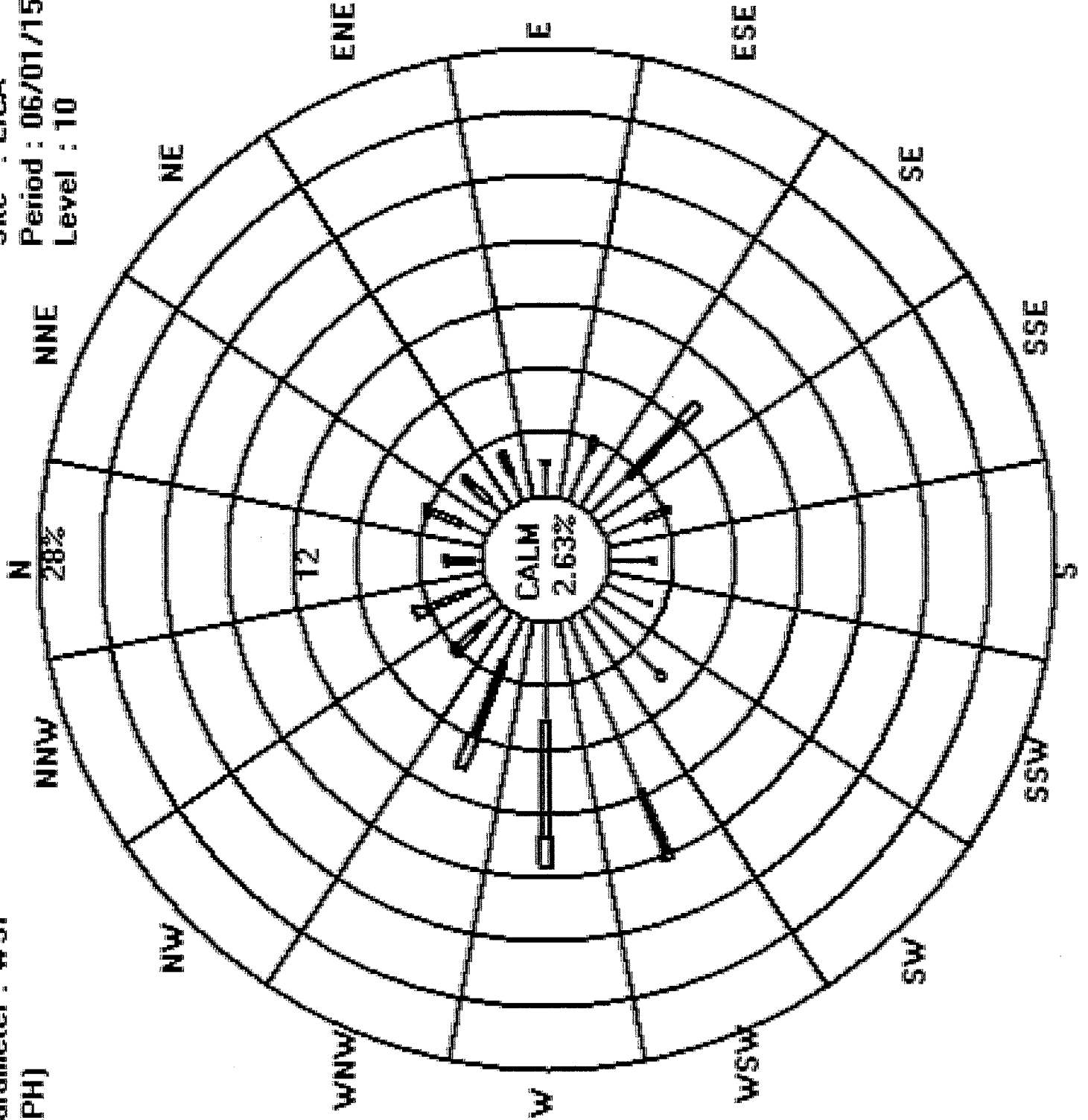
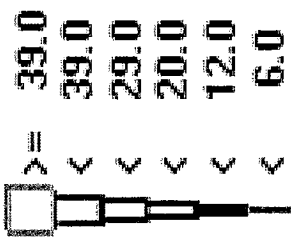
Logger : 01 Parameter : WSP

Site : LICA

Class Limits (KPH)

Period : 06/01/15-06/30/15

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

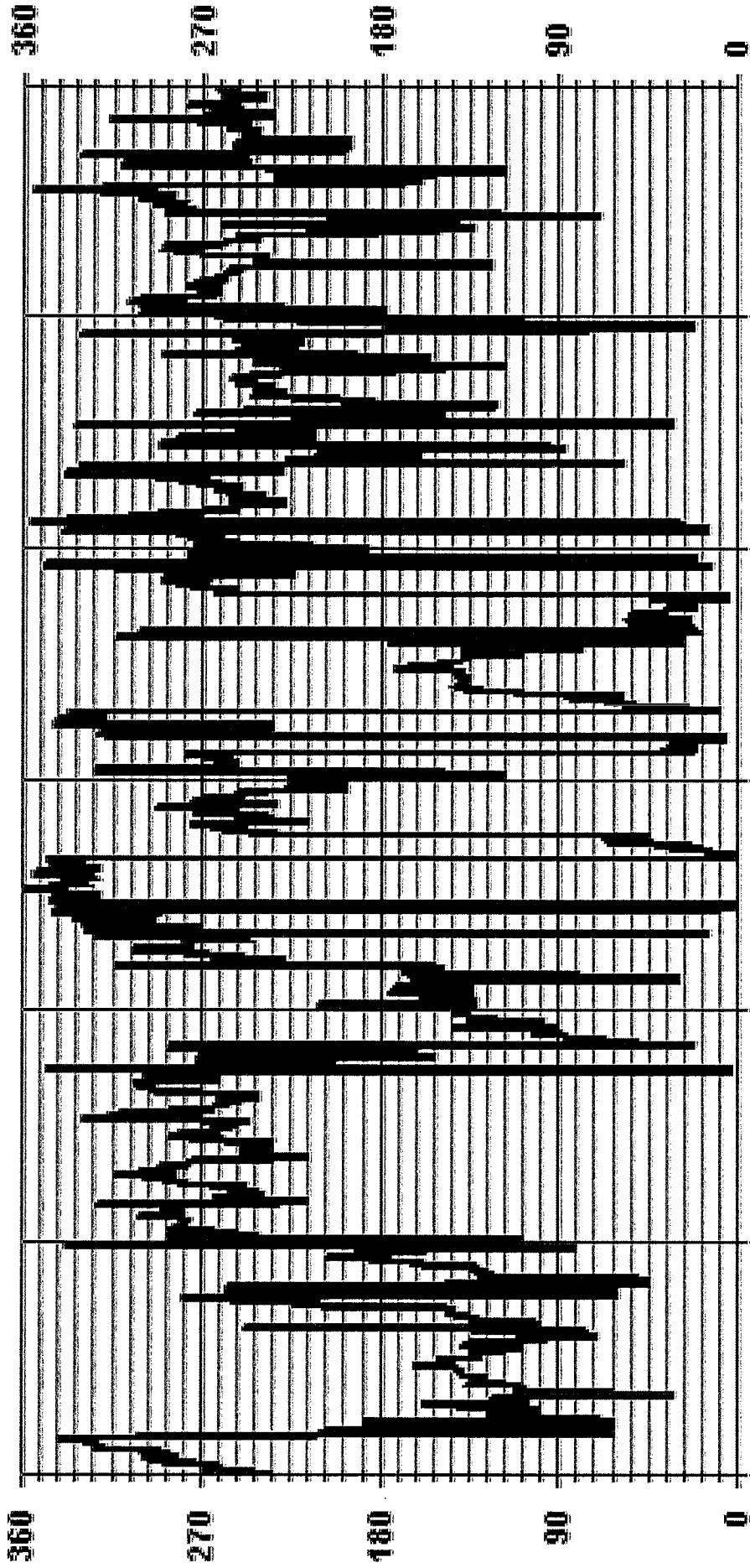
STATUS FLAG CODES

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

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	720	HRS
STANDARD DEVIATION:	91.61		AVOID OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	W	

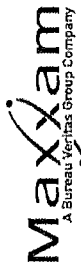
01 Hour Averages



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

— LICA    - - - WDR    . . . DEG

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Cold Lake South Site - JUNE 2015  
JOB # 2833-2015-06-01-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
42	29	17	17	18	21	20	24	24	24	25	22	24	24	24	22	23	23	27	27	24	24	24	24	24	24	24	24	24	24	24
57	42	18	15	47	55	24	28	32	35	51	54	53	41	43	59	51	29	22	36	22	41	20	24	18	19	18	17	61	41	38
16	16	17	21	13	14	17	15	17	40	32	30	41	29	33	31	42	27	31	12	38	11	19	24	24	24	24	24	24	24	24
40	48	19	50	45	49	26	23	24	25	25	20	19	21	17	23	43	37	38	22	67	31	33	46	46	46	46	46	46	46	46
29	54	69	63	46	46	27	25	26	25	27	51	36	45	44	44	51	43	42	31	25	52	56	74	74	74	74	74	74	74	74
41	68	70	30	33	20	25	24	25	24	27	24	28	29	26	25	26	23	23	21	31	31	36	53	53	53	53	53	53	53	53
23	18	20	21	30	24	20	23	24	24	26	26	27	29	36	24	27	27	24	21	20	17	20	14	25	25	25	25	25	25	25
26	45	30	45	30	19	22	23	25	22	24	24	22	23	23	27	24	18	18	21	19	18	13	14	14	14	14	14	14	14	14
13	15	19	40	24	25	27	25	30	29	32	26	24	31	31	29	32	30	29	33	54	21	63	58	58	58	58	58	58	58	58
63	60	63	52	48	34	36	35	29	36	41	52	81	39	50	41	51	62	27	25	27	22	21	15	15	15	15	15	15	15	15
13	12	28	27	61	51	16	36	15	34	48	29	25	42	43	29	27	32	20	28	43	51	13	41	41	41	41	41	41	41	41
30	57	36	33	18	19	23	22	23	27	27	29	32	33	29	32	31	26	23	26	17	23	20	21	21	21	21	21	21	21	21
19	15	19	27	19	20	18	21	20	21	20	21	22	19	17	20	20	19	18	17	16	15	15	18	18	18	18	18	18	18	18
19	16	13	15	15	18	18	21	21	19	21	22	20	26	33	30	22	27	28	36	14	21	12	16	16	16	16	16	16	16	16
20	26	46	33	32	38	33	38	48	54	48	41	48	46	34	34	28	27	29	31	29	31	28	35	35	35	35	35	35	35	35
47	53	44	44	58	49	35	28	33	30	34	36	33	31	34	50	20	24	24	20	22	21	17	26	26	26	26	26	26	26	26
17	14	19	28	62	25	20	25	43	30	28	27	31	30	31	28	24	31	32	20	23	50	25	19	19	19	19	19	19	19	19
13	13	14	12	12	15	18	26	20	33	42	27	24	16	20	21	25	23	14	42	67	36	60	60	60	60	60	60	60	60	60
69	60	57	53	18	24	27	22	25	26	29	25	26	26	26	26	26	24	24	20	22	32	20	25	25	25	25	25	25	25	25
18	30	23	20	16	21	24	22	24	31	32	28	23	23	27	34	46	47	25	22	31	42	37	59	59	59	59	59	59	59	59
68	57	24	26	29	22	26	30	47	32	39	49	60	30	25	27	27	21	23	19	21	23	19	21	23	23	23	23	23	23	23
37	17	20	26	24	21	23	23	30	31	28	26	28	25	27	24	42	34	22	31	45	78	44	40	40	40	40	40	40	40	40
52	54	50	60	61	55	28	38	45	66	59	51	50	52	49	37	36	24	40	36	37	57	38	54	54	54	54	54	54	54	54
30	57	66	54	63	66	38	42	41	47	32	41	39	34	37	35	29	27	28	31	22	36	47	49	49	49	49	49	49	49	49
38	53	39	63	38	52	41	30	31	45	40	47	40	38	35	58	55	24	23	46	36	47	49	49	49	49	49	49	49	49	49
34	52	51	71	65	40	33	38	41	26	51	55	35	31	27	24	24	22	21	20	16	10	13	11	11	11	11	11	11	11	11
30	62	45	43	47	29	26	30	35	37	28	33	34	35	31	39	33	30	25	33	27	41	49	47	47	47	47	47	47	47	47
50	61	49	58	70	70	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
56	28	68	57	63	56	50	23	22	25	25	46	36	33	40	32	32	29	23	31	40	23	27	22	22	22	22	22	22	22	22
27	23	26	60	55	49	60	45	35	28	26	26	27	28	26	28	29	27	24	27	24	21	18	17	17	17	17	17	17	17	17

STATUS FLAG CODES

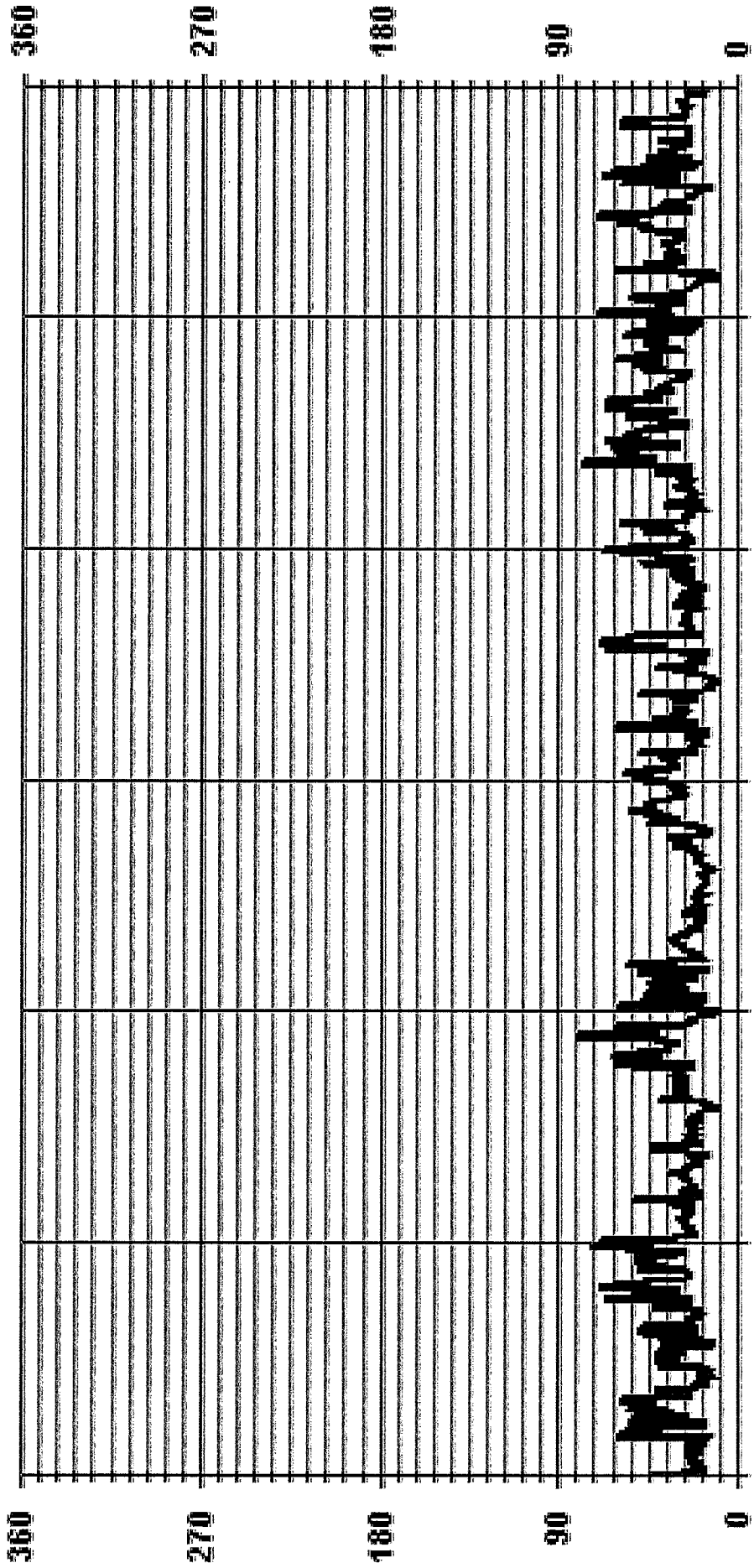
C	- CALIBRATION	Q	- QUALITY ASSURANCE
V	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

LAST CALIBRATION: April 1, 2015

CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	720	HRS
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01 Hour Averages



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

— LICA    - - - - - STDWDIR DEG

***RELATIVE HUMIDITY***

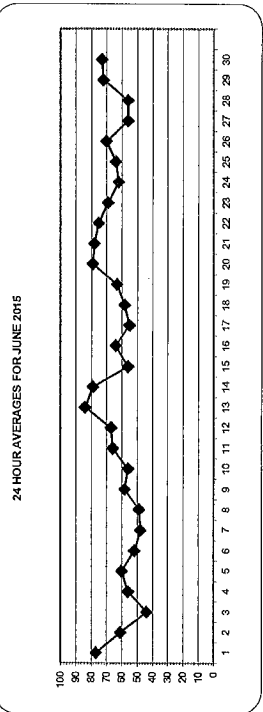


RELATIVE HUMIDITY (RH) hourly averages in %

DAY	HOUR																								DAILY MAX	DAILY AVE	RDGS.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	99	100	100	99	98	96	92	87	82	78	75	74	67	61	56	59	55	49	47	47	60	81	89	91	100	76.8	24
2	93	90	84	87	80	64	60	56	55	51	46	44	44	38	35	40	48	50	54	60	67	60	63	93	60.9	24	
3	64	54	50	53	59	63	61	57	51	42	39	33	31	29	27	26	24	20	24	39	57	65	71	71	44.3	24	
4	74	78	80	84	86	71	60	52	49	45	40	38	40	39	37	36	35	36	39	48	58	70	74	86	56.1	24	
5	82	87	90	89	88	79	73	66	57	49	41	36	36	38	39	37	37	39	40	45	65	76	82	90	60.4	24	
6	86	90	91	92	91	77	65	53	46	40	33	32	29	28	28	27	24	24	25	28	35	56	69	92	51.9	24	
7	78	78	81	80	76	69	57	50	48	41	32	27	23	22	23	25	25	28	33	46	58	69	81	90	47.6	24	
8	56	61	66	70	74	66	59	54	44	37	39	37	40	41	40	39	32	35	38	42	52	59	67	74	49.4	24	
9	73	77	85	89	87	77	69	60	49	40	34	35	39	45	36	32	29	36	42	49	62	81	87	90	58.5	24	
10	92	91	93	93	92	81	71	57	48	45	40	38	36	33	33	31	29	27	31	35	49	65	67	93	55.8	24	
11	61	60	59	67	74	74	62	61	63	65	64	58	50	41	39	42	45	67	77	75	89	98	99	99	66.0	24	
12	92	96	98	99	98	91	78	68	60	55	54	48	43	39	36	36	38	45	47	63	72	77	84	99	66.9	24	
13	94	93	96	97	97	95	87	83	80	73	72	82	71	75	73	73	67	76	80	88	87	88	91	97	84.5	24	
14	90	91	94	94	92	92	88	86	87	85	79	75	68	62	54	54	52	51	53	77	89	92	93	94	78.6	24	
15	92	90	90	92	89	81	71	60	50	40	35	33	33	31	28	29	31	31	37	43	53	63	71	80	92	56.4	24
16	84	88	91	92	91	79	63	55	48	41	38	34	33	30	26	41	64	80	76	75	75	77	82	92	64.1	24	
17	84	84	86	86	90	71	60	51	43	39	35	35	40	39	38	37	37	36	36	39	50	71	75	61	90	55.1	24
18	57	61	64	66	68	66	60	53	46	40	47	51	49	47	47	49	48	48	49	53	62	74	79	88	58.0	24	
19	92	93	94	95	95	85	77	68	61	56	53	50	47	44	41	38	38	37	38	46	58	64	68	74	95	63.0	24
20	68	74	77	85	82	77	74	71	66	60	59	50	48	43	38	38	62	60	73	69	81	91	95	96	96	78.8	24
21	96	96	97	97	94	85	77	64	55	45	45	45	41	37	35	35	42	58	62	77	76	88	92	97	69.0	24	
22	94	95	95	95	92	81	69	61	56	47	39	32	27	26	25	31	42	45	55	75	86	91	95	96	64.4	24	
23	96	96	97	98	97	85	90	91	92	88	80	64	58	51	42	37	33	32	38	39	43	63	81	82	99	69.6	24
24	81	86	87	89	86	70	62	58	51	45	37	31	29	28	28	28	31	30	28	40	63	78	83	87	89	55.7	24
25	90	91	91	92	91	83	69	63	52	45	40	35	33	27	27	25	25	24	27	33	54	69	78	81	92	56.0	24
26	83	88	88	89	90	88	86	81	75	64	56	55	52	54	55	60	60	61	60	70	77	76	75	90	71.6	24	
27	78	80	82	86	88	83	72	67	72	74	68	61	58	57	57	58	59	65	70	74	78	82	86	88	72.5	24	
28	99	100	99	98	99	98	91	92	88	86	93	94	92	75	91	89	89	80	88	89	88	98	99	96	82.0	24	
29	83.6	85.3	86.5	88.0	88.2	81.4	73.6	66.4	60.2	55.0	50.7	47.2	45.5	42.9	40.7	42.4	43.1	45.1	47.3	52.4	64.1	74.7	79.7	82.0			
30																											
31																											

STATUS FLAG CODES

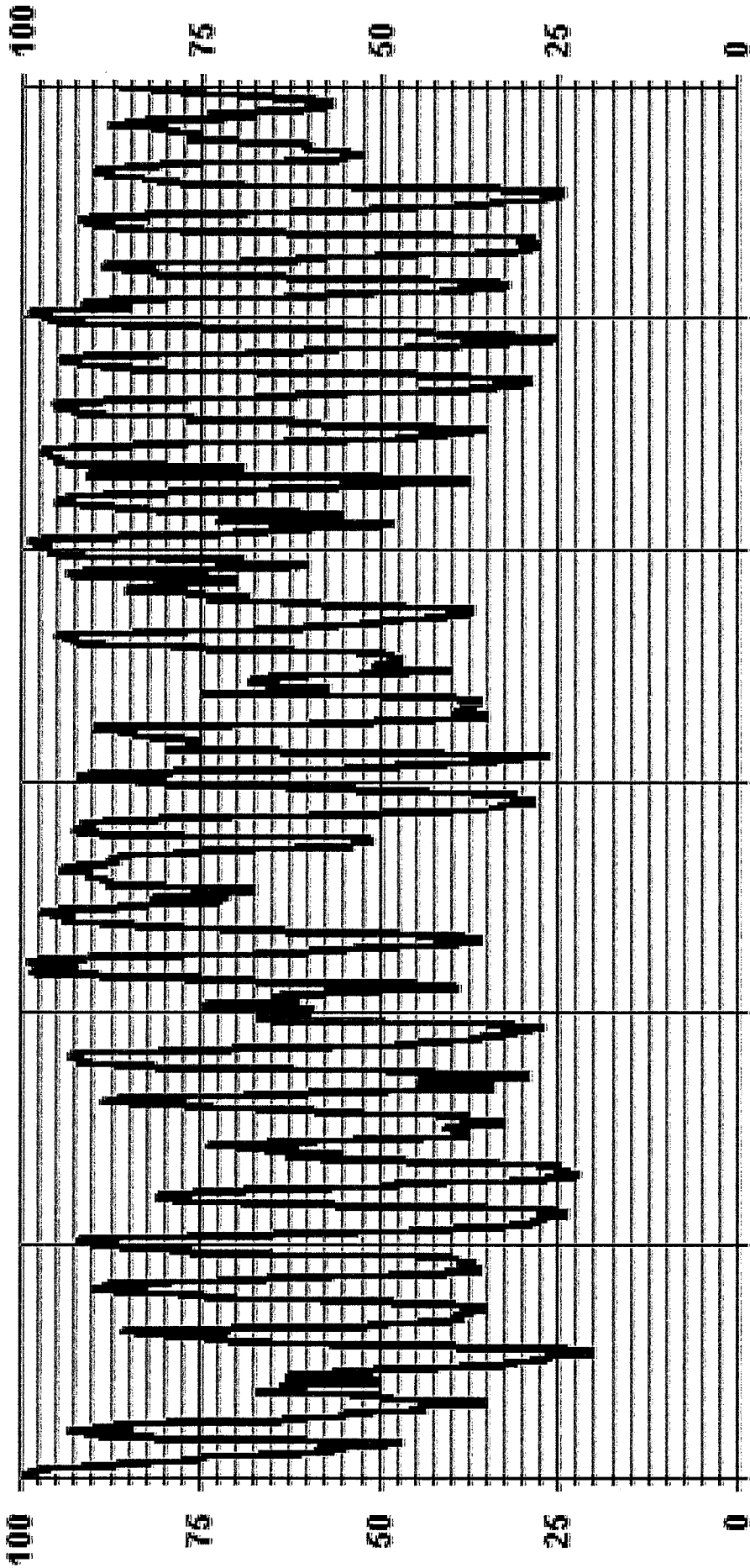
C	QUALITY ASSURANCE	Q	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR(S)	1, 2	ON DAY(S)	1, 1
MAXIMUM 24-HR AVERAGE:	84.5	%			ON DAY(S)	13
					VARIOUS	
STANDARD DEVIATION:	22.10				OPERATIONAL TIME:	720 HRS
					AMD OPERATION UPTIME:	100.0 %
					MONTHLY AVERAGE:	64 %

01 Hour Averages



— LICA RH %FS

***AMBIENT TEMPERATURE***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Cold Lake South Site - JUNE 2015  
JOB # 2833-2015-06-01 - C

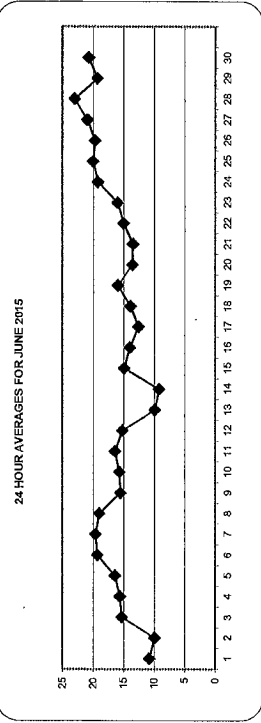
AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

**MST**

DAY	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	24-HOUR AVE.	ROGS.
1	8.3	7.5	7.8	7.6	7.6	8.3	9.7	11.2	11.9	12.6	13.3	13.0	14.4	15.0	15.2	14.2	14.6	14.5	14.2	13.5	10.9	6.9	4.7	3.4	15.2	10.8	24
2	2.2	4.3	3.0	4.2	3.6	4.8	7.5	9.1	10.0	10.5	11.5	12.5	13.3	13.7	14.2	14.9	14.8	13.7	13.3	13.2	12.4	11.2	11.5	11.2	14.9	9.9	24
3	10.8	11.5	11.9	12.0	11.5	11.2	11.7	12.6	13.9	16.1	16.7	18.3	19.2	19.5	20.5	21.0	21.6	21.8	21.1	20.1	16.3	11.5	9.0	7.6	21.8	15.3	24
4	6.7	5.4	4.6	3.8	4.0	8.6	12.0	14.7	16.4	18.4	20.9	22.3	22.9	22.7	22.2	23.1	22.3	23.1	22.3	21.7	19.6	17.7	15.2	13.8	12.7	15.6	24
5	11.1	9.3	8.6	8.7	8.8	11.0	13.0	15.3	17.3	19.8	21.4	21.6	21.6	21.6	21.6	22.2	22.6	22.2	22.5	21.7	17.7	14.2	12.7	11.9	22.6	16.4	24
6	11.8	11.3	11.0	10.8	11.0	13.8	16.8	19.5	21.2	22.7	23.9	23.7	25.0	25.4	25.6	25.0	25.6	25.5	25.0	24.1	17.5	16.8	13.9	12.8	25.6	19.3	24
7	12.1	11.6	10.5	9.9	10.5	12.9	16.1	18.1	19.3	21.7	23.7	24.8	25.6	26.1	25.9	26.1	26.4	26.0	24.9	23.5	20.8	17.8	17.3	18.5	26.4	19.6	24
8	18.4	17.6	16.7	15.4	14.8	15.9	17.6	19.5	21.8	22.7	21.9	22.3	21.4	21.8	21.9	22.5	23.8	21.3	20.1	19.7	17.8	15.6	13.6	12.1	23.8	19.0	24
9	11.0	10.1	8.2	7.2	7.6	10.8	13.4	16.1	18.0	19.8	20.9	21.2	19.8	19.6	21.5	22.0	22.3	20.9	18.9	17.3	15.5	11.3	9.6	8.7	22.3	15.5	24
10	7.6	6.7	6.0	5.3	5.3	9.2	13.4	15.7	17.0	18.2	19.4	20.2	21.2	21.6	21.1	21.9	22.7	23.6	22.1	21.2	17.7	13.9	12.5	13.7	23.6	15.7	24
11	13.8	13.7	13.6	12.1	11.4	11.7	14.9	16.1	16.1	16.4	17.3	19.6	21.5	23.3	24.0	23.6	22.8	18.7	15.6	15.8	14.1	13.1	12.5	12.4	24.0	16.4	24
12	12.2	11.4	10.1	9.8	9.7	10.9	12.7	14.2	16.2	17.4	18.3	19.1	20.0	20.6	20.9	21.0	19.9	17.6	17.3	15.0	13.6	13.0	11.8	11.0	21.0	15.2	24
13	10.4	10.4	10.1	10.2	10.1	9.7	8.7	9.1	9.6	9.8	10.7	11.3	10.7	11.4	11.2	11.0	11.3	10.4	9.8	9.0	8.7	8.4	7.9	7.5	11.4	9.9	24
14	7.0	6.5	6.3	6.3	6.4	6.7	7.2	7.6	7.7	7.9	8.6	9.6	10.1	11.1	12.7	13.7	13.4	13.7	13.7	14.3	10.7	7.5	6.4	5.8	14.3	9.2	24
15	6.8	7.3	7.4	7.3	8.3	10.3	12.7	14.8	16.7	18.3	18.4	18.9	19.8	20.4	21.4	20.8	20.4	20.5	19.1	18.0	15.4	13.3	11.1	9.2	21.4	14.9	24
16	8.2	6.8	5.6	4.8	5.2	8.7	13.2	16.3	18.7	20.4	21.2	21.8	22.1	22.7	23.9	19.7	15.9	13.7	13.3	12.3	11.5	10.8	9.8	9.0	23.9	14.0	24
17	8.6	8.4	8.2	8.0	7.6	9.8	11.5	13.1	14.5	15.2	15.7	15.9	15.4	15.9	16.1	16.3	16.0	16.2	15.9	15.1	13.2	9.5	7.6	9.0	16.3	12.6	24
18	9.1	8.3	7.8	7.3	7.4	8.0	9.2	11.7	14.9	16.8	18.3	17.9	17.4	17.2	17.2	18.0	17.9	18.5	18.2	17.6	16.5	14.2	13.1	11.1	18.8	13.9	24
19	9.4	8.5	7.4	6.5	6.9	10.6	13.3	14.5	16.1	17.7	19.0	19.9	20.6	21.1	21.7	22.0	22.3	22.3	21.8	19.8	17.4	15.8	14.7	13.2	22.3	15.9	24
20	13.3	12.6	12.8	11.6	11.8	12.9	14.1	14.6	15.2	15.4	14.6	13.9	13.5	13.4	15.5	16.4	16.5	17.0	14.4	14.5	13.0	11.0	9.4	8.4	17.0	13.6	24
21	7.5	6.5	6.4	7.8	7.8	8.7	9.7	12.2	14.6	15.1	16.2	16.8	17.4	19.0	19.6	15.5	16.5	17.0	18.6	17.8	14.4	13.9	13.1	11.4	19.6	13.5	24
22	9.8	9.6	10.2	10.4	10.7	11.0	12.5	15.0	16.8	19.8	21.1	22.0	22.9	22.1	20.6	13.2	15.0	17.2	17.6	16.8	14.6	11.7	10.1	9.0	22.9	15.0	24
23	8.2	7.4	6.7	6.2	6.5	9.6	13.2	16.1	18.1	19.1	20.6	21.1	21.9	22.7	23.7	24.4	24.6	22.7	18.2	16.1	14.9	12.7	11.7	24.6	16.0	24	
24	10.6	9.7	8.9	8.2	8.3	11.3	15.3	18.1	20.4	22.6	24.0	25.2	26.0	26.4	26.9	27.0	26.6	26.0	25.9	25.3	20.9	17.2	15.4	14.1	27.0	19.2	24
25	12.8	12.0	11.1	10.5	10.8	14.3	18.6	20.7	22.6	25.1	26.7	28.1	29.1	29.9	30.0	27.9	24.5	23.2	21.6	18.1	17.1	16.2	14.8	13.6	30.0	20.0	24
26	13.0	12.6	12.7	13.0	14.1	16.5	16.1	15.9	16.4	17.4	19.7	22.8	24.4	25.9	26.8	27.4	27.6	27.3	26.9	26.1	23.3	18.3	14.6	13.3	27.6	19.7	24
27	12.9	11.6	10.5	9.6	10.0	14.3	17.1	20.0	22.5	24.3	25.3	26.4	27.1	28.0	28.7	28.3	28.3	28.5	27.6	22.7	18.1	16.1	14.9	28.7	20.9	24	
28	14.4	14.1	13.0	12.6	13.3	15.7	20.5	22.6	25.0	27.4	29.1	30.3	31.0	31.1	31.5	31.1	31.5	31.1	28.7	26.8	22.5	18.3	16.1	14.4	31.5	23.0	24
29	13.3	12.3	11.6	11.0	10.6	11.3	13.2	15.7	18.9	21.2	22.5	23.5	24.1	25.1	25.6	25.7	25.0	24.7	24.2	22.3	20.5	20.6	20.2	19.4	25.7	19.3	24
30	18.7	18.1	17.7	16.9	16.6	16.9	17.9	20.3	21.5	20.9	20.4	21.8	23.4	23.9	24.4	24.8	25.0	24.7	23.9	22.5	20.9	19.3	18.2	17.3	25.0	20.7	24
HOURLY MAX	18.7	18.1	17.7	16.9	16.6	16.9	20.5	22.6	25.0	27.4	29.1	30.3	31.0	31.5	31.1	31.5	31.3	31.1	28.7	27.6	23.3	20.6	20.2	19.4	25.0	20.7	24
HOURLY AVG	10.7	10.0	9.5	9.2	9.3	11.2	13.4	15.3	17.0	18.3	19.3	20.2	20.8	21.3	21.8	21.4	21.2	20.6	19.9	18.9	16.5	14.0	12.5	11.6	16.2	11.6	11.6

STATUS FLAG CODES

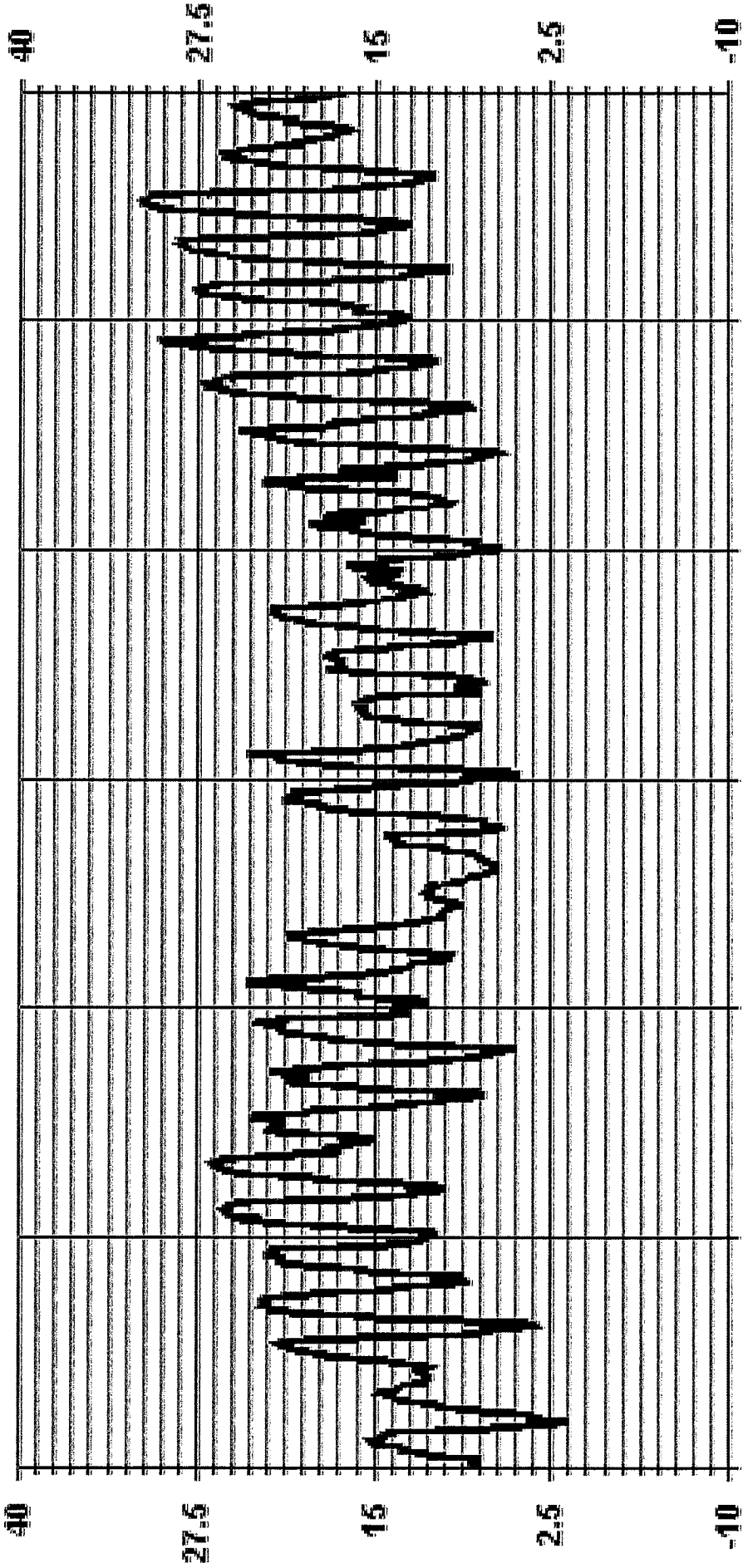
C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	1.3	°C	@ HOUR(S)	1	ON DAY(S)	2
MAXIMUM 1-HR AVERAGE:	31.5	°C	@ HOUR(S)	13, 15	ON DAY(S)	28, 28
MAXIMUM 24-HR AVERAGE:	23.0	°C			ON DAY(S)	28
					VARS-VARIOUS	
STANDARD DEVIATION:	6.09					
OPERATIONAL TIME:						720 HRS
AMID OPERATION UPTIME:						100.0 %
MONTHLY AVERAGE:						16.0 °C

01 Hour Averages



— LICA    - - - TPX    . . . DGC

***APPENDIX II***  
***NON-CONTINUOUS MONITORING DATA RESULTS***



***VOC RESULTS***

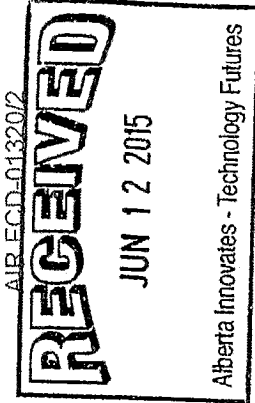
Sample ID: 15060152-001  
 Customer ID: LICA  
 Cust Samp ID: LICAVOC/CLS/June 5, 2015

Maxxam

VOC Sample Collection Data Sheet

Client: LICA  
 Location: CLS  
 Station ID: LICA 01  
 Field Sample ID: LICA/VOC/CLS/June 05, 2015

Sampler S/N: 6167  
 Canister ID: 15755  
 Canister Installation Date/Time: June 01 2015 @ 18:28  
 Canister Removal Date/Time: June 08 2015 @ 10:43



Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 05, 2015	00:00 June 05, 2015	00:00 June 06, 2015
		Elapsed Time (Hours)
		24.0

IMP

24 psi

Can past use - by date - Jan 23/15

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	24.9

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:

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Technician Signature: Sample in - by Alex Yakupov  
Sample out by Alex Yakupov  
 Date: June 8, 2015

## Volatile Organics Data Results

Date: JUNE 5, 2015  
Canister ID: 15755

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	0.03
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	0.03
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.04
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.01
2-Methylhexane	0.03
2-Methylpentane	0.14
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.07
Acetone	7.0
Acrolein	< 0.3
Benzene	0.07
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.04
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	0.05
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.9
Ethyl acetate	< 0.4
Ethylbenzene	0.03
Freon-11	0.29

## Volatile Organics Data Results

Date: JUNE 5, 2015  
Canister ID: 15755

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	0.02
Freon-12	0.61
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.44
Isopentane	0.54
Isoprene	0.83
Isopropyl alcohol	1.0
Isopropylbenzene	< 0.01
m,p-Xylene	0.08
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.6
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.04
Methylcyclopentane	0.06
Methylene chloride	< 0.3
n-Butane	1.19
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.05
n-Hexane	0.11
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	0.04
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.12
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: 15060265-001

Customer ID: LICA

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

Maxxam

VOC Sample Collection Data Sheet

Client: LICA  
Location: CLS  
Station ID: LICA or  
Field Sample ID: LICA/VOC / CLS / June 11, 2015

Sampler S/N: 8167  
Canister ID: 14708  
Canister Installation Date/Time: June 8, 2015 @ 10:46  
Canister Removal Date/Time: June 15, 2015 @ 14:54

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

Flow Settings	
Meter Reading (sccm)	Pump Pressure Setting (psig)
10.0	6.52 24

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
28.8	24.4

23.5  
SR

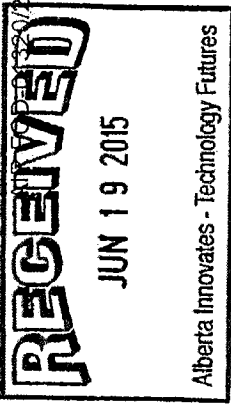
Canister valve open prior to sampling? YES / NO  
Timer set to 0.00 minutes prior to sampling? YES / NO  
Canister valve closed prior to disconnection? YES / NO

Comments:

Technician Signature:

Sample in - by Alex Yakupov  
Sample out by Alex Yakupov

Date June 15, 2015



## Volatile Organics Data Results

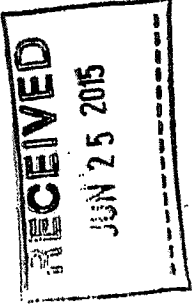
Date: JUNE 11, 2015  
Canister ID: 14708

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	0.18
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	0.27
1,2-Dibromoethane	0.03
1,2-Dichlorobenzene	0.06
1,2-Dichloroethane	0.03
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.08
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.27
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	0.06
3-Methylpentane	0.03
Acetone	9.9
Acrolein	< 0.3
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	0.03
Bromomethane	< 0.01
Carbon disulfide	0.64
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.60
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.06
cis-2-Pentene	0.03
Cyclohexane	0.20
Cyclopentane	0.02
Dibromochloromethane	0.01
Ethanol	2.0
Ethyl acetate	< 0.4
Ethylbenzene	0.14
Freon-11	0.28

## Volatile Organics Data Results

Date: JUNE 11, 2015  
Canister ID: 14708

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.05
Freon-114	< 0.02
Freon-12	0.56
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.12
Isopentane	0.14
Isoprene	0.82
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.36
m-Diethylbenzene	< 0.04
m-Ethyltoluene	0.13
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	1.0
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.19
Methylcyclopentane	0.06
Methylene chloride	< 0.3
n-Butane	0.23
n-Decane	< 0.06
n-Dodecane	1.6
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	0.06
n-Undecane	< 0.5
Naphthalene	6.5
o-Ethyltoluene	0.10
o-Xylene	0.15
p-Diethylbenzene	< 0.04
p-Ethyltoluene	0.09
Styrene	0.06
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	1.14
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.11
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02



Sample ID: 15060384-002

Customer ID: LICA

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

Maxxam

VOC Sample Collection Data Sheet

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

Sampler S/N: 6167  
 Canister ID: B5625  
 Canister Installation Date/Time: June 15, 2015 @ 15:22  
 Canister Removal Date/Time: June 22, 2015 @ 08:57

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 17, 2015	08:00 June 17, 2015	00:00 June 17, 2015
		Elapsed Time (Hours) 24.0

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	24.0

2 HR's  
AS

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:

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Technician Signature: \_\_\_\_\_

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

Date: June 22, 2015



## Volatile Organics Data Results

Date: JUNE 17, 2015  
Canister ID: S5625

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	0.03
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	0.05
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.03
Acetone	2.4
Acrolein	< 0.3
Benzene	0.02
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.08
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.43
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	1.0
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.19

## Volatile Organics Data Results

Date: JUNE 17, 2015  
Canister ID: S5625

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.04
Freon-114	< 0.02
Freon-12	0.52
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.12
Isopentane	0.22
Isoprene	0.16
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.05
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.03
Methylcyclopentane	0.03
Methylene chloride	< 0.3
n-Butane	0.21
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.04
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	0.07
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: 15060384-006

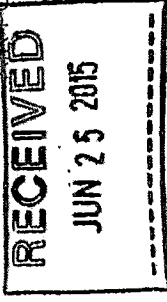
Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/June 23, 2015

Maxxam

VOC Sample Collection Data Sheet

ALB-FC-D-01320/2



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

Sampler S/N: 6167  
 Canister ID: 2655  
 Canister Installation Date/Time: June 22, 2015 @ 09:04  
 Canister Removal Date/Time: June 24, 2015 @ 08:56

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

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

24.25  
SMP

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:

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Technician Signature:

Sample in-by Alex Yakupov  
Sample out - Alex Yakupov

Date: June 24, 2015

## Volatile Organics Data Results

Date: JUNE 23, 2015  
Canister ID: 2655

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	0.10
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.04
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	0.06
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	< 0.01
Acetone	4.3
Acrolein	0.7
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.59
Carbon tetrachloride	0.08
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.43
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.07
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.3
Ethyl acetate	< 0.4
Ethylbenzene	0.03
Freon-11	0.19

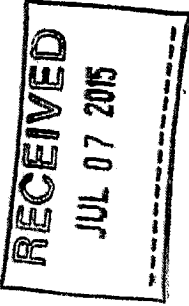
## Volatile Organics Data Results

Date: JUNE 23, 2015  
Canister ID: 2655

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.04
Freon-114	< 0.02
Freon-12	0.52
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.19
Isopentane	0.26
Isoprene	1.11
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.12
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.5
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.08
Methylcyclopentane	0.06
Methylene chloride	< 0.3
n-Butane	0.35
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	0.04
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: 15070024-002  
 Customer ID: LICA  
 Cust Samp ID: LICAVOC/CLS/June 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/June 29, 2015

Sampler S/N: 6167  
 Canister ID: 1678  
 Canister Installation Date/Time: June 24, 2015 @ 08:58  
 Canister Removal Date/Time: July 3, 2015 @ 09:36

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

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

23 psig  
 SNR

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:

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Technician Signature: Sample in - by Alex Yakupov

Sample out - by Alex Yakupov

Date: July 3, 2015

## Volatile Organics Data Results

Date: JUNE 29, 2015  
Canister ID: 1678

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	0.05
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	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.07
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	0.03
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.05
2-Methylhexane	< 0.01
2-Methylpentane	0.16
3-Methylheptane	< 0.02
3-Methylhexane	0.09
3-Methylpentane	0.09
Acetone	7.5
Acrolein	< 0.3
Benzene	0.37
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	1.26
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.66
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	2.0
Ethyl acetate	< 0.4
Ethylbenzene	0.05
Freon-11	0.23

## Volatile Organics Data Results

Date: JUNE 29, 2015  
Canister ID: 1678

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	< 0.02
Freon-12	0.55
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.37
Isopentane	0.59
Isoprene	4.54
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.15
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.9
Methyl Isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.14
Methylcyclopentane	0.11
Methylene chloride	< 0.3
n-Butane	0.81
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.16
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	0.02
o-Xylene	0.06
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	0.05
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



***PAH RESULTS***

Sample ID: 15060152-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/June 5, 2015

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA

Location: CLS

Station ID: LICA 01

Field Sample ID: LICA/PUF/CLS/June 5, 2015

Puf+ S/N: 7EOP

Motor S/N: 1138

Installation Date/Time: June 5, 2015 @ 19:16

Removal Date/Time: June 8, 2015 @ 10:22

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 5, 2015	00:00 June 5, 2015	00:00 June 6, 2015
		Elapsed Time (Hours) 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)
711	229	18.0 °C
		Volume (Vstd m <sup>3</sup> ) 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:

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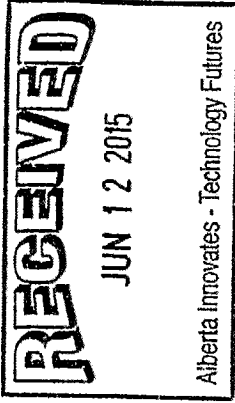


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Technician Signature:

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

Date: June 8, 2015



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 5, 2015  
PUF S/N: TE08

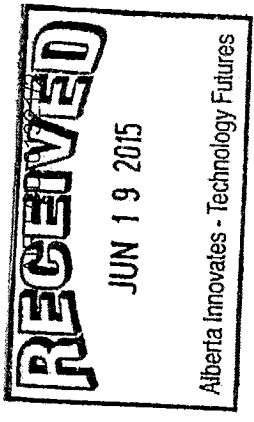
PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.24
2-Methylnaphthalene	0.47
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.02
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 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	0.04
Fluorene	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.23
Perylene	< 0.01
Phenanthrene	0.30
Pyrene	0.03
Retene	0.03

Sample ID: 15060265-002  
 Customer ID: LICA  
 Cust Samp ID: LICA/PUF/CLS/June 11, 2015

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA  
 Location: CLS  
 Station ID: LICA 01  
 Field Sample ID: LICA/PUF/CLS/June 11, 2015  
 Puf+ S/N: TE-07  
 Motor S/N: 1138  
 Installation Date/Time: June 8, 2015 @ 10:24  
 Removal Date/Time: June 15, 2015 @ 15:14



Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 11, 2015	00:00	00:00
	June 11, 2015	June 12, 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)
706	229	17.8
		Volume (Vstd m <sup>3</sup> )
		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)

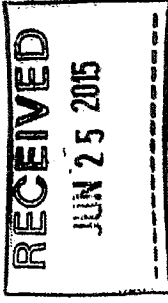
Comments:  
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Technician Signature: \_\_\_\_\_  
 Sample in - by Alex Yakupov  
 Sample out - by Alex Yakupov  
 Date: June 15, 2015

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 11, 2015  
PUFS/N: TE07

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	0.02
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.16
Pyrene	0.02
Retene	0.03



Sample ID: 15060384-003

Customer ID: LICA

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

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: TE-09  
 Location: CLS Motor S/N: 1138  
 Station ID: LICA 01 Installation Date/Time: June 15, 2015 @ 15:16  
 Field Sample ID: LICA/PUF/CLS/June 17, 2015 Removal Date/Time: June 22, 2015 @ 09:14

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 17, 2015	00:00	00:00
	June 17, 2015	June 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)
714	229	14.1 °
		Volume (Vstd m³)
		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:

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Technician Signature: \_\_\_\_\_  
 Sample in - by Alex Yakupov  
 Sample out - by Alex Yakupov  
 Date: June 22, 2015

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 17, 2015  
PUF S/N: TE09

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.06
2-Methylnaphthalene	0.10
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,l)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.05
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.18
Pyrene	0.03
Retene	0.02

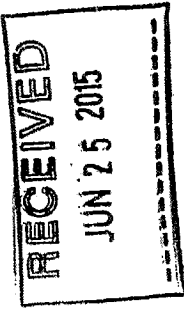
Sample ID: 15060384-007

Customer ID: LICA  
Cust Samp ID: LICA/PUF/CLS/June 23, 2015

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: 9801  
Location: CLS Motor S/N: 1138  
Station ID: LICA 01 Installation Date/Time: June 22, 2015 @ 09:16  
Field Sample ID: LICA/PUF/CLS/June 23, 2015 Removal Date/Time: June 24, 2015 @ 09:04



Date and Time Information		
Sample Date	Start Time (MST)	Elapsed Time (Hours)
June 23, 2015	00:00 June 23, 2015	24.0 June 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)
712	229	18.4°
		Volume (Vstd m³)
		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: June 24, 2015



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

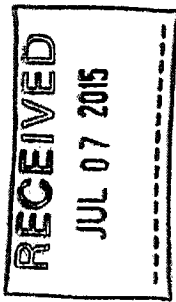
Date: JUNE 23, 2015  
PUF S/N: 9801

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.07
2-Methylnaphthalene	0.13
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	0.06
Fluorene	0.08
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.09
Perylene	< 0.01
Phenanthrene	0.35
Pyrene	0.06
Retene	0.02

Sample ID: 15070024-003

Customer ID: LICA  
Cust Samp ID: LICA/PUF/CLS/June 29, 2015

AIR FCD-01321/2



# Maxxam

## Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: 94 A.Y. TE-11  
 Location: CLS Motor S/N: 1138  
 Station ID: LICA 01 Installation Date/Time: June 24, 2015 @ 09:06  
 Field Sample ID: LICA/PUF/CLS/June 29, 2015 Removal Date/Time: July 3, 2015 @ 08:51

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 29, 2015	00:00	June 30, 2015
		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)
713	229	20.9
		Volume (Vstd m <sup>3</sup> )
		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:

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Technician Signature:

Sample in - by Alex Yakupov  
 Sample out by Alex Yakupov

Date: July 3, 2015

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

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

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.18
2-Methylnaphthalene	0.33
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.03
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	0.02
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.12
Fluorene	0.15
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.06
Perylene	< 0.01
Phenanthrene	0.97
Pyrene	0.05
Retene	0.57

***PARTISOL RESULTS***



### Partisol Sampler Results

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Date	Filter NO.	Concentration (mg)
JUNE 5	P4143631	0.146
JUNE 11	P4131701	0.116
JUNE 17	P4148537	0.063
JUNE 23	P4148568	0.098
JUNE 29	P4148571	1.070

Sample ID: 15060153-001

AIR FCD-01318/2

Customer ID: LICA

Cust Samp ID: LICA P4143631

### Partisol Sample Data Sheet

Priority: Normal

Date Sampled: June 5, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: LICA P4143631

Start Time 00:00 June 5, 2015

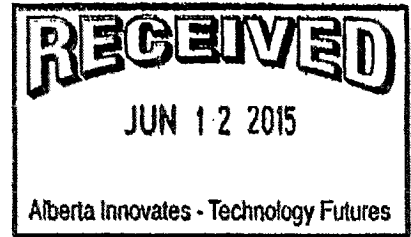
End Time 00:00 June 6, 2015

Status OK

Std Vol 23 132

Valid Time 24:00

Total Time 24



Comments: Weather Conditions, etc.

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Technician Signature: Alex Yakupov

Date: June 8, 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"
- 8) Make Sure it is left in RUN mode

Note: Beginning & End Date should be same date

Sample ID: 15060264-001

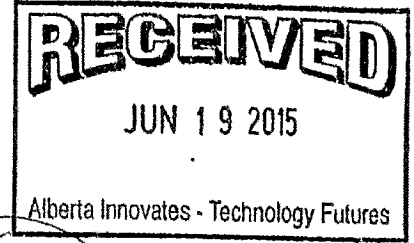
AIR FCD-01318/2

Customer ID: LICA

Cust Samp ID: LICA P4131701

Partisol Sample Data Sheet

Priority: Normal



Date Sampled: June 11, 2015

Location: CLS

Parameter: TSP PM10

Filter #: LICA P4131701

PM2.5

Start Time 00:00 June 11, 2015

End Time 00:00 June 12, 2015

Status OK

Std Vol 23.0041

Valid Time 24:00

Total Time 24

Comments: Weather Conditions, etc.

Five horizontal lines for handwritten comments.

Technician Signature:

Alex Yakupov

Date: June 15, 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: 15060385-001

Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA P4148567

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: June 17, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: LICA P 1148567

Start Time 00:00 June 17, 2015

End Time 00:00 June 18, 2015

Status OK

Std Vol 23.532

Valid Time 24:0

Total Time 24

Comments: Weather Conditions, etc.

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Technician Signature: Alex Yakupov

Date: June 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: 15060385-002

AIR FCD-01318/2

Customer ID: LICA

### Partisol Sample Data Sheet

Cust Samp ID: LICA P4148568

Priority: Normal

Date Sampled: June 23, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: LICA P4148568

Start Time 00:00 June 23, 2015

End Time 00:00 June 24, 2015

Status OK

Std Vol 23.163

Valid Time 24:00

Total Time 24

Comments: Weather Conditions, etc.

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Technician Signature: Alex Yakupov

Date: June 24, 2015  
@ 09:17

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"
- 8) Make Sure it is left in RUN mode

Note: Beginning & End Date should be same date

Sample ID: 15070023-001

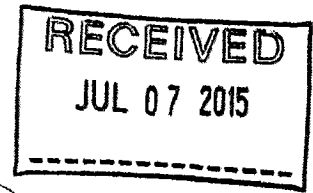
Customer ID: LICA

Cust Samp ID: LICA Filter #P4148571

AIR FCD-01318/2

### Partisol Sample Data Sheet

Priority: Normal



PM2.5

Date Sampled: June 29, 2015

Location: ELS

Parameter: TSP PM10

Filter #: LICA P4148571

Start Time 00:00 June 29, 2015

End Time 00:00 June 30, 2015

Status OK

Std Vol 23.011

Valid Time 24:00

Total Time 24

Comments: Weather Conditions, etc.

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Technician Signature: Alex Yakupov

Date: July 3, 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

***APPENDIX III***  
***ANALYZER CALIBRATION RESULTS***

***SULPHUR DIOXIDE***

## Maxxam Thermo 43i SO2 Analyzer Calibration

**Date:** 2-Jun-15 **Start/End Time (mst):** 8:13 - 12:37  
**Company:** LICA **Calibration Purpose:** Monthly  
**Station Name/Location:** Cold Lake South **Converter Make & Model:** NA  
**Performed by:** Alex Yakupov **Converter Serial #:** NA  
**Application H<sub>2</sub>S/TRS/SO<sub>2</sub>:** SO<sub>2</sub> **Cal Gas Expiry Date:** 12-Mar-19

---

**Analyzer:**  
**Serial Number:** 806528242 **Range ppb:** 500  
**Last Calibration Date:** 2-May-15 **As Found C.F.:** 1.005  
**Previous Cal High Point C.F.:** 1.001 **New C.F.:** 1.000

<p><b>MOTHERBOARD:</b></p> <table border="0"> <tr><td colspan="2" style="text-align: center;">As found:</td></tr> <tr><td>BKG:</td><td>7.0</td></tr> <tr><td>COEF:</td><td>1.115</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>23.9</td></tr> <tr><td>-3.3</td><td>-3.2</td></tr> </table> <p><b>INTERFACE BOARD:</b></p> <table border="0"> <tr><td>PMT:</td><td>-632.3</td></tr> <tr><td>FLASH:</td><td>714</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>14.8</td></tr> <tr><td>-15.0</td><td>-15.1</td></tr> <tr><td>24.0</td><td>23.6</td></tr> <tr><td>INTERNAL:</td><td>28.7</td></tr> <tr><td>CHAMBER:</td><td>45.0</td></tr> <tr><td>PERM OVEN GAS:</td><td>45.0</td></tr> <tr><td>PERM OVEN HEATER:</td><td>44.20</td></tr> <tr><td>PRESSURE:</td><td>681.6</td></tr> <tr><td>SAMPLE FLOW:</td><td>0.354</td></tr> <tr><td>LAMP INTENSITY:</td><td>76</td></tr> <tr><td>CONVERTER:</td><td>NA</td></tr> <tr><td>CONVERTER SET:</td><td>NA</td></tr> <tr><td>Internal Span:</td><td>390.3</td></tr> </table>	As found:		BKG:	7.0	COEF:	1.115	3.3	3.3	5.0	5.0	15.0	15.0	24.0	23.9	-3.3	-3.2	PMT:	-632.3	FLASH:	714	3.3	3.3	5.0	5.0	15.0	14.8	-15.0	-15.1	24.0	23.6	INTERNAL:	28.7	CHAMBER:	45.0	PERM OVEN GAS:	45.0	PERM OVEN HEATER:	44.20	PRESSURE:	681.6	SAMPLE FLOW:	0.354	LAMP INTENSITY:	76	CONVERTER:	NA	CONVERTER SET:	NA	Internal Span:	390.3	<p><b>As left:</b></p> <table border="0"> <tr><td>BKG:</td><td>7.0</td></tr> <tr><td>COEF:</td><td>1.119</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>23.8</td></tr> <tr><td>-3.3</td><td>-3.2</td></tr> </table> <p>PMT: -632.0 FLASH: 711 3.3 3.3 5.0 5.0 15.0 14.8 -15.0 -15.1 24.0 23.6 INTERNAL: 29.4 CHAMBER: 45.0 PERM OVEN GAS: 45.0 PERM OVEN HEATER: 44.20 PRESSURE: 681.0 SAMPLE FLOW: 0.354 LAMP INTENSITY: 76 CONVERTER: NA CONVERTER SET: NA Internal Span: 380.3</p>	BKG:	7.0	COEF:	1.119	3.3	3.3	5.0	5.0	15.0	15.0	24.0	23.8	-3.3	-3.2
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**Callibrator:** **Callibrator Flow Targets:**

Flow Meter ID's: NA	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
Make & Model: Environoncs	zero	5000	0	5000
Serial #: 4760	high	5000	40	5040
Cal Gas Cylinder I.D. #: BLM002073	mid	5000	20	5020
Cal Gas Conc. (ppm): 49.5	low	5000	10	5010

---

**Calibration:**

Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors
as found zero	4994	0.0	4994	0	0.0	NA
as found high	4959	37.43	4996	370.8	369.0	1.005
adjusted high	4959	37.43	4996	370.8	371.0	1.000
mid	4977	17.75	4995	175.9	176.0	1.000
low	4985	8.88	4994	88.0	88.0	1.000
callibrator zero	4994	0.00	4994	0	0.0	NA

Average C.F.= 1.000

---

**Linear Regression/Calibration Results:**

Correlation Coefficient = 1.000	LIMITS	Pass/Fail ?
Slope = 0.999	> or = 0.995	PASS
b (Intercept as % of full scale) = 0.00%	0.85-1.15	PASS
% change in C.F. from last cal = -0.39%	± 3% F.S.	PASS
	± 15%	PASS

**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**

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

SO<sub>2</sub> High Point gas concentration: NA Time gas run (mst): NA

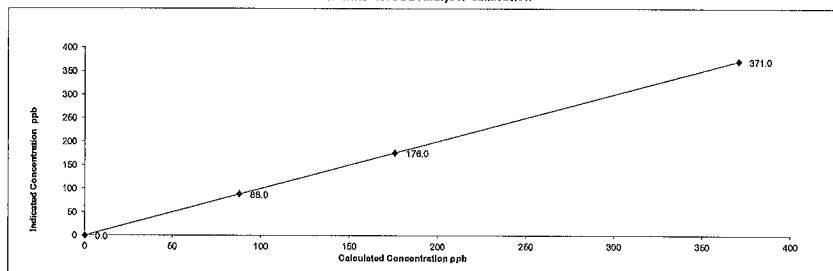
Zero corrected analyzer response: NA

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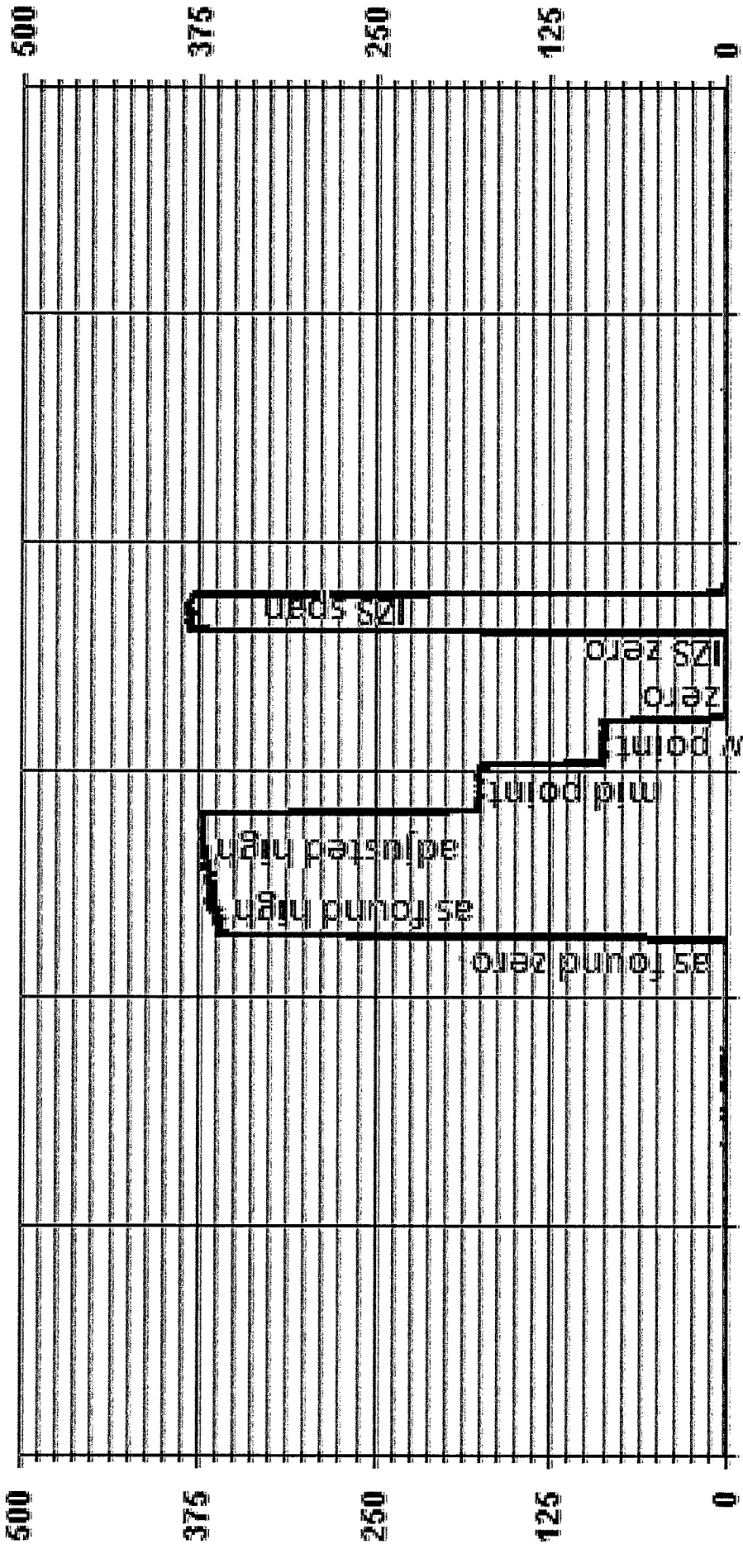
**Comments:**

Sample filter changed. No zero adjustment made.

Thermo 43i SO2 Analyzer Calibration



01 Minute Averages



06:02/15 05:00 06:02/15 07:00 06:02/15 09:00 06:02/15 11:00 06:02/15 13:00 06:02/15 15:00

— LICA SO2- PPB

## Maxam Thermo 43i SO2 Analyzer Calibration

Date: <u>25-Jun-15</u>	Start/End Time (mst): <u>11:00-14:15</u>
Company: <u>LICA</u>	Calibration Purpose: <u>As found</u>
Station Name/Location: <u>Cold Lake South</u>	Converter Make & Model: <u>NA</u>
Performed by: <u>LimIn LI</u>	Converter Serial #: <u>NA</u>
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> : <u>SO2</u>	Cal Gas Expiry Date: <u>12-Aug-17</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>1.007</u>
Previous Cal High Point C.F.: <u>1.000</u>	New C.F.: <u>NA</u>

<p style="text-align: center;">As found:</p> <p>MOTHERBOARD:</p> <p>BKG: <u>7.0</u></p> <p>COEF: <u>1.119</u></p> <p><u>3.3</u> <u>3.3</u></p> <p><u>5.0</u> <u>5.0</u></p> <p><u>15.0</u> <u>15.0</u></p> <p><u>24.0</u> <u>23.8</u></p> <p><u>-3.3</u> <u>-3.2</u></p> <p>INTERFACE BOARD:</p> <p>PMT: <u>-632.0</u></p> <p>FLASH: <u>705</u></p> <p><u>3.3</u> <u>3.3</u></p> <p><u>5.0</u> <u>5.0</u></p> <p><u>15.0</u> <u>14.8</u></p> <p><u>-15.0</u> <u>-15.1</u></p> <p><u>24.0</u> <u>23.6</u></p> <p>INTERNAL: <u>29.7</u></p> <p>CHAMBER: <u>45.1</u></p> <p>PERM OVEN GAS: <u>45.0</u></p> <p>PERM OVEN HEATER: <u>44.20</u></p> <p>PRESSURE: <u>678.6</u></p> <p>SAMPLE FLOW: <u>0.342</u></p> <p>LAMP INTENSITY: <u>76</u></p> <p>CONVERTER: <u>NA</u></p> <p>CONVERTER SET: <u>NA</u></p> <p>Internal Span: <u>380.3</u></p>	<p style="text-align: center;">As left:</p> <p>BKG: <u>7.0</u></p> <p>COEF: <u>1.119</u></p> <p><u>3.3</u> <u>3.3</u></p> <p><u>5.0</u> <u>5.0</u></p> <p><u>15.0</u> <u>15.0</u></p> <p><u>24.0</u> <u>23.8</u></p> <p><u>-3.3</u> <u>-3.2</u></p> <p>PMT: <u>-632.0</u></p> <p>FLASH: <u>705</u></p> <p><u>3.3</u> <u>3.3</u></p> <p><u>5.0</u> <u>5.0</u></p> <p><u>15.0</u> <u>14.8</u></p> <p><u>-15.0</u> <u>-15.1</u></p> <p><u>24.0</u> <u>23.6</u></p> <p>INTERNAL: <u>29.4</u></p> <p>CHAMBER: <u>45.0</u></p> <p>PERM OVEN GAS: <u>45.0</u></p> <p>PERM OVEN HEATER: <u>44.20</u></p> <p>PRESSURE: <u>681.0</u></p> <p>SAMPLE FLOW: <u>0.475</u></p> <p>LAMP INTENSITY: <u>76</u></p> <p>CONVERTER: <u>NA</u></p> <p>CONVERTER SET: <u>NA</u></p> <p>Internal Span: <u>380.3</u></p>
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Calibrator: Flow Meter ID's: <u>NA</u> Make & Model: <u>Environconcs</u> Serial #: <u>4760</u> Cal Gas Cylinder I.D. #: <u>LL42475</u> Cal Gas Conc. (ppm): <u>50.3</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">Calibrator Flow Targets:</th> </tr> <tr> <th style="text-align: center;">point</th> <th style="text-align: center;">diluent (cc/min)</th> <th style="text-align: center;">cal gas (cc/min)</th> <th style="text-align: center;">total (cc/min)</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> <td style="text-align: center;">5000</td> </tr> <tr> <td style="text-align: center;">high</td> <td style="text-align: center;">5000</td> <td style="text-align: center;">40</td> <td style="text-align: center;">5040</td> </tr> <tr> <td style="text-align: center;">mid</td> <td style="text-align: center;">5000</td> <td style="text-align: center;">20</td> <td style="text-align: center;">5020</td> </tr> <tr> <td style="text-align: center;">low</td> <td style="text-align: center;">5000</td> <td style="text-align: center;">10</td> <td style="text-align: center;">5010</td> </tr> </tbody> </table>	Calibrator Flow Targets:				point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)	zero	5000	0	5000	high	5000	40	5040	mid	5000	20	5020	low	5000	10	5010
Calibrator Flow Targets:																									
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)																						
zero	5000	0	5000																						
high	5000	40	5040																						
mid	5000	20	5020																						
low	5000	10	5010																						

---

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	0.2	NA
as found high	4956	37.88	4994	381.5	379.0	1.007

Average C.F.=

---

Linear Regression/Calibration Results:

Correlation Coefficient = <u>NA</u>	LIMITS <u>Pass/Fail ?</u>
Slope = <u>NA</u>	> or = 0.995 <u>0.85-1.15</u>
b (Intercept as % of full scale) = <u>NA</u>	± 3% F.S. <u>± 15%</u>
% change in C.F. from last cal = <u>-0.67%</u>	<u>PASS</u>

Converter Efficiency Check for H<sub>2</sub>S/TRS application:

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

SO<sub>2</sub> High Point gas concentration: NA Time gas run (mst): NA

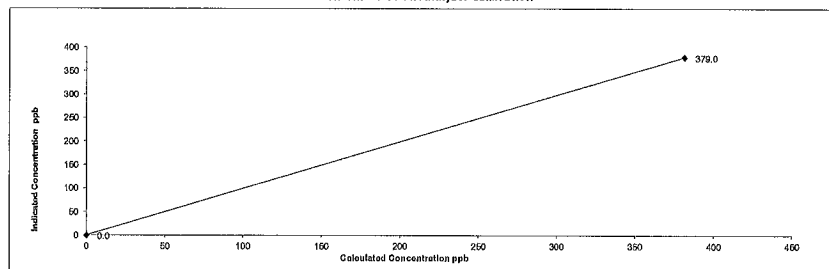
Zero corrected analyzer response: NA

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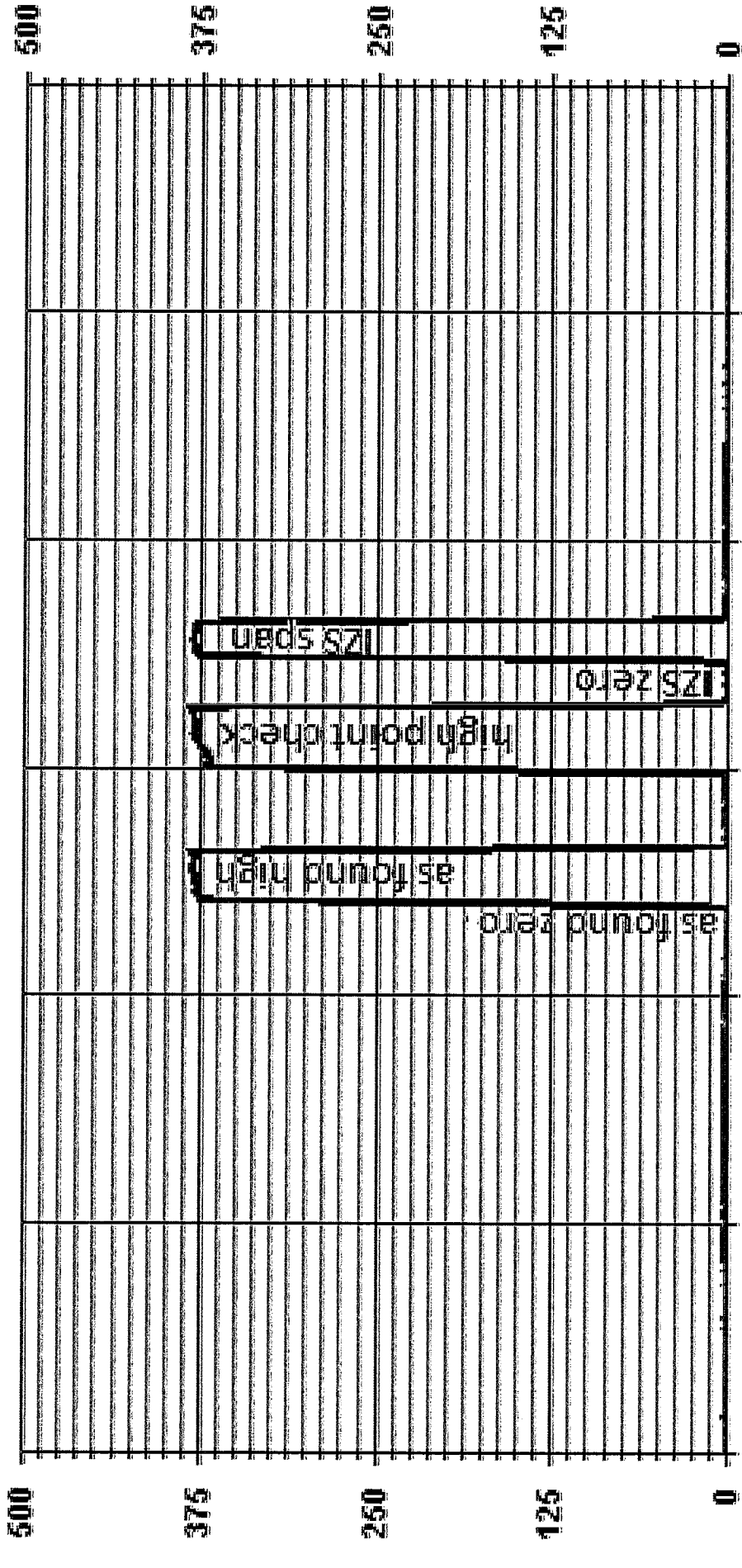
Comments:

After as found point, calibrate sample flow rate. Then recheck high point. No change.

Thermo 43i SO2 Analyzer Calibration



01 Minute Averages



— LICA SO2\_ PPB



***TOTAL REDUCED SULPHUR***

## Maxxam Thermo 450i TRS Analyzer Calibration

Date: 2-Jun-15	Start/End Time (mst): 8:13 - 12:43	
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 <sub>2</sub> S/TRS/SO <sub>2</sub> : TRS	Cal Gas Expiry Date: 15-Jul-17	

---

**Analyzer:**

Serial Number: 812728560	Range ppb: 100
Last Calibration Date: 6-May-15	As Found C.F.: 1.014
Previous Cal High Point C.F.: 1.000	New C.F.: 0.986

<p><b>MOTHERBOARD:</b></p> <table border="0"> <tr><td>As found:</td><td></td></tr> <tr><td>BKG:</td><td>13.4</td></tr> <tr><td>COEF:</td><td>0.973</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>23.9</td></tr> <tr><td>-3.3:</td><td>-3.2</td></tr> </table> <p><b>INTERFACE BOARD:</b></p> <table border="0"> <tr><td>PMT:</td><td>-650.8</td></tr> <tr><td>FLASH:</td><td>742</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>14.6</td></tr> <tr><td>-15.0:</td><td>-15.0</td></tr> <tr><td>24.0:</td><td>23.3</td></tr> <tr><td>INTERNAL:</td><td>32.7</td></tr> <tr><td>CHAMBER:</td><td>45.3</td></tr> <tr><td>CONVERTER TEMP:</td><td>323.3</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>44.37</td></tr> <tr><td>PRESSURE:</td><td>658.4</td></tr> <tr><td>SAMPLE FLOW:</td><td>0.514</td></tr> <tr><td>LAMP INTENSITY:</td><td>92</td></tr> <tr><td>Internal Span:</td><td>39.02</td></tr> </table>	As found:		BKG:	13.4	COEF:	0.973	3.3:	3.3	5.0:	5.0	15.0:	15.0	24.0:	23.9	-3.3:	-3.2	PMT:	-650.8	FLASH:	742	3.3:	3.2	5.0:	5.0	15.0:	14.6	-15.0:	-15.0	24.0:	23.3	INTERNAL:	32.7	CHAMBER:	45.3	CONVERTER TEMP:	323.3	CONVERTER SET:	325.0	PERM OVEN GAS:	45.00	PERM OVEN HTR:	44.37	PRESSURE:	658.4	SAMPLE FLOW:	0.514	LAMP INTENSITY:	92	Internal Span:	39.02	<p><b>As left:</b></p> <table border="0"> <tr><td>BKG:</td><td>13.3</td></tr> <tr><td>COEF:</td><td>0.972</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>23.9</td></tr> <tr><td>-3.3:</td><td>-3.2</td></tr> </table> <p>PMT: -650.5</p> <p>FLASH: 743</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: 23.3</p> <p>INTERNAL: 32.9</p> <p>CHAMBER: 45.2</p> <p>CONVERTER TEMP: 323.9</p> <p>CONVERTER SET: 325.0</p> <p>PERM OVEN GAS: 45.01</p> <p>PERM OVEN HTR: 44.39</p> <p>PRESSURE: 657.8</p> <p>SAMPLE FLOW: 0.512</p> <p>LAMP INTENSITY: 90</p> <p>Internal Span: 38.9</p>	BKG:	13.3	COEF:	0.972	3.3:	3.3	5.0:	5.0	15.0:	15.0	24.0:	23.9	-3.3:	-3.2
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-3.3:	-3.2																																																																

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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	<table border="1" style="width: 100%; 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																		

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**Calibration:**

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors
	Diluent	Cal Gas	Total			
as found zero	4999	0.0	4999	0	0.0	NA
as found high	4958	39.00	4997	78.0	77.0	1.014
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	23.0	0.956
calibrator zero	4999	0.00	4999	0	0.0	NA
Average C.F. =						0.986

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**Linear Regression/Calibration Results:**

Correlation Coefficient = 1.000	LIMITS > or = 0.995	Pass/Fail ?
Slope = 1.004	0.85-1.15	PASS
b (Intercept as % of full scale) = -0.38%	± 3% F.S.	PASS
% change in C.F. from last cal = -1.36%	± 15%	PASS

**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**

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

SO<sub>2</sub> High Point gas concentration: 22.0      Time gas run (mst): 09:11-09:21

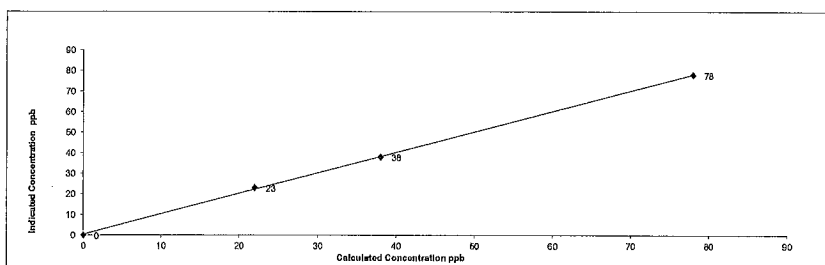
Zero corrected analyzer response: 0

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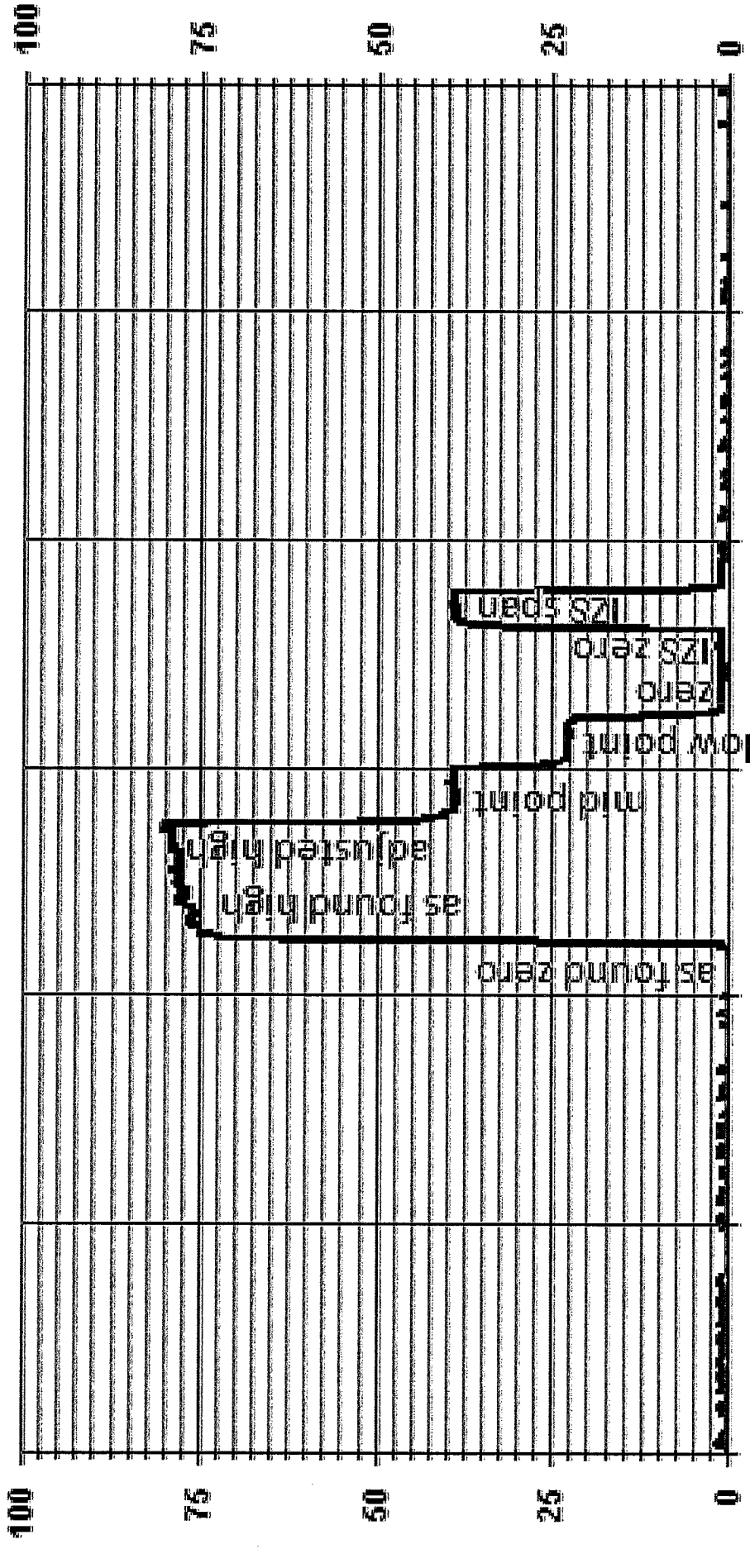
**Comments:**

Filter changed. No ZERO adjustment made.

Thermo 450i TRS Analyzer Calibration



01 Minute Averages



06:02:15 05:05 06:02:15 07:05 06:02:15 09:05 06:02:15 11:05 06:02:15 13:05 06:02:15 15:05

— LICA TRS\_ PPB

***TOTAL HYDROCARBON***

# Maxxam Thermo 51C THC Analyzer Calibration

Date: 3-Jun-15 Start Time (mst): 7:30  
 Company: LICA End Time (mst): 10:56  
 Station Name/Location: Cold Lake South Calibration Purpose: Monthly Calibration  
 Performed by: Alex Yakupov Cal Gas Expiry Date: 12-Aug-17

Analyzer: \_\_\_\_\_  
 Serial Number: 427408718 Range ppm: 50  
 Last Calibration Date: 5-May-15 As Found C.F.: 0.999  
 Previous Cal High Point C.F.: 1.002 New C.F.: 1.009

	As found:		As left:
H <sub>2</sub> cylinder (psi):	<u>750</u>	H <sub>2</sub> cylinder (psi):	<u>750</u>
H <sub>2</sub> cylinder reg set (psi):	<u>23</u>	H <sub>2</sub> cylinder reg set (psi):	<u>23</u>
Span Cylinder (psi):	<u>1800</u>	Span Cylinder (psi):	<u>1800</u>
Span Cylinder Reg Set (psi):	<u>30</u>	Span Cylinder Reg Set (psi):	<u>30</u>
Zero Air Gen Pressure:	<u>33</u>	Zero Air Gen Pressure:	<u>33</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>1427</u>	FID status:	cnt: <u>1412</u>
	rng: <u>1</u>		rng: <u>1</u>
	try: <u>1</u>		try: <u>1</u>
	flm: <u>183.8</u>		flm: <u>183.2</u>
	det: <u>125.2</u>		det: <u>125.7</u>
Oven Readings:	Flame: <u>183</u>	Oven Readings:	Flame: <u>183</u>
	Filter: <u>125</u>		Filter: <u>125</u>
	Base: <u>125</u>		Base: <u>125</u>
	Pump: <u>06.53</u>		Pump: <u>06.52</u>
Voltages:	+5 <u>5.0</u>	Voltages:	+5 <u>5.0</u>
	+15 <u>14.8</u>		+15 <u>14.8</u>
	-15 <u>-15.1</u>		-15 <u>-15.1</u>
	Internal Span: <u>31.81</u>		Internal Span: <u>32.3</u>

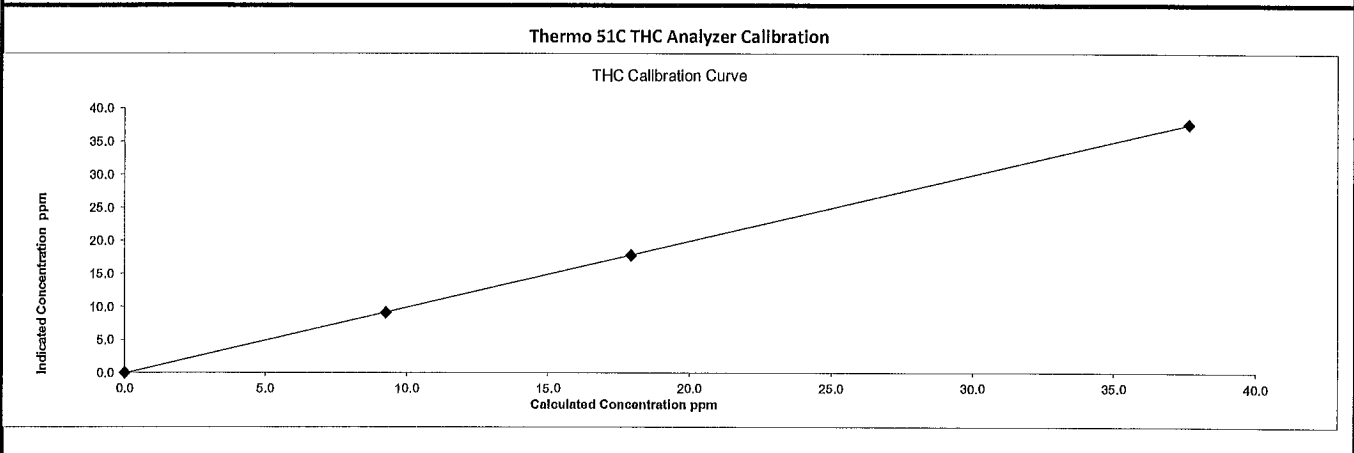
Calibrator:	Flow Meter ID's: <u>NA</u>	Calibrator Flow Targets:			
	Make & Model: <u>API 700</u>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
	Serial #: <u>830</u>	zero	<u>2000</u>	<u>0</u>	<u>2000</u>
	Cal Gas Cylinder I.D. #: <u>LL33674</u>	high	<u>1935</u>	<u>65</u>	<u>2000</u>
	CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> Cylinder Conc. (ppm): <u>601.4</u> <u>202.0</u>	mld	<u>1969</u>	<u>31</u>	<u>2000</u>
	CH <sub>4</sub> as propane/total CH <sub>4</sub> equivalents (ppm): <u>555.5</u> <u>1156.9</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	2000	0.00	2000	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	37.60	1.002
mld	1969	31.00	2000	17.93	17.80	1.007
low	1984	16.00	2000	9.26	9.10	1.017
calibrator zero	2000	0.00	2000	0	0.00	NA
Average C.F. =						1.009

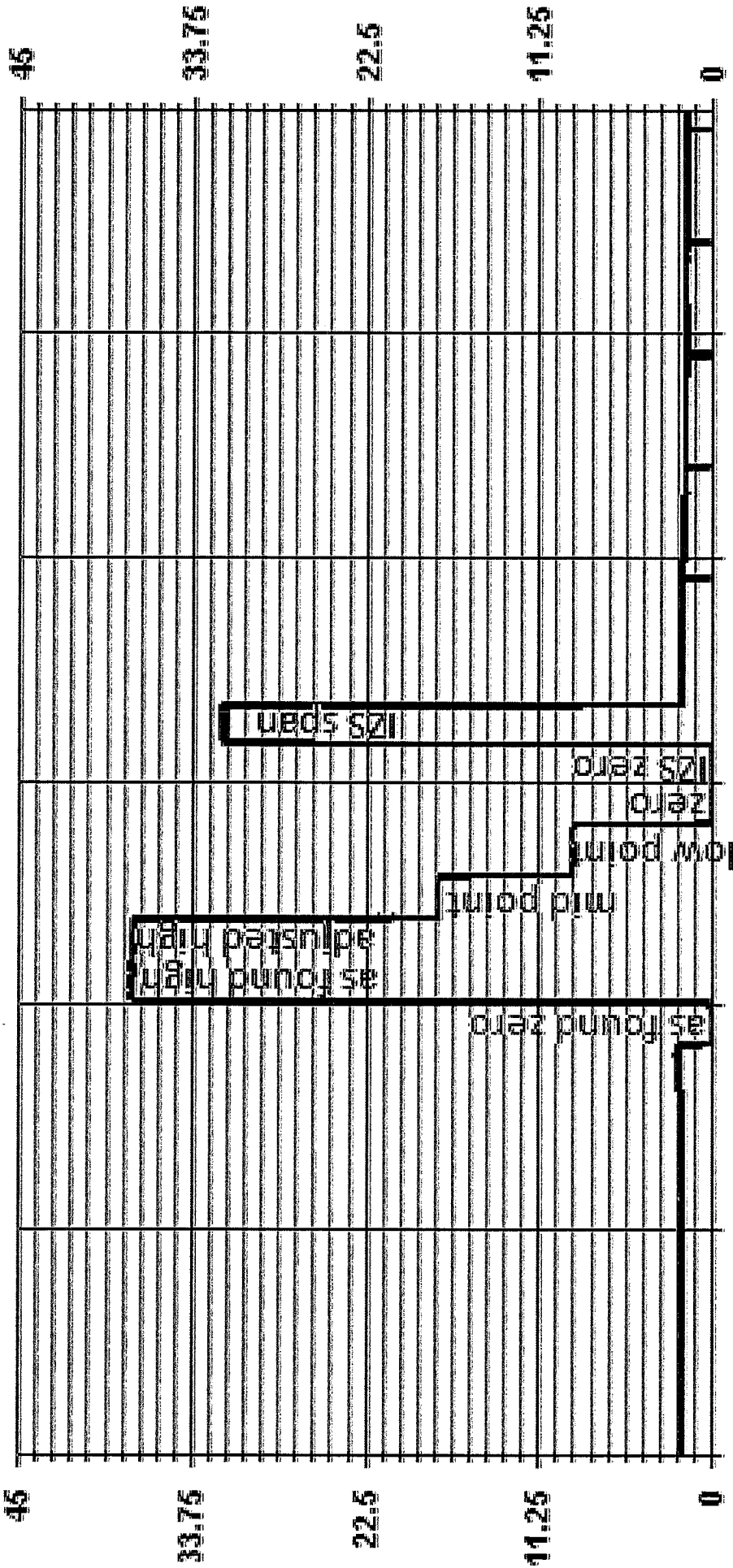
Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>0.999</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>-0.158%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0.32%</u>	± 3% F.S.	PASS
		± 15%	PASS

Comments:  
 Sample filter changed. No Zero adjustment made.

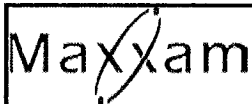


# 01 Minute Averages



— LICA THC PPM

***NITROGEN DIOXIDE***



### Thermo 42C NOx Analyzer Calibration

Date: 2-Jun-15  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Performed by: Alex Yakupov

Start Time (mst): 8:13  
 End Time (mst): 15:01  
 Calibration Purpose: Monthly  
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: <u>427408716</u>		Correction Factors:	
Last Calibration Date: <u>5-May-15</u>	As found C.F.	Previous Cal High Point C.F.:	
Range ppb: <u>500</u>	NO= <u>1.059</u>	NO= <u>1.001</u>	
	NOx= <u>1.059</u>	NOx= <u>1.001</u>	
	NO <sub>2</sub> = <u>1.000</u>	NO <sub>2</sub> = <u>1.000</u>	
<b>As found:</b>		<b>As left:</b>	
NO Bkg ppb: <u>4.7</u>	NO Bkg ppb: <u>5.0</u>		
NOx Bkg ppb: <u>4.9</u>	NOx Bkg ppb: <u>5.2</u>		
NO Coef: <u>0.951</u>	NO Coef: <u>1.009</u>		
NOx Coef: <u>1.016</u>	NOx Coef: <u>1.011</u>		
NO <sub>2</sub> Coef: <u>1.003</u>	NO <sub>2</sub> Coef: <u>1.003</u>		
PMT: <u>-850</u>	PMT: <u>-850</u>		
+15: <u>15.1</u>	+15: <u>15.1</u>		
+5: <u>5.0</u>	+5: <u>5.0</u>		
-15: <u>15.1</u>	-15: <u>15.1</u>		
-15: <u>-15.1</u>	-15: <u>-15.1</u>		
Battery: <u>3.2</u>	Battery: <u>3.2</u>		
Internal: <u>29.2</u>	Internal: <u>29.4</u>		
Chamber: <u>49.7</u>	Chamber: <u>49.6</u>		
Cooler: <u>-2.5</u>	Cooler: <u>-2.5</u>		
Converter: <u>318</u>	Converter: <u>317</u>		
Converter Set: <u>319</u>	Converter Set: <u>319</u>		
Pressure: <u>190.0</u>	Pressure: <u>189.4</u>		
Sample Flow: <u>0.540</u>	Sample Flow: <u>0.540</u>		
Ozonator Flow: <u>OK</u>	Ozonator Flow: <u>OK</u>		
Internal Span: <u>390.7/6.7/384</u>	Internal Span: <u>439.3/7.5/431.6</u>		

**Calibrator Flow Targets:**

Make & Model: EnviroNics 6100  
 Serial #: 4760  
 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 <sub>3</sub> setting (v or ppb)	total (cc/min)
zero	4995	0	0	4995
high	4916	40	210.00	4956
mid	4957	20	120.00	4977
low	4975	10	45.00	4985

**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	4994	0.0	4994	0	0	0.0	0.0	NA	NA
as found high	4959	37.43	4996	379.1	379.1	358	358	1.059	1.059
adjusted high	4959	37.43	4996	379.1	379.1	379	379	1.000	1.000
mid	4977	17.75	4995	179.8	179.8	179	179	1.005	1.005
low	4985	8.88	4994	90.0	90.0	89	89	1.011	1.011
callibrator zero	4994	0.00	4994	0	0	0.0	0.0	NA	NA
Average C.F.=								1.005	1.005

Callibrator Flow Rates (cc/min)				Callibrator Setting	Indicated NO	Indicated NOx	Indicated NO <sub>2</sub>	NO drop	NO <sub>2</sub> Increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4959	37.43	4996	0.0	381.0	380.0	-1.0	0.0	0.0	
as found NO <sub>2</sub>	4959	37.43	4996	210.0	127.0	380.0	253.0	254.0	254.0	1.000
gpt mid	4959	37.43	4996	120.0	240.0	380.0	140.0	141.0	141.0	1.000
gpt low	4959	37.43	4996	45.0	329.0	380.0	51.0	52.0	52.0	1.000
Average NO <sub>2</sub> C.F.=									1.000	

**Linear Regression/Calibration Results:**

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.001	1.001	1.000	0.85-1.15
b (Intercept as % of full scale)=	-0.11%	-0.11%	0.00%	± 3% F.S.
% change in C.F. from last cal=	-5.78%	-5.78%	0.00%	+/-15%
NO <sub>2</sub> converter efficiency			100.0%	>85%

**Comments:**

No ZERO adjustment made. Filter changed. An additional point was taken after GPT calibration (13:46 - 14:05) to provide for a Low O3 cal target (Ind. NO=289, Ind. Nox=380, Ind. NO<sub>2</sub>=91, NO drop=92, NO<sub>2</sub> increase= 92, NO<sub>2</sub> C.F = 1.000) => O3 concentration = 80 ppb;

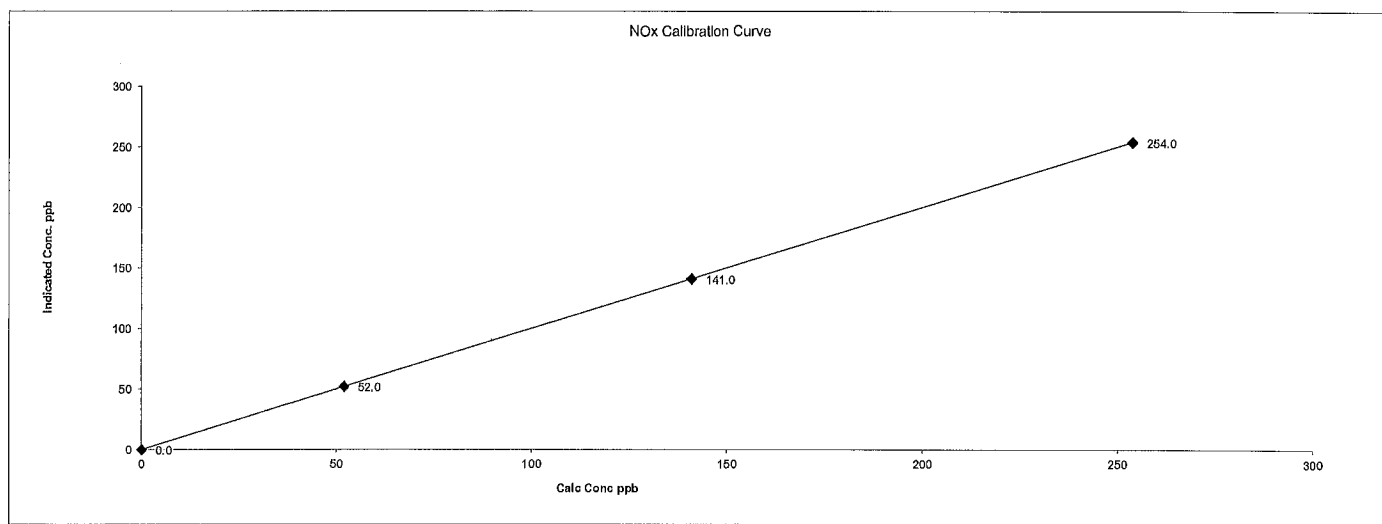
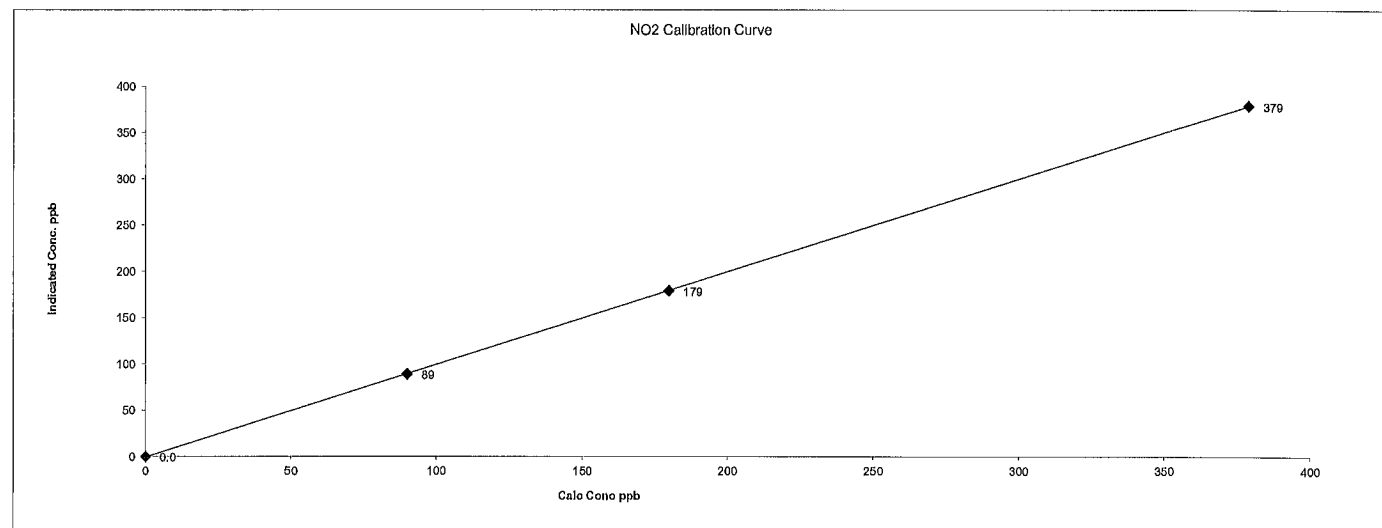
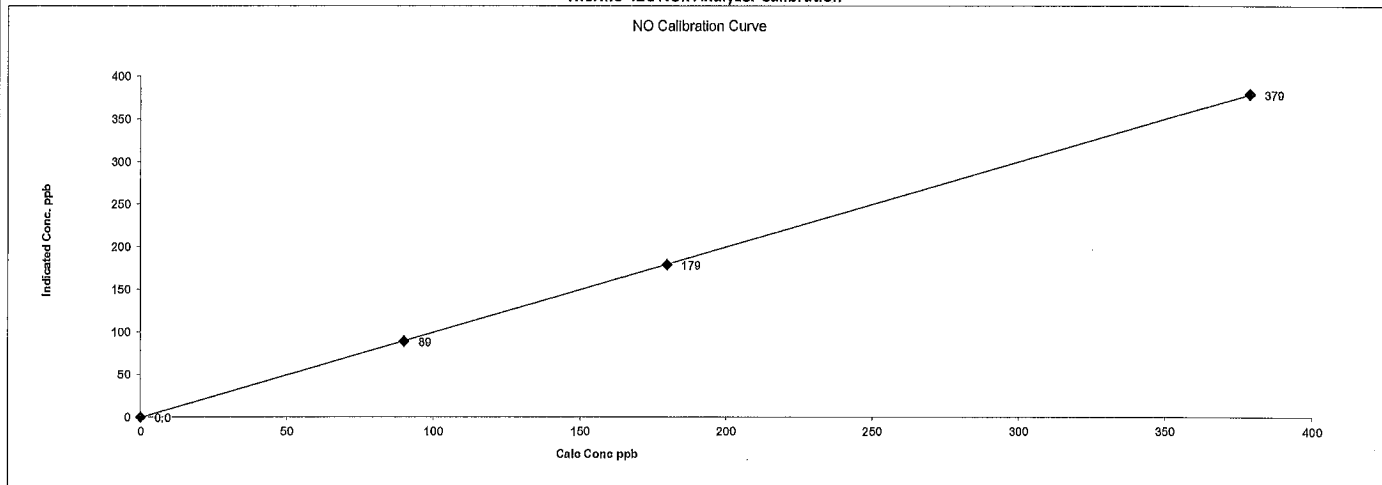
NO<sub>2</sub> adjustment not made.



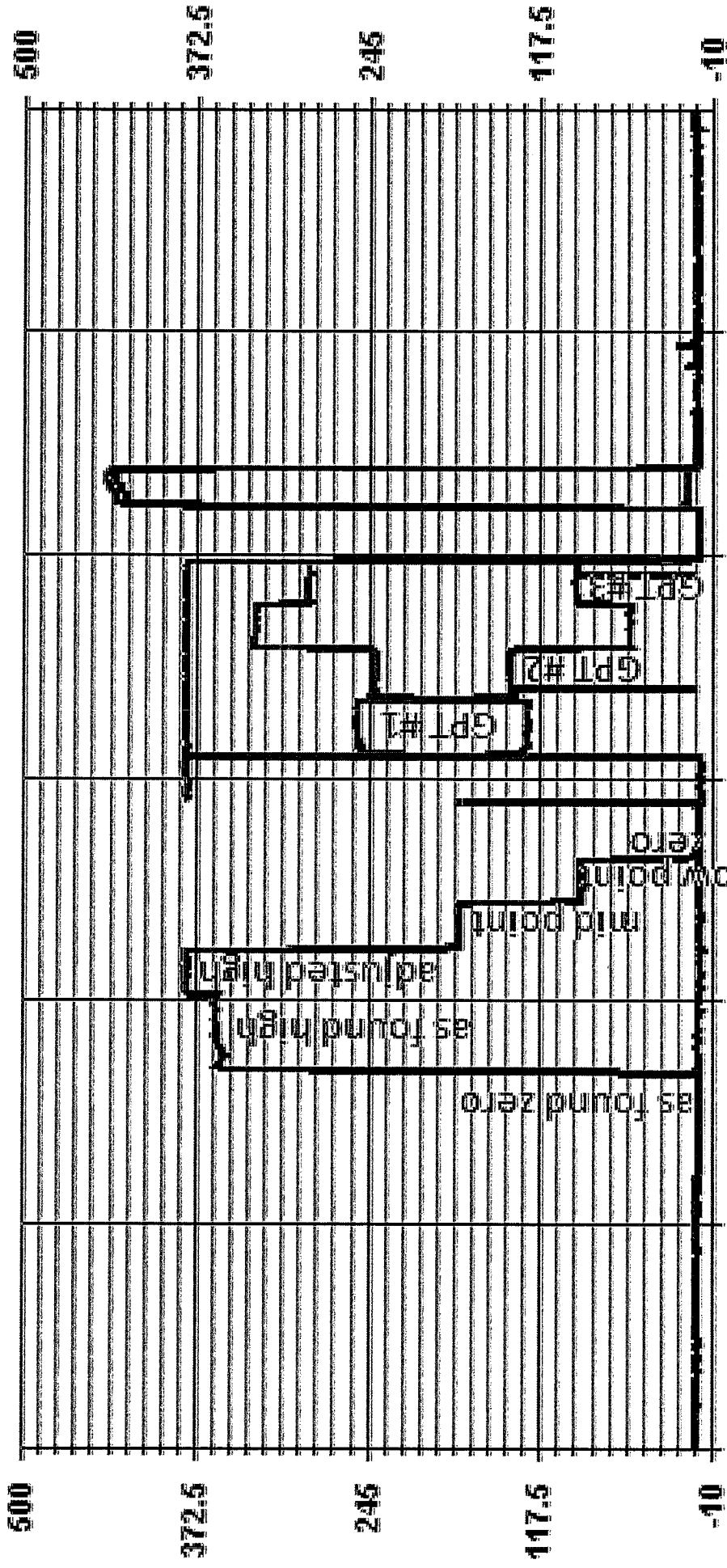
Date: 2-Jun-15  
Company: LICA  
Station Name/Location: Cold Lake South  
Performed by: Alex Yakupov

Start Time (mst): 8:13  
End Time (mst): 15:01  
Calibration Purpose: Monthly  
Cal Gas Expiry Date: 12-Mar-19

Thermo 42C NOx Analyzer Calibration



# 01 Minute Averages



— LICA NOX\_ PPB — LICA NO\_ PPB — LICA NO2\_ PPB

**OZONE**

## Maxxam Thermo 49i O<sub>3</sub> Analyzer Calibration

Date: <u>3-Jun-15</u> Company: <u>LICA</u> Station Name/Location: <u>Cold Lake South</u> Performed by: <u>Alex Yakupov</u>	Start Time (mst): <u>7:30</u> End Time (mst): <u>11:13</u> Calibration Purpose: <u>Monthly Calibration</u> G.P.T. Date: <u>5-May-15</u>
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Analyzer: Serial Number: <u>700419951</u> Last Calibration Date: <u>6-May-15</u> Previous Cal High Point C.F.: <u>1.000</u>	Range ppm: <u>500</u> As Found C.F.: <u>1.085</u> New C.F.: <u>0.992</u>
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**As found:**

Motherboard:

O<sub>3</sub> Bkg: 0.2  
 O<sub>3</sub> Coef: 0.952  
3.3 3.3  
15.0 15.1  
24.0 23.9  
-3.3 -3.2

Interface Board:

3.3 3.2  
5.0 4.9  
15.0 14.8  
-15.0 -14.8

Photo Lamp:

24.0 23.7  
9.0 9.0  
28.5 28.5  
53.5 53.5  
67.4 67.4  
703.8 703.8  
0.712 0.712  
0.750 0.750  
0.0 0.0  
18.5 18.5  
-18.5 -18.5  
59031 59031  
57370 57370  
259 259

**As left:**

O<sub>3</sub> Bkg: 0.3  
 O<sub>3</sub> Coef: 1.049  
3.3 3.3  
15.0 15.1  
24.0 23.9  
-3.3 -3.2

Photo Lamp:

3.3 3.2  
5.0 4.9  
15.0 14.8  
-15.0 -14.8

Photo Lamp:

24.0 23.7  
9.0 9.0  
29.0 29.0  
53.5 53.5  
67.5 67.5  
703.5 703.5  
0.712 0.712  
0.751 0.751  
0.1 0.1  
1.5 1.5  
-1.4 -1.4  
59108 59108  
57430 57430  
283 283

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Calibrator: Make & Model: <u>Envirotronics 6100</u> Serial #: <u>4760</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>O<sub>3</sub> setting (v or ppb)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>4995</td> <td>0</td> </tr> <tr> <td>high</td> <td>4995</td> <td>210</td> </tr> <tr> <td>mid</td> <td>4995</td> <td>120</td> </tr> <tr> <td>low</td> <td>4995</td> <td>80</td> </tr> </tbody> </table>	point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)	zero	4995	0	high	4995	210	mid	4995	120	low	4995	80
point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)														
zero	4995	0														
high	4995	210														
mid	4995	120														
low	4995	80														

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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	0.0	NA
as found high	4994	0.00	4994	254.0	234.0	1.085
adjusted high	4994	0.00	4994	254.0	254.0	1.000
mid	4994	0.00	4994	141.0	143.0	0.986
low	4994	0.00	4994	92.0	93.0	0.989
calibrator zero	4994	0.00	4994	0.0	0.0	NA

Average C.F. = 0.992

\*\*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	Pass/Fail ?
Slope =	<u>1.000</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>0.144%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-9%</u>	± 3% F.S.	PASS
		± 15%	PASS

---

Comments:

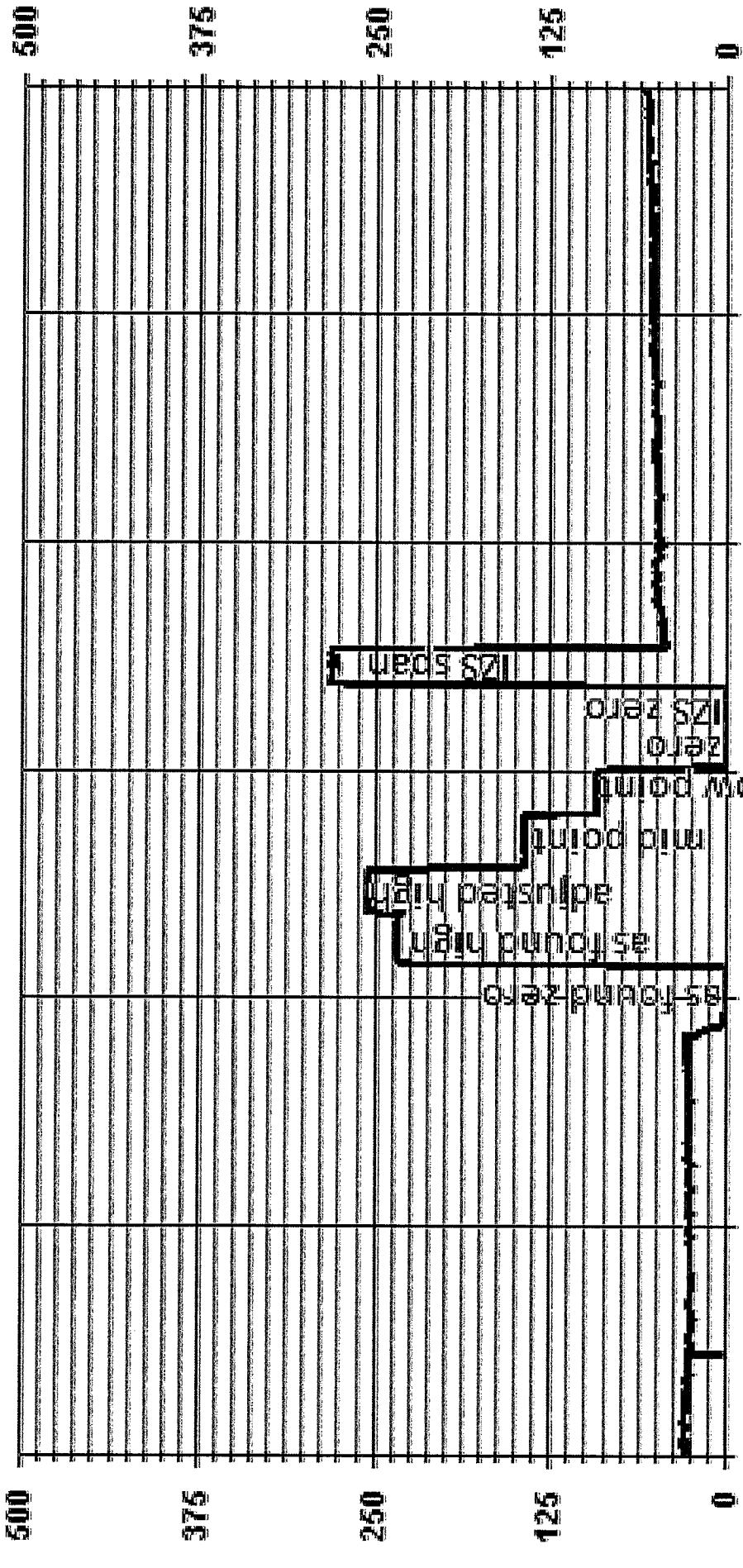
Filter changed. No Zero adjustments made

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**Thermo 49i O<sub>3</sub> Analyzer Calibration**

O<sub>3</sub> Calibration Curve

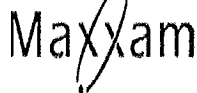
01 Minute Averages



06:03/15 04:05 06:03/15 06:05 06:03/15 08:05 06:03/15 10:05 06:03/15 12:05 06:03/15 14:05

— LICA 03\_ PPB

***PARTICULATE MATTER***



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 2-Jun-15  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: 21-May-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 14:17 - 15:42  
 Calibration Purpose: 1st Audit

**1400A Information and Status:**

Serial Number: 1405A201620804      As Found Filter Loading %: 33.70  
 Ko Factor: 14578      As Left Filter Loading %: 19.20  
 Ambient Temperature °C: 12.72      As Found Noise: 0.117  
 Ambient Pressure atm: 0.942      As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00      Pump Vacuum: 0.38  
 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	0.02	0.22	0.03	0.22
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.28	0.28	0.21	0.28
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.02	0.22	0.03	0.22
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.28	0.28	0.21	0.28
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**As found temperature and pressure:**

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>12.7</u>	1405F pressure atm: <u>0.942</u>
reference temperature °C: <u>18.0</u>	reference pressure: <u>0.941</u>
difference °C: <u>5.3</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>18.0</u>	1405F pressure atm: <u>0.941</u>
reference temperature °C: <u>18.0</u>	reference pressure: <u>0.941</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>3.07</u>	reference total/aux flow lpm: <u>16.98</u>
difference lpm: <u>0.07</u>	difference lpm: <u>0.31</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>2.99</u>	reference total/aux flow lpm: <u>16.64</u>
difference lpm: <u>-0.01</u>	difference lpm: <u>-0.03</u>

**K<sub>o</sub> Audit:**

Last K<sub>o</sub> audit date: 18-Mar-15  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: 14753.2000  
 % difference: 1.20

**Comments:**

Maintenance conducted (PM2.5 head cleaning)  
 FDMS external filter changed and PM2.5 TEOM sampling filter changed



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 19-Jun-15  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: 2-Jun-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 09:00 - 09:38  
 Calibration Purpose: 2nd Audit

**1400A Information and Status:**

Serial Number:	<u>1405A201620804</u>	As Found Filter Loading %:	<u>28.18</u>
Ko Factor:	<u>14578</u>	As Left Filter Loading %:	<u>26.14</u>
Ambient Temperature °C:	<u>19.51</u>	As Found Noise:	<u>0.007</u>
Ambient Pressure atm:	<u>0.937</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>
Callibration 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	0.26	0.01	0.24
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	0.55	0.10	0.39
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	-0.03	0.26	0.01	0.24
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	0.55	0.10	0.39
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**As found temperature and pressure:**

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>19.5</u>	1405F pressure atm:	<u>0.937</u>
reference temperature °C:	<u>19.4</u>	reference pressure:	<u>0.935</u>
difference °C:	<u>-0.1</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>19.4</u>	1405F pressure atm:	<u>0.935</u>
reference temperature °C:	<u>19.4</u>	reference pressure:	<u>0.935</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>2.99</u>	reference total/aux flow lpm:	<u>16.69</u>
difference lpm:	<u>-0.01</u>	difference lpm:	<u>0.02</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>2.99</u>	reference total/aux flow lpm:	<u>16.69</u>
difference lpm:	<u>-0.01</u>	difference lpm:	<u>0.02</u>

**K<sub>o</sub> Audit:**

Last K<sub>o</sub> audit date: 18-Mar-15  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: 14753.2000  
 % difference: 1.20

**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: AJZ 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

***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 <sub>2</sub> Cylinder Conc. <u>50.3</u>	Barometric Pressure <u>N/A</u>
SO <sub>2</sub> 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 (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)*

<u>SO<sub>2</sub></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 <sub>2</sub> Analyzer
<b>Audit Calibrator</b>	Make/Model <u>Teco 43C</u>
Make/Model <u>R&amp;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 <u>Maxxam</u>		Operator: <u>Limin Li</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>EnviroNics 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 <sub>2</sub>	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)*

<b>NO</b>		<b>LIMITS</b>		<b>NOx</b>
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 <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOx	% Diff, Vs Audit gas	
4993	0.000	0.000	0.823	-0.001	0.822	NO <sub>2</sub>	% 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%

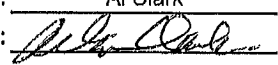
**LINEAR REGRESSION ANALYSIS** *y=mx+b (where x=calculated concentration, y=Indicated concentration)*

<b>NO<sub>2</sub></b>		<b>LIMITS</b>
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0006	0.90-1.10
b (Intercept % of FS)=	-0.0132	± 3% F.S.

<b>AENV Standards</b>	<b>NO<sub>x</sub> Analyzer</b>
<b>Audit Calibrator</b>	
Make/Model	<u>Teco 146i</u>
Serial/AMU Number	<u>AMU 1809</u>
	Make/Model
	<u>Teco 42i</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 Date: December 17, 2014

Operator Signature:  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: 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: Blos 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 (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.00000</del>	<del>0.00000</del>	<del>0.000</del>
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:					<b>48.0</b>

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. 2014-257CGA

Company: Maxxam Operator's Name: Llmln Ll  
Cylinder #: LL42475 Concentration PPM: 50.3 Tolerance(%): 1 Certified By: Alr Liquide

**Reference Calibrator and Gas:**

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

**Reference Analyzer:**

Make/Model: Teco 43C Serial/AMU Number: 1623  
Instrument Settings: Zero: 7.7 Span: 1.018 Range: 1.0  
Last Calibration: Date: Dec15/14 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.01019</del>	<del>98.157</del>	<del>49.3</del>
5114	52.1	0.502	0.01019	98.157	49.3
5093	22.3	0.214	0.00438	228.386	48.9
5073	10.9	0.105	0.00215	465.413	48.9
Average Cylinder Concentration:					49.0

Previous Stated Concentration PPM: 50.3

Percent variance from Stated: 2.6

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: McIntyre 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&amp;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>CAL015108</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	<del>0.00755</del>	<del>132.442</del>	<del>10.0</del>
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:					<b>9.9</b>

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: [Signature] Location: McIntyre Center Edmonton



Praxair Canada, Inc.  
 9501-34th Street  
 Edmonton, AB T6B 2X8  
 Tel: 780-449-0778  
 Fax: 780-449-5302

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	800.0ppm	801.4ppm	U	±1% rel
Propane	200.0ppm	202ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler-Toledo Analytical Balance--ID2ex/USA--  
 Hewlett-Packard (Agilent)-6690--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 Hryniw

The gas cylinder standard prepared by Praxair Canada, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure methods. The cylinder standard is used to certify against Praxair Canada, Inc. Reference Materials which are either prepared by methods traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials which are available.

Note: All concentrations for concentration (in µ, % or ppm) are for gas phase, by volume (v/v), unless otherwise noted.

Key to Analytical Methods:			
A: Gas Analysis with Methane	B: Gas Chromatography with Carbide Detector	C: Gas Chromatography with Electrode Conductivity Detector	D: Gas Chromatography with Flame Ionization Detector
E: Gas Chromatography with Flame Photometric Detector	F: Gas Chromatography with Thermal Conductivity Detector	G: Gas Chromatography with Methanoferric Chloride	H: Gas Chromatography with Photoacoustic Detector
I: Gas Chromatography with Redox Gas Analyzer	J: Gas Chromatography with Thermal Conductivity Detector	K: Binary Gas Analyzer with Thermal Conductivity Detector	L: Infrared - FTIR or MPA
M: Mass Spectrometry - MS or GC/MS	N: By Difference of Typical Analytes	O: Paramagnetic	P: Specific Water Analytes
Q: Trace Hydrocarbon Analysis	R: PPM Control	S: Heffeler Tube	T: Total
U: Stray Gas Monitor	V: Electrochemical	W: Gas Chromatography with Chemiresistive 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 within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any 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. arise out of the use of the information contained herein, except the fee established for providing such information.



# Calibration Gas Audit

## NO Cylinder Gas

File No. 2016-346CGA

**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 DC2</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	<del>0.01660</del>	<del>60.242</del>	<del>51.5</del>	<del>51.1</del>
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
<b>Average Cylinder Concentration:</b>						<b>52.0</b>	<b>51.3</b>

<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

***APPENDIX IV***  
***ANALYTICAL RESULTS***

***VOCS SAMPLES***

<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 5, 2015</p> <p><b>CANISTER ID:</b> 15755</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	13-Jun-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Jun-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	13-Jun-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jun-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jun-15
1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	13-Jun-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jun-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	13-Jun-15
2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	13-Jun-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
2,3-Dimethylpentane	I	0.04	ppbv	0.02	AC-058	13-Jun-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-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

**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:** 15060152-001

**MATRIX:** Ambient Air

**CLIENT SAMPLE ID:** LICA/VOC/CLS/June 5, 2015

**CANISTER ID:** 15755

**DESCRIPTION:** CLS

**DATE SAMPLED:** 05-Jun-15 0:00

**DATE RECEIVED:** 12-Jun-15

**REPORT CREATED:** 16-Jul-15

**REPORT VERSION:** Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.01	ppbv	0.01	AC-058	13-Jun-15
2-Methylhexane	I	0.03	ppbv	0.01	AC-058	13-Jun-15
2-Methylpentane	I	0.14	ppbv	0.01	AC-058	13-Jun-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
3-Methylhexane	I	0.03	ppbv	0.02	AC-058	13-Jun-15
3-Methylpentane	I	0.07	ppbv	0.01	AC-058	13-Jun-15
Acetone		7.0	ppbv	0.4	AC-058	13-Jun-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jun-15
Benzene	I	0.07	ppbv	0.01	AC-058	13-Jun-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	13-Jun-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Chloroform	I	0.04	ppbv	0.02	AC-058	13-Jun-15
Chloromethane		0.69	ppbv	0.02	AC-058	13-Jun-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Cyclohexane	I	0.05	ppbv	0.02	AC-058	13-Jun-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-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

<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060152-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 5, 2015  <b>CANISTER ID:</b> 15755  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 05-Jun-15 0:00  <b>DATE RECEIVED:</b> 12-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.9	ppbv	0.3	AC-058	13-Jun-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Ethylbenzene	I	0.03	ppbv	0.01	AC-058	13-Jun-15
Freon-11	I	0.29	ppbv	0.02	AC-058	13-Jun-15
Freon-113	I	0.07	ppbv	0.01	AC-058	13-Jun-15
Freon-114	I	0.02	ppbv	0.02	AC-058	13-Jun-15
Freon-12		0.61	ppbv	0.02	AC-058	13-Jun-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	13-Jun-15
Isobutane		0.44	ppbv	0.02	AC-058	13-Jun-15
Isopentane		0.54	ppbv	0.03	AC-058	13-Jun-15
Isoprene		0.83	ppbv	0.01	AC-058	13-Jun-15
Isopropyl alcohol		1.0	ppbv	0.4	AC-058	13-Jun-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
m,p-Xylene	I	0.08	ppbv	0.03	AC-058	13-Jun-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	13-Jun-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	13-Jun-15
Methyl ethyl ketone		0.6	ppbv	0.3	AC-058	13-Jun-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Jun-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jun-15
Methylcyclohexane	I	0.04	ppbv	0.01	AC-058	13-Jun-15
Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	13-Jun-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jun-15
n-Butane		1.19	ppbv	0.03	AC-058	13-Jun-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jun-15

<b>Qualifiers</b> 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 5, 2015</p> <p><b>CANISTER ID:</b> 15755</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	13-Jun-15
n-Heptane	I	0.05 ppbv	0.01	AC-058	13-Jun-15
n-Hexane	I	0.11 ppbv	0.01	AC-058	13-Jun-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	13-Jun-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	13-Jun-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	13-Jun-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	13-Jun-15
n-Nonane	I	0.01 ppbv	0.01	AC-058	13-Jun-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15
o-Xylene	I	0.04 ppbv	0.01	AC-058	13-Jun-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	13-Jun-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	13-Jun-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	13-Jun-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	13-Jun-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	13-Jun-15
Toluene	I	0.12 ppbv	0.01	AC-058	13-Jun-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	13-Jun-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	13-Jun-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	13-Jun-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060265-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 11, 2015  <b>CANISTER ID:</b> 14708  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 11-Jun-15 0:00  <b>DATE RECEIVED:</b> 19-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> 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	22-Jun-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
1,2,3-Trimethylbenzene	I	0.18	ppbv	0.05	AC-058	22-Jun-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	22-Jun-15
1,2,4-Trimethylbenzene	I	0.27	ppbv	0.03	AC-058	22-Jun-15
1,2-Dibromoethane	I	0.03	ppbv	0.02	AC-058	22-Jun-15
1,2-Dichlorobenzene	I	0.06	ppbv	0.03	AC-058	22-Jun-15
1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	22-Jun-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
1,3,5-Trimethylbenzene	I	0.08	ppbv	0.02	AC-058	22-Jun-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
1-Butene	I	0.27	ppbv	0.02	AC-058	22-Jun-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15

<b>Qualifiers</b> 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 11, 2015</p> <p><b>CANISTER ID:</b> 14708</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	22-Jun-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2-Methylpentane	I	0.04	ppbv	0.01	AC-058	22-Jun-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
3-Methylhexane	I	0.06	ppbv	0.02	AC-058	22-Jun-15
3-Methylpentane	I	0.03	ppbv	0.01	AC-058	22-Jun-15
Acetone		9.9	ppbv	0.4	AC-058	22-Jun-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-15
Benzene	I	0.04	ppbv	0.01	AC-058	22-Jun-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Bromoform	I	0.03	ppbv	0.02	AC-058	22-Jun-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
Carbon disulfide		0.64	ppbv	0.01	AC-058	22-Jun-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	22-Jun-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Chloroform	I	0.02	ppbv	0.02	AC-058	22-Jun-15
Chloromethane		0.60	ppbv	0.02	AC-058	22-Jun-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
cis-2-Butene	I	0.06	ppbv	0.02	AC-058	22-Jun-15
cis-2-Pentene	I	0.03	ppbv	0.02	AC-058	22-Jun-15
Cyclohexane	I	0.20	ppbv	0.02	AC-058	22-Jun-15
Cyclopentane	I	0.02	ppbv	0.01	AC-058	22-Jun-15
Dibromochloromethane	I	0.01	ppbv	0.01	AC-058	22-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060265-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 11, 2015  <b>CANISTER ID:</b> 14708  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 11-Jun-15 0:00 <b>DATE RECEIVED:</b> 19-Jun-15 <b>REPORT CREATED:</b> 16-Jul-15 <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		2.0	ppbv	0.3	AC-058	22-Jun-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Ethylbenzene	I	0.14	ppbv	0.01	AC-058	22-Jun-15
Freon-11	I	0.28	ppbv	0.02	AC-058	22-Jun-15
Freon-113	I	0.05	ppbv	0.01	AC-058	22-Jun-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Freon-12		0.56	ppbv	0.02	AC-058	22-Jun-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	22-Jun-15
Isobutane	I	0.12	ppbv	0.02	AC-058	22-Jun-15
Isopentane	I	0.14	ppbv	0.03	AC-058	22-Jun-15
Isoprene		0.82	ppbv	0.01	AC-058	22-Jun-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
m,p-Xylene		0.36	ppbv	0.03	AC-058	22-Jun-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
m-Ethyltoluene	I	0.13	ppbv	0.08	AC-058	22-Jun-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	22-Jun-15
Methyl ethyl ketone		1.0	ppbv	0.3	AC-058	22-Jun-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	22-Jun-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	22-Jun-15
Methylcyclohexane	I	0.19	ppbv	0.01	AC-058	22-Jun-15
Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	22-Jun-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-15
n-Butane	I	0.23	ppbv	0.03	AC-058	22-Jun-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	22-Jun-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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 11, 2015</p> <p><b>CANISTER ID:</b> 14708</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane		1.6	ppbv	0.4	AC-058	22-Jun-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	22-Jun-15
n-Propylbenzene	I	0.06	ppbv	0.05	AC-058	22-Jun-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	22-Jun-15
Naphthalene		6.5	ppbv	0.5	AC-058	22-Jun-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
o-Ethyltoluene	I	0.10	ppbv	0.01	AC-058	22-Jun-15
o-Xylene	I	0.15	ppbv	0.01	AC-058	22-Jun-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
p-Ethyltoluene	I	0.09	ppbv	0.07	AC-058	22-Jun-15
Styrene	I	0.06	ppbv	0.04	AC-058	22-Jun-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Toluene		1.14	ppbv	0.01	AC-058	22-Jun-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
trans-2-Butene	I	0.11	ppbv	0.01	AC-058	22-Jun-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 17, 2015  <b>CANISTER ID:</b> S5625  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 17-Jun-15 0:00  <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> 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	02-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	02-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	02-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	02-Jul-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	02-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	02-Jul-15
1,2-Dichloroethane	I	0.01 ppbv	0.01	AC-058	02-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	02-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	02-Jul-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	02-Jul-15
1-Butene	I	0.04 ppbv	0.02	AC-058	02-Jul-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
2,2,4-Trimethylpentane	I	0.03 ppbv	0.01	AC-058	02-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
2,3,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15

<b>Qualifiers</b> I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 17, 2015</p> <p><b>CANISTER ID:</b> S5625</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2-Methylpentane	I	0.05	ppbv	0.01	AC-058	02-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
3-Methylpentane	I	0.03	ppbv	0.01	AC-058	02-Jul-15
Acetone		2.4	ppbv	0.4	AC-058	02-Jul-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
Benzene	I	0.02	ppbv	0.01	AC-058	02-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Carbon tetrachloride	I	0.08	ppbv	0.01	AC-058	02-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloromethane		0.43	ppbv	0.02	AC-058	02-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 17, 2015  <b>CANISTER ID:</b> S5625  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 17-Jun-15 0:00  <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.0	ppbv	0.3	AC-058	02-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Ethylbenzene	I	0.02	ppbv	0.01	AC-058	02-Jul-15
Freon-11	I	0.19	ppbv	0.02	AC-058	02-Jul-15
Freon-113	I	0.04	ppbv	0.01	AC-058	02-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Freon-12		0.52	ppbv	0.02	AC-058	02-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Isobutane	I	0.12	ppbv	0.02	AC-058	02-Jul-15
Isopentane	I	0.22	ppbv	0.03	AC-058	02-Jul-15
Isoprene	I	0.16	ppbv	0.01	AC-058	02-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
m,p-Xylene	I	0.05	ppbv	0.03	AC-058	02-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	02-Jul-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
Methylcyclohexane	I	0.03	ppbv	0.01	AC-058	02-Jul-15
Methylcyclopentane	I	0.03	ppbv	0.02	AC-058	02-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
n-Butane	I	0.21	ppbv	0.03	AC-058	02-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	02-Jul-15

**Qualifiers**

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

**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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 17, 2015</p> <p><b>CANISTER ID:</b> S5625</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
n-Hexane	I	0.04 ppbv	0.01	AC-058	02-Jul-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	02-Jul-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	02-Jul-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	02-Jul-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	02-Jul-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
o-Xylene	I	0.02 ppbv	0.01	AC-058	02-Jul-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	02-Jul-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	02-Jul-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	02-Jul-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	02-Jul-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	02-Jul-15
Toluene	I	0.07 ppbv	0.01	AC-058	02-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	02-Jul-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	02-Jul-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	02-Jul-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-006</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 23, 2015</p> <p><b>CANISTER ID:</b> 2655</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	02-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	02-Jul-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
1,2-Dichloroethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1-Butene	I	0.10	ppbv	0.02	AC-058	02-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2,2,4-Trimethylpentane	I	0.04	ppbv	0.01	AC-058	02-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2,3,4-Trimethylpentane	I	0.01	ppbv	0.01	AC-058	02-Jul-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15

**Qualifiers**

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

**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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-006</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 23, 2015</p> <p><b>CANISTER ID:</b> 2655</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2-Methylpentane	I	0.06	ppbv	0.01	AC-058	02-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
3-Methylhexane	I	0.03	ppbv	0.02	AC-058	02-Jul-15
3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Acetone		4.3	ppbv	0.4	AC-058	02-Jul-15
Acrolein		0.7	ppbv	0.3	AC-058	02-Jul-15
Benzene	I	0.04	ppbv	0.01	AC-058	02-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Carbon disulfide		0.59	ppbv	0.01	AC-058	02-Jul-15
Carbon tetrachloride	I	0.08	ppbv	0.01	AC-058	02-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloroform	I	0.02	ppbv	0.02	AC-058	02-Jul-15
Chloromethane		0.43	ppbv	0.02	AC-058	02-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Cyclohexane	I	0.07	ppbv	0.02	AC-058	02-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-006  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 23, 2015  <b>CANISTER ID:</b> 2655  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 23-Jun-15 0:00 <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15 <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.3	ppbv	0.3	AC-058	02-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Ethylbenzene	I	0.03	ppbv	0.01	AC-058	02-Jul-15
Freon-11	I	0.19	ppbv	0.02	AC-058	02-Jul-15
Freon-113	I	0.04	ppbv	0.01	AC-058	02-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Freon-12		0.52	ppbv	0.02	AC-058	02-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Isobutane	I	0.19	ppbv	0.02	AC-058	02-Jul-15
Isopentane	I	0.26	ppbv	0.03	AC-058	02-Jul-15
Isoprene		1.11	ppbv	0.01	AC-058	02-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
m,p-Xylene	I	0.12	ppbv	0.03	AC-058	02-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	02-Jul-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Methyl ethyl ketone		0.5	ppbv	0.3	AC-058	02-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
Methylcyclohexane	I	0.08	ppbv	0.01	AC-058	02-Jul-15
Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	02-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
n-Butane		0.35	ppbv	0.03	AC-058	02-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	02-Jul-15

**Qualifiers**

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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-006</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 23, 2015</p> <p><b>CANISTER ID:</b> 2655</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
n-Hexane	I	0.06	ppbv	0.01	AC-058	02-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	02-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	02-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	02-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	02-Jul-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
o-Xylene	I	0.04	ppbv	0.01	AC-058	02-Jul-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Toluene	I	0.18	ppbv	0.01	AC-058	02-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-007</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 23, 2015</p> <p><b>CANISTER ID:</b> 9801</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.07	ug/PUF	0.01	NA-017	08-Jul-15
2-Methylnaphthalene		0.13	ug/PUF	0.01	NA-017	08-Jul-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Acridine	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Chrysene		0.01	ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Fluoranthene		0.06	ug/PUF	0.01	NA-017	08-Jul-15
Fluorene		0.08	ug/PUF	0.01	NA-017	08-Jul-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Naphthalene		0.09	ug/PUF	0.01	NA-017	08-Jul-15
Perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	08-Jul-15
Phenanthrene		0.35	ug/PUF	0.01	NA-017	08-Jul-15
Pyrene		0.06	ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b>    15060384-007</p> <p><b>MATRIX:</b>    Air Filter</p> <p><b>CLIENT SAMPLE ID:</b>            LICA/PUF/CLS/June 23, 2015</p> <p><b>CANISTER ID:</b>                    9801</p> <p><b>DESCRIPTION:</b>    CLS</p> <p><b>DATE SAMPLED:</b>    23-Jun-15    0:00</p> <p><b>DATE RECEIVED:</b>    25-Jun-15</p> <p><b>REPORT CREATED:</b>    16-Jul-15</p> <p><b>REPORT VERSION:</b>    Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.02 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 29, 2015</p> <p><b>CANISTER ID:</b> 1678</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> 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	I	0.05	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	0.02	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	0.07	ppbv	0.01	AC-058	10-Jul-15
2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	10-Jul-15
2,3,4-Trimethylpentane	I	0.03	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	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 29, 2015</p> <p><b>CANISTER ID:</b> 1678</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> 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	0.16	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	0.09	ppbv	0.02	AC-058	10-Jul-15
3-Methylpentane	I	0.09	ppbv	0.01	AC-058	10-Jul-15
Acetone		7.5	ppbv	0.4	AC-058	10-Jul-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Jul-15
Benzene		0.37	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		1.26	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	I	0.03	ppbv	0.02	AC-058	10-Jul-15
Chloromethane		0.66	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><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15070024-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 29, 2015  <b>CANISTER ID:</b> 1678  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 29-Jun-15 0:00  <b>DATE RECEIVED:</b> 07-Jul-15  <b>REPORT CREATED:</b> 28-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		2.0	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	0.05	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		0.37	ppbv	0.02	AC-058	10-Jul-15
Isopentane		0.59	ppbv	0.03	AC-058	10-Jul-15
Isoprene		4.54	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	0.15	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		0.9	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	0.14	ppbv	0.01	AC-058	10-Jul-15
Methylcyclopentane	I	0.11	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		0.81	ppbv	0.03	AC-058	10-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Jul-15

<b>Qualifiers</b> 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/June 29, 2015</p> <p><b>CANISTER ID:</b> 1678</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> 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	0.16	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	0.02	ppbv	0.01	AC-058	10-Jul-15
o-Xylene	I	0.06	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	I	0.05	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		0.35	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

**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

***PAHS SAMPLES***

<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060152-002  <b>MATRIX:</b> Air Filter  <b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 5, 2015  <b>CANISTER ID:</b> TE08  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 05-Jun-15 0:00  <b>DATE RECEIVED:</b> 12-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.24 ug/PUF	0.01	NA-017	30-Jun-15
2-Methylnaphthalene		0.47 ug/PUF	0.01	NA-017	30-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Anthracene		0.02 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Chrysene		0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Fluoranthene		0.04 ug/PUF	0.01	NA-017	30-Jun-15
Fluorene		0.07 ug/PUF	0.01	NA-017	30-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Naphthalene		0.23 ug/PUF	0.01	NA-017	30-Jun-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Phenanthrene		0.30 ug/PUF	0.01	NA-017	30-Jun-15
Pyrene		0.03 ug/PUF	0.01	NA-017	30-Jun-15

<b>Qualifiers</b> 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-002</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 5, 2015</p> <p><b>CANISTER ID:</b> TE08</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.03 ug/PUF	0.01	NA-017	30-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-002</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 11, 2015</p> <p><b>CANISTER ID:</b> TE-07</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.02	ug/PUF	0.01	NA-017	30-Jun-15
2-Methylnaphthalene		0.04	ug/PUF	0.01	NA-017	30-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Acridine	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Anthracene		0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Chrysene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Fluoranthene		0.02	ug/PUF	0.01	NA-017	30-Jun-15
Fluorene		0.04	ug/PUF	0.01	NA-017	30-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Naphthalene		0.03	ug/PUF	0.01	NA-017	30-Jun-15
Perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Phenanthrene		0.16	ug/PUF	0.01	NA-017	30-Jun-15
Pyrene		0.02	ug/PUF	0.01	NA-017	30-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-002</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 11, 2015</p> <p><b>CANISTER ID:</b> TE-07</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.03 ug/PUF	0.01	NA-017	30-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 17, 2015</p> <p><b>CANISTER ID:</b> TE-09</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.06 ug/PUF	0.01	NA-017	08-Jul-15
2-Methylnaphthalene		0.10 ug/PUF	0.01	NA-017	08-Jul-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Chrysene		0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Fluoranthene		0.03 ug/PUF	0.01	NA-017	08-Jul-15
Fluorene		0.05 ug/PUF	0.01	NA-017	08-Jul-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Naphthalene		0.03 ug/PUF	0.01	NA-017	08-Jul-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Phenanthrene		0.18 ug/PUF	0.01	NA-017	08-Jul-15
Pyrene		0.03 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 17, 2015</p> <p><b>CANISTER ID:</b> TE-09</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.02 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-007</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 23, 2015</p> <p><b>CANISTER ID:</b> 9801</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.07 ug/PUF	0.01	NA-017	08-Jul-15
2-Methylnaphthalene		0.13 ug/PUF	0.01	NA-017	08-Jul-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Chrysene		0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Fluoranthene		0.06 ug/PUF	0.01	NA-017	08-Jul-15
Fluorene		0.08 ug/PUF	0.01	NA-017	08-Jul-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Naphthalene		0.09 ug/PUF	0.01	NA-017	08-Jul-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Phenanthrene		0.35 ug/PUF	0.01	NA-017	08-Jul-15
Pyrene		0.06 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-007</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 23, 2015</p> <p><b>CANISTER ID:</b> 9801</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Retene		0.02	ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 29, 2015</p> <p><b>CANISTER ID:</b> TE-11</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.18 ug/PUF	0.01	NA-017	08-Jul-15
2-Methylnaphthalene		0.33 ug/PUF	0.01	NA-017	08-Jul-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Anthracene		0.03 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Chrysene		0.02 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Fluoranthene		0.12 ug/PUF	0.01	NA-017	08-Jul-15
Fluorene		0.15 ug/PUF	0.01	NA-017	08-Jul-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Naphthalene		0.06 ug/PUF	0.01	NA-017	08-Jul-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Phenanthrene		0.97 ug/PUF	0.01	NA-017	08-Jul-15
Pyrene		0.05 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/June 29, 2015</p> <p><b>CANISTER ID:</b> TE-11</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.57 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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***PARTISOL SAMPLES***

<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Mike Bisaga                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060153-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA P4143631</p> <p><b>CANISTER ID:</b></p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 07-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.146 mg	0.004	AC-029	18-Jun-15

<p><u>Qualifiers</u></p>	<p><b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Mike Bisaga                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060264-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA P4131701</p> <p><b>CANISTER ID:</b></p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 30-Jun-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.116 mg	0.004	AC-029	22-Jun-15

<p><u>Qualifiers</u></p>	<p><b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Mike Bisaga                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060385-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA P4148567</p> <p><b>CANISTER ID:</b></p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 07-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.063 mg	0.004	AC-029	06-Jul-15

<p><u>Qualifiers</u></p>	<p><b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB                      T2E 6P8</p> <p><b>INVOICE TO:</b> Mike Bisaga                      780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB                      T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060385-002</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA P4148568</p> <p><b>CANISTER ID:</b></p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 07-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.098 mg	0.004	AC-029	06-Jul-15

<p><b>Qualifiers</b></p>	<p><b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> 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:**

Mike Bisaga 780 812-2182  
PO Box 8237  
5107W-50 St  
Bonnyville  
AB T9N 2J5

**LABORATORY SAMPLE ID:** 15070023-001

**MATRIX:** Air Filter

**CLIENT SAMPLE ID:** LICA Filter # P4148571

**CANISTER ID:**

**DESCRIPTION:** CLS

**DATE SAMPLED:** 29-Jun-15 0:00

**DATE RECEIVED:** 07-Jul-15

**REPORT CREATED:** 10-Jul-15

**REPORT VERSION:** Version 02

**REPORT REVISED:** 13-Jul-15

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		1.07 mg	0.004	AC-029	09-Jul-15

Qualifiers

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

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

***APPENDIX V***  
***CHAIN OF CUSTODY***



# Maxxam Analytics - Air Services Group

## Project Chain of Custody

Client: Lakeland Industry & Community Association  
Site: Cold Lake South Site

Project #: 2833-2015-06-01- C  
Contact: Mike Bisaga

QA Check Complete msdmbg Date 29 - July - 2015

QA Check Review msdmbg Date 29 - July - 2015

Report Complete msdmbg Date 31 - July - 2015

Report Reviewed [Signature] Date 3 - Aug - 15

Report Shipped \_\_\_\_\_ Date \_\_\_\_\_

Notes

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

**JOB #:2833-2015-06-30- C**

**JUNE 2015**

Prepared for:

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

**Attention: MIKE BISAGA**

DATE: **July 7, 2015**

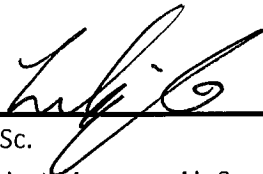
Prepared by:



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 JUNE 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: Hourly maximum data collected on June 21 hour 15 was invalidated as the analyzers were recovering from a power outage. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.

WS: Three hourly maximum data collected on June 16 hour 15 and hour 16 and on June 25 hour 16 were invalidated due to spikes. Reason unknown.

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	8	8, 15	20, 7	6.1 2.1	WNW NW	1.7	29	99.9	
H2S (PPB)	10	3	0	0	0	8	4	1	0.8	NNE	0.8	3, 4	99.9	
THC (PPM)	-	-	-	-	2.1	5.3	4	1	0.8	NNE	2.4	29	99.9	
NO2 (PPB)	159	-	0	-	2.3	16	8	20	6.1	WNW	3.9	VAR	99.9	
NO (PPB)	-	-	-	-	0.5	12.1	23	6	1.1	SW	1.5	1	99.9	
NOX (PPB)	-	-	-	-	2.8	24.1	15	6	2.8	WNW	4.8	9	99.9	
RELATIVE HUMIDITY (%)	-	-	-	-	62.1	94	23, 26	VAR	VAR	VAR	83.0	13	99.9	
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	942	951	15	VAR	VAR	VAR	948	15	99.9	
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	15.9	32.5	28	13	7.1	WNW	23.0	28	99.9	
PRECIPITATION (MM)	-	-	-	-	0.1	7.4	13	1	4.1	WNW	0.5	13	99.9	
VECTOR WS (KPH)	-	-	-	-	4.5	13.9	8	16	-	WNW	6.8	8	99.9	
VECTOR WD (DEG)	-	-	-	-	W	-	-	-	-	-	-	-	99.9	

NA-NOT AVAILABLE VAR-VARIOUS

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## Exceedence Summary Report

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SO<sub>2</sub> 1- Hour Exceedences

**No Exceedences Recorded During the Month**

SO<sub>2</sub> 24- Hour Exceedences

**No Exceedences Recorded During the Month**

H<sub>2</sub>S 1- Hour Exceedences

**No Exceedences Recorded During the Month**

H<sub>2</sub>S 24- Hour Exceedences

**No Exceedences Recorded During the Month**

NO<sub>2</sub> 1- Hour Exceedences

**No Exceedences Recorded During the Month**

**TABLE OF CONTENTS**

<u>Title</u>	<u>Page</u>
<b>1.0 Discussion</b>	<b>3</b>
<b>2.0 Project Personnel</b>	<b>5</b>
<b>3.0 Plant Monthly Required AMD Summary</b>	<b>5</b>
<b>4.0 Calculations and Results</b>	<b>5</b>
<b>5.0 Methods and Procedures</b>	<b>6</b>
<b>Appendix I</b>	<b>Continuous Monitoring Data Results</b>
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Wind Speed
	Wind Direction
	Standard Deviation Wind Direction
	Relative Humidity
	Barometric Pressure
	Ambient Temperature
	Precipitation
<b>Appendix II</b>	<b>Analyzer Calibration Results</b>
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Nitrogen Dioxide
	Wind System
	Calibrators
	Calibration Gases
<b>Appendix III</b>	<b>Chain of Custody</b>

## 1.0 Discussion

This monthly report consists of data for parameters SO<sub>2</sub>, H<sub>2</sub>S, THC, NO<sub>x</sub>, NO, NO<sub>2</sub>, WS, WD, RH, BP, Precipitation and 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 June 16.

### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 16. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 hour 15 was invalidated as the analyzer was recovering from a power outage.

### **HYDROGEN SULPHIDE (H<sub>2</sub>S)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 16. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 hour 15 was invalidated as the analyzer was recovering from a power outage.

### **TOTAL HYDROCARBONS (THC)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 16. The CH<sub>4</sub> cylinder was replaced on the same day. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 hour 15 was invalidated as the analyzer was recovering from a power outage.

### **NITROGEN DIOXIDE (NO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 16. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 hour 15 was invalidated as the analyzer was recovering from a power outage.

### **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.

3 hourly maximum data collected on June 16 hour 15 and hour 16 and on June 25 hour 16 were invalidated due to spikes. Reason unknown. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 hour 15 was invalidated as the analyzer was recovering from a power outage.

### **RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.

### **BAROMETRIC PRESSURE (BP)**

The pressure sensor was working well throughout the month. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.

### **PRECIPITATION**

The rain gauge system was working well throughout the month. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.

### **AMBIENT TEMPERATURE (TPX)**

The temperature sensor was working well throughout the month. Hourly data collected on June 29 hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.

## **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.

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 H<sub>2</sub>S Monitoring
- Maxxam AIR SOP-00211: Ambient SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> 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	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 MAX	PPB																								
HOURLY AVG	PPB																								
1	1	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	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	1	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	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	0	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	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	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
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
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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	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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
HOURLY MAX	2	2	2	2	3	5	6	8	5	3	3	3	3	3	2	5	4	2	3	7	7	8	7	2	2
HOURLY AVG	0.4	0.5	0.5	0.5	0.9	1.3	1.9	1.4	1.1	1.1	0.9	0.9	0.8	0.8	1.1	0.6	0.8	1.1	1.1	1.0	1.0	0.8	0.6	0.5	
DAILY MAX	5																								
DAILY AVG	1.5																								

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

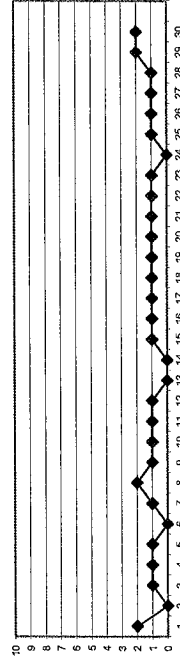
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 12-PPB 172-PPB 22-PPB 48-PPB

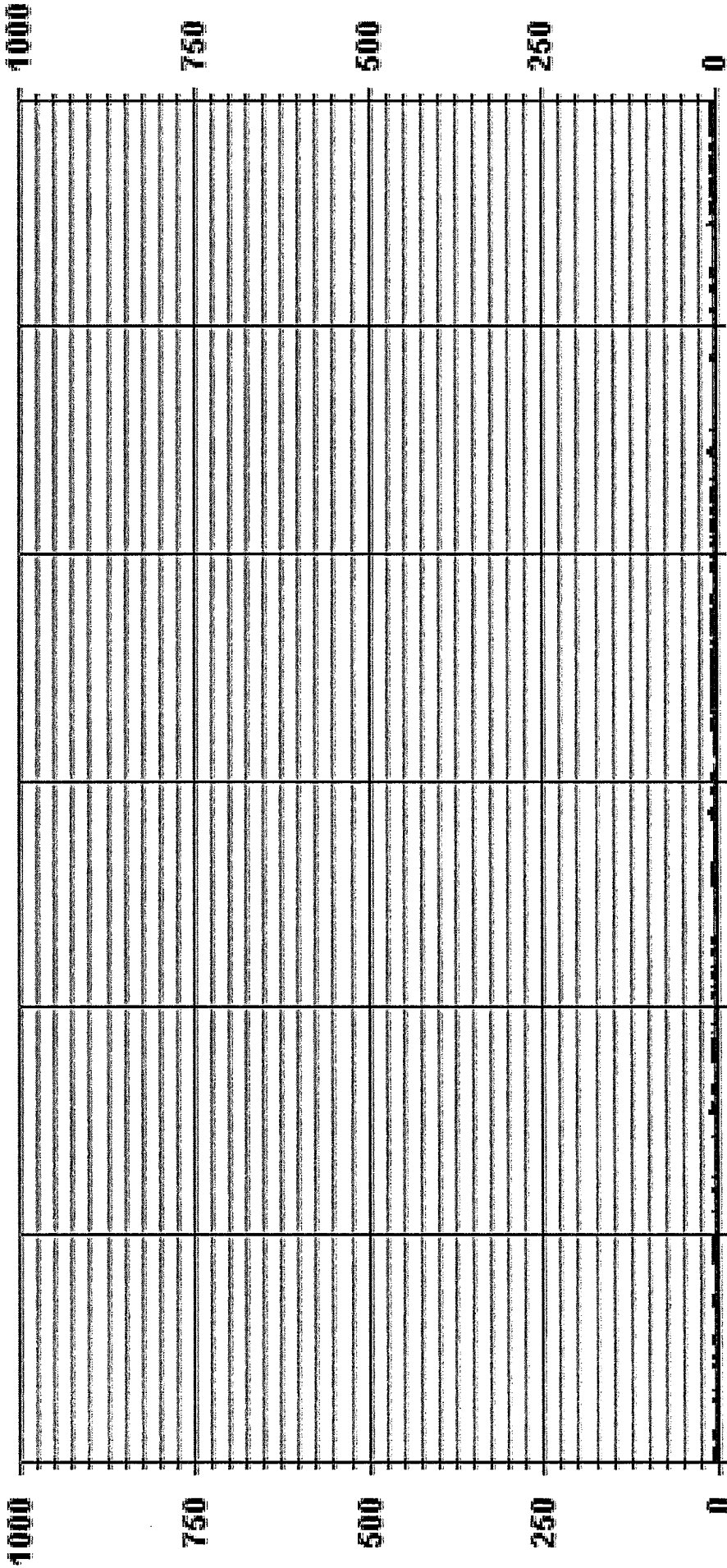
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES	0
NUMBER OF 24-HR EXCEEDENCES	0
NUMBER OF NON-ZERO READINGS	385
MAXIMUM 1-HR AVERAGE	8 PPB @ HOUR(S)
MAXIMUM 24-HR AVERAGE	1.7 PPB
24-HR CALIBRATION TIME	31 HRS
MONTHLY CALIBRATION TIME	5 HRS
STANDARD DEVIATION	1.14
OPERATIONAL TIME	719 HRS
AMTD OPERATION UPTIME	99.9 %
MONTHLY AVERAGE	1 PPB
ON DAY(S)	8, 15
ON DAY(S) VAR-VARIOUS	29

24 HOUR AVERAGES FOR JUNE 2015

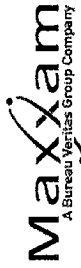


01 Hour Averages



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

— LICA30 SO2\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 Maskwa Site - JUNE 2015  
 JOB # 2833-2015-06-30-C

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	DAILY MAX.	24-HOUR AVG.	RDSS.	
DAY	1	1	1	1	1	2	5	4	4	4	3	2	5	11	12	5	9	7	13	4	1	1	1	1	1	13	4.1	24
2	1	1	1	1	1	5	2	5	2	2	2	2	2	2	3	2	2	1	1	1	1	1	1	1	1	5	1.6	24
3	1	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1	2	2	4	2	2	1	1	1	1	4	1.4	24
4	1	1	1	1	1	1	1	1	2	3	3	2	2	1	2	1	1	1	1	1	1	0	1	1	3	1.3	24	
5	1	1	1	1	1	1	1	2	1	1	1	2	2	2	1	2	1	1	1	1	1	1	1	1	2	1.2	24	
6	1	5	0	1	1	1	1	1	1	1	1	3	1	4	7	1	3	1	1	2	2	1	1	1	7	1.6	24	
7	5	3	1	1	1	1	1	5	2	1	1	4	2	3	15	5	3	1	1	1	0	1	1	1	5	2.6	24	
8	1	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	7	18	16	14	17	5	3	18	4.2	24	
9	1	1	1	2	2	10	4	9	8	2	15	3	0	0	5	1	3	1	0	2	1	5	0	1	15	3.2	24	
10	1	1	1	1	1	1	1	1	1	3	4	2	2	3	4	3	7	7	1	4	5	0	0	1	7	2.2	24	
11	5	1	1	1	1	1	1	2	2	2	2	1	1	1	3	1	1	2	1	5	1	1	1	1	5	1.5	24	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	6	14	1	1	14	2.7	24	
13	1	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	5	1	1	1	1	1	1	2	0.8	24	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	1	0.8	24	
15	1	0	0	0	1	2	11	13	6	3	4	1	1	1	1	1	5	1	1	2	2	1	1	1	13	2.4	24	
16	1	1	1	1	1	1	2	2	2	2	C	C	C	C	C	3	1	1	1	0	1	0	0	0	3	1.1	24	
17	0	1	0	1	1	1	1	1	1	1	5	8	2	6	7	2	4	3	3	3	3	4	4	1	2	11	3.4	24
18	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	5	6	2	2	2	2	6	2.1	24	
19	2	2	5	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	
20	1	5	1	1	1	1	1	2	3	2	3	4	3	1	1	2	1	2	2	2	2	1	1	1	4	1.6	24	
21	1	1	1	1	1	1	1	1	1	1	4	4	1	1	4	4	1	R	2	2	2	1	1	1	5	4	1.6	23
22	1	1	2	3	2	1	1	1	2	1	1	1	1	1	1	15	2	1	2	4	2	1	1	1	5	15	3.0	24
23	1	1	1	1	1	1	1	1	5	2	1	1	1	1	1	1	1	1	1	4	3	1	1	1	11	2.2	24	
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1	1.0	24	
25	1	1	1	1	1	1	1	1	7	8	6	1	1	1	1	2	2	1	1	1	5	1	1	1	8	1.9	24	
26	1	1	1	1	1	1	1	1	6	4	4	1	1	1	1	1	1	1	1	5	3	8	5	6	2	2.6	24	
27	1	1	1	1	1	1	1	1	8	6	4	1	1	1	1	1	1	1	1	1	1	0	1	1	12	2.3	24	
28	1	1	1	1	1	1	4	11	2	6	7	2	10	6	6	17	14	5	2	2	1	2	3	2	17	4.5	24	
29	2	1	1	1	1	1	1	1	2	3	2	4	3	3	4	5	3	3	2	2	2	2	2	2	4	2.2	23	
30	2	2	2	2	2	4	6	9	3	5	3	2	2	2	5	2	1	1	1	2	2	2	2	2	9	2.7	24	
HOURLY MAX	5	5	3	3	4	12	11	13	11	7	15	10	6	11	17	14	9	7	18	16	14	17	6	3				
HOURLY AVG	1.3	1.3	1.1	1.1	1.2	2.1	2.8	3.9	3.3	2.4	2.8	2.2	2.0	2.2	3.7	2.2	2.0	2.1	2.8	2.4	2.4	1.9	1.2	1.3				

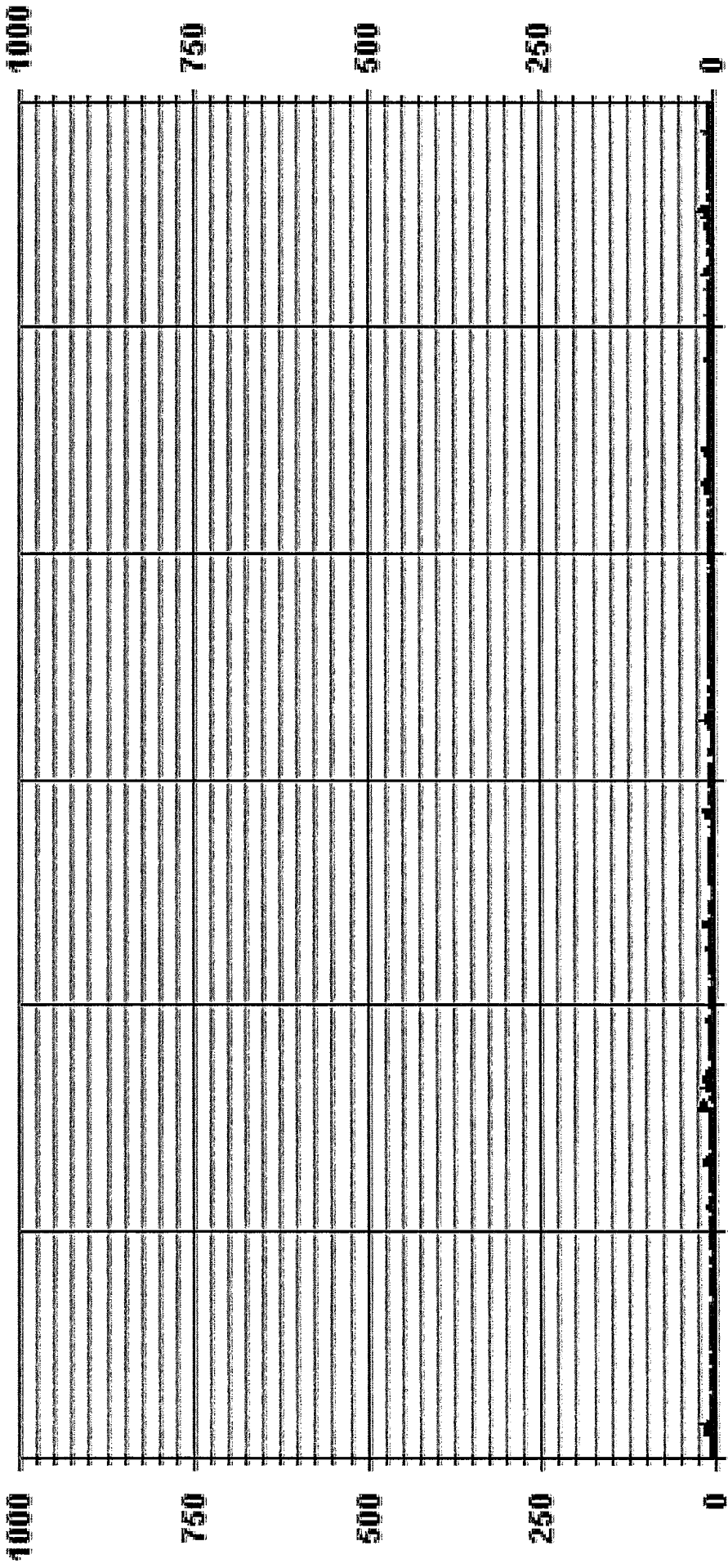
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	651
MAXIMUM INSTANTANEOUS VALUE:	18 PPB @ HOUR(S) 18 ON DAY(S) 8
1ZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	2.61
OPERATIONAL TIME:	71.8 HRS
VAR- VARIOUS	

01 Hour Averages



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

— LICA30 SO2MAX PPB

LICA30  
 SO2\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LICA30  
 Parameter : SO2  
 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
< 20	4.97	5.85	5.56	3.95	2.48	4.53	5.85	4.24	4.09	10.54	14.64	6.73	8.19	9.37	4.83	4.09	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	4.97	5.85	5.56	3.95	2.48	4.53	5.85	4.24	4.09	10.54	14.64	6.73	8.19	9.37	4.83	4.09	

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples

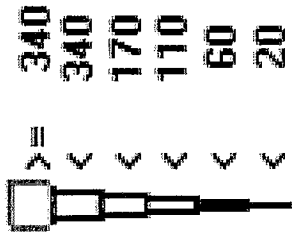
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	34	40	38	27	17	31	40	29	28	72	100	46	56	64	33	28	683
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	34	40	38	27	17	31	40	29	28	72	100	46	56	64	33	28	

Calm : .00 %

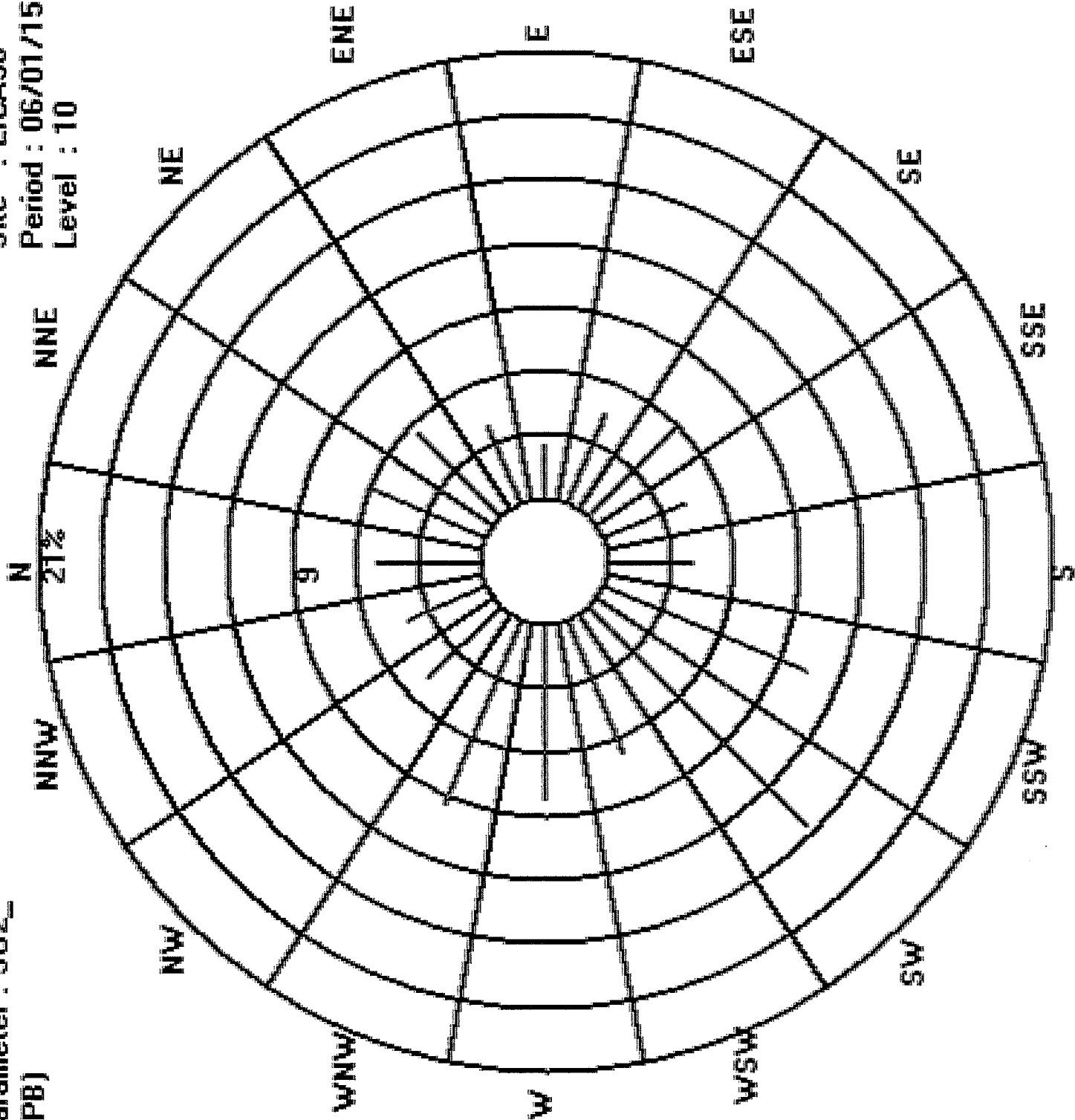
Total # Operational Hours : 683

Logger : 30 Parameter : SO2\_

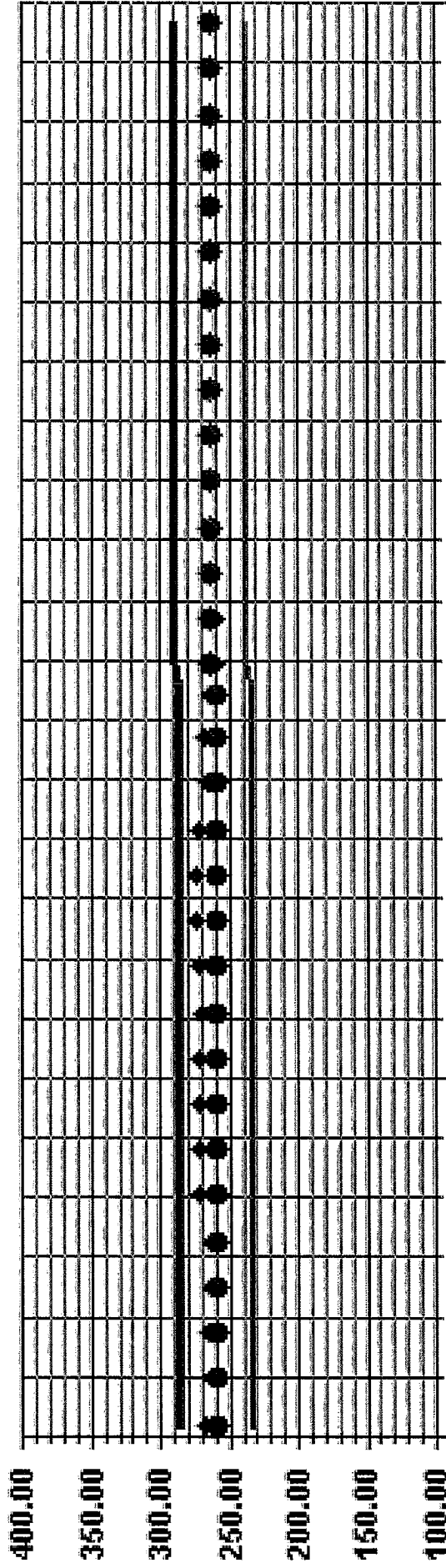
Class Limits (PPB)



Site : LICA30  
Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA30 Parameter: SO2\_ Sequence: SO2 Phase: SPAN



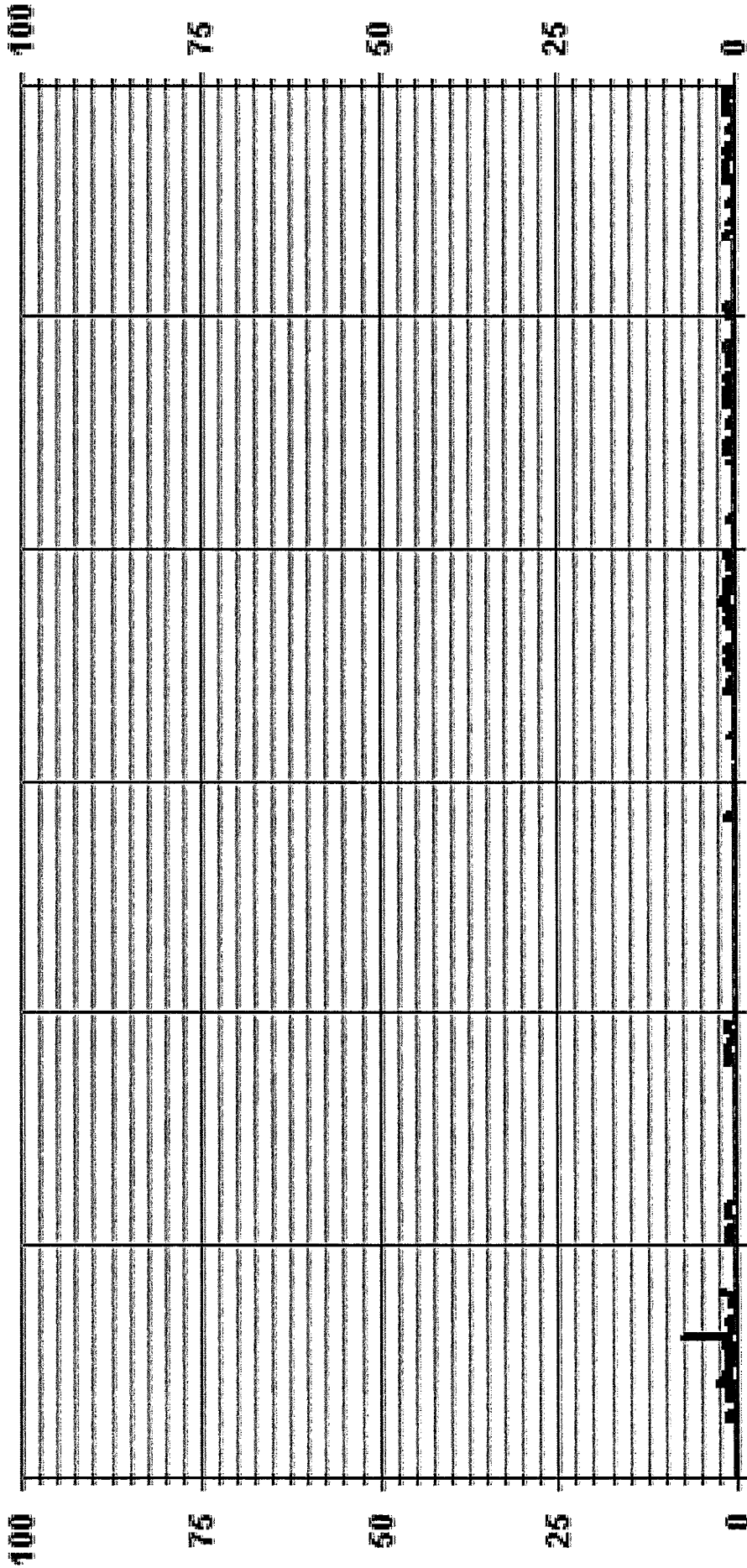
6/1/15 6/8/15 6/16/15 6/23/15 7/1/15  
Exp Value +10% Exp Value -10%



***HYDROGEN SULPHIDE***

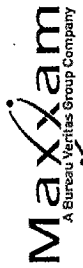


01 Hour Averages



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

— LICA30 H2S\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Maskwa Site - JUNE 2015  
JOB # 2833-2015-06-30-C

HYDROGEN SULPHIDE 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	DAILY MAX	24-HOUR AVG.	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	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	
3	1	1	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	9	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	1	
5	3	3	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	
6	0	5	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
7	5	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	
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	
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	
10	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	1	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	0	
12	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	
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	1	1	1	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	0	0	0	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	0	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	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	1	1	
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	
20	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	1	
21	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	0	0	0	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	1	1	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	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	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	1	
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	
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	
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	1	1	1	
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	1	
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	1	1	
HOURLY MAX	9	23	5	4	2	3	4	2	2	2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	
HOURLY AVG	1.0	1.5	0.8	0.8	0.6	0.8	0.8	0.7	0.8	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.9	0.8	0.8		

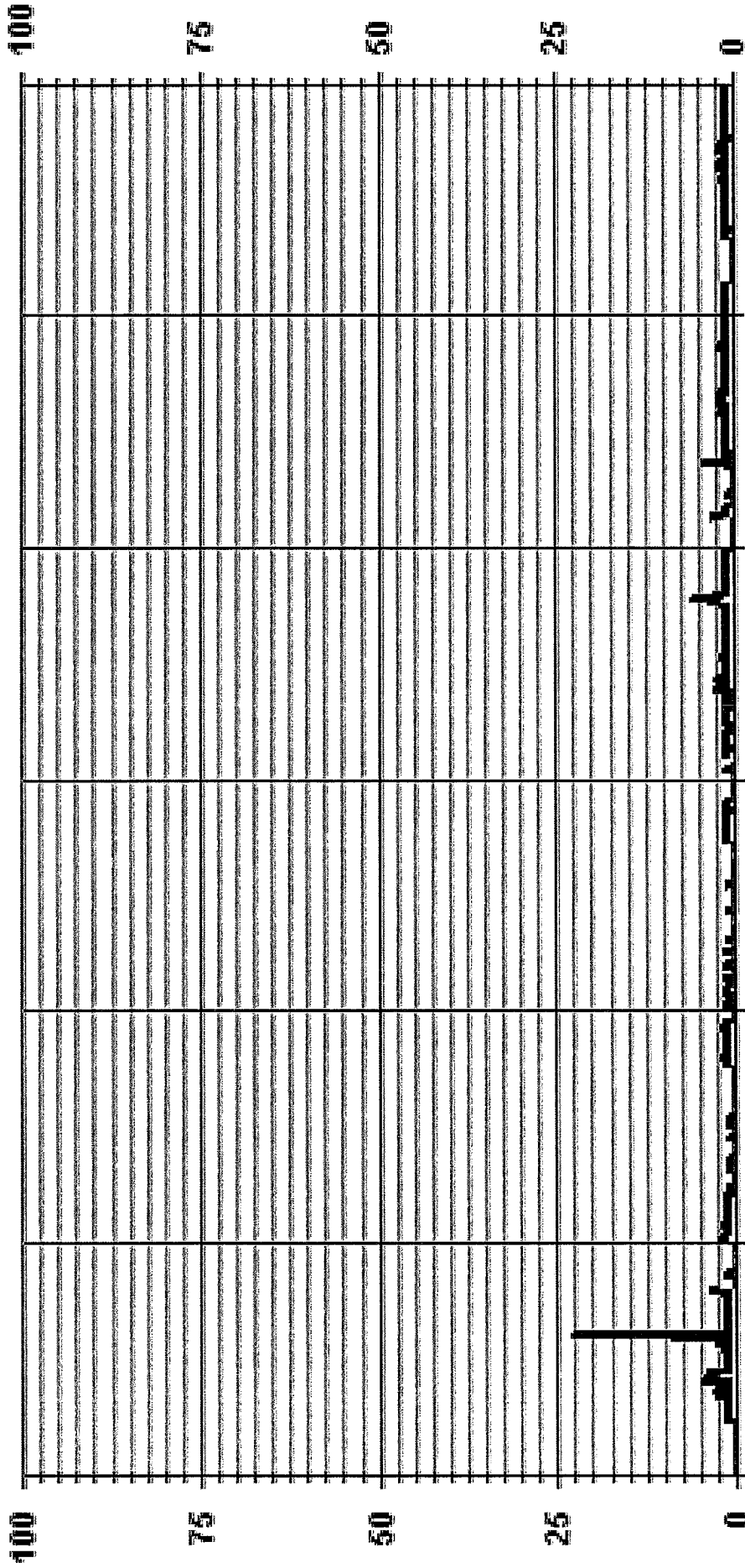
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	414
MAXIMUM INSTANTANEOUS VALUE:	23 PPB @ 1 HOUR(S)
ON DAYS:	4
OPERATIONAL TIME:	718 HRS
STANDARD DEVIATION:	1.16
OPERATIONAL TIME:	5 HRS
MONTHLY CALIBRATION TIME:	31 HRS
VAR-VARIOUS:	1 ON DAY(S)

01 Hour Averages



06/06/15 00:00 06/06/15 00:00 06/11/15 00:00 06/16/15 00:00 06/21/15 00:00 06/26/15 00:00

— LICA30 H2SMAX PPB

LICA30  
H2S\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 30  
Site Name : LICA30  
Parameter : H2S  
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
< 3	4.97	5.71	5.56	3.95	2.48	4.39	5.85	4.24	4.09	10.54	14.64	6.73	8.19	9.37	4.83	4.09	99.70
< 10	.00	.14	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.29
< 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	4.97	5.85	5.56	3.95	2.48	4.53	5.85	4.24	4.09	10.54	14.64	6.73	8.19	9.37	4.83	4.09	

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples

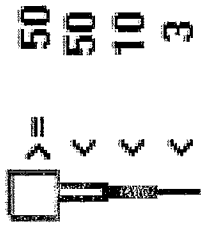
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	34	39	38	27	17	30	40	29	28	72	100	46	56	64	33	28	681
< 10	-	1				1											2
< 50																	
>= 50																	
Totals	34	40	38	27	17	31	40	29	28	72	100	46	56	64	33	28	

Calm : .00 %

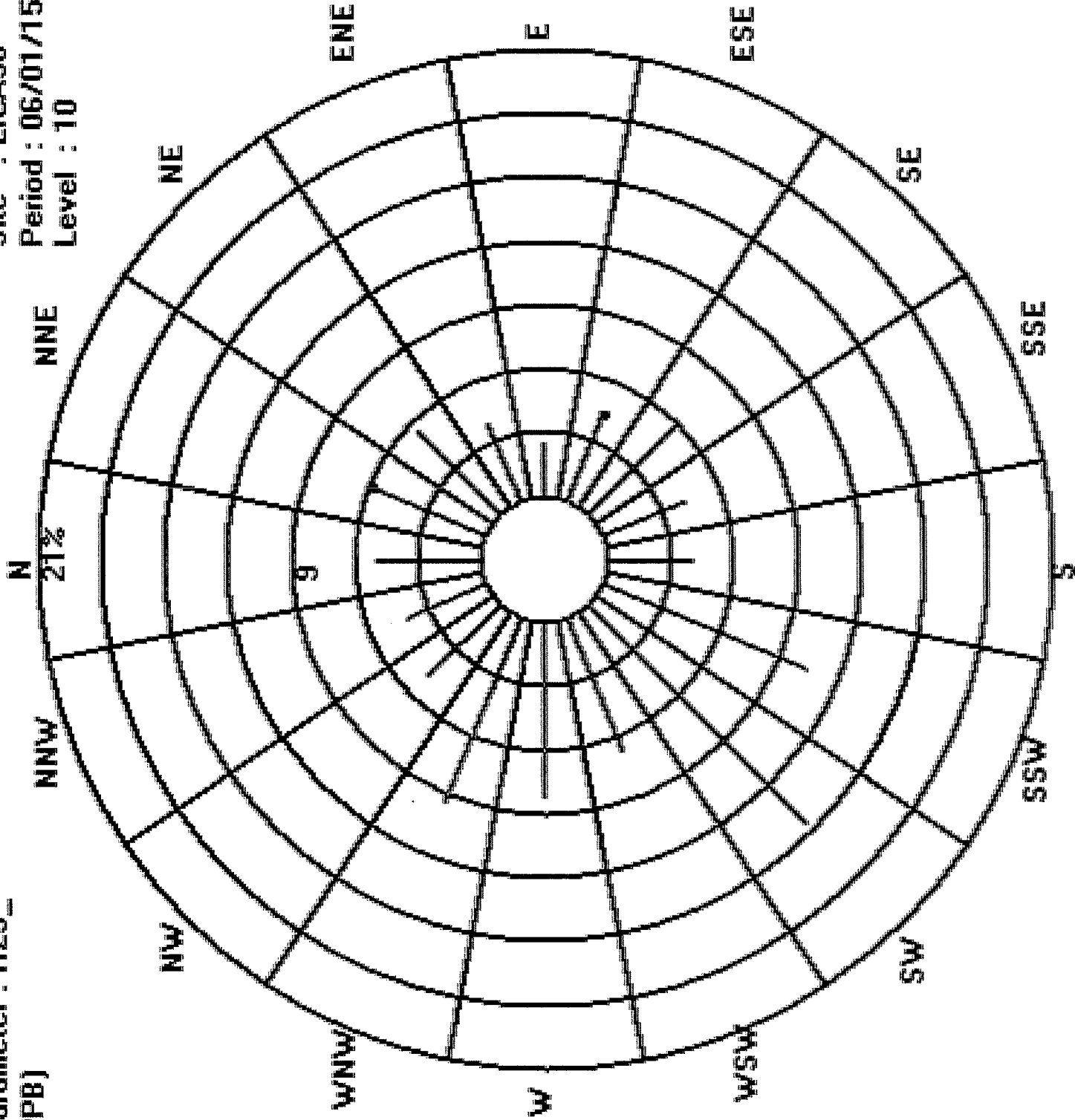
Total # Operational Hours : 683

Logger : 30 Parameter : H2S\_

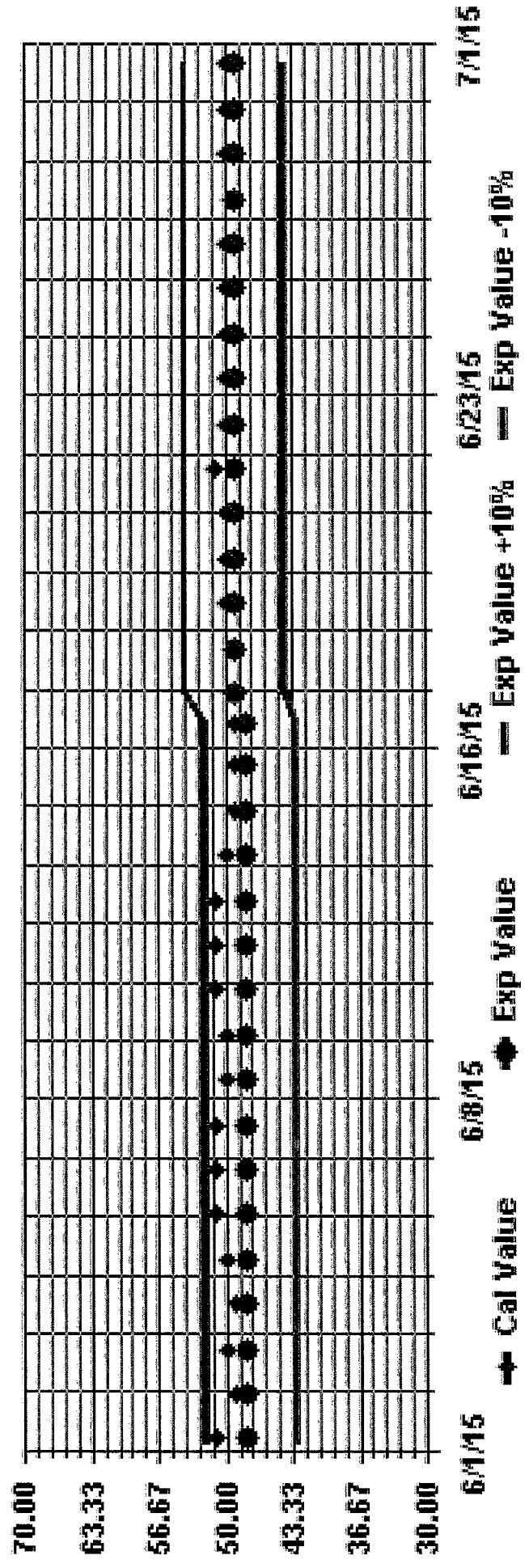
Class Limits (PPB)



Site : LICA30  
Period : 06/01/15-06/30/15  
Level : 10

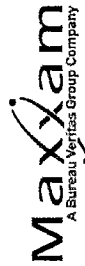


Calibration Graph for Site: LICA30 Parameter: H2S\_ Sequence: H2S Phase: SPAN





***TOTAL HYDROCARBON***



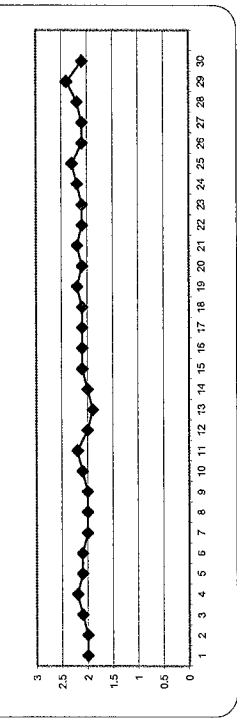
TOTAL HYDROCARBONS (THC) hourly averages in ppm

Table with columns for HOUR, DAY, and 24-HOUR AVG. Rows include hourly data from 1 to 30 and summary rows for HOURLY MAX and HOURLY AVG.

STATUS FLAG CODES

Legend for 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.

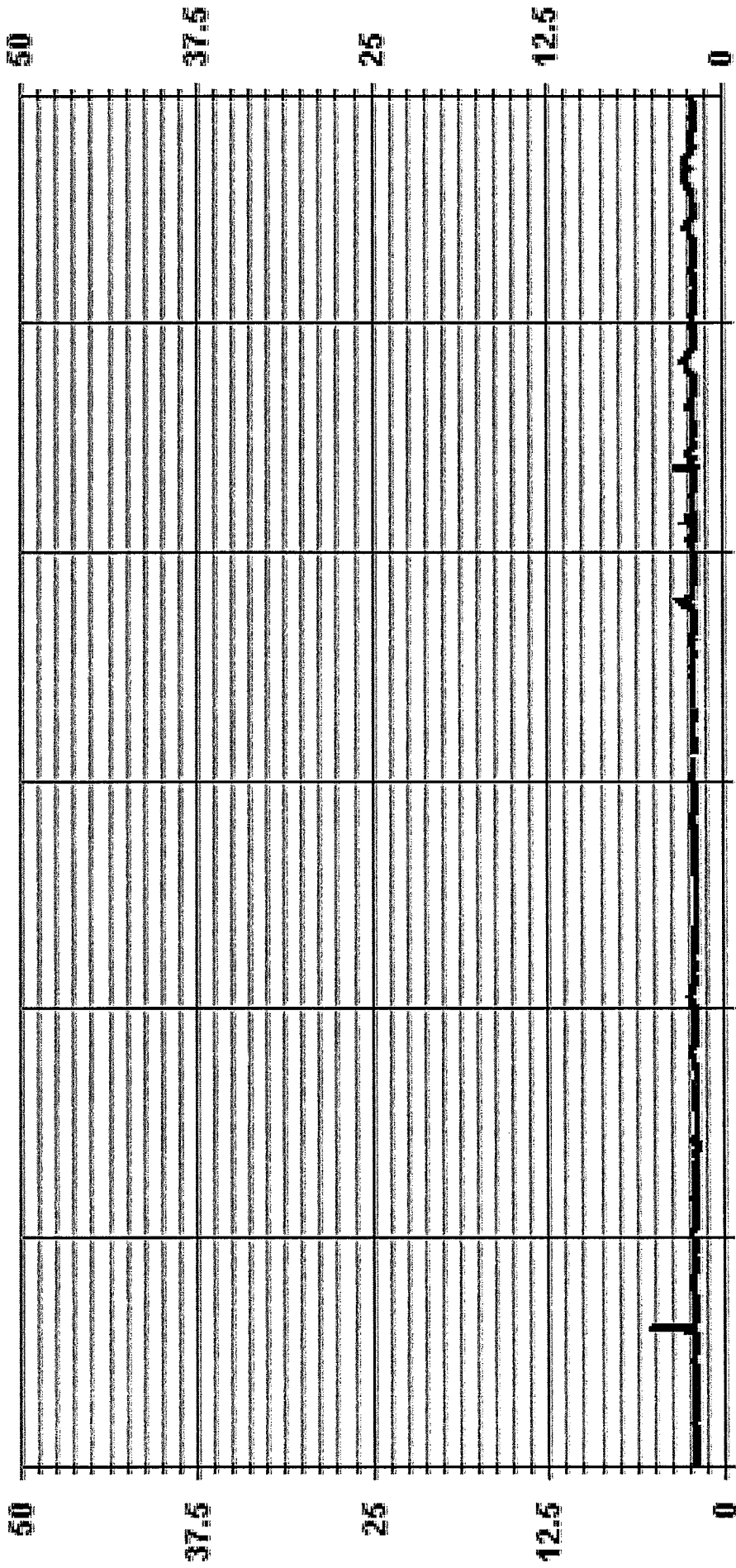
24 HOUR AVERAGES FOR JUNE 2015



MONTHLY SUMMARY

Summary table with metrics: NUMBER OF NON-ZERO READINGS: 683, MAXIMUM 1-HR AVERAGE: 5.3 PPM, MAXIMUM 24-HR AVERAGE: 2.4 PPM, OPERATIONAL TIME: 31 HRS, MONTHLY CALIBRATION TIME: 5 HRS, STANDARD DEVIATION: 0.21.

01 Hour Averages



— LICA30    - - - - THC    PPM



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

DAY	HOUR																								DAILY MAX	24-HOUR AVG	RODS
	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	2.1	2.0	2.0	2.0	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	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.4		
3	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.4		
4	6.8	14.6	2.6	2.1	2.2	2.1	2.1	2.0	2.0	2.1	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	14.6	2.4		
5	2.3	2.2	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	2.0	2.0	2.1	2.1	2.1	2.4		
6	2.1	2.3	2.4	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.4		
7	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4		
8	2.0	2.1	2.0	2.2	2.5	2.5	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.0	2.1	2.2	2.2	2.2	2.4			
9	2.0	2.4	2.2	2.2	2.3	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	2.4			
10	2.2	2.4	2.4	2.3	2.3	2.3	2.3	2.0	2.0	2.1	2.1	2.0	2.0	2.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4			
11	2.1	2.2	2.2	2.2	2.8	2.6	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.1	2.0	2.0	2.4	2.9	2.1	2.1	2.1	2.1	2.1	2.4			
12	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.1	2.1	2.1	2.1	2.0	2.0	2.5	2.8	2.1	2.6	2.1	1.9	1.9	2.8	2.4			
13	2.0	2.2	2.0	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.4			
14	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	2.3	2.4	2.4	2.0	2.0	2.1	2.1	2.2	2.4			
15	2.2	2.3	2.3	2.3	2.3	2.3	2.5	2.4	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.5	2.0	2.1	2.1	2.2	2.4			
16	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.4			
17	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4			
18	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	2.4			
19	2.5	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	2.4			
20	4.2	2.2	2.2	2.4	2.4	2.6	2.5	2.6	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	2.4			
21	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	2.4			
22	2.2	2.1	2.3	2.1	2.1	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	2.4			
23	2.2	2.2	2.2	2.4	2.4	2.6	2.5	2.6	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	2.4			
24	2.1	2.2	2.4	2.6	2.5	2.7	2.6	2.2	2.2	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	2.4			
25	2.4	2.5	2.6	2.8	2.9	2.9	2.8	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.4			
26	2.4	2.3	2.2	2.1	2.4	2.4	2.4	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	2.4			
27	2.1	2.1	2.1	2.1	2.3	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	2.4			
28	2.5	2.5	2.4	2.9	2.7	2.9	2.5	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	2.4			
29	2.5	2.4	2.7	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.4			
30	2.2	2.5	2.5	2.4	2.3	2.3	2.1	2.1	2.0	2.0	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	2.4			
HOURLY MAX	6.8	14.6	2.9	2.9	2.9	2.9	2.8	2.9	3.0	4.4	2.6	2.5	2.6	2.6	2.7	2.3	3.9	3.7	3.4	2.9	3.8	7.3	7.1	4.2			
HOURLY AVG	2.4	2.7	2.3	2.3	2.3	2.3	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	2.3			

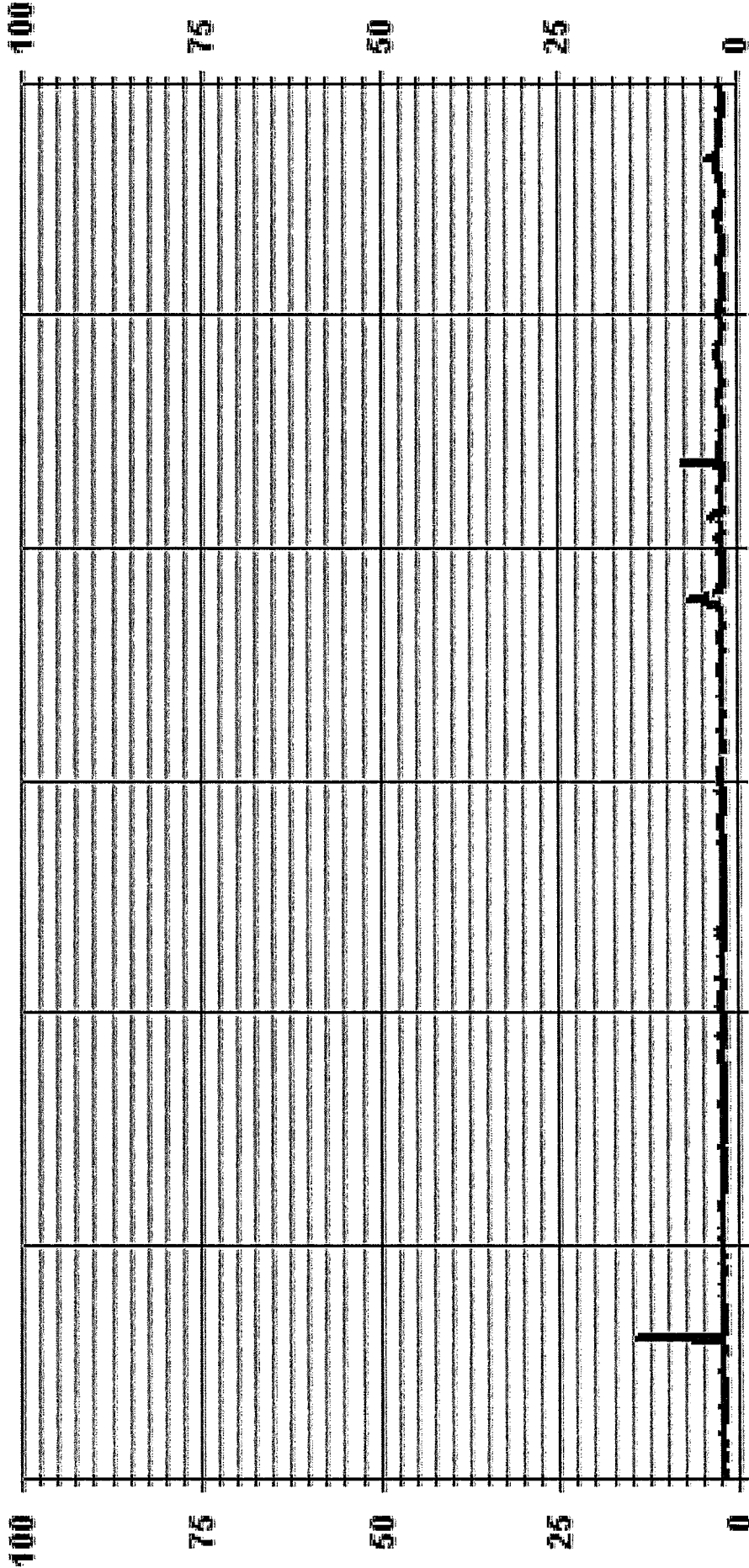
STATUS FLAG CODES

C	QUALITY ASSURANCE
O	RECOVERY
M	MAINTENANCE
D	DAILY ZERO/SPAN CHECK
P	POWER FAILURE
G	OUT FOR REPAIR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682
MAXIMUM INSTANTANEOUS VALUE:	14.6 PPM @ HOUR(S) 1 ON DAY(S) 4
IS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	0.64
OPERATIONAL TIME:	71.8 HRS
VAR- VARIOUS	

01 Hour Averages



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

— LICA30 THCMAX PPM

THC / WDR Joint Frequency Distribution (Percent)

LIICA30  
June 2015

Distribution By % Of Samples

Logger Id : 30  
Site Name : LIICA30  
Parameter : THC  
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	4.83	5.56	5.27	3.95	2.48	4.53	5.85	4.24	3.95	10.68	14.93	6.73	8.19	9.37	4.83	4.09	99.56
< 10.0	.00	.14	.14	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.43
< 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	4.83	5.71	5.41	3.95	2.48	4.53	5.85	4.24	4.09	10.68	14.93	6.73	8.19	9.37	4.83	4.09	

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	
< 3.0	33	38	36	27	17	31	40	29	27	73	102	46	56	64	33	28	680
< 10.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
< 50.0																	
>= 50.0																	
Totals	33	39	37	27	17	31	40	29	28	73	102	46	56	64	33	28	

Calm : .00 %

Total # Operational Hours : 683

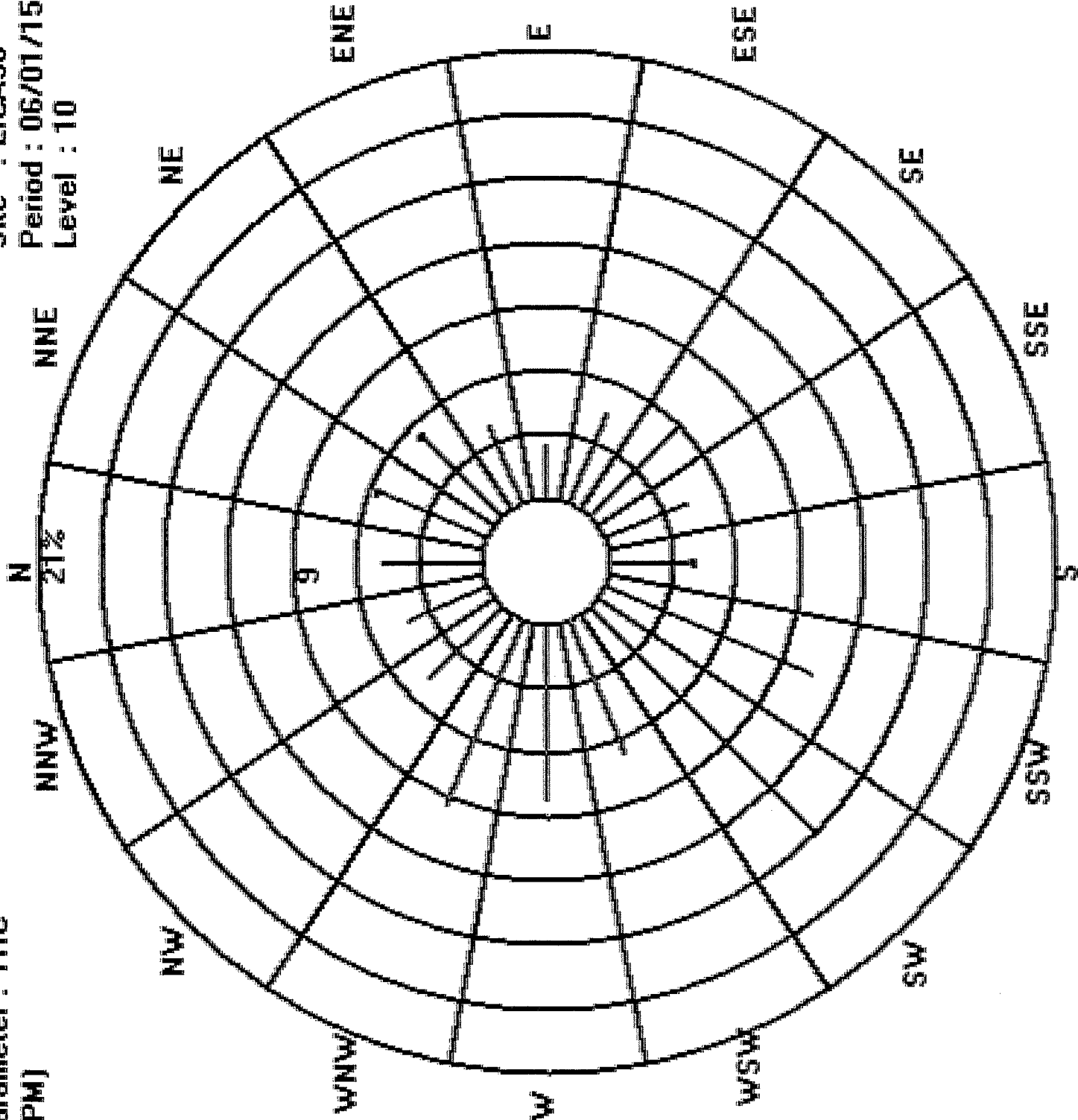
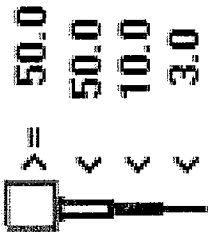
Logger : 30 Parameter : THC

Site : LICA30

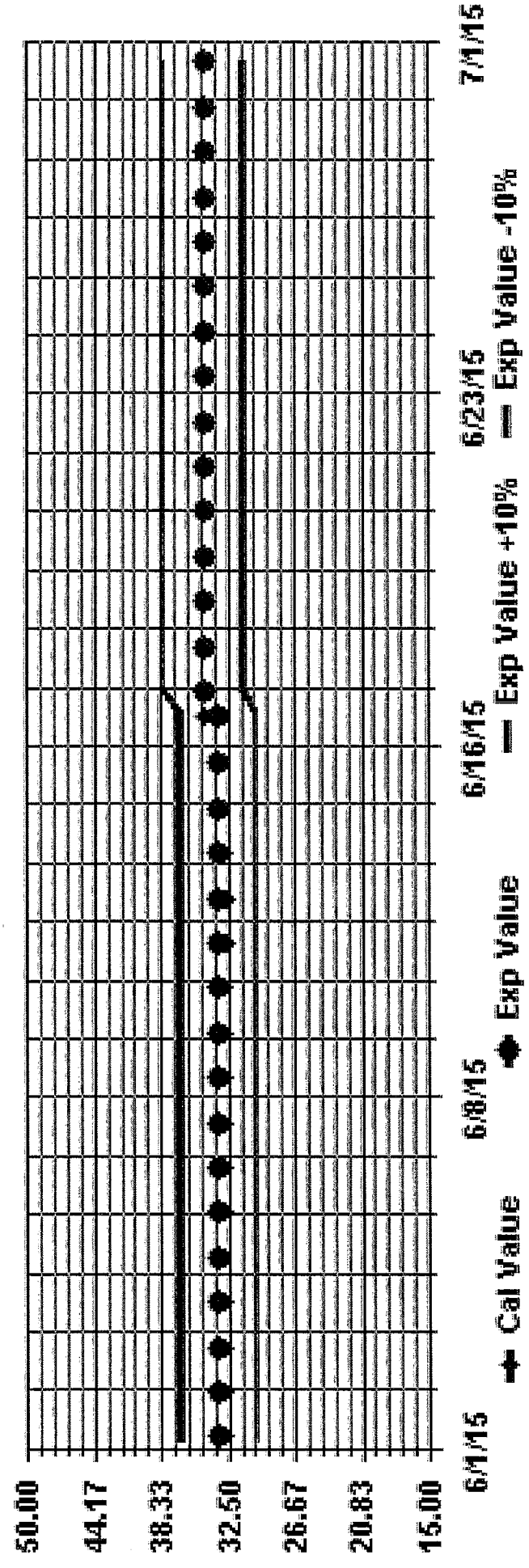
Class Limits (PPM)

Period : 06/01/15-06/30/15

Level : 10

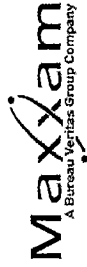


Calibration Graph for Site: LICA30 Parameter: THC Sequence: THC Phase: SPAN





## ***OXIDES OF NITROGEN***



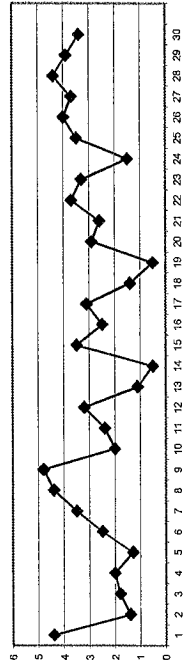
OXIDES OF NITROGEN (NOx) hourly averages in ppb

DAY	HOURS																								DAILY MAX.	24-HOUR AVG.	RDSS.
	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				
1	0.7	0.5	0.3	2.2	7.1	8.8	\$	9.8	8.1	8.4	3.8	1.8	5.5	11.0	9.4	3.5	4.0	4.7	6.6	1.0	0.1	1.0	1.5	1.2	11.0	4.4	24
2	0.9	0.3	0.2	0.0	0.0	\$	1.4	5.8	2.3	3.3	3.6	2.1	0.7	1.2	4.5	1.4	0.9	0.6	0.5	0.4	0.3	0.5	0.8	0.4	5.8	1.4	24
3	0.3	0.2	0.9	0.9	\$	1.8	2.2	2.9	3.4	2.9	2.2	1.5	1.5	1.2	1.0	1.4	2.5	1.7	4.1	2.7	3.7	1.0	0.9	0.9	4.1	1.8	24
4	0.5	0.6	0.7	\$	0.9	0.8	1.2	1.8	4.2	6.8	4.8	3.4	1.4	1.1	1.5	1.5	1.7	1.4	1.5	1.6	2.0	2.3	2.0	2.2	6.8	2.0	24
5	1.7	1.3	\$	1.1	1.0	1.5	\$	1.7	2.6	1.7	1.5	2.3	0.9	1.1	1.2	1.1	1.2	1.1	1.1	0.9	0.9	1.2	2.6	1.3	2.4	1.3	24
6	1.6	\$	4.0	5.7	5.1	18.8	4.7	1.2	0.6	0.8	0.3	0.6	0.2	1.3	2.2	0.3	0.4	0.0	0.0	0.2	3.0	2.4	3.1	1.4	18.8	2.5	24
7	\$	13.9	12.5	8.1	0.8	3.0	2.7	6.2	9.2	2.2	1.3	1.6	1.0	2.4	5.4	2.8	0.9	0.3	0.2	0.2	0.4	0.7	1.1	\$	13.9	3.5	24
8	0.8	7.5	3.1	2.8	6.1	5.4	1.4	0.4	0.0	0.0	0.1	0.2	0.2	0.3	0.1	0.1	0.4	1.9	13.3	13.4	18.1	17.2	\$	7.8	18.1	4.4	24
9	3.5	7.2	7.7	15.8	13.3	20.6	5.4	6.0	7.8	0.5	6.8	1.0	0.4	0.3	2.4	0.7	1.7	0.9	0.7	2.7	2.8	\$	1.5	1.3	20.6	4.8	24
10	1.3	2.0	1.8	2.0	2.1	2.3	1.5	1.3	1.0	1.3	2.1	0.9	0.9	1.7	2.3	2.0	5.2	5.9	0.8	4.6	\$	1.2	1.0	1.2	5.9	2.0	24
11	2.9	0.9	0.6	1.7	2.0	3.4	3.9	4.0	3.7	3.2	3.0	2.5	2.1	2.5	1.4	1.4	1.5	2.7	0.9	\$	2.1	2.5	2.5	3.7	4.0	2.4	24
12	1.8	1.4	1.9	1.3	1.0	4.2	11.9	12.8	7.5	3.4	1.5	1.4	0.9	2.1	0.7	0.3	0.5	\$	5.7	6.7	2.8	0.8	1.8	12.8	3.2	24	
13	2.1	14.4	2.4	4.0	0.1	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	\$	0.9	0.5	0.4	0.3	0.1	0.0	14.4	1.1	24
14	0.1	0.2	0.1	0.2	0.5	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	\$	0.7	1.2	1.2	0.4	0.6	1.5	3.8	0.5	24	
15	3.0	1.9	2.9	2.9	2.7	5.8	24.1	15.6	3.1	1.6	1.3	0.9	0.7	0.7	0.6	\$	1.1	0.9	2.0	2.3	0.9	1.0	1.7	2.5	24.1	3.5	24
16	2.6	2.4	3.1	3.6	4.7	5.0	5.5	7.0	5.1	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	24
17	0.0	0.1	1.5	3.1	\$	4.9	2.9	3.4	7.5	3.4	2.9	1.0	4.8	3.3	0.8	1.2	1.4	1.4	2.5	2.5	10.1	9.7	1.3	2.6	10.1	3.1	24
18	1.1	0.6	0.6	\$	1.5	1.3	1.2	1.4	1.6	1.8	1.1	0.7	1.3	1.5	0.9	0.8	2.2	4.0	5.0	0.8	1.0	1.1	0.8	0.8	5.0	1.4	24
19	0.4	0.4	\$	0.8	0.6	0.9	1.1	0.9	0.7	0.7	0.6	0.6	0.7	0.6	0.5	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.4	1.1	0.5	24
20	0.4	\$	2.5	2.0	1.9	2.8	5.6	5.3	3.7	6.8	3.4	5.9	0.7	0.4	2.2	2.2	3.2	4.5	2.9	1.4	4.3	1.6	6.8	2.9	24	24	
21	\$	2.3	1.2	1.0	6.1	3.3	5.0	8.9	3.9	1.1	0.3	0.1	3.2	3.9	1.1	0.9	1.9	3.4	2.6	0.8	1.7	3.9	\$	8.9	2.6	24	24
22	1.7	1.1	15.2	12.5	5.9	2.5	4.7	3.7	3.2	1.5	4.1	6.2	3.9	0.7	6.5	3.2	1.2	1.7	3.7	0.6	0.4	0.4	\$	0.9	15.2	3.7	24
23	0.7	0.7	1.1	1.7	2.9	3.1	2.0	21.8	10.1	1.0	1.1	1.2	1.2	0.9	0.9	0.5	0.3	0.0	2.0	2.0	0.7	\$	1.4	0.9	21.8	3.3	24
24	0.8	0.8	0.5	0.5	0.8	1.0	3.4	4.9	3.2	2.5	1.8	1.4	0.8	0.7	0.5	0.7	0.8	1.3	1.2	1.8	\$	2.0	1.8	2.2	4.9	1.5	24
25	2.2	2.2	2.0	1.9	2.5	5.3	6.1	12.1	14.6	9.6	3.7	1.1	1.0	0.9	1.3	1.4	3.7	3.6	0.8	\$	1.2	1.1	1.1	1.5	14.6	3.5	24
26	1.0	0.8	1.1	0.7	0.6	2.6	5.1	25.1	6.9	4.4	2.9	0.8	1.1	0.6	0.3	0.1	0.1	0.3	\$	0.8	14.5	14.5	3.0	1.8	23.1	4.0	24
27	0.1	0.0	3.8	13.1	18.4	15.8	11.9	11.1	2.5	0.1	0.3	0.2	0.7	0.3	0.1	0.0	\$	1.1	0.6	0.7	0.6	0.9	2.1	18.4	3.7	24	24
28	1.9	3.2	5.4	3.9	4.6	7.6	19.5	1.9	4.4	5.6	1.0	5.5	1.2	2.0	8.1	4.7	\$	1.6	1.6	0.4	2.5	6.1	4.5	3.1	19.5	4.4	24
29	1.9	1.1	1.0	0.9	1.1	\$	1.6	4.1	13.3	6.0	9.2	4.8	5.3	5.2	6.4	\$	3.9	3.2	1.9	2.0	3.0	2.2	4.5	3.3	13.3	3.9	23
30	2.3	3.6	8.0	4.7	2.7	8.5	5.6	13.0	1.7	4.0	2.8	4.0	2.5	0.9	\$	1.5	1.2	1.3	1.1	1.0	1.1	1.4	0.0	5.6	13.0	3.4	24
HOURLY MAX	3.5	14.4	15.2	15.8	18.4	20.6	24.1	23.1	14.6	9.6	9.2	6.2	5.5	11.0	9.4	4.7	5.2	5.9	13.3	13.4	18.1	17.2	8.0	7.8			
HOURLY AVG	1.4	2.6	3.1	3.5	5.0	5.6	6.6	4.5	2.9	2.3	1.8	1.6	1.6	1.7	2.2	1.3	1.4	1.7	2.3	2.0	2.9	2.7	1.9	2.0			

STATUS FLAG CODES

G	CALIBRATION	Q	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	WALCH/IN/MAJUNCTION
P	POWER FAILURE	O	OPERATION ERROR
G	OUT-OF-REPAIR	K	COLLECTION ERROR

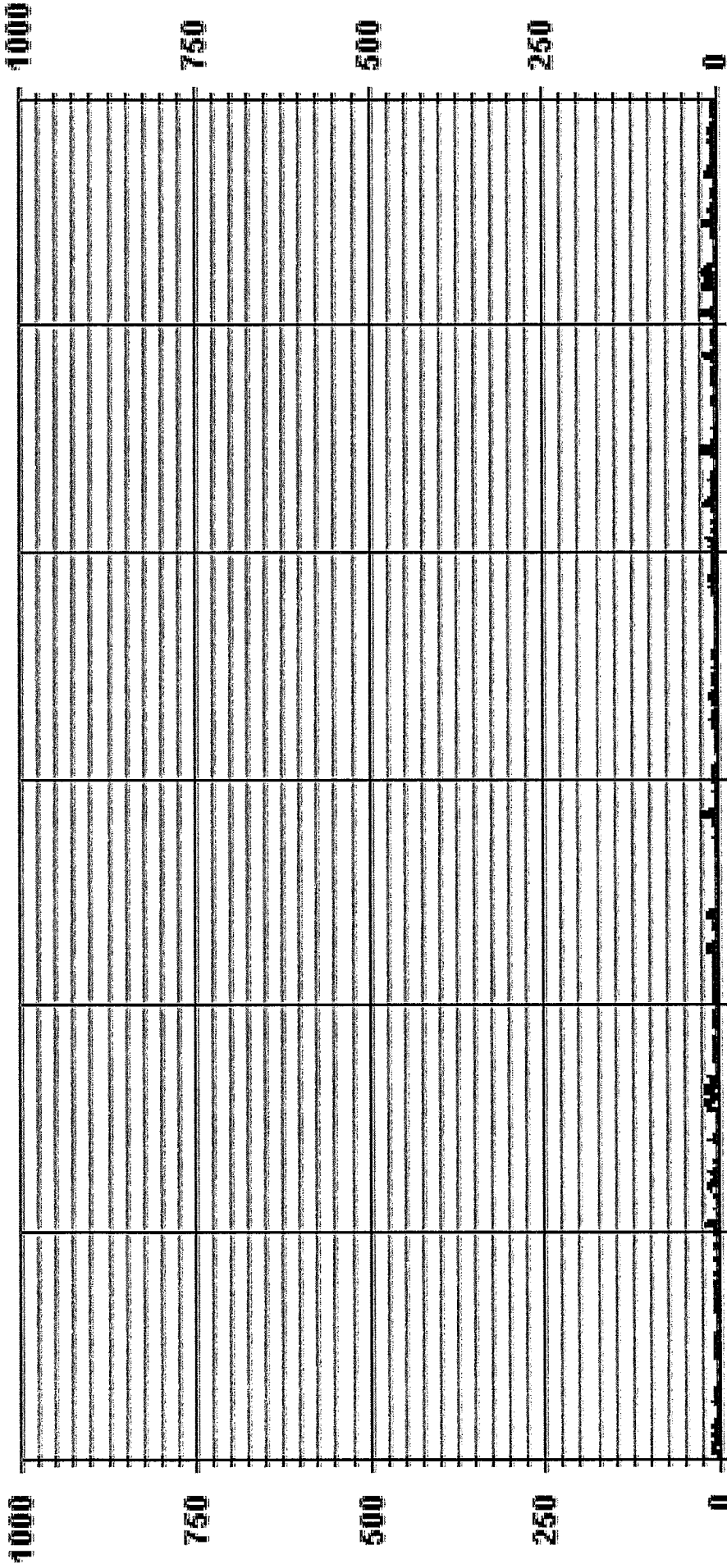
24 HOUR AVERAGES FOR JUNE 2015



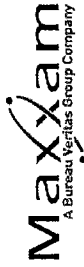
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	546	ON DAY(S)	15
MAXIMUM 1-HR AVERAGE:	24.1 PPB	ON DAY(S)	9
MAXIMUM 24-HR AVERAGE:	4.8 PPB	VAR-VARIOUS	
125 CALIBRATION TIME:	33 HRS	OPERATIONAL TIME:	719 HRS
MONTHLY CALIBRATION TIME:	7 HRS	AMTD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	3.59	MONTHLY AVERAGE:	2.8 PPB

01 Hour Averages



— LICA30 NOX\_ PPB



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

DAY	HOUR START	HOUR END	DAILY																								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			30:00
1	1.3	1.1	0.9	0.7	9.5	12.5	22.9	\$	21.9	15.7	18.1	12.8	5.9	13.8	29.9	25.9	9.4	18.3	15.8	26.5	6.8	0.7	2.8	2.6	1.9	29.9	12.0	24	
2	1.6	0.9	0.5	0.7	\$	5.5	\$	12.1	5.5	8.2	8.2	6.2	4.7	2.0	4.1	9.8	3.5	1.4	1.1	1.2	1.1	0.7	1.2	1.4	0.9	12.1	3.3	24	
3	0.8	0.8	2.4	1.8	\$	2.4	3.0	4.7	5.6	3.7	2.8	2.1	2.3	2.4	1.6	3.8	5.8	4.0	3.5	9.0	1.6	1.5	1.5	1.5	1.5	9.3	3.4	24	
4	1.2	1.3	1.2	\$	1.6	1.3	2.5	6.5	9.4	9.6	9.0	9.0	6.2	3.9	1.9	2.5	2.2	2.6	1.9	2.0	2.0	2.6	2.8	2.8	2.8	9.6	3.5	24	
5	2.6	1.9	\$	1.7	1.5	\$	3.2	4.3	3.8	3.1	5.2	2.1	1.9	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.6	1.4	1.4	2.0	5.2	2.3	24	
6	2.5	\$	4.6	7.4	8.7	29.8	14.0	2.3	1.0	4.7	0.8	3.4	0.8	5.2	13.1	3.9	3.4	0.4	0.5	4.4	5.9	3.7	4.6	4.2	29.8	5.6	24		
7	\$	20.9	23.7	22.5	1.3	11.2	10.6	22.5	21.1	6.8	2.8	6.7	5.5	9.4	18.0	9.2	5.6	1.1	0.6	0.8	0.9	1.2	1.9	\$	23.7	9.3	24		
8	1.9	19.7	19.6	4.2	9.0	9.2	2.7	0.9	1.1	0.4	0.7	1.9	0.7	0.9	1.0	0.7	3.3	15.7	29.0	26.5	30.9	43.0	\$	17.6	43.0	10.5	24		
9	5.2	19.8	13.0	19.5	27.4	41.2	9.1	19.5	19.9	3.8	50.8	4.7	9.8	1.0	10.3	3.2	5.7	2.4	2.2	9.3	9.6	\$	2.3	1.7	50.8	12.7	24		
10	1.9	2.8	2.6	2.9	2.6	3.7	2.7	2.1	2.3	4.9	6.9	4.3	2.9	4.4	6.6	6.5	17.7	13.3	1.5	9.0	\$	2.0	1.6	2.5	17.7	4.7	24		
11	4.4	1.6	1.2	2.7	2.7	4.5	4.5	4.7	4.6	4.4	3.5	3.0	3.4	5.8	3.6	2.3	1.9	6.7	1.5	\$	5.1	4.4	3.1	7.6	7.6	3.8	24		
12	3.3	2.1	2.4	2.0	1.4	10.1	16.6	25.3	18.6	5.3	4.1	3.2	1.9	3.9	1.8	1.7	0.9	1.0	\$	12.8	26.6	5.0	4.4	5.8	26.6	7.0	24		
13	12.4	30.8	9.2	8.9	1.1	0.8	0.5	1.0	0.5	0.5	0.5	0.5	0.6	0.9	0.9	0.8	0.5	0.5	\$	1.5	1.0	1.1	0.8	0.6	0.5	30.8	3.3	24	
14	0.5	0.6	0.6	0.5	1.1	0.8	0.5	1.4	0.4	0.5	0.9	0.7	0.7	0.7	0.5	0.5	0.7	\$	1.4	3.4	2.3	1.0	1.2	2.3	7.9	1.3	24		
15	7.4	2.8	4.2	4.2	4.2	4.2	13.8	31.1	29.6	11.5	5.3	7.7	2.2	1.3	1.2	1.4	\$	2.2	1.9	4.3	4.6	2.0	1.7	2.6	3.0	31.1	6.6	24	
16	3.4	3.2	3.7	4.5	7.2	6.9	7.0	8.4	6.5	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	1.4	0.6	0.4	0.4	0.3	8.4	3.6	24
17	0.5	1.1	3.0	3.9	\$	6.0	4.6	4.3	35.9	9.8	12.5	2.9	16.6	11.6	2.2	5.4	4.3	9.6	7.3	17.0	16.7	2.6	4.6	4.6	35.9	8.1	24		
18	3.4	3.2	4.2	4.2	2.7	2.7	2.0	2.0	2.1	2.0	2.1	2.0	1.7	1.3	1.9	2.1	1.6	1.3	5.4	12.8	14.4	1.5	1.7	2.0	1.3	1.2	20.9	3.9	24
19	0.9	0.9	\$	1.6	1.2	1.5	2.1	1.6	1.2	1.2	1.2	1.0	1.0	1.0	1.0	0.9	0.7	1.0	0.9	1.0	0.8	0.8	0.8	2.1	1.1	1.1	24		
20	1.0	\$	3.4	2.8	2.6	3.6	12.2	12.1	7.1	14.2	13.7	17.1	2.2	0.8	9.7	9.7	0.7	8.2	4.7	5.4	4.0	2.2	7.8	4.5	17.1	6.5	24		
21	\$	3.4	2.1	2.0	9.5	5.0	8.1	13.9	12.1	1.9	1.1	0.7	9.5	10.0	2.8	16.2	27.5	8.1	3.9	4.3	13.9	3.8	1.0	1.2	\$	1.5	27.5	8.7	24
22	2.7	1.8	24.3	24.3	11.1	4.9	5.8	5.0	5.2	2.5	16.0	19.8	10.2	1.6	27.5	8.1	3.9	4.3	13.9	3.8	1.0	1.2	\$	1.5	27.5	8.7	24		
23	1.3	1.3	1.8	3.2	3.7	8.5	45.8	32.4	22.1	2.7	2.1	2.3	1.7	1.4	1.9	1.1	1.4	0.5	11.1	11.1	1.9	\$	3.1	1.5	45.8	7.1	24		
24	1.5	1.5	1.2	1.0	1.2	2.9	5.1	8.5	4.7	3.1	2.8	2.3	1.5	1.4	1.4	1.2	1.6	1.9	3.1	\$	2.5	2.3	2.9	8.5	2.5	24			
25	3.0	2.8	2.7	3.0	3.5	9.6	7.0	24.6	20.5	16.5	5.2	2.0	1.9	1.4	2.2	4.8	7.3	11.3	1.4	\$	2.4	1.8	1.6	4.5	24.6	6.1	24		
26	1.6	1.5	2.1	1.2	1.1	12.8	20.1	41.4	36.7	18.9	15.4	2.1	2.4	1.0	0.8	0.7	0.8	0.8	\$	9.1	33.7	26.8	25.6	6.5	41.4	11.4	24		
27	0.6	0.5	8.5	19.1	22.4	33.2	26.5	22.6	8.1	0.7	1.3	0.7	2.7	1.3	0.5	0.5	0.6	\$	1.8	1.2	1.5	1.3	1.4	8.3	33.2	7.2	24		
28	2.8	5.0	6.4	7.2	7.3	13.3	37.4	4.3	10.3	13.6	7.1	37.8	6.4	8.3	28.4	18.7	\$	3.1	3.3	1.1	4.9	7.4	5.8	4.7	37.8	10.6	24		
29	2.9	1.6	1.7	1.5	1.7	X	2.1	8.5	18.8	8.4	15.5	6.7	8.0	6.8	9.8	\$	4.8	4.1	2.5	2.6	4.0	2.7	7.0	4.1	18.8	5.7	23		
30	3.1	8.0	9.4	6.6	4.0	18.0	19.5	25.4	4.7	10.6	5.6	4.8	5.0	1.7	\$	2.8	1.6	1.9	1.8	1.9	1.9	2.0	8.5	9.5	25.4	6.9	24		
HOURLY MAX	12.4	30.8	24.3	24.3	27.4	41.2	45.8	41.4	36.7	20.9	50.8	37.8	16.6	29.9	28.4	18.7	18.3	15.8	29.0	26.5	33.7	43.0	25.6	17.6					
HOURLY AVG	2.7	5.0	5.7	6.1	5.6	10.1	11.0	12.7	10.5	7.1	7.4	5.3	4.4	4.3	6.7	4.0	4.0	4.8	5.9	5.0	6.3	5.2	3.8	4.1					

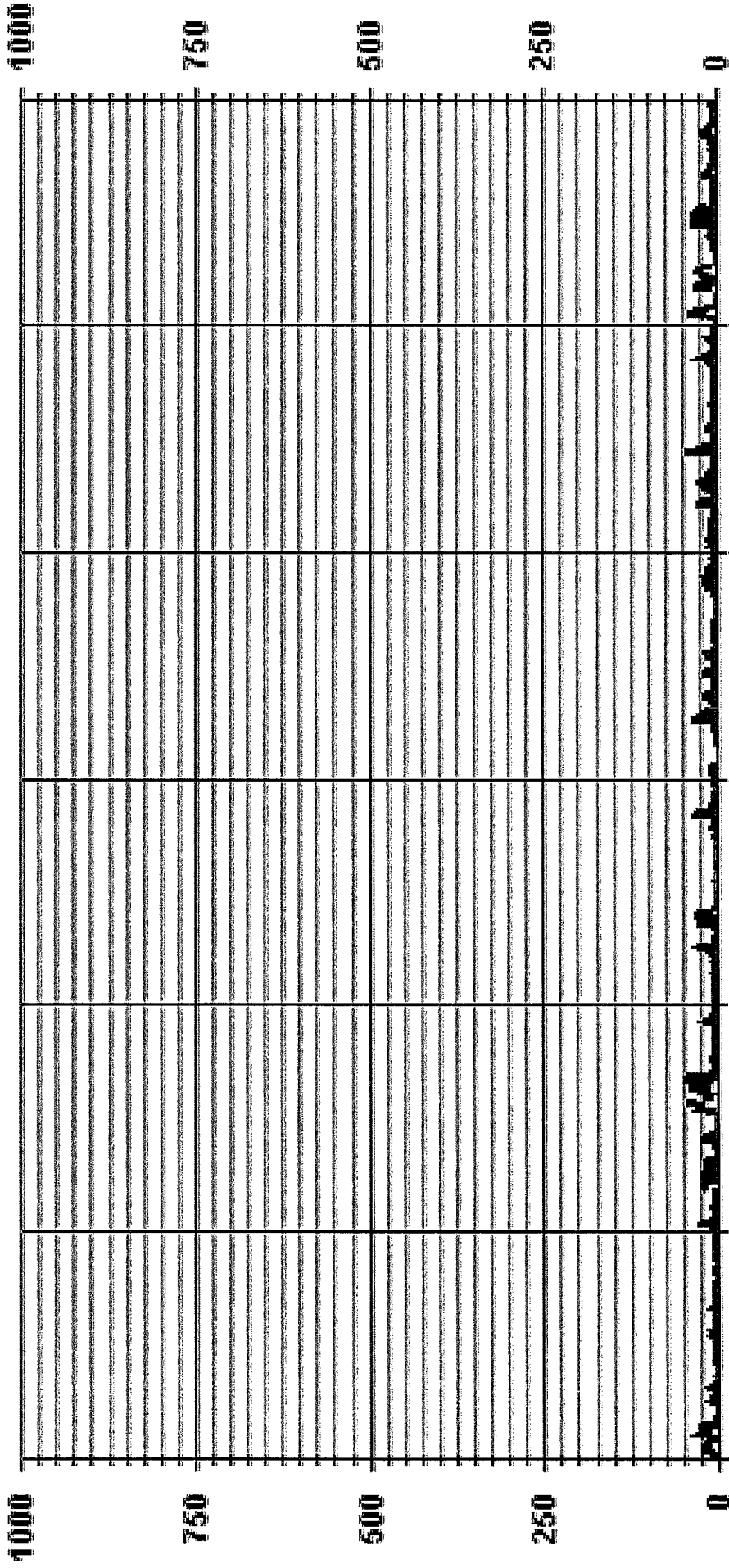
STATUS FLAG CODES

C	CALIBRATION
M	MAINTENANCE
S	DAILY ZERO/SPAN CHECK
P	POWER CALIBRE
G	OFFFOR REPAIR
Q	QUALITY ASSURANCE
R	RECOVER
X	MACHINE MALFUNCTION
O	OPERATOR ERROR
K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	676	PPB	50.8	@ HOUR(S)	10	ON DAY(S)	9
MAXIMUM INSTANTANEOUS VALUE:	50.8	PPB	50.8	@ HOUR(S)	10	ON DAY(S)	9
OPERATIONAL TIME:	35	HRS	35	OPERATIONAL TIME:	718	HRS	718
MONTHLY CALIBRATION TIME:	7	HRS	7	MONTHLY CALIBRATION TIME:	7	HRS	7
STANDARD DEVIATION:	7.76		7.76	STANDARD DEVIATION:	7.76		7.76

01 Hour Averages



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

— LICA30 NOXMAX PPB

LIC30  
 NOX\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LIC30  
 Parameter : NOX  
 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	4.86	5.89	5.30	3.82	2.50	4.56	5.89	4.27	4.12	10.60	14.72	6.77	8.24	9.42	4.86	4.12	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	4.86	5.89	5.30	3.82	2.50	4.56	5.89	4.27	4.12	10.60	14.72	6.77	8.24	9.42	4.86	4.12	

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	33	40	36	26	17	31	40	29	28	72	100	46	56	64	33	28	679
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	33	40	36	26	17	31	40	29	28	72	100	46	56	64	33	28	

Calm : .00 %

Total # Operational Hours : 679

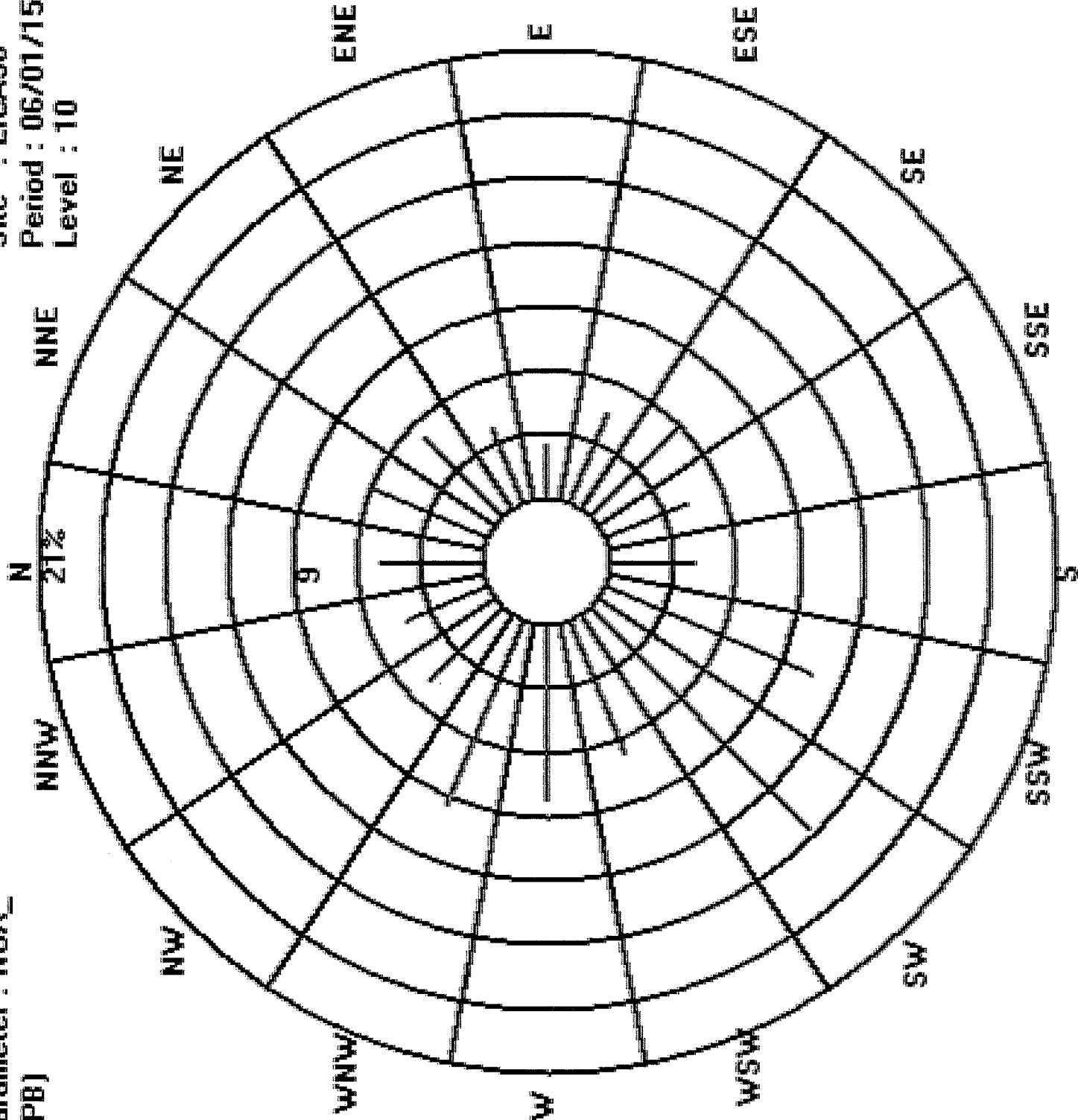
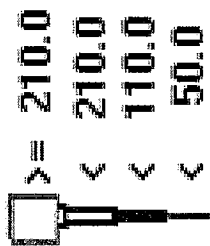
Logger : 30 Parameter : NDX\_

Site : LICA30

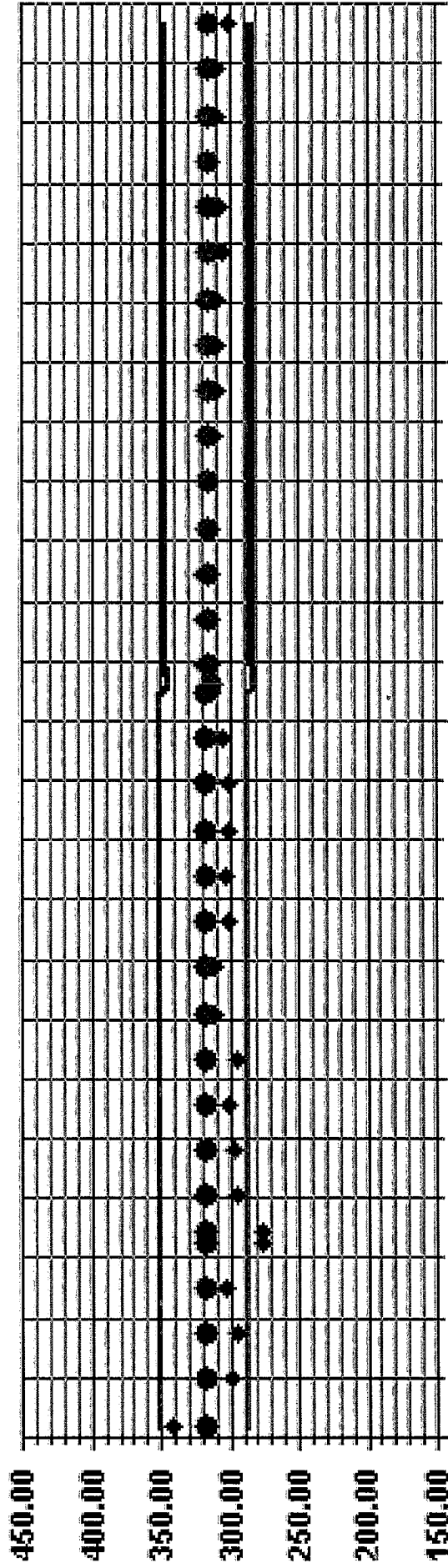
Class Limits (PPB)

Period : 06/01/15-06/30/15

Level : 10

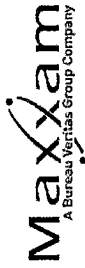


Calibration Graph for Site: LICA30 Parameter: NOX\_ Sequence: NO2 Phase: SPAN





***NITRIC OXIDES***



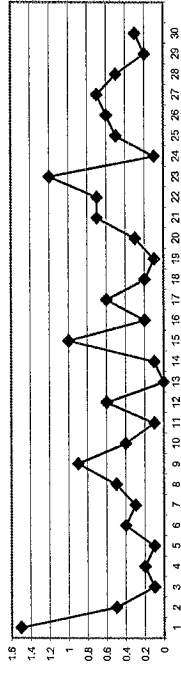
NITRIC OXIDE (NO) hourly averages in ppb

DAY	NITRIC OXIDE (NO) hourly averages in ppb																								24-HOUR AVG.		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	MAX.	MIN.		
1	0.0	0.0	0.0	0.0	0.0	1.1	\$	3.1	2.4	2.8	1.2	1.0	2.9	4.9	5.0	1.8	2.3	2.4	3.3	0.7	0.0	0.5	0.1	0.0	5.0	1.5	24	
2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.4	0.9	1.4	1.5	0.8	0.0	0.5	1.3	0.4	0.3	0.3	0.4	0.3	0.2	0.5	0.4	0.4	2.4	0.5	24	
3	0.3	0.2	0.3	0.3	0.0	0.2	0.4	0.6	0.5	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24	
4	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	1.4	1.2	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.1	0.2	0.1	1.4	0.2	24		
5	0.1	0.2	\$	0.0	0.2	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	0.0	0.0	1.1	0.1	24		
6	0.0	0.0	\$	0.2	0.0	4.6	1.0	0.3	0.1	0.3	0.1	0.2	0.1	0.3	0.7	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.1	4.6	0.4	24	
7	\$	0.2	0.0	0.0	0.0	0.0	1.1	1.9	0.2	0.0	0.0	0.2	0.1	0.5	1.1	0.5	0.0	0.0	0.0	0.2	0.3	0.4	\$	1.9	0.3	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	3.3	0.5	24	
9	0.1	0.4	0.3	0.6	1.9	7.2	1.4	2.0	2.3	0.3	0.0	0.1	0.1	0.1	0.8	0.2	0.5	0.2	0.1	0.0	0.0	0.0	0.4	7.2	0.9	24		
10	0.5	0.2	0.0	0.0	0.2	0.4	0.3	0.3	0.3	0.0	0.7	0.4	0.3	0.4	0.7	0.5	1.1	1.1	0.6	0.8	\$	0.0	0.0	1.1	0.4	24		
11	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.4	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.4	0.1	24		
12	0.1	0.1	0.0	0.1	0.2	0.7	3.0	4.7	2.7	0.3	0.0	0.1	0.2	0.5	0.1	0.1	0.0	0.0	\$	0.0	0.3	0.0	0.0	4.7	0.6	24		
13	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	0.0	0.0	0.0	\$	0.0	0.0	0.1	0.0	0.0	0.0	0.9	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	0.6	0.8	0.7	0.0	0.4	0.3	0.1	0.8	0.1	24
15	0.1	0.1	0.1	0.0	0.3	1.4	10.7	6.4	1.2	0.1	0.0	0.6	0.1	0.5	0.5	\$	0.0	0.1	0.0	0.0	0.0	0.0	0.0	10.7	1.0	24		
16	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.3	1.3	C	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.2	24		
17	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.8	1.0	3.1	1.0	1.0	1.6	1.0	0.0	0.2	0.3	0.3	0.4	0.5	0.7	0.4	0.2	3.1	0.6	24		
18	0.0	0.1	0.0	\$	0.2	0.2	0.3	0.4	0.5	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.4	0.8	0.1	0.1	0.1	0.1	0.8	0.2	24		
19	0.0	0.0	\$	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.3	0.1	24		
20	0.2	\$	0.0	0.0	0.0	0.5	1.0	0.4	1.4	0.7	1.2	0.0	0.0	0.2	0.0	0.2	0.3	0.5	0.4	0.1	0.0	0.0	0.2	1.4	0.3	24		
21	\$	0.2	0.2	0.1	1.2	0.9	2.5	4.4	1.7	0.3	0.0	1.0	0.9	1.0	0.9	0.1	0.6	0.3	0.6	0.4	0.1	0.0	0.1	\$	4.4	0.7	24	
22	0.0	0.0	2.9	1.9	0.7	0.4	1.2	1.0	1.0	0.2	0.9	1.7	0.8	0.0	1.7	0.3	0.1	0.2	0.8	0.0	0.1	0.1	\$	2.9	0.7	24		
23	0.0	0.0	0.0	0.0	0.0	0.2	1.0	10.7	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	12.1	1.2	24			
24	0.0	0.0	0.0	0.0	0.0	0.1	1.4	1.4	2.8	3.6	2.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	0.1	0.2	0.0	3.6	0.5	24		
25	0.2	0.0	0.0	0.0	0.0	1.1	0.8	7.3	1.4	1.3	0.8	0.0	0.1	0.1	0.0	0.0	0.0	0.0	\$	0.1	1.0	0.3	0.4	7.3	0.6	24		
26	0.0	0.0	0.0	0.0	0.8	3.4	4.7	3.5	3.3	0.6	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0	\$	0.0	0.0	0.0	0.1	4.7	0.7	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	24		
28	0.0	0.0	0.0	0.0	0.0	0.8	4.9	0.0	0.3	0.7	0.0	1.3	0.0	0.1	2.0	1.1	\$	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.5	24		
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	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	2.7	0.2	23		
30	0.5	0.9	2.9	1.9	3.4	7.2	12.1	10.7	3.7	2.8	3.0	1.7	2.9	4.9	5.0	1.8	2.3	2.4	3.3	2.5	2.1	3.3	0.4	0.5	0.3	24		
HOURLY MAX	0.5	0.9	2.9	1.9	3.4	7.2	12.1	10.7	3.7	2.8	3.0	1.7	2.9	4.9	5.0	1.8	2.3	2.4	3.3	2.5	2.1	3.3	0.4	0.5	0.3	24		
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.3	1.0	1.7	2.0	1.2	0.4	0.3	0.3	0.3	0.5	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1		

STATUS FLAG CODES

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

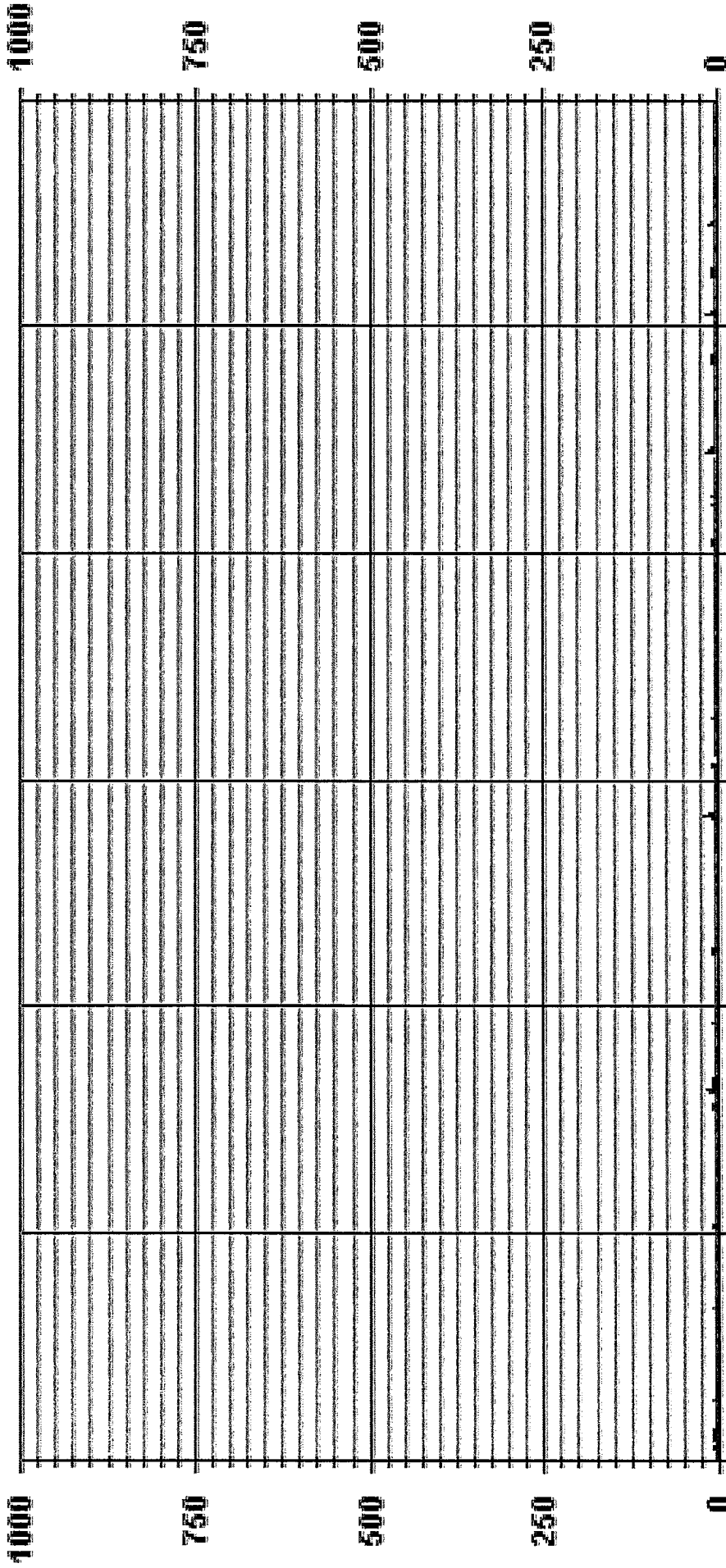
24 HOUR AVERAGES FOR JUNE 2015



MONTHLY SUMMARY

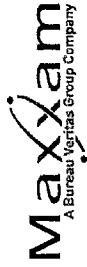
NUMBER OF NON-ZERO READINGS:	352
MAXIMUM 1-HR AVERAGE:	12.1 PPB
MAXIMUM 24-HR AVERAGE:	1.5 PPB
OPERATIONAL TIME:	33 HRS
MONTHLY CALIBRATION TIME:	7 HRS
MONTHLY AVERAGE:	1.15
ON DAY(S)	6
ON DAY(S) VAR-VARIOUS	23
OPERATIONAL TIME:	719 HRS
AMD OPERATION UPTIME:	99.9 %
MONTHLY AVERAGE:	0.5 PPB

01 Hour Averages



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

— LICA30 NO\_ PPB



NITRIC OXIDE MAX instantaneous maximum in ppb

DAY	HOURS																								DAILY MAX.	24-HOUR AVG.	ROGS.	
	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	0.2	0.1	0.2	0.6	1.7	6.5	\$	8.5	5.2	7.0	3.5	2.2	6.7	14.4	12.9	4.5	9.5	7.7	14.2	2.3	1.0	1.0	1.0	1.0	0.8	14.4	4.9	24
2	0.7	0.8	0.8	0.7	0.8	\$	2.3	5.6	1.8	3.7	2.8	1.8	0.9	1.8	2.8	1.4	1.0	0.8	1.0	0.8	0.8	1.1	1.0	0.9	5.6	1.6	24	
3	0.7	0.6	0.7	0.7	\$	0.6	0.7	1.1	1.2	1.2	0.9	0.6	0.6	0.6	0.5	0.8	1.1	0.9	1.1	0.6	0.4	0.5	0.5	0.5	1.2	0.7	24	
4	0.4	0.4	0.3	\$	0.5	0.6	0.8	1.3	2.1	2.5	2.8	1.6	0.5	0.5	0.5	0.7	0.8	0.8	0.8	0.6	0.6	0.6	0.6	0.8	2.8	0.9	24	
5	0.7	0.6	\$	0.6	0.7	0.7	\$	0.4	0.7	0.7	0.4	0.8	0.1	0.2	0.0	0.2	0.0	0.2	0.2	0.2	0.0	0.1	0.0	0.8	0.4	24		
6	0.0	\$	1.1	1.0	1.7	10.1	4.1	1.3	1.3	2.9	1.0	1.7	1.0	2.5	4.5	1.7	1.5	0.9	0.9	1.0	1.0	0.9	1.3	1.1	10.1	1.9	24	
7	\$	1.9	1.1	0.7	0.9	1.5	1.4	6.8	6.1	1.9	1.1	2.5	2.1	3.2	4.9	2.8	1.5	0.9	0.8	0.8	0.9	0.9	0.9	\$	6.8	2.1	24	
8	0.3	0.8	0.1	0.2	0.5	0.7	0.8	0.2	0.1	0.1	0.1	1.2	0.1	0.4	0.1	0.2	0.6	4.1	8.3	6.4	6.5	12.9	\$	1.3	12.9	2.0	24	
9	0.5	1.9	0.9	2.6	8.7	19.2	3.7	7.6	7.3	1.5	31.6	1.4	4.6	0.5	3.4	1.3	1.9	0.8	0.7	0.7	0.8	\$	0.9	0.9	31.6	4.5	24	
10	1.1	1.2	0.9	1.3	1.4	1.3	1.4	1.3	1.2	1.5	2.0	2.6	1.9	1.4	1.9	2.2	2.1	3.9	3.3	1.1	1.5	\$	0.6	0.5	3.9	1.6	24	
11	0.2	0.1	0.1	0.2	0.5	0.7	0.6	0.9	1.1	0.8	0.8	0.7	0.6	1.1	0.3	0.3	0.5	1.3	0.5	\$	0.8	0.6	0.6	0.9	1.3	0.6	24	
12	0.7	0.6	0.5	0.5	0.7	2.1	4.9	10.9	8.1	1.7	2.0	1.2	0.7	1.4	0.9	0.7	0.5	0.7	\$	2.3	4.2	0.4	0.3	0.3	10.9	2.0	24	
13	1.0	6.0	0.4	0.7	0.1	0.3	0.2	0.3	0.1	0.3	0.1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	\$	0.6	0.4	0.4	0.4	6.0	0.6	24	
14	0.4	0.6	0.6	0.6	0.4	0.5	0.3	0.5	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	\$	1.3	1.5	1.2	1.2	0.9	1.1	1.5	0.7	24
15	1.2	1.0	1.0	1.0	1.2	5.2	15.6	14.6	4.6	1.8	2.2	1.1	1.0	1.1	1.2	\$	0.6	0.6	0.7	0.6	0.4	0.4	0.3	0.3	15.6	2.5	24	
16	0.4	0.4	0.5	0.3	1.1	1.1	1.9	2.6	2.0	C	C	C	C	C	C	C	C	C	C	\$	0.7	0.5	0.9	0.7	0.4	2.6	0.9	24
17	0.6	0.5	0.7	0.5	\$	1.8	1.5	1.7	30.3	3.4	5.2	0.8	6.5	4.8	0.8	1.4	1.3	1.1	2.1	1.6	1.8	1.2	0.8	0.9	30.3	3.1	24	
18	0.8	0.9	0.9	\$	0.8	0.8	1.2	1.2	1.2	1.2	7.5	1.2	0.9	0.9	0.7	0.6	0.7	1.3	2.3	3.2	0.8	1.0	1.0	0.9	1.1	7.5	1.4	24
19	1.2	\$	0.6	0.9	0.7	0.6	2.7	3.0	1.9	4.1	4.6	4.9	1.1	0.7	2.5	0.5	2.3	1.4	0.9	1.0	1.0	0.8	0.9	0.8	0.7	1.1	0.9	24
20	1.1	1.2	1.0	2.4	1.6	4.8	6.2	5.7	1.2	0.8	0.7	3.8	2.5	0.9	R	1.4	1.9	1.5	0.7	0.7	0.7	0.9	0.8	\$	6.2	2.0	23	
21	1.2	0.8	6.7	7.0	2.5	1.4	2.0	2.3	2.3	1.2	6.2	7.6	3.2	0.6	8.8	1.5	1.1	1.0	3.5	0.9	0.8	1.0	\$	0.6	8.8	2.8	24	
22	0.8	0.6	0.4	0.5	1.1	4.2	32.8	18.4	9.7	1.3	0.6	0.8	0.5	0.7	0.7	0.5	0.5	0.4	2.3	2.3	0.4	\$	0.7	0.7	32.8	3.5	24	
23	0.4	0.4	0.5	0.7	0.4	1.4	2.0	2.9	1.5	0.9	0.8	0.9	0.6	0.6	0.8	0.6	0.6	0.6	0.6	0.4	\$	0.9	0.7	0.8	2.9	0.9	24	
24	0.4	0.4	0.5	0.7	0.4	1.4	2.0	2.9	1.5	0.9	0.8	0.9	0.6	0.6	0.8	0.6	0.6	0.6	0.6	0.4	\$	0.9	0.7	0.8	2.9	0.9	24	
25	1.0	1.0	0.6	0.6	0.8	8.6	4.2	17.9	13.0	7.7	5.6	0.9	0.8	0.9	1.2	0.7	1.0	0.9	\$	1.2	3.9	1.0	2.1	0.8	17.9	3.3	24	
26	1.0	0.5	0.7	1.9	5.7	13.1	10.2	8.4	2.2	0.9	1.0	0.8	0.9	1.2	0.7	0.7	0.8	\$	0.7	0.6	0.4	0.3	0.7	3.7	13.1	2.5	24	
27	1.0	0.5	0.7	1.9	5.7	13.1	10.2	8.4	2.2	0.9	1.0	0.8	0.9	1.2	0.7	0.7	0.8	\$	0.7	0.6	0.4	0.3	0.7	3.7	13.1	2.5	24	
28	0.4	0.6	0.7	0.4	0.9	2.7	13.4	0.8	1.7	2.8	1.9	17.0	1.9	1.9	8.5	7.2	\$	0.5	0.5	0.7	0.3	0.7	0.6	0.7	17.0	2.9	24	
29	0.7	0.4	0.9	0.5	0.7	X	0.7	2.4	6.5	0.8	1.6	0.7	1.0	0.9	1.0	\$	0.7	0.7	0.7	0.7	0.7	0.5	0.9	0.4	0.9	6.5	1.1	23
30	0.7	0.7	0.8	0.9	1.0	3.3	4.3	6.7	1.2	2.3	1.5	1.4	1.5	0.9	\$	1.1	0.9	0.9	0.6	0.7	0.8	1.0	1.0	0.7	6.7	1.5	24	
HOURLY MAX	1.2	6.0	6.7	7.0	8.7	19.2	32.8	18.4	30.3	7.7	31.6	17.0	6.7	14.4	12.9	7.2	9.5	7.7	14.2	6.4	6.5	12.9	2.1	3.7				
HOURLY AVG	0.7	0.9	0.9	1.0	1.4	3.4	4.3	5.0	4.2	2.3	3.0	2.0	1.6	1.7	2.2	1.4	1.3	1.4	1.9	1.2	1.2	1.2	0.8	0.9				

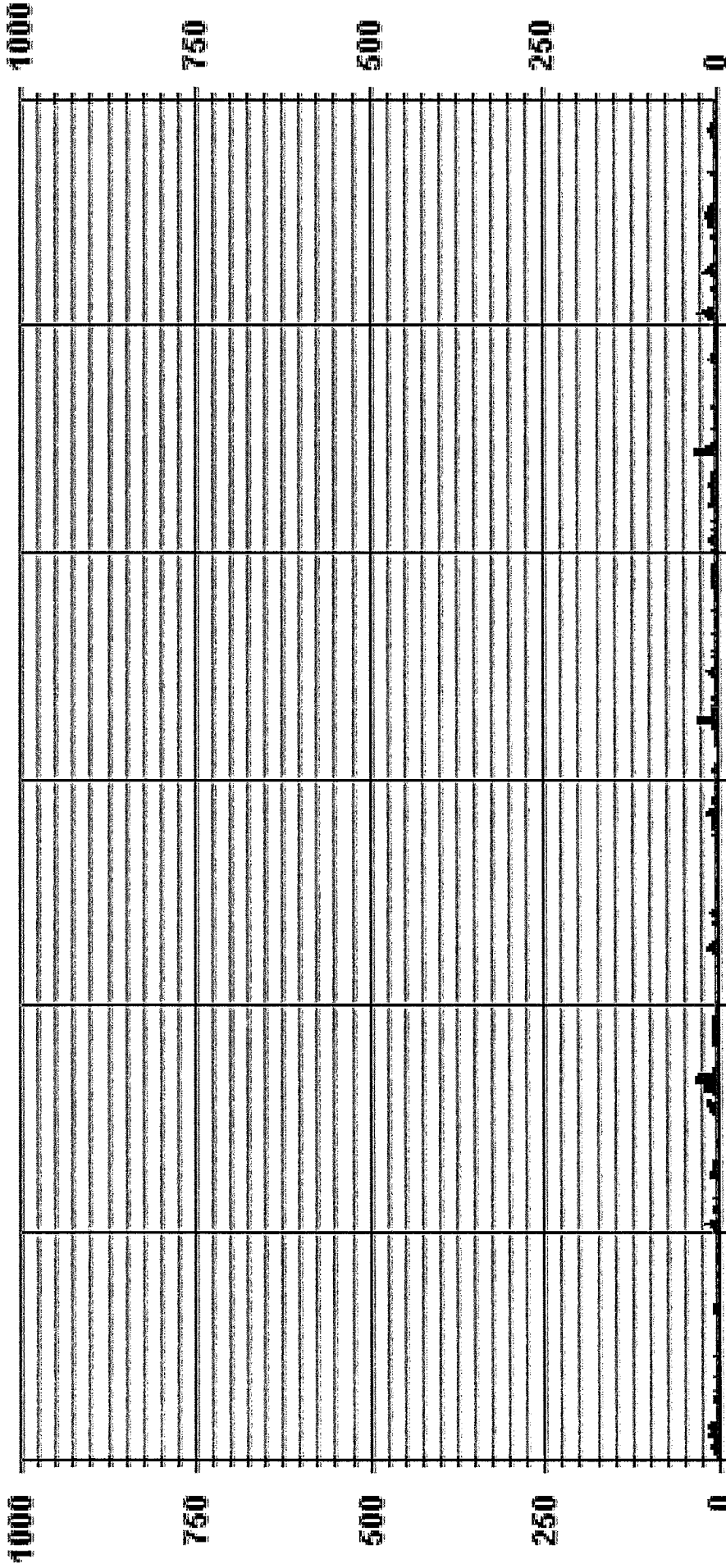
STATUS FLAG CODES

C	QUALITY ASSURANCE	Q	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SAMPLE CHECK	X	MACHINE ALLOCATION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUTLET FOR REPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	670
MAXIMUM INSTANTANEOUS VALUE:	32.8 PPB @ HOUR(S) 6 ON DAY(S) 23
12S CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	3.27
OPERATIONAL TIME:	718 HRS

01 Hour Averages



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

— LICA30 HOMAX PPB

LIICA30  
 NO\_ / WDR Joint Frequency Distribution (Percent)  
 June 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LIICA30  
 Parameter : NO  
 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	4.86	5.89	5.16	3.83	2.50	4.57	5.89	4.27	4.12	10.61	14.74	6.78	8.25	9.43	4.86	4.12	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	4.86	5.89	5.16	3.83	2.50	4.57	5.89	4.27	4.12	10.61	14.74	6.78	8.25	9.43	4.86	4.12	

Calm : .00 %

Total # Operational Hours : 678

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	40	35	26	17	31	40	29	28	72	100	46	56	64	33	28	678
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	33	40	35	26	17	31	40	29	28	72	100	46	56	64	33	28	678

Calm : .00 %

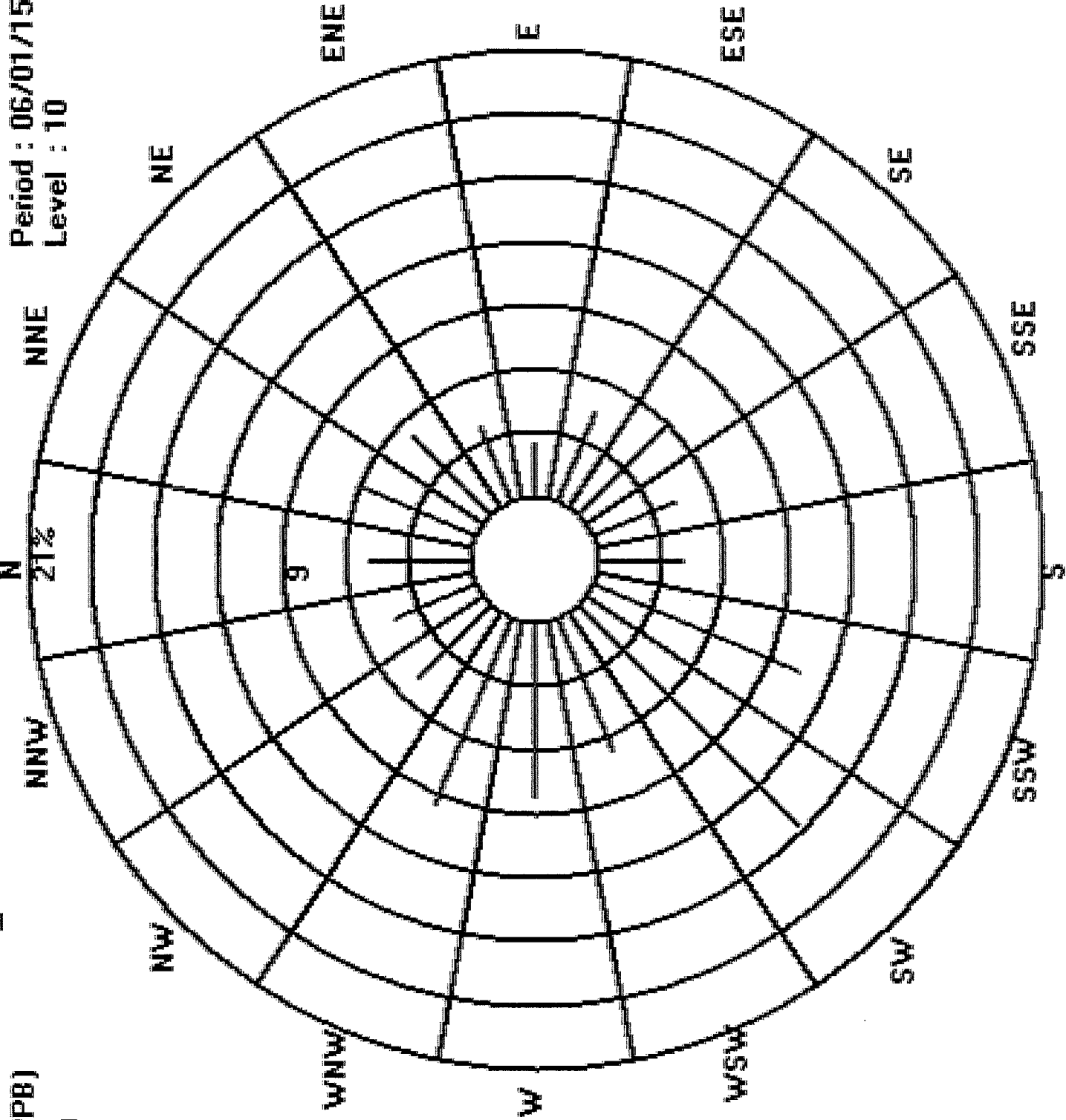
Total # Operational Hours : 678

Logger : 30 Parameter : NO\_

Site : LICA30

Period : 06/01/15-06/30/15

Level : 10



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

***NITROGEN DIOXIDE***





NITROGEN DIOXIDE (NO2) 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
HOURLY MAX	3.4	13.7	12.5	15.2	15.0	14.2	14.6	15.8	11.0	7.6	9.0	4.8	5.3	6.1	6.4	3.6	4.1	4.8	10.3	10.9	16.0	14.2	7.6	7.3	2	2	2	2	2	2
HOURLY AVG	1	2	3	3	3	3	4	4	4	5	3	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DAILY MAX	7.7	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
DAILY AVG	2.8	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7

STATUS FLAG CODES

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

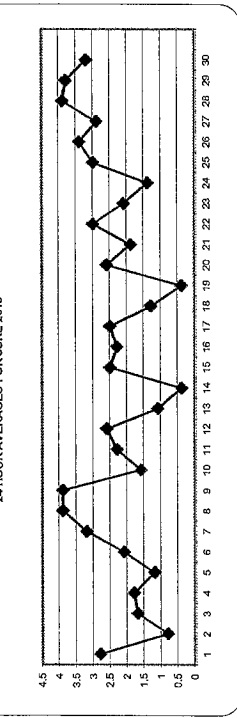
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1597-PPB

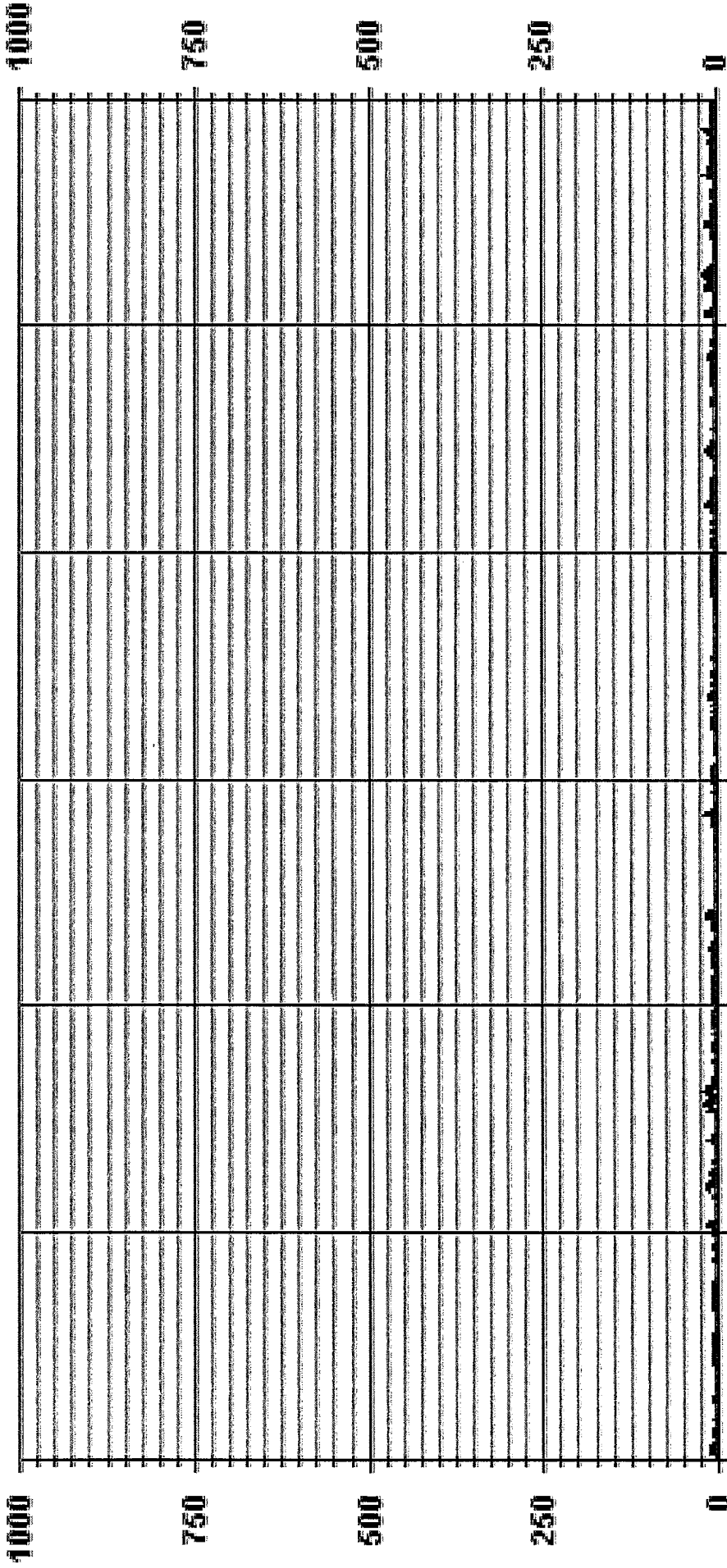
MONTHLY SUMMARY

NUMBER OF ZERO EXCEEDENCES	0
NUMBER OF NON-ZERO READINGS:	642
MAXIMUM 1-HR AVERAGE:	16.0
MAXIMUM 24-HR AVERAGE:	3.9
1/2 CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	719 HRS
AMTD OPERATION UPTIME:	99.9 %
MONTHLY AVERAGE:	2.78
ON DAY(S)	8
ON DAY(S) VAR-VARIOUS	VAR
MONTHLY AVERAGE:	2.3

24 HOUR AVERAGES FOR JUNE 2015



01 Hour Averages



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

— LICA30 NO2\_ PPB

NITROGEN DIOXIDE MAX instantaneous maximum in ppb



MST

DAY	HOURS																								24-HOUR 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				0:00
1	1.3	1.3	1.0	8.9	11.2	16.2	S	13.6	10.7	11.3	10.1	4.3	7.6	15.8	13.2	5.5	9.1	8.8	12.3	5.1	0.4	2.5	2.2	1.9	16.2	7.6	24	
2	1.1	0.6	0.4	0.3	0.4	0.3	S	3.9	7.2	4.6	5.2	4.2	3.6	1.5	3.2	7.3	2.8	1.4	1.3	1.1	1.0	1.2	1.6	0.9	7.3	2.4	24	
3	0.8	0.8	2.4	1.8	S	2.2	2.6	3.9	4.5	2.9	3.3	1.9	1.9	1.9	1.9	4.1	2.8	5.0	3.2	4.1	8.8	1.5	1.3	8.8	2.9	24		
4	1.1	1.3	1.1	S	1.3	1.1	2.1	5.4	8.0	7.1	6.3	4.8	3.0	1.5	2.0	1.9	2.3	1.7	1.7	1.9	2.2	2.5	2.4	2.4	8.0	2.8	24	
5	2.1	1.5	S	1.4	1.2	1.2	S	S	2.9	4.0	3.2	2.8	4.3	1.9	1.8	1.6	1.6	1.7	2.0	1.8	1.8	1.6	1.6	2.1	4.3	2.1	24	
6	2.6	S	4.6	7.4	7.8	20.2	10.8	2.1	1.0	2.9	0.9	2.3	0.8	4.2	9.0	3.1	2.9	0.6	0.8	4.4	5.9	3.9	4.8	4.2	20.2	4.7	24	
7	S	19.7	23.1	22.3	1.4	10.2	9.7	15.7	15.2	5.3	2.4	5.0	4.1	6.8	13.6	6.7	4.8	0.9	0.7	0.6	1.0	1.3	1.9	S	23.1	7.8	24	
8	1.7	19.6	19.5	4.2	8.3	8.3	2.5	0.9	0.9	0.7	0.7	1.2	0.9	0.9	0.9	0.8	2.7	11.2	20.2	19.7	24.2	29.9	S	16.6	29.9	8.5	24	
9	5.1	18.0	12.4	18.4	18.7	21.8	6.2	11.8	12.5	2.4	22.1	3.4	5.1	0.6	7.1	2.2	4.2	1.9	1.8	8.7	8.9	S	2.1	1.5	22.1	8.6	24	
10	1.5	2.7	2.6	3.0	2.4	2.9	2.1	1.7	1.4	3.5	4.9	2.9	2.0	3.5	5.0	5.1	14.4	11.4	1.2	8.2	S	1.4	1.1	2.2	14.4	3.8	24	
11	4.0	1.5	0.9	2.3	2.3	4.1	4.0	3.9	3.8	4.0	2.8	2.4	2.4	4.3	2.8	1.8	1.5	5.2	1.1	S	4.6	4.1	3.0	6.9	6.9	3.2	24	
12	2.8	1.7	2.4	1.8	1.0	8.0	11.8	14.2	10.8	3.8	2.2	2.3	1.5	2.9	1.1	1.0	0.6	0.7	S	11.7	22.1	5.0	4.0	5.7	22.1	5.2	24	
13	11.9	24.8	8.7	8.3	1.0	0.9	0.4	0.9	0.4	0.5	0.5	0.6	0.7	0.4	0.7	S	1.1	0.6	0.4	0.4	0.4	0.4	0.3	0.4	24.8	2.8	24	
14	0.4	0.4	0.4	0.3	0.9	0.6	0.3	0.4	0.2	0.2	0.3	0.3	0.4	0.3	0.3	S	1.2	2.6	2.0	0.7	1.2	2.1	2.1	7.6	7.6	1.0	24	
15	7.3	2.6	4.0	4.0	4.3	9.0	15.9	15.4	7.6	4.0	5.7	1.7	1.2	1.0	1.5	S	1.8	1.6	3.8	4.2	1.5	1.4	2.4	3.2	15.9	4.6	24	
16	3.1	3.0	3.7	4.5	6.5	6.1	5.5	6.0	4.6	C	C	C	C	C	C	C	1.4	S	1.2	0.7	0.4	0.4	0.4	0.4	6.5	3.2	24	
17	0.5	1.2	3.3	4.3	S	4.8	3.5	3.2	11.3	6.6	7.1	2.1	9.9	6.8	1.5	4.0	3.1	3.4	7.7	6.1	15.7	15.7	2.4	4.1	15.7	5.6	24	
18	3.2	0.8	1.8	S	2.4	2.2	1.5	1.5	1.6	16.4	1.4	1.2	1.6	1.7	1.4	1.1	4.6	10.4	11.4	1.2	1.4	1.8	1.0	1.0	16.4	3.2	24	
19	0.8	0.7	S	3.2	2.8	2.4	3.5	9.5	9.2	6.0	10.1	9.3	12.8	1.4	0.9	7.3	7.5	0.6	6.0	4.1	4.7	3.8	2.2	7.2	3.9	12.8	5.2	24
20	0.7	S	3.2	1.9	1.7	7.3	3.8	3.8	7.6	6.5	1.1	0.9	0.6	5.8	7.9	2.3	R	5.6	7.2	5.5	1.2	1.8	5.5	6.1	S	7.9	4.2	23
21	S	3.2	1.6	17.8	17.4	9.2	4.1	4.5	3.6	3.6	2.0	10.0	12.3	7.6	1.4	18.9	7.9	2.9	3.7	10.7	3.3	0.9	1.3	S	1.7	18.9	6.5	24
22	1.2	1.3	1.7	3.0	3.3	4.4	12.9	13.9	12.4	2.3	1.8	1.8	1.8	1.8	1.5	1.5	1.1	1.3	0.5	9.2	9.3	1.9	S	3.0	1.7	13.9	4.0	24
23	1.7	1.5	1.3	1.1	1.3	1.8	3.8	5.6	3.6	2.7	2.7	2.1	2.1	1.6	1.3	1.1	1.3	1.5	2.1	2.1	3.0	S	2.2	2.2	2.7	5.6	2.2	24
24	2.8	2.6	2.5	2.7	2.9	6.7	5.3	16.8	14.7	12.3	4.7	1.8	1.6	1.1	1.9	4.4	6.7	10.4	1.1	S	2.3	1.5	1.5	2.1	16.8	4.8	24	
25	1.2	1.1	1.9	1.3	0.8	4.5	15.6	23.8	23.7	11.7	9.9	1.7	2.0	1.0	0.6	0.6	0.6	0.7	S	8.0	30.1	25.8	23.4	6.3	30.1	8.5	24	
26	0.5	0.4	8.1	17.7	17.2	20.1	16.5	14.0	5.8	0.4	0.9	0.7	2.1	1.0	0.4	0.4	0.4	S	1.8	1.0	1.2	1.2	1.2	4.6	20.1	5.1	24	
27	2.8	4.7	6.3	6.8	6.8	10.7	23.4	4.0	8.6	10.9	5.3	23.4	4.8	6.3	19.5	11.2	S	3.0	3.6	1.3	5.0	7.5	5.8	4.7	23.4	8.1	24	
28	2.9	2.0	1.8	1.8	2.0	X	2.0	6.7	13.6	7.8	14.4	6.7	7.7	6.6	9.2	S	4.6	4.1	2.5	2.7	4.1	2.7	7.1	4.2	14.4	5.3	23	
29	3.0	7.7	9.1	6.6	4.0	14.9	15.4	18.8	4.0	8.8	4.9	4.2	4.2	1.5	S	2.3	1.5	1.7	1.5	1.9	1.9	2.1	8.4	9.6	18.8	6.0	24	
30	11.9	24.8	23.1	22.3	18.7	21.8	23.4	23.8	23.7	16.4	22.1	23.4	9.9	15.8	19.5	11.2	14.4	11.4	20.2	19.7	30.1	29.9	23.4	16.6	30.1	16.6	3.7	24
HOURLY MAX	2.5	4.6	5.3	5.6	4.6	7.0	8.0	6.8	5.2	4.9	3.9	3.1	3.1	4.8	3.0	3.2	3.9	4.5	4.3	5.5	4.6	4.6	3.6	3.6	3.6	3.6	3.7	24
HOURLY AVG	2.5	4.6	5.3	5.6	4.6	7.0	8.0	6.8	5.2	4.9	3.9	3.1	3.1	4.8	3.0	3.2	3.9	4.5	4.3	5.5	4.6	4.6	3.6	3.6	3.6	3.6	3.7	24

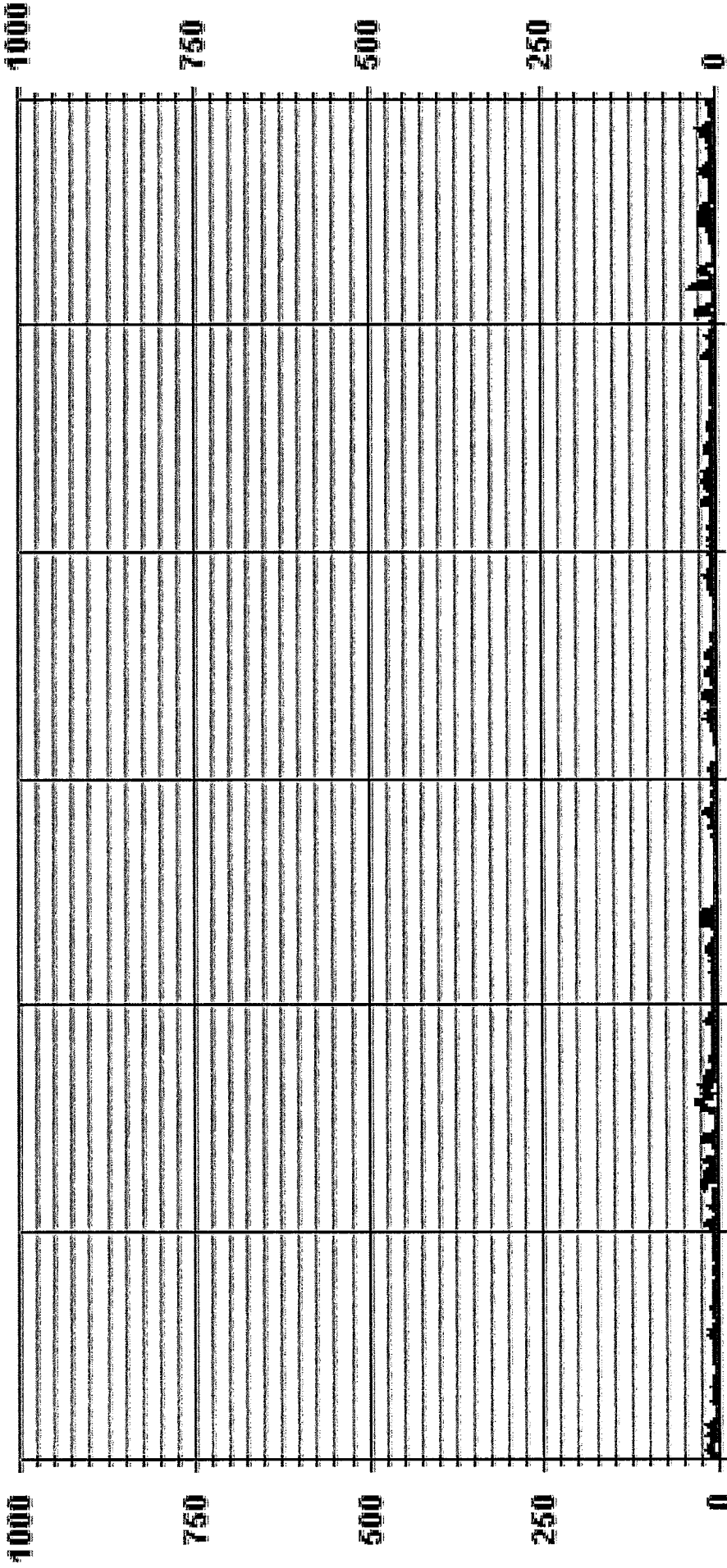
STATUS FLAG CODES

C	QUALITY ASSURANCE
O	RECOVERY
Y	MACHINE/VALVE/JUNCTION
S	DAILY ZERO/SPAN CHECK
P	POWER FAILURE
G	OUT-OF-REPAIR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	676
MAXIMUM INSTANTANEOUS VALUE:	30.1 PPB @ HOUR(S) 20 ON DAY(S) 26
12S CALIBRATION TIME:	35 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	718 HRS
STANDARD DEVIATION:	5.23
VAR-VARIOUS	VAR-VARIOUS

01 Hour Averages



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

— LICA30 NO2MAX PPB

LIIA30  
 NO2\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LIIA30  
 Parameter : NO2  
 Units : PPS

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	4.86	5.89	5.30	3.82	2.50	4.56	5.89	4.27	4.12	10.60	14.72	6.77	8.24	9.42	4.86	4.12	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	4.86	5.89	5.30	3.82	2.50	4.56	5.89	4.27	4.12	10.60	14.72	6.77	8.24	9.42	4.86	4.12	

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

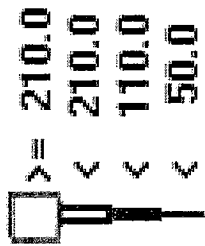
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	33	40	36	26	17	31	40	29	28	72	100	46	56	64	33	28	679
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	33	40	36	26	17	31	40	29	28	72	100	46	56	64	33	28	

Calm : .00 %

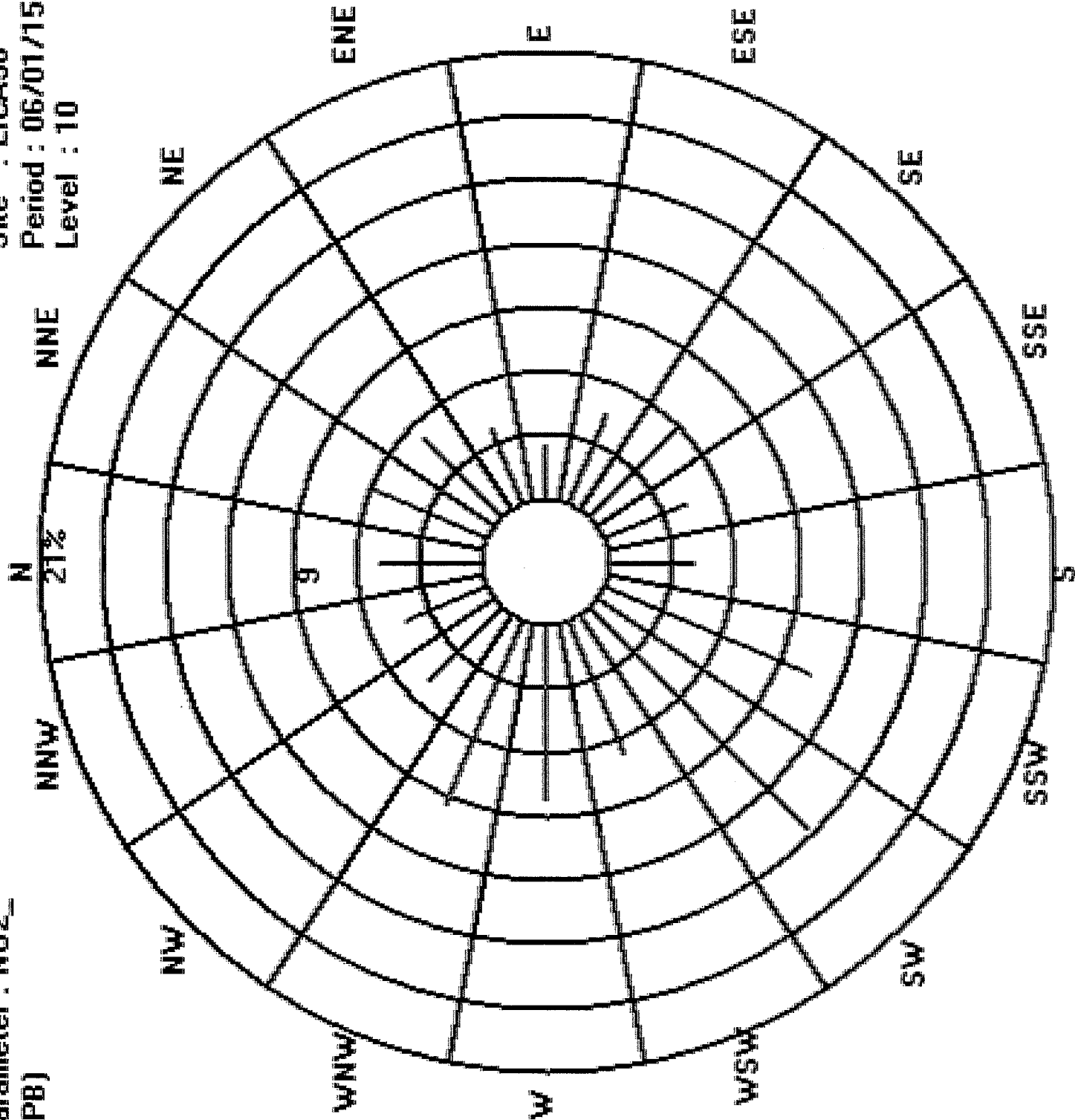
Total # Operational Hours : 679

Logger : 30 Parameter : NO2\_

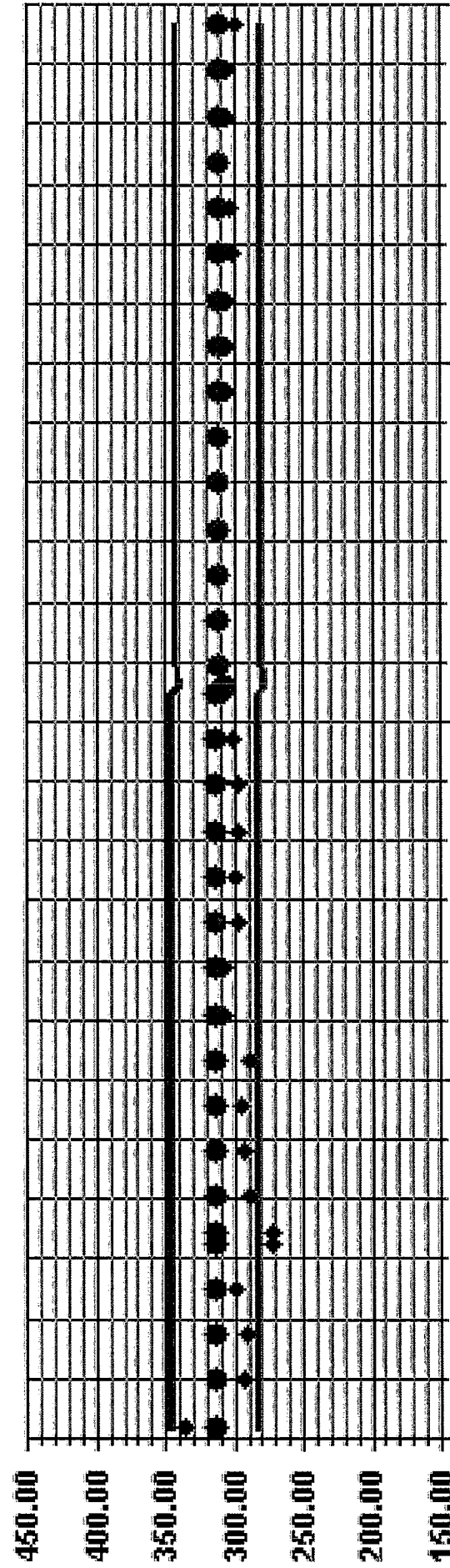
Class Limits (PPB)



Site : LICA30  
Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA30 Parameter: NO2\_ Sequence: NO2 Phase: SPAM



6/1/15      6/8/15      6/16/15      6/23/15      7/1/15  
 +      ◆      — Exp Value +10%      — Exp Value -10%

***WIND SPEED***



**WIND SPEED (WS) hourly averages in km/hr**

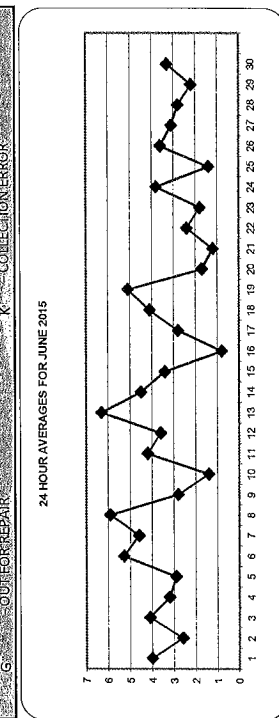
DAY	HOURS																								24-HOUR AVG.			
	0000	0059	0159	0259	0359	0459	0559	0659	0759	0859	0959	1059	1159	1259	1359	1459	1559	1659	1759	1859	1959	2059	2159	2259		2359		
1	2.8	3.0	2.5	4.1	4.5	4.5	5.1	5.6	5.3	4.6	4.5	5.7	6.8	8.9	8.1	6.4	6.2	6.7	5.7	5.7	1.9	1.8	2.7	0.5	8.9	4.7	24	
2	0.7	4.0	4.6	3.5	0.4	2.4	3.7	2.6	4.4	4.9	4.8	4.0	5.4	4.9	2.2	3.2	4.1	3.3	2.4	2.5	2.7	2.0	1.7	5.4	1.7	5.4	3.2	24
3	3.1	4.6	4.9	4.1	3.6	4.0	4.0	2.9	3.7	6.8	7.0	8.5	6.7	6.5	6.2	5.7	4.7	5.5	3.6	2.6	2.9	2.5	3.2	1.6	8.5	4.6	24	
4	1.4	0.8	1.6	1.3	2.5	3.6	3.7	4.2	5.2	6.4	7.1	8.4	7.6	9.6	8.3	7.2	10.6	11.3	6.4	3.1	1.9	1.0	2.0	1.8	11.3	4.9	24	
5	2.1	1.5	1.2	1.3	1.0	3.0	3.0	2.9	4.9	5.2	6.3	6.3	5.7	5.7	6.0	6.3	4.0	6.3	3.4	3.5	4.0	4.3	4.7	6.3	4.1	24		
6	4.3	4.7	5.5	4.8	3.2	4.2	5.1	7.7	6.0	7.8	10.1	9.4	9.1	9.1	7.4	8.5	8.5	8.5	9.6	5.4	1.9	3.1	1.9	2.3	10.1	6.2	24	
7	2.8	3.1	2.8	2.6	4.0	5.9	5.7	5.8	5.3	5.7	6.6	7.2	5.6	5.8	6.2	7.0	6.2	5.3	3.4	3.1	3.2	3.7	3.8	7.2	4.9	24		
8	4.0	2.5	3.5	4.0	5.4	4.6	5.5	4.6	8.0	7.9	8.4	7.7	7.1	8.5	9.1	12.2	13.9	8.2	8.6	7.9	6.1	5.8	5.1	3.6	13.9	6.8	24	
9	3.3	2.9	1.8	1.7	1.6	4.8	4.6	4.8	5.0	6.7	6.2	7.2	6.6	6.1	4.5	3.2	3.4	6.6	4.2	1.1	3.3	0.9	0.3	8.8	7.2	3.8	24	
10	1.2	1.1	1.5	2.3	0.3	1.2	4.9	7.9	5.5	3.3	4.0	3.5	2.5	3.5	2.2	4.6	4.1	4.3	3.2	3.4	3.9	4.8	3.9	4.9	7.9	3.4	24	
11	5.8	4.3	4.2	3.6	1.2	3.8	3.8	4.9	8.1	5.7	6.3	7.4	8.1	7.5	7.6	6.7	6.9	5.9	6.8	3.3	5.4	9.8	11.0	2.3	11.0	5.9	24	
12	2.0	2.5	3.9	3.5	4.6	6.6	7.1	6.6	6.3	6.6	5.9	5.1	4.3	6.8	7.9	4.0	3.1	1.6	4.2	2.4	2.0	5.3	5.3	7.9	4.7	24		
13	4.6	4.1	3.6	2.1	5.3	6.8	8.4	6.2	6.4	6.2	5.0	7.2	8.5	9.4	13.1	12.6	9.6	8.1	6.8	4.5	5.9	7.0	6.0	13.1	6.8	24		
14	6.7	4.4	4.8	6.1	5.2	5.6	5.5	7.9	7.4	7.0	8.4	10.8	10.8	9.5	9.8	9.3	5.3	5.1	2.6	2.6	4.5	3.8	3.9	3.6	10.8	6.3	24	
15	2.5	2.0	2.2	2.8	3.5	1.4	2.8	2.1	4.3	3.2	3.1	4.0	3.8	7.9	7.8	6.6	7.6	6.9	4.1	2.9	4.1	3.9	3.8	2.0	7.9	4.0	24	
16	4.8	5.2	5.4	5.8	5.5	6.0	5.2	5.4	7.7	8.1	5.8	6.4	4.9	5.5	9.1	12.0	5.7	8.8	12.3	11.0	7.7	5.0	4.5	0.9	12.3	6.6	24	
17	2.4	2.7	2.5	2.6	1.9	2.2	4.0	4.4	6.4	6.2	7.7	7.5	7.3	6.2	6.8	5.3	4.2	2.5	3.6	4.2	3.3	3.1	3.0	4.7	7.7	4.4	24	
18	5.0	4.8	2.7	2.4	2.2	3.3	3.2	4.6	5.1	6.7	7.3	11.0	8.3	7.5	7.6	8.6	5.6	6.1	5.7	3.8	2.9	2.2	2.4	2.0	11.0	5.0	24	
19	1.6	1.1	1.5	0.3	1.0	2.1	5.7	10.7	8.5	9.1	6.9	6.0	7.2	7.8	8.2	7.5	6.0	7.3	8.4	5.6	3.8	2.6	3.6	3.1	10.7	5.2	24	
20	3.6	1.1	2.7	1.4	2.3	2.1	3.8	4.2	4.3	4.0	3.6	3.8	4.5	4.9	3.4	3.6	5.3	6.1	5.8	2.0	1.8	0.9	1.4	1.1	6.1	3.2	24	
21	1.1	1.9	3.2	5.1	3.3	2.2	4.6	2.4	3.7	5.3	5.0	3.3	1.3	1.7	4.1	2.3	5.8	3.7	3.4	1.7	2.9	4.0	3.3	2.6	5.8	3.2	24	
22	2.7	2.9	2.6	2.2	2.5	3.1	4.4	4.3	5.0	5.5	5.2	5.1	4.4	6.8	9.9	2.6	3.9	5.4	6.1	4.7	1.6	1.2	1.3	1.8	9.9	4.0	24	
23	2.0	1.0	2.0	1.5	0.3	0.6	1.1	1.5	3.2	3.3	4.0	6.7	10.0	6.0	5.3	10.9	5.4	5.2	5.7	4.6	4.1	3.9	1.3	1.3	8.4	4.1	24	
24	0.9	0.9	0.6	0.8	0.4	0.4	2.9	1.8	4.0	6.3	7.5	8.3	6.6	7.8	7.3	8.4	6.4	5.2	5.7	4.6	4.1	3.9	1.3	1.3	8.4	4.1	24	
25	1.2	0.4	1.1	0.4	0.5	1.8	1.6	1.7	3.1	4.5	7.5	9.8	10.7	9.9	2.4	7.1	4.7	7.0	6.1	3.4	2.2	0.9	0.4	1.2	10.7	3.7	24	
26	1.5	1.0	4.5	2.0	0.4	0.9	2.6	4.1	3.7	2.4	3.9	5.0	6.0	6.6	8.1	7.9	6.9	6.0	4.4	5.2	4.0	2.6	2.4	2.7	8.1	4.0	24	
27	3.0	2.6	2.0	2.3	2.2	3.7	6.1	5.2	5.6	6.1	5.9	7.0	4.8	5.5	6.6	4.5	3.0	2.2	1.3	1.5	2.7	2.0	1.4	1.4	7.0	3.7	24	
28	2.1	1.7	3.3	0.7	1.2	1.6	2.4	3.8	5.3	4.9	5.6	7.7	8.1	7.1	6.1	7.3	9.5	6.2	2.9	1.6	1.1	1.7	2.0	0.3	9.5	3.9	24	
29	0.6	0.7	1.0	1.8	0.7	1.4	1.3	2.1	3.4	2.7	2.0	3.4	4.3	3.8	2.7	3.2	3.6	2.3	2.1	3.0	3.0	3.0	2.6	4.3	2.4	23		
30	3.0	5.2	3.1	2.3	1.9	2.9	3.9	3.9	3.0	1.8	5.4	6.8	6.3	5.5	4.9	5.1	5.2	4.7	3.6	2.8	3.0	2.4	3.3	2.4	6.8	3.9	24	
HOURLY MAX	6.7	5.2	5.5	6.1	5.5	6.8	8.4	10.7	8.5	9.1	10.1	11.0	10.8	10.0	13.1	12.6	13.9	11.3	12.3	11.0	7.7	9.8	11.0	6.0	11.0	6.0	24	
HOURLY AVG	2.8	2.6	2.9	2.6	2.4	3.3	4.2	4.5	5.2	5.5	5.9	6.5	6.3	6.8	6.7	6.6	6.2	5.9	5.0	3.7	3.3	3.1	3.2	2.5	6.6	2.4	24	

**STATUS FLAG CODES**

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

LAST CALIBRATION: March 04, 2014

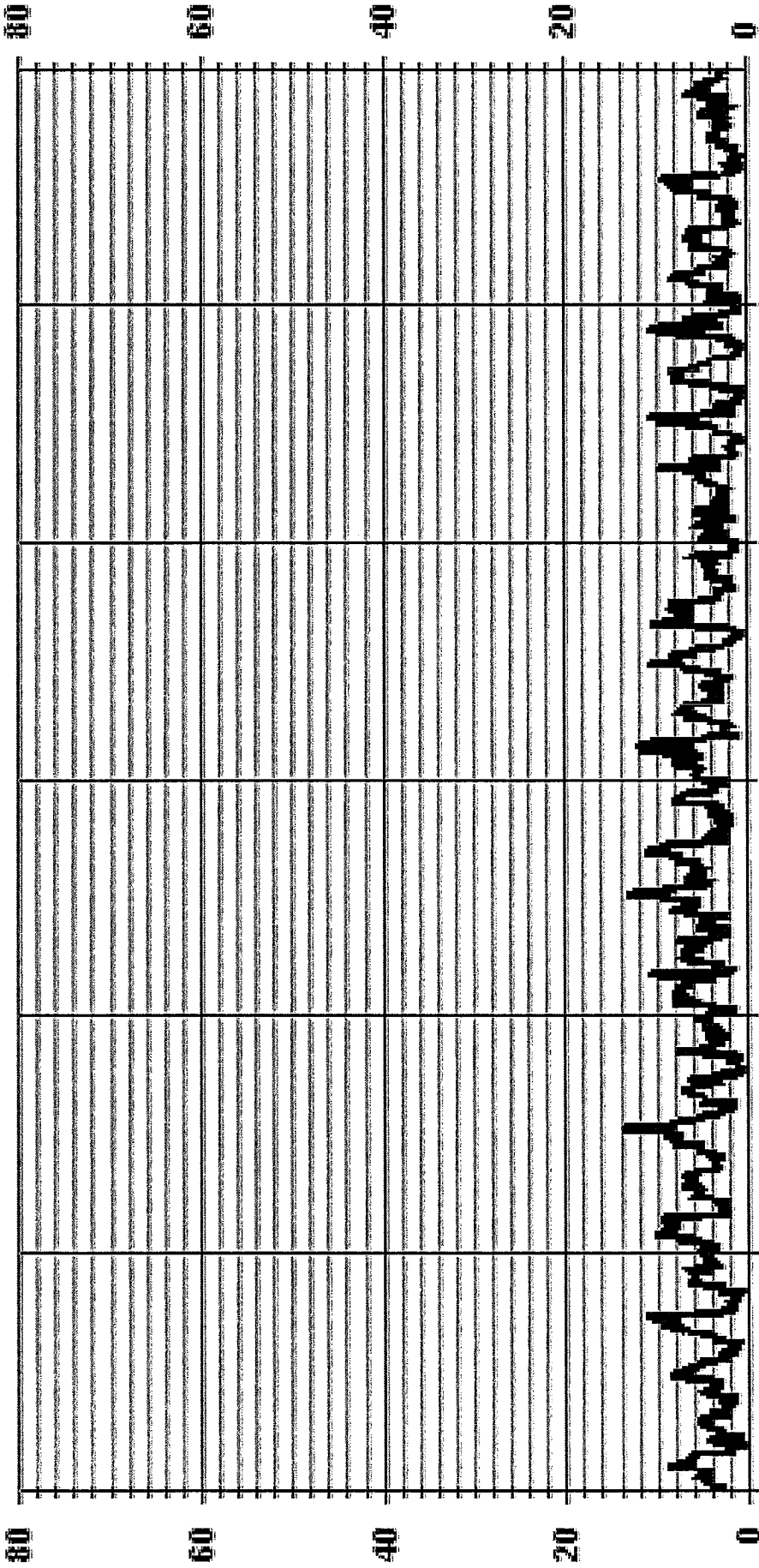
DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	719	KPH @ HOUR(S)	16	ON DAY(S)	8
MAXIMUM 1-HR AVERAGE:	13.9	KPH	5.8	ON DAY(S)	8, 13
MAXIMUM 24-HR AVERAGE:	0	HRS	2.48	MONTHLY AVERAGE:	4.5
MONTHLY CALIBRATION TIME:	0	HRS	2.48	MONTHLY AVERAGE:	4.5
STANDARD DEVIATION:	2.48	MONTHLY AVERAGE:	4.5	OPERATIONAL TIME:	719 HRS
		MONTHLY AVERAGE:	4.5	AMD OPERATION UPTIME:	99.9 %
		MONTHLY AVERAGE:	4.5	VAR-VARIOUS	8

01 Hour Averages



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

— LICA30 WSP KPH



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

DAY	HOUR																								24-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		
1	13.9	16.1	11.5	16.1	15.9	15.5	26.5	20.6	19.1	17.1	25.1	25.1	29.5	32.6	34.1	33.6	26.8	29.5	31.5	19.9	10.7	7.8	6.7	6.1	34.1	20.5	24	
2	7.8	11.1	11.5	10.9	9.9	11.1	10.0	10.9	13.5	17.9	24.2	18.1	17.2	25.8	13.7	17.4	19.2	10.6	7.1	7.1	6.9	5.6	4.7	6.3	25.8	12.4	24	
3	8.9	15.9	18.1	15.0	13.9	11.8	13.4	13.4	16.2	22.3	21.4	28.4	22.7	26.2	24.4	22.2	16.6	26.8	16.6	9.8	8.0	6.3	8.7	11.3	28.4	16.6	24	
4	12.6	4.3	5.8	6.3	7.4	7.6	10.0	10.0	14.4	24.2	28.8	29.2	31.9	32.1	31.1	32.1	33.3	30.4	34.8	25.0	8.1	5.9	3.4	4.3	7.1	34.8	17.9	24
5	7.4	6.7	6.5	5.4	3.0	7.6	10.0	17.9	16.6	20.1	21.4	23.3	29.2	22.7	21.1	24.2	18.8	17.4	15.9	13.9	8.7	6.9	7.8	8.9	29.2	14.2	24	
6	10.4	11.1	13.7	12.6	10.9	16.9	19.3	29.1	28.7	34.6	39.6	40.1	45.9	36.7	35.4	40.8	38.0	42.1	39.1	36.9	15.5	6.3	7.4	8.5	45.9	25.8	24	
7	12.2	13.9	16.1	12.4	17.4	24.2	22.5	22.7	19.4	26.8	33.0	38.4	30.8	27.7	27.7	30.1	32.7	34.9	26.8	16.3	13.3	12.2	13.0	21.6	38.4	22.8	24	
8	22.9	27.1	10.9	11.5	12.2	19.0	24.2	25.1	37.1	40.8	42.8	36.0	35.8	36.5	40.9	51.6	60.6	54.3	42.3	35.9	29.1	22.6	21.4	14.4	60.6	31.5	24	
9	13.5	12.4	10.7	11.3	9.8	21.4	18.1	18.5	18.5	24.7	25.1	33.8	28.4	26.6	26.4	27.3	15.2	34.1	20.5	5.2	8.0	5.2	4.7	4.3	34.1	17.7	24	
10	4.1	4.7	5.0	5.0	4.8	5.5	16.7	16.6	17.7	17.0	25.5	19.8	26.4	23.3	15.5	19.6	16.6	16.1	9.8	10.6	11.1	11.5	10.9	12.6	26.4	13.6	24	
11	13.7	15.5	15.2	13.1	8.2	14.1	12.8	17.0	26.2	16.8	21.8	23.3	27.5	30.6	30.1	27.9	39.5	22.3	26.2	12.0	31.7	36.3	36.5	26.4	39.5	22.7	24	
12	10.0	10.1	10.3	14.0	21.2	21.6	27.9	29.7	22.7	23.8	31.0	33.4	22.0	23.1	28.1	36.5	22.9	16.8	15.9	19.6	17.7	11.5	25.8	27.7	36.5	21.8	24	
13	20.9	18.6	14.6	10.4	17.9	22.3	22.0	18.6	24.2	16.7	23.0	25.0	28.9	27.5	42.4	44.2	29.9	25.6	25.8	14.2	23.1	20.1	24.5	16.4	44.2	23.2	24	
14	21.8	16.8	16.6	21.4	18.1	19.6	19.9	23.2	19.1	21.2	27.3	33.9	29.1	29.5	31.5	27.5	27.9	22.9	13.7	12.4	10.0	10.2	9.6	33.9	20.6	24		
15	10.7	10.4	8.7	8.7	8.3	6.9	10.7	8.9	18.8	19.1	18.4	20.8	18.4	25.0	30.4	28.5	27.8	34.6	19.9	13.9	12.4	9.8	8.2	8.9	34.6	16.2	24	
16	12.0	12.2	12.4	15.7	14.4	17.0	15.0	17.9	20.1	23.5	27.9	25.1	26.0	30.6	41.1	X	X	20.5	28.4	24.9	21.4	14.4	12.2	6.5	41.1	20.0	22	
17	8.3	13.4	10.2	10.2	10.0	11.1	14.8	16.3	26.8	24.9	28.4	31.9	28.6	26.6	30.6	20.3	21.1	12.2	23.1	17.7	11.5	10.4	8.0	15.3	31.9	18.0	24	
18	18.8	18.6	15.0	9.4	10.1	13.3	12.6	16.6	16.3	21.1	26.6	34.1	29.2	28.6	26.4	26.8	28.6	23.8	27.5	14.4	12.0	8.9	7.1	5.6	34.1	18.8	24	
19	7.4	4.3	4.3	4.1	4.1	7.1	13.1	27.3	25.5	26.8	27.1	25.4	27.6	28.2	27.1	30.7	31.5	20.5	27.7	17.2	11.1	6.9	9.3	31.5	17.7	24		
20	9.8	10.4	10.0	8.0	8.2	8.2	15.2	16.6	17.0	14.4	20.9	18.8	18.5	18.8	15.9	12.0	13.3	15.5	14.6	6.5	5.6	4.3	9.4	7.6	20.9	12.5	24	
21	4.2	6.4	8.3	11.8	14.4	9.8	12.6	10.7	14.8	19.2	16.8	13.3	13.7	17.0	28.8	R	31.0	15.5	15.2	11.5	8.7	12.2	9.1	8.9	31.0	13.6	23	
22	9.3	8.3	12.7	8.3	7.0	8.7	11.3	12.2	16.6	25.5	27.9	25.7	34.1	40.2	44.8	22.7	14.1	24.4	22.5	25.1	5.2	5.0	6.3	4.3	44.8	17.6	24	
23	5.0	6.3	5.0	4.5	3.0	3.0	7.4	12.4	13.7	18.1	15.0	16.6	22.1	26.3	25.2	23.9	38.8	19.3	9.2	5.5	10.0	7.4	11.3	9.8	38.8	13.3	24	
24	3.0	2.8	4.5	3.6	5.6	3.9	10.0	7.1	11.3	15.9	20.9	24.0	24.6	23.3	28.6	26.6	23.5	24.4	22.9	15.0	7.8	7.1	5.2	4.1	28.6	13.6	24	
25	5.0	3.6	5.4	3.0	2.3	11.7	7.2	11.8	14.5	14.2	19.3	24.1	29.5	31.6	24.6	22.0	X	23.8	21.6	13.3	10.7	7.8	4.3	5.2	31.6	13.8	23	
26	7.1	6.5	16.6	7.4	7.1	10.7	17.4	19.9	19.2	12.0	20.3	25.3	30.3	31.9	34.7	37.5	39.7	36.7	33.2	23.3	14.8	12.6	13.1	10.0	39.7	20.3	24	
27	8.5	9.1	7.6	10.3	12.1	12.5	20.6	19.1	24.3	24.5	25.1	27.9	21.8	25.9	24.2	21.1	24.0	13.3	9.1	4.7	5.6	7.4	4.7	6.3	27.9	15.4	24	
28	7.4	4.7	10.0	11.3	11.3	7.8	16.1	14.6	21.1	22.2	24.2	36.9	30.3	34.5	36.9	36.0	28.6	27.9	15.2	6.7	5.2	4.7	4.5	3.2	36.9	17.6	24	
29	4.1	8.0	4.1	4.8	2.9	X	3.1	4.8	8.9	13.1	12.0	10.4	11.7	15.4	13.5	13.3	10.4	14.4	8.7	10.2	14.8	13.9	14.6	13.1	15.4	10.0	23	
30	10.4	15.0	12.0	12.0	15.2	15.5	17.4	20.3	14.4	10.6	18.8	19.8	21.3	20.7	22.2	19.4	21.6	16.8	15.9	12.2	13.9	13.5	14.6	9.1	22.2	15.9	24	
HOURLY MAX	22.9	27.1	18.1	21.4	21.2	24.2	27.9	29.7	37.1	40.8	42.8	40.1	45.9	40.2	44.8	51.6	60.6	54.3	42.3	36.9	31.7	36.3	36.5	27.7				
HOURLY AVG	10.4	10.8	10.4	10.0	10.2	12.6	15.3	17.1	19.6	21.1	24.7	26.4	26.4	27.5	28.6	27.8	26.8	24.4	21.0	14.7	12.4	10.4	11.0	10.3				

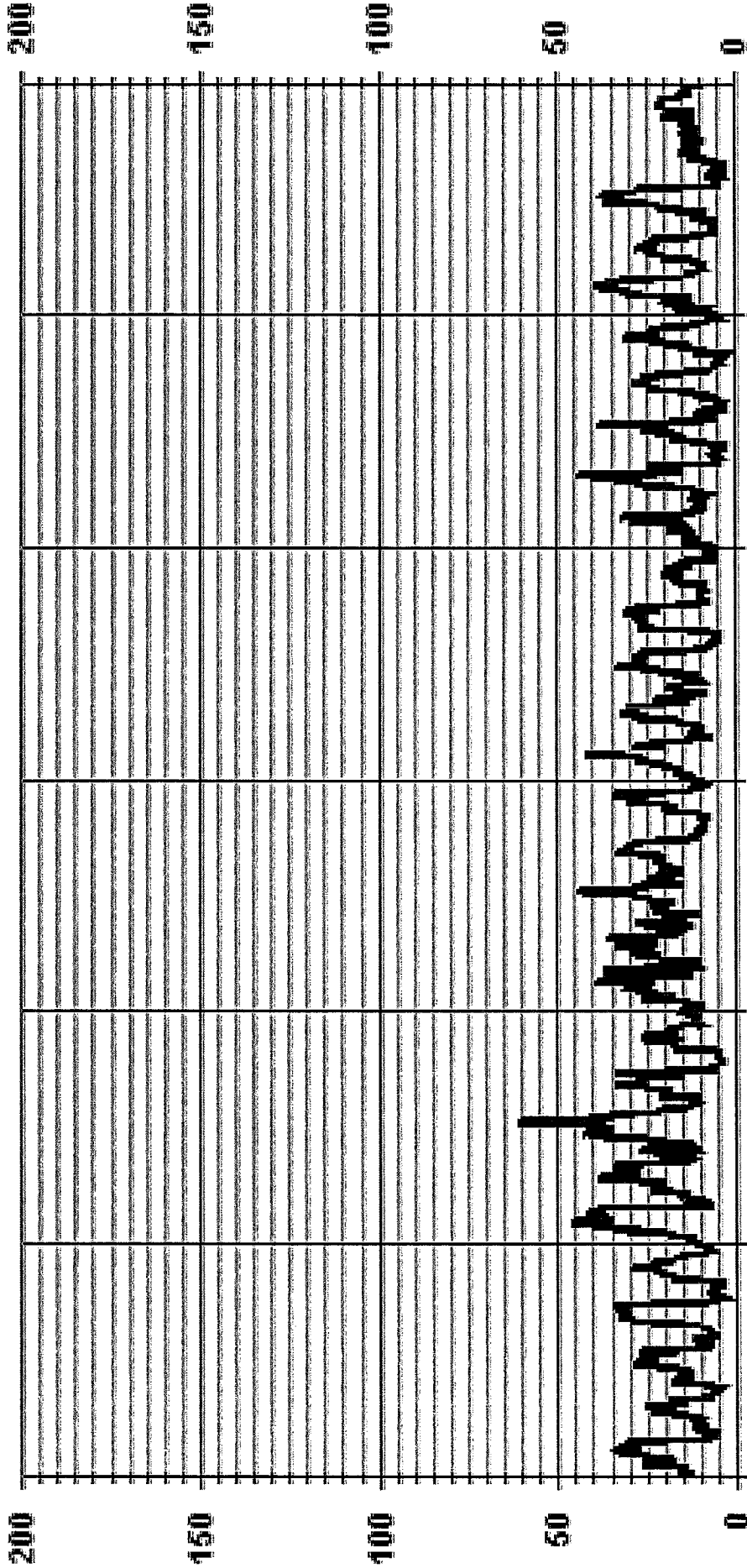
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	60.6	KPH	@ HOUR(S)	16	ON DAY(S)	8
OPERATIONAL TIME:			7:15	HRS	VAR-VARIOUS	

01 Hour Averages



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

— LICA30 WSMAX KPH

LICA30  
WSP / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

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

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
< 6.0	2.78	2.36	4.03	3.33	2.36	4.03	4.86	2.22	2.64	8.20	12.79	5.42	6.53	5.70	2.92	3.05	73.29
< 12.0	2.22	3.05	1.25	.83	.27	.41	.83	1.80	1.39	2.64	1.80	1.39	1.94	3.05	1.80	1.11	25.86
< 20.0	.00	.27	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.27	.00	.00	.83
< 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	5.00	5.70	5.56	4.17	2.64	4.45	5.70	4.03	4.03	10.84	14.60	6.81	8.48	9.04	4.72	4.17	

Calm : .00 %

Total # Operational Hours : 719

Distribution By Samples

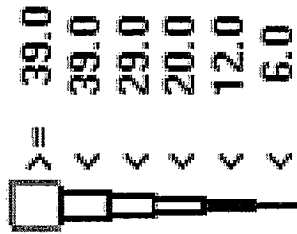
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	20	17	29	24	17	29	35	16	19	59	92	39	47	41	21	22	527
< 12.0	16	22	9	6	2	3	6	13	10	19	13	10	14	22	13	8	186
< 20.0	2	2												2			6
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	36	41	40	30	19	32	41	29	29	78	105	49	61	65	34	30	

Calm : .00 %

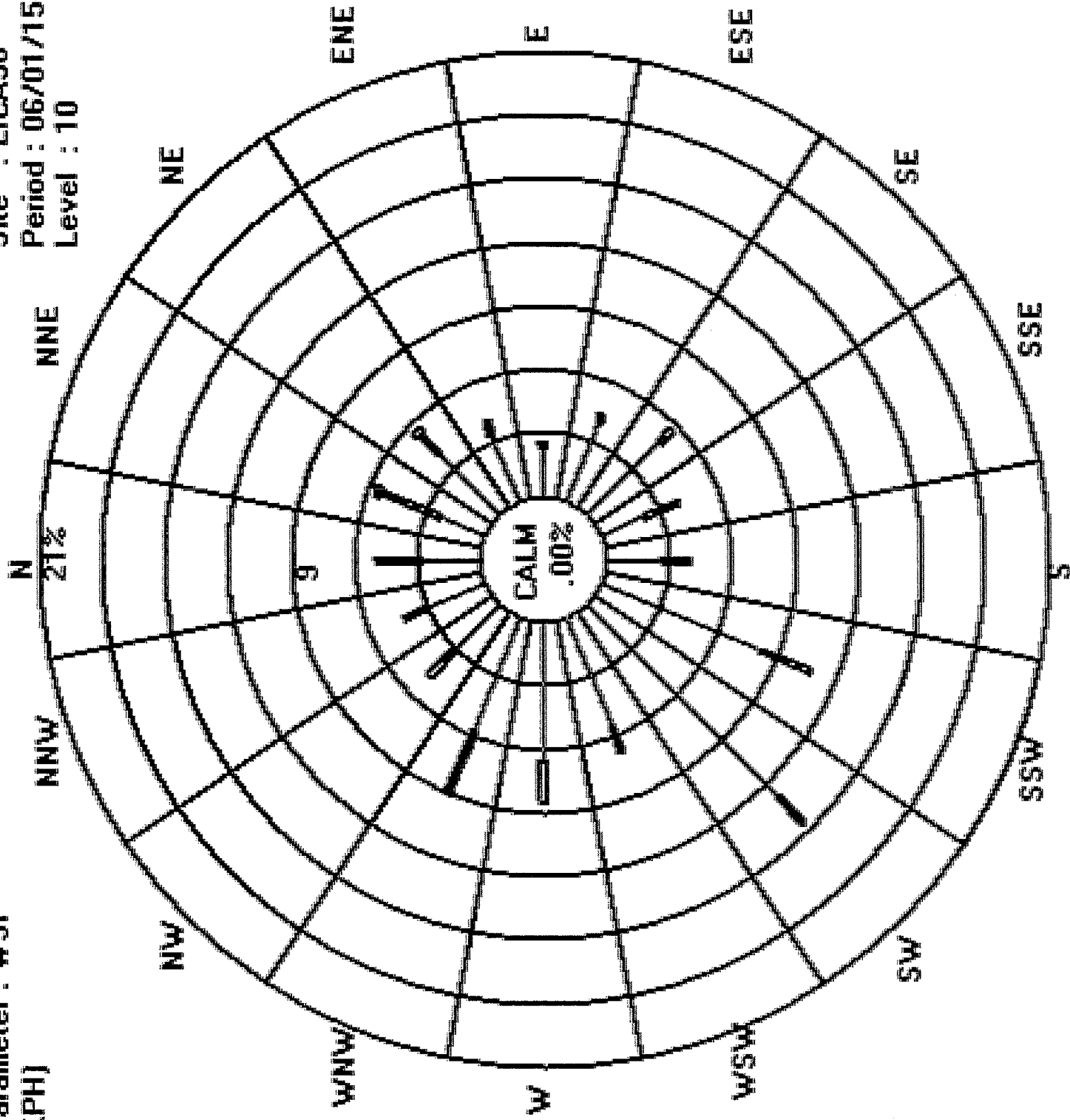
Total # Operational Hours : 719

Logger : 30 Parameter : WSP

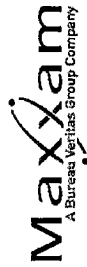
Class Limits (KPH)



Site : LICA30  
Period : 06/01/15-06/30/15  
Level : 10



***WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 Maskwa Site - JUNE 2015  
 JOB # 2833-2015-06-30-C

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

24-HOUR AVG  
 QUADRANT  
 BDEGS.

STATUS FLAG CODES

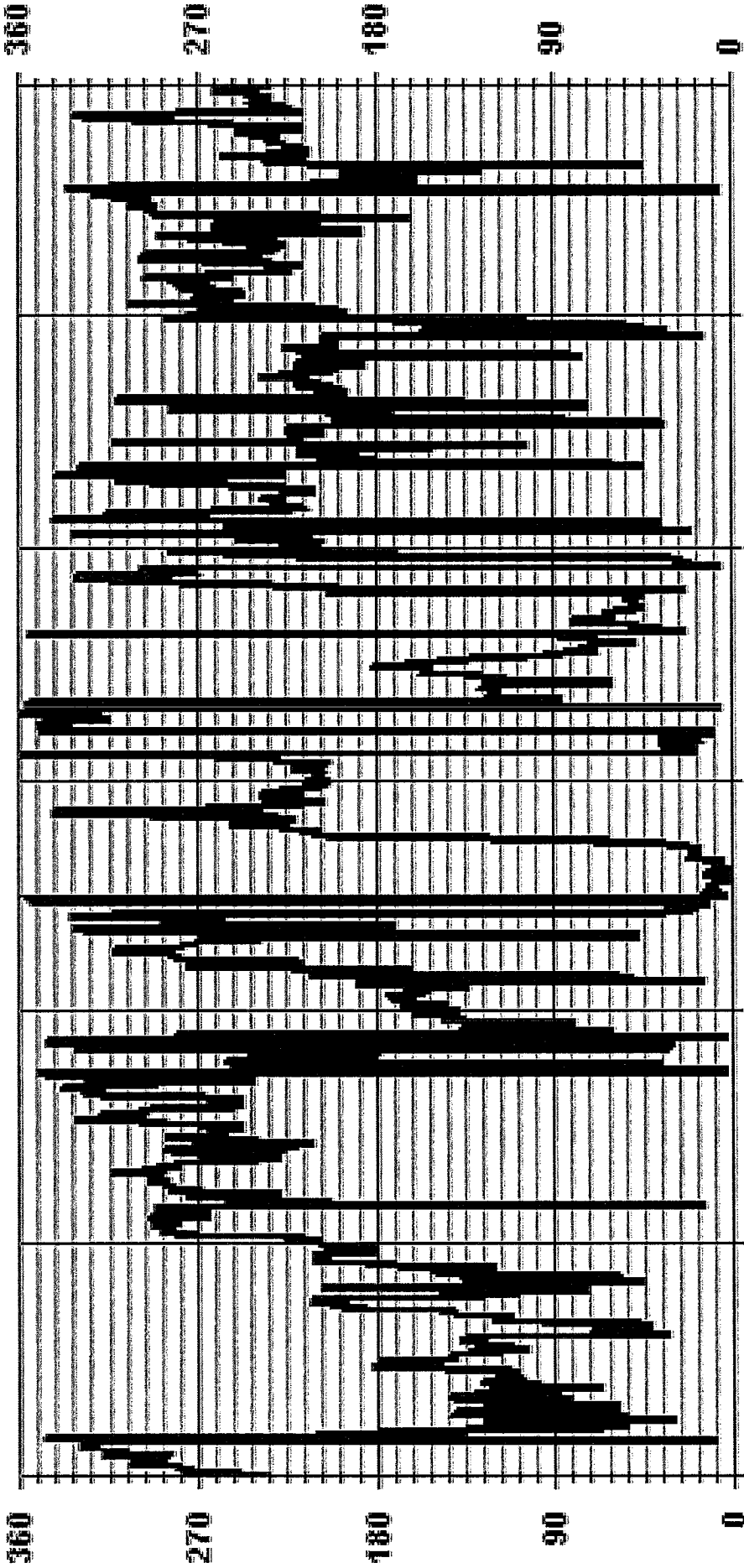
C	CALIBRATION	G	QUALITY ASSURANCE
D	DATE CHANGE	R	RECOVERY
S	DATA ZERO / SPAN CHECK	X	MAGNETIC MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

LAST CALIBRATION: March 04, 2014  
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	719	HRS
STANDARD DEVIATION:	96.42		AMD OPERATION UPTIME:	99.9	%
			MONTHLY AVERAGE:	W	



01 Hour Averages



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

— LICA30 WDR DEG

***STANDARD DEVIATION WIND DIRECTION***



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
37	39	43	36	34	40	41	38	39	42	41	43	42	38	43	44	45	44	41	41	30	36	41	41	30	36	38	17	63		
52	20	24	53	58	27	50	41	46	48	50	44	41	61	51	40	22	25	22	18	23	20	28								
20	26	32	39	30	29	33	44	50	38	36	35	38	44	49	41	49	39	42	26	16	10	12	27	27						
48	62	27	45	24	15	18	27	35	42	42	39	39	32	27	25	26	23	23	16	19	19	14	34							
25	27	47	50	35	20	27	35	44	43	42	40	45	43	56	29	28	26	10	10	12	13									
16	17	15	16	31	41	41	36	45	39	39	43	44	44	47	43	43	41	37	41	29	11	32	41							
42	38	40	34	42	35	34	39	43	45	47	45	56	49	47	45	41	45	44	43	35	32	29	40							
51	30	31	14	34	43	45	42	45	45	46	45	39	42	38	42	58	44	44	38	36	34	32								
52	54	38	22	65	51	23	19	40	60	58	57	65	55	64	46	33	35	31	25	16	15	17	18							
19	22	28	22	58	26	32	37	28	26	32	36	39	42	45	37	26	36	25	31	42	24	25	60							
50	25	22	32	33	31	32	42	43	38	46	53	51	51	45	45	46	37	47	43	56	38	34	33							
34	36	34	44	15	19	17	21	24	26	45	37	34	32	25	25	30	26	27	25	31	31	27	25							
26	31	25	28	27	30	31	19	25	26	22	24	25	25	24	37	35	30	55	15	27	17	21								
36	45	35	27	16	57	36	58	42	44	47	48	51	30	36	45	35	34	17	15	17	18	16	15	53						
13	14	14	15	16	20	28	26	23	27	46	46	48	51	37	35	34	17	15	17	18	16	15	53							
25	35	40	39	54	49	41	44	43	45	40	39	39	46	40	42	47	55	52	32	28	18	18	22							
37	34	34	34	34	43	43	44	43	32	38	29	30	36	31	34	35	36	34	47	23	26	22	23							
47	30	48	33	37	17	17	31	27	38	45	40	41	37	37	40	30	23	21	19	18	19	19	19							
16	32	54	54	45	44	38	41	42	41	42	47	40	38	36	40	22	22	23	31	29	41	52	55							
29	32	42	35	28	23	18	26	33	40	48	50	50	48	37	32	42	42	42	30	30	47	22	26							
19	35	29	49	55	54	49	61	59	54	47	45	30	28	39	59	20	27	63	31	30	33	22	47							
54	41	41	59	58	51	36	56	37	26	31	28	43	33	40	35	35	44	39	24	11	9	28	34							
39	44	33	51	56	38	40	55	37	40	27	23	27	29	30	25	32	29	31	34	48	52	46	51							
33	55	21	40	59	50	32	44	35	42	40	46	45	45	43	46	48	42	43	31	39	38	40	32							
31	30	33	38	45	32	33	38	42	44	42	37	48	46	39	46	51	49	63	30	13	37	28	22							
23	28	16	73	64	37	47	47	36	50	44	42	39	44	41	44	29	33	35	36	50	31	27	56							
45	57	36	39	59	X	37	50	34	34	41	52	36	32	33	36	32	33	39	36	33	35	34	39							
24	18	35	37	47	44	47	49	49	42	39	31	37	44	43	39	35	37	42	41	33	38	37	38							

STATUS FLAG CODES

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

LAST CALIBRATION:

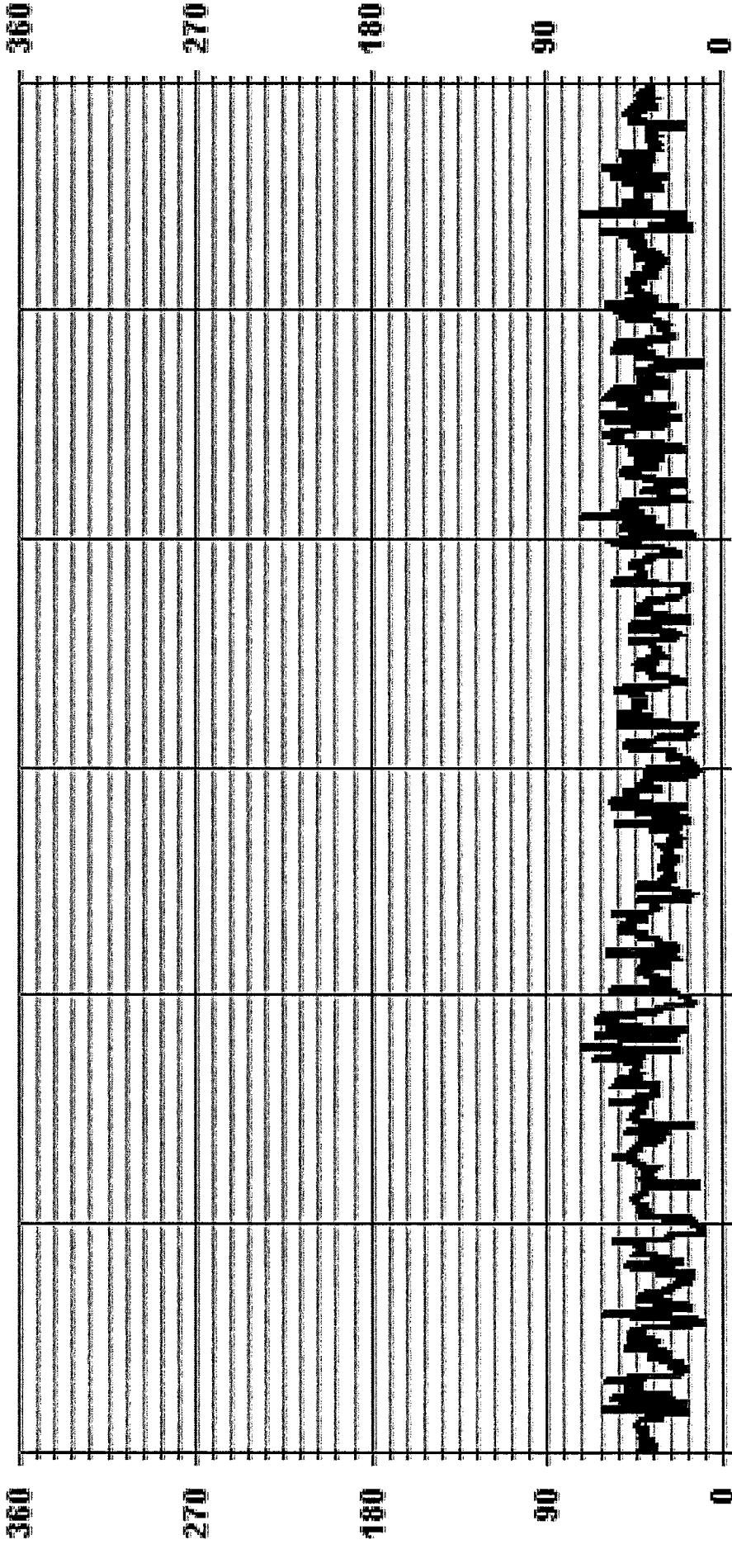
March 04, 2014

CALIBRATION TIME:

0 HRS

OPERATIONAL TIME: 719 HRS

01 Hour Averages



— LICA30 STDWDIR DEG

***RELATIVE HUMIDITY***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
Maskwa Site - JUNE 2015  
JOB # 2833-2015-06-30-C

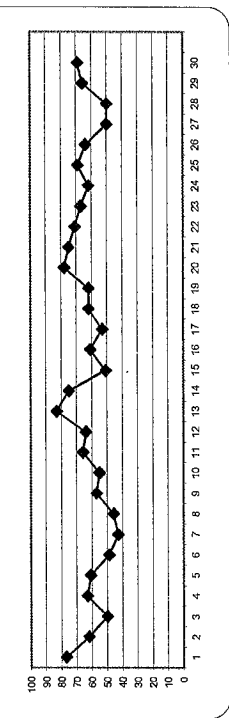
RELATIVE HUMIDITY (RH) hourly averages in %

DAY	HOURS																								DAILY MAX	24-HOUR AVG	RDGS
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
93	93	93	93	91	84	84	83	80	80	80	69	68	65	63	55	50	49	53	68	84	90	91	93	77.0	24		
92	92	89	89	90	86	72	57	49	46	43	43	41	37	33	43	52	56	54	58	67	69	72	92	62.0	24		
72	59	58	57	62	66	65	60	51	45	43	36	34	32	31	27	26	28	38	51	65	79	87	87	49.9	24		
87	87	91	91	91	78	71	61	46	41	38	42	43	47	44	40	45	56	69	79	89	91	91	93	63.3	24		
91	91	92	93	93	84	67	57	51	45	40	38	36	40	38	35	40	41	45	68	76	76	74	93	60.9	24		
91	91	74	74	74	75	78	66	57	47	42	37	32	30	28	27	26	25	26	33	51	68	73	70	78	48.7	24	
64	65	67	73	68	57	55	51	46	36	28	25	24	28	30	26	25	26	29	33	41	46	48	47	73	49.2	24	
47	52	54	60	65	64	53	48	39	38	35	35	39	30	24	26	45	39	42	50	55	60	65	65	46.0	24		
71	74	82	85	89	73	61	53	48	38	33	40	36	34	31	34	41	47	53	62	79	87	90	90	57.4	24		
56	60	60	69	74	70	63	58	56	63	59	52	48	48	48	40	60	79	85	88	90	90	91	90	66.2	24		
92	93	93	92	92	83	73	62	53	48	47	43	39	37	36	34	40	50	50	56	87	88	90	93	63.7	24		
87	89	88	88	87	86	84	82	81	78	73	67	62	54	53	58	58	72	82	85	84	89	84	89	75.0	24		
81	81	81	79	84	74	62	51	37	34	31	32	34	28	27	28	32	40	44	48	56	66	74	84	51.5	24		
77	77	78	79	80	69	62	53	50	46	37	34	32	25	34	44	75	73	69	69	73	78	84	84	61.1	24		
86	82	79	75	73	62	55	46	40	39	36	41	38	36	34	31	31	38	47	57	66	73	77	86	53.0	24		
71	65	68	76	79	64	62	54	50	49	44	40	49	56	52	48	53	52	54	64	80	85	89	91	62.3	24		
92	92	93	93	93	90	77	64	54	50	48	45	43	41	37	37	39	38	43	49	57	67	69	73	93	61.8	24	
73	69	65	72	72	77	78	72	70	73	71	69	82	89	86	81	76	76	73	85	91	92	93	93	78.3	24		
93	93	93	93	93	92	85	78	70	68	63	58	50	47	66	79	62	60	54	69	76	80	87	90	93	75.0	24	
91	92	90	90	90	87	85	74	63	50	46	44	44	39	51	80	71	59	61	74	84	90	92	92	71.1	24		
93	93	93	93	93	94	83	61	54	50	49	45	46	40	39	37	58	62	51	55	69	84	81	81	94	66.8	24	
92	92	93	93	93	90	64	50	48	45	39	32	29	27	37	53	59	81	78	83	90	91	93	93	62.2	24		
94	94	94	94	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	68.6	24	
94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	63.8	24	
68	68	75	78	66	53	45	41	36	32	29	27	25	27	26	25	30	33	42	55	70	78	85	86	50.0	24		
83	85	82	81	80	68	60	48	38	29	25	24	25	25	28	22	24	25	31	48	60	66	72	82	50.5	24		
85	87	90	92	91	X	82	73	61	50	48	44	45	49	48	53	54	57	59	66	68	67	71	75	92	65.9	23	
77	80	82	83	82	81	74	68	65	63	64	64	58	55	52	54	55	58	61	68	74	79	80	82	68.1	24		
94	94	94	93	93	94	88	88	82	80	80	82	89	86	81	76	81	85	88	91	92	92	93	93	93	78.2	80.8	
81.8	81.8	82.5	83.7	84.1	78.2	70.0	61.7	55.7	50.9	46.8	44.3	43.3	42.2	41.7	42.6	45.6	48.3	50.3	56.1	65.4	73.7	78.2	80.8				

STATUS FLAG CODES

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

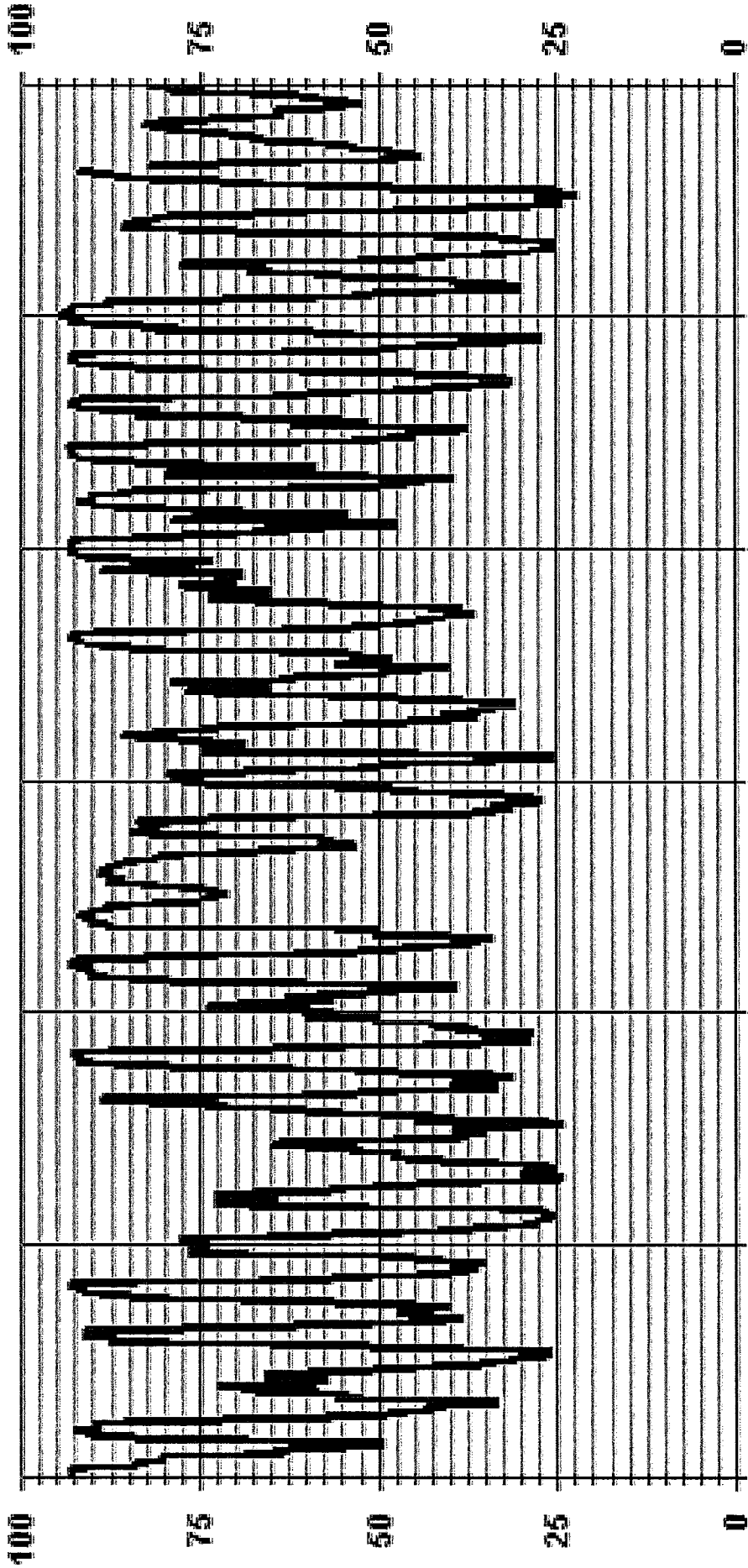
24 HOUR AVERAGES FOR JUNE 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	94	%	@ HOUR(S)	VAR	ON DAY(S)	23, 26
MAXIMUM 24-HR AVERAGE:	83.0	%			ON DAY(S)	13
					VAR-VARIOUS	
STANDARD DEVIATION:	21.04				OPERATIONAL TIME:	719 HRS
					AMD OPERATION UPTIME:	99.9 %
					MONTHLY AVERAGE:	62 %

# 01 Hour Averages



— LICA30 RH %

## ***BAROMETRIC PRESSURE***



**BAROMETRIC PRESSURE (BP) hourly averages in millibar**

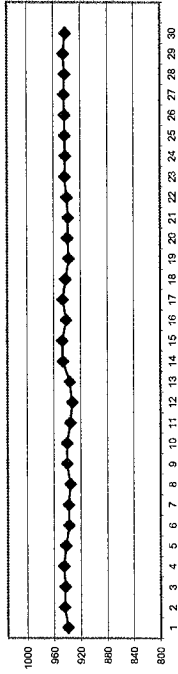
**MST**

DAY	HOURS 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	935	935	935	936	936	937	938	939	940	941	941	941	942	942	942	943	943	943	943	943	943	943	943	944	944	940	24			
2	944	944	944	944	944	945	945	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	945	24		
3	943	943	943	943	943	943	943	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	945	24		
4	944	944	944	944	944	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	946	24		
5	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	946	24		
6	939	939	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	939	24		
7	938	938	938	938	938	938	938	939	939	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	939	24	
8	937	937	937	936	936	936	937	937	937	937	936	936	936	936	936	935	935	935	935	935	935	935	935	935	935	935	938	24		
9	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	941	936	24	
10	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	937	24	
11	939	939	939	939	939	939	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	937	24	
12	933	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	933	24	
13	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	933	24	
14	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	937	24	
15	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	947	24	
16	943	943	943	943	943	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	24	
17	944	944	944	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	942	24	
18	947	947	947	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	947	24	
19	938	937	937	937	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	938	24	
20	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	24
21	939	939	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	939	24
22	939	939	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	941	941	24
23	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	941	24
24	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	24
25	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	24
26	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	24
27	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	24
28	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	24
29	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	945	23
30	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	24
HOURLY MAX	950	950	950	950	950	950	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951	950	950	
HOURLY AVG	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941

**STATUS FLAG CODES**

C	CALIBRATION	Q	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO / SPAN CHECK	X	MACHINE / VALVE / FUNCTION
P	POWER FAILURES	O	OPERATION ERROR
G	OUT OF REPAIR	K	COLLECTION ERROR

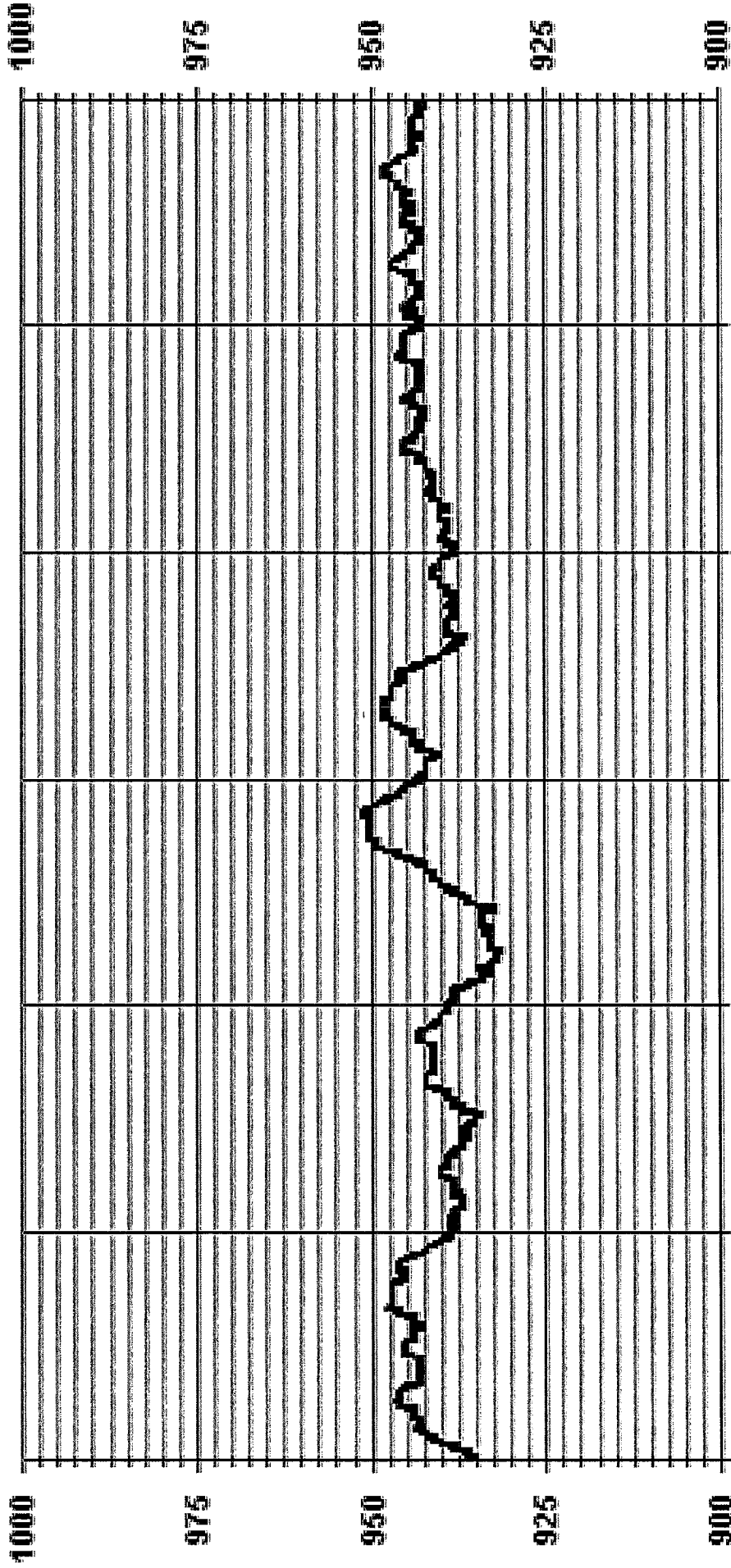
**24 HOUR AVERAGES FOR JUNE 2015**



**MONTHLY SUMMARY**

MAXIMUM 1-HR AVERAGE:	951	MB	@ HOUR(S)	VAR	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	948	MB			ON DAY(S)	15
STANDARD DEVIATION:	3.96				VAR-VARIOUS	
OPERATIONAL TIME:	719	HRS				
AMD OPERATION UPTIME:	95.9	%				
MONTHLY AVERAGE:	942	MB				

01 Hour Averages



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

— LICA30 BP MB

***AMBIENT TEMPERATURE***



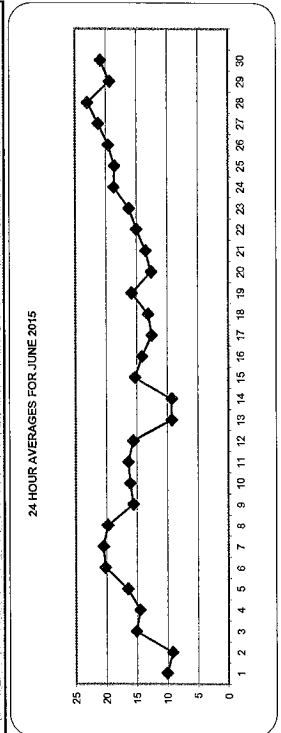
AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

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	7.4	7.1	6.9	6.9	7.3	8.9	10.9	10.7	11.0	12.0	12.0	12.4	14.2	14.4	13.6	12.9	14.1	14.5	14.0	12.2	8.3	4.7	3.1	1.8	14.5	10.1	24
2	0.9	0.9	0.8	0.3	-0.1	3.2	6.8	10.6	10.4	12.3	13.4	14.1	13.7	14.2	14.8	15.9	15.3	12.9	12.1	12.1	10.6	9.3	8.7	8.6	15.9	9.2	24
3	9.0	10.1	10.5	10.6	10.3	10.1	10.9	12.9	15.4	17.7	18.4	20.2	20.6	22.4	22.6	22.3	22.4	22.3	21.4	18.4	13.5	9.9	6.7	4.9	22.6	15.1	24
4	4.0	3.4	3.2	2.5	2.2	6.8	10.6	13.3	17.0	19.3	22.0	23.9	23.1	23.1	21.7	20.9	21.1	21.9	20.2	17.8	15.0	12.8	11.6	10.0	23.9	14.5	24
5	9.1	8.1	7.0	6.0	6.1	10.0	14.5	17.6	18.2	19.8	21.9	22.7	23.1	23.1	21.9	23.4	23.8	22.8	21.7	20.3	15.8	13.4	12.7	13.6	23.8	16.5	24
6	13.6	13.9	14.1	13.7	12.5	15.8	18.6	21.0	23.0	24.2	25.0	25.7	26.3	26.3	27.0	26.8	26.4	25.9	24.9	22.9	18.1	14.0	12.7	13.0	27.0	20.2	24
7	13.8	13.0	12.3	10.5	11.7	15.4	17.0	18.9	20.9	24.0	25.6	26.5	27.0	25.4	25.1	27.2	26.8	26.3	24.6	22.9	20.4	19.2	19.0	19.1	27.2	20.5	24
8	19.7	18.6	18.3	16.4	15.5	16.2	19.0	21.3	23.2	23.0	23.5	23.5	22.7	22.9	24.9	25.8	24.6	19.6	20.5	18.7	16.6	15.1	14.0	12.6	25.8	19.8	24
9	10.7	9.8	8.0	7.3	7.0	12.0	14.5	16.8	18.7	20.6	22.1	21.3	19.9	22.0	22.5	23.3	22.2	19.5	17.6	16.9	14.3	10.5	8.7	7.4	23.3	15.6	24
10	7.0	7.6	7.0	6.0	5.5	9.9	13.9	16.2	19.2	21.5	23.3	22.8	23.1	22.3	23.5	21.4	20.6	21.5	19.1	18.9	15.3	14.2	12.6	13.3	23.5	16.1	24
11	14.0	12.8	12.5	11.0	9.8	12.1	14.4	16.7	18.6	17.2	18.6	21.5	23.7	24.9	25.8	24.4	19.3	17.1	14.5	13.8	13.5	13.1	12.5	12.1	25.8	16.4	24
12	11.4	10.2	9.7	9.2	9.0	11.3	13.1	15.0	17.7	19.4	20.6	21.4	22.0	22.1	22.1	22.6	19.7	16.8	16.7	16.3	15.2	11.4	10.6	10.2	22.6	15.6	24
13	10.0	10.0	9.9	9.8	9.1	8.8	8.1	8.1	8.4	8.9	10.8	10.7	10.9	10.9	11.0	10.6	10.2	9.5	9.1	8.7	8.0	7.8	7.4	7.0	11.0	9.3	24
14	6.4	5.9	5.7	5.6	5.9	6.3	6.9	7.1	7.5	8.1	9.0	10.0	11.1	12.1	14.1	14.1	13.7	14.2	13.9	13.5	10.4	8.2	7.2	7.3	14.2	9.3	24
15	8.3	8.6	8.6	8.5	7.0	10.5	13.5	16.6	18.8	18.9	20.1	19.8	19.3	20.5	20.8	21.4	21.2	20.4	17.8	17.0	15.5	13.7	11.0	8.8	21.4	15.3	24
16	8.3	8.6	8.2	7.9	8.1	10.9	13.1	16.0	17.9	20.0	22.2	22.2	22.3	24.5	21.8	19.4	14.2	14.0	13.1	12.0	11.1	9.0	7.4	6.5	24.5	14.1	24
17	6.1	7.1	7.4	7.3	7.2	9.9	11.9	14.1	15.7	15.5	16.6	15.9	16.9	17.8	17.6	17.7	17.8	17.1	16.4	13.9	10.5	7.9	5.6	6.0	17.8	12.5	24
18	6.6	6.8	5.9	4.0	4.1	9.8	11.0	14.2	16.2	16.9	18.9	19.8	17.7	17.1	17.6	18.4	17.1	17.7	17.2	15.7	12.8	11.0	9.3	8.1	19.8	13.1	24
19	7.0	6.2	5.6	5.0	5.9	8.7	12.1	15.5	17.9	19.5	21.1	22.3	22.8	22.9	23.6	23.7	22.6	22.1	20.7	18.7	16.2	13.5	12.8	11.9	23.7	15.8	24
20	11.1	11.3	12.4	11.1	11.4	12.1	13.1	15.3	15.3	14.6	14.7	15.1	13.6	12.3	11.9	13.6	15.1	14.5	14.2	11.5	10.5	9.7	8.8	8.1	15.3	12.6	24
21	6.9	6.9	7.0	7.3	7.8	10.5	12.1	13.7	15.9	16.0	16.9	17.7	20.2	21.0	16.1	15.1	17.5	16.9	18.4	14.6	13.3	12.6	10.9	9.7	21.0	13.5	24
22	9.1	9.2	10.1	10.2	10.3	11.1	11.9	14.5	17.8	21.0	22.0	23.1	22.3	23.2	23.2	19.6	14.1	16.7	19.2	18.4	16.5	12.5	9.8	8.5	7.8	15.0	24
23	7.2	7.7	6.6	6.2	6.2	10.0	14.2	19.1	20.5	21.4	21.7	22.6	22.2	23.5	23.8	24.7	18.4	18.0	21.0	19.7	15.7	13.4	12.8	12.2	24.7	16.2	24
24	9.9	8.6	7.6	7.0	7.0	9.8	15.1	19.4	21.5	22.9	24.3	25.3	26.2	25.8	27.1	27.1	26.0	26.0	25.9	23.8	19.8	16.4	13.7	12.3	27.1	18.7	24
25	11.2	10.5	9.9	9.4	9.4	13.0	19.1	23.2	25.1	26.8	27.5	28.1	29.0	29.4	25.6	21.0	20.9	17.4	18.0	17.0	15.5	14.8	13.1	12.6	29.4	18.6	24
26	12.3	11.9	12.9	11.8	12.1	14.2	15.7	15.6	16.1	21.1	24.8	25.9	26.4	27.8	28.4	28.1	27.8	27.0	25.1	21.8	19.4	15.9	14.4	13.1	28.4	19.6	24
27	12.3	11.5	10.3	10.3	15.2	20.1	22.8	25.2	26.6	26.8	27.6	28.1	29.2	29.2	29.1	28.7	27.0	27.0	24.9	19.7	16.2	14.3	12.9	13.1	29.2	21.2	24
28	13.3	12.8	13.7	15.0	15.6	19.5	22.6	26.0	29.5	31.3	32.0	32.4	32.1	32.5	30.4	32.3	29.8	27.8	25.7	20.3	16.8	14.8	13.5	11.5	32.5	23.0	24
29	10.5	9.7	9.0	10.0	X	14.2	16.1	19.9	22.5	23.6	24.7	24.9	24.8	25.6	25.2	25.5	24.7	23.7	21.9	20.8	20.4	19.8	18.8	25.6	19.4	23	
30	18.1	17.5	17.2	16.5	16.4	16.9	18.7	20.0	20.9	21.9	22.3	23.5	24.9	25.3	25.3	25.2	24.7	23.7	22.0	20.0	17.9	17.7	17.0	25.6	20.8	24	
HOURLY MAX	19.7	18.6	18.3	16.5	16.4	20.1	22.8	26.0	29.5	31.3	32.0	32.4	32.1	32.5	30.4	32.3	29.8	27.8	25.9	23.8	20.8	20.4	19.8	19.1			
HOURLY AVG	9.8	9.5	9.3	8.7	8.9	11.5	14.0	16.4	18.2	19.5	20.8	21.4	21.7	22.1	21.9	21.6	20.8	20.0	19.2	17.3	14.7	12.6	11.3	10.6			

STATUS FLAG CODES

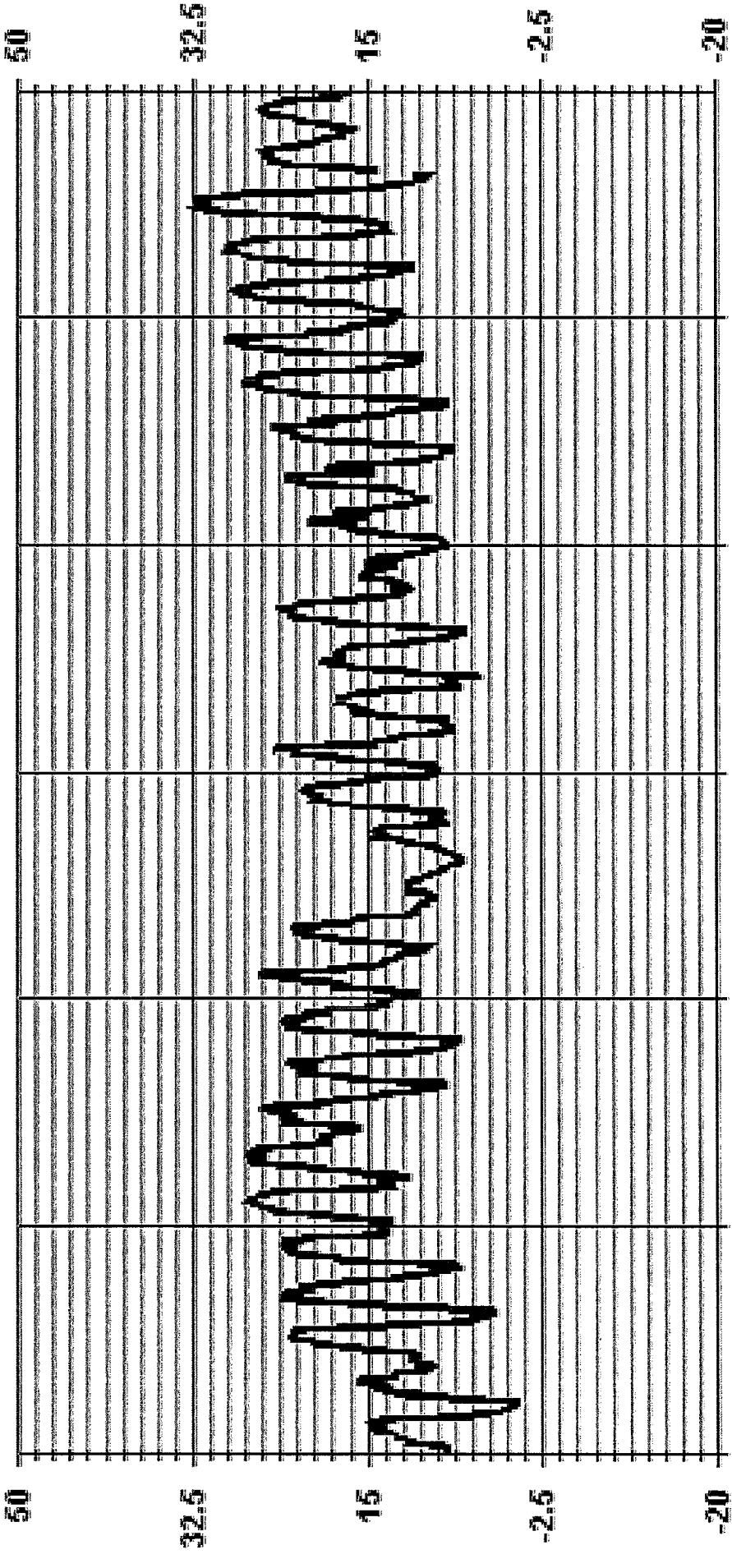
C	- CALIBRATION	Q	- QUANTITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-0.1	°C	@ HOUR(S)	4	ON DAY(S)	2
MAXIMUM 1-HR AVERAGE:	32.5	°C	@ HOUR(S)	13	ON DAY(S)	28
MAXIMUM 24-HR AVERAGE:	23.0	°C			ON DAY(S)	28
					VAR-VARIOUS	
STANDARD DEVIATION:	6.56		OPERATIONAL TIME:		HRS	719
			AMD OPERATION UPTIME:		%	99.9
			MONTHLY AVERAGE:		°C	15.9

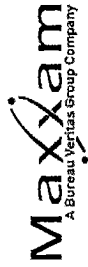
01 Hour Averages



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

— LICA30 TPX DGC

***PRECIPITATION***

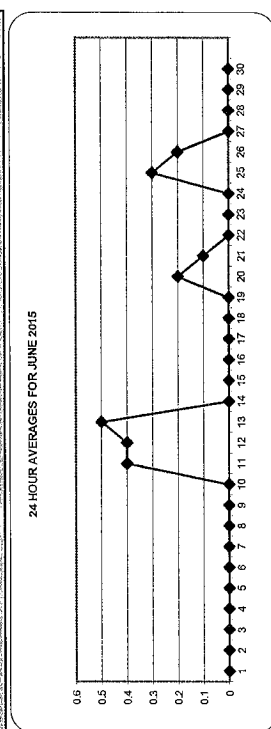


PRECIPITATION hourly averages (mm)

DAY	HOUR																								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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	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	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	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	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	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	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	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	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	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	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	0.0	24
13	1.4	7.4	1.0	0.5	0.3	0.5	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	24
14	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	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	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	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	0.0	0.0	0.0	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	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	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	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	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	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	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	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	0.0	24
26	0.1	0.0	0.1	0.0	0.1	0.0	0.4	1.9	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	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	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	0.0	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
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	0.0	24
HOURLY MAX	1.4	7.4	1.0	0.5	0.3	0.5	0.4	1.9	1.1	0.0	0.3	0.1	0.9	2.5	1.0	0.8	2.7	6.0	0.2	0.3	2.0	3.6	5.6	2.1						
HOURLY AVG	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.2	0.1			

STATUS FLAG CODES

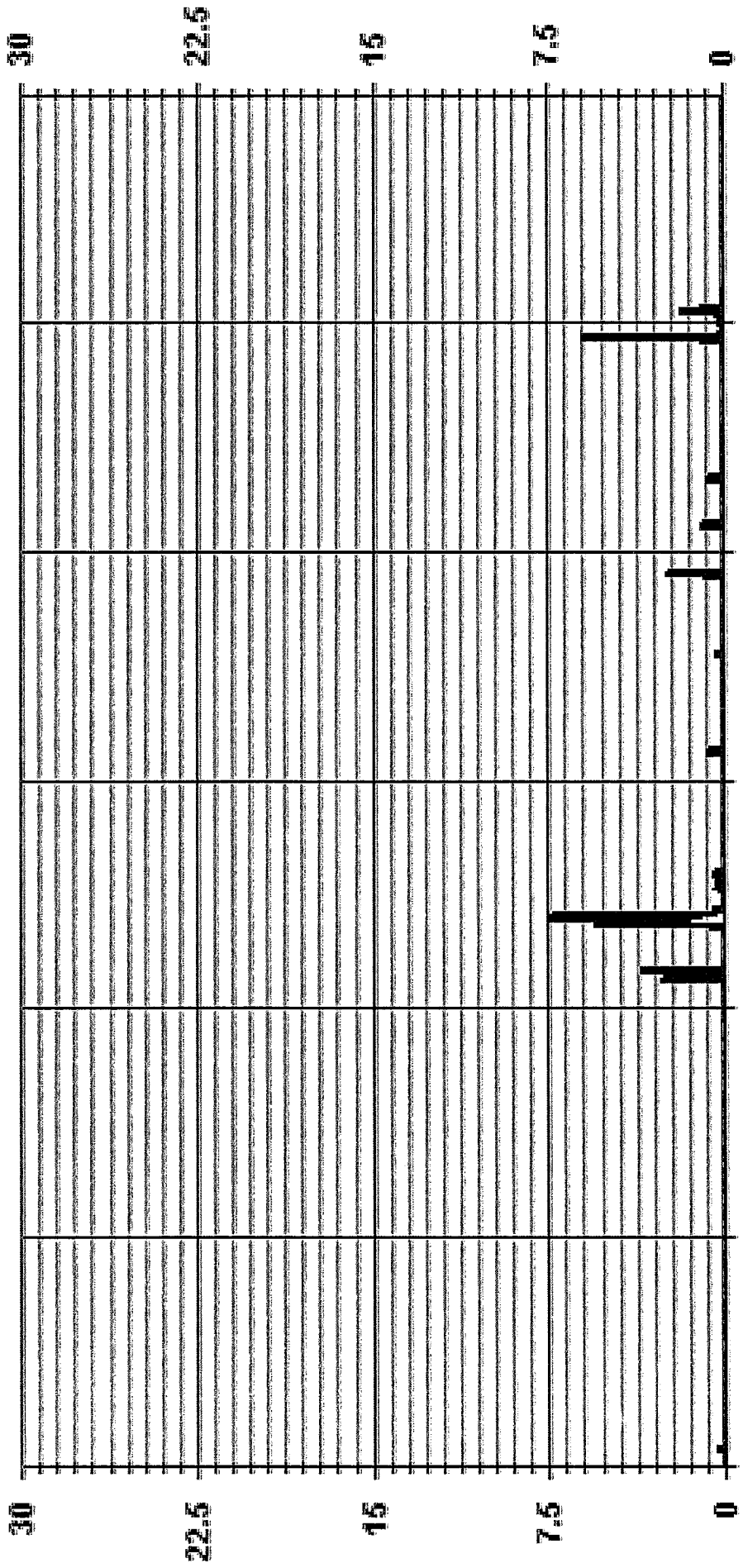
C	CALIBRATION	O	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE/ALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT OF REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	7.4	MM	@ HOUR(S)	1	ON DAY(S)	13
MAXIMUM 24-HR AVERAGE:	0.5	MM			ON DAY(S)	13
MONTHLY TOTAL	51.3	MM			VAR-VARIOUS	
STANDARD DEVIATION:	0.49					
			OPERATIONAL TIME:		719	HRS
			AMD OPERATION UPTIME:		99.9	%
			MONTHLY AVERAGE:		0.1	MM

# 01 Hour Averages



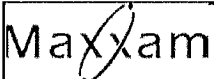
06/01/15 00:00 06/06/15 00:00 06/11/15 00:00 06/16/15 00:00 06/21/15 00:00 06/26/15 00:00

— LICA30 PRECIP MM



***APPENDIX II***  
***ANALYZER CALIBRATION RESULTS***

***SULPHUR DIOXIDE***



## API 100E SO2 Analyzer Calibration

---

Date: 16-Jun-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Alex Yakupov

Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: SO2

Start/End Time (mst): 9:07 - 13:35

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: 8-May-15

Previous Cal High Point C.F.: 1.000

Range ppb: 1000

As Found C.F.: 0.988

New C.F.: 1.009

As found:

SLOPE: 1.007

OFFSET: 123.3

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 31.0

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.0

PRES: 24.3

SAMP FL: 579

PMT: 108.4

NORM PMT: 130.2

UV LAMP: 2927.3

LAMP RATIO: 91.3

STR. LGT: 62.1

DRK PMT: 12.2

DRK LMP: -1.7

Internal Span: 259.4

As left:

SLOPE: 0.991

OFFSET: 128.5

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 30.0

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 24.3

SAMP FL: 580

PMT: 107.8

NORM PMT: 128.7

UV LAMP: 2929.5

LAMP RATIO: 91.4

STR. LGT: 63.7

DRK PMT: 12.4

DRK LMP: -1.7

Internal Span: 262.9

---

Calibrator:  
Flow Meter ID's: NA

Make & Model: Enviroincs 6100

Serial #: 4760

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	4995	0	4995
high	4916	78	4994
mid	4957	38	4995
low	4975	19	4994

---

Calibration:

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	4993	0.0	4993	0	3.0	NA
adjusted zero	4993	0.0	4993	0	0.0	NA
as found high	4915	76.90	4992	762.5	772.0	0.988
adjusted high	4915	76.90	4992	762.5	762.0	1.001
mid	4959	37.44	4996	370.9	368.0	1.008
low	4976	18.71	4995	185.4	182.0	1.019
calibrator zero	4993	0.00	4993	0	0.0	NA
Average C.F. =						1.009

---

Linear Regression/Calbration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS	Pass/Fail ?
Slope = <u>0.999</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>1.22%</u>	± 3% F.S.	PASS
	± 15%	PASS

Converter Efficiency Check for H<sub>2</sub>S/TRS application:

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

SO<sub>2</sub> High Point gas concentration: NA      Time gas run (mst): NA

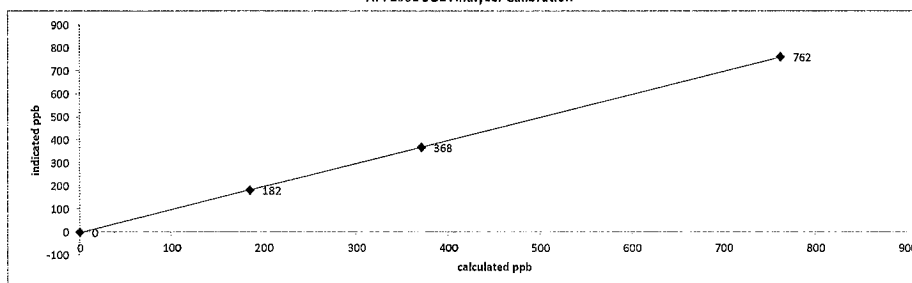
Zero corrected analyzer response: NA

---

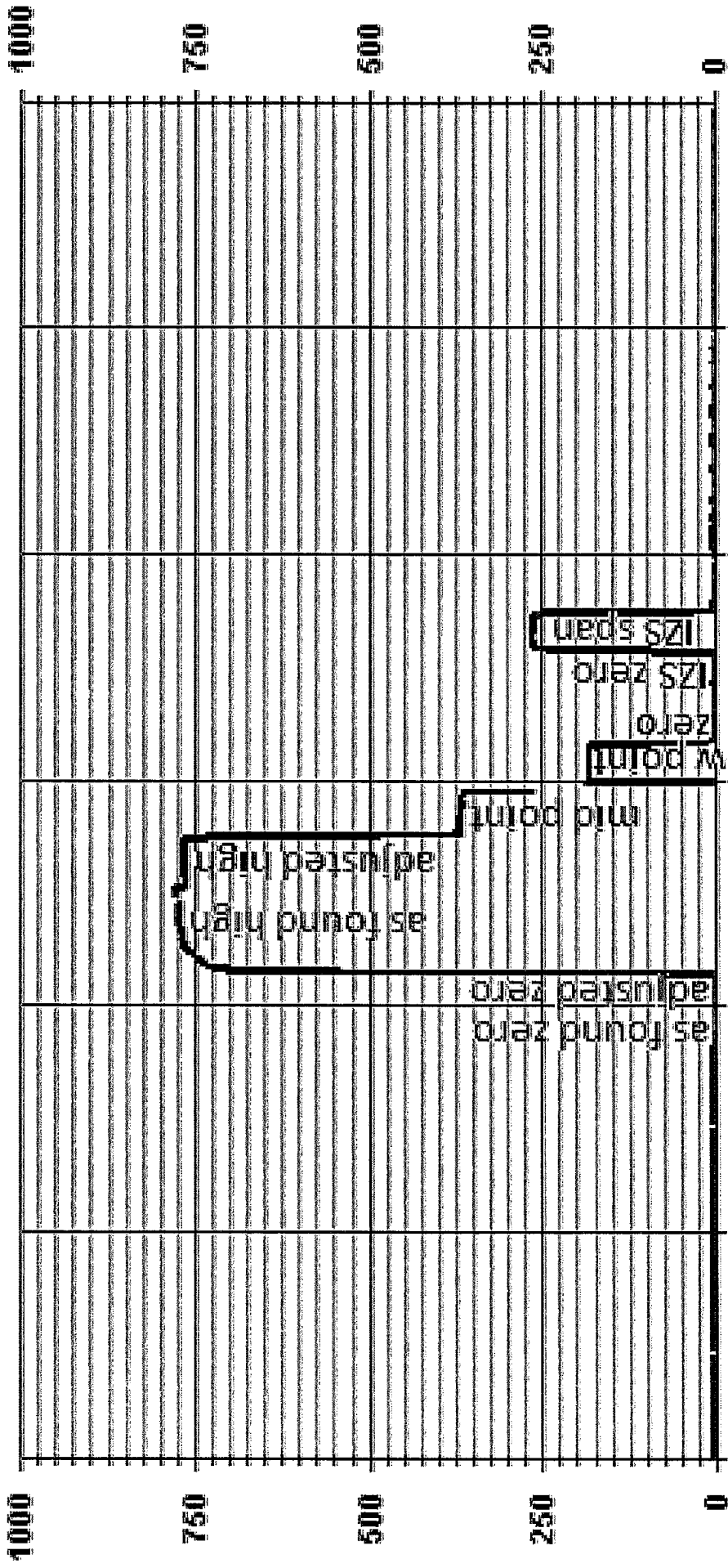
Comments:

Sample filter changed.

API 100E SO2 Analyzer Calibration



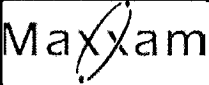
01 Minute Averages



06/16/15 06:00 06/16/15 08:00 06/16/15 10:00 06/16/15 12:00 06/16/15 14:00 06/16/15 16:00

— LICA30 S02\_ PPB

***HYDROGEN SULPHIDE***



## API 101E H2S Analyzer Calibration

Date: 16-Jun-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Alex Yakupov

Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: H2S

Start/End Time (mst): 9:07 - 13:23

Calibration Purpose: Monthly

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 15-Jul-17

---

Analyzer:  
Serial Number: 511

Last Calibration Date: 8-May-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: 0.867

OFFSET: 49.0

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 32.6

PMT TEMP: 7.9

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 28.9

SAMP FL: 649

PMT: 76.8

NORM PMT: 51.0

UV LAMP: 2695.6

LAMP RATIO: 86.6

STR. LGT: 21.2

DRK PMT: 33.2

DRK LMP: 5.5

Internal Span: 47.6

**As left:**

SLOPE: 0.873

OFFSET: 49.5

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 30.9

PMT TEMP: 7.9

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 28.9

SAMP FL: 650

PMT: 77.1

NORM PMT: 49.6

UV LAMP: 2699.9

LAMP RATIO: 86.8

STR. LGT: 21.6

DRK PMT: 33.9

DRK LMP: 5.4

Internal Span: 49.08

---

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:**

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	0.4	NA
adjusted zero	4999	0.0	4999	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	4979	19.00	4998	38.0	38.2	0.995
low	4989	11.00	5000	22.0	22.0	1.000
calibrator zero	4999	0.00	4999	0	0.2	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>-0.05%</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 H<sub>2</sub>S/TRS application:**

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

SO<sub>2</sub> High Point gas concentration: 20 ppb      Time gas run (mst): 10:02 - 10:11

Zero corrected analyzer response: 0.4

---

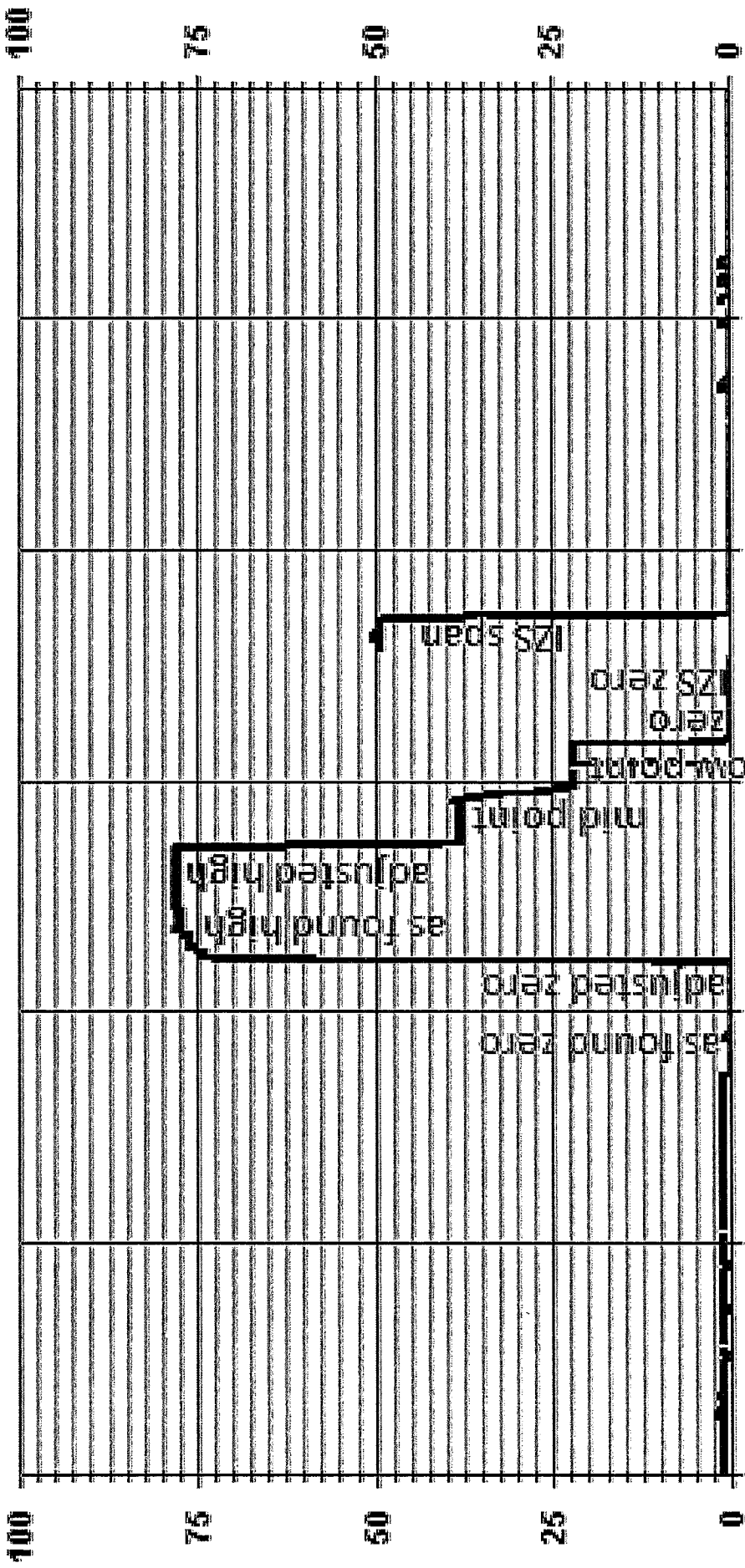
Comments:

Filter changed

API 101E H2S Analyzer Calibration

Calculated Concentration (ppb)	Indicated Concentration (ppb)
0.0	0.0
22.0	22.0
38.2	38.2
78.0	78.0

01 Minute Averages



— LICA30 H2S\_ PPB

***TOTAL HYDROCARBON***



# Maxxam Thermo 51C THC Analyzer Calibration

Date: 16-Jun-15  
 Company: LICA  
 Station Name/Location: Maskwa  
 Performed by: Alex Yakupov

Start Time (mst): 12:40  
 End Time (mst): 16:30  
 Calibration Purpose: Monthly Calibration  
 Cal Gas Expiry Date: 26-Mar-17

Analyzer: \_\_\_\_\_  
 Serial Number: 436609738 Range ppm: 50  
 Last Calibration Date: 8-May-15 As Found C.F.: 1.015  
 Previous Cal High Point C.F.: 1.000 New C.F.: 1.002

	<b>As found:</b>		<b>As left:</b>
H <sub>2</sub> cylinder (psi):	<u>1200</u>	H <sub>2</sub> cylinder (psi):	<u>1200</u>
H <sub>2</sub> cylinder reg set (psi):	<u>25</u>	H <sub>2</sub> cylinder reg set (psi):	<u>25</u>
Span Cylinder (psi):	<u>170</u>	Span Cylinder (psi):	<u>2100</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>2542</u>	FID status:	cnt: <u>902</u>
	rng: <u>1</u>		rng: <u>1</u>
	try: <u>5</u>		try: <u>5</u>
	flm: <u>178.9</u>		flm: <u>179.3</u>
	det: <u>125.3</u>		det: <u>125.4</u>
Oven Readings:	Flame: <u>178</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>33.3</u>		Internal Span: <u>34.6</u>

Calibrator: \_\_\_\_\_  
 Flow Meter ID's: NA  
 Make & Model: API 700  
 Serial #: 830  
 Cal Gas Cylinder I.D. #: LL33674  
 CH<sub>4</sub>/C<sub>3</sub>H<sub>8</sub> Cylinder Conc. (ppm): 601.4 202.0  
 CH<sub>4</sub> as propane/total CH<sub>4</sub> equivalents (ppm): 555.5 1156.9

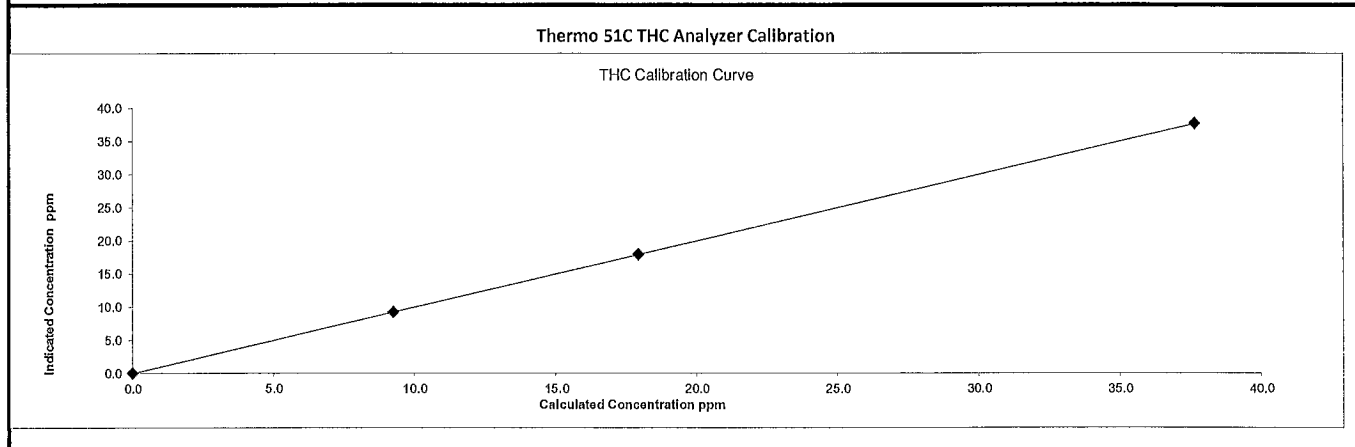
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	2000	0	2000
high	1935	65	2000
mid	1969	31	2000
low	1984	16	2000

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	1999	0.00	1999	0	-0.02	NA
adjusted zero	1999	0.00	1999	0	0.01	NA
as found high	1933	65.00	1998	37.64	37.10	1.015
adjusted high	1933	65.00	1998	37.64	37.64	1.000
mid	1969	31.00	2000	17.93	17.93	1.001
low	1984	16.00	2000	9.26	9.21	1.006
calibrator zero	1999	0.00	1999	0	0.01	NA
Average C.F.=						1.002

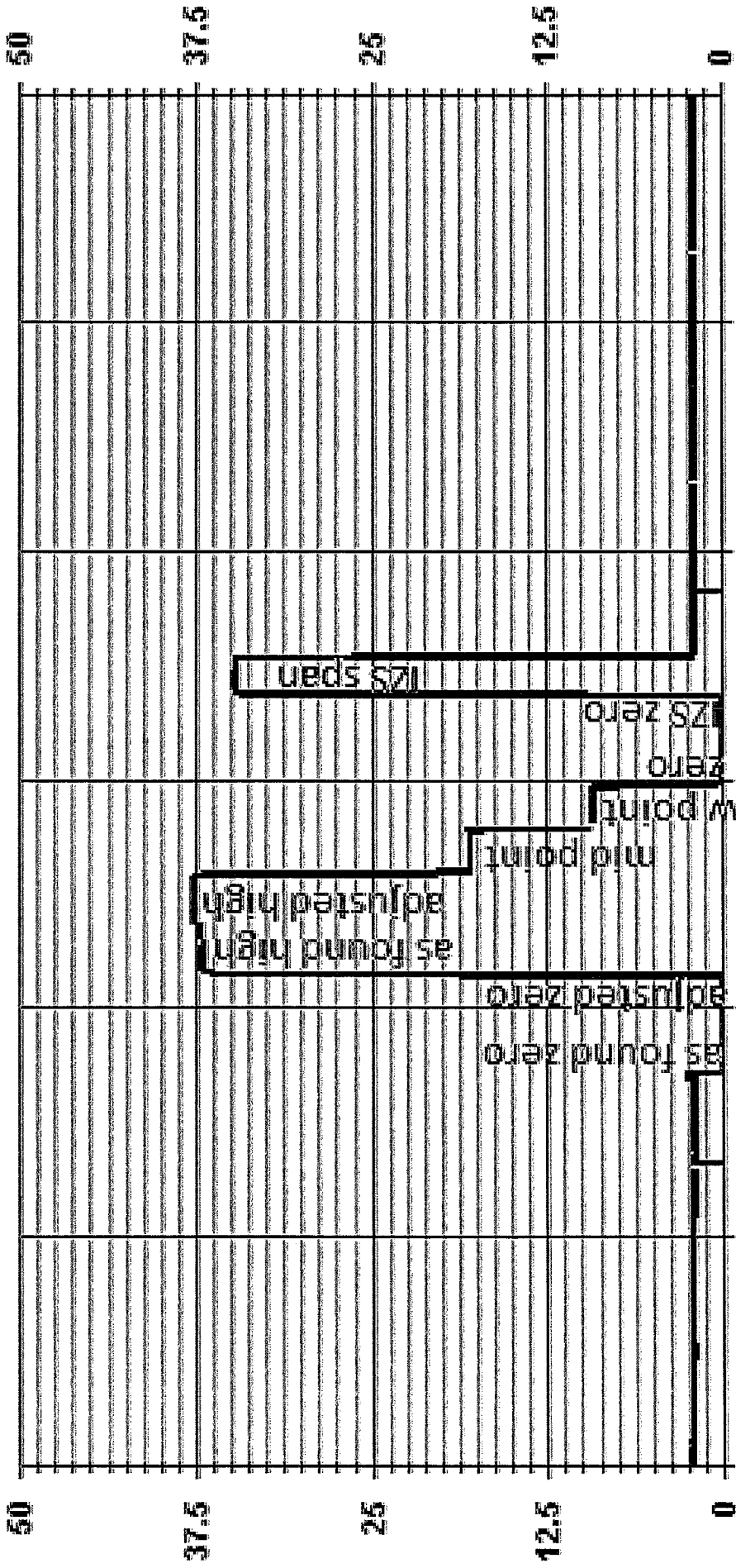
**Linear Regression/Calibration Results:**

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>-0.028%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-1.47%</u>	± 3% F.S.	PASS
		± 15%	PASS

Comments:  
 Sample filter changed. New CH<sub>4</sub> cylinder connected



01 Minute Averages



— LICA30    - - - - - THC    . . . . . PPM

***NITROGEN DIOXIDE***



API 200E NOx Analyzer Calibration

Date: 16-Jun-15  
 Company: LICA  
 Station Name/Location: Maskwa  
 Performed by: Alex Yakupov

Start Time (mst): 9:07  
 End Time (mst): 15:40  
 Calibration Purpose: Monthly Calibration  
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 593  
 Last Calibration Date: 8-May-15  
 Range ppb: 1000

Correction Factors:  
 As found C.F. Previous Cal High Point C.F.:  
 NO= 1.026 NO= 1.002  
 NOx= 1.037 NOx= 1.000  
 NO<sub>2</sub>= 0.994 NO<sub>2</sub>= 1.002

As found:  
 NOx SLOPE: 0.979  
 NOx OFFS: 2.8  
 NO SLOPE: 0.988  
 NO OFFS: -0.8  
 TEST: 126.7  
 SAMP FLW: 490  
 OZONE FL: 77  
 PMT: 9.5  
 NORM PMT: 1.9  
 AZERO: 7.4  
 HVPS: 634  
 RCELL TEMP: 50.0  
 BOX TEMP: 33.5  
 PMT TEMP: 6.8  
 IZS TEMP: 50.3  
 MOLY TEMP: 315.0  
 RCEL: 7.1  
 SAMP: 26.8  
 Internal Span: 318.5/4.9/313.4

As left:  
 NOx SLOPE: 1.014  
 NOx OFFS: 1.5  
 NO SLOPE: 1.010  
 NO OFFS: -0.2  
 TEST: 126.7  
 SAMP FLW: 490  
 OZONE FL: 77  
 PMT: 8.7  
 NORM PMT: -0.6  
 AZERO: 7.6  
 HVPS: 634  
 RCELL TEMP: 50.1  
 BOX TEMP: 32.4  
 PMT TEMP: 6.8  
 IZS TEMP: 50.0  
 MOLY TEMP: 315.2  
 RCEL: 6.7  
 SAMP: 26.9  
 Internal Span: 316.1/4.4/311.4

Calibrator Flow Targets:

Make & Model: EnviroNics 6100  
 Serial #: 4760  
 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 <sub>3</sub> setting (v or ppb)	total (cc/min)
zero	4995	0	0	4995
high	4916	78	420.00	4994
mid	4957	38	230.00	4995
low	4975	19	87.00	4994

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	4993	0.0	4993	0	0	1.0	1.0	NA	NA
adjusted zero	4993	0.0	4993	0	0	1.0	0.0	NA	NA
as found high	4915	76.90	4992	779.5	779.5	761	752	1.026	1.037
adjusted high	4915	76.90	4992	779.5	779.5	779	779	1.002	1.001
mid	4959	37.44	4996	379.2	379.2	379	379	1.003	1.000
low	4976	18.71	4995	189.5	189.5	189	189	1.008	1.003
calibrator zero	4993	0.00	4993	0	0	1.0	0.0	NA	NA
Average C.F.=								1.004	1.001

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO <sub>2</sub>	NO drop	NO <sub>2</sub> increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4916	76.90	4993	0.0	779.0	778.0	-1.0	1.0	-1.0	
as found NO <sub>2</sub>	4916	76.90	4993	420.0	295.0	780.0	486.0	484.0	487.0	0.994
gpt mid	4916	76.90	4993	230.0	515.0	781.0	265.0	264.0	266.0	0.992
gpt low	4916	76.90	4993	87.0	684.0	779.0	95.0	95.0	96.0	0.990
Average NO <sub>2</sub> C.F.=										0.992

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.999	1.000	1.009	0.85-1.15
b (Intercept as % of full scale) =	0.04%	-0.02%	-0.09%	± 3% F.S.
% change in C.F. from last cal =	-2.36%	-3.66%	0.81%	+/-15%
NO <sub>2</sub> converter efficiency			100.8%	>85%

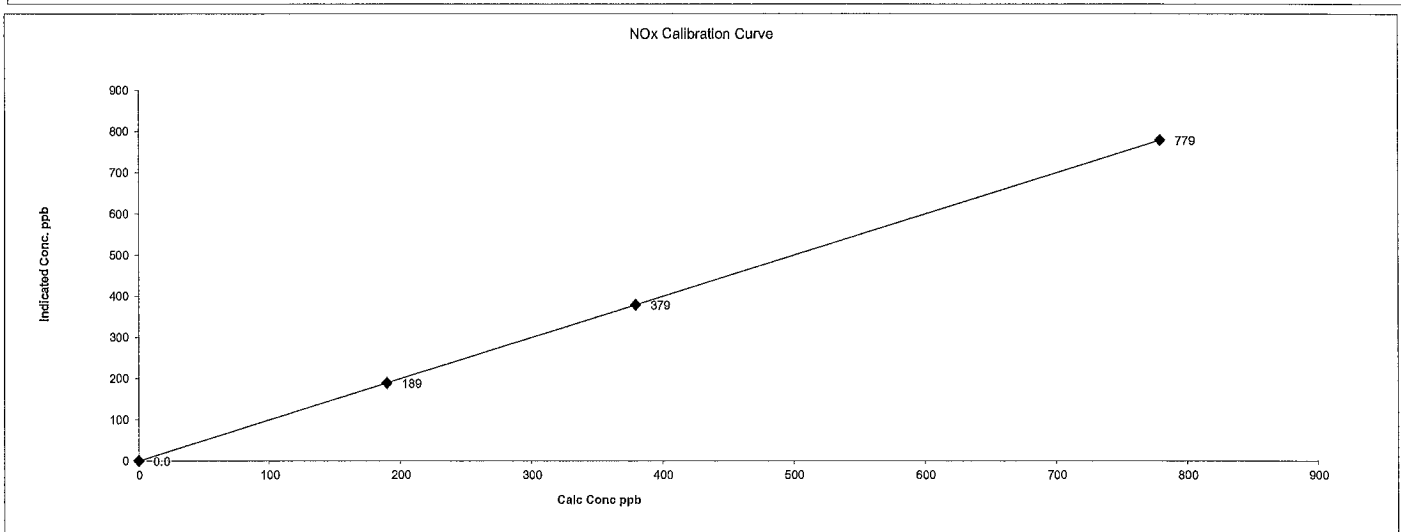
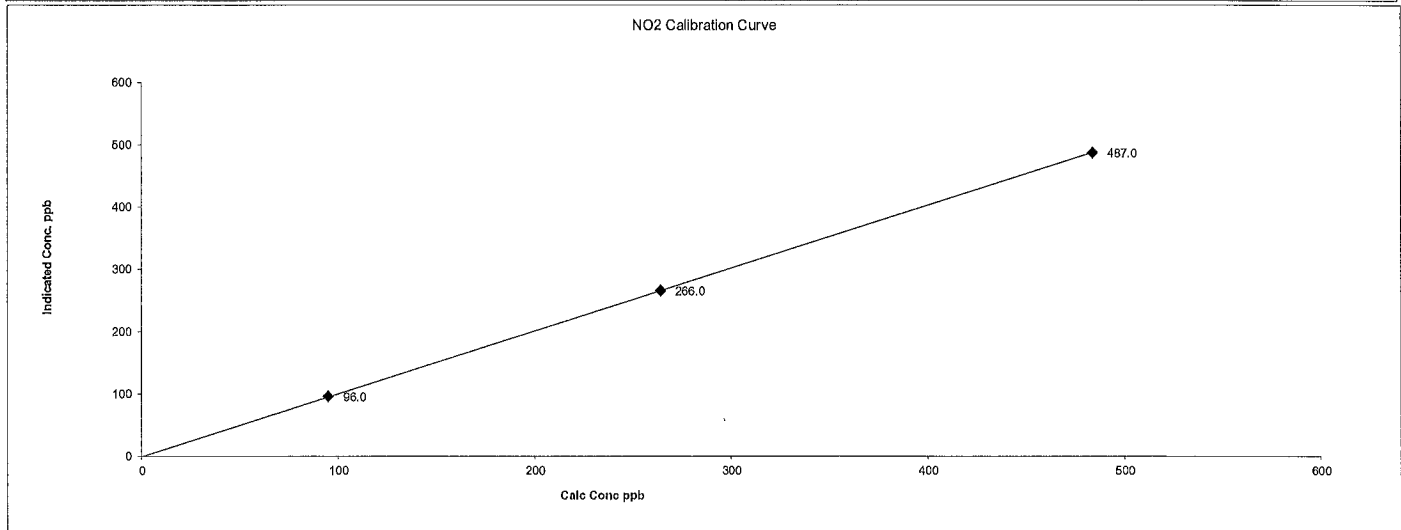
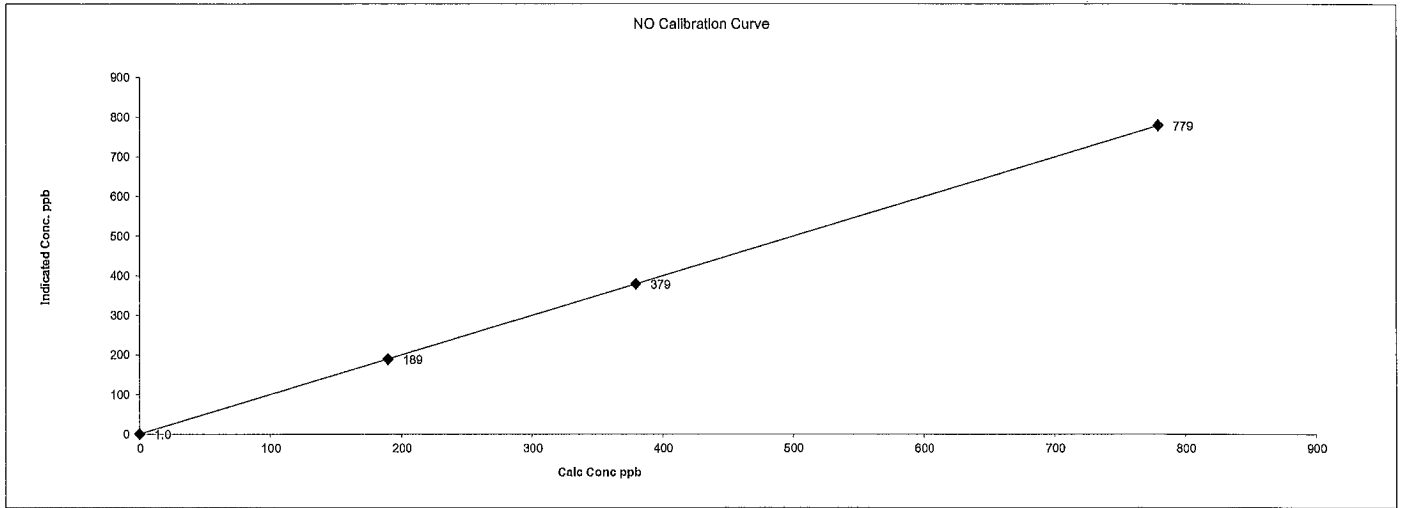
Comments:

Sample filter changed.  
 No NO<sub>2</sub> adjustment made.

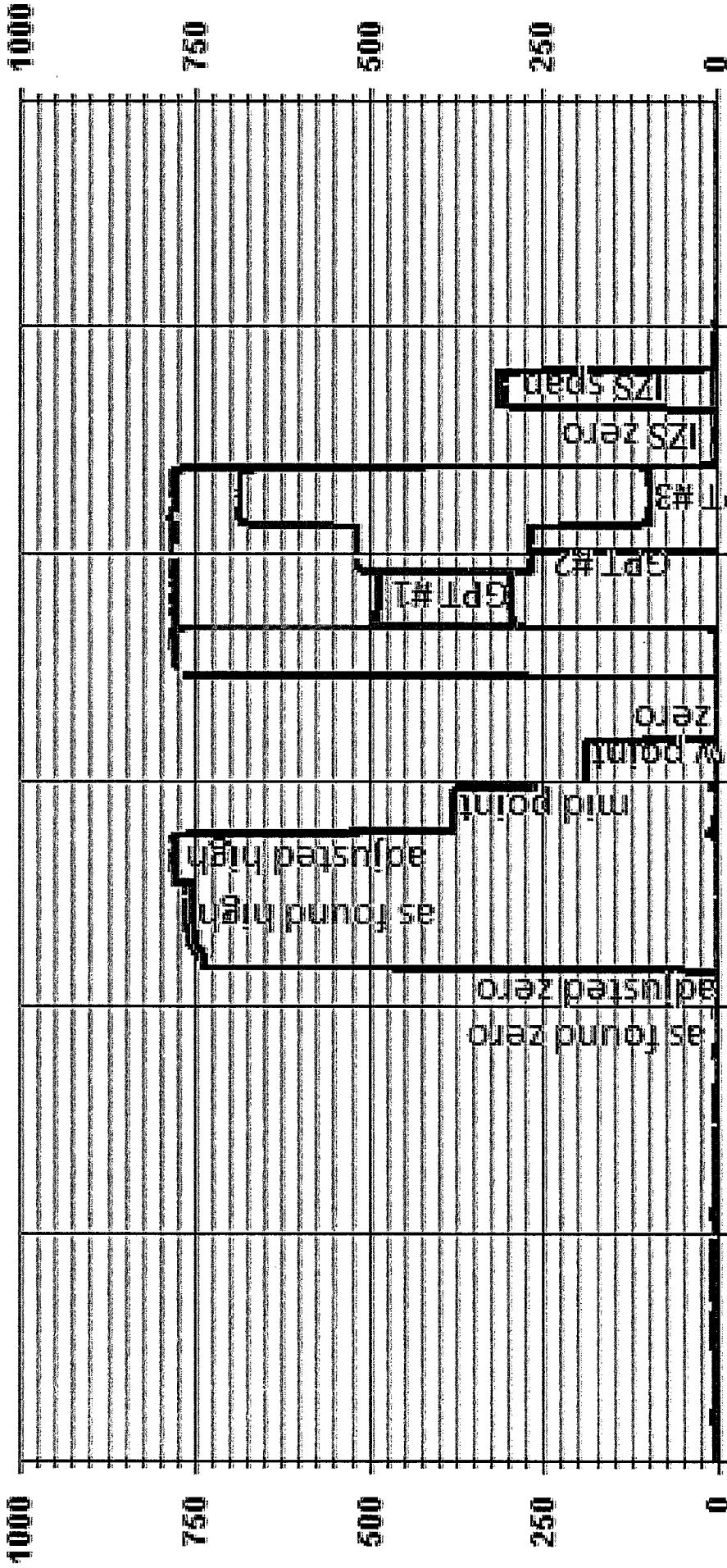
Date: 16-Jun-15  
Company: LICA  
Station Name/Location: Maskwa  
Performed by: Alex Yakupov

Start Time (mst): 9:07  
End Time (mst): 15:40  
Calibration Purpose: Monthly Calibration  
Cal Gas Expiry Date: 12-Mar-19

API 200E NOx Analyzer Calibration



# 01 Minute Averages



06/16/15 05:58 06/16/15 07:58 06/16/15 09:58 06/16/15 11:58 06/16/15 13:58 06/16/15 15:58

— LICA30 NOX PPB — LICA30 NO2 — LICA30 NO2 PPB

***WIND SYSTEM***

Met One Instruments  
Sonic Sensor Test Data  
50.5-6100

Model: 50.5H Tech: Dan Fitch Date: 3/4/2014  
 Serial # H10703 Customer: Maxxam Analytics  
 P.O. No.: 35-54786 Sensor Output Voltage: 1 vdc  
 Sales Order Number: 101530 As Found:  As Left:

Test 1: Actual Wind Tunnel Speed 2.22 m/s

WD Setting (Degree)	WD Output Voltage	WD Indication	WD Error +/- 3 deg	WS Output Voltage	WS Indication	WS Error +/- .20 m/s
30	0.087	31.3	1.3	0.044	2.20	-0.02
60	0.172	61.9	1.9	0.043	2.15	-0.07
120	0.337	121.3	1.3	0.045	2.25	0.03
150	0.418	150.5	0.5	0.045	2.25	0.03
210	0.586	211.0	1.0	0.044	2.20	-0.02
240	0.670	241.2	1.2	0.045	2.25	0.03
300	0.837	301.3	1.3	0.045	2.25	0.03
330	0.922	331.9	1.9	0.045	2.25	0.03

Test 2: Actual Wind Tunnel Speed 11.19 m/s

WD Setting (Degree)	WD Output Voltage	WD Indication	WD Error +/- 3 deg	WS Output Voltage	WS Indication	WS Error +/- .24 m/s
30	0.085	30.6	0.6	0.224	11.20	0.01
60	0.169	60.8	0.8	0.225	11.25	0.06
120	0.334	120.2	0.2	0.226	11.30	0.11
150	0.422	151.9	1.9	0.225	11.25	0.06
210	0.586	211.0	1.0	0.223	11.15	-0.04
240	0.672	241.9	1.9	0.225	11.25	0.06
300	0.837	301.3	1.3	0.228	11.40	0.21
330	0.922	331.9	1.9	0.227	11.35	0.16



## ***CALIBRATORS***

Company Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Enviroincs 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 (scm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (scm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>	Gas flows not available from display.	

Callibrator Flow (scm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	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)*

<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>	
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 <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
4993	0.000	0.000	0.823	-0.001	0.822	NO <sub>2</sub>	% 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)*

<u>NO<sub>2</sub></u>		<u>LIMITS</u>	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	1.0006	0.90-1.10	
b (Intercept % of FS)=	-0.0132	± 3% F.S.	

<u>AENV Standards</u>		<u>NO<sub>x</sub> Analyzer</u>	
<u>Audit Calibrator</u>		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>December 15, 2014</u>
		Full Scale (ppm)	<u>1.0</u>

COMMENTS: \_\_\_\_\_

Auditor: Al Clark Date: December 17, 2014  
 Operator Signature: [Signature] 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 <sub>2</sub> Cylinder Conc.	<u>50.3</u>	Barometric Pressure	<u>N/A</u>
SO <sub>2</sub> 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 (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)*

SO <sub>2</sub>	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 <sub>2</sub> Analyzer	
<b>Audit Calibrator</b>		Make/Model	<u>Teco 43C</u>
Make/Model	<u>R&amp;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

***CALIBRATION GASES***



# Calibration Gas Audit

## NO Cylinder Gas

File No. 2015-345CGA

Company: Maxxam Operators name: Limln 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 (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	<del>0.01660</del>	<del>60.242</del>	<del>51.5</del>	<del>51.1</del>
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:						<b>52.0</b>	<b>51.3</b>

	<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. 2014-251CGA

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&amp;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	<del>0.0000</del>	<del>132.442</del>	<del>10.0</del>
5099	38.5	0.0754	0.00755	132.442	9.9
5092	18.0	0.0349	0.00353	282.889	9.8
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					<b>9.9</b>

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. 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: Blos 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	<del>0.01660</del>	<del>60.242</del>	<del>48.3</del>
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:					<b>48.0</b>

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



Praxair Canada, Inc.  
8501-34th Street  
Edmonton AB T6B 2X8  
Tel: 780-449-0776  
Fax: 780-449-8302

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-ID2ex/USA--  
Hewlett-Packard (Agilent)-6890--GC-FID**

Cylinder Style: **AQ** Filling Method: **Gravimetric**  
Cylinder Pressure @70F: **2200 psig** Date of Fill: **03/28/2014**  
Cylinder Volume: **82.0 ft3** Expiration Date: **03/26/2017**  
Valve Outlet Connection: **CGA-350**  
Cylinder NO(s): **LL33674**

Analyst: Todd Hryniv

The gas contained in this cylinder was prepared by Praxair Canada, Inc. and is certified as a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard used is certified against Praxair Canada, Inc. Reference Materials which are either prepared by weight standards to the National Institute of Standards and Technology (NIST), Massachusetts, Canada, or the NIST Standard Reference Materials Agency available.

All expressions of concentration (L/L, % or ppm) are for gas phase, by volume at 0 °C, 101.325 kPa, unless otherwise noted.

Method	Gas Chromatography with Flame Ionization Detector	Gas Chromatography with Electrodeless Discharge	Gas Chromatography with Electrolytic Conductivity Detector	Gas Chromatography with Flame Ionization Detector
A	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
B	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
C	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
D	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
E	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
F	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
G	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
H	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
I	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
J	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
K	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
L	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
M	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
N	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
O	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
P	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
Q	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
R	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
S	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
T	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
U	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
V	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
W	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
X	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
Y	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector
Z	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Thermal Conductivity Detector	Gas Chromatography with Photoacoustic Detector

**IMPORTANT:** This information contained herein has been prepared at your request by personnel within Praxair Canada, Inc. While we believe the information is accurate within the limits of the analytical methods employed and is correct to the extent 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 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. arising out of the use of the information contained herein be held liable for providing such information.



***APPENDIX III***  
***CHAIN OF CUSTODY***



# Maxxam Analytics - Air Services Group

## Project Chain of Custody

<b>Client:</b> <u>Lakeland Industry &amp; Community Association</u>	<b>Project #:</b> <u>2833-2015-06-30- C</u>
<b>Site:</b> <u>Maskwa Site</u>	<b>Contact:</b> <u>Mike Bisaga</u>

QA Check Complete msdlnb Date 03 - July - 2015

QA Check Review msdlnb Date 03 - July - 2015

Report Complete msdlnb Date 07 - July - 2015

Report Reviewed E. Tangang Date 9 - Jul - 15

Report Shipped \_\_\_\_\_ Date \_\_\_\_\_

Notes



maxxam.ca

MAXXAM ANALYTICS  
#1 2080 39 Ave. NE, Calgary  
AB T2E 6P7

Toll Free 800-386-7247  
Fax 403-219-3673

**AMBIENT AIR MONITORING MONTHLY DATA REPORT  
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
ST. LINA SITE**

**JOB #:2833-2015-07-31- C**

**JUNE 2015**


Prepared for:

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

**Attention: MIKE BISAGA**

DATE: **July 9, 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 JUNE 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.

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: Hourly maximum data collected on June 1 hour 10 and on June 20 hour 12 were invalidated as the analyzers were recovering from power outages.

THC: The Thermo 51C S/N: 436609739 was replaced with Thermo 51C S/N: 51CLT-77021-384 on June 6 for maintenance purposes. 18 hours of data collected between June 6 hour 16 and June 7 hour 9 are not valid as the analyzer was being allowed time to stabilize before installation calibration.

PM 2.5: 12 hours of data collected on June 1 were discarded due to a malfunction that occurred on May 31. 1 hour of data was invalidated as the data were below  $-3 \text{ ug/m}^3$  this month.

BP: Data collected on June 13 at hour 4 was invalidated due to the malfunctioning of the pressure sensor.

Precipitation: Maintenance was performed on the rain guage system on June 1. A precipitation sensor check was completed on June 10. Data collected on June 7 at hour 13 was invalidated due to a spike.

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 (%)
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	1-HOUR				24-HOUR			
	1-HR	24-HR	1-HR	24-HR		READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
SO2 (PPB)	172	48	0	0	0	2	22, 25	VAR	VAR	VAR	0.2	VAR	100.0
H2S (PPB)	10	3	0	0	0	3	7	4	8.9	WSW	0.7	18	100.0
THC (PPM)	-	-	-	-	1.8	2.7	7	23	3	W	2.1	2	97.5
NO2 (PPB)	159	-	0	-	1.3	7	11	1	8.9	SSE	2.8	3, 25	100.0
NO (PPB)	-	-	-	-	0.1	2.3	24, 24	6, 7	5.7 4.7	SW SSW	0.4	24	100.0
NOX (PPB)	-	-	-	-	1.4	7.3	24	6	5.7	SW	3.0	3, 25	100.0
O3 (PPB)	82	-	0	-	36	64	11	13	6.1	SSW	48.6	11	100.0
PM2.5 (UG/M3)	-	30	-	0	5.9	75.0	29	8	7.9	SSE	25.7	30	98.2
RELATIVE HUMIDITY (%)	-	-	-	-	59.4	91	20, 24	VAR	VAR	VAR	81.3	13	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	933	941	14, 15	VAR	VAR	VAR	938	15	99.9
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	16.5	31.3	28	14	11	WNW	25.3	28	100.0
PRECIPITATION (MM)	-	-	-	-	0.1	12.9	11	19	20.3	WNW	1.0	11	99.2
VECTOR WS (KPH)	-	-	-	-	8.0	22.7	8	17	-	NW	11.8	6	100.0
VECTOR WD (DEG)	-	-	-	-	W	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

---

## Exceedence Summary Report

---

**SO<sub>2</sub> 1- Hour Exceedences**

**No Exceedences Recorded During the Month**

**SO<sub>2</sub> 24- Hour Exceedences**

**No Exceedences Recorded During the Month**

**H<sub>2</sub>S 1- Hour Exceedences**

**No Exceedences Recorded During the Month**

**H<sub>2</sub>S 24- Hour Exceedences**

**No Exceedences Recorded During the Month**

**NO<sub>2</sub> 1- Hour Exceedences**

**No Exceedences Recorded During the Month**

**PM<sub>2.5</sub> 24- Hour Exceedences**

**No Exceedences Recorded During the Month**

**TABLE OF CONTENTS**

<u>Title</u>	<u>Page</u>
<u>1.0 Discussion</u>	<u>3</u>
<u>2.0 Project Personnel</u>	<u>6</u>
<u>3.0 Plant Monthly Required AMD Summary</u>	<u>6</u>
<u>4.0 Calculations and Results</u>	<u>6</u>
<u>5.0 Methods and Procedures</u>	<u>7</u>
<u>Appendix I</u>	<b>Continuous Monitoring Data Results</b>
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Ozone
	Particulate Matter 2.5
	Wind Speed
	Wind Direction
	Standard Deviation Wind Direction
	Relative Humidity
	Barometric Pressure
	Ambient Temperature
	Precipitation
<u>Appendix II</u>	<b>Analyzer Calibration Results</b>
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Nitrogen Dioxide
	Ozone
	Particulate Matter
	Wind System
	Calibrators
	Calibration Gases
<u>Appendix III</u>	<b>Chain of Custody</b>

## 1.0 Discussion

This monthly report consists of data for parameters SO<sub>2</sub>, H<sub>2</sub>S, THC, NO<sub>x</sub>, NO, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>2.5</sub>, WS, WD, RH, BP, Precipitation and 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.

The power unit for the PC Temperature sensor was replaced on June 7 after it was burnt during a thunderstorm. Trailer inspection was performed on June 9.

### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 9. Hourly maximum data collected on June 1 hour 10 and on June 20 hour 12 were invalidated as the analyzer was recovering from power outages.



### **HYDROGEN SULPHIDE (H<sub>2</sub>S)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 9. Hourly maximum data collected on June 1 hour 10 and on June 20 hour 12 were invalidated as the analyzer was recovering from power outages.

### **TOTAL HYDROCARBONS (THC)**

The analyzer spanned low on June 5. Following a removal calibration on June 6, the Thermo 51C S/N: 436609739 was replaced with Thermo 51C S/N: 51CLT-77021-384. The Thermo 51C S/N: 436609739 was brought back to Maxxam shop for maintenance. Both analyzers are LICA-owned. The analyzer was allowed time to stabilize overnight and the installation calibration was performed on June 7. 18 hours of data are invalid during the time the analyzer was stabilizing. Hourly maximum data collected on June 1 hour 10 and on June 20 hour 12 were invalidated as the analyzer was recovering from power outages.

### **NITROGEN DIOXIDE (NO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 9. Hourly maximum data collected on June 1 hour 10 and on June 20 hour 12 were invalidated as the analyzer was recovering from power outages.

### **OZONE (O<sub>3</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 10. Hourly maximum data collected on June 1 hour 10 and on June 20 hour 12 were invalidated as the analyzer was recovering from power outages.

### **PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM<sub>2.5</sub>)**

Two Teom audits were performed this month: one was completed on June 10, and the other audit was performed on June 19. Both the inlet filter and the FDMS filter were replaced on June 10. The Teom unit malfunctioned on May 31. Troubleshooting was performed by restarting the Teom unit on June 1 and the issue was fixed. 12 hours of data collected on June 1 from hour 0 to hour 11 were discarded due to this issue. Data was corrected using Alberta air quality guideline. If the data was between 0 to -3 ug/m<sup>3</sup>, the data was corrected to 0 ug/m<sup>3</sup>. If the data was below -3ug/m<sup>3</sup>, the data was invalidated. 1 hour of data was invalidated as the data was below -3 ug/m<sup>3</sup> this month.

### **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 June 1 hour 10 and on June 20 hour 12 were invalidated as the wind system was recovering from power outages.

**RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month.

**BAROMETRIC PRESSURE (BP)**

Data collected on June 13 at hour 4 was invalidated due to the malfunctioning of the pressure sensor at that hour.

**PRECIPITATION**

The rain gauge system was checked on June 1, and the system's functionality was confirmed. Data collected on June 7 at hour 13 was invalidated due to a spike. A precipitation sensor check was completed on June 10 in order to investigate any potential issues that caused the spike that was recorded on June 7. No obvious issues were found.

**AMBIENT TEMPERATURE (TPX)**

The temperature sensor was working well throughout the month.

## **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.

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 H<sub>2</sub>S Monitoring
- Maxxam AIR SOP-00211: Ambient SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00212: Ambient O<sub>3</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

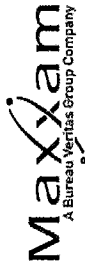
There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Flourescent Analyzer
- Hydrogen Sulphide - API 101E UV Flourescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM<sub>2.5</sub>) - 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	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	24-HOUR AVG.	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	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	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	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	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	0.0	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	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	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	0.0	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	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	0.0	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	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	0.0	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	0	0	0	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	24
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

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

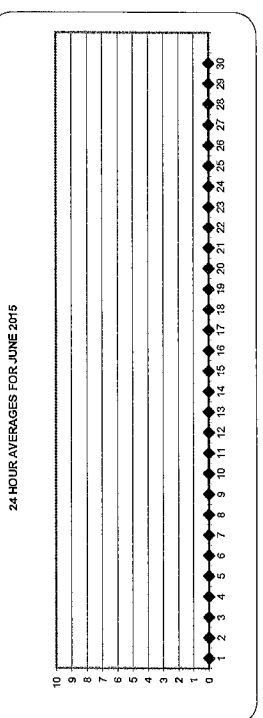
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	24-HR	3-DZ	PPB	24-HR	MS	PPB
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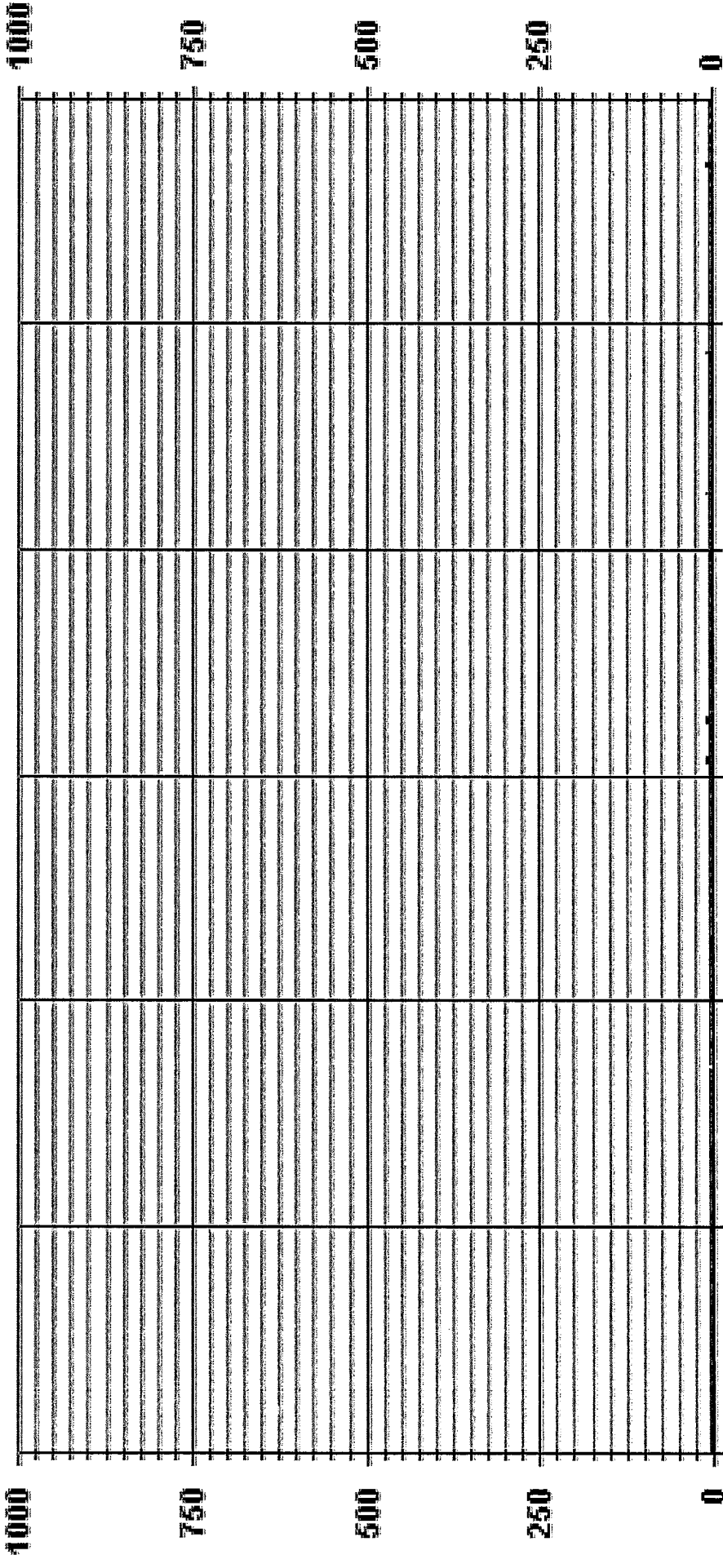
MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES	0
NUMBER OF 24-HR EXCEEDENCES	0

NUMBER OF NON-ZERO READINGS:	19					
MAXIMUM 1-HR AVERAGE:	2	PPB	@ HOUR(S)	VAR	ON DAY(S)	22, 25
MAXIMUM 24-HR AVERAGE:	0.2	PPB			ON DAY(S)	VAR
1/25 CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	5	HRS	AMTD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.20		MONTHLY AVERAGE:	0	PPB	



01 Hour Averages



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

— LICA31 SO2\_ PPB





SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOURS START	HOURS END	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.		
		1:00	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						
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	1	1	1	1	0.1	23
	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	1	1	1.0	24
	3	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	24
	4	1	1	1	1	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	1	1	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
	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	0.1	24
	7	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	0.4	24
	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	1	1	0.9	24
	9	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	0.4	24
	10	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	0.8	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	4	1.1	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	1.0	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	1.0	24
	14	S	1	1	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
	15	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	2	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	2	1.4	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	2	1.2	24
	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	1	0.8	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	0.2	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	1	0.1	23
	21	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	0.3	24
	22	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	3	0.8	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	0.5	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	1.0	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	1	3	1.3	24
	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	1.0	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	1	1.0	24
	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	1	1	2	1.0	24
	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	3	1.3	24
	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	1	1	1.0	24
HOURLY MAX	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.6	0.7			

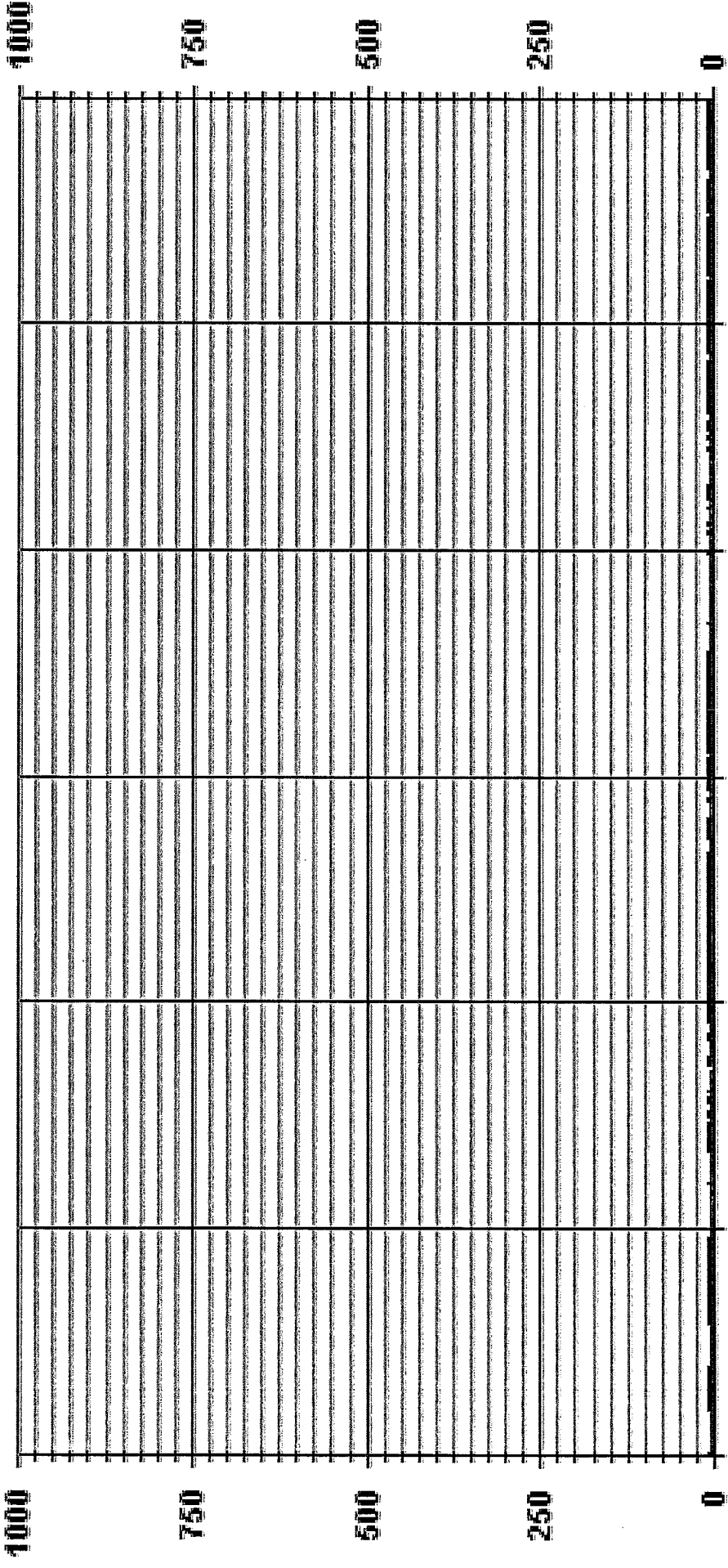
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	489
MAXIMUM INSTANTANEOUS VALUE:	S PPB @ HOUR(S) 8 ON DAY(S) 16
12S CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	0.58
OPERATIONAL TIME:	718 HRS
VAR-VARIUS	

01 Hour Averages



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

— LICA31 SO2MAX PPB

LICA31  
 SO2\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By # of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : SO2  
 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				
< 20	3.07	2.34	2.92	3.51	3.66	3.22	5.41	4.68	5.85	5.27	8.05	9.95	15.37	13.90	6.88	5.85	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	3.07	2.34	2.92	3.51	3.66	3.22	5.41	4.68	5.85	5.27	8.05	9.95	15.37	13.90	6.88	5.85				

Calm : .00 %

Total # Operational Hours : 683

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	21	16	20	24	25	22	37	32	40	36	55	68	105	95	47	40	683			
< 60																				
< 110																				
< 170																				
< 340																				
>= 340																				
Totals	21	16	20	24	25	22	37	32	40	36	55	68	105	95	47	40				

Calm : .00 %

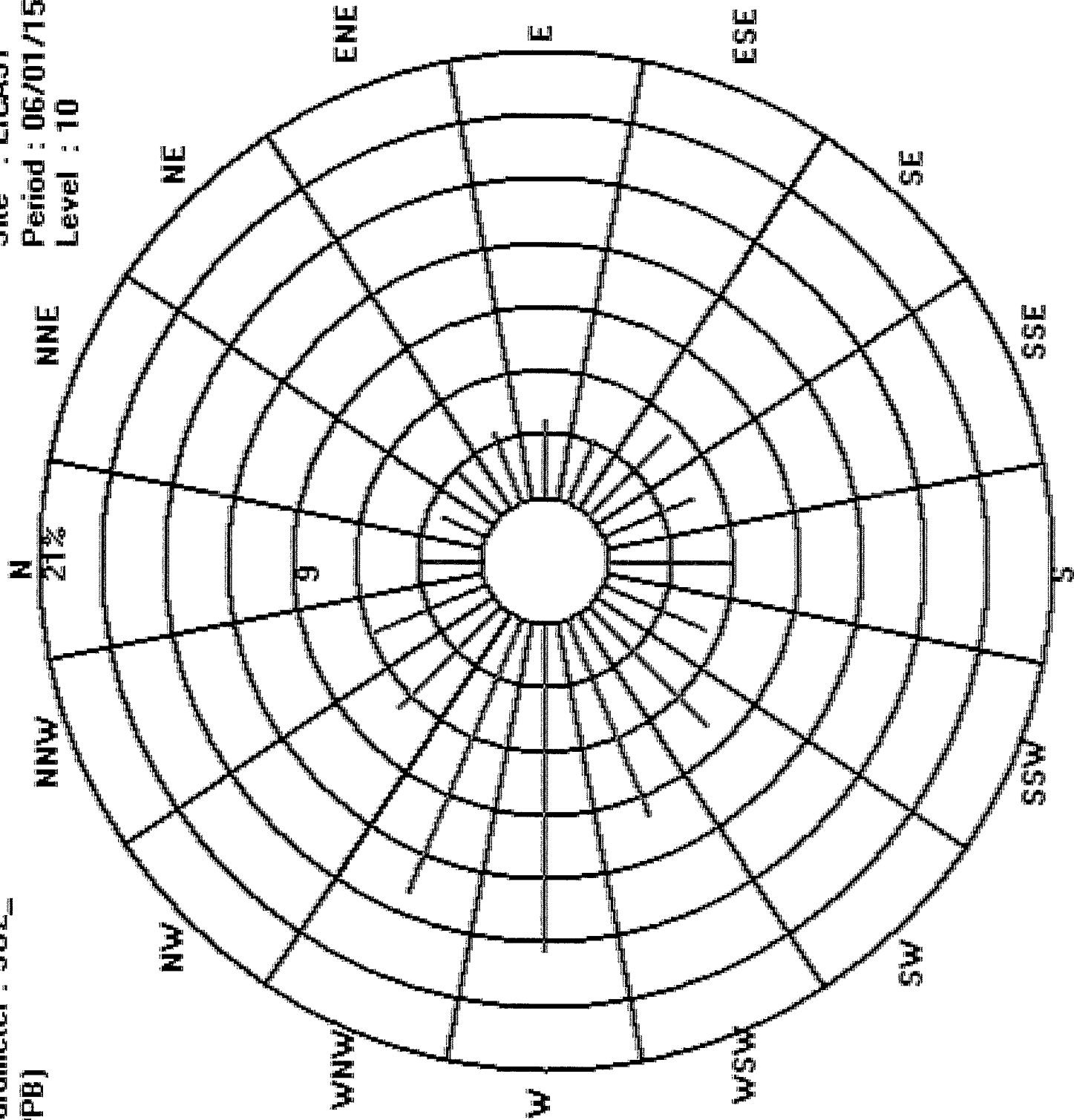
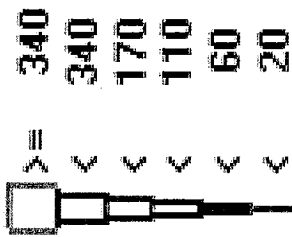
Total # Operational Hours : 683

Logger : 31 Parameter : SO2\_

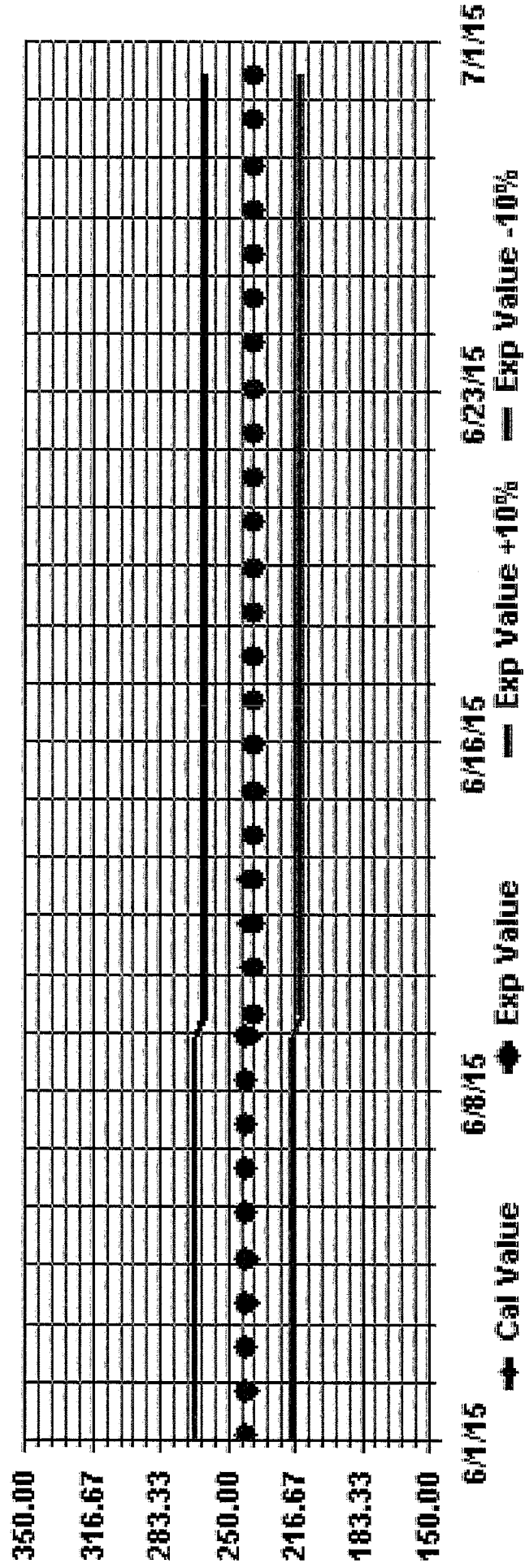
Site : LICA31

Class Limits (PPB)

Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA31 Parameter: SO2\_ Sequence: SO2 Phase: SPAM



***HYDROGEN SULPHIDE***



HYDROGEN SULPHIDE (H2S) 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
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	
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
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
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
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
6	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
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
8	0	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	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	0	0	0	0	0
10	0	0	1	1	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
11	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	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	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	0	0	0
14	0	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	1	1	1	1	1	2	2	1	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	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	0	0	0	0	0
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	1	1	1	1
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
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
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
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
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
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
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
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
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
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
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
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

HOURLY MAX: 1 2 1 1 3 2 2 1

HOURLY AVG: 0.1 0.2 0.3 0.4 0.4 0.4 0.4 0.2 0.1 0.1 0.0

DAILY MAX: 1 2 1 1 3 2 2 1

DAILY AVG: 0.0

24-HOUR RGS: 24

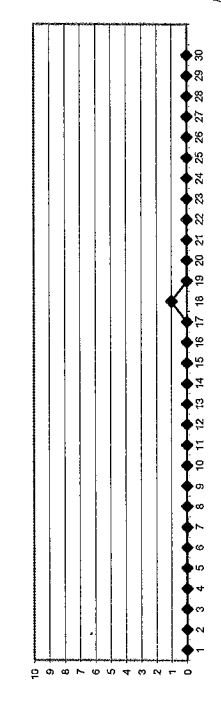
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1000-PPBS, 12-HR-PPBS, 24-HR-PPBS

24-HOUR AVERAGES FOR JUNE 2015

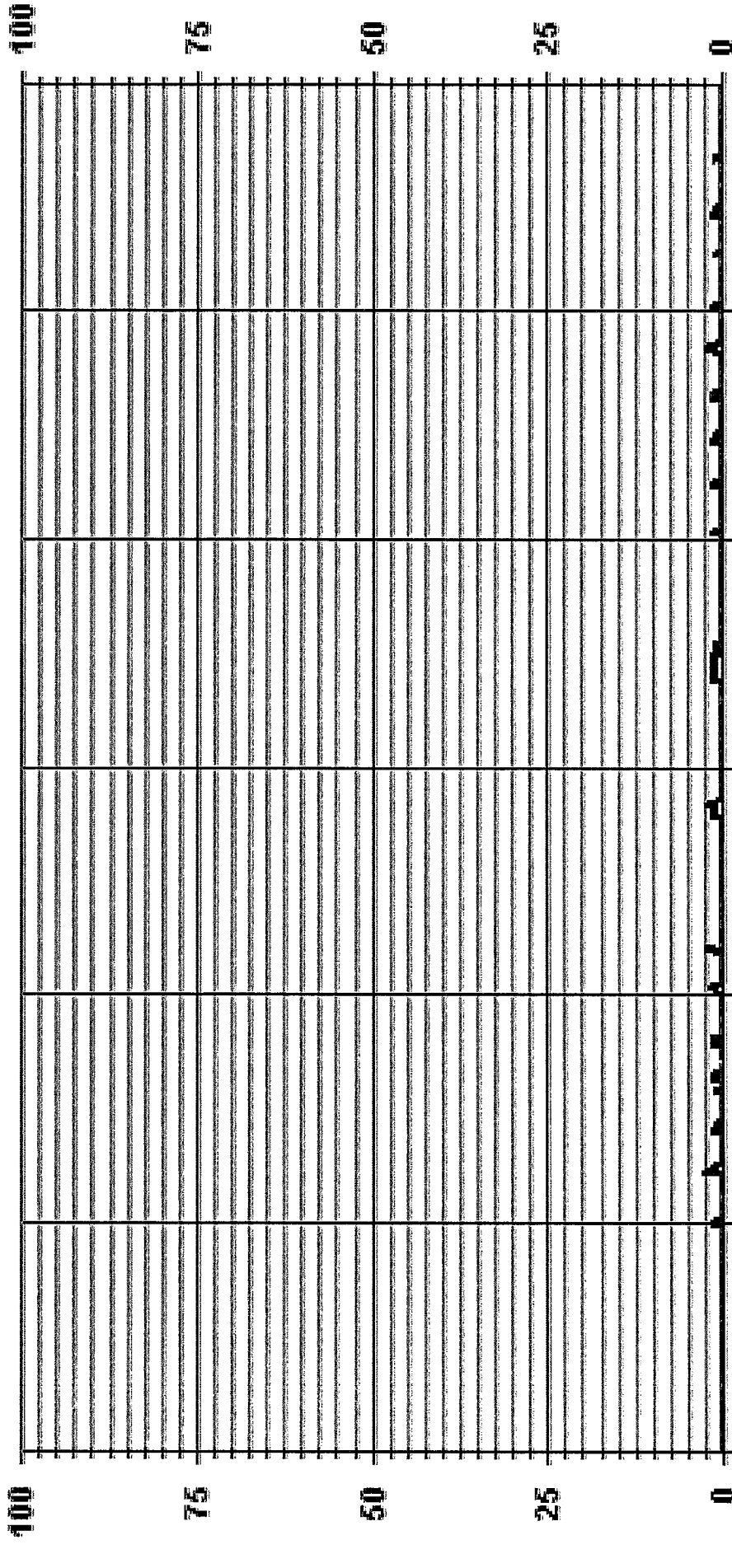


MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NUMBER OF 24-HR EXCEEDENCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NUMBER OF NON-ZERO READINGS:	73																													
MAXIMUM 1-HR AVERAGE:	3	PPB	@	HOURLY(S)	4	ON	DAY(S)																							
MAXIMUM 24-HR AVERAGE:	0.7	PPB																												
12S CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:																											
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:																											
STANDARD DEVIATION:	0.37		MONTHLY AVERAGE:																											

720 HRS  
100.0 %  
0 PPB

01 Hour Averages



— LICA31 H2S\_ PPB

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 St. Lina Site - JUNE 2015  
 JOB # 2833-2015-07-31-C

HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

HOURS START	DAILY																								24-HOUR AVG.	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			
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	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	
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	

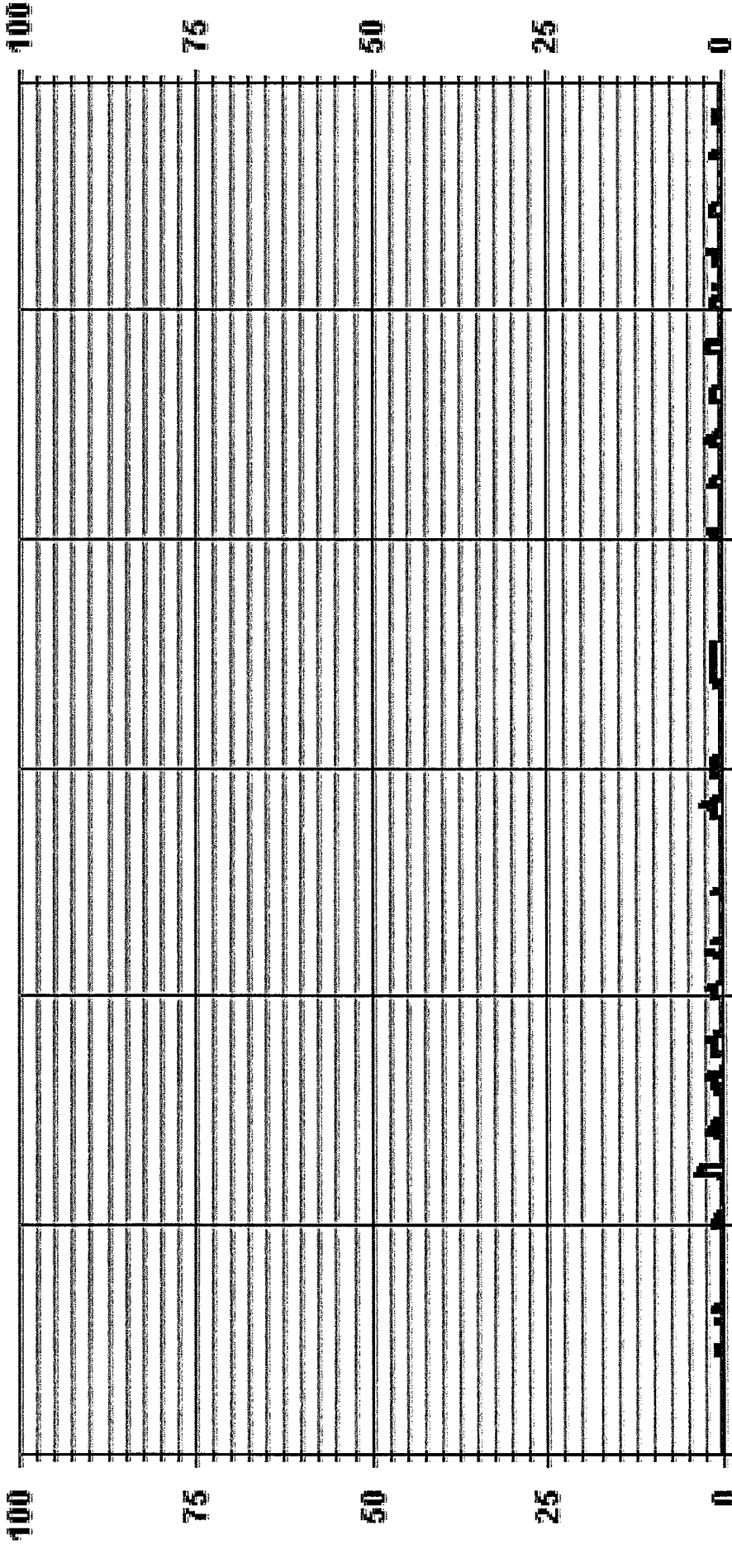
STATUS FLAG CODES

C	QUALITY ASSURANCE
M	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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	134
MAXIMUM INSTANTANEOUS VALUE:	4 PPB @ HOUR(S) 4 ON DAY(S) 7
I/ZS CALIBRATION TIME:	91 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	0.55
OPERATIONAL TIME:	718 HRS
VARIOUS:	VARIOUS

01 Hour Averages



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

— LICA31 H2S MAX PPB

LICA31  
H2S\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 31  
Site Name : LICA31  
Parameter : H2S\_  
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	
< 3	3.07	2.33	2.92	3.50	3.65	3.21	5.40	4.67	5.84	5.26	8.04	9.79	15.35	14.03	6.87	5.84	99.85
< 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.14
< 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	3.07	2.33	2.92	3.50	3.65	3.21	5.40	4.67	5.84	5.26	8.04	9.94	15.35	14.03	6.87	5.84	

Calm : .00 %

Total # Operational Hours : 684

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	21	16	20	24	25	22	37	32	40	36	55	67	105	96	47	40	683
< 10												1					1
< 50																	
>= 50																	
Totals	21	16	20	24	25	22	37	32	40	36	55	68	105	96	47	40	

Calm : .00 %

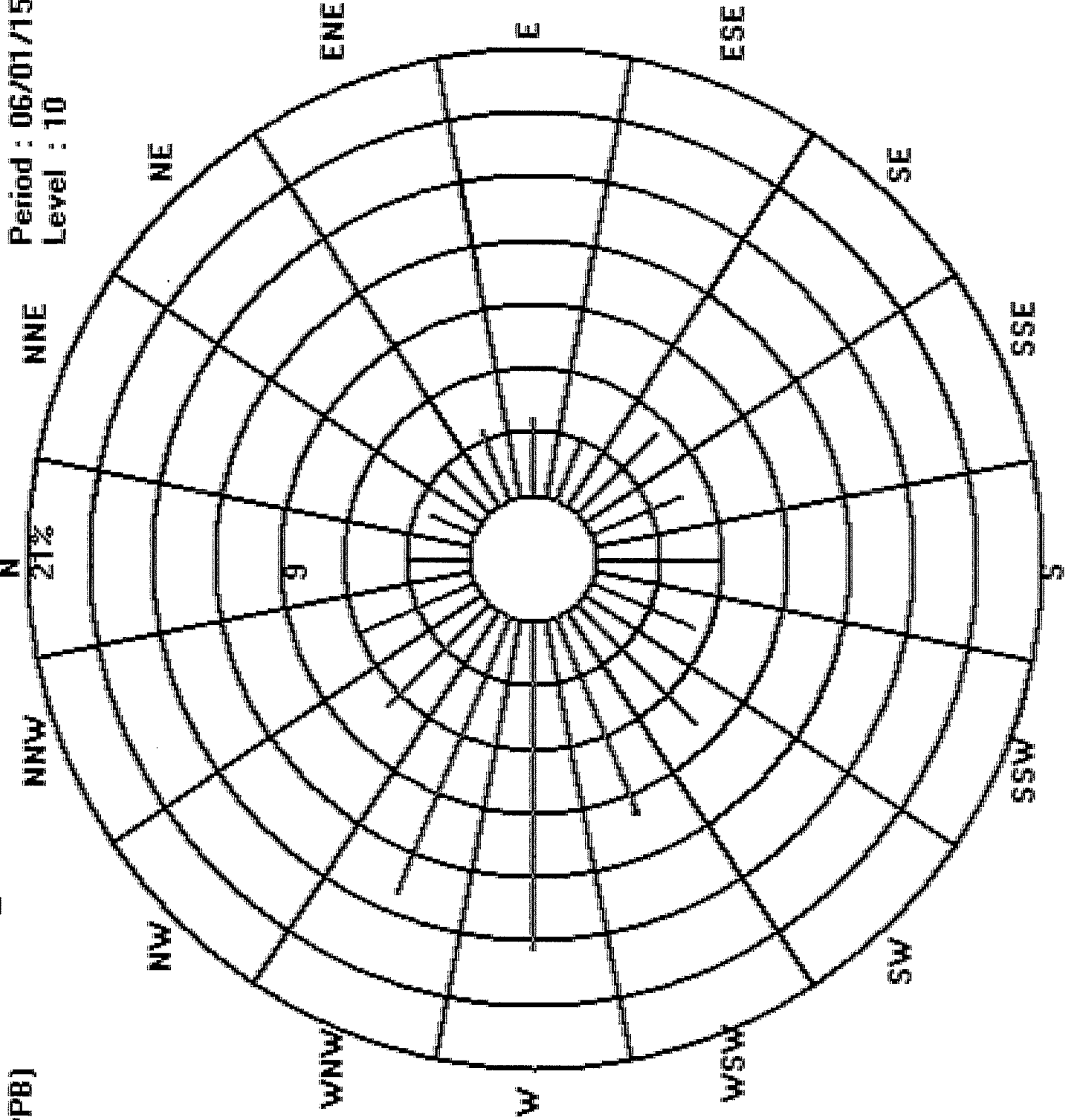
Total # Operational Hours : 684

Logger : 31 Parameter : H25\_

Site : LICA31

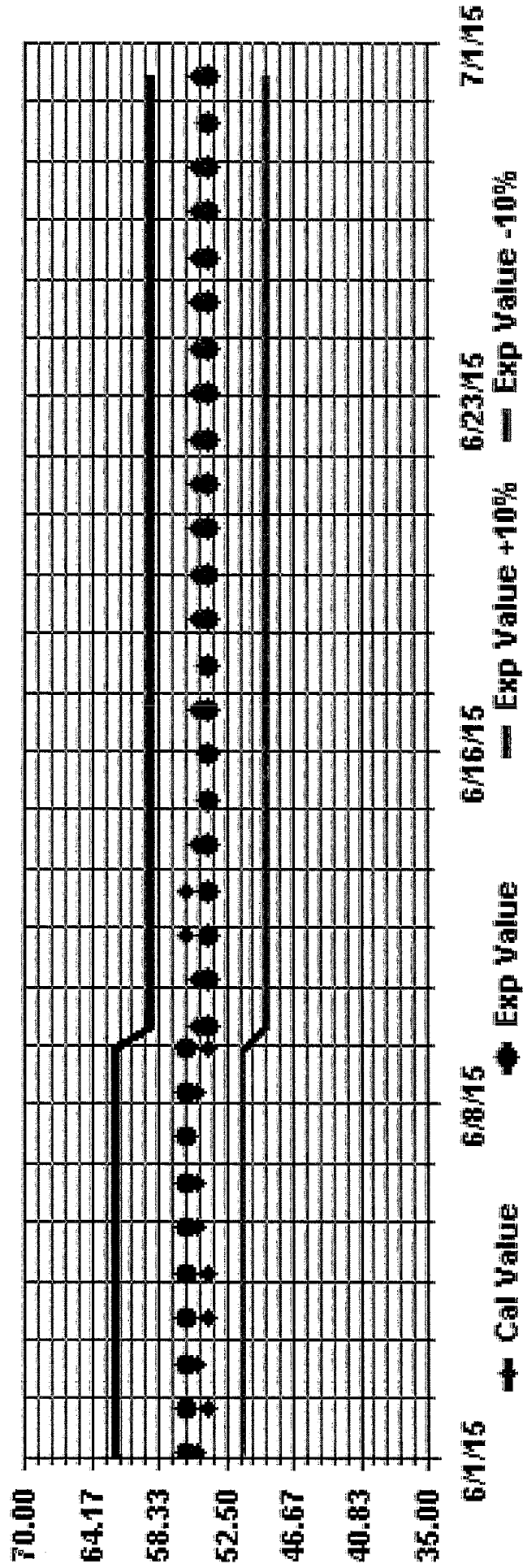
Period : 06/01/15-06/30/15

Level : 10

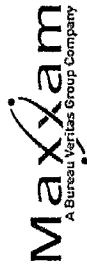


>= 50  
< 50  
< 10  
< 3

Calibration Graph for Site: LICA31 Parameter: H2S\_ Sequence: H2S Phase: SPAN



***TOTAL HYDROCARBON***



TOTAL HYDROCARBONS (THC) hourly averages in ppm

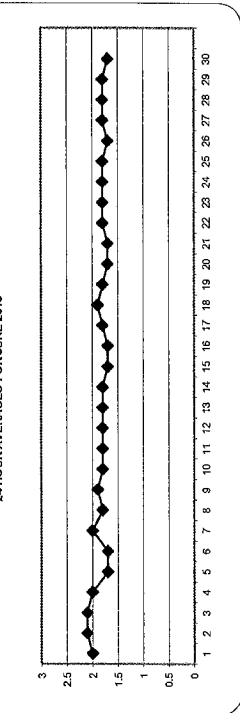
MST

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
19	1.9	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	2.0	2.0	2.0	2.0	2.0	2.0
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	2.0	2.0
21	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	1.8
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	1.7	1.7
23	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	1.8
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	1.8	1.8
25	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	1.7	1.7
26	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	1.8
27	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	1.8
28	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	1.8
29	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	1.8
30	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	1.6	1.6
HOURLY MAX	2.0	2.3	2.2	2.4	2.5	2.3	2.5	2.3	2.4	2.3	2.4	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
HOURLY AVG	1.8	1.8	1.8	1.8	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
DAILY MAX	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
DAILY AVG	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	2.0	2.0
ROGS																														

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	- OUTFORREPAIR	K	- COLLECTION ERROR

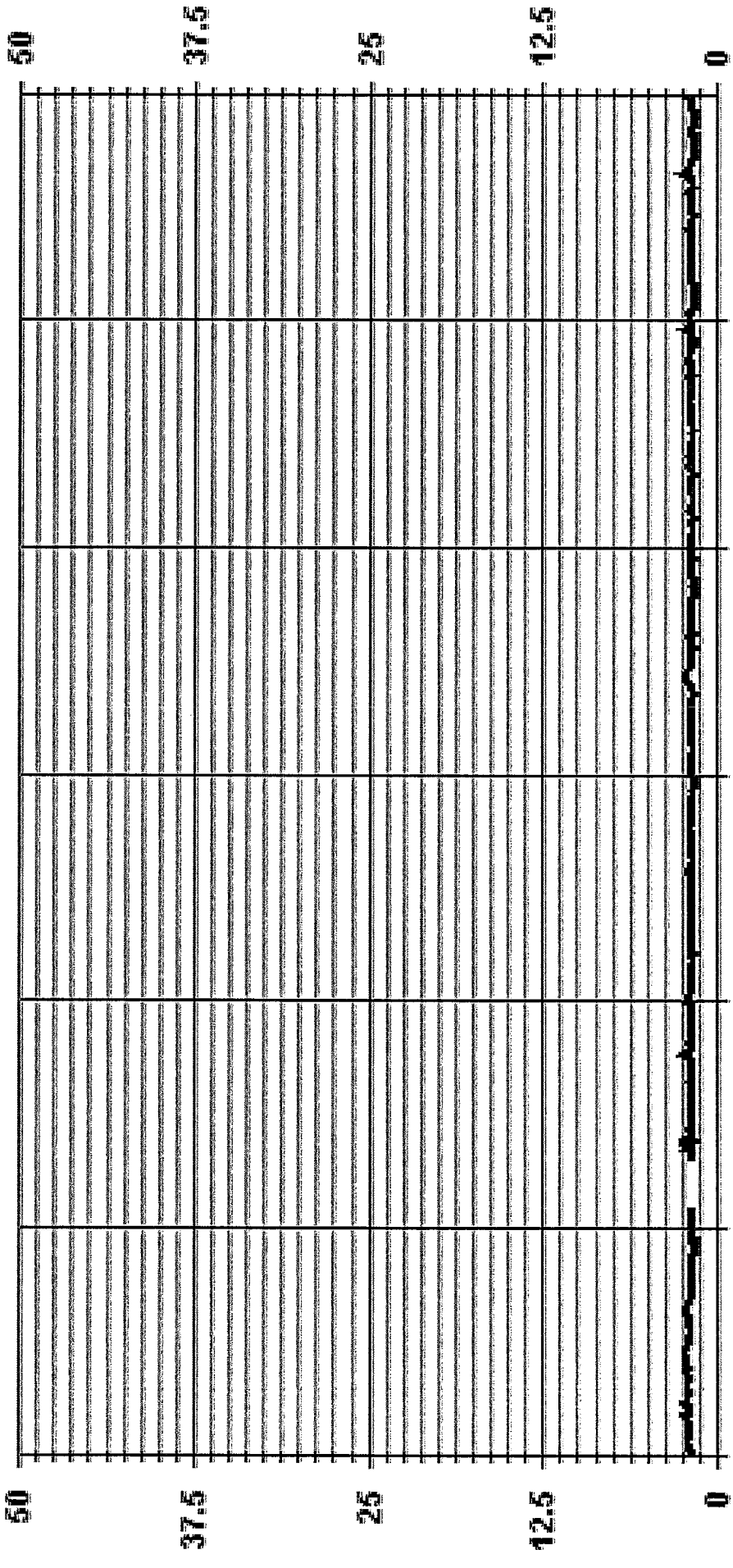
24 HOUR AVERAGES FOR JUNE 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	662	ON DAY(S)	7
MAXIMUM 1-HR AVERAGE:	2.7 PPM	ON DAY(S)	2, 3
MAXIMUM 24-HR AVERAGE:	2.1 PPM	VAR-VARIOUS	
1/25 CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	702 HRS
MONTHLY CALIBRATION TIME:	9 HRS	AMD OPERATION UPTIME:	97.5 %
STANDARD DEVIATION:	0.17	MONTHLY AVERAGE:	1.8 PPM

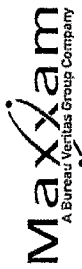
# 01 Hour Averages



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

— LICA31 THC PPM





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 St. Lina Site - JUNE 2015  
 JOB # 2833-2015-07-31-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	24:00
HOURLY 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	25:00
HOURLY 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	24:00	25:00	01:00
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
STATUS	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
MAX	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
AVG	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
1	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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
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	2.1	2.1	2.1	2.1	2.1
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	2.1	2.1	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
6	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
7	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
8	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
9	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
10	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
11	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
12	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
13	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
14	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
15	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
16	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
17	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
18	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
19	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	2.1	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
21	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
22	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	2.1	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
24	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
25	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
26	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
27	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
28	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
29	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
30	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
HOURLY MAX	4.9	12.3	2.9	4.9	3.9	3.2	2.8	3.4	2.7	2.7	3.1	3.5	2.5	2.3	2.5	3.9	3.1	3.3	3.9	7.1	2.2	2.1	2.1	2.1	2.1
HOURLY AVG	2.3	2.4	2.0	2.1	2.2	2.1	2.2	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.8	2.8	2.8	2.8	2.6

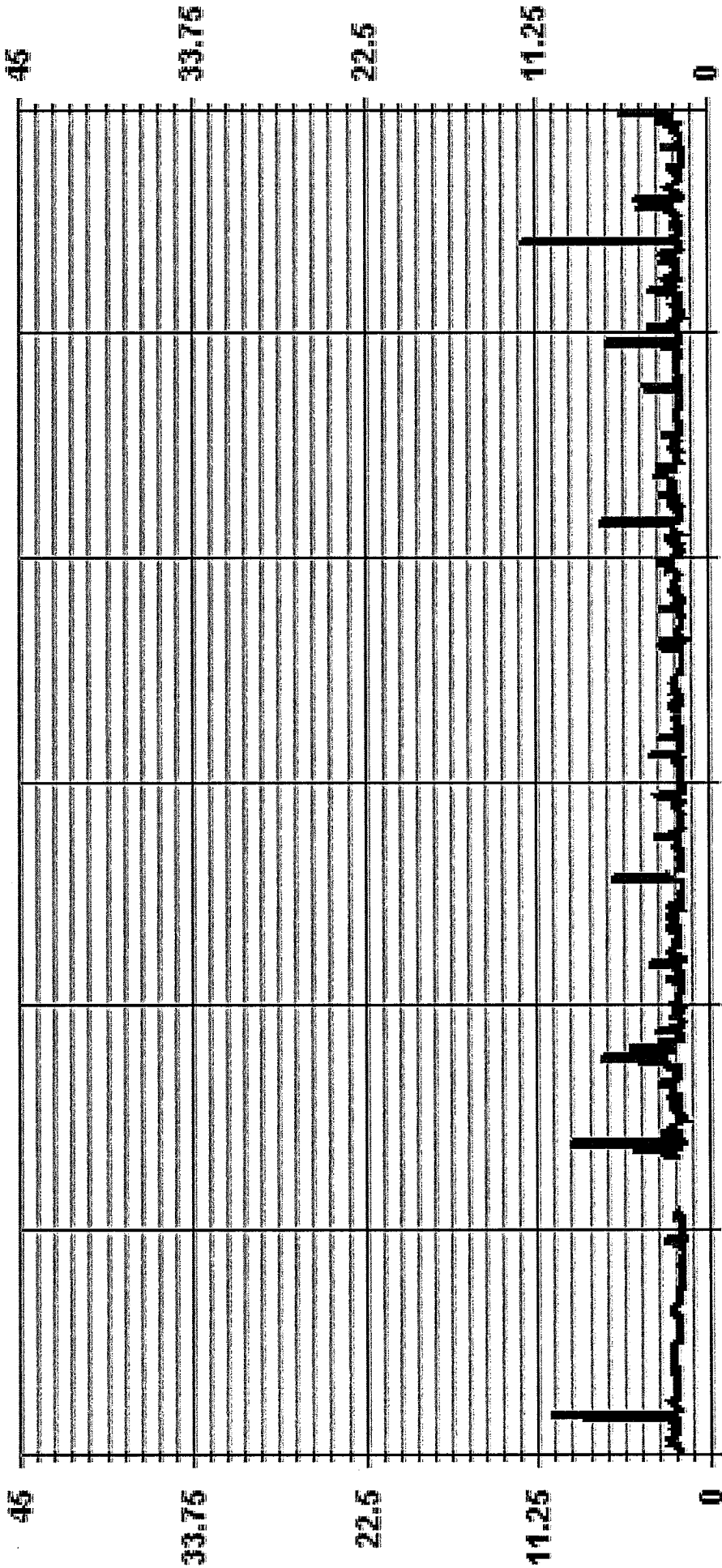
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	660
MAXIMUM INSTANTANEOUS VALUE:	12.3 PPM @ HOUR(S) 1 ON DAY(S) 28
OPERATIONAL TIME:	700 HRS
MONTHLY CALIBRATION TIME:	9 HRS
STANDARD DEVIATION:	0.90
VAR-VARIOUS	

01 Hour Averages



— LICA31 THCMAX PPM

LIC31  
 THC / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LIC31  
 Parameter : THC  
 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	3.17	2.41	3.02	3.62	3.77	3.32	5.58	4.83	6.04	5.43	8.30	9.51	14.80	12.68	7.25	6.19	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	3.17	2.41	3.02	3.62	3.77	3.32	5.58	4.83	6.04	5.43	8.30	9.51	14.80	12.68	7.25	6.19	

Calm : .00 %

Total # Operational Hours : 662

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	21	16	20	24	25	22	37	32	40	36	55	63	98	84	48	41	662
< 10.0																	
< 50.0																	
>= 50.0																	
Totals	21	16	20	24	25	22	37	32	40	36	55	63	98	84	48	41	

Calm : .00 %

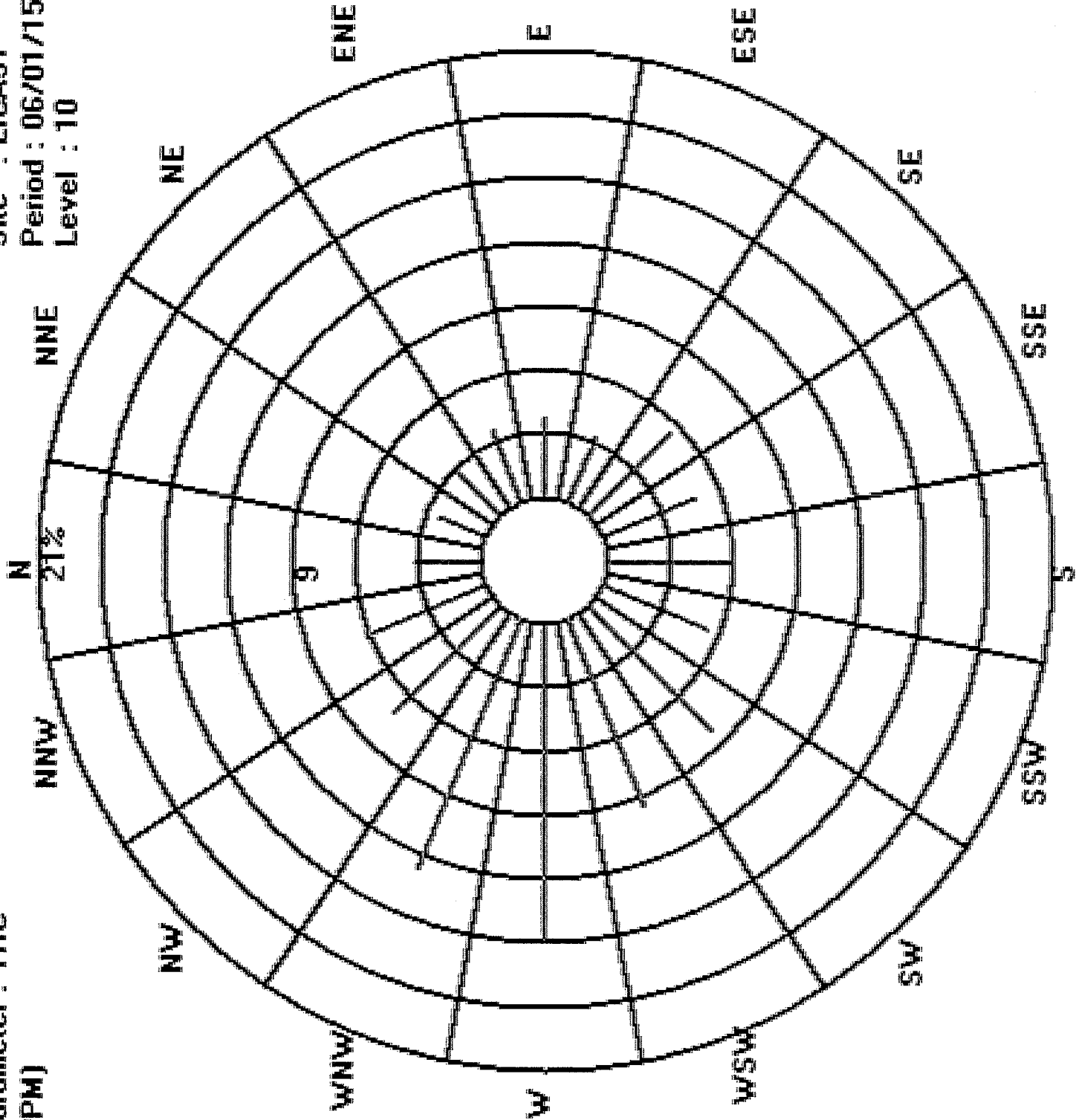
Total # Operational Hours : 662

Logger : 31 Parameter : THC

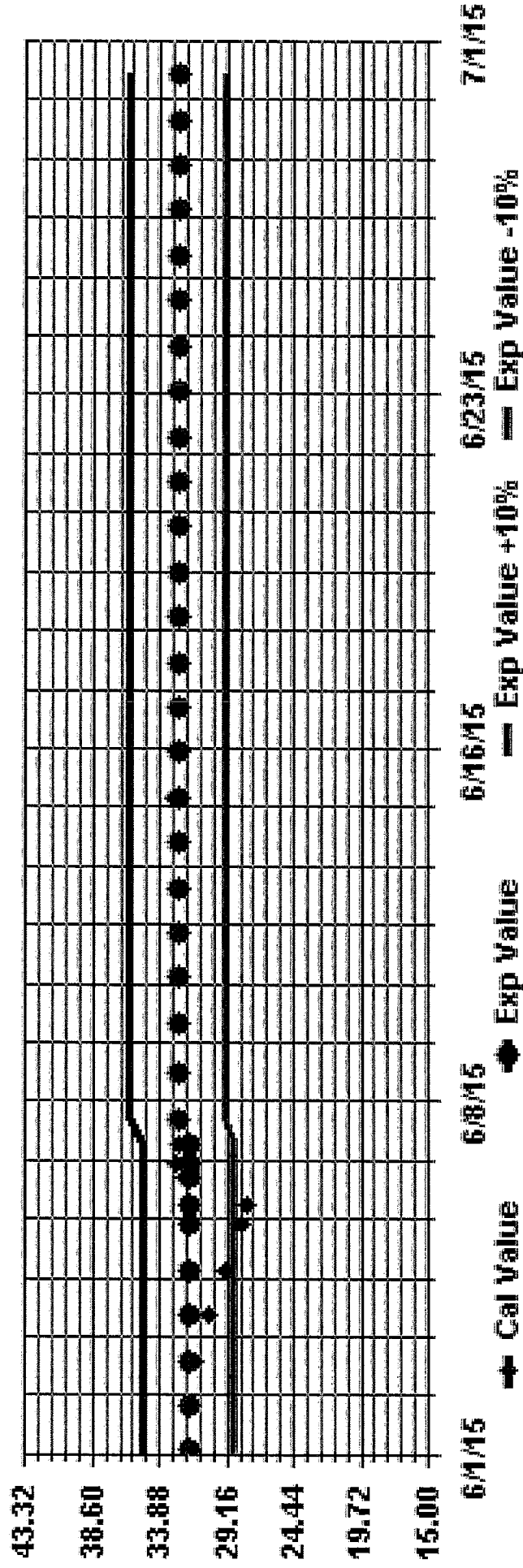
Class Limits (PPM)

- ☐ >= 50.0
- ▮ < 50.0
- ▮ < 10.0
- ▮ < 3.0

Site : LICA31  
Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA31 Parameter: THC Sequence: THC Phase: SPAN



## ***OXIDES OF NITROGEN***

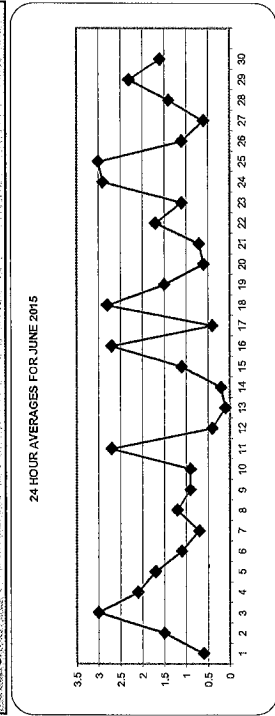


OXIDES OF NITROGEN (NOx) hourly averages in ppb

DAY	HOURLY 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	0.8	0.9	S	0.6	0.8	1.0	0.8	1.1	0.6	0.9	0.9	0.7	0.4	0.4	0.2	0.3	0.3	0.3	0.0	0.0	1.1	0.5	0.2	0.1	1.1	0.6	24		
2	0.1	S	1.0	4.7	5.5	3.5	1.7	1.6	1.6	1.2	0.8	0.3	0.2	0.4	0.1	0.4	0.5	0.8	0.8	1.1	1.5	1.7	2.1	2.7	5.5	1.5	24		
3	S	4.2	3.3	3.5	3.8	4.5	4.7	4.9	5.4	5.1	5.3	3.9	3.6	2.0	1.2	1.3	1.3	0.9	1.1	1.0	1.4	2.3	2.2	S	5.4	3.0	24		
4	2.0	1.8	1.5	2.7	3.8	5.0	4.0	4.1	3.5	3.1	3.2	1.9	1.3	1.0	0.8	0.9	1.2	0.9	1.0	0.9	1.2	1.4	S	2.2	5.0	2.1	24		
5	1.7	1.7	1.5	1.8	2.3	2.8	3.2	2.8	2.3	1.6	1.4	1.2	1.4	1.2	1.1	1.0	1.1	1.4	1.4	0.5	S	1.4	2.0	3.2	1.7	24			
6	2.8	3.9	4.6	4.3	2.6	1.7	0.8	0.5	0.4	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.5	0.4	S	0.7	0.7	1.0	4.6	1.1	24		
7	1.0	0.8	0.9	1.0	1.1	1.4	1.4	1.2	0.8	0.7	0.6	0.3	0.3	0.3	0.4	0.2	0.1	0.5	0.2	S	0.2	1.7	0.5	0.2	1.7	0.7	24		
8	1.0	1.5	3.4	4.9	4.7	2.9	1.8	0.9	0.6	0.6	0.6	0.4	0.3	0.5	0.1	0.1	0.0	S	C	C	0.2	S	1.0	1.1	1.3	0.9	24		
9	0.7	0.8	0.7	0.9	0.7	0.9	1.3	1.3	0.7	0.9	0.9	0.8	1.1	C	C	C	C	C	C	C	0.2	S	1.0	1.1	1.3	0.9	24		
10	1.1	1.3	1.3	1.0	S	1.5	0.8	0.5	0.6	0.8	0.4	0.2	0.3	0.9	0.4	0.6	0.7	0.5	0.3	0.6	0.6	1.4	2.8	2.3	2.8	0.9	24		
11	3.5	7.0	6.5	S	5.1	4.5	4.5	4.3	3.8	3.1	2.6	2.0	1.7	1.6	1.6	1.5	1.4	1.4	1.8	1.4	0.7	0.7	0.8	0.8	7.0	2.7	24		
12	1.0	1.2	S	1.0	0.9	0.9	0.6	0.4	0.2	0.6	0.4	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.8	0.2	0.2	0.1	0.2	0.3	1.2	0.4	24		
13	0.2	S	0.2	0.3	0.3	0.2	0.2	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	0.3	0.1	24		
14	S	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.6	0.5	1.3	0.9	1.4	1.9	S	0.8	0.2	24
15	1.3	1.6	1.4	1.8	2.3	2.0	2.0	1.6	1.1	0.4	0.0	0.1	0.0	0.2	1.2	1.4	0.8	1.3	0.8	0.6	0.5	0.3	0.7	S	0.7	5.6	2.7	24	
16	4.2	4.8	5.3	5.0	5.6	5.1	5.3	5.2	5.1	4.0	2.2	1.2	1.2	1.4	0.8	1.3	0.8	0.6	0.5	0.3	0.7	S	0.7	0.7	5.6	2.7	24		
17	0.2	0.5	0.5	0.7	0.8	1.0	0.9	0.7	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	S	0.7	0.6	1.3	1.3	0.4	24
18	2.5	3.4	4.7	5.0	4.5	4.9	5.1	4.1	3.8	3.5	2.9	2.1	1.0	1.1	1.1	1.0	1.1	1.4	1.5	S	2.0	2.3	2.8	2.8	5.1	2.8	24		
19	2.0	1.9	1.7	1.6	1.7	1.5	1.4	1.9	3.2	2.6	2.0	1.4	1.5	1.3	1.0	0.9	0.8	0.7	S	1.2	1.5	1.4	0.8	0.8	3.2	1.5	24		
20	0.9	1.5	1.1	1.0	0.8	0.9	0.9	0.5	0.6	0.5	0.2	0.7	0.4	0.5	0.3	0.4	0.5	S	0.3	0.0	0.5	0.3	0.5	0.4	1.5	0.6	24		
21	0.8	0.4	0.6	0.6	0.7	0.8	0.4	0.3	0.4	0.3	0.3	0.2	0.5	0.3	0.3	0.3	0.3	S	0.7	0.6	0.9	0.9	1.6	2.5	0.7	24			
22	1.2	1.4	1.1	1.0	1.5	3.6	3.9	5.8	6.7	4.1	1.7	1.8	1.2	0.7	0.8	S	0.4	0.3	0.3	0.3	0.6	0.6	0.7	0.5	6.7	1.7	24		
23	0.5	0.3	0.6	0.6	1.3	2.6	2.7	1.4	1.0	0.5	0.3	0.4	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.4	0.7	0.6	0.6	0.8	S	0.8	0.2	24	
24	3.9	4.6	4.3	5.0	5.6	6.4	7.3	6.7	5.2	2.7	2.0	1.3	1.2	S	1.2	1.3	1.0	3.2	1.2	0.5	0.6	0.6	0.6	1.2	7.3	2.9	24		
25	2.0	3.2	3.4	4.4	5.2	6.5	6.1	6.3	4.5	4.2	3.7	3.0	S	1.4	1.3	1.2	1.3	1.5	1.2	1.3	2.0	2.3	1.5	1.5	6.5	3.0	24		
26	1.8	2.8	3.2	3.7	4.0	2.9	1.0	0.8	1.0	0.5	0.5	S	0.5	0.3	0.1	0.2	0.3	0.3	0.4	0.2	0.1	0.4	0.5	0.5	4.0	1.1	24		
27	0.5	0.5	0.4	0.3	0.5	0.4	0.4	0.4	0.2	S	0.6	0.5	0.6	0.7	0.4	0.7	0.4	0.5	0.6	0.5	0.6	0.5	0.3	1.0	2.4	0.6	24		
28	2.7	3.1	2.9	2.6	2.3	2.7	2.6	3.0	2.5	S	1.8	1.2	0.8	0.6	0.5	0.3	0.2	0.3	0.4	0.2	0.7	0.2	0.6	0.6	3.1	1.4	24		
29	1.1	0.9	0.8	1.1	2.0	5.1	7.2	5.4	S	3.5	3.0	2.7	2.1	2.7	2.7	1.6	1.1	1.0	1.4	1.3	1.4	1.6	1.8	2.2	7.2	2.3	24		
30	2.0	2.0	2.0	1.7	1.1	1.0	1.0	S	1.8	1.4	2.0	1.7	1.3	1.2	1.2	1.3	1.1	1.3	1.1	1.3	1.9	1.6	2.6	1.9	2.0	1.8	24		
HOURLY MAX	4.2	7.0	6.5	5.0	5.6	6.5	7.3	6.7	6.7	5.1	5.3	3.9	3.6	2.7	2.7	1.6	1.4	3.2	1.9	1.6	2.6	2.3	2.8	3.1					
HOURLY AVG	1.6	2.1	2.1	2.2	2.5	2.6	2.5	2.3	2.0	1.6	1.4	1.1	0.8	0.8	0.7	0.6	0.6	0.7	0.8	0.7	0.9	1.1	1.1	1.3					

STATUS FLAG CODES

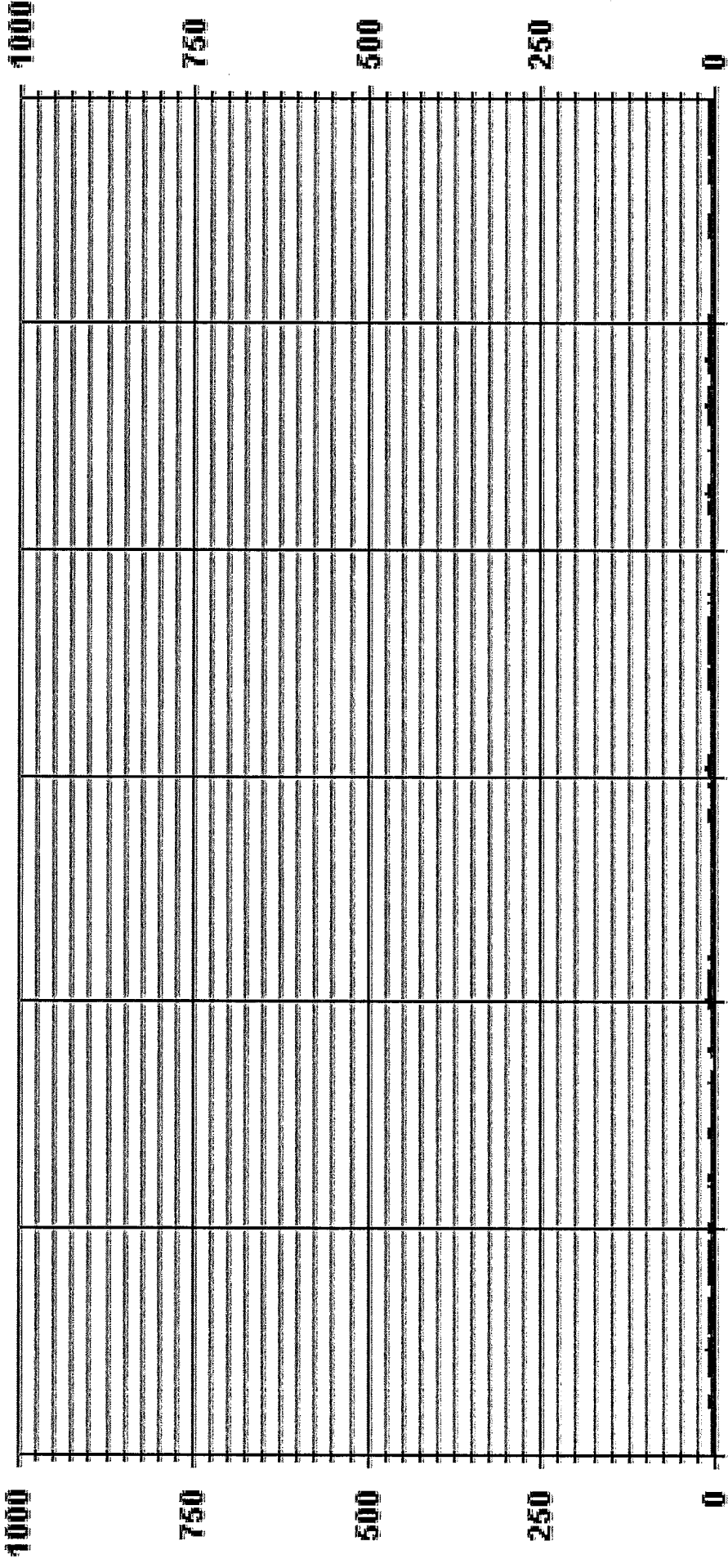
C	CALIBRATION
Y	RECOVERY
S	MAINTENANCE
P	DAILY ZERO/SPAN CHECK
G	POWER FAILURE
	OUT FOR REPAIR
Q	QUALITY ASSURANCE
R	RECOVERY
X	MACHINE MALFUNCTION
O	OPERATOR ERROR
K	COLLECTION ERROR



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	629	PPB @ HOUR(S)	6	ON DAY(S)	24
MAXIMUM 1-HR AVERAGE:	7.3	PPB		ON DAY(S)	3, 25
MAXIMUM 24-HR AVERAGE:	3.0	PPB		VAR-VARIOUS	
ISZ CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMTD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1.46		MONTHLY AVERAGE:	1.4	PPB

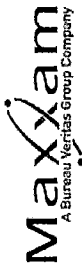
01 Hour Averages



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

— LICA31 NOX\_ PPB





OXIDES OF NITROGEN 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	24-HOUR	RDGS.		
HOURLY MAX	0000	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	MAX.	AVG.		
1	1.3	1.5	1.3	1.2	2.0	2.0	1.4	3.0	1.2	1.7	R	1.9	1.1	1.1	0.8	0.9	1.4	1.3	0.8	0.6	7.2	2.7	1.6	0.9	7.2	1.7	23	
2	0.7	S	4.0	6.5	6.4	5.3	3.2	2.1	2.2	1.9	1.5	1.2	0.8	1.0	0.7	0.9	1.2	1.4	1.4	1.8	2.1	2.7	2.6	3.5	6.5	2.4	24	
3	S	5.0	3.9	4.1	4.4	5.2	5.2	5.0	6.0	6.0	6.3	5.2	5.3	2.8	1.9	1.8	2.0	1.6	1.7	1.6	2.2	3.1	S	6.3	3.8	24	24	
4	3.0	2.4	2.4	3.7	5.1	5.8	4.9	5.0	5.0	4.1	4.1	2.7	2.4	1.8	1.5	1.6	1.9	1.8	1.6	1.6	2.0	2.1	S	2.8	5.8	3.0	24	
5	2.5	2.4	2.1	2.6	3.0	3.4	4.3	4.0	3.2	2.2	2.0	2.3	1.9	2.8	2.3	2.8	1.8	2.3	5.1	6.3	1.2	S	2.7	3.0	6.3	2.9	24	
6	3.9	4.9	5.3	5.1	3.9	2.4	1.5	1.8	1.1	0.5	0.8	1.8	0.6	1.5	1.2	0.6	1.5	0.5	14.9	1.6	S	1.2	1.5	1.8	14.9	2.6	24	
7	1.7	1.5	2.0	1.7	1.5	2.3	2.1	2.0	1.3	1.2	0.9	1.0	1.5	1.7	0.9	1.1	2.0	3.6	S	3.3	7.1	1.2	1.0	7.1	2.0	2.0	24	
8	1.7	2.7	4.2	5.7	6.0	5.3	3.0	3.2	2.4	2.5	1.6	1.5	2.1	1.3	4.0	1.0	0.6	0.7	S	1.2	1.3	1.7	1.3	1.3	6.0	2.4	24	
9	1.3	1.6	1.2	1.5	1.4	4.3	4.5	3.1	2.4	2.7	4.0	1.3	C	C	C	C	C	C	C	C	0.9	S	S	1.8	4.5	2.3	24	
10	1.9	2.1	2.0	1.6	S	2.8	1.6	1.2	1.3	1.5	1.4	0.7	0.9	45.3	1.2	1.7	1.2	1.1	0.9	2.0	1.2	2.5	3.4	3.1	45.3	3.6	24	
11	6.2	7.9	7.7	S	5.8	5.1	5.2	5.2	5.1	4.1	4.9	2.6	2.5	3.2	2.6	2.1	2.2	2.6	2.6	2.1	1.5	1.4	1.5	1.4	7.9	3.7	24	
12	1.9	1.7	S	1.7	1.6	4.8	2.3	1.7	1.6	1.7	1.9	1.9	1.6	1.4	1.0	0.8	0.6	0.8	2.3	1.4	1.0	0.8	0.8	0.9	4.8	1.6	24	
13	0.9	S	0.9	1.0	1.1	0.8	0.9	0.9	0.6	0.7	0.2	0.2	0.2	0.5	0.5	0.5	0.6	0.3	0.7	0.5	0.5	1.3	0.7	1.3	0.6	2.4	24	
14	S	0.9	0.6	1.0	0.5	0.3	0.5	0.7	0.3	0.5	0.5	0.6	0.4	0.4	0.2	0.8	1.8	0.7	0.9	1.3	1.3	1.2	1.3	S	1.8	0.8	24	
15	2.1	2.4	2.0	2.9	3.5	3.6	6.1	3.9	2.5	2.0	0.2	1.9	0.9	1.2	1.3	1.8	2.8	1.1	8.1	1.5	2.4	2.6	S	5.6	8.1	2.7	24	
16	7.3	5.7	8.1	5.9	6.6	5.8	7.1	6.6	6.8	5.3	3.6	2.0	2.0	4.0	2.0	7.8	2.8	1.7	1.2	0.9	1.3	S	1.4	1.8	4.2	2.4	24	
17	0.9	1.0	1.2	1.7	1.8	1.7	1.5	1.5	1.4	0.9	0.9	0.9	0.8	0.6	0.9	0.6	0.2	0.4	0.4	0.2	S	1.4	1.3	2.9	2.9	1.1	24	
18	3.4	4.8	5.3	5.9	5.1	5.7	5.8	5.0	4.6	4.4	4.0	2.8	1.6	1.8	1.8	1.8	1.8	2.3	2.3	S	2.7	3.5	6.6	3.5	6.6	3.8	24	
19	3.4	2.6	2.3	2.1	2.5	2.1	2.1	3.4	4.1	3.7	2.9	2.1	2.0	1.8	1.7	1.4	1.2	S	1.9	2.2	2.2	1.6	1.8	4.1	2.3	2.4	24	
20	1.4	2.1	2.0	1.7	1.5	2.6	1.7	1.3	1.3	1.6	1.2	3.6	R	1.8	1.0	1.0	0.9	S	0.9	0.8	1.6	0.8	1.3	1.2	3.6	1.5	23	
21	1.5	1.3	1.2	1.4	1.3	1.5	1.1	1.0	0.9	1.3	1.1	1.3	1.3	1.4	1.1	1.4	S	1.3	2.5	5.5	1.8	2.9	7.6	2.3	7.6	1.9	24	
22	1.8	2.0	1.8	1.9	3.1	4.9	5.3	8.4	7.9	6.4	2.6	2.6	2.0	1.7	1.7	S	1.2	0.9	1.3	1.1	3.0	1.3	2.0	1.2	8.4	2.9	24	
23	1.3	1.1	1.4	1.3	3.4	3.3	4.8	2.4	1.8	1.3	1.0	1.4	4.7	4.2	S	3.4	4.4	1.6	33.4	3.3	1.3	1.2	1.3	1.1	2.1	33.4	5.3	24
24	4.7	5.5	4.8	6.2	6.4	7.2	7.8	8.4	6.7	4.4	3.1	2.3	2.1	S	2.4	2.0	2.1	5.3	2.4	1.8	2.5	2.9	3.1	2.0	2.1	35.7	5.5	24
25	2.9	4.3	4.0	4.6	4.8	5.1	2.1	2.3	2.7	1.5	1.6	S	1.2	1.2	0.8	0.9	1.4	1.0	1.3	0.9	0.9	2.6	2.1	1.2	6.1	2.3	24	
26	2.5	6.1	4.0	4.6	4.8	1.4	1.2	1.0	2.0	1.4	0.8	S	1.3	2.0	1.4	1.6	1.5	3.0	1.5	1.4	1.1	1.0	2.2	3.4	3.4	1.5	24	
27	1.2	1.2	1.2	0.9	1.4	1.2	1.0	2.0	1.4	0.8	S	3.1	2.0	1.7	2.2	1.5	1.1	1.1	1.1	1.7	0.9	2.9	0.8	1.4	1.5	4.0	2.4	24
28	3.5	4.0	3.5	3.4	3.3	3.9	3.5	3.7	3.3	S	4.7	3.6	3.3	3.0	3.9	4.5	3.0	3.0	2.7	2.8	4.1	2.5	2.4	2.7	7.0	8.9	3.8	24
29	1.9	1.8	1.3	1.7	3.5	6.9	8.9	7.2	S	4.7	3.6	3.3	3.0	3.9	4.5	3.0	3.0	2.7	2.8	4.1	2.5	2.4	2.7	7.0	8.9	3.8	24	
30	2.8	3.2	2.5	2.4	1.8	1.8	1.8	1.8	S	5.6	2.5	3.2	2.5	3.3	3.1	1.9	2.1	1.7	2.5	5.0	5.8	7.1	3.2	2.8	2.7	7.1	3.1	24
HOURLY MAX	7.3	7.9	8.1	6.5	6.8	35.7	8.9	8.4	7.9	6.4	6.3	5.2	5.3	45.3	4.5	7.8	5.3	33.4	14.9	6.3	7.2	7.1	7.6	7.0				
HOURLY AVG	2.5	3.0	3.0	3.0	3.4	4.8	3.6	3.6	3.2	2.7	2.4	2.1	1.8	3.5	1.7	1.7	1.7	2.6	2.7	1.9	2.2	2.2	2.2	2.3	2.4			

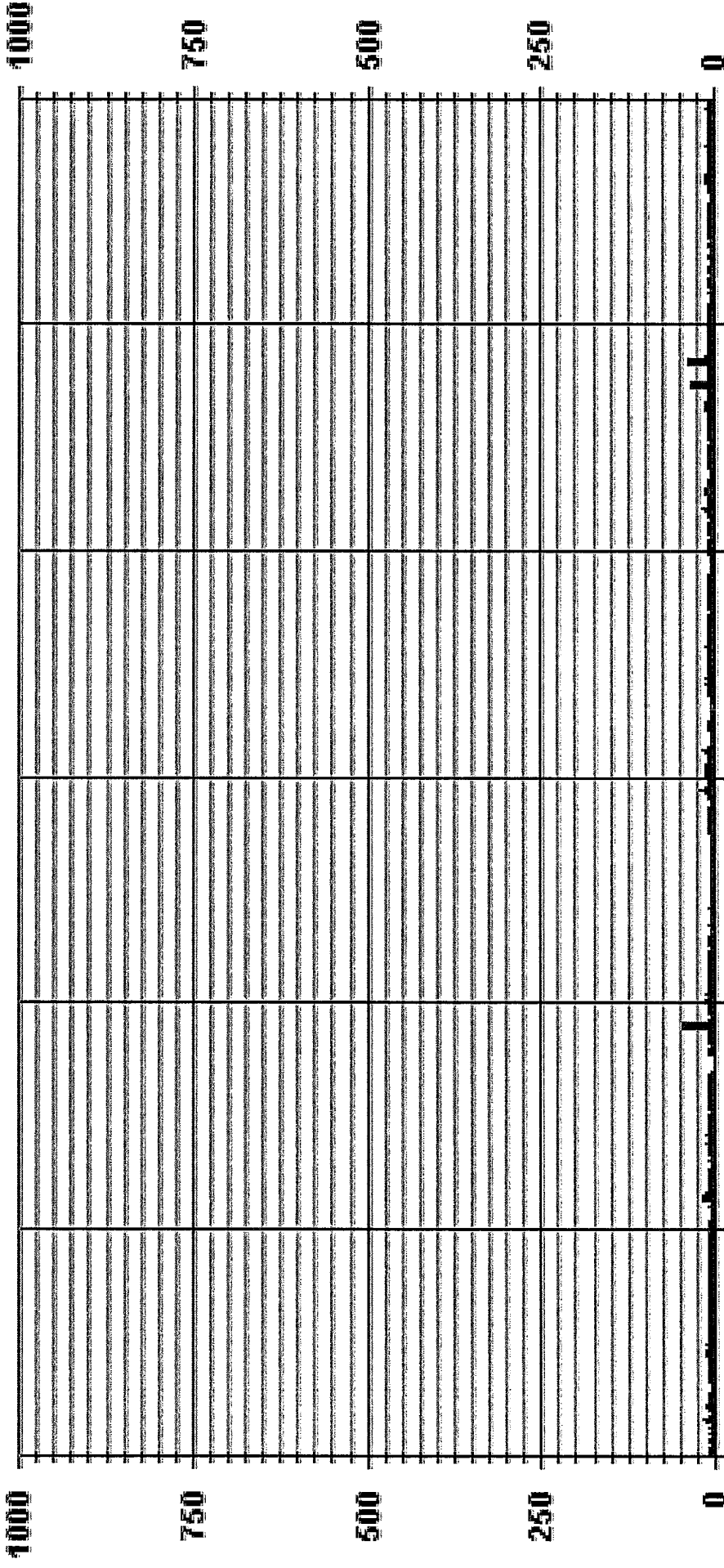
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	677
MAXIMUM INSTANTANEOUS VALUE:	45.3 PPB @ HOUR(S) 13 ON DAY(S) 10
1ZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	8 HRS
OPERATIONAL TIME:	718 HRS
STANDARD DEVIATION:	3.00
VAR-VARIOUS	

01 Hour Averages



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

— LICA31 NOXMAX PPB

LIICA31  
 NOX\_ / WDR Joint Frequency Distribution (Percent)  
 June 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LIICA31  
 Parameter : NOX  
 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	
< 50.0	3.08	2.34	2.93	3.52	3.67	3.23	5.43	4.69	5.87	5.28	8.07	9.98	15.41	13.95	6.60	5.87	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	3.08	2.34	2.93	3.52	3.67	3.23	5.43	4.69	5.87	5.28	8.07	9.98	15.41	13.95	6.60	5.87	

Calm : .00 %

Total # Operational Hours : 681

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	21	16	20	24	25	22	37	32	40	36	55	68	105	95	45	40	681
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	21	16	20	24	25	22	37	32	40	36	55	68	105	95	45	40	

Calm : .00 %

Total # Operational Hours : 681

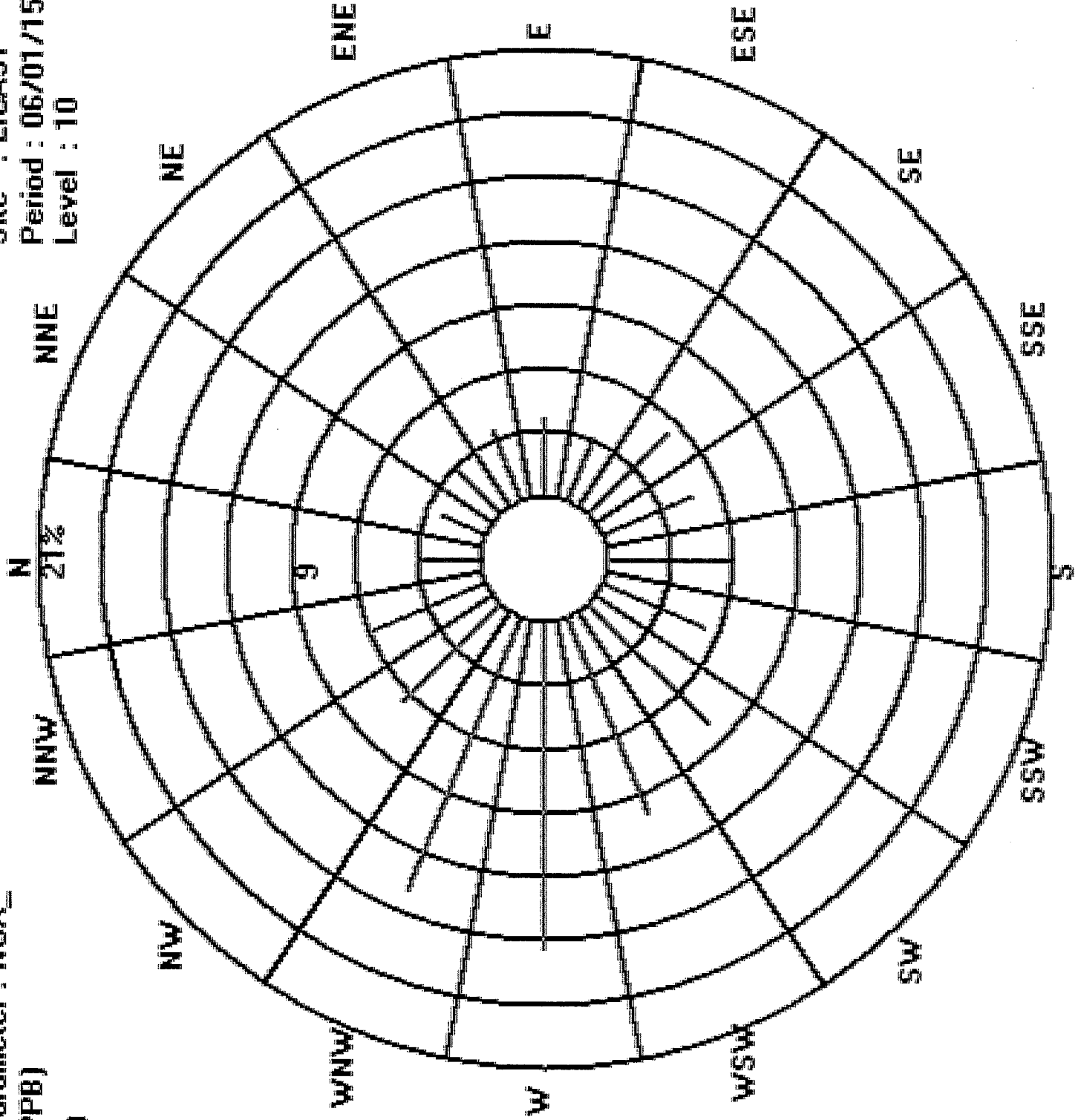
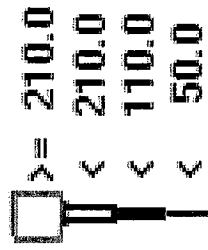
Logger : 31 Parameter : NOX\_

Site : LICA31

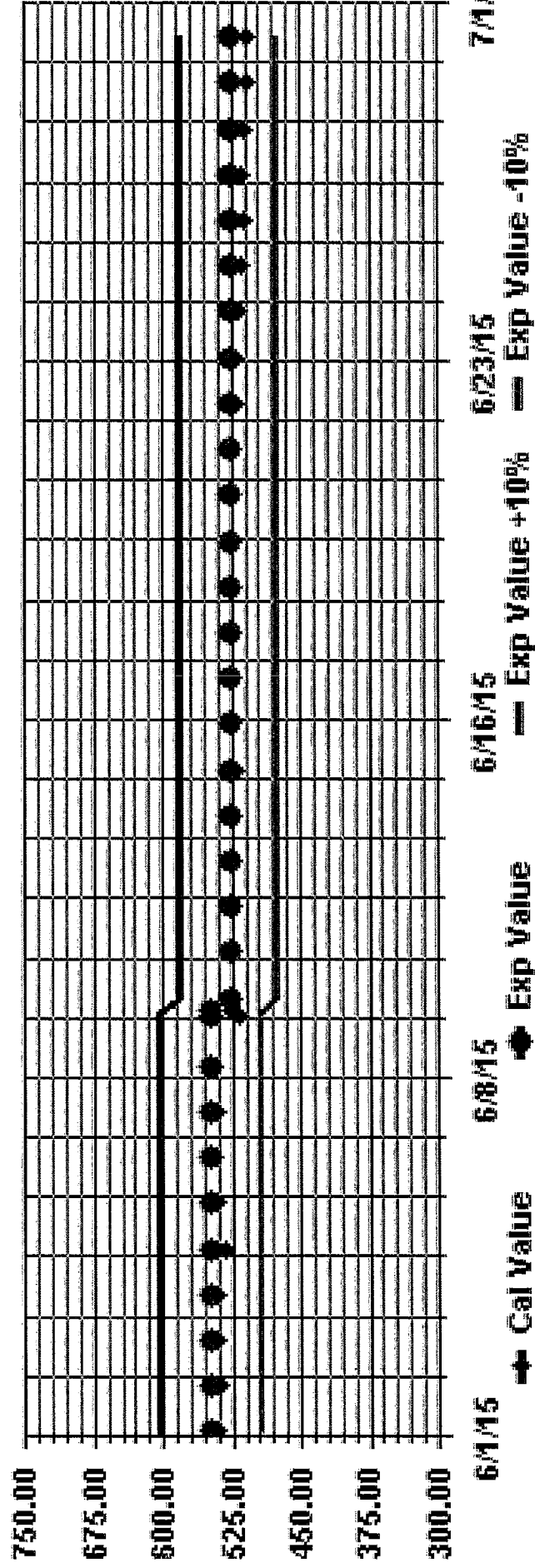
Class Limits (PPB)

Period : 06/01/15-06/30/15

Level : 10



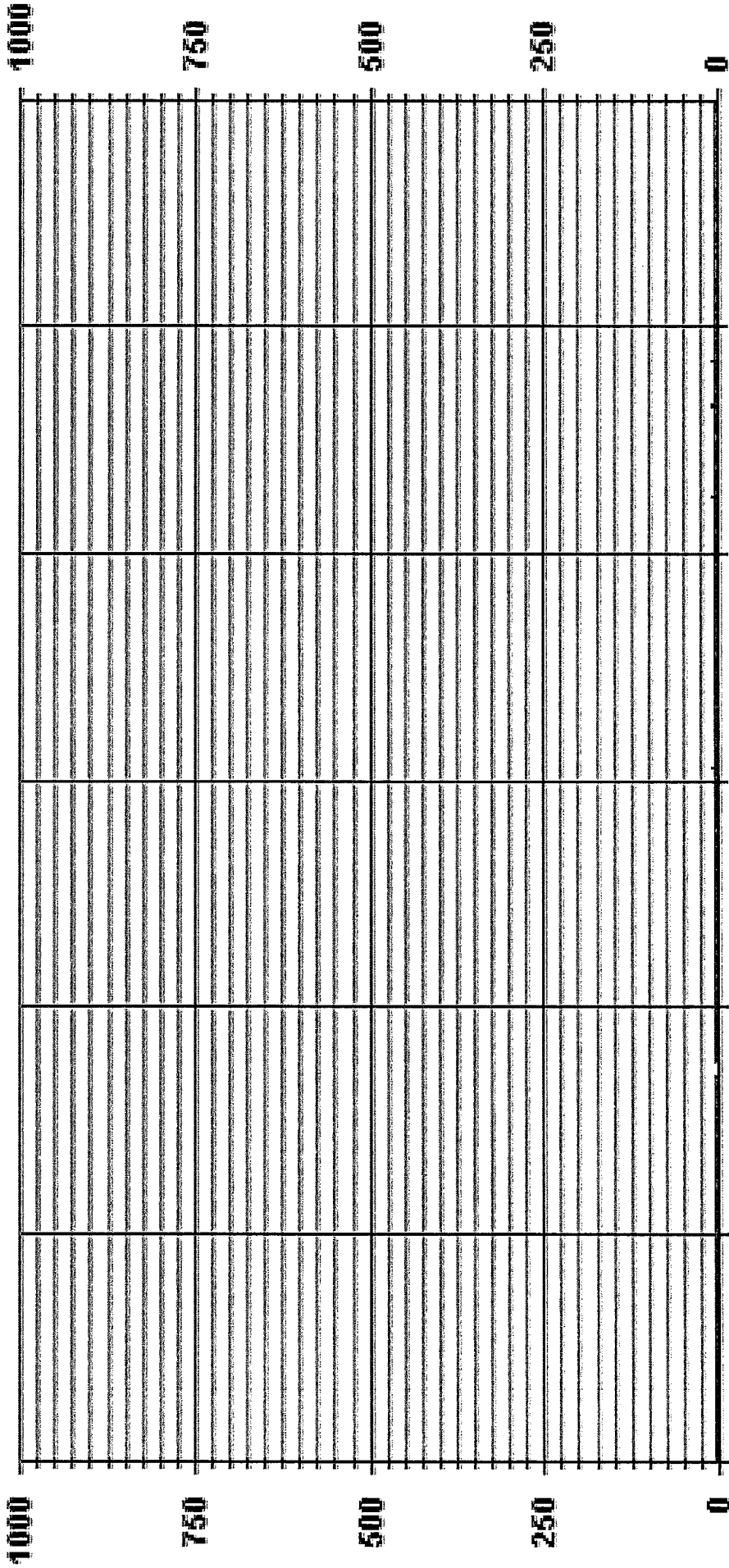
Calibration Graph for Site: LICA31 Parameter: NOX\_ Sequence: NO2 Phase: SPAN



***NITRIC OXIDES***



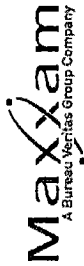
01 Hour Averages



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

— LICA31 NO\_ PPB





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 St. Lina Site - JUNE 2015  
 JOB # 2833-2015-07-31- C

NITRIC OXIDE MAX instantaneous maximum in ppb

MST

DAY	DAILY																								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	0.4	S	0.5	0.2	0.6	0.3	0.7	0.4	0.6	R	0.3	0.6	0.5	0.2	0.3	0.4	0.4	0.4	0.0	0.4	1.2	0.4	0.3	0.0	1.2	0.4	0.4	23		
2	0.1	S	0.3	0.2	0.8	0.8	0.7	0.5	0.8	0.7	0.4	0.4	0.3	0.4	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.5	0.8	0.4	0.4	0.4	24		
3	S	0.5	0.3	0.5	0.3	0.6	0.9	1.0	1.3	1.6	2.0	1.4	1.3	0.5	0.5	0.3	0.5	0.3	0.3	0.3	0.3	0.6	0.4	0.2	S	2.0	0.7	24	24		
4	0.4	0.6	0.3	0.1	0.6	0.6	1.1	1.2	1.2	0.9	1.2	0.6	0.5	0.3	0.3	0.3	0.1	0.3	0.3	0.3	0.3	0.3	0.3	S	0.8	1.2	0.5	24	24		
5	0.7	0.8	0.7	1.0	0.8	0.7	1.3	1.1	1.1	1.1	0.8	0.8	0.7	0.7	0.7	0.5	0.8	1.0	2.2	1.4	0.8	S	0.2	0.0	2.2	0.9	24	24	24		
6	0.2	0.3	0.4	0.1	0.3	0.2	0.3	0.3	0.6	0.2	0.6	0.7	0.1	0.2	0.3	0.2	0.3	0.2	0.7	0.6	S	0.8	0.6	0.8	0.8	0.7	0.7	24	24	24	
7	0.6	0.7	0.7	0.6	0.5	0.9	1.0	0.9	1.0	0.6	0.9	0.6	0.8	0.9	0.8	0.6	0.7	1.0	0.7	S	0.1	1.1	1.1	0.1	0.0	1.1	0.7	24	24	24	
8	0.2	0.0	0.1	0.3	0.3	1.3	0.9	1.6	1.0	1.0	0.5	0.4	0.9	0.3	1.1	0.0	0.2	0.0	S	C	C	C	0.1	S	S	0.6	2.6	0.7	24	24	24
9	0.1	0.2	0.3	0.4	0.1	1.0	2.6	1.0	0.6	0.8	1.9	0.2	C	C	C	C	C	C	C	C	C	0.1	S	S	0.6	2.6	0.7	24	24	24	
10	1.1	0.9	0.6	0.6	S	1.0	0.7	0.6	0.8	0.8	0.7	0.4	0.7	0.4	0.7	0.4	0.5	0.5	0.5	0.5	0.5	0.7	0.4	0.7	0.6	16.4	1.4	24	24	24	
11	0.5	0.5	0.5	0.5	S	1.0	0.7	1.3	1.0	1.0	1.1	0.8	0.7	0.6	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.6	0.6	1.3	0.7	24	24	24	
12	0.8	0.5	S	0.5	0.8	2.0	1.0	1.1	0.8	1.2	1.3	1.1	1.0	1.0	0.6	0.9	0.5	0.7	1.3	0.7	0.7	0.7	0.7	0.6	0.6	2.0	0.9	24	24	24	
13	0.5	S	0.5	0.5	0.6	0.4	0.6	0.5	0.5	0.6	0.3	0.3	0.5	0.5	0.5	0.1	0.2	0.5	0.2	0.3	0.3	0.3	0.2	0.3	0.6	0.6	0.4	24	24	24	
14	S	0.4	0.4	0.4	0.2	0.1	0.2	0.5	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.7	0.2	0.2	0.4	0.4	0.4	0.2	0.2	S	0.7	0.3	24	24	24	
15	0.3	0.2	0.0	0.2	0.3	1.1	3.3	1.3	1.1	0.8	0.1	0.7	0.1	0.6	0.4	0.1	0.6	0.5	2.6	0.1	0.1	0.1	0.1	S	0.4	3.3	0.7	24	24	24	
16	0.4	0.2	0.5	0.3	0.8	0.8	2.1	2.0	2.1	1.5	0.7	0.3	0.4	1.1	0.6	1.7	0.5	0.4	0.5	0.1	0.4	S	0.7	0.4	2.1	0.8	24	24	24	24	
17	0.2	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.7	0.5	0.4	0.7	0.4	0.4	0.4	0.5	0.3	0.3	0.6	0.7	0.2	S	0.6	0.6	0.4	0.7	0.5	24	24	24	24
18	0.7	0.7	0.5	0.9	0.4	1.5	1.8	1.4	1.3	1.3	0.9	0.9	0.4	0.7	0.6	0.4	0.4	0.4	0.7	0.6	S	0.6	0.4	1.7	0.5	1.8	0.8	24	24	24	24
19	0.4	0.4	0.4	0.5	0.6	0.7	0.6	1.1	1.5	1.1	0.7	0.6	0.6	0.6	0.6	0.4	0.5	0.5	0.4	S	0.5	0.3	0.3	0.3	0.4	1.5	0.6	24	24	24	24
20	0.3	0.6	0.3	0.4	0.3	0.5	0.3	0.3	0.3	0.6	0.3	1.1	R	0.7	0.4	0.6	0.4	S	0.4	0.2	0.4	0.3	0.5	0.2	1.1	0.4	23	24	24	24	
21	0.4	0.4	0.4	0.4	0.3	0.2	0.6	0.5	0.3	0.6	0.5	0.4	0.5	0.4	0.3	0.4	0.5	S	0.7	0.4	1.3	0.4	0.3	0.5	0.2	1.1	0.5	24	24	24	24
22	0.3	0.3	0.8	0.6	0.3	0.8	1.5	3.4	2.9	1.8	0.7	0.6	0.4	0.5	0.5	S	1.0	0.5	0.5	0.5	0.5	1.4	0.4	1.0	0.4	3.4	0.9	24	24	24	24
23	0.5	0.6	0.5	0.8	1.3	2.1	2.1	1.1	0.7	0.6	0.5	0.9	1.9	1.3	S	0.9	0.9	0.9	1.1	0.8	1.0	0.9	0.9	0.6	2.1	0.9	24	24	24	24	
24	0.7	0.7	1.0	1.2	2.2	2.8	3.6	2.6	1.2	1.0	1.0	0.7	S	0.7	1.3	0.4	5.6	0.6	0.4	0.6	0.3	0.3	0.5	5.6	1.3	24	24	24	24	24	
25	0.5	0.3	0.3	0.4	0.8	13.6	1.9	2.2	1.7	0.8	0.8	0.8	S	0.8	0.8	0.9	1.8	0.5	0.5	0.5	0.6	0.6	0.5	0.5	13.6	1.4	24	24	24	24	
26	0.5	0.7	0.6	0.5	1.5	1.5	1.0	1.1	1.0	0.8	S	0.4	0.2	0.2	0.3	0.4	0.2	0.4	0.2	0.4	0.3	0.1	0.4	0.2	0.1	1.5	0.5	24	24	24	24
27	0.1	0.1	0.3	0.0	0.3	0.2	0.3	0.6	0.3	0.2	S	0.9	1.2	0.7	0.9	0.5	0.9	0.4	0.8	0.5	0.5	0.4	0.2	0.4	1.2	0.5	24	24	24	24	
28	0.6	0.7	0.5	0.3	0.5	0.5	0.4	0.8	0.6	S	0.9	0.4	0.5	1.0	0.5	0.6	0.7	0.8	0.7	0.6	1.0	0.3	0.4	0.4	1.0	0.6	24	24	24	24	
29	0.4	0.5	0.4	0.6	0.8	0.9	1.3	0.9	S	1.0	0.8	0.7	0.7	0.8	0.8	0.6	1.0	0.8	0.9	1.5	0.6	0.5	0.6	2.9	0.9	24	24	24	24	24	
30	0.8	0.6	0.6	0.7	0.6	0.7	0.7	S	1.7	1.0	1.0	0.7	0.9	0.9	0.6	0.5	0.6	0.6	1.5	1.5	1.4	0.8	0.6	1.7	0.8	0.9	24	24	24	24	
HOURLY MAX	1.1	0.9	0.8	1.0	1.2	13.6	3.3	3.6	2.9	1.8	2.0	1.4	1.9	16.4	1.1	1.7	1.8	5.6	7.4	1.5	1.4	1.1	1.1	1.7	2.9						
HOURLY AVG	0.5	0.5	0.4	0.5	0.5	1.3	1.1	1.1	1.1	0.9	0.8	0.7	0.6	1.2	0.5	0.5	0.6	0.7	1.0	0.6	0.6	0.6	0.5	0.5	0.5	0.5					

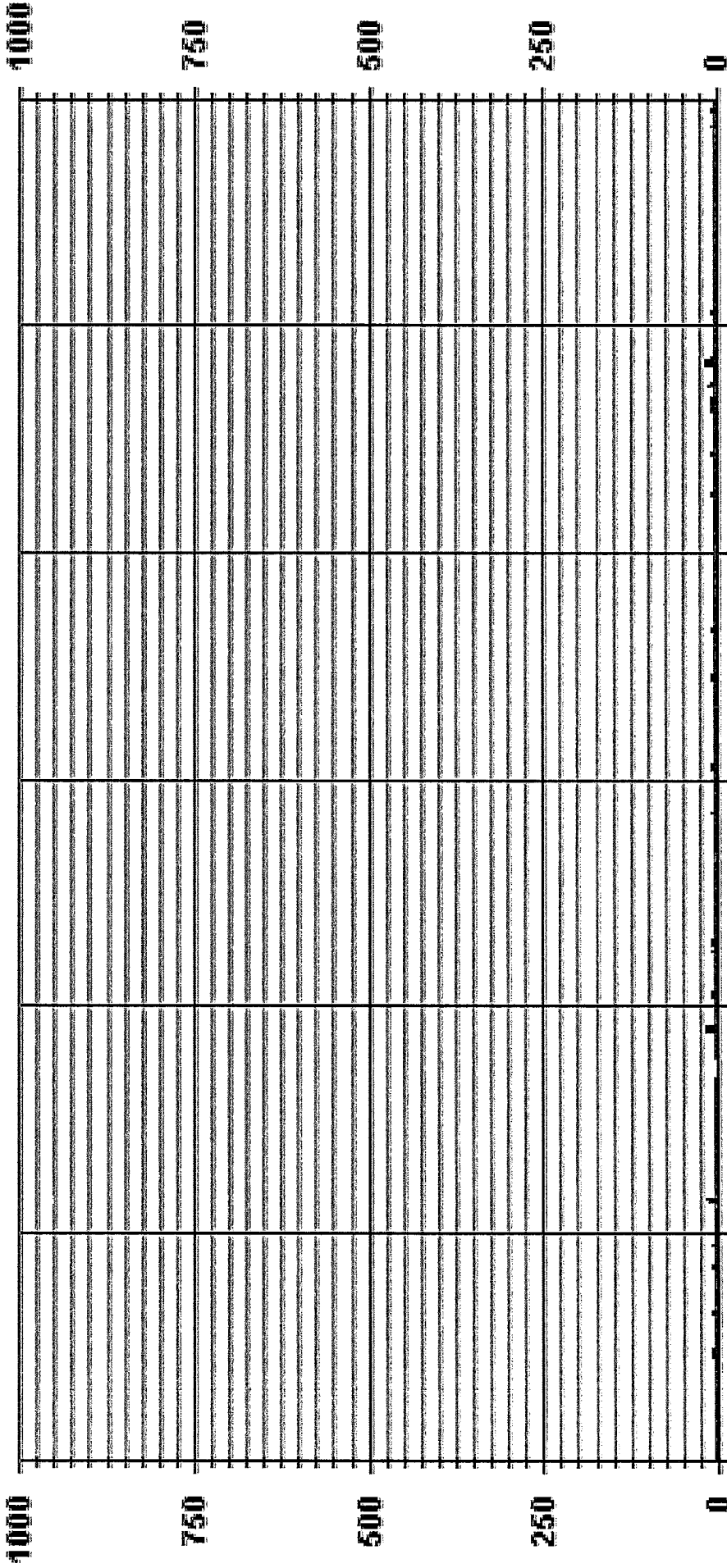
STATUS FLAG CODES

C	CALIBRATION
S	MAINTENANCE
Y	DAILY ZERO/SPAN CHECK
X	POWER FAILURE
O	OPERATOR ERROR
K	COLLECTION ERROR
Q	QUALITY ASSURANCE
R	RECOVERY
M	MACHINE MAINTENANCE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	668
MAXIMUM INSTANTANEOUS VALUE:	16.4 PPB @ HOUR(S) 13 ON DAY(S) 10
12S CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	0.97
OPERATIONAL TIME:	718 HRS
VAR-VARIOUS	

01 Hour Averages



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

— LICA31 NOMAX PPB

NO\_ / WDR Joint Frequency Distribution (Percent)

LICA31

June 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : NO  
 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	3.08	2.34	2.93	3.52	3.67	3.23	5.43	4.69	5.87	5.28	8.07	9.98	15.41	13.95	6.60	5.87	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	3.08	2.34	2.93	3.52	3.67	3.23	5.43	4.69	5.87	5.28	8.07	9.98	15.41	13.95	6.60	5.87	

Calm : .00 %

Total # Operational Hours : 681

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	21	16	20	24	25	22	37	32	40	36	55	68	105	95	45	40	681
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	21	16	20	24	25	22	37	32	40	36	55	68	105	95	45	40	

Calm : .00 %

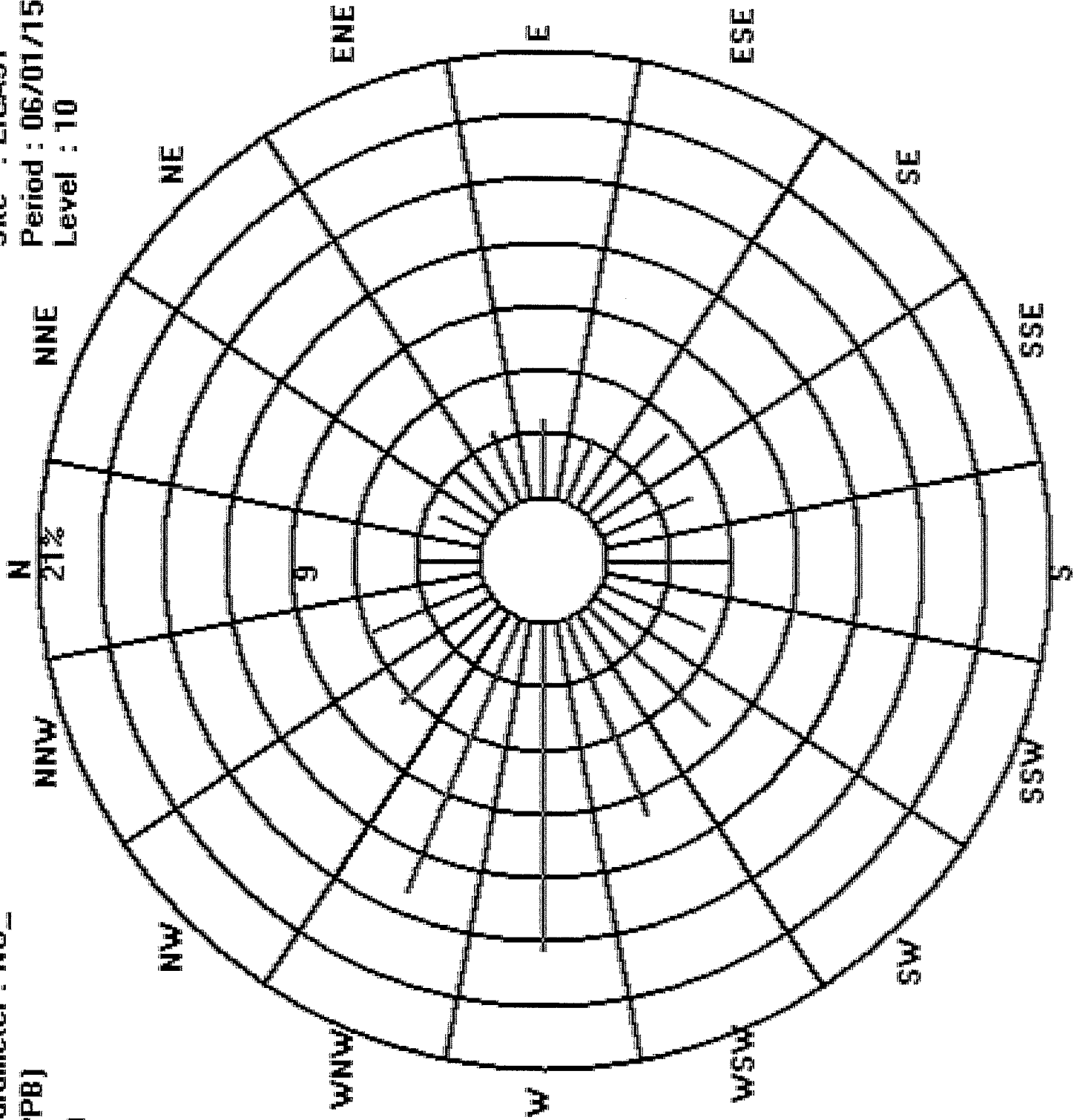
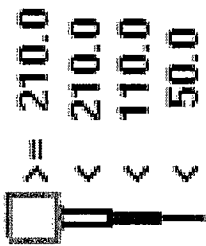
Total # Operational Hours : 681

Logger : 31 Parameter : NO\_

Site : LICA31

Class Limits (PPB)

Period : 06/01/15-06/30/15  
Level : 10



***NITROGEN DIOXIDE***



NITROGEN DIOXIDE (NO2) hourly averages in ppb

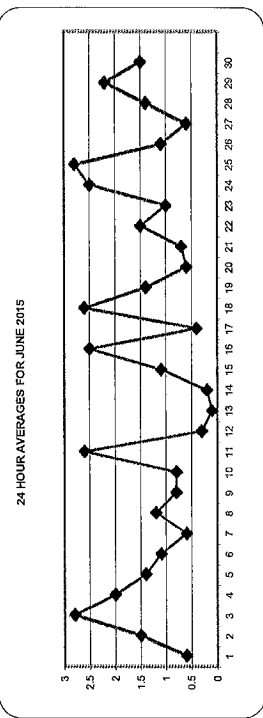
MST

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
HOURLY MAX	0.8	0.9	1.0	0.6	0.8	1.0	0.8	1.1	0.6	0.9	0.9	0.7	0.4	0.4	0.2	0.3	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
HOURLY AVG	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	0.1	0.1	0.1	0.1
24-HOUR AVG	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	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
DAILY MAX	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
DAILY AVG	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	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
ROGS	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	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE/FAULT FUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR

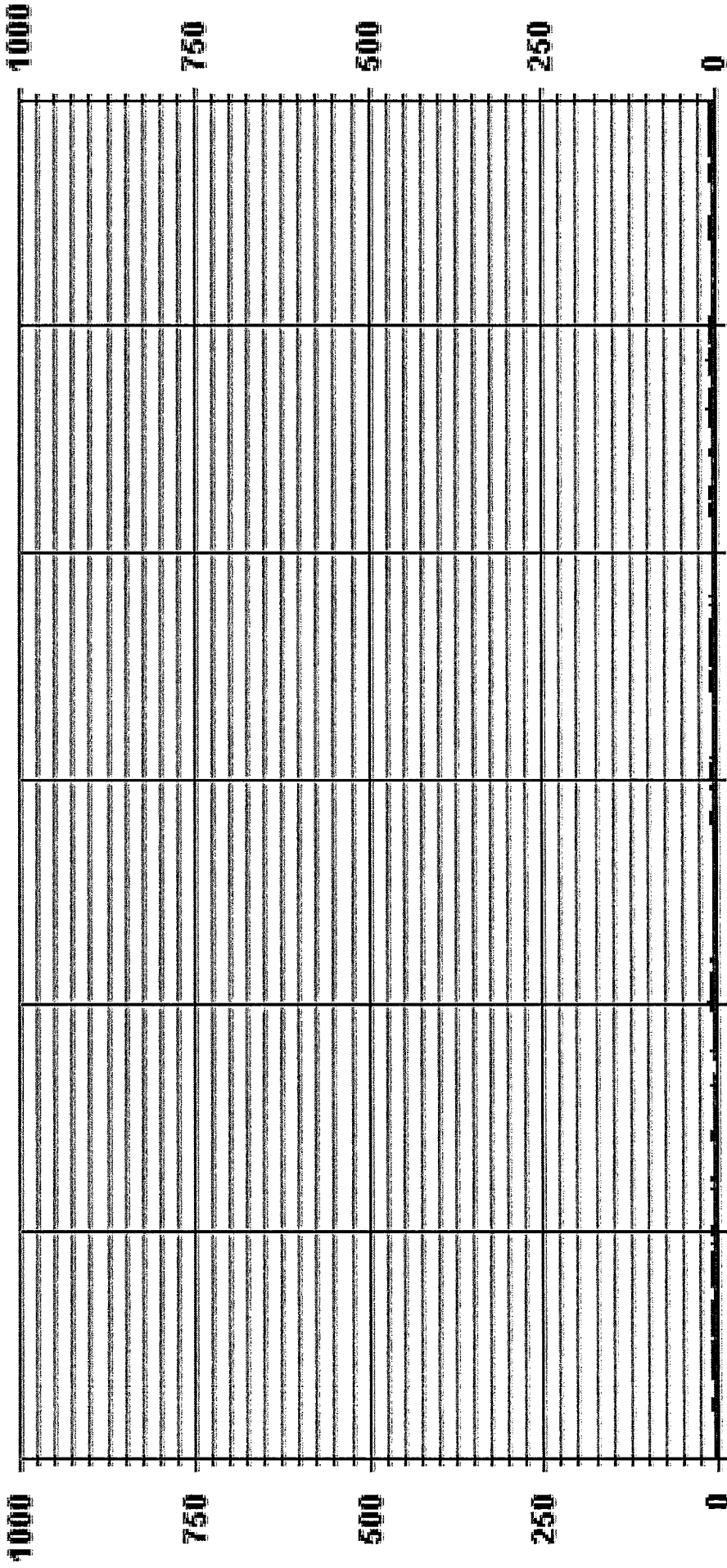
OBJECTIVE LIMIT: ALBERTA ENVIRONMENT: 1-HR: 159 PPB



MONTHLY SUMMARY

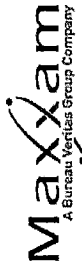
NUMBER OF 24-HR EXCEEDENCES	0
NUMBER OF NON-ZERO READINGS	628
MAXIMUM 1-HR AVERAGE	7 PPB
MAXIMUM 24-HR AVERAGE	2.8 PPB
12S CALIBRATION TIME	32 HRS
MONTHLY CALIBRATION TIME	7 HRS
STANDARD DEVIATION	1.33
OPERATIONAL TIME	720 HRS
AMID OPERATION UPTIME	100.0 %
MONTHLY AVERAGE	1.33 PPB
ON DAY(S)	11
VAR-VARIOUS	3, 25

01 Hour Averages



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

— LICA31 NO2\_ PPB



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

DAY	HOURS																								DAILY MAX	24-HOUR AVG.	RDSS.
	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	0100			
1	1.2	1.3	1.2	1.5	1.8	2.3	1.4	1.4	1.6	R	1.8	1.4	1.2	1.1	0.9	1.1	1.2	1.1	0.9	6.2	2.6	1.4	1.2	6.2	1.6	23	
2	1.1	S	4.1	6.4	6.6	5.0	2.7	1.4	1.4	1.2	0.9	1.1	1.0	1.2	1.5	1.3	1.4	2.1	2.4	2.7	2.9	3.5	6.6	2.4	24		
3	S	4.6	3.8	4.0	4.4	4.6	4.9	5.0	4.9	4.8	4.1	4.0	2.4	1.6	1.6	1.5	1.5	1.5	2.4	2.9	3.1	S	5.0	3.4	24		
4	2.9	2.5	2.4	4.1	4.9	5.6	4.6	4.3	4.0	3.5	3.5	2.7	2.2	1.8	1.6	1.9	2.1	1.8	1.8	1.6	2.0	2.3	S	5.6	2.9	24	
5	2.1	2.1	2.1	2.0	2.6	3.4	3.6	3.2	2.5	1.8	1.7	2.2	1.7	2.2	1.7	2.5	1.4	1.5	3.8	5.4	0.9	S	2.3	5.4	24		
6	4.1	4.9	5.6	5.4	4.1	2.7	1.8	1.4	0.8	0.8	1.0	1.1	0.7	1.3	1.2	0.7	1.2	0.7	7.5	1.1	S	0.9	1.3	1.4	24		
7	1.4	1.3	1.2	1.2	1.6	1.5	2.1	2.0	1.2	1.2	1.1	0.9	0.7	0.8	0.9	0.7	0.9	1.3	3.1	S	3.1	6.4	1.4	1.5	24		
8	1.9	3.2	4.5	6.0	6.1	4.6	2.6	1.8	1.7	1.6	1.5	1.2	1.6	1.2	2.9	1.1	0.9	0.9	S	1.0	1.0	1.1	0.9	6.1	2.2	24	
9	0.9	0.9	1.0	1.0	1.0	1.0	2.7	1.7	1.8	1.5	1.6	1.9	1.3	C	C	C	C	C	C	C	S	1.4	2.7	1.4	24		
10	1.2	1.6	1.6	1.3	S	2.1	1.6	1.4	1.3	1.4	1.1	1.1	1.1	29.3	1.3	1.6	1.5	1.4	1.1	1.9	1.4	2.7	3.4	2.9	24		
11	6.5	8.4	8.3	S	5.5	4.7	4.6	4.5	4.5	3.7	3.9	2.2	2.2	2.8	2.4	1.7	1.9	2.2	2.3	2.2	1.2	1.1	1.1	0.9	8.4	24	
12	1.5	1.7	S	1.5	1.7	3.1	1.6	1.4	1.1	1.2	1.3	0.9	1.2	0.9	0.7	0.7	0.7	1.5	0.9	0.7	0.7	0.9	0.8	3.1	1.2	24	
13	0.7	S	1.0	1.0	1.1	1.1	1.0	1.1	0.9	0.7	0.7	0.7	0.7	0.9	0.6	0.7	0.9	0.7	1.1	0.8	0.9	1.4	0.7	1.4	0.9	24	
14	S	0.9	0.6	0.8	0.9	0.7	0.9	0.9	0.8	0.8	0.8	0.7	0.8	0.7	1.1	1.7	1.2	1.5	1.6	1.7	1.6	2.0	S	2.0	1.1	24	
15	2.3	2.6	2.6	3.0	3.7	3.0	2.8	1.9	1.6	0.9	1.6	1.1	1.1	1.2	2.0	2.4	1.2	5.8	2.0	2.7	3.1	S	5.6	5.8	2.5	24	
16	1.5	1.6	1.5	1.8	1.8	1.9	1.6	1.6	1.4	0.8	1.0	0.7	1.0	0.8	1.1	0.9	0.5	0.6	0.6	0.5	S	1.2	1.2	2.7	1.2	24	
17	7.1	5.7	8.2	6.6	6.5	5.7	5.4	5.3	5.1	4.3	3.0	2.2	1.9	3.0	1.9	6.4	2.8	1.5	1.2	1.3	1.3	S	1.5	2.1	8.2	3.9	24
18	3.1	4.6	5.3	5.6	5.3	4.7	4.6	4.1	3.8	3.5	3.4	2.6	1.6	1.6	1.6	1.7	1.6	2.1	2.1	S	2.6	3.3	5.3	3.4	24		
19	2.6	2.3	2.0	2.0	2.0	1.8	2.4	3.1	2.8	2.6	1.8	1.8	1.7	1.5	1.5	1.3	1.2	S	1.7	2.2	2.1	1.4	1.6	3.1	2.0	24	
20	1.6	2.0	2.0	1.5	1.6	2.3	1.5	1.4	1.2	1.5	1.2	2.5	R	1.3	1.0	0.9	1.2	S	1.0	0.8	1.3	1.0	1.3	1.9	1.4	23	
21	1.4	1.3	1.4	1.5	1.4	1.3	1.0	1.1	1.1	1.1	1.1	1.3	1.1	1.3	1.1	1.3	S	1.2	2.1	4.3	1.8	2.2	6.0	2.0	6.0	1.7	24
22	2.0	2.1	1.8	1.6	3.0	4.2	4.3	5.3	5.5	4.7	2.4	2.0	1.5	1.5	S	0.7	0.8	1.0	1.8	1.2	1.3	1.2	5.5	2.3	2.4	2.4	24
23	1.3	1.0	1.1	1.3	3.1	2.9	2.8	1.6	1.6	1.0	0.8	1.0	3.0	S	0.7	1.2	1.4	1.0	1.0	2.0	2.1	2.5	3.4	1.8	1.8	24	
24	4.3	4.7	4.5	5.5	5.6	5.6	5.0	4.5	3.4	2.2	2.1	1.6	S	2.8	3.1	1.7	27.6	2.9	1.2	1.1	1.1	1.0	2.3	27.6	4.3	24	
25	2.9	4.2	4.5	5.9	6.1	23.9	5.9	5.7	4.5	4.8	4.2	3.7	S	2.2	1.5	1.6	3.5	2.1	1.9	2.3	2.9	3.0	2.2	1.9	23.9	4.4	24
26	2.5	5.4	3.5	4.5	4.5	3.9	1.7	1.5	1.9	0.9	1.0	S	1.0	0.9	0.7	0.6	1.1	1.1	1.0	1.0	1.1	2.1	1.9	1.2	5.4	2.0	24
27	1.3	1.3	0.8	0.8	0.9	1.2	1.2	1.3	1.2	0.9	S	1.0	1.2	1.2	1.2	1.4	2.0	1.7	1.1	1.2	1.0	1.1	2.5	3.4	1.3	24	
28	3.4	3.6	3.6	3.3	3.0	3.6	3.0	3.1	3.0	S	2.4	1.8	1.6	1.7	1.1	0.9	0.9	1.1	1.4	1.1	2.4	0.9	1.4	1.4	3.6	2.2	24
29	1.9	1.9	1.6	1.6	3.5	6.6	7.8	6.6	S	4.1	3.4	3.2	2.8	3.6	4.0	3.0	2.3	2.3	2.4	3.1	2.5	2.5	2.8	4.7	7.8	3.4	24
30	2.6	3.3	2.8	2.7	2.0	1.9	2.4	S	3.8	1.8	2.1	2.0	2.2	1.9	1.6	1.7	1.4	2.0	3.5	4.2	5.9	2.7	2.3	2.2	5.9	2.6	24
HOURLY MAX	7.1	8.4	8.3	6.6	6.6	23.9	7.8	6.6	5.5	4.9	4.8	4.1	4.0	29.3	4.0	6.4	3.5	27.6	7.5	5.4	6.2	6.4	6.0	5.6			
HOURLY AVG	2.4	2.9	3.0	2.9	3.3	3.9	3.0	2.8	2.5	2.2	2.0	1.8	1.6	2.6	1.5	1.5	1.5	2.3	2.1	1.8	2.1	2.1	2.1	2.1	2.2		

STATUS FLAG CODES

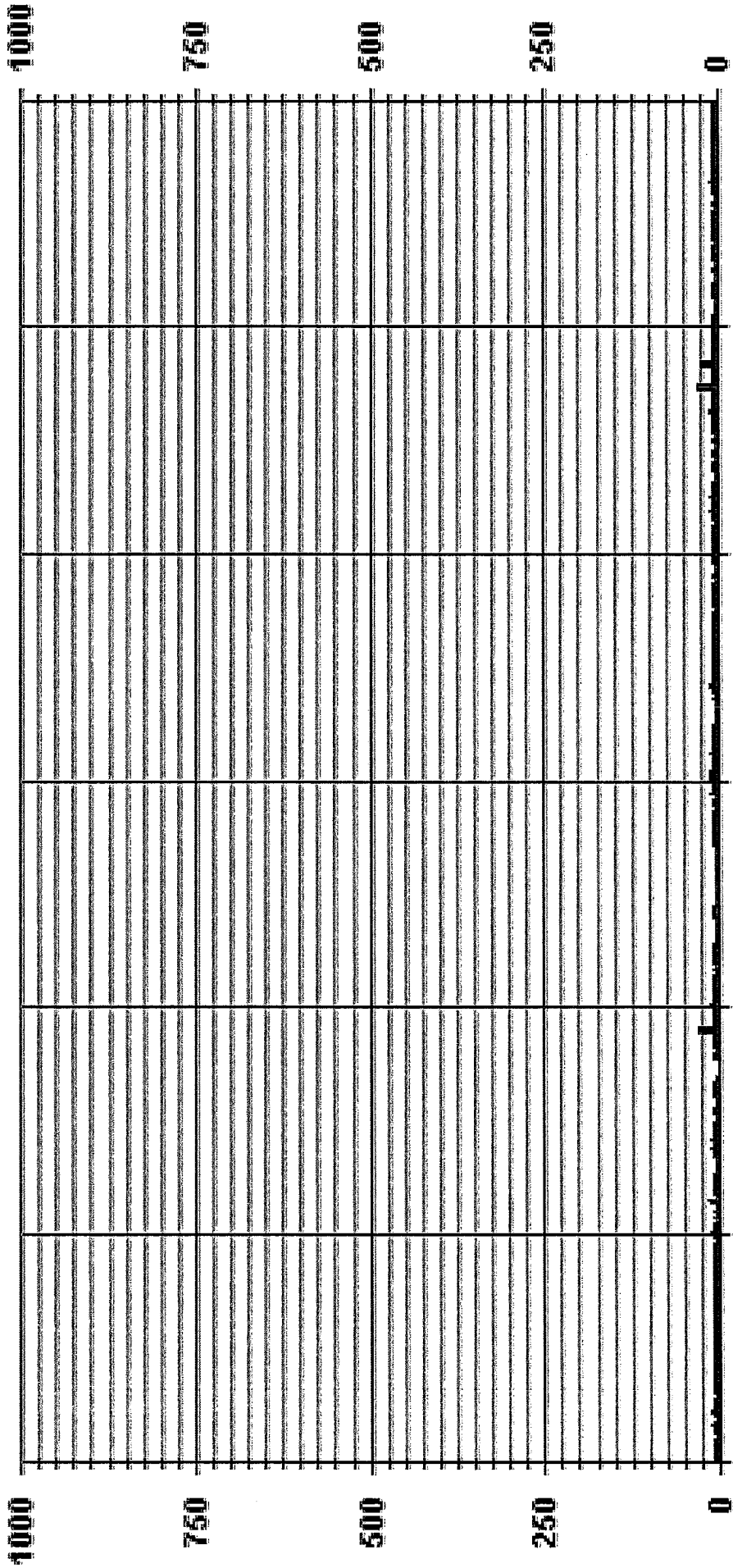
C	CALIBRATION	Q	QUANTITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE/ALFUNCTION
P	POWER ALONE	O	OPERATOR ERROR
G	OUTFORREPAIR	K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	677	PPB	29.3	@ HOUR(S)	13	ON DAY(S)	10
MAXIMUM INSTANTANEOUS VALUE:							VAR-VARIOUS
IZS CALIBRATION TIME:	33	HRS		OPERATIONAL TIME:			718
MONTHLY CALIBRATION TIME:	8	HRS					
STANDARD DEVIATION:	2.22						



01 Hour Averages



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

--- LICA31 NO2MAX PPB

LICA31  
 NO2\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : NO2\_  
 Units : PPS

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	3.08	2.34	2.93	3.52	3.67	3.23	5.43	4.69	5.87	5.28	8.07	9.98	15.41	13.95	6.60	5.87	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	3.08	2.34	2.93	3.52	3.67	3.23	5.43	4.69	5.87	5.28	8.07	9.98	15.41	13.95	6.60	5.87	

Calm : .00 %

Total # Operational Hours : 681

Distribution By Samples





Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	21	16	20	24	25	22	37	32	40	36	55	68	105	95	45	40	681
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	21	16	20	24	25	22	37	32	40	36	55	68	105	95	45	40	

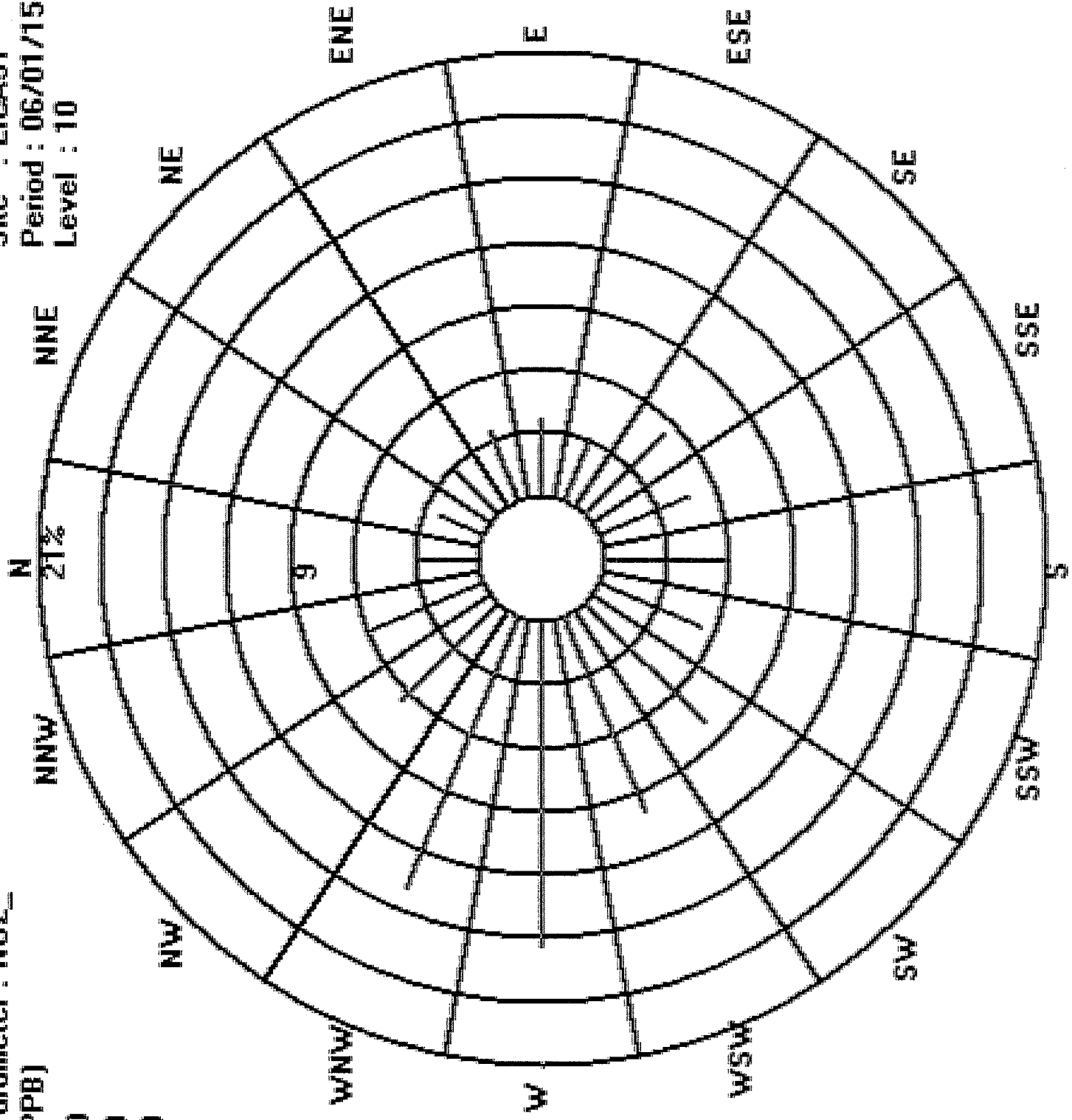
Calm : .00 %

Total # Operational Hours : 681

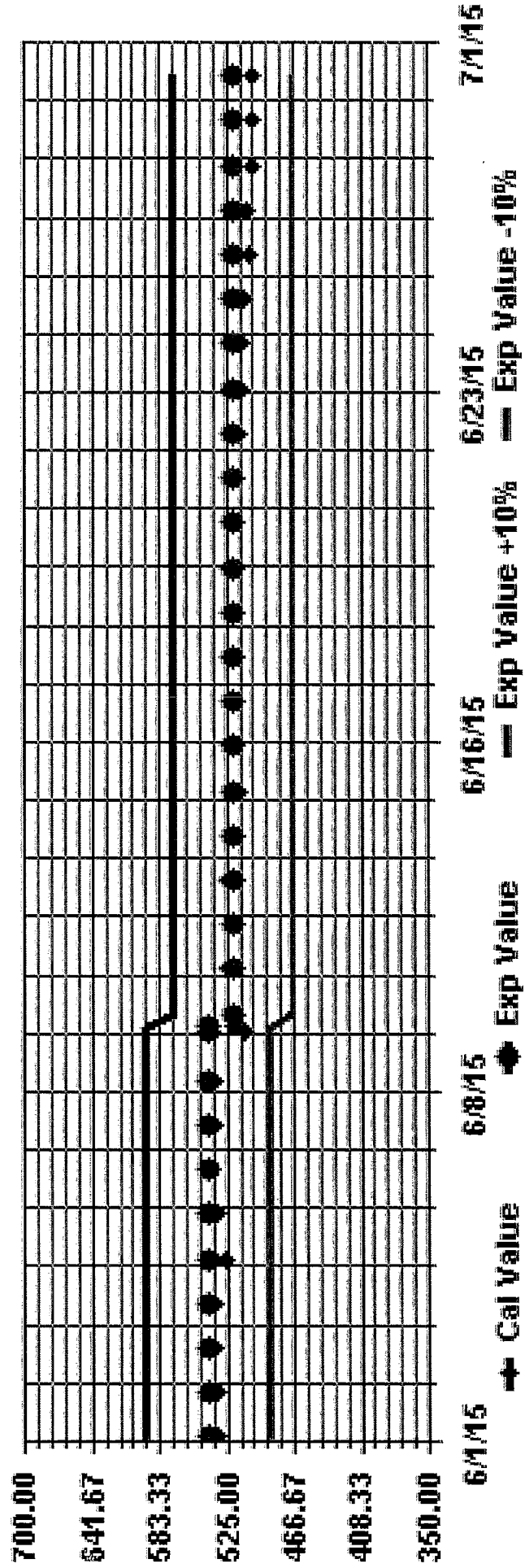
Site : LICA31  
Period : 06/01/15-06/30/15  
Level : 10

Logger : 31 Parameter : ND2\_  
Class Limits (PPB)

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



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	24:00	DAILY MAX	DAILY AVG	RDS.
1	29	33	S	31	28	24	24	24	28	32	28	24	26	31	31	28	28	28	30	30	30	28	28	29	30	33	28.5	24
2	31	S	23	16	18	20	21	23	24	24	26	28	31	29	30	30	31	32	32	28	26	26	25	25	32	32	26.0	24
3	S	28	30	29	28	28	26	24	24	26	30	35	38	45	50	56	59	62	62	59	55	52	51	S	62	62	40.8	24
4	49	50	50	45	42	38	36	37	39	43	44	48	50	47	52	52	52	51	51	49	47	46	S	43	52	46.0	24	
5	41	41	43	44	44	41	40	43	45	47	51	53	51	48	49	50	52	51	50	48	50	S	45	44	53	46.6	24	
6	43	40	36	33	33	31	30	33	36	38	40	42	45	47	47	49	53	53	51	50	S	49	49	48	53	42.4	24	
7	48	48	50	49	45	42	36	34	36	40	42	45	45	45	44	43	40	37	34	S	38	30	31	31	50	40.3	24	
8	23	20	17	17	19	22	23	24	26	29	31	32	33	34	33	38	44	42	S	44	42	39	37	35	44	30.6	24	
9	35	33	32	31	29	27	26	26	30	32	34	C	C	C	C	41	43	47	48	49	49	44	39	40	49	39.0	24	
10	39	29	S	36	36	35	37	42	49	49	60	62	64	63	60	59	56	52	52	52	52	53	51	47	64	48.6	24	
11	41	39	S	36	30	31	31	32	33	33	34	36	36	37	37	36	36	37	36	34	30	27	26	41	34.2	24		
12	25	S	21	20	19	19	17	20	26	28	30	34	36	40	39	37	36	35	30	30	30	26	29	28	40	28.0	24	
13	S	31	32	31	32	34	31	32	27	27	31	33	33	34	38	40	36	40	36	33	33	29	28	S	40	31.7	24	
14	22	21	20	18	20	16	19	26	31	36	39	41	42	43	43	45	45	46	49	46	43	S	40	49	34.3	24		
15	36	34	32	31	31	30	31	34	40	48	53	54	52	51	50	35	35	24	22	S	24	22	S	24	23	54	35.8	24
16	23	24	23	23	24	25	29	32	34	33	34	35	35	35	36	36	36	35	35	S	33	34	26	36	36	31.0	24	
17	28	29	26	25	24	22	24	28	29	31	34	38	39	41	42	42	41	37	S	37	36	33	29	42	32.3	24		
18	32	29	27	32	30	24	29	28	31	37	41	43	46	48	47	45	44	43	S	39	38	42	48	47	48	37.8	24	
19	44	41	39	39	38	33	29	28	31	31	31	30	33	33	34	33	34	33	S	34	34	32	30	26	44	33.3	24	
20	20	18	17	14	16	15	17	18	20	25	28	30	33	33	34	S	33	37	35	27	29	25	24	37	25.2	24		
21	27	25	29	29	26	21	18	19	27	37	41	44	39	40	S	34	34	30	31	29	28	29	28	44	30.7	24		
22	27	28	22	22	16	11	17	22	27	33	35	34	36	36	S	36	32	37	39	35	29	31	31	39	29.0	24		
23	30	27	23	18	15	17	20	25	38	45	47	51	S	50	48	52	48	50	46	49	48	49	47	52	37.3	24		
24	45	45	42	33	29	23	22	27	35	43	51	60	S	55	51	50	52	62	60	57	43	40	40	41	62	43.7	24	
25	42	40	36	31	31	29	27	34	37	38	S	43	42	40	40	44	47	49	48	46	43	42	41	49	39.2	24		
26	40	38	42	42	40	39	38	36	37	41	S	41	41	42	42	42	41	38	37	40	39	42	43	40.1	24			
27	47	46	41	40	45	48	41	41	50	S	58	51	48	41	39	38	42	43	41	38	36	36	33	36	58	42.6	24	
28	38	41	41	38	33	26	23	30	S	37	40	42	39	49	50	46	41	41	38	34	33	31	30	29	50	37.0	24	
29	27	29	28	32	34	36	36	S	30	31	38	43	44	44	46	46	46	44	41	40	40	44	39	42	46	37.7	24	
30	49	50	50	49	45	48	41	43	50	49	58	60	62	64	63	60	59	62	62	59	55	53	51	48	46	37.7	24	
HOURLY MAX	34.5	33.6	31.5	30.3	29.6	28.0	27.6	28.6	31.5	34.8	37.9	40.1	40.6	41.7	42.5	42.6	42.8	42.8	42.8	41.4	40.3	37.6	37.3	35.8	35.1			
HOURLY AVG																												

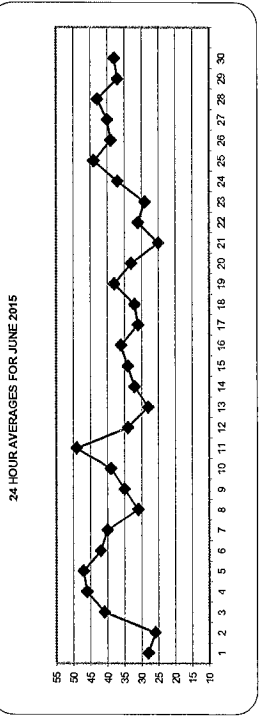
STATUS FLAG CODES

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

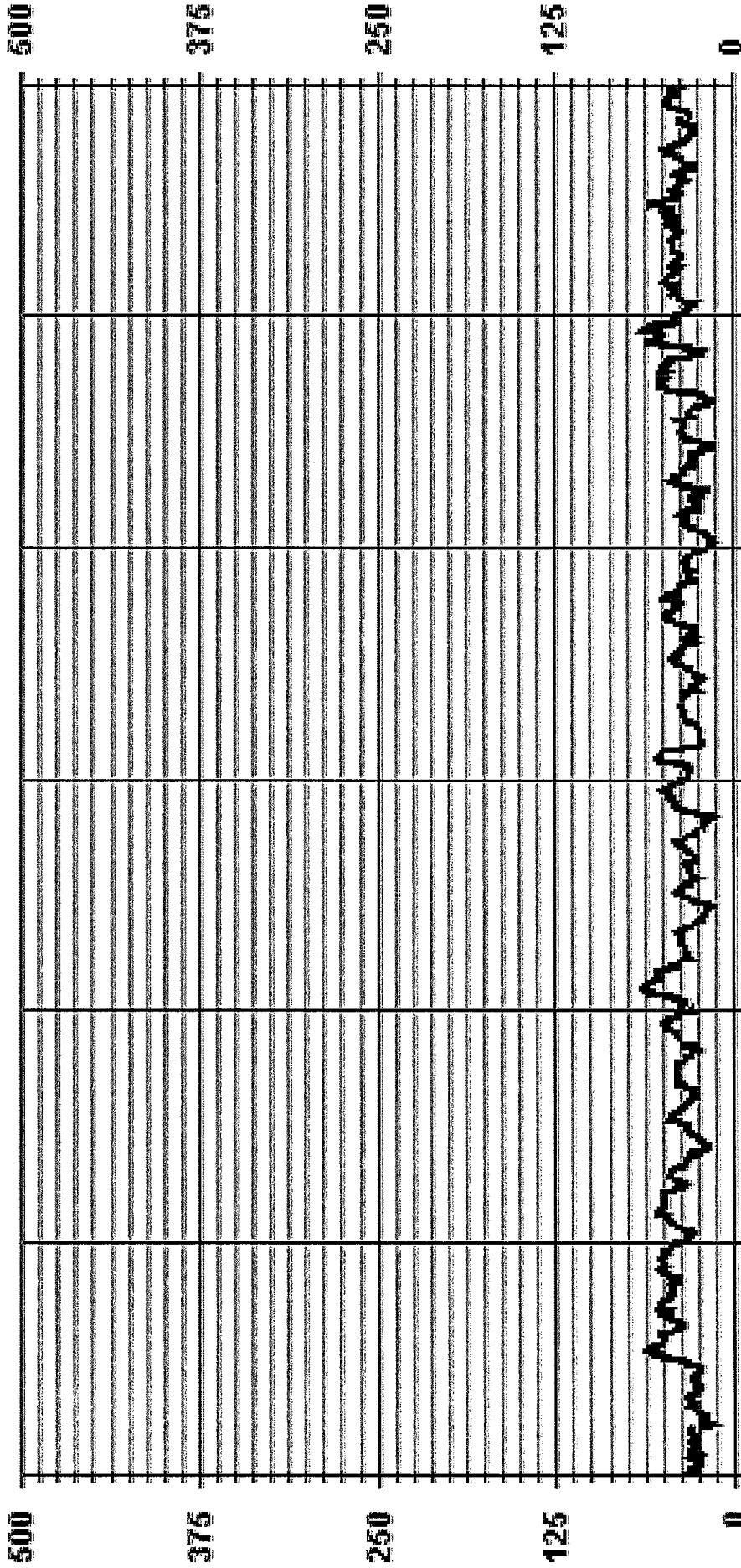
OBJECTIVE LIMIT: ALBERTA ENVIRONMENT: 60 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	60
NUMBER OF NON-ZERO READINGS:	682
MAXIMUM 1-HR AVERAGE:	64 PPB
MAXIMUM 24-HR AVERAGE:	48.6 PPB
1/2S CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	9.69
OPERATIONAL TIME:	720 HRS
AMTD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	36 PPB
ON DAY(S)	11
ON DAY(S) VAR-VARIOUS	11



01 Hour Averages



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

— LICA31 03\_ PPB



OZONE 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	AVG.	RODS.		
1	34	34	S	32	30	28	25	27	32	34	R	45	29	35	34	32	30	30	30	32	31	30	31	30	32	45	31.7	23	
2	33	S	28	19	18	21	23	24	24	26	30	33	33	31	32	32	32	34	34	33	31	28	28	27	26	34	28.1	24	
3	S	30	31	30	29	29	27	26	26	29	37	38	47	47	54	58	62	64	64	62	58	53	53	53	53	64	43.3	24	
4	50	51	52	48	46	40	39	39	44	44	48	50	52	53	55	56	53	53	53	52	51	48	47	5	45	56	48.5	24	
5	44	43	44	46	45	43	43	46	47	50	54	55	55	50	51	52	53	54	54	52	51	51	S	48	46	55	48.8	24	
6	45	44	38	34	34	33	32	35	38	40	42	43	48	48	51	54	55	53	51	S	34	34	33	35	52	42.5	24		
7	49	50	52	51	47	46	38	36	38	42	45	46	47	46	46	45	43	38	36	S	45	44	41	38	36	46	32.7	24	
8	26	22	20	18	22	23	24	25	29	32	33	34	35	35	35	42	46	46	S	45	44	40	41	40	37	43	36.4	24	
9	36	34	33	33	32	S	29	36	40	C	C	C	C	C	43	46	49	49	S	52	51	48	47	41	42	52	42.2	24	
10	35	35	35	32	S	38	38	36	41	47	55	59	63	64	66	65	64	64	60	53	55	56	56	55	55	66	52.1	24	
11	42	34	32	S	43	31	32	34	34	35	36	37	37	39	39	38	39	41	43	37	36	32	28	27	47	36.6	24		
12	47	43	S	23	21	20	19	20	18	26	27	31	31	38	38	43	42	39	38	36	34	31	31	30	43	30.4	24		
13	26	S	23	21	20	19	20	18	26	27	31	31	38	38	43	42	39	38	36	34	31	31	30	43	30.4	24			
14	S	32	35	33	35	36	33	31	29	28	29	34	35	35	37	43	43	43	39	37	37	32	30	28	S	43	34.1	24	
15	23	23	21	21	21	19	26	30	34	39	41	43	44	44	45	46	48	48	48	52	52	48	47	S	42	52	37.3	24	
16	40	35	35	32	32	32	31	35	38	48	51	55	56	56	55	54	46	39	28	24	24	S	27	25	56	39.0	24		
17	25	26	25	24	25	28	32	35	36	35	36	36	36	36	38	38	37	37	36	36	S	39	38	36	31	45	34.5	24	
18	32	31	27	25	24	24	28	29	30	31	33	37	39	41	43	45	45	45	45	S	39	39	38	36	34	38	33.0	24	
19	33	31	32	34	31	28	31	30	35	42	44	46	50	50	50	49	47	45	S	42	39	48	48	50	48	50	40.5	24	
20	45	44	42	42	42	42	42	35	33	30	34	33	34	R	37	34	36	34	S	36	35	34	32	28	26	45	35.8	23	
21	22	20	19	16	17	17	17	17	18	20	23	31	32	30	32	36	37	36	S	37	40	39	31	30	29	26	40	27.7	24
22	29	27	30	31	28	24	21	21	34	41	43	46	45	43	44	S	37	36	33	32	31	29	31	31	31	46	33.3	24	
23	28	29	26	25	24	15	21	26	30	36	36	37	38	39	S	39	40	40	40	41	39	31	34	33	32	41	32.1	24	
24	32	28	27	20	18	17	19	23	31	44	48	50	55	S	51	57	54	56	49	51	50	51	50	51	51	57	40.7	24	
25	50	47	45	36	32	28	25	32	40	48	56	64	S	61	55	57	68	63	61	54	41	41	42	68	47.9	24			
26	44	42	40	35	33	35	32	32	37	40	40	S	45	44	41	42	47	50	50	50	48	45	43	43	50	41.7	24		
27	42	42	43	43	41	40	39	37	39	43	S	42	43	44	44	45	44	44	44	44	40	39	42	40	49	42.1	24		
28	50	49	48	44	49	51	47	48	56	S	60	57	53	44	40	41	47	44	44	42	40	37	37	41	38	60	46.2	24	
29	39	44	43	40	37	29	29	32	S	39	43	45	43	45	43	44	44	44	44	43	36	35	32	32	31	57	40.1	24	
30	28	32	30	39	40	40	40	40	S	35	34	36	42	45	46	48	49	48	46	44	44	42	43	45	42	44	40.8	24	
HOURLY MAX	50	51	52	51	49	51	47	48	56	55	60	64	64	66	65	64	64	68	64	62	58	56	55	55	55	57	40.8	24	
HOURLY AVG	36.8	35.8	34.1	32.6	31.7	30.5	30.4	31.5	34.8	37.9	41.3	43.4	43.8	44.3	45.2	45.4	45.9	45.6	44.3	42.7	40.1	39.5	37.9	37.9	37.6	37.9	37.9	37.6	

STATUS FLAG CODES

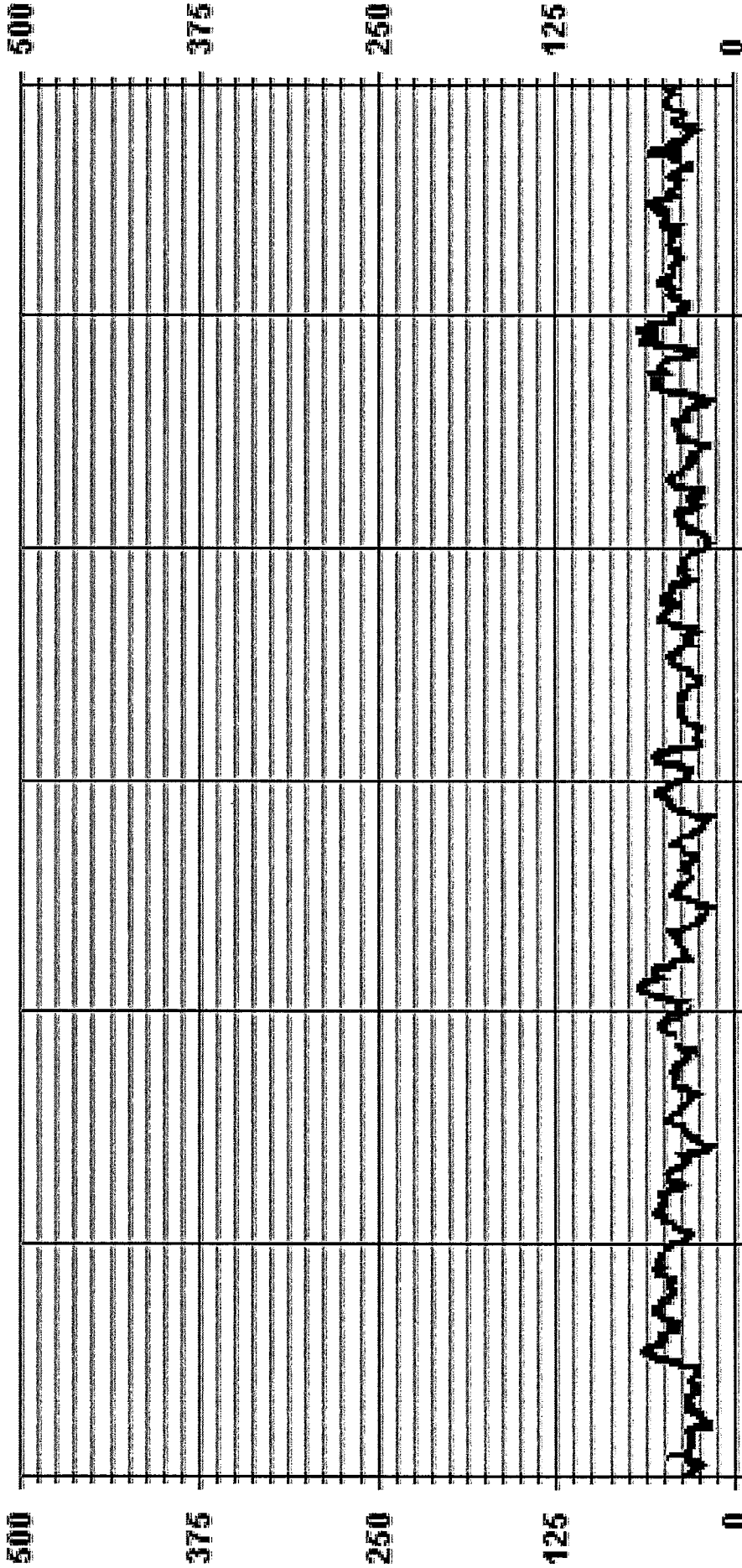
C	QUALITY ASSURANCE
M	MAINTENANCE
S	MAINTENANCE
D	DAILY ZERO/SPAN CHECK
P	POWER FAILURE
G	OUTFLOW REPAIR
R	RECOVERS
X	MACHINE MAINTENANCE
O	OPERATOR ERROR
K	COLLECTION ERROR

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	680
MAXIMUM INSTANTANEOUS VALUE:	68 PPB @ HOUR(S)
ON DAY(S)	25
OPERATIONAL TIME:	718 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	9.98
VAR-VARIOUS	VAR-VARIOUS



01 Hour Averages



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

— LICA31 O3MAX PPB

LIC31  
 O3\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LIC31  
 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	3.07	1.75	2.78	3.37	3.22	2.34	4.25	4.10	5.13	4.83	6.89	9.09	14.07	12.90	6.89	5.71	90.46
< 110	.00	.58	.00	.14	.87	1.17	.58	.73	.43	1.17	.87	1.31	1.31	1.31	.00	.14	9.53
< 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	3.07	2.34	2.78	3.51	3.37	3.22	5.42	4.69	5.86	5.27	8.06	9.97	15.39	14.22	6.89	5.86	

Calm : .00 %

Total # Operational Hours : 682

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	21	12	19	23	22	16	29	28	35	33	47	62	96	88	47	39	617
< 110	4	4	1	1	1	6	8	4	5	3	8	6	9	9	1	1	65
< 210																	
>= 210																	
Totals	21	16	19	24	23	22	37	32	40	36	55	68	105	97	47	40	

Calm : .00 %

Total # Operational Hours : 682

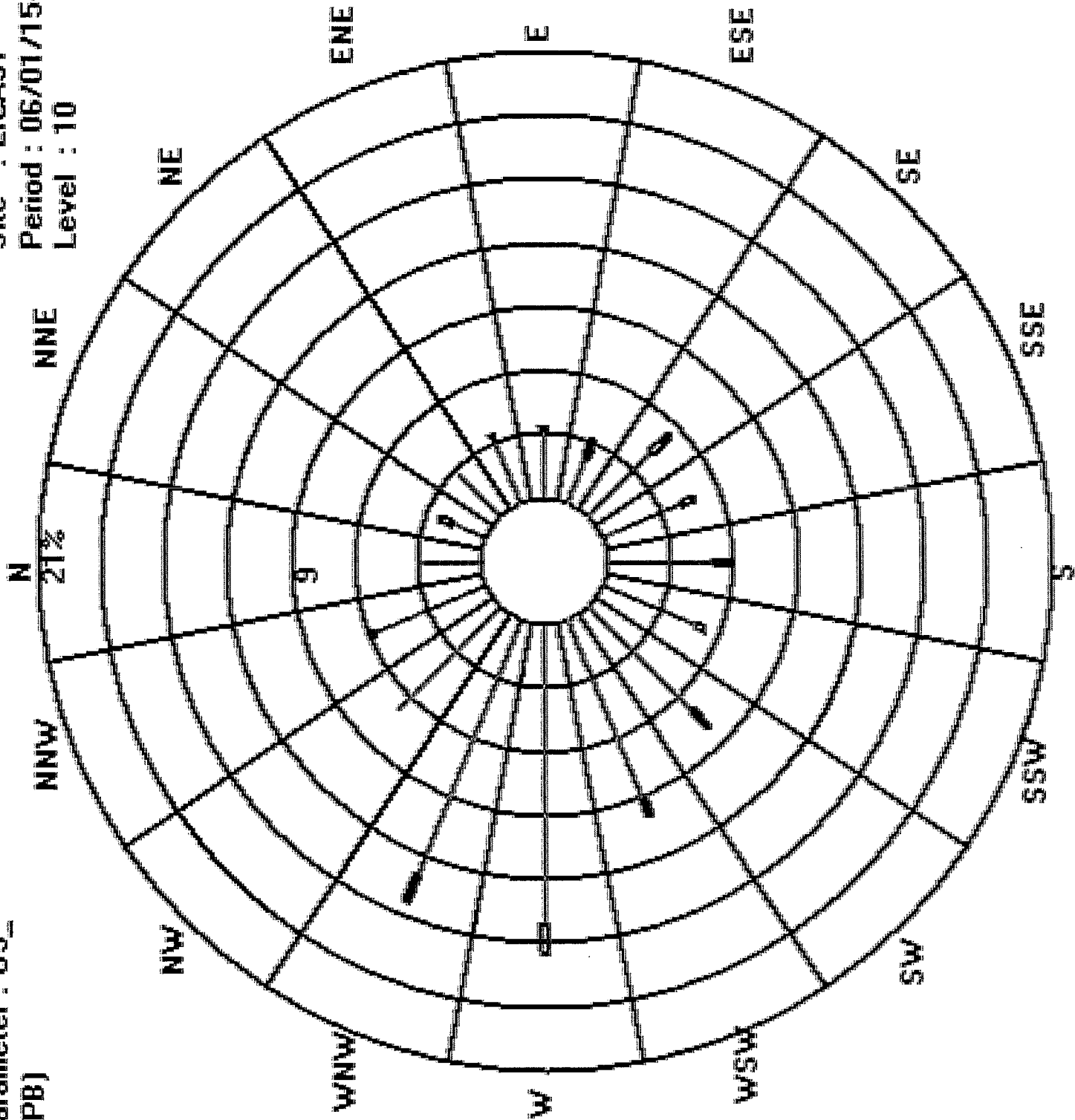
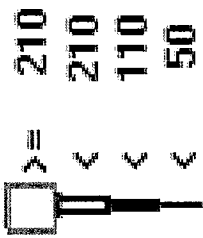
Logger : 31 Parameter : 03\_

Site : LICA31

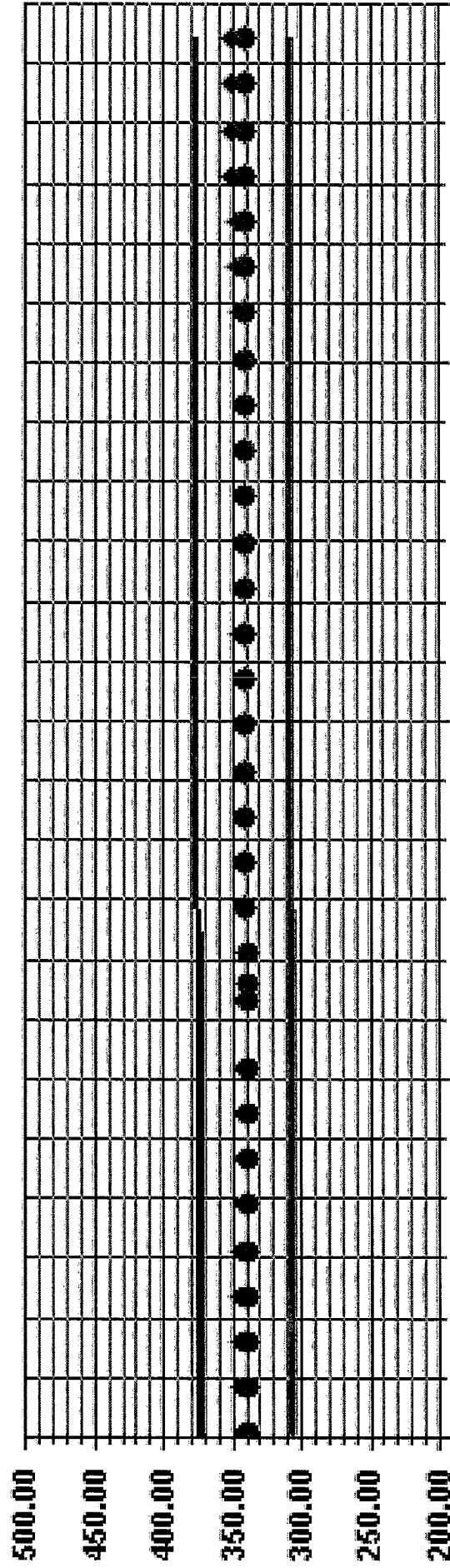
Period : 06/01/15-06/30/15

Level : 10

Class Limits (PPB)



Calibration Graph for Site: LICA31 Parameter: O3\_ Sequence: O3 Phase: SPAN



6/1/15

6/8/15

6/16/15

6/23/15

7/1/15

→ Cal Value

● Exp Value

— Exp Value +10%

— Exp Value -10%

***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				24:00
1	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	12	3.8	12
2	0	0	5	4	2	2	6	3	8	8	3	6	4	6	6	3	3	3	4	0	2	2	0	2	1	8	4.1	24
3	7	6	2	3	4	4	5	5	3	4	8	11	8	4	5	6	8	3	2	6	4	4	4	4	11	5.1	24	
4	3	1	3	4	5	6	4	3	9	9	7	6	8	6	2	4	3	5	3	2	4	4	5	9	9	4.6	24	
5	5	6	3	4	5	6	4	3	5	5	3	4	4	7	9	2	6	1	7	4	7	6	7	8	9	5.0	24	
6	14	14	13	14	12	7	7	2	8	8	6	5	6	8	5	13	8	5	14	6	7	6	4	6	14	8.3	24	
7	6	8	7	4	5	6	6	6	8	5	7	5	5	7	6	2	2	2	6	2	5	8	3	6	8	5.4	24	
8	6	7	7	8	8	4	3	1	5	8	4	3	2	5	3	5	4	3	1	3	1	3	5	5	8	4.7	24	
9	3	3	1	2	3	2	3	7	3	2	7	3	7	5	3	5	7	4	6	5	0	3	5	5	7	3.9	24	
10	4	2	5	4	6	4	8	4	7	3	5	C	3	3	2	5	7	3	8	10	9	12	8	12	5.4	24		
11	6	9	9	8	10	8	7	10	5	8	6	5	4	8	5	6	11	7	9	10	4	2	4	3	11	6.8	24	
12	4	4	6	4	9	3	1	2	1	2	1	1	4	1	8	3	0	2	3	3	4	3	4	9	9	3.0	24	
13	0	3	2	5	4	3	3	3	1	0	0	0	2	3	1	1	1	1	4	0	2	2	2	5	2	2.0	24	
14	0	1	3	0	2	0	0	2	1	0	0	0	0	0	2	1	0	3	6	4	2	3	3	1	6	1.4	24	
15	3	6	5	4	3	7	6	0	4	1	3	3	3	3	5	2	3	13	13	11	7	7	9	13	5.6	24		
16	12	15	14	11	10	4	4	5	6	7	7	8	5	13	4	5	0	4	5	6	9	5	0	1	15	6.7	24	
17	0	4	5	6	2	5	6	2	5	0	8	3	1	2	2	1	1	4	0	5	2	2	1	1	8	3.0	24	
18	4	3	6	5	4	4	4	2	0	0	2	2	4	0	5	2	10	3	7	5	6	8	6	12	4.4	24		
19	6	7	5	2	7	7	6	6	4	7	4	3	11	3	6	C	0	5	2	3	4	4	0	1	11	4.5	24	
20	0	1	0	1	1	1	5	1	1	3	5	4	7	11	8	11	8	8	3	2	4	0	5	0	7	1.7	23	
21	2	2	1	0	1	1	1	0	7	2	5	5	4	7	11	8	8	3	2	4	0	5	0	5	11	4.3	24	
22	6	6	5	4	2	7	1	10	10	9	3	5	7	0	4	0	4	2	4	4	6	3	6	4	10	4.7	24	
23	2	6	2	5	1	6	5	7	5	3	2	6	6	3	3	0	4	4	4	4	3	3	7	4	7	4.0	24	
24	6	7	8	12	9	10	11	9	6	6	5	2	4	5	9	5	7	0	0	0	4	3	2	6	12	5.9	24	
25	6	10	8	11	9	9	8	7	9	9	9	8	7	9	6	9	8	12	8	7	7	10	9	12	8.5	24		
26	3	6	7	10	6	5	6	7	1	0	6	2	2	3	3	2	1	4	4	5	0	4	1	0	10	3.7	24	
27	5	3	3	6	5	1	1	1	2	0	3	4	2	3	2	3	8	3	0	1	0	2	0	6	8	2.7	24	
28	8	10	6	4	9	5	6	4	6	5	8	7	3	7	3	1	2	3	0	6	6	7	3	9	10	5.3	24	
29	16	22	24	22	19	21	24	60	75	64	52	38	20	8	9	7	5	1	6	6	6	5	5	3	75	21.6	24	
30	6	4	7	7	6	7	18	15	13	15	27	32	38	38	41	42	36	40	37	37	36	37	38	40	42	25.7	24	
HOURLY MAX	16	22	24	22	19	21	24	60	75	64	52	38	38	41	42	36	40	37	37	36	37	38	40	42	75	25.7	24	
HOURLY AVG	4.9	6.0	5.9	6.0	5.9	5.2	5.7	7.5	7.0	6.8	6.9	6.6	6.4	5.9	5.9	5.6	5.2	5.5	6.0	5.6	5.3	5.3	5.2	5.7	6.0	5.3	5.2	5.7

STATUS FLAG CODES

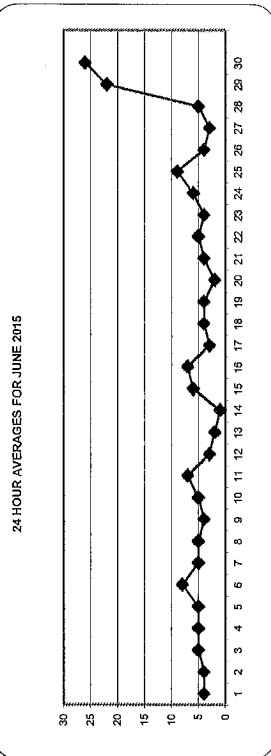
C	-CALIBRATION	Q	-QUALITY ASSURANCE
Y	-MAINTENANCE	R	-RECOVERY
S	-DAILY ZERO/SPAN CHECK	X	-MACHINE/MALFUNCTION
P	-POWER FAILURE	O	-OPERATOR ERROR
G	-OUT FOR REPAIR	K	-COLLECTION ERROR

OBJECTIVE LIMIT:

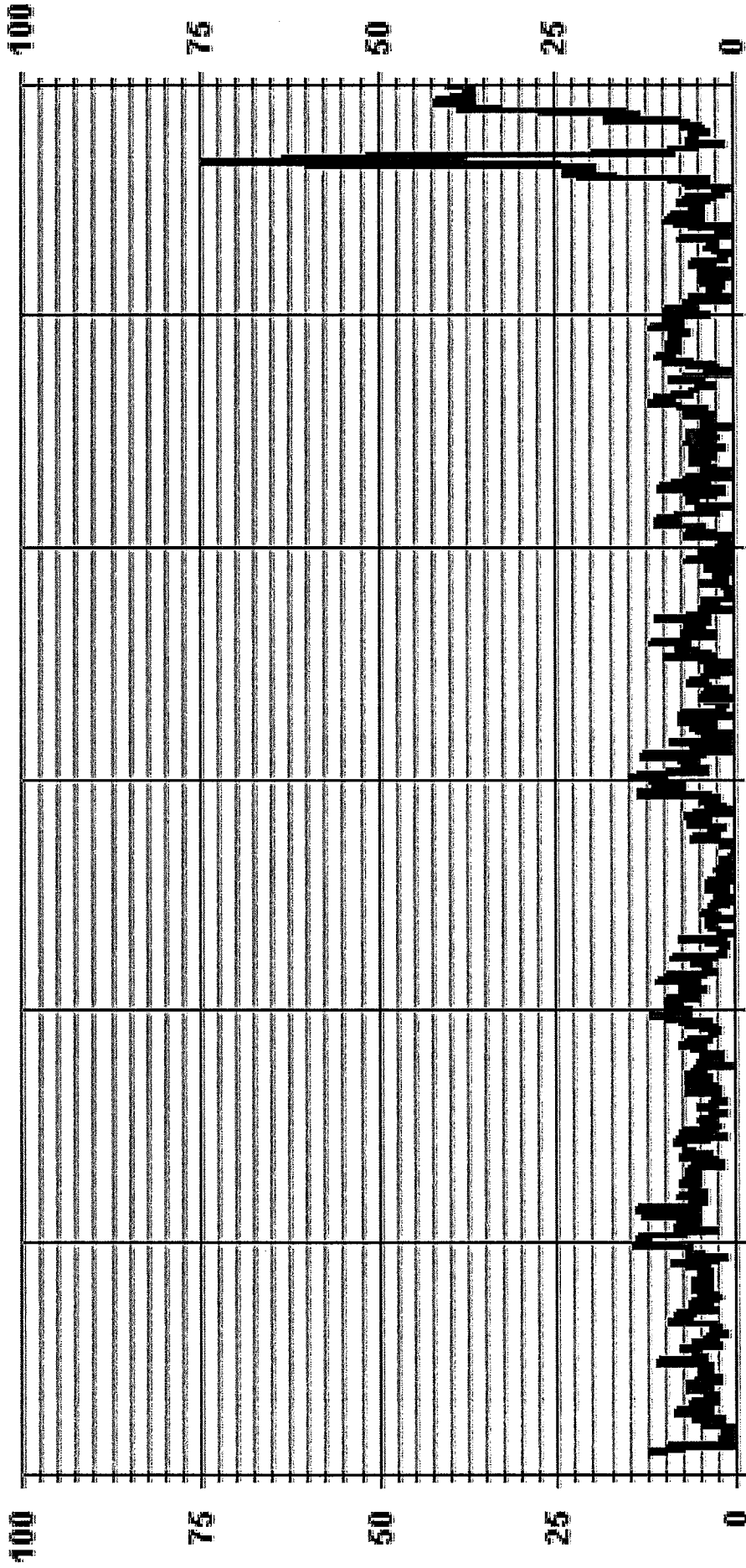
ALBERTA ENVIRONMENT: 24-HR: 30 ug/m3

MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	0	
NUMBER OF NON-ZERO READINGS:	644	
MAXIMUM 1-HR AVERAGE:	75 ug/m3 @ HOUR(S)	8 ON DAY(S)
MAXIMUM 24-HR AVERAGE:	25.7 ug/m3	30 ON DAY(S)
MONTHLY CALIBRATION TIME:	2 HRS	OPERATIONAL TIME: 707 HRS
STANDARD DEVIATION:	7.30	AMD OPERATION UPTIME: 98.2 %
		MONTHLY AVERAGE: 5.9 ug/m3



# 01 Hour Averages



— LICA31 PM2 UGM3

FM2 / WDR Joint Frequency Distribution (Percent)  
 LICA31  
 June 2015

Distribution By % Of Samples

Logger id : 31  
 Site Name : LICA31  
 Parameter : FM2  
 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	3.40	2.55	2.69	3.68	3.68	3.12	5.24	4.96	5.53	5.39	7.80	9.92	13.47	13.33	6.52	6.09	97.44
< 60	.00	.00	.00	.00	.00	.14	.00	.00	.14	.00	.00	.14	1.13	.56	.00	.00	2.12
< 80	.00	.00	.00	.00	.00	.00	.28	.00	.14	.00	.00	.00	.00	.00	.00	.00	.42
< 120	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.40	2.55	2.69	3.68	3.68	3.12	5.39	5.24	5.81	5.39	7.80	10.07	14.60	13.90	6.52	6.09	6.09

Calm : .00 %

Total # Operational Hours : 705

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	24	18	19	26	26	22	37	35	39	38	55	70	95	94	46	43	687
< 60						1			1			1	8	4			15
< 80							2		1								3
< 120																	
< 240																	
>= 240																	
Totals	24	18	19	26	26	22	38	37	41	38	55	71	103	98	46	43	43

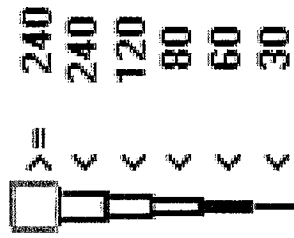
Calm : .00 %

Total # Operational Hours : 705

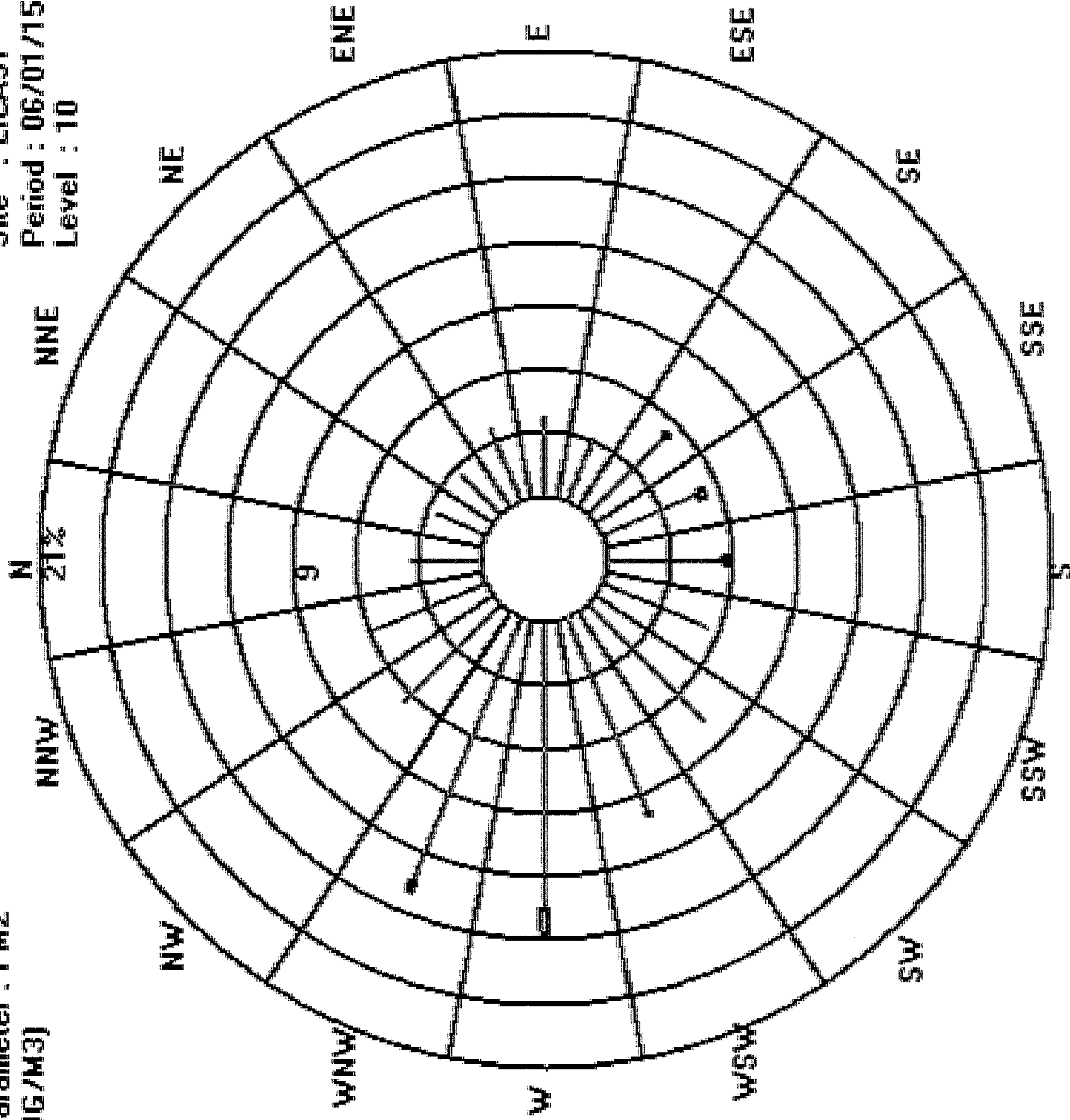


Logger : 31 Parameter : PM2

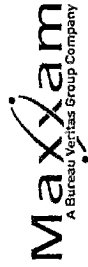
Class Limits (UG/M3)



Site : LICA31  
Period : 06/01/15-06/30/15  
Level : 10



***WIND SPEED***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 St. Lina Site - JUNE 2015  
 JOB # 2833-2015-07-31 - C

WIND SPEED (WS) hourly averages in km/hr

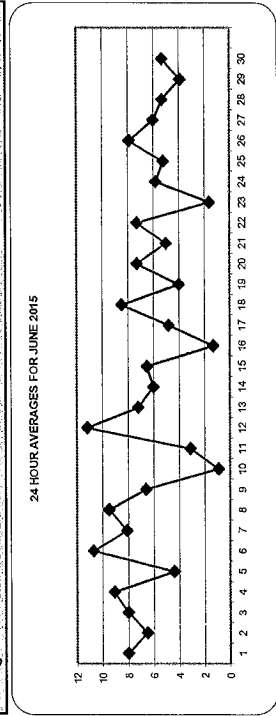
MST

DAY	DAILY																								24-HOUR	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	8.2	10.0	10.4	10.0	9.5	7.5	6.5	6.6	9.1	9.7	11.6	9.5	9.9	12.8	12.1	13.5	9.9	9.1	11.1	8.5	4.8	4.2	5.3	6.4	13.5	9.0	24	
2	7.2	8.0	9.8	8.0	8.7	8.9	6.5	6.8	6.2	6.8	7.2	7.3	4.5	5.8	6.0	7.1	8.3	8.8	7.8	8.4	8.4	8.4	8.3	8.0	8.4	8.3	24	
3	9.2	7.3	7.4	7.6	7.8	5.6	5.0	5.2	4.4	5.3	7.7	8.6	9.9	11.2	10.7	9.0	10.9	9.2	10.2	8.4	8.5	10.4	11.6	8.9	11.6	8.3	24	
4	9.2	9.7	9.0	9.7	8.7	8.6	9.0	8.6	7.8	9.5	11.7	13.7	13.9	13.8	17.8	19.1	14.2	13.0	8.8	6.5	5.3	7.3	7.3	19.1	10.4	24		
5	7.2	6.1	7.1	8.6	7.1	4.8	5.3	5.9	4.6	4.6	6.3	5.9	7.6	7.7	5.5	6.1	7.8	4.9	6.1	1.1	2.3	5.9	6.9	8.6	5.8	24		
6	6.4	6.4	9.7	9.5	8.1	8.8	11.5	11.1	17.1	17.9	16.6	16.4	16.0	16.0	15.9	16.7	15.4	10.2	8.6	8.3	8.7	9.5	9.0	17.9	11.8	24		
7	8.7	9.4	9.9	9.9	9.1	9.3	9.0	8.0	7.5	9.8	12.8	10.3	10.1	11.5	11.8	12.0	8.8	5.7	4.2	3.7	4.0	4.1	3.0	12.8	8.4	24		
8	6.1	6.5	7.1	7.5	7.6	6.5	7.3	7.4	8.5	8.7	11.1	15.8	15.2	14.4	12.1	12.4	19.0	22.7	20.9	14.1	9.3	10.2	7.5	9.8	22.7	11.2	24	
9	9.8	9.7	11.0	9.1	7.7	6.5	5.5	5.6	6.0	8.2	10.8	5.9	8.0	6.2	6.5	7.8	7.5	10.0	4.4	4.1	5.1	7.2	6.4	11.0	7.2	24		
10	8.6	8.5	5.6	3.6	5.2	2.9	0.2	3.0	3.7	1.5	2.1	0.8	3.0	3.6	7.9	6.5	4.0	2.0	1.2	1.4	5.5	6.9	8.8	9.0	4.4	24		
11	8.1	8.9	8.7	9.2	10.2	9.7	10.9	11.1	8.1	5.6	4.8	5.6	5.5	6.1	3.8	5.3	5.1	7.3	12.7	20.3	3.5	13.0	3.3	5.5	20.3	8.0	24	
12	10.2	13.2	12.1	12.0	9.7	8.0	6.6	10.5	11.9	11.8	13.3	11.5	10.3	10.0	14.9	17.4	13.8	15.0	10.8	9.1	12.9	12.7	12.3	11.9	17.4	11.7	24	
13	11.6	12.4	10.9	11.8	9.4	9.0	9.4	7.4	8.2	8.9	9.2	9.0	12.4	14.6	14.5	11.5	7.9	10.0	7.2	3.2	3.5	3.1	4.4	5.4	14.6	9.0	24	
14	9.5	9.0	10.2	9.5	10.3	10.5	9.1	8.6	8.8	11.4	10.2	11.0	11.1	9.6	9.5	9.8	6.3	4.2	3.8	2.0	4.0	6.5	7.1	5.6	11.4	8.2	24	
15	6.0	5.4	6.2	6.2	7.1	6.5	5.9	8.8	8.0	8.0	8.0	11.2	11.0	11.1	8.9	6.2	2.2	3.1	5.2	6.9	5.4	6.2	6.7	7.2	11.2	7.0	24	
16	8.4	7.6	6.9	7.9	6.9	6.0	6.7	6.9	6.3	6.3	5.7	8.1	7.3	7.8	9.3	3.0	15.4	6.1	9.8	9.0	7.5	11.7	8.4	5.1	15.4	7.7	24	
17	3.7	4.7	5.0	4.9	5.3	5.5	5.5	5.5	6.0	5.7	6.5	8.5	8.1	10.0	9.9	9.1	9.4	7.6	6.0	4.4	2.0	2.7	5.8	7.0	7.8	10.0	6.3	24
18	9.8	9.8	9.0	8.9	8.4	7.6	7.7	7.3	9.0	10.4	11.3	11.2	13.7	13.1	12.4	11.7	9.8	9.9	4.0	8.3	8.0	5.5	5.7	5.9	13.7	9.1	24	
19	8.0	8.1	8.1	7.2	5.7	5.9	8.6	7.1	5.1	4.6	4.7	5.9	5.7	8.3	7.4	7.1	8.5	7.2	6.5	5.4	5.7	13.4	14.6	11.3	14.6	7.5	24	
20	11.4	13.3	11.3	13.1	10.1	8.7	8.4	9.2	8.0	6.3	6.2	6.8	5.5	7.8	11.2	11.4	8.4	8.0	7.2	9.2	7.2	5.8	5.4	7.1	13.3	8.6	24	
21	8.1	7.2	7.8	6.8	8.7	7.4	7.2	8.2	7.9	7.4	7.0	5.6	3.8	2.2	2.3	7.6	8.5	7.5	5.1	4.8	7.2	8.0	4.6	7.0	8.7	6.6	24	
22	9.1	10.3	10.0	8.6	8.3	7.7	4.1	5.1	9.7	11.7	10.8	12.6	5.2	16.5	11.0	5.8	7.6	9.1	5.7	5.7	5.0	6.5	7.1	7.2	16.5	8.4	24	
23	6.6	7.3	6.6	5.8	5.7	5.4	4.3	4.6	4.1	3.7	3.6	2.2	5.3	5.7	8.1	3.8	2.7	2.1	0.9	3.7	6.1	6.7	7.1	6.7	8.1	5.0	24	
24	6.0	5.3	6.2	5.8	7.0	6.7	5.7	4.7	5.2	8.4	9.7	10.5	10.6	7.2	7.5	9.0	5.8	5.6	1.0	2.5	2.4	2.2	6.6	10.6	6.3	24		
25	7.1	5.8	5.9	6.2	6.2	6.0	6.7	5.8	4.8	5.0	5.4	8.0	11.6	15.2	15.8	14.9	12.7	8.4	5.3	3.9	8.7	10.0	8.3	6.4	15.8	8.1	24	
26	7.7	8.0	6.9	5.7	5.8	12.3	7.9	8.0	7.9	5.8	12.4	10.4	16.4	15.0	12.9	12.9	13.5	15.2	12.5	10.6	6.7	7.0	7.8	8.7	16.4	9.8	24	
27	8.6	8.4	11.6	11.8	9.3	10.0	8.7	7.5	7.8	10.5	10.0	10.6	8.4	7.2	7.4	6.0	4.4	5.1	4.2	1.5	2.7	6.5	6.9	6.7	11.8	7.6	24	
28	6.0	6.8	8.2	7.2	5.8	8.5	5.5	8.6	9.3	7.7	8.2	8.7	8.7	14.1	11.0	12.0	12.9	12.2	10.4	6.6	6.4	6.1	5.4	7.4	14.1	8.5	24	
29	1.3	1.9	6.2	7.4	8.0	7.4	5.6	6.4	7.9	4.1	4.9	7.2	12.0	10.2	8.4	12.4	11.1	9.0	8.5	9.8	6.7	13.0	7.6	13.0	7.6	24		
30	6.6	6.0	5.4	5.7	5.2	7.2	5.8	3.6	5.4	7.8	10.2	10.3	9.5	9.3	8.3	7.3	4.6	5.1	4.2	5.1	5.8	5.5	3.5	5.0	10.3	6.4	24	
HOURLY MAX	11.6	13.3	12.1	13.1	10.3	12.3	10.9	11.5	11.9	17.1	17.9	16.6	16.4	16.5	16.0	17.8	19.1	22.7	20.9	20.3	12.9	13.4	14.6	11.9				
HOURLY AVG	7.7	8.0	8.3	8.2	7.7	7.5	6.8	7.2	7.3	7.7	8.5	8.9	9.3	10.2	9.9	9.6	9.5	8.7	7.7	6.5	6.1	7.3	7.1	7.2				

STATUS FLAG CODES

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

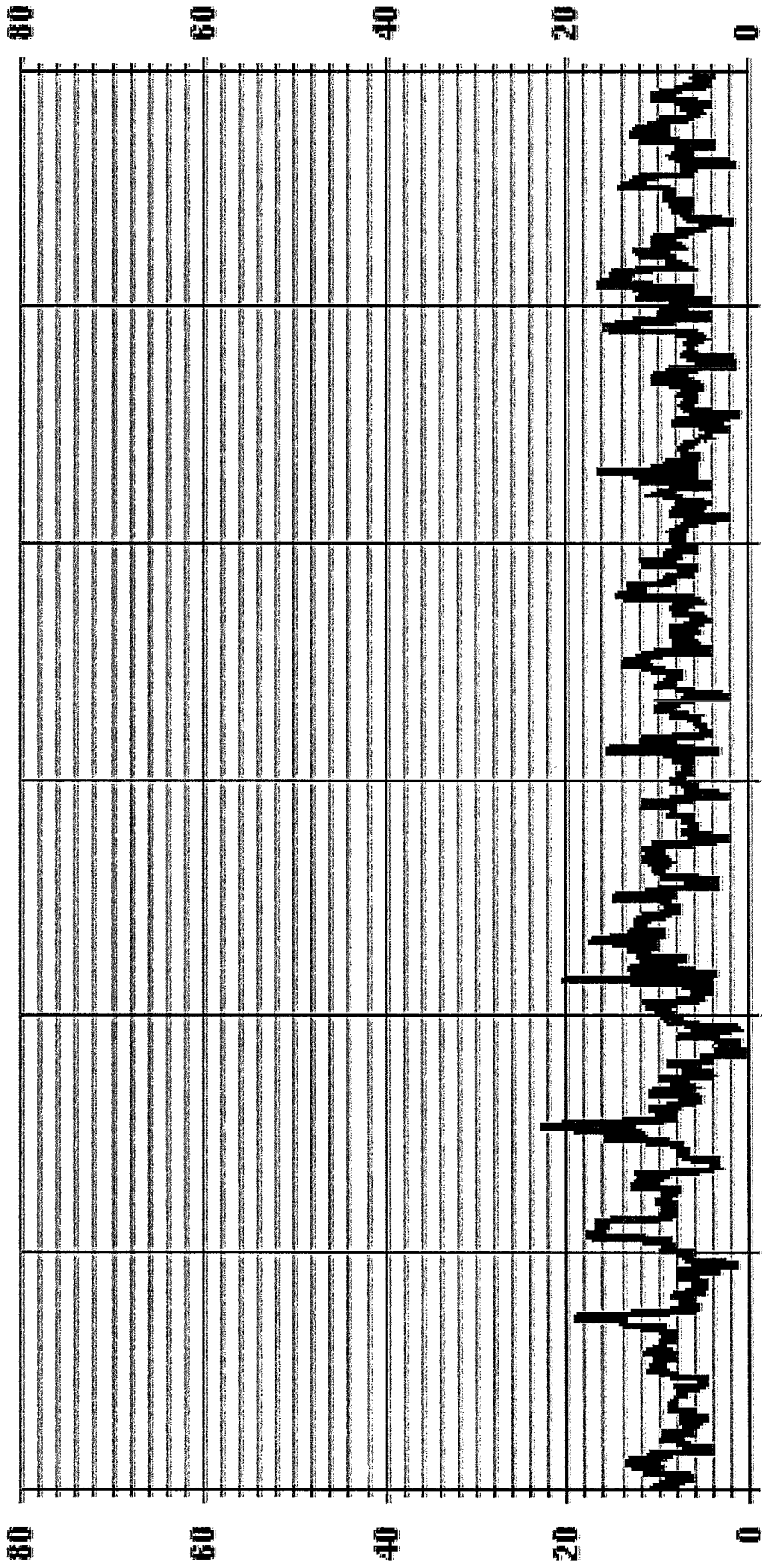
LAST CALIBRATION: August 28, 2014  
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720	ON DAY(S)	8
MAXIMUM 1-HR AVERAGE:	22.7 KPH	@ HOUR(S)	17
MAXIMUM 24-HR AVERAGE:	11.8 KPH	ON DAY(S) VAR-VARIOUS	6
MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	720 HRS
STANDARD DEVIATION:	3.22	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	8.0 KPH

01 Hour Averages



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

— LICA31 WSP KPH



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

DAY	HOURS																								24-HOUR AVG.	RODS.	
	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	17.6	18.7	19.8	19.5	20.0	16.9	16.2	22.9	24.1	24.6	R	25.8	29.6	34.0	36.6	39.2	32.5	29.1	34.2	25.8	19.0	11.0	9.7	12.7	39.2	23.5	23
2	13.8	15.9	29.0	21.5	22.6	22.6	18.4	18.4	19.3	21.3	19.6	18.7	22.1	11.6	17.1	15.8	18.2	23.5	24.1	18.4	18.6	19.5	19.3	18.7	29.0	19.5	24
3	14.1	15.2	14.5	15.2	17.3	14.0	11.6	13.4	10.6	13.6	18.3	27.2	28.4	28.8	28.4	27.7	31.9	31.9	24.9	22.4	17.1	19.4	24.8	17.8	31.9	20.4	24
4	17.8	18.5	17.2	17.0	16.9	16.9	23.0	24.2	22.2	25.3	34.7	30.4	35.6	45.4	43.8	44.9	56.1	39.1	32.3	13.4	13.4	10.5	14.1	56.1	27.3	24	
5	15.8	11.3	16.7	18.3	15.8	9.3	16.5	17.4	15.9	13.6	27.3	21.6	27.0	23.3	22.6	17.5	22.0	15.7	18.1	7.8	4.7	8.7	12.2	12.6	27.3	16.3	24
6	13.9	11.7	14.8	17.8	17.8	15.8	19.2	26.0	28.4	41.3	45.2	44.3	45.4	40.0	46.9	43.4	44.9	40.5	31.6	24.0	18.9	19.8	26.1	21.3	46.9	29.1	24
7	22.6	19.8	18.9	17.8	13.4	14.0	14.7	17.8	17.4	20.4	27.0	35.6	32.1	34.6	35.8	37.3	38.4	30.7	19.1	8.2	5.6	5.6	8.9	9.3	38.4	21.0	24
8	10.2	10.2	13.6	15.4	17.9	14.5	19.9	18.2	26.7	22.8	23.5	28.1	31.9	30.3	27.5	33.4	52.6	76.4	50.7	46.9	43.8	32.0	16.5	16.9	76.4	28.3	24
9	18.9	17.8	21.3	18.0	15.2	14.0	15.8	15.0	17.6	23.8	50.1	22.2	29.6	30.2	27.9	21.7	22.6	32.5	15.0	11.2	7.7	9.7	12.5	12.1	50.1	20.1	24
10	16.3	16.7	13.2	8.6	9.2	6.6	4.8	9.1	11.7	11.6	14.0	9.9	21.6	18.5	28.1	25.7	14.1	12.2	5.7	5.6	8.2	12.6	13.7	15.6	28.1	13.1	24
11	14.7	16.1	16.7	17.4	20.9	26.3	29.0	30.3	24.0	18.4	24.7	24.2	21.4	26.9	16.6	29.2	16.5	27.4	36.2	73.1	25.6	36.1	21.0	11.4	73.1	25.2	24
12	19.1	24.1	22.8	25.4	23.0	19.7	21.0	32.0	31.8	28.8	30.9	28.3	25.2	30.5	31.4	38.6	34.2	43.4	34.6	21.9	45.8	32.6	33.6	35.9	45.8	29.8	24
13	27.1	26.5	25.4	29.8	19.7	19.9	23.8	22.5	26.6	27.5	28.8	30.0	42.0	45.3	51.0	42.0	31.1	36.0	19.9	9.8	12.0	8.5	15.7	18.4	51.0	26.6	24
14	24.9	26.5	29.7	27.6	28.6	37.9	30.8	28.8	29.7	34.7	36.5	35.0	37.4	29.3	38.8	36.3	34.1	13.0	13.8	7.1	11.7	10.8	11.6	10.8	38.8	26.1	24
15	10.3	8.8	8.6	8.6	9.4	8.6	13.2	15.6	19.2	22.7	27.3	32.1	24.4	32.1	27.0	16.3	8.2	8.9	16.9	20.2	12.3	14.0	11.9	14.1	32.1	16.3	24
16	15.4	14.1	14.5	13.4	13.6	14.1	18.0	15.9	18.3	17.4	20.7	27.7	32.3	62.4	49.5	40.7	67.5	32.2	32.9	27.8	26.9	34.6	23.0	14.7	67.5	18.7	24
17	10.8	11.9	11.9	11.8	13.3	14.7	17.4	16.7	24.3	27.0	25.5	26.9	34.9	33.4	29.5	35.1	24.1	20.9	14.8	8.4	4.7	8.0	8.8	13.4	35.1	18.7	24
18	23.3	19.3	21.7	18.9	17.8	19.8	19.5	24.1	26.5	26.5	29.4	34.0	35.1	36.2	36.0	40.4	34.2	30.5	27.6	29.5	15.4	13.6	11.7	10.8	40.4	25.1	24
19	16.0	19.1	16.0	14.0	16.2	15.2	30.0	22.9	19.2	17.7	19.9	20.1	22.6	27.1	28.7	23.8	27.0	21.4	16.6	9.7	10.4	47.3	50.3	27.2	50.3	22.4	24
20	23.9	26.3	25.6	25.6	24.1	23.8	23.2	24.7	15.1	13.8	14.4	19.5	R	31.6	32.7	44.3	33.6	25.5	20.7	21.3	16.9	13.2	12.9	14.5	44.3	22.9	23
21	16.5	15.4	15.0	12.7	14.3	12.7	14.9	17.8	20.8	20.4	21.1	18.2	17.0	14.2	13.7	26.5	64.7	34.6	18.0	10.5	11.6	14.0	12.7	9.9	64.7	18.6	24
22	17.1	19.5	20.8	15.8	15.4	14.3	12.7	12.8	27.9	27.2	28.9	31.1	31.3	45.6	61.5	42.4	23.0	23.2	17.3	15.5	13.2	13.8	12.6	12.3	61.5	23.2	24
23	13.0	15.0	11.4	10.1	9.2	9.5	7.5	10.2	10.7	13.7	17.9	11.9	24.5	35.2	34.3	11.0	8.7	14.1	12.8	13.4	11.5	16.9	14.3	29.6	35.2	15.3	24
24	10.4	11.0	13.6	11.5	11.9	12.8	11.5	12.7	14.0	19.6	25.6	31.5	27.9	29.9	25.9	20.7	24.0	11.5	19.0	5.9	5.6	4.5	3.6	10.4	31.5	15.6	24
25	11.7	9.7	10.9	9.7	11.2	13.7	15.7	18.1	12.7	14.6	21.7	30.0	33.8	36.2	33.7	35.1	32.3	24.0	16.1	9.3	27.5	21.5	18.7	12.8	36.2	20.0	24
26	20.3	15.7	18.7	17.6	13.0	29.4	24.3	25.8	28.9	21.2	26.4	32.5	37.4	34.9	31.9	38.2	40.9	39.4	35.9	25.5	14.3	18.2	20.0	40.9	25.9	24	
27	16.9	17.4	24.6	23.7	23.1	18.1	17.6	17.2	18.8	27.8	31.3	26.6	24.6	21.8	30.8	22.9	10.7	15.0	13.1	12.0	7.6	11.3	13.5	10.9	31.3	19.1	24
28	11.5	14.8	16.5	15.4	15.0	15.9	15.2	17.9	17.0	20.1	20.7	21.2	26.4	40.8	34.1	37.8	33.8	35.4	25.5	16.8	12.6	11.7	10.9	9.5	40.8	20.7	24
29	5.9	6.7	9.1	11.7	12.9	12.8	12.4	15.2	23.8	14.4	12.0	15.6	17.2	24.6	22.0	25.5	21.6	22.9	29.2	25.7	23.2	20.0	21.1	15.2	29.2	17.5	24
30	14.3	14.3	10.4	11.7	13.0	15.2	13.6	13.4	13.0	14.9	19.6	21.3	24.0	23.3	21.3	18.5	11.5	12.4	8.9	10.6	10.0	9.7	7.5	11.9	24.0	14.3	24
HOURLY MAX	27.1	26.5	29.7	29.8	28.6	37.9	30.8	32.0	31.8	41.3	50.1	44.3	45.4	62.4	61.5	44.3	67.5	76.4	50.7	73.1	45.8	47.3	50.3	35.9	76.4	50.3	35.9
HOURLY AVG	16.1	16.3	17.4	16.7	16.4	16.6	17.7	19.2	20.5	21.6	25.7	26.1	29.1	31.9	32.1	31.0	30.1	28.0	23.0	19.2	15.9	16.9	16.3	15.5	19.2	15.9	16.3

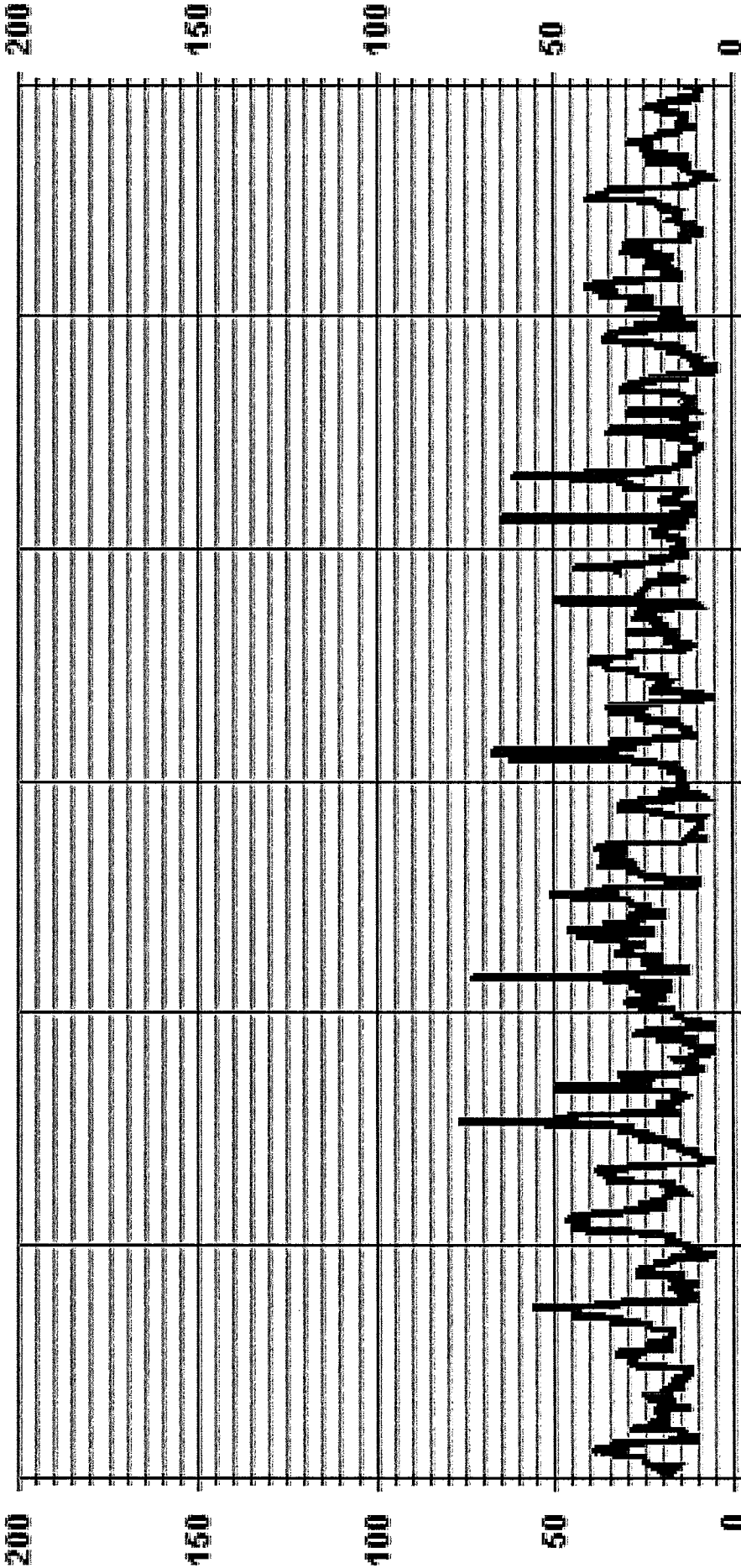
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	76.4	KPH	@	17	ON DAY(S)	8
OPERATIONAL TIME:	718	HRS	VAR-VARIOUS			

01 Hour Averages



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

— LICA31 WSMAX KPH

LICA31  
WSP / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 31  
Site Name : LICA31  
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	.83	.69	1.66	.97	1.11	.97	.55	.83	1.80	2.63	2.63	1.52	2.63	3.05	2.08	1.94	25.97
< 12.0	2.22	1.66	1.11	2.36	2.50	2.08	4.16	3.61	3.75	2.63	4.30	5.55	10.41	9.16	3.75	3.61	62.91
< 20.0	.27	.13	.00	.13	.00	.00	.55	.69	.13	.00	.83	2.77	2.22	1.66	.69	.27	10.41
< 29.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	.27	.00	.41
< 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	3.33	2.50	2.77	3.47	3.61	3.05	5.27	5.13	5.69	5.27	7.77	9.86	15.27	14.02	6.80	5.83	

Calm : .27 %

Total # Operational Hours : 720

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	6	5	12	7	8	7	4	6	13	19	19	11	19	22	15	14	187
< 12.0	16	12	8	17	18	15	30	26	27	19	31	40	75	66	27	26	453
< 20.0	2	1		1			4	5	1		6	20	16	12	5	2	75
< 29.0														1	2		3
< 39.0																	
>= 39.0																	
Totals	24	18	20	25	26	22	38	37	41	38	56	71	110	101	49	42	

Calm : .27 %

Total # Operational Hours : 720

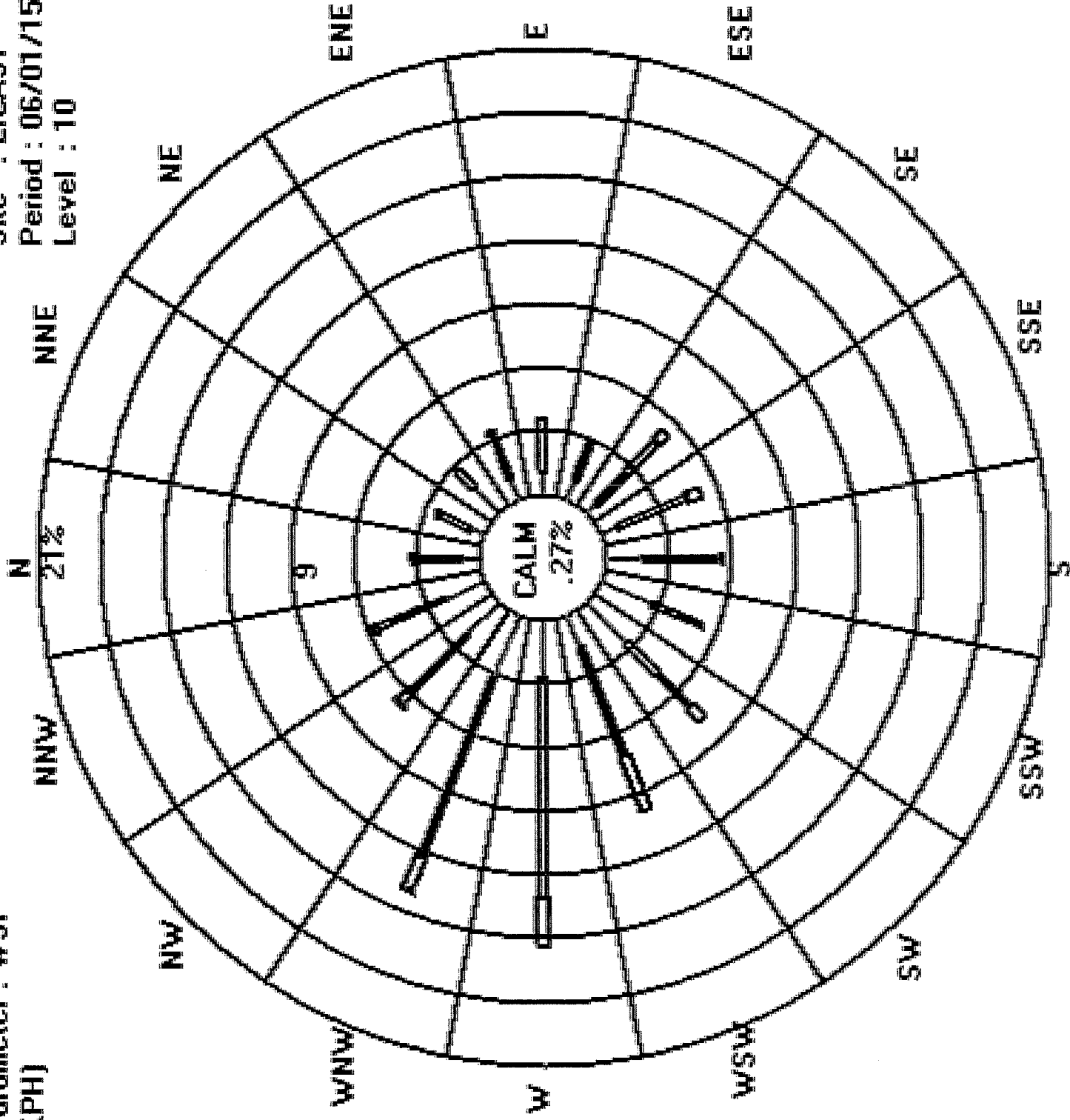
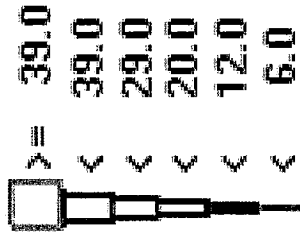
Logger : 31 Parameter : WSP

Site : LICA31

Class Limits (KPH)

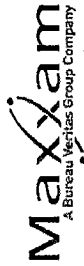
Period : 06/01/15-06/30/15

Level : 10





***WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 St. Lina Site - JUNE 2015  
 JOB # 2833-2015-07-31-C

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	24-HOUR AVG	QUADRANT	RDBS.		
1	SW	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	WNW	24		
2	NNW	N	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	
3	E	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ENE	24	
4	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ENE	24
5	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	ENE	24
6	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	S	S	S	ENE	24
7	WNW	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	ENE	24
8	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	ENE	24
9	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	W	ENE	24
10	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	ENE	24
11	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	ENE	24
12	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	WSW	ENE	24
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	W	W	W	ENE	24
14	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	ENE	24
15	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	ENE	24
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	S	S	S	ENE	24
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	N	N	N	ENE	24
18	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	SE	SE	SE	ENE	24
19	W	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	ENE	24
20	WSW	SW	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	ENE	24
21	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	W	ENE	24
22	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	W	W	ENE	24
23	W	WNW	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	ENE	24
24	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	S	S	S	ENE	24
25	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	S	S	S	ENE	24
26	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	ENE	24
27	WNW	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	ENE	24
28	SSW	SSW	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	S	ENE	24
29	ESE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	ENE	24
30	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	ENE	24

STATUS FLAG CODES

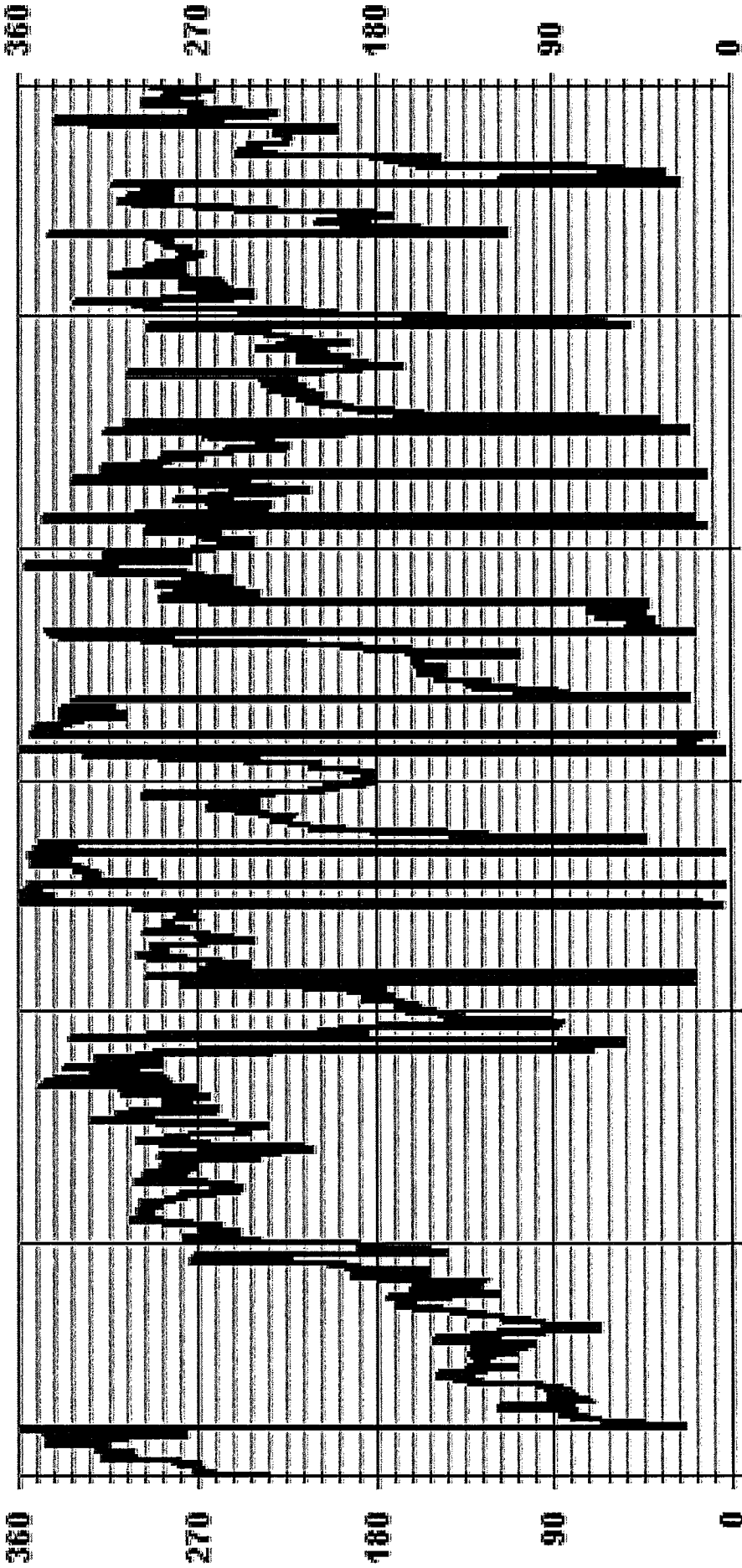
C	CALIBRATION	CL	QUALITY ASSURANCE
M	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	ROUTE TO REPAIR	IC	COLLECTION ERROR

LAST CALIBRATION: August 28, 2014  
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME: 0 HRS  
 STANDARD DEVIATION: 88.52

OPERATIONAL TIME: 720 HRS  
 MONTHLY AVERAGE: 100.0 %  
 W

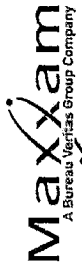
01 Hour Averages



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

— LICA31 WDR DEG

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 St. Lina Site - JUNE 2015  
 JOB # 2833-2015-07-31-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									
1	8	11	13	13	14	15	19	20	22	22	20	21	19	22	21	26	23	28	27	23	21	22	23	21	22	23	13	13	14										
2	12	14	17	16	16	18	23	22	22	24	24	23	18	23	18	23	20	19	22	19	16	16	16	16	16	16	17	17	14										
3	11	11	11	12	13	15	17	19	24	23	24	24	26	23	24	29	26	23	25	19	16	10	10	10	10	10	13	13	13										
4	12	12	12	11	9	12	13	19	24	24	24	26	26	20	24	19	20	18	18	19	14	12	11	8	10	10	10	10	10										
5	15	9	12	15	13	13	14	24	32	35	36	38	32	25	44	62	30	40	21	30	14	6	9	10	10	10	10	10	10										
6	13	11	6	11	13	9	12	16	20	17	19	22	21	24	22	23	21	20	21	16	15	15	15	15	15	16	15	15	15	15									
7	15	12	13	10	6	8	7	13	19	26	24	25	31	28	26	26	24	19	15	9	6	9	13	25	25	25	25	25	25	25									
8	9	8	10	8	10	14	17	18	20	18	14	12	16	12	14	19	19	20	19	20	20	20	20	20	20	20	20	20	20	20	20								
9	13	12	13	13	13	15	26	23	26	25	24	32	30	46	35	25	24	20	22	16	10	8	10	10	10	10	10	10	10	10	10								
10	11	12	14	14	17	26	44	29	37	68	64	55	63	45	31	37	28	38	35	38	10	9	8	8	8	8	8	8	8	8	8								
11	12	10	9	11	13	14	13	17	22	33	43	41	42	39	37	29	25	21	20	26	37	20	28	16	16	16	16	16	16	16	16								
12	7	9	10	12	15	17	23	18	20	21	23	23	23	30	19	17	17	19	20	16	17	17	17	17	17	17	17	17	17	17	17	17							
13	17	15	16	16	16	17	17	20	23	26	24	25	24	22	23	23	28	22	23	23	28	28	17	19	21	21	21	21	21	21	21	21							
14	19	19	20	19	20	25	22	21	21	22	22	26	23	25	26	26	30	24	17	21	21	23	9	8	10	10	10	10	10	10	10	10	10						
15	9	7	4	4	3	4	12	13	22	30	30	30	18	20	27	25	30	25	21	18	12	12	12	12	12	12	12	12	12	12	12	12	12						
16	10	10	12	10	12	17	21	19	26	29	45	28	35	28	35	50	25	34	23	22	21	22	21	22	20	19	19	19	19	19	19	19	19						
17	22	15	16	18	15	18	26	31	35	33	28	31	26	32	29	29	28	30	27	32	9	4	3	11	11	11	11	11	11	11	11	11	11	11					
18	10	13	14	14	14	16	18	20	19	19	19	19	19	20	19	19	21	28	20	33	15	11	13	12	11	11	11	11	11	11	11	11	11	11	11				
19	16	13	11	11	18	19	18	19	15	17	21	22	35	29	23	26	26	23	26	19	15	14	13	12	12	12	12	12	12	12	12	12	12	12	12				
20	14	15	12	8	9	10	16	17	23	27	30	30	51	54	48	33	32	27	21	11	7	10	16	5	5	5	5	5	5	5	5	5	5	5	5				
21	9	10	12	10	11	9	25	23	21	21	21	20	29	15	19	36	30	23	18	23	14	12	11	9	9	9	9	9	9	9	9	9	9	9	9	9			
22	12	12	11	7	10	9	12	19	30	38	53	48	42	53	21	19	18	51	42	15	12	18	16	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
23	8	8	13	13	8	11	12	25	26	21	22	24	33	26	30	26	21	10	17	39	15	8	9	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
24	9	8	10	9	8	12	15	18	25	28	32	30	30	25	21	19	19	21	20	16	26	16	15	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
25	8	8	10	9	8	12	15	18	25	28	32	30	30	25	21	19	19	21	20	16	26	16	15	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
26	15	11	13	13	12	16	17	24	29	16	25	21	20	21	23	21	23	21	19	16	13	10	10	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
27	12	10	13	13	12	13	15	18	21	22	25	24	32	38	34	31	23	22	18	46	12	9	9	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
28	10	11	13	14	35	11	18	15	14	22	22	22	23	26	21	25	25	21	19	18	14	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
29	44	20	7	8	8	10	15	17	14	23	28	21	21	14	13	15	16	18	18	18	16	12	11	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
30	12	16	12	12	23	15	18	24	18	12	12	16	22	28	27	28	21	23	18	13	12	10	8	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13

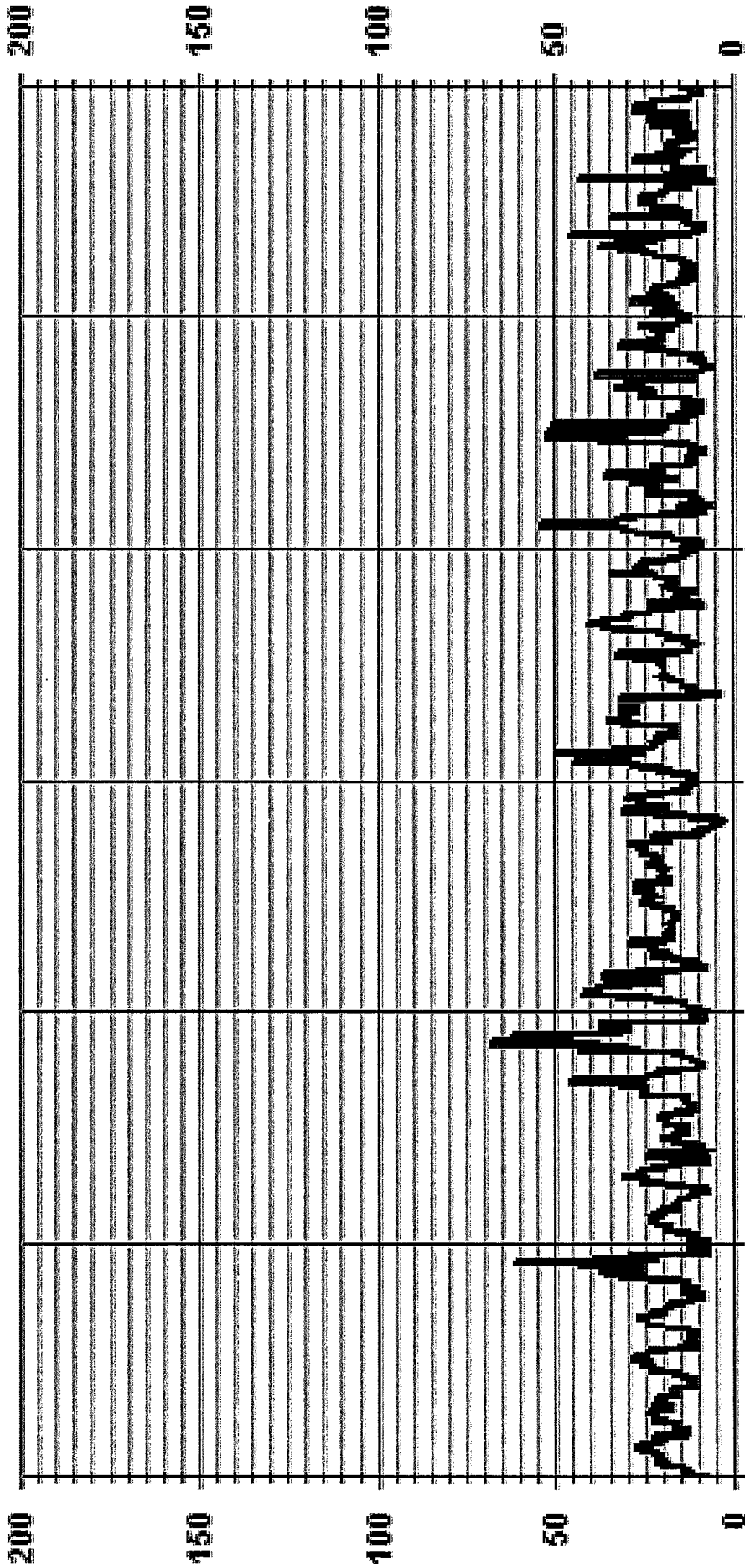
STATUS FLAG CODES

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

LAST CALIBRATION: August 28, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 720 HRS

01 Hour Averages



— LICA31 STOWDIR DEG

***RELATIVE HUMIDITY***



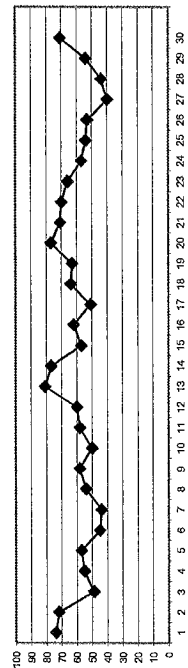
RELATIVE HUMIDITY (RH) hourly averages in %

DAY	DAILY																								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	88	84	85	87	88	86	84	82	74	74	70	74	81	72	63	63	63	59	56	59	60	68	72	74	72	88	73.5	24	
2	72	75	80	83	83	80	76	78	73	71	67	64	64	71	71	68	64	64	64	68	71	70	70	70	70	83	72.0	24	
3	70	65	64	64	65	66	68	68	66	66	66	66	58	47	40	37	32	28	24	22	25	31	39	38	42	70	49.5	24	
4	47	51	53	59	62	64	65	59	55	50	48	45	44	42	59	51	55	55	52	53	55	56	60	68	68	68	54.5	24	
5	70	70	69	68	68	69	67	63	63	58	51	48	49	52	47	46	43	42	43	48	52	54	62	70	62	56.7	24		
6	66	70	74	69	67	61	53	47	45	43	37	32	28	27	27	26	29	34	39	43	44	48	44	48	74	44.9	24		
7	51	56	52	55	61	61	61	57	48	41	36	32	29	28	27	28	28	31	36	40	43	48	47	48	61	43.5	24		
8	63	72	74	67	62	58	57	58	55	54	50	47	48	46	38	28	37	41	43	50	52	62	69	74	53.5	24			
9	70	73	72	74	75	68	62	57	51	46	41	43	39	39	41	46	48	48	50	58	62	64	71	75	75	57.6	24		
10	74	74	81	86	89	76	62	53	47	40	36	33	27	29	31	34	32	32	34	48	48	50	48	89	49.7	24			
11	47	56	62	65	63	62	61	58	53	46	42	38	35	34	35	50	43	49	56	84	88	84	85	86	88	57.6	24		
12	87	88	88	84	80	71	67	61	56	53	49	46	45	39	38	42	41	41	48	56	60	65	72	73	88	60.4	24		
13	75	80	85	86	85	85	85	88	89	86	82	77	73	72	70	69	75	79	79	83	84	88	87	88	89	81.3	24		
14	86	86	87	87	87	86	87	87	86	87	87	86	82	80	69	60	55	55	58	63	61	69	75	77	83	87	76.5	24	
15	86	87	87	87	86	77	66	57	51	44	38	40	37	36	36	39	40	38	43	45	52	60	62	66	87	56.7	24		
16	69	72	73	74	72	67	62	54	52	47	41	34	32	50	51	41	69	65	76	77	79	75	74	77	79	61.8	24		
17	78	76	78	77	67	58	48	41	40	41	36	35	36	34	33	35	36	38	40	47	52	51	69	78	50.9	24			
18	63	64	66	69	70	65	61	59	56	56	57	58	53	51	49	53	54	60	71	71	75	79	84	89	89	63.9	24		
19	86	86	86	80	81	74	66	65	61	57	53	51	46	43	45	44	47	48	51	56	60	67	72	75	87	62.5	24		
20	82	87	89	89	90	91	91	90	90	86	82	77	68	59	54	52	64	65	64	70	78	84	87	91	87	76.7	24		
21	89	90	89	89	89	87	85	79	68	61	56	60	53	47	45	45	70	64	55	62	72	74	79	85	90	70.5	24		
22	81	83	78	78	80	78	71	59	52	49	51	67	56	57	81	63	61	69	66	74	80	81	82	83	89	66.3	24		
23	84	83	88	89	82	71	64	57	48	45	48	43	52	75	61	61	52	51	41	45	44	47	69	74	89	66.3	24		
24	80	85	88	90	91	82	70	66	61	52	46	40	37	38	39	37	37	37	37	41	45	44	47	53	91	57.0	24		
25	64	70	79	80	73	64	56	50	48	44	40	37	34	31	33	34	37	39	44	59	70	75	72	80	80	53.8	24		
26	65	68	74	75	79	80	78	74	62	53	46	40	40	40	34	33	33	31	30	32	39	45	47	48	80	53.0	24		
27	53	60	52	54	57	52	48	46	41	34	31	30	29	26	25	26	28	28	31	38	42	40	45	55	60	40.5	24		
28	58	64	71	70	64	55	55	51	48	46	42	35	31	27	26	24	20	21	26	33	39	43	51	50	71	43.8	24		
29	42	36	40	49	56	57	60	57	54	52	50	50	47	45	49	45	46	49	55	63	70	75	78	80	80	54.4	24		
30	82	83	86	85	83	80	76	77	74	74	73	66	59	56	54	55	58	55	58	67	72	72	75	75	86	70.9	24		
HOURLY MAX	89	90	89	90	91	91	91	90	90	87	86	82	80	74	75	81	75	79	84	88	88	87	89	89	89	89	88	88	88
HOURLY AVG	70.7	72.7	74.4	75.6	75.8	72.0	68.0	64.4	59.9	55.7	53.0	47.0	45.2	45.1	44.8	46.0	46.8	49.1	53.4	59.5	62.8	65.5	68.8	68.8	68.8	68.8	68.8	68.8	

STATUS FLAG CODES

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

24 HOUR AVERAGES FOR JUNE 2015

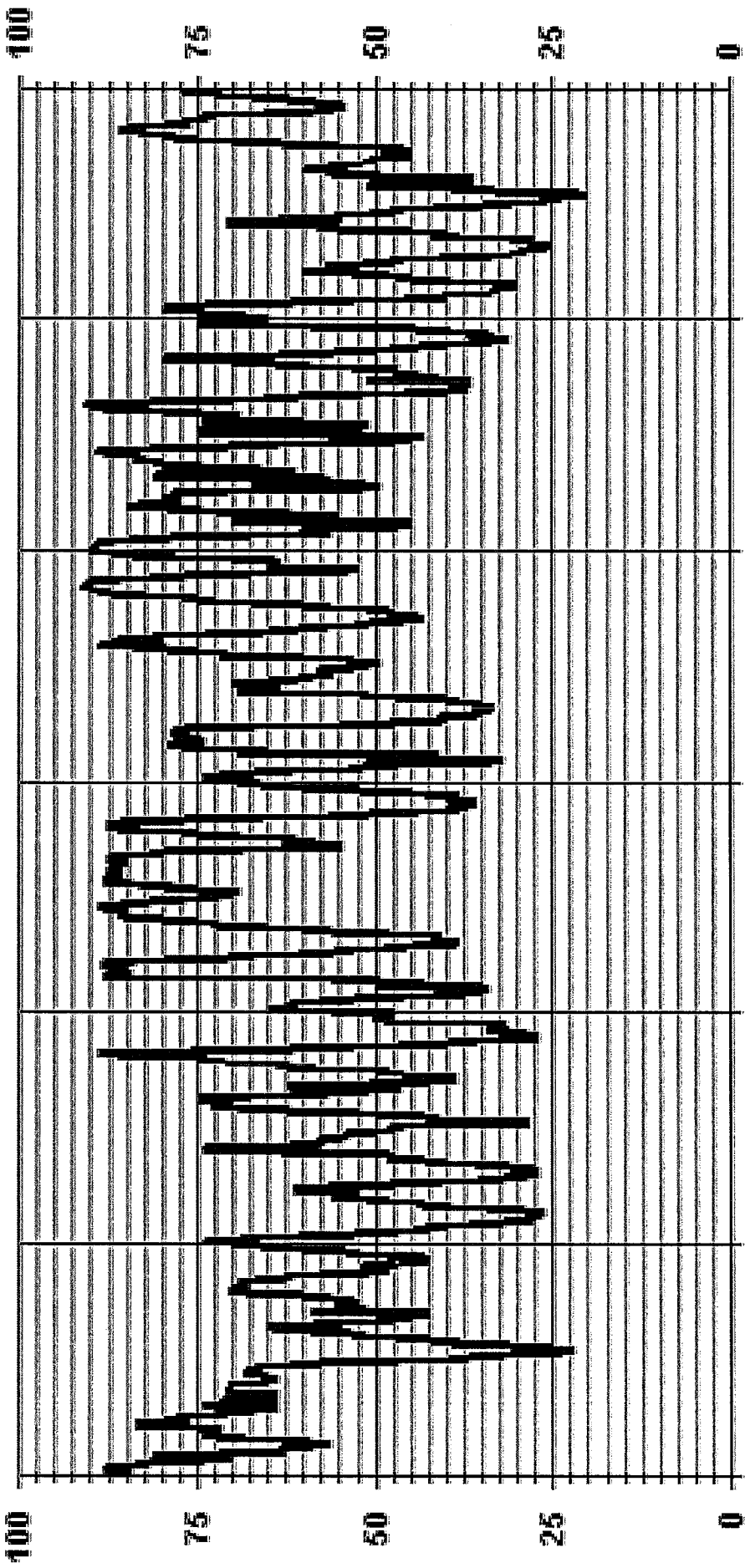


MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	91	%	@ HOUR(S)	VAR	ON DAY(S)	20, 24
MAXIMUM 24-HR AVERAGE:	81.3	%			ON DAY(S)	13
STANDARD DEVIATION:	17.38				VAR-VARIOUS	
			OPERATIONAL TIME:			720 HRS
			AMTD OPERATION UPTIME:			100.0 %
			MONTHLY AVERAGE:			59 %



01 Hour Averages



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

— LICA31 RH %FS

## ***BAROMETRIC PRESSURE***



BAROMETRIC PRESSURE (BP) hourly averages in millibar

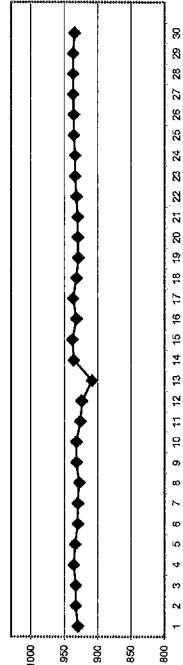
MST

DAY	DAILY																								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	925	925	925	926	926	927	927	928	930	930	931	931	932	933	933	934	934	935	934	933	932	933	933	933	933	930	24
2	933	933	932	932	932	933	934	934	934	934	934	934	934	933	933	933	932	932	932	932	932	931	931	931	931	934	24
3	931	931	931	931	931	932	932	932	933	933	934	935	935	935	935	935	935	935	935	935	934	933	933	933	933	933	24
4	933	933	934	933	934	934	934	935	936	936	937	937	937	936	936	937	937	937	937	937	937	937	937	936	936	24	
5	936	936	936	935	935	935	935	935	936	936	935	935	934	935	934	934	934	934	934	933	933	931	931	930	930	936	24
6	929	929	929	929	929	929	929	930	930	930	931	930	930	930	930	931	930	930	930	931	930	929	929	929	929	930	24
7	929	929	929	929	929	929	929	930	930	931	932	932	932	932	932	932	932	931	930	929	929	929	929	929	930	24	
8	928	927	927	927	927	927	928	928	928	928	927	928	927	927	928	929	929	929	930	930	929	929	929	929	930	24	
9	929	929	929	930	930	931	931	932	933	933	933	933	933	933	933	932	932	932	932	932	932	931	931	931	933	24	
10	931	931	931	931	931	931	931	933	934	934	934	934	934	933	933	932	932	932	932	932	932	931	931	931	933	24	
11	928	928	928	927	927	927	927	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	24	
12	923	923	923	923	923	923	923	924	924	924	924	925	925	925	925	925	925	925	925	925	925	925	925	925	926	24	
13	924	924	923	923	X	924	924	925	925	926	926	927	928	928	929	929	929	930	930	930	930	931	931	931	931	23	
14	931	932	932	932	932	933	933	934	935	935	936	937	938	938	938	939	939	939	940	940	941	941	939	939	941	24	
15	939	939	939	939	939	939	939	940	941	941	941	941	941	940	939	938	938	938	938	937	937	936	935	934	938	24	
16	933	932	932	931	931	931	931	932	933	933	933	933	933	933	933	932	932	932	932	932	932	932	932	932	932	24	
17	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	24	
18	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	24	
19	927	927	927	927	927	927	927	928	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	929	24	
20	929	929	928	928	928	928	928	928	929	929	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	24	
21	928	928	928	928	928	928	928	928	929	929	930	930	930	931	931	931	931	931	931	931	931	931	931	931	931	24	
22	929	930	930	930	930	931	931	931	932	932	933	933	932	932	932	933	933	933	933	933	933	933	933	933	933	24	
23	933	933	933	933	933	933	933	934	935	935	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	24	
24	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	932	24	
25	934	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	24	
26	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	24	
27	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	24	
28	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	24	
29	937	937	937	936	936	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	937	24	
30	935	934	934	933	933	933	934	934	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	24	
HOURLY MAX	939	939	939	939	939	939	940	941	941	941	941	940	940	939	939	939	939	939	939	939	939	939	939	939	939	939	
HOURLY AVG	931	931	931	931	931	931	932	932	933	933	934	934	934	934	934	934	934	934	934	933	933	933	933	933	932	932	

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

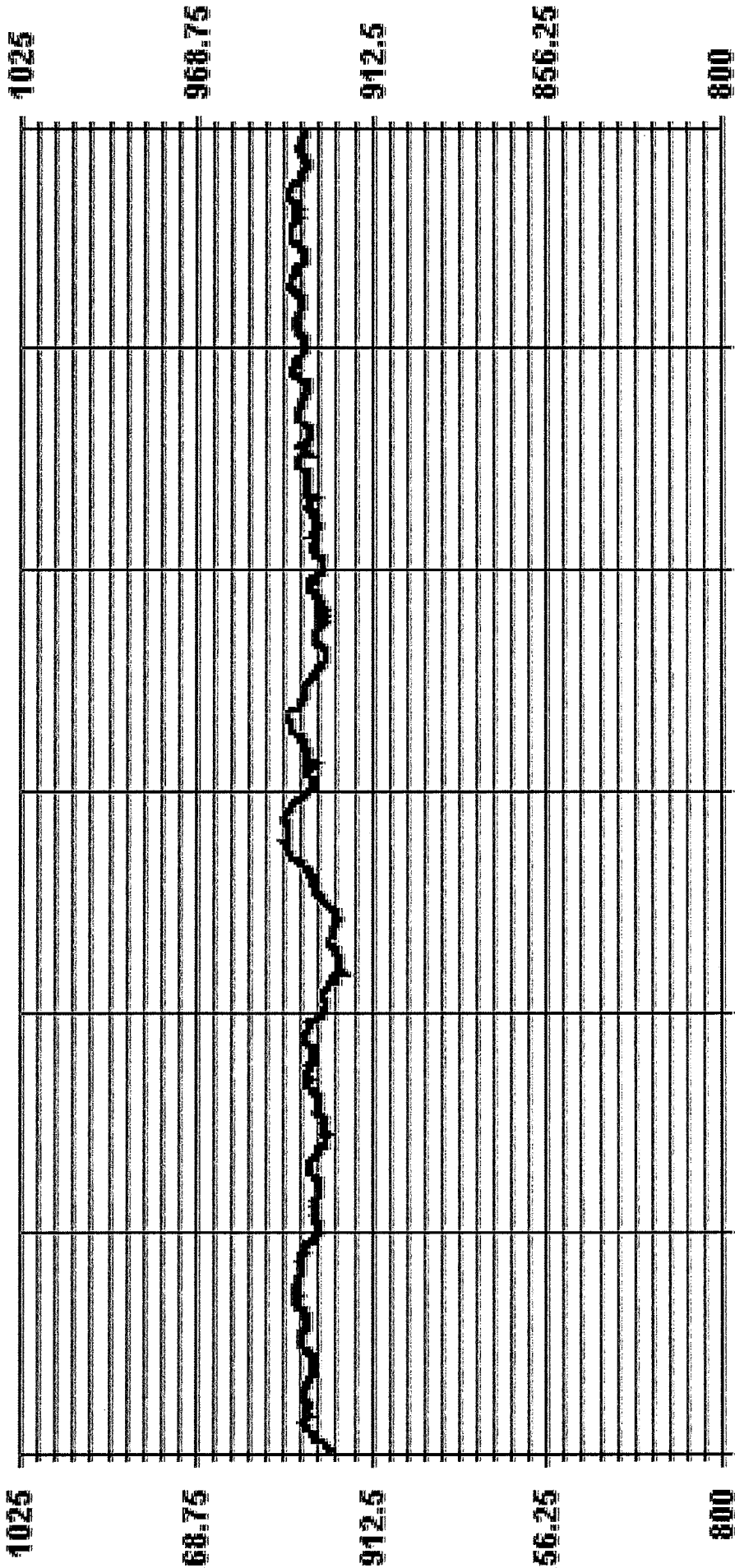
24-HOUR AVERAGES FOR JUNE 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	941	MB	@ HOUR(S)	VAR	ON DAY(S)	14, 15
MAXIMUM 24-HR AVERAGE:	938	MB			ON DAY(S)	15
STANDARD DEVIATION:	3.90				VAR-YARIOUS	
OPERATIONAL TIME:	719	HRS				
AMD OPERATION UPTIME:	99.9	%				
MONTHLY AVERAGE:	933	MB				

# 01 Hour Averages



— LICA31 BP MB

***AMBIENT TEMPERATURE***



AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

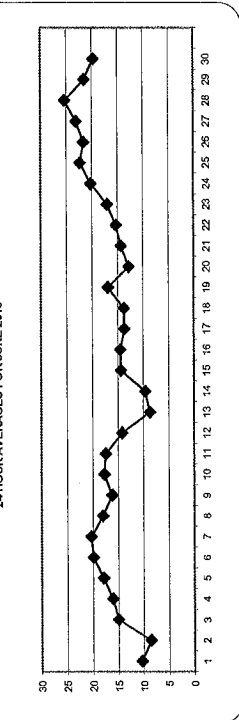
MST

DAY	HOURLY AVERAGE																								DAILY MAX.	DAILY AVG.	ROSG.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1	7.5	8.2	7.8	7.4	7.1	7.9	9.4	10.9	13.2	13.4	12.3	10.7	13.0	14.4	13.8	13.0	13.7	13.5	12.0	10.7	8.7	7.0	6.5	6.7	14.4	10.4	24	
2	6.7	5.9	4.4	2.8	3.1	4.8	6.8	6.8	8.9	9.8	10.7	10.7	10.3	9.5	10.4	10.4	10.2	10.8	11.9	11.8	10.8	10.3	10.0	9.8	8.6	11.9	8.6	24
3	9.4	9.8	9.6	9.6	9.8	10.4	11.2	11.9	12.9	14.5	16.3	17.4	18.0	19.5	20.4	21.1	21.2	21.2	20.1	18.7	16.0	14.3	13.7	12.7	21.2	15.0	24	
4	12.1	13.1	11.9	10.1	9.5	9.3	11.0	14.6	17.0	19.5	20.7	21.8	22.0	22.8	23.1	23.0	23.1	23.3	23.2	20.8	18.8	16.0	14.5	13.0	22.8	16.1	24	
5	13.3	13.1	13.4	13.6	13.4	13.2	14.0	15.9	17.1	18.3	19.6	20.1	20.6	20.4	22.2	22.3	23.1	23.3	23.2	20.8	18.8	16.0	14.5	13.0	22.8	16.1	24	
6	15.4	14.4	13.1	13.8	13.9	15.8	19.0	20.7	21.2	21.9	22.5	22.9	24.1	25.1	25.0	25.1	24.8	24.5	23.7	21.5	19.1	17.7	17.2	16.0	25.1	19.9	24	
7	15.2	14.2	14.3	13.4	11.8	12.9	14.5	16.3	20.0	22.8	24.5	25.9	26.5	26.7	26.6	26.2	24.8	23.8	22.3	21.1	19.9	19.9	19.7	20.3	26.7	20.3	24	
8	17.3	15.5	14.8	15.3	16.2	17.1	17.8	18.4	19.6	18.9	18.6	19.6	20.9	20.6	21.7	24.0	23.9	20.9	18.7	17.8	15.9	14.6	12.4	11.1	24.0	18.0	24	
9	11.2	10.6	11.0	10.4	10.2	12.2	15.4	17.5	19.5	20.8	17.2	17.3	20.2	21.4	22.2	22.3	21.6	22.1	21.8	20.2	17.5	16.3	15.8	15.4	23.4	17.7	24	
10	11.7	11.3	9.9	9.1	8.1	11.9	16.6	18.4	19.7	21.4	22.0	21.7	23.4	22.7	23.3	22.6	21.6	22.1	21.8	20.2	17.5	16.3	15.8	15.4	23.4	17.7	24	
11	15.0	13.5	12.4	12.4	13.3	14.0	15.1	16.5	18.9	21.3	22.5	23.5	24.9	25.3	25.0	22.6	23.9	21.9	18.8	13.2	11.2	11.3	10.8	10.7	25.3	17.4	24	
12	10.4	10.1	10.0	9.9	9.9	10.6	11.3	13.0	14.6	16.1	17.1	17.8	17.9	19.7	20.2	18.9	18.7	18.5	16.1	14.6	13.5	11.8	10.4	9.0	20.2	14.2	24	
13	7.9	6.9	6.4	6.3	6.8	7.3	7.7	7.6	8.0	8.6	9.3	10.2	10.9	11.2	11.1	11.1	10.5	9.8	9.7	9.1	8.6	8.2	8.1	8.0	11.2	8.7	24	
14	7.9	7.6	7.1	6.6	6.5	6.8	6.9	6.9	7.3	7.8	9.2	9.7	12.2	14.0	14.7	14.3	14.2	12.9	12.7	11.1	9.5	9.2	8.1	14.7	9.6	24		
15	7.3	6.9	7.2	7.1	6.8	9.3	13.2	15.8	17.8	19.0	19.4	17.5	19.0	19.6	19.3	18.7	18.7	19.2	17.9	16.6	14.0	12.5	12.0	10.8	19.6	14.4	24	
16	10.2	9.4	8.8	8.4	8.8	10.9	13.2	17.3	18.8	20.5	22.0	23.0	23.7	18.3	17.5	21.2	14.5	15.6	14.2	12.6	11.4	10.2	9.2	8.7	23.7	14.5	24	
17	8.3	8.3	8.3	8.4	8.1	10.4	13.2	14.3	15.9	16.7	16.2	17.4	17.8	17.5	18.2	18.3	17.6	17.1	16.4	15.3	13.5	12.0	11.2	8.5	18.3	13.7	24	
18	8.6	9.0	8.4	7.9	7.9	9.7	11.9	12.4	13.3	14.1	14.9	15.4	16.4	17.2	18.2	18.9	20.4	19.0	17.4	16.6	15.4	14.3	13.2	11.8	20.4	13.8	24	
19	11.9	11.4	10.6	10.9	10.6	12.7	15.5	16.9	18.4	19.6	20.9	21.5	22.5	22.9	22.4	22.5	21.6	20.8	19.5	17.8	16.2	14.3	12.6	11.5	22.9	16.9	24	
20	11.4	11.2	10.6	10.3	10.1	10.1	10.2	10.2	10.4	11.4	12.7	13.9	16.2	17.5	17.5	18.0	16.5	15.8	15.1	14.4	13.8	12.6	11.0	9.2	18.0	12.8	24	
21	8.5	7.6	7.8	7.7	8.3	8.7	9.9	11.9	15.5	17.7	19.1	18.2	20.0	21.0	21.2	21.6	15.6	17.2	17.6	15.7	14.4	13.8	12.6	11.0	21.6	14.3	24	
22	11.1	10.4	10.4	10.2	10.2	12.7	16.1	19.4	20.2	21.0	21.5	18.4	17.7	16.7	13.7	18.5	18.9	16.6	17.2	15.3	13.9	12.5	12.5	11.5	21.5	15.3	24	
23	11.8	11.9	10.3	9.7	9.0	11.6	16.0	19.2	21.0	22.2	22.2	21.3	23.3	20.2	15.2	19.1	19.9	21.6	17.1	19.4	15.8	15.0	15.2	14.7	23.3	17.0	24	
24	13.6	12.7	11.4	10.3	10.1	12.8	17.0	19.3	21.6	23.9	25.0	25.9	25.9	26.0	26.1	27.0	26.4	22.7	24.0	22.0	21.6	20.1	19.9	18.6	27.0	20.2	24	
25	17.6	16.7	15.3	13.6	13.2	15.8	19.4	22.4	24.9	26.3	27.1	27.4	28.6	29.5	29.5	28.3	27.9	27.3	26.7	25.6	20.5	17.3	16.5	16.8	29.5	22.3	24	
26	17.3	17.1	16.6	16.1	16.2	16.0	16.4	17.2	18.1	21.6	24.3	26.3	27.6	28.9	29.1	28.6	28.8	27.4	27.6	27.1	26.9	26.1	24.7	22.4	20.4	19.3	18.1	24
27	17.3	15.8	16.2	15.9	14.9	16.4	18.9	21.3	23.8	25.6	26.6	26.6	27.6	28.9	28.9	29.1	28.6	28.8	27.4	26.3	24.5	23.0	21.8	20.7	29.1	23.1	24	
28	20.0	18.9	18.0	18.2	18.9	20.3	22.4	25.7	26.9	28.2	29.4	30.4	31.1	30.7	34.3	31.0	30.7	29.9	28.7	27.2	25.0	23.3	20.8	19.7	31.3	25.3	24	
29	20.6	21.4	19.4	17.4	16.7	17.7	18.6	19.2	20.4	22.7	24.0	24.3	26.3	25.7	25.4	26.2	26.1	25.8	24.3	21.4	19.7	18.3	17.6	16.9	26.3	21.5	24	
30	16.5	16.4	15.8	15.7	16.1	16.5	17.6	18.0	19.1	19.2	19.9	21.5	23.7	24.4	24.7	24.2	24.2	23.1	22.0	20.5	19.2	18.6	17.9	18.3	24.7	19.7	24	
HOURLY MAX	20.6	21.4	19.4	18.2	18.9	20.3	22.4	25.7	26.9	28.2	29.4	30.4	31.1	30.7	31.3	31.0	30.7	29.9	28.7	27.2	25.0	23.3	21.8	20.7				
HOURLY AVG	12.4	11.9	11.4	11.0	11.0	12.2	14.1	15.8	17.4	18.8	19.5	20.0	21.0	21.2	21.1	21.3	20.9	20.5	19.5	18.0	16.2	14.9	14.0	13.2				

STATUS FLAG CODES

G	CALIBRATION	G	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DATA ZERO/SIGNAL CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT-OF-REPAIR	K	COLLECTION ERROR

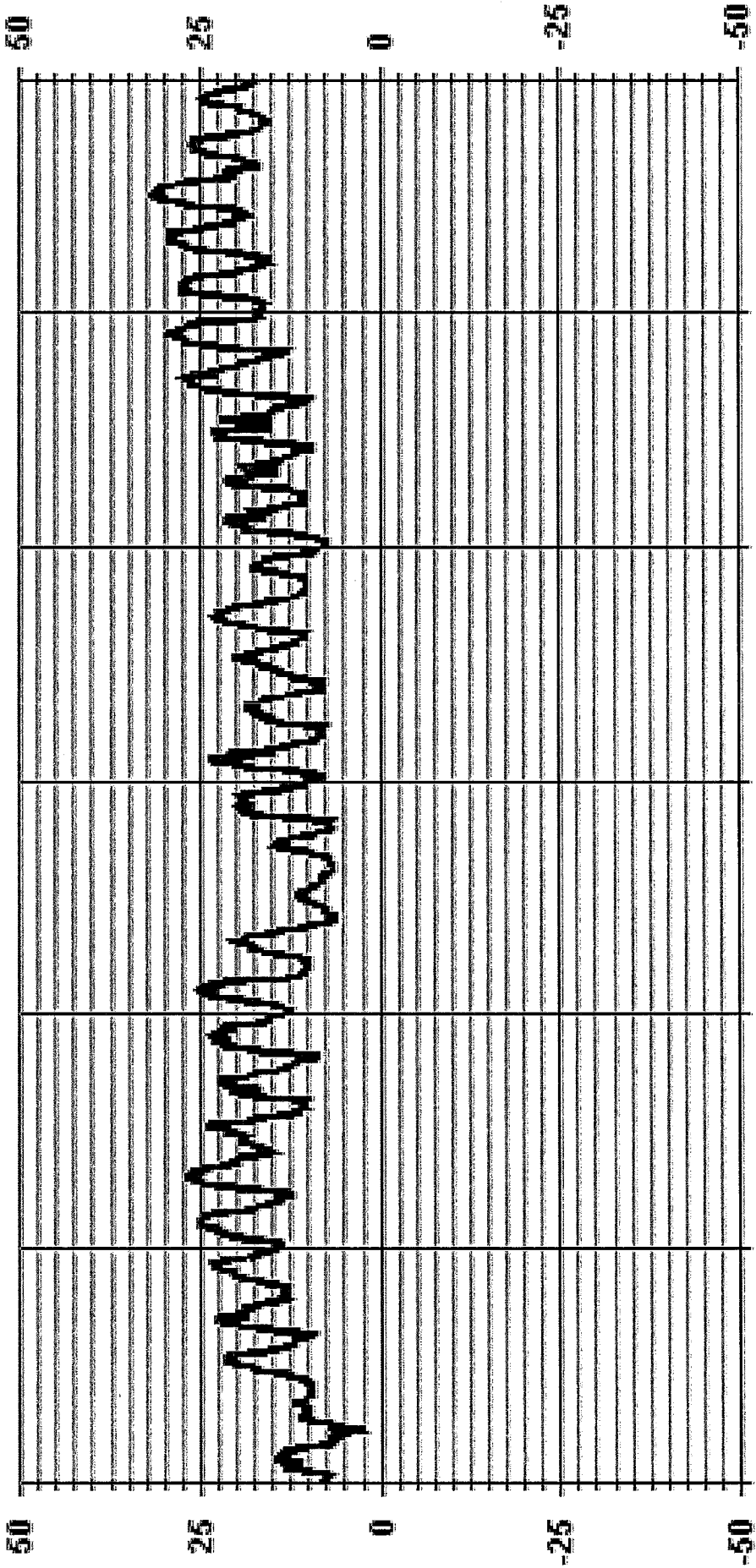
24 HOUR AVERAGES FOR JUNE 2015



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	2.8	°C	@ HOUR(S)	3	ON DAY(S)	2
MAXIMUM 1-HR AVERAGE:	31.3	°C	@ HOUR(S)	14	ON DAY(S)	28
MAXIMUM 24-HR AVERAGE:	25.3	°C	VAR-VARIOUS		ON DAY(S)	28
STANDARD DEVIATION:	5.86					
OPERATIONAL TIME:						720 HRS
AMD OPERATION UPTIME:						100.0 %
MONTHLY AVERAGE:						16.5 °C

01 Hour Averages



— LICA31 TPX DGC

## ***PRECIPITATION***



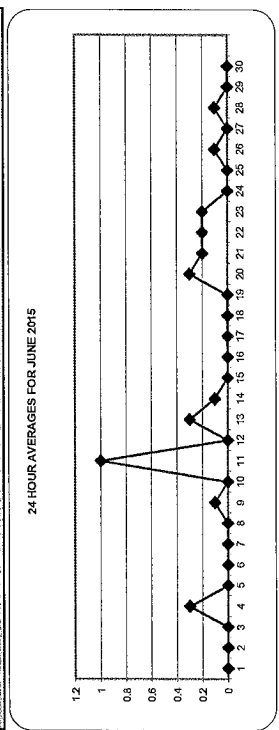


PRECIPITATION hourly averages (mm)

DAY	DAILY																								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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	23	
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	0.4	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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	23
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	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	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	20
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	0.1	0.0	0.0	0.2	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	0.0	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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.9	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	0.0	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	0.1	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
HOURLY MAX	0.1	0.9	0.4	2.6	2.1	1.3	1.1	1.5	1.1	0.3	2.0	0.3	2.3	2.2	4.2	0.5	4.4	1.1	0.3	12.9	9.0	1.5	0.6	0.4					
HOURLY AVG	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0

STATUS FLAG CODES

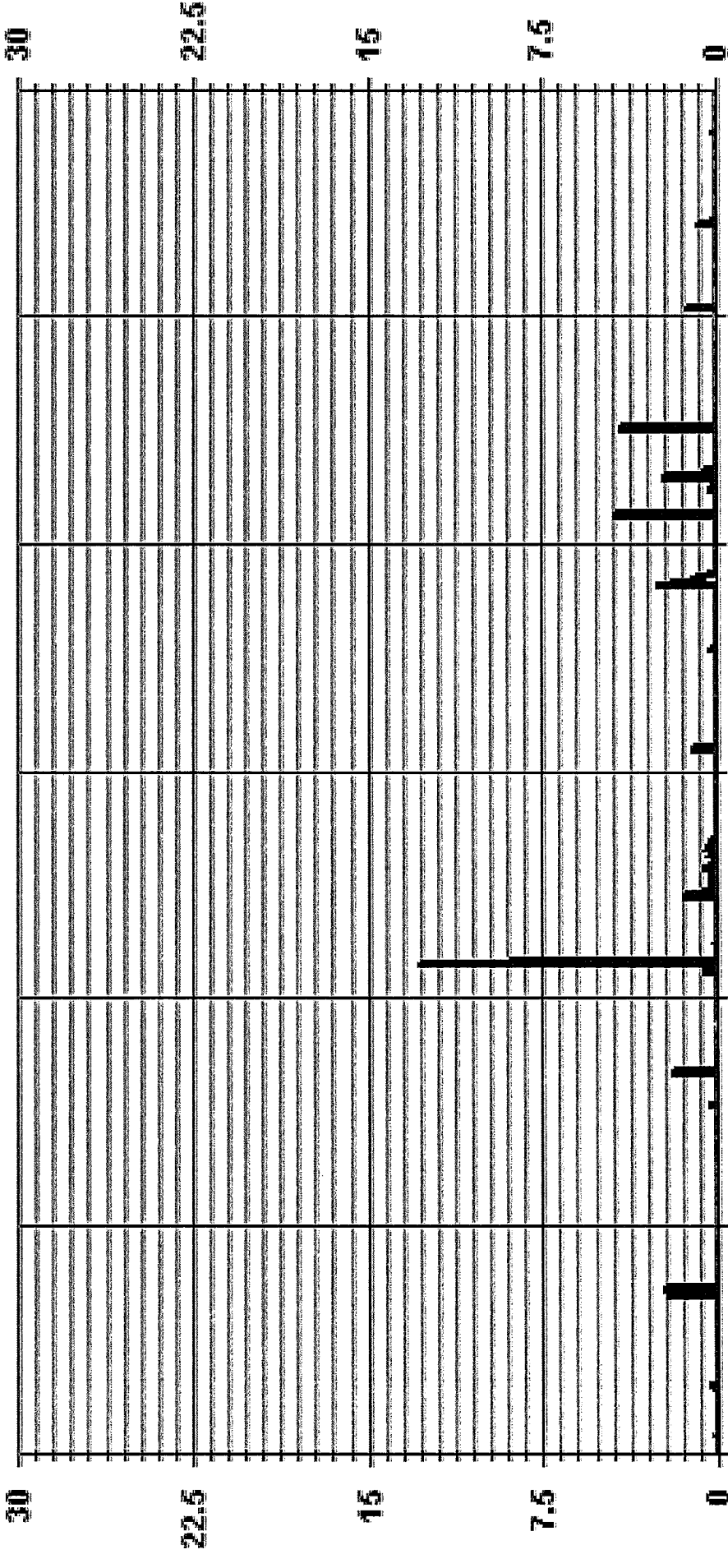
C	CALIBRATION	G	QUALITY ASSURANCE
V	MAINTENANCE	R	RECOVERY
S	DAILY ZERO / SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
F	OUT-OF-REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	12.9	MM	@ HOUR(S)	19	ON DAY(S)	11
MAXIMUM 24-HR AVERAGE:	1.0	MM			ON DAY(S)	11
MONTHLY TOTAL	66.9	MM			VAR-VARIOUS	
STANDARD DEVIATION:	0.68					
OPERATIONAL TIME:						714 HRS
AMTD OPERATION UPTIME:						99.2 %
MONTHLY AVERAGE:						0.1 MM

01 Hour Averages

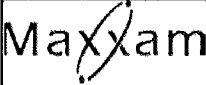


06/01/15 00:00 06/06/15 00:00 06/11/15 00:00 06/16/15 00:00 06/21/15 00:00 06/26/15 00:00

— LICA31 PRECIP MM

***APPENDIX II***  
***ANALYZER CALIBRATION RESULTS***

***SULPHUR DIOXIDE***



## API 100E SO2 Analyzer Calibration

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Date: 9-Jun-15

Company: LICA

Station Name/Location: St.Lina

Performed by: Alex Yakupov

Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: SO2

Start/End Time (mst): 12:47 - 17:15

Calibration Purpose: Monthly Calibration

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Mar-19

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Analyzer:

Serial Number: 468

Last Calibration Date: 13-May-15

Previous Cal High Point C.F.: 1.000

Range ppb: 1000

As Found C.F.: 0.993

New C.F.: 1.001

---

**As found:**

SLOPE: 0.956

OFFSET: 64.5

HVPS: 532

RCELL TEMP: 50.0

BOX TEMP: 28.7

PMT TEMP: 7.8

IZS TEMP: 40.0

TEST: NA

STABIL: 0.0

PRES: 24.1

SAMP FL: 577

PMT: 65.5

NORM PMT: 68.4

UV LAMP: 2035.8

LAMP RATIO: 82.3

STR. LGT: 30.9

DRK PMT: 18.2

DRK LMP: 3.6

Internal Span: 242

**As left:**

SLOPE: 0.950

OFFSET: 68.6

HVPS: 532

RCELL TEMP: 50.0

BOX TEMP: 28.6

PMT TEMP: 7.8

IZS TEMP: 40.0

TEST: NA

STABIL: 0.1

PRES: 24.0

SAMP FL: 577

PMT: 62.4

NORM PMT: 68.8

UV LAMP: 2033.6

LAMP RATIO: 82.2

STR. LGT: 32.6

DRK PMT: 17.9

DRK LMP: 3.6

Internal Span: 237

---

Calibrator:

Flow Meter ID's: NA

Make & Model: EnviroNics 6100

Serial #: 4760

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	4995	0	4995
high	4916	78	4994
mid	4957	38	4995
low	4975	19	4994

---

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	2.0	NA
adjusted zero	4994	0.0	4994	0	0.0	NA
as found high	4921	73.95	4995	732.8	738.0	0.993
adjusted high	4921	73.95	4995	732.8	733.0	1.000
mid	4958	37.45	4995	371.1	371.0	1.000
low	4975	18.71	4994	185.5	185.0	1.003
calibrator zero	4994	0.00	4994	0	0.0	NA
Average C.F.=						1.001

---

**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>0.70%</u>	± 3% F.S.	PASS
		± 15%	PASS

**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**

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

SO<sub>2</sub> High Point gas concentration: NA      Time gas run (mst): NA

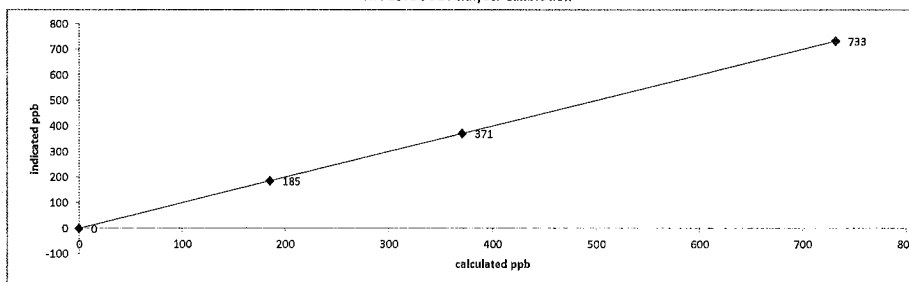
Zero corrected analyzer response: NA

---

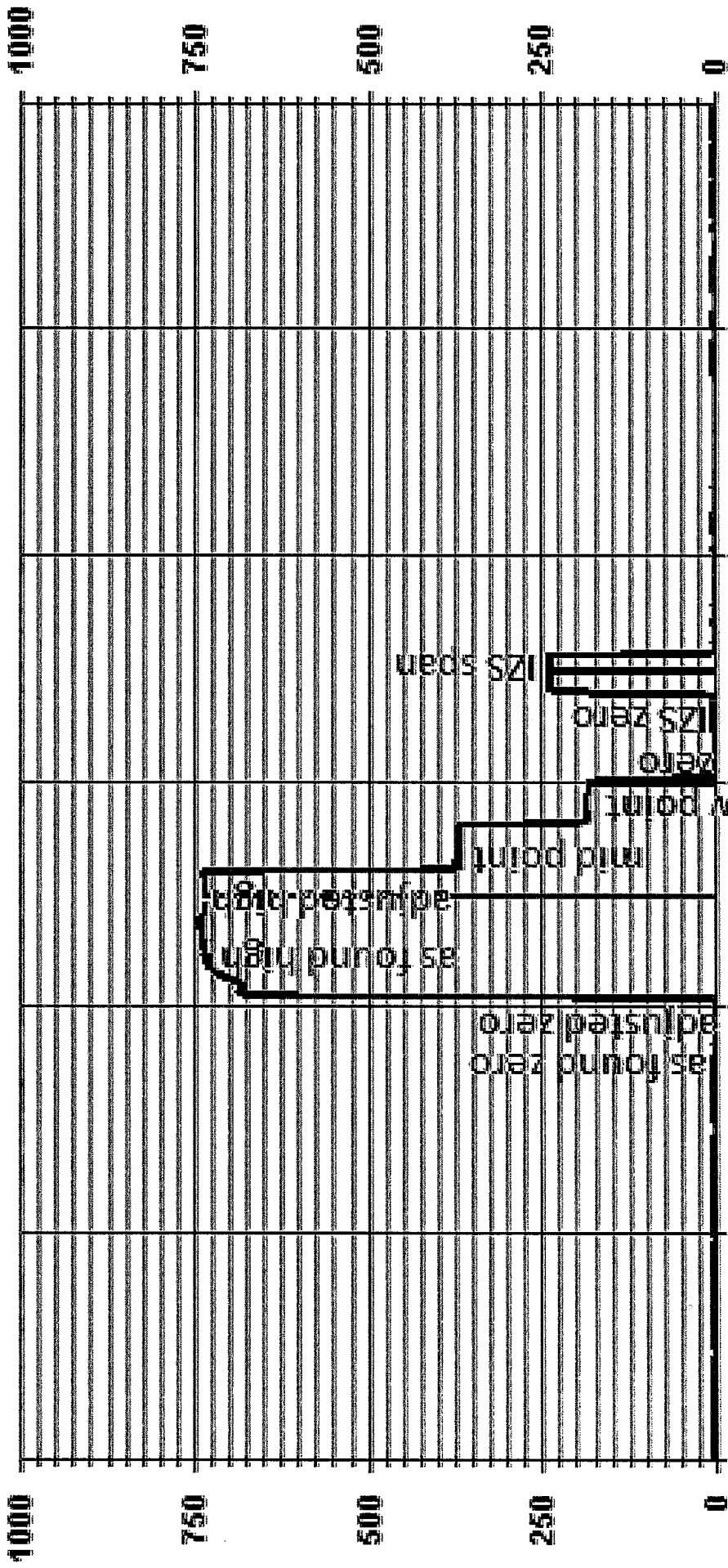
Comments:

Sample filter changed.

API 100E SO2 Analyzer Calibration

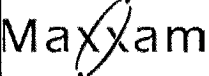


01 Minute Averages



— LICA31 SO2\_ PPB

***HYDROGEN SULPHIDE***



## API 101E H2S Analyzer Calibration

---

**Date:** 9-Jun-15

**Company:** LICA

**Station Name/Location:** St.Lina

**Performed by:** Alex Yakupov

**Application H<sub>2</sub>S/TRS/SO<sub>2</sub>:** H2S

**Start/End Time (mst):** 12:47 - 17:20

**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:** 14-May-15

**Previous Cal High Point C.F.:** 1.000

**Range ppb:** 100

**As Found C.F.:** 1.003

**New C.F.:** 1.005

**As found:**

SLOPE: 1.085

OFFSET: 32.9

HVPS: 488

RCELL TEMP: 50.0

BOX TEMP: 29.9

PMT TEMP: 7.9

IZS TEMP: 48.0

TEST: 314.0

STABIL: 0.2

PRES: 20.5

SAMP FL: 544

PMT: 33.7

NORM PMT: 34.6

UV LAMP: 3234.4

LAMP RATIO: 97.5

STR. LGT: 17.8

DRK PMT: 9.2

DRK LMP: 0.8

Internal Span: 56.3

**As left:**

SLOPE: 1.092

OFFSET: 33.6

HVPS: 488

RCELL TEMP: 50.0

BOX TEMP: 29.5

PMT TEMP: 7.9

IZS TEMP: 48.0

TEST: 313.8

STABIL: 0.1

PRES: 20.5

SAMP FL: 544

PMT: 30.2

NORM PMT: 34.1

UV LAMP: 3231.1

LAMP RATIO: 97.4

STR. LGT: 18.8

DRK PMT: 9.0

DRK LMP: 0.8

Internal Span: 54

---

**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	4999	0.0	4999	0	1.2	NA
adjusted zero	4999	0.0	4999	0	0.0	NA
as found high	4961	39.00	5000	78.0	77.8	1.003
adjusted high	4961	39.00	5000	78.0	78.0	1.000
mid	4979	19.00	4998	38.0	38.0	1.000
low	4990	11.00	5001	22.0	21.7	1.014
calibrator zero	4999	0.00	4999	0	0.0	NA
<b>Average C.F.=</b>						<b>1.005</b>

---

**Linear Regression/Calibration Results:**

Correlation Coefficient = <u>1.000</u>	<b>LIMITS</b>	<b>Pass/Fail ?</b>
Slope = <u>0.999</u>	<b>&gt; or = 0.995</b>	<b>PASS</b>
b (Intercept as % of full scale) = <u>0.12%</u>	<b>0.85-1.15</b>	<b>PASS</b>
% change in C.F. from last cal = <u>-0.26%</u>	<b>± 3% F.S.</b>	<b>PASS</b>
	<b>± 15%</b>	<b>PASS</b>

**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**

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

SO<sub>2</sub> High Point gas concentration: 22 ppb      Time gas run (mst): 13:58 - 14:02

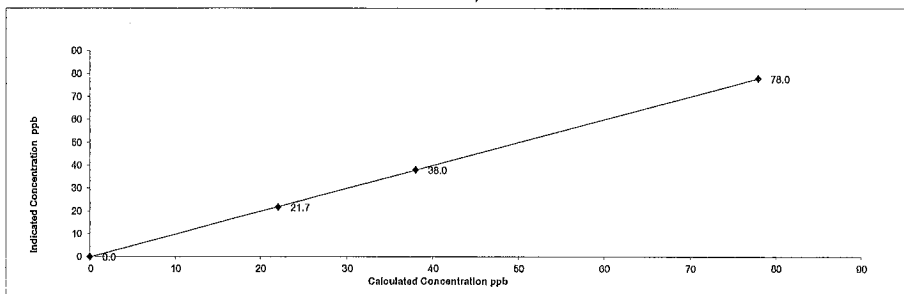
Zero corrected analyzer response: 0.2

---

**Comments:**

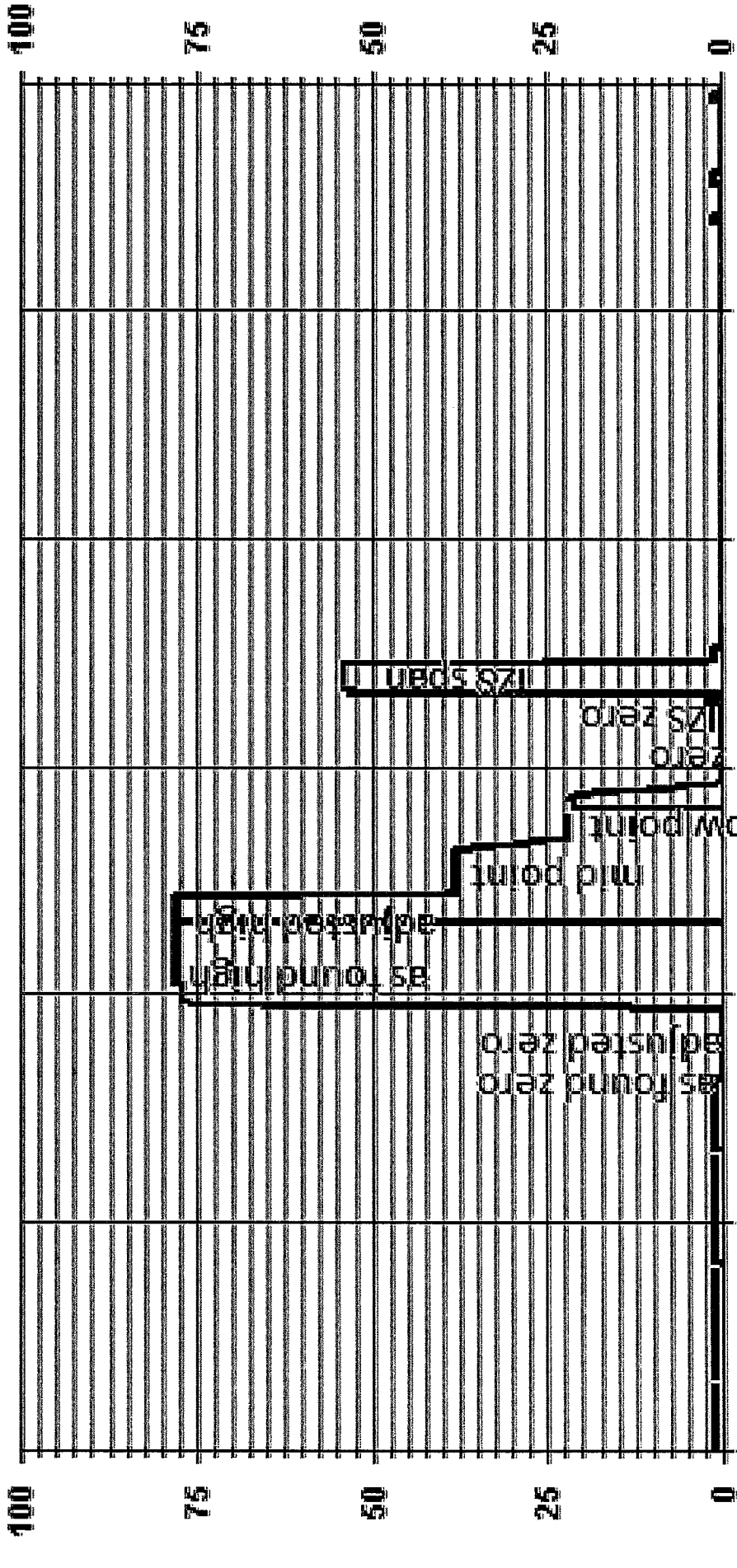
Sample filter changed.

API 101E H2S Analyzer Calibration





# 01 Minute Averages



— LICA31 H2S\_ PPB

***TOTAL HYDROCARBON***

# Maxxam Thermo 51C THC Analyzer Calibration

Date: 6-Jun-15 Start Time (mst): 12:14  
 Company: LICA End Time (mst): 14:50  
 Station Name/Location: St. Lina Calibration Purpose: Removal Calibration  
 Performed by: Alex Yakupov Cal Gas Expiry Date: 12-Aug-17

**Analyzer:**  
 Serial Number: 436609739 Range ppm: 50  
 Last Calibration Date: 12-May-15 As Found C.F.: 1.114  
 Previous Cal High Point C.F.: 1.002 New C.F.: NA

	<b>As found:</b>		<b>As left:</b>
H <sub>2</sub> cylinder (psi):	<u>1300</u>	H <sub>2</sub> cylinder (psi):	<u>NA</u>
H <sub>2</sub> cylinder reg set (psi):	<u>32</u>	H <sub>2</sub> cylinder reg set (psi):	<u>NA</u>
Span Cylinder (psi):	<u>150</u>	Span Cylinder (psi):	<u>NA</u>
Span Cylinder Reg Set (psi):	<u>45</u>	Span Cylinder Reg Set (psi):	<u>NA</u>
Zero Air Gen Pressure:	<u>42</u>	Zero Air Gen Pressure:	<u>NA</u>
measurement alarms:	<u>Flow Low</u>	measurement alarms:	<u>NA</u>
service alarms:	<u>None</u>	service alarms:	<u>NA</u>

**FID status:**

cnt:	<u>2035</u>	cnt:	<u>NA</u>
rng:	<u>1</u>	rng:	<u>NA</u>
try:	<u>1</u>	try:	<u>NA</u>
flm:	<u>202.2</u>	flm:	<u>NA</u>
det:	<u>125.3</u>	det:	<u>NA</u>

**Oven Readings:**

Flame:	<u>202</u>	Flame:	<u>NA</u>
Filter:	<u>125</u>	Filter:	<u>NA</u>
Base:	<u>125</u>	Base:	<u>NA</u>
Pump:	<u>06.54</u>	Pump:	<u>NA</u>

**Voltages:**

+5	<u>4.9</u>	+5	<u>NA</u>
+15	<u>14.9</u>	+15	<u>NA</u>
-15	<u>-15.0</u>	-15	<u>NA</u>
Internal Span:	<u>31.82</u>	Internal Span:	<u>NA</u>

**Calibrator:**

Flow Meter ID's:	<u>NA</u>	<b>Calibrator Flow Targets:</b>			
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 <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> Cylinder Conc. (ppm):	<u>601.4</u>   <u>202.0</u>	mid	<u>1969</u>	<u>31</u>	<u>2000</u>
CH <sub>4</sub> as propane/total CH <sub>4</sub> equivalents (ppm):	<u>555.5</u>   <u>1156.9</u>	low	<u>1984</u>	<u>16</u>	<u>2000</u>

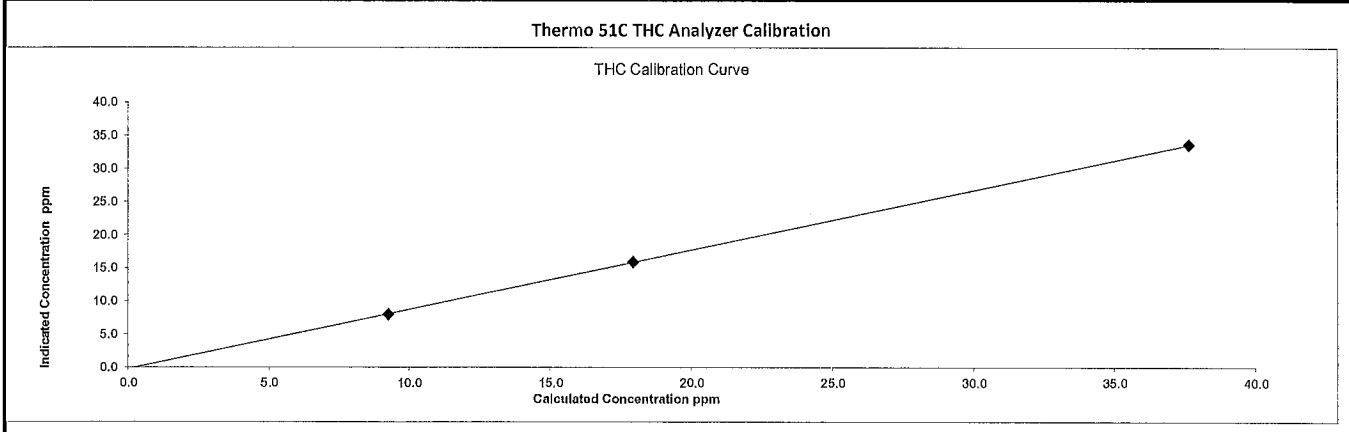
**Calibration:**

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration:		Indicated Concentration:		Correction Factors:	
	Diluent	Cal Gas	Total	(ppm)	(ppm)	(ppm)	(ppm)		
as found zero	1999	0.00	1999	0	-0.20				NA
as found high	1933	65.00	1998	37.64	33.60				1.114
mid	1969	31.00	2000	17.93	15.90				1.114
low	1984	16.00	2000	9.26	8.01				1.127
calibrator zero	1999	0.00	1999	0	-0.20				NA
Average C.F.=									1.118

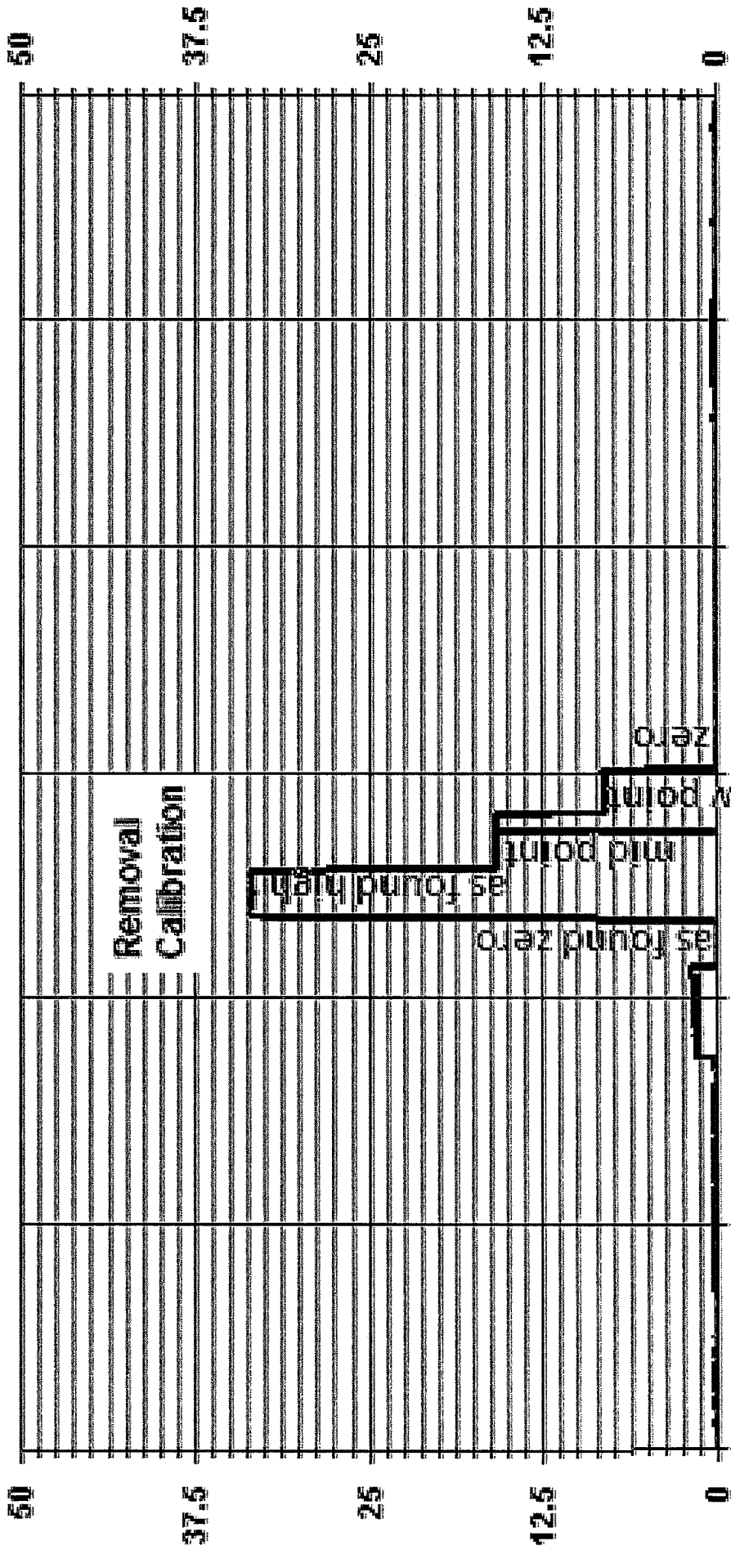
**Linear Regression/Calibration Results:**

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>0.899</u>	> or = 0.995	PASS
b (Intercept as % of full scale)=	<u>-0.484%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-11.13%</u>	± 3% F.S.	PASS
		± 15%	PASS

**Comments:**  
 The analyzer has been changed because of span drift was over 10%. The analyzer requires maintenance.



01 Minute Averages



— LICA31    THC    PPM

# Maxxam Thermo 51C THC Analyzer Calibration

Date: 7-Jun-15 Start Time (mst): 10:28  
 Company: LICA End Time (mst): 14:21  
 Station Name/Location: St. Lina Calibration Purpose: Installation Calibration  
 Performed by: Alex Yakupov Cal Gas Expiry Date: 12-Aug-17

Analyzer: 51CLT-77021-384 Range ppm: 50  
 Serial Number: NA As Found C.F.: NA  
 Last Calibration Date: NA New C.F.: 1.001  
 Previous Cal High Point C.F.: NA

	<b>As found:</b>		<b>As left:</b>
H <sub>2</sub> cylinder (psi):	<u>NA</u>	H <sub>2</sub> cylinder (psi):	<u>1300</u>
H <sub>2</sub> cylinder reg set (psi):	<u>NA</u>	H <sub>2</sub> cylinder reg set (psi):	<u>32</u>
Span Cylinder (psi):	<u>NA</u>	Span Cylinder (psi):	<u>1900</u>
Span Cylinder Reg Set (psi):	<u>NA</u>	Span Cylinder Reg Set (psi):	<u>45</u>
Zero Air Gen Pressure:	<u>NA</u>	Zero Air Gen Pressure:	<u>42</u>
measurement alarms:	<u>NA</u>	measurement alarms:	<u>None</u>
service alarms:	<u>NA</u>	service alarms:	<u>None</u>
FID status:	cnt: <u>NA</u>	cnt:	<u>1510</u>
	rng: <u>NA</u>	rng:	<u>1</u>
	try: <u>NA</u>	try:	<u>1</u>
	flm: <u>NA</u>	flm:	<u>185.2</u>
	det: <u>NA</u>	det:	<u>125.3</u>
Oven Readings:	Flame: <u>NA</u>	Flame:	<u>185</u>
	Filter: <u>NA</u>	Filter:	<u>125</u>
	Base: <u>NA</u>	Base:	<u>125</u>
	Pump: <u>NA</u>	Pump:	<u>06.92</u>
Voltages:	+5 <u>NA</u>	+5	<u>4.9</u>
	+15 <u>NA</u>	+15	<u>14.8</u>
	-15 <u>NA</u>	-15	<u>-14.9</u>
	Internal Span: <u>NA</u>	Internal Span:	<u>32.6</u>

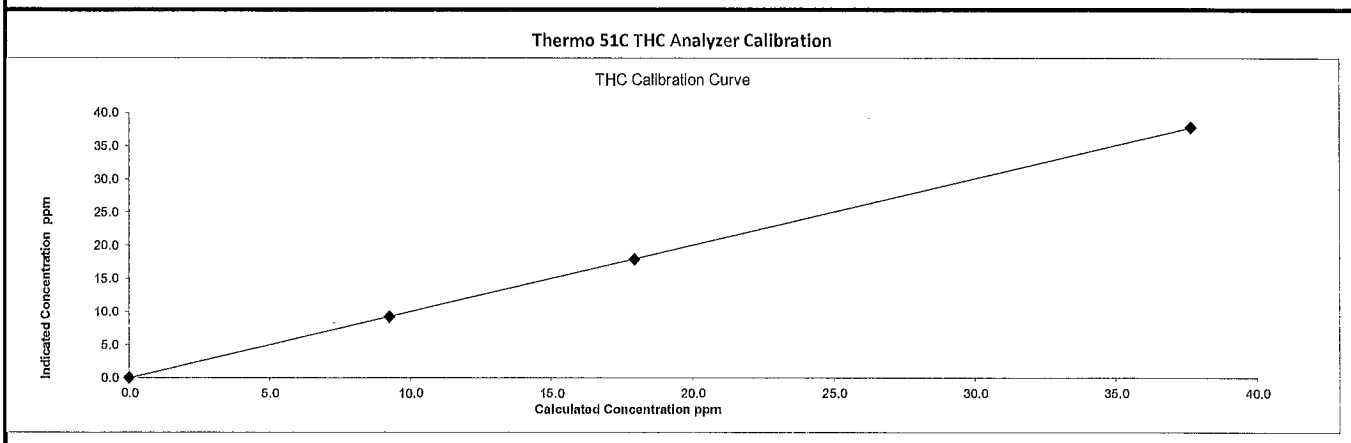
Calibrator:	Flow Meter ID's:	<u>NA</u>	<b>Calibrator Flow Targets:</b>			
	Make & Model:	<u>API 700</u>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
	Serial #:	<u>830</u>	zero	<u>2000</u>	<u>0</u>	<u>2000</u>
	Cal Gas Cylinder I.D. #:	<u>LL33674</u>	high	<u>1935</u>	<u>65</u>	<u>2000</u>
	CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> Cylinder Conc. (ppm):	<u>601.4</u> <u>202.0</u>	mid	<u>1969</u>	<u>31</u>	<u>2000</u>
CH <sub>4</sub> as propane/total CH <sub>4</sub> equivalents (ppm):	<u>555.5</u> <u>1156.9</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)	
adjusted zero	1999	0.00	1999	0	0.00	NA
adjusted high	1932	65.00	1997	37.66	37.80	0.996
mid	1969	31.00	2000	17.93	17.90	1.002
low	1984	16.00	2000	9.26	9.20	1.006
calibrator zero	1999	0.00	1999	0	0.00	NA
Average C.F.=						1.001

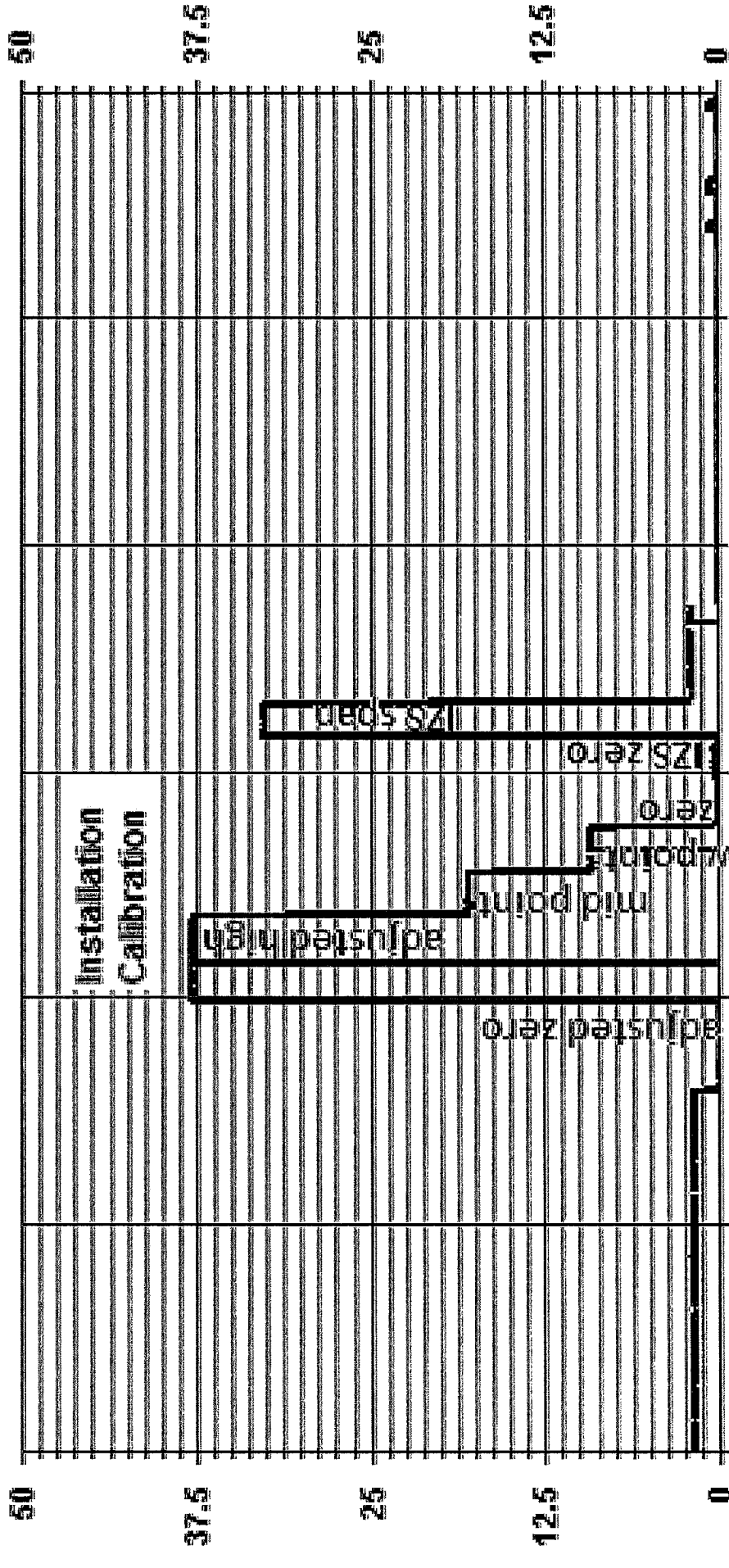
**Linear Regression/Calibration Results:**

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>1.004</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>-0.116%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>NA</u>	± 3% F.S.	PASS
		± 15%	NA

Comments:  
Filter changed

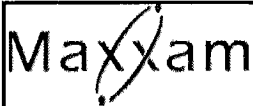


01 Minute Averages



— LICA31    THC    PPM

***NITROGEN DIOXIDE***



API 200E NOx Analyzer Calibration

Date: 9-Jun-15  
 Company: LICA  
 Station Name/Location: St.Lina  
 Performed by: Alex Yakupov

Start Time (mst): 12:47  
 End Time (mst): 19:51  
 Calibration Purpose: Re-Calibration  
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 594  
 Last Calibration Date: 14-May-15  
 Range ppb: 1000

Correction Factors:  
 As found C.F. Previous Cal High Point C.F.:  
 NO= 0.991 NO= 0.999  
 NOx= 0.979 NOx= 0.999  
 NO<sub>2</sub>= 1.004 NO<sub>2</sub>= 1.000

As found:  
 NOx SLOPE: 0.897  
 NOx OFFS: 0.5  
 NO SLOPE: 0.891  
 NO OFFS: -0.6  
 TEST: NA  
 SAMP FLW: 453  
 OZONE FL: 78  
 PMT: 20.3  
 NORM PMT: -2.0  
 AZERO: 16.9  
 HVPS: 771  
 RCELL TEMP: 50.0  
 BOX TEMP: 29.0  
 PMT TEMP: 6.7  
 IZS TEMP: 45.1  
 MOLY TEMP: 316.4  
 RCEL: 7.0  
 SAMP: 26.8  
 Internal Span: 548.4/7.0/541

As left:  
 NOx SLOPE: 0.881  
 NOx OFFS: 1.9  
 NO SLOPE: 0.881  
 NO OFFS: 0.3  
 TEST: NA  
 SAMP FLW: 452  
 OZONE FL: 78  
 PMT: 15.5  
 NORM PMT: -0.2  
 AZERO: 16.4  
 HVPS: 771  
 RCELL TEMP: 50.0  
 BOX TEMP: 28.7  
 PMT TEMP: 6.7  
 IZS TEMP: 45.1  
 MOLY TEMP: 316.1  
 RCEL: 7.0  
 SAMP: 26.3  
 Internal Span: 527.8/8.6/519

Callibrator Flow Targets:

Make & Model: EnviroNics 6100  
 Serial #: 4760  
 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 <sub>3</sub> setting (v or ppb)	total (cc/min)
zero	4995	0	0	4995
high	4916	78	420.00	4994
mid	4957	38	263.00	4995
low	4975	19	85.00	4994

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	4994	0.0	4994	0	0	0.0	4.0	NA	NA
adjusted zero	4994	0.0	4994	0	0	0.0	0.0	NA	NA
as found high	4921	73.95	4995	749.1	749.1	756	765	0.991	0.979
adjusted high	4921	73.95	4995	749.1	749.1	750	750	0.999	0.999
mid	4958	37.45	4995	379.3	379.3	378	379	1.004	1.001
low	4975	18.71	4994	189.6	189.6	189	189	1.003	1.003
calibrator zero	4994	0.00	4994	0	0	0.0	0.0	NA	NA
Average C.F.=								1.002	1.001

Callibrator Flow Rates (cc/min)				Callibrator Setting	Indicated NO	Indicated NOx	Indicated NO <sub>2</sub>	NO drop	NO <sub>2</sub> increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4921	73.95	4995	0.0	751.0	751.0	0.0	0.0	0.0	
as found NO <sub>2</sub>	4921	73.95	4995	420.0	272.0	750.0	477.0	479.0	477.0	1.004
gpt mid	4921	73.95	4995	263.0	451.0	750.0	298.0	300.0	298.0	1.007
gpt low	4921	73.95	4995	85.0	657.0	750.0	93.0	94.0	93.0	1.011
Average NO <sub>2</sub> C.F.=										1.007

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.001	1.001	0.996	0.85-1.15
b (Intercept as % of full scale)=	-0.07%	-0.05%	-0.04%	± 3% F.S.
% change in C.F. from last cal=	0.81%	1.98%	-0.42%	+/-15%
NO <sub>2</sub> converter efficiency			99.3%	>85%

Comments:

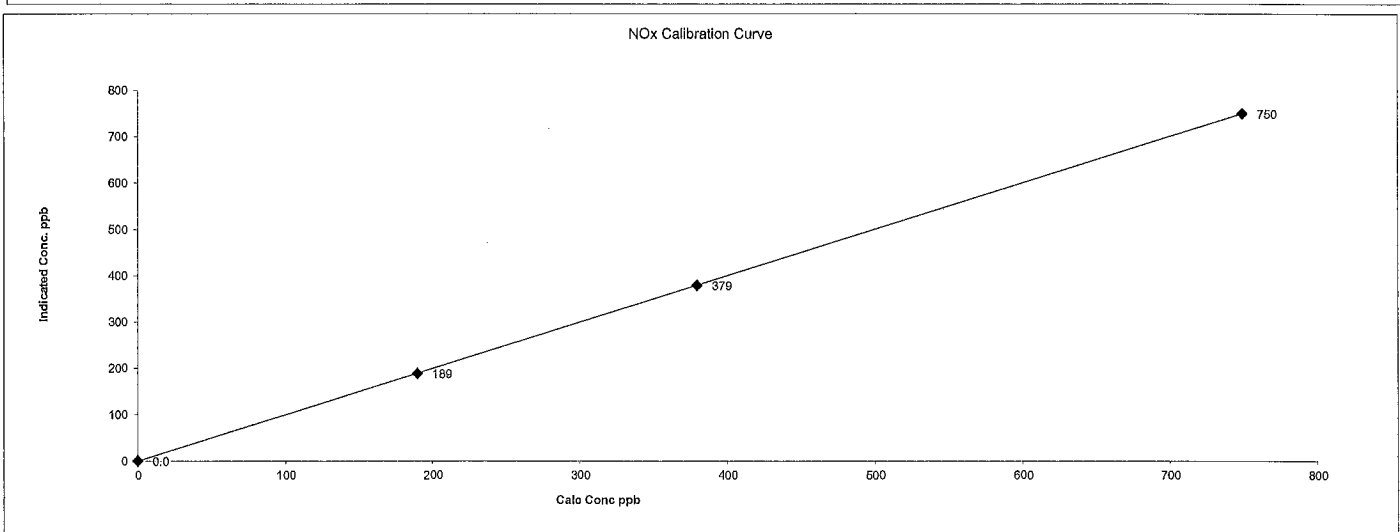
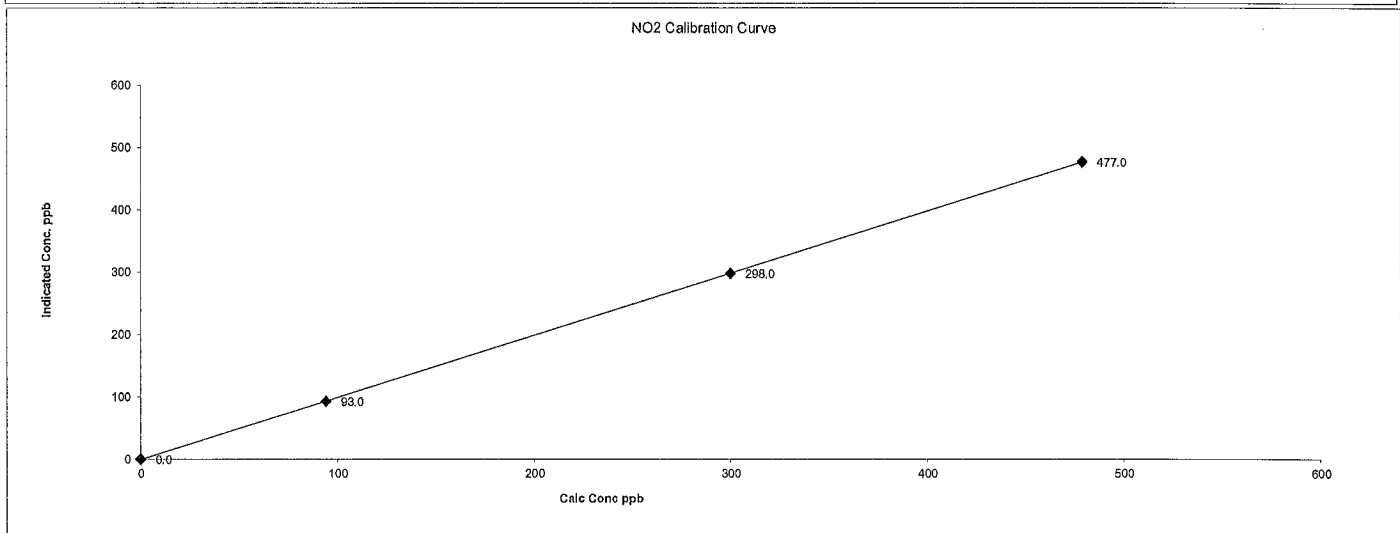
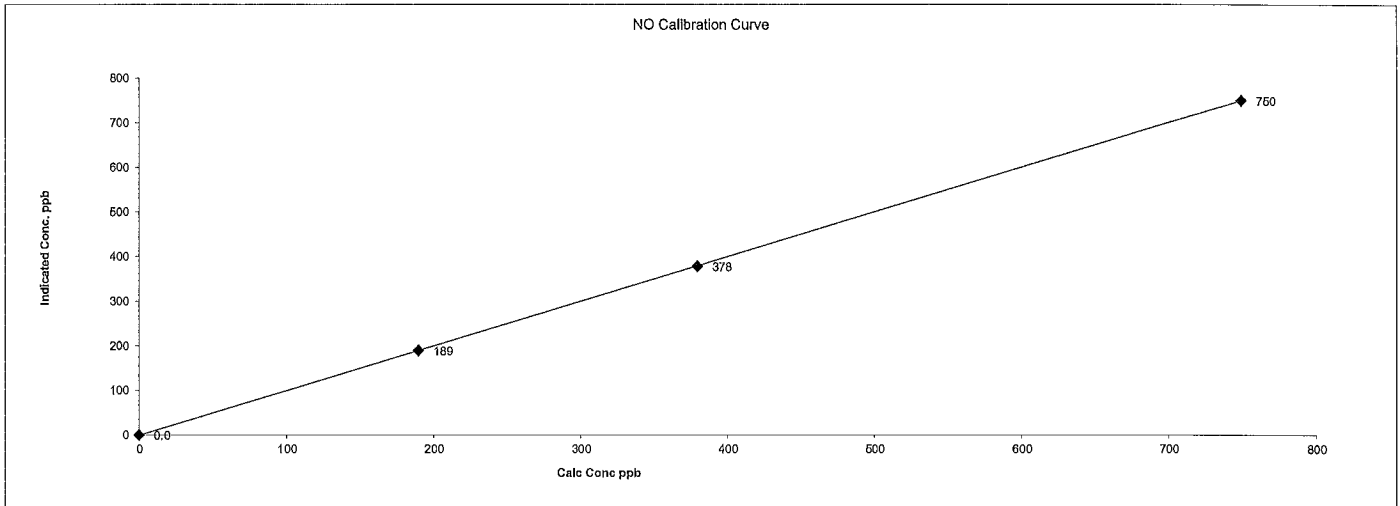
No adjustments made for NO<sub>2</sub>. Sample Filter changed. An additional GPT Point was taken to provide for O<sub>3</sub> calibration (18:26) Ind.NO=567, Ind.No<sub>x</sub>=750, Ind.NO<sub>2</sub>=181, NO drop=184, NO<sub>2</sub> increase =181



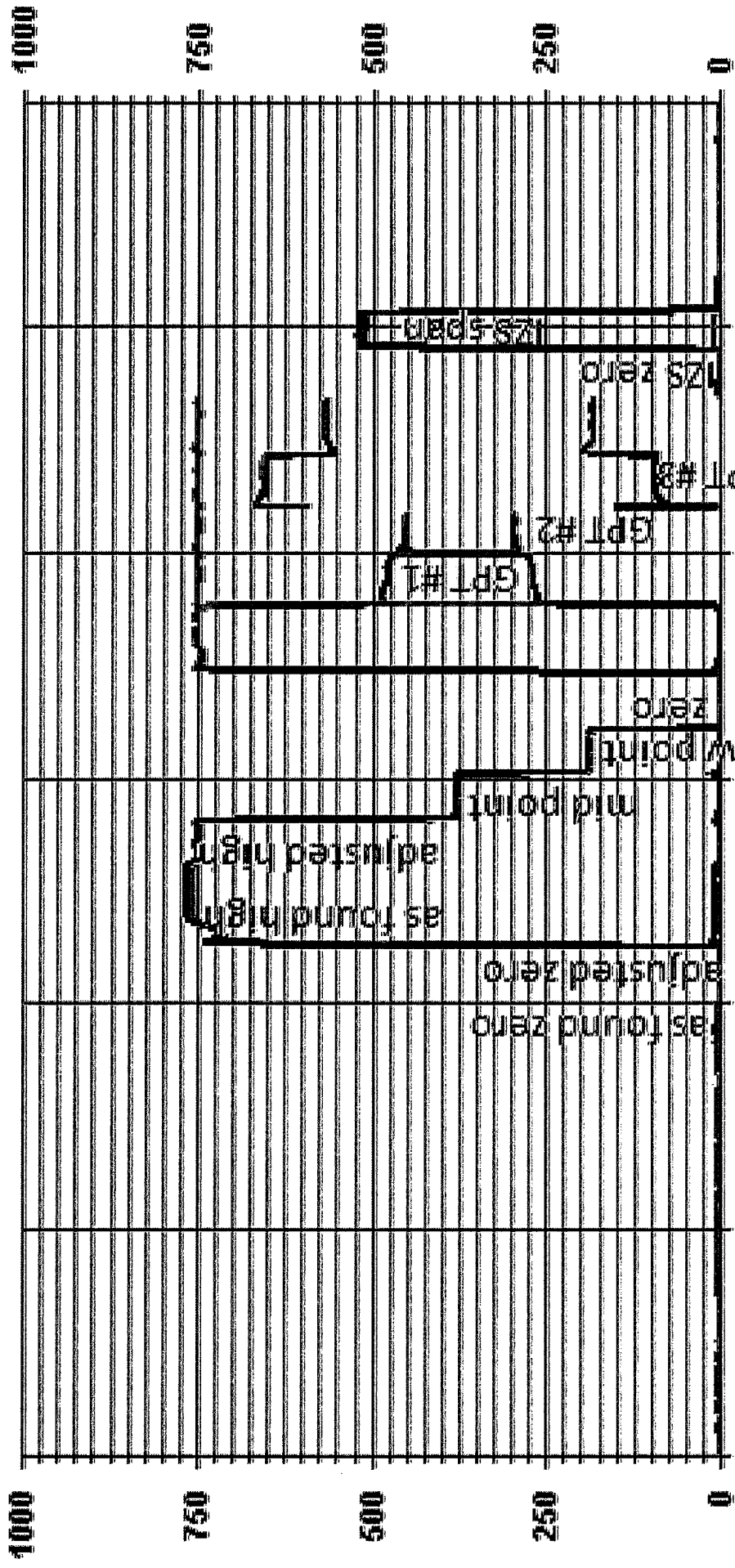
Date: 9-Jun-15  
 Company: LICA  
 Station Name/Location: St.Lina  
 Performed by: Alex Yakupov

Start Time (mst): 12:47  
 End Time (mst): 19:51  
 Calibration Purpose: Re-Calibration  
 Cal Gas Expiry Date: 12-Mar-19

API 200E NOx Analyzer Calibration



01 Minute Averages



— LICA31 NOX PPB = LICA31 NO PPB — LICA31 NO2 PPB

Note: The GPT graph is not shown completely due to some missing calibration data.

**OZONE**

## Maxxam Thermo 49i O<sub>3</sub> Analyzer Calibration

Date: <u>10-Jun-15</u>	Start Time (mst): <u>8:44</u>
Company: <u>LICA</u>	End Time (mst): <u>12:45</u>
Station Name/Location: <u>St.Lina</u>	Calibration Purpose: <u>Monthly Calibration</u>
Performed by: <u>Alex Yakupov</u>	G.P.T. Date: <u>9-Jun-15</u>

---

Analyzer: Serial Number: <u>1002240371</u>	Range ppm: <u>500</u>
Last Calibration Date: <u>12-May-15</u>	As Found C.F.: <u>0.990</u>
Previous Cal High Point C.F.: <u>1.000</u>	New C.F.: <u>1.000</u>

**As found:**

O<sub>3</sub> Bkg: -1.5

O<sub>3</sub> Coef: 0.995

Motherboard:  
3.3 3.3  
15.0 14.8  
24.0 23.7  
-3.3 -3.2

Interface Board:  
3.3 3.3  
5.0 4.9  
15.0 14.7  
-15.0 -15.0

Photo Lamp  
24.0 23.4

O<sub>3</sub> Lamp  
8.3 8.3  
Bench: 29.0

Bench Lamp: 53.6

O<sub>3</sub> Lamp: 67.8

Pressure: 680.6

Cell A lpm: 0.728

Cell B lpm: 0.723

O<sub>3</sub> ppb: -4.8

Cell A ppb: 2.0

Cell B ppb: -11.7

Cell A Int: 60412

Cell B Int: 72261

Internal Span: 338.8

**As left:**

O<sub>3</sub> Bkg: -0.7

O<sub>3</sub> Coef: 0.988

3.3 3.3  
15.0 14.8  
24.0 23.7  
-3.3 -3.2

3.3 3.3  
5.0 4.9  
15.0 14.7  
-15.0 -15.0

Photo Lamp  
24.0 23.4

O<sub>3</sub> Lamp  
8.3 8.3  
Bench: 28.5

Bench Lamp: 53.6

O<sub>3</sub> Lamp: 67.8

Pressure: 680.3

Cell A lpm: 0.728

Cell B lpm: 0.722

O<sub>3</sub> ppb: 0.7

Cell A ppb: 0.2

Cell B ppb: 1.2

Cell A Int: 60458

Cell B Int: 72321

Internal Span: 341.6

---

Calibrator:	Calibrator Flow Targets:															
Make & Model: <u>EnviroNics 6100</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>point</th> <th>total flow (cc/min)</th> <th>O<sub>3</sub> setting (v or ppb)</th> </tr> <tr> <td>zero</td> <td>5000</td> <td>0</td> </tr> <tr> <td>high</td> <td>5000</td> <td>263</td> </tr> <tr> <td>mid</td> <td>5000</td> <td>160</td> </tr> <tr> <td>low</td> <td>5000</td> <td>85</td> </tr> </table>	point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)	zero	5000	0	high	5000	263	mid	5000	160	low	5000	85
point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)														
zero	5000	0														
high	5000	263														
mid	5000	160														
low	5000	85														
Serial #: <u>4760</u>																
NOx Gas Cylinder I.D. #: <u>BLM002073</u>																
NOx Cylinder Conc. (ppm): <u>50.6</u>																

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Calibration:						
Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	4995	0.0	4995	0.0	1.0	NA
adjusted zero	4995	0.0	4995	0.0	0.0	NA
as found high	4995	0.00	4995	300.0	303.0	0.990
adjusted high	4995	0.00	4995	300.0	300.0	1.000
mid	4995	0.00	4995	184.0	184.0	1.000
low	4995	0.00	4995	94.0	94.0	1.000
calibrator zero	4995	0.00	4995	0.0	0.0	NA
Average C.F.=						1.000

\*\*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/Fail ?
Slope = <u>1.000</u>	0.85-1.15	PASS
b (Intercept as % of full scale) = <u>0.0000%</u>	± 3% F.S.	PASS
% change in C.F. from last cal = <u>1%</u>	± 15%	PASS

---

Comments:

Sample Filter changed.

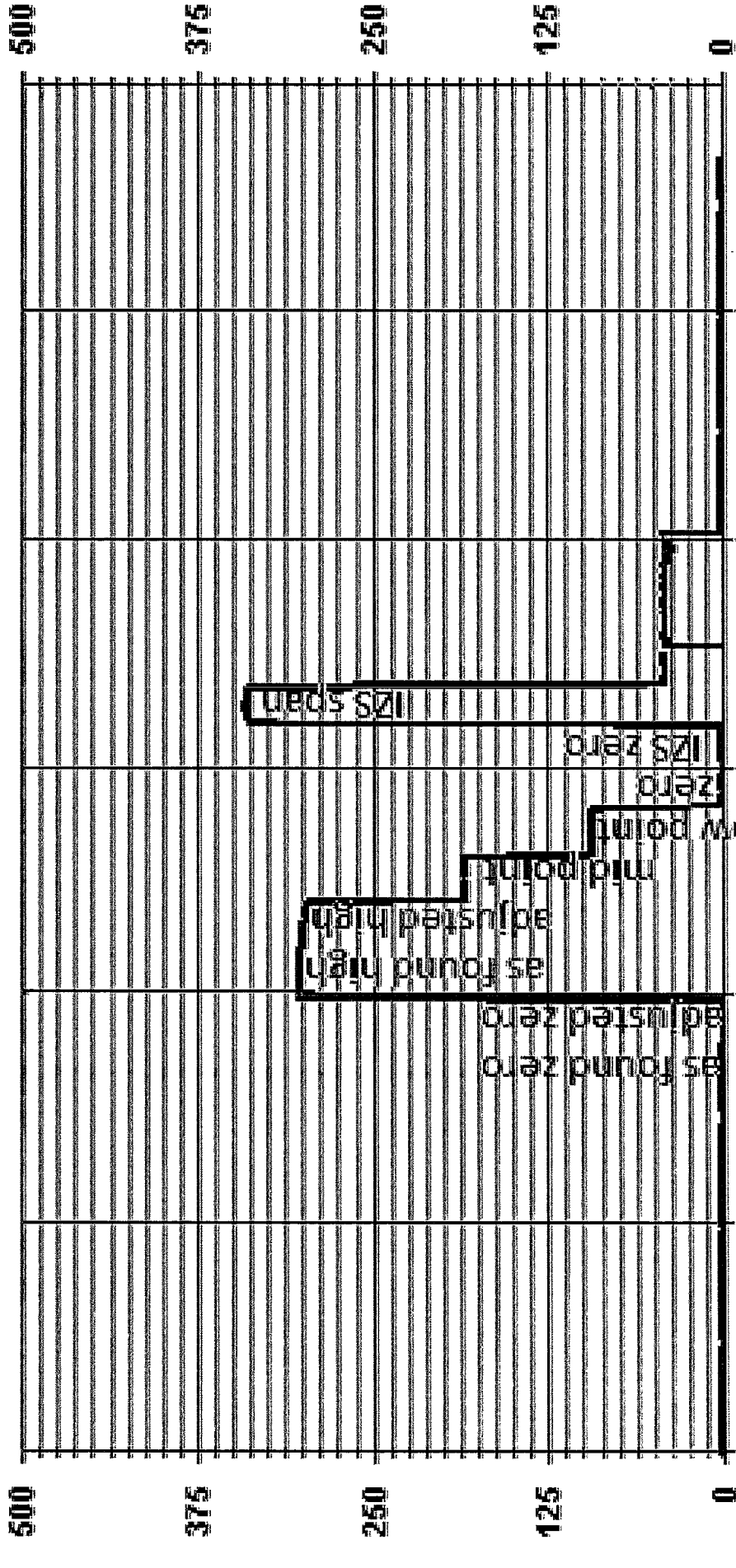
---

**Thermo 49i O<sub>3</sub> Analyzer Calibration**

O<sub>3</sub> Calibration Curve

Calc Conc (ppb)	Indicated Conc. (ppb)
0.0	0.0
94.0	94.0
184.0	184.0
300.0	300.0

01 Minute Averages



— LICA31 Q3\_ PPB

***PARTICULATE MATTER***



## R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 10-Jun-15  
 Company: LICA  
 Station Name/Location: St Lina  
 Previous Audit Date: 14-May-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 12:00 - 12:46  
 Calibration Purpose: 1st Audit

**1400A Information and Status:**

Serial Number: <u>1405A208301003</u>	As Found Filter Loading %: <u>35.53</u>
Ko Factor: <u>13125.0</u>	As Left Filter Loading %: <u>20.01</u>
Ambient Temperature °C: <u>21.51</u>	As Found Noise: <u>0.008</u>
Ambient Pressure atm: <u>0.921</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>
Callibration 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	<del>X</del>	0.15	<del>X</del>
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	<del>X</del>	0.60	<del>X</del>

**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	<del>X</del>	0.15	<del>X</del>
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	<del>X</del>	0.60	<del>X</del>

**As found temperature and pressure:**

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>21.5</u>	1405F pressure atm: <u>0.921</u>
reference temperature °C: <u>22.0</u>	reference pressure: <u>0.921</u>
difference °C: <u>0.5</u>	difference: <u>0.000</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>22.0</u>	1405F pressure atm: <u>0.921</u>
reference temperature °C: <u>22.0</u>	reference pressure: <u>0.921</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>3.15</u>	reference total/aux flow lpm: <u>17.33</u>
difference lpm: <u>0.15</u>	difference lpm: <u>0.66</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>3.09</u>	reference total/aux flow lpm: <u>16.99</u>
difference lpm: <u>0.09</u>	difference lpm: <u>0.32</u>

**K<sub>o</sub> Audit:**

Last K<sub>o</sub> audit date: 20-Mar-15  
 1405F K<sub>o</sub> factor: 13125.0  
 Measured K<sub>o</sub> factor: 13213.2000  
 % difference: 0.67

**Comments:**



## R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 19-Jun-15  
 Company: LICA  
 Station Name/Location: St Lina  
 Previous Audit Date: 10-Jun-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 15:15 - 16:22  
 Calibration Purpose: 2nd Audit

**1400A Information and Status:**

Serial Number:	<u>1405A208301003</u>	As Found Filter Loading %:	<u>35.33</u>
Ko Factor:	<u>13125.0</u>	As Left Filter Loading %:	<u>23.69</u>
Ambient Temperature °C:	<u>22.19</u>	As Found Noise:	<u>0.008</u>
Ambient Pressure atm:	<u>0.912</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	0.00	-0.15	0.00	-0.15
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**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	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-0.66	0.00	-0.66
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**As found temperature and pressure:**

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>22.2</u>	1405F pressure atm:	<u>0.912</u>
reference temperature °C:	<u>23.6</u>	reference pressure:	<u>0.916</u>
difference °C:	<u>1.4</u>	difference:	<u>-0.004</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>23.6</u>	1405F pressure atm:	<u>0.916</u>
reference temperature °C:	<u>23.6</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>17.46</u>
difference lpm:	<u>0.18</u>	difference lpm:	<u>0.79</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>3.11</u>	reference total/aux flow lpm:	<u>17.24</u>
difference lpm:	<u>0.11</u>	difference lpm:	<u>0.57</u>

**Ko Audit:**

Last Ko audit date: 20-Mar-15  
 1405F Ko factor: 13125.0  
 Measured Ko factor: 13213.2000  
 % difference: 0.67

**Comments:**



## ***WIND SYSTEM***

# Met 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 Degrees	WD Output Volts	WD Reading Degrees	WD Error ± 3 Deg	WS Standard mps	WS Output Volts	WS Reading mps	WS Error ± 0.24 MPS
30.0	0.082	29.6	-0.4	11.21	0.224	11.19	-0.02
60.0	0.164	59.0	-1.0	11.17	0.227	11.33	0.16
120.0	0.331	119.1	-0.9	11.68	0.221	11.06	-0.62
150.0	0.429	151.3	1.3	11.29	0.222	11.11	-0.18
210.0	0.582	209.2	0.6	11.25	0.223	11.16	-0.09
240.0	0.685	239.2	-0.6	11.18	0.226	11.32	0.14
300.0	0.835	300.5	0.5	11.16	0.224	11.18	0.02
330.0	0.917	330.0	0.0	11.18	0.223	11.15	-0.03

Average wind speed this test in mps 2.21

WD Setting Degrees	WD Output Volts	WD Reading Degrees	WD Error ± 3 Deg	WS Standard mps	WS Output Volts	WS Reading mps	WS Error ± 0.20 MPS
30.0	0.061	28.3	-0.7	2.18	0.042	2.08	-0.10
60.0	0.123	58.5	-1.5	2.20	0.043	2.14	-0.06
120.0	0.232	119.6	-0.4	2.21	0.042	2.08	-0.13
150.0	0.277	150.3	0.3	2.22	0.042	2.07	-0.15
210.0	0.384	210.1	0.1	2.20	0.042	2.12	0.08
240.0	0.466	239.8	-0.2	2.23	0.042	2.10	-0.13
300.0	0.535	300.6	0.6	2.22	0.043	2.18	0.04
330.0	0.617	330.0	0.0	2.21	0.043	2.17	-0.04

Instrument Test Condition: As Found \_\_\_\_\_ As Left X

Sensor Model No. 50.5H

Sensor Serial No. H12635

Sensor Output Range 0-50.10V

Sensor Output Range 0-50 MPS

Customer: Maxam Analytics

Sales Order No. 104703

Instrument ID: 3558687

Calibration Date: 08/28/2014

Calibrated by: Dan Hill

QC Inspection

*Diana Dawson*

***METEOROLOGICAL SYSTEM***

# Meteorological System Checklist

Date: **10-Jun-15**  
 Performed by: **Alex Yakupov**  
 Station: **St. Lina**  
 Start: **12:40** End: **13:30**

## PRECIPITATION SENSOR CHECK

Previous check date: **June 1, 2015**

	YES	NO
Is the sensor Level?	YES	
Is the heater operating properly?	YES	
Are the bucket drain holes clean?	YES	
Is the inner screen on the housing? (screen should be on between July and September)	YES	
Is the upper screen on the housing? (screen should be on between July and September)	YES	
Is the housing clean?	YES	
Is the area around the housing clean and free from obstacle?	YES	
Is the tipping sensor working properly? (test sequence 1.0 - 2.0 - 3.0 - 2.0 - 1.0 mm)	YES	
	PASS	

Comments: the rain gauge has been tested with and without water. Response is timely and accurate. No issues. The wind break has been removed temporarily for test as it might affect magnetic field over the reed sensor.

Field Technician: **Alexander Yakupov** June 10, 2015

## ***CALIBRATORS***

Company Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>EnviroNics 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 <sub>2</sub>	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 <sub>2</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOx	% Diff. Vs Audit gas	
4993	0.000	0.000	0.823	-0.001	0.822	NO <sub>2</sub>	% 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)*

NO <sub>2</sub>		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 Audit Calibrator		NO <sub>x</sub> Analyzer	
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 1868</u>
		Last Calibration Date	<u>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 <sub>2</sub> Cylinder Conc.	<u>50.3</u>	Barometric Pressure	<u>N/A</u>
SO <sub>2</sub> 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 (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)*

SO <sub>2</sub>		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 <sub>2</sub> Analyzer	
<b>Audit Calibrator</b>		Make/Model	<u>Teco 43C</u>
Make/Model	<u>R&amp;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

## ***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: 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: Blos 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	<del>0.0000</del>	<del>0.0000</del>	<del>0.000</del>
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:					<b>48.0</b>

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. 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: CAL015108

**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 (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>132.442</del>	<del>10.0</del>
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:					<b>9.9</b>

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.  
 8501-34th Street  
 Edmonton, AB T6B 2X6  
 Tel: 780-449-0778  
 Fax: 780-449-5302

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
Propene	200.0ppm	202ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler-Toledo Analytical Balance-ID2ex/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): LL33674

Filling Method: Gravimetric  
 Date of Fill: 03/28/2014  
 Expiration Date: 03/26/2017

Analyst:   
 Todd Hryniv

The gas calibration cylinder standard prepared by Praxair Canada, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Canada, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or against NIST Standard Reference Materials where available.  
 Note: All submissions for hydrogen (H<sub>2</sub>, A or ppm) are for gas phase, by volume to U. (parts) unless otherwise noted.

A. Gas Chromatography with Thermal Conductivity Detector	B. Gas Chromatography with Catalytic Oxidation Detector	C. Gas Chromatography with Electrode Conductivity Detector	D. Wet Chemical Analysis with Flame Ionization Detector
E. Gas Chromatography with Flame Ionization Detector	F. Gas Chromatography with Hydrocarbon Detector	G. Gas Chromatography with Methanol Detector	H. Gas Chromatography with Photoionization Detector
I. Gas Chromatography with Reduced Gas Analyzer	J. Gas Chromatography with Thermal Conductivity Detector	K. Binary Gas Analyzer with Thermal Conductivity Detector	L. Infrared (FTIR) Analysis
M. Gas Chromatography with Electrode	N. By Difference of Typical Analyzers	O. Paramagnetic	P. Sample Vapor Analysis
Q. Total Gas Pressure Analysis	R. Wet Chemical	S. Infrared Tube	T. Sample Vapor Analysis
U. Gravimetric Analysis	V. Electrochemical	W. Gas Chromatography with Catalytic Oxidation 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 method employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any 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. arising out of the use of the information contained herein exceed the fee established for providing such information.



***APPENDIX III***  
***CHAIN OF CUSTODY***



# Maxxam Analytics - Air Services Group

## Project Chain of Custody

**Client:** Lakeland Industry & Community Association  
**Site:** St. Lina Site

**Project #:** 2833-2015-07-31- C  
**Contact:** Mike Bisaga

QA Check Complete	<u>inselmber</u>	Date	<u>08 - July - 2015</u>
QA Check Review	<u>inselmber</u>	Date	<u>08 - July - 2015</u>
Report Complete	<u>inselmber</u>	Date	<u>13 - July - 2015</u>
Report Reviewed	<u>E. Tangang</u>	Date	<u>15 - Jul - 15</u>
Report Shipped	_____	Date	_____

Notes

**AMBIENT AIR MONITORING MONTHLY DATA REPORT  
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
ELK POINT AIRPORT SITE**

**JOB #:2833-2015-06-35- C**

**JUNE 2015**


Prepared for:

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

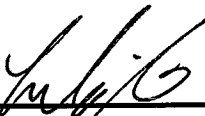
**Attention: MIKE BISAGA**

DATE: **July 31, 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 JUNE 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.

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

PM 2.5: Four hours of data were invalidated this month as the data were below  $-3 \text{ ug/m}^3$ .

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 (%)
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	7	24	19	3	WNW	1.2	24	100.0
H2S (PPB)	10	3	0	0	0	2	VAR	VAR	VAR	VAR	0.6	9, 11	100.0
THC (PPM)	-	-	-	-	2.3	6.3	28	3	3.8	WNW	3.0	28	100.0
CH4 (PPM)	-	-	-	-	2.3	6.1	28	3	3.8	WNW	3.0	28	100.0
NMHC (PPM)	-	-	-	-	0.01	0.20	VAR	VAR	VAR	VAR	0.05	28	100.0
NO2 (PPB)	159	-	0	-	6.4	30	9	23	6.8	W	10.0	4	100.0
NO (PPB)	-	-	-	-	1.8	47.1	25	3	4.4	WNW	6.9	25	100.0
NOX (PPB)	-	-	-	-	8.2	76.5	25	3	4.4	WNW	16.1	25	100.0
O3 (PPB)	82	-	0	-	31	70	28, 28	12, 13	14.2 17.1	WNW WNW	42.3	11	100.0
PM2.5 (UG/M3)	-	30	-	0	7.0	114.0	29	10	3.4	S	30.0	28, 29	99.4
VECTOR WS (KPH)	-	-	-	-	10.8	35.9	8	18	-	NW	17.9	6	100.0
VECTOR WD (DEG)	-	-	-	-	WNW	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

## Exceedence Summary Report

---

**SO<sub>2</sub> 1- Hour Exceedences**

**No Exceedences Recorded During the Month**

**SO<sub>2</sub> 24- Hour Exceedences**

**No Exceedences Recorded During the Month**

**H<sub>2</sub>S 1- Hour Exceedences**

**No Exceedences Recorded During the Month**

**H<sub>2</sub>S 24- Hour Exceedences**

**No Exceedences Recorded During the Month**

**NO<sub>2</sub> 1- Hour Exceedences**

**No Exceedences Recorded During the Month**

**PM<sub>2.5</sub> 24- Hour Exceedences**

**No Exceedences Recorded During the Month**

### Volatile Organics (VOCs) Data Summary

---

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
JUNE 5, 2015	5.80	ACETONE
JUNE 11, 2015	4.70	ACETONE
JUNE17, 2015	2.40	ACETONE
JUNE 23, 2015	4.10	ACETONE
JUNE 29, 2015	14.60	ACETONE

Note: NA

### Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

---

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
JUNE 5, 2015	0.13	PHENANTHRENE
JUNE 11, 2015	0.07	PHENANTHRENE
JUNE 17, 2015	0.12	2-METHYLNAPHTHALENE AND PHENANTHRENE
JUNE 23, 2015	0.14	2-METHYLNAPHTHALENE
JUNE 29, 2015	0.45	PHENANTHRENE

Note: NA

**TABLE OF CONTENTS**

<u>Title</u>	<u>Page</u>
<b>1.0 Discussion</b>	<b>3</b>
<b>2.0 Project Personnel</b>	<b>6</b>
<b>3.0 Plant Monthly Required AMD Summary</b>	<b>6</b>
<b>4.0 Calculations and Results</b>	<b>6</b>
<b>5.0 Methods and Procedures</b>	<b>7</b>
<b>Appendix I</b>	<b>Continuous Monitoring Data Results</b>
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Methane
	Non-Methane Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Ozone
	Particulate Matter 2.5
	Wind Speed
	Wind Direction
	Standard Deviation Wind Direction
<b>Appendix II</b>	<b>Non-Continuous Monitoring Data Results</b>
	VOC Results
	PAH Results
	NMHC Canister Results
<b>Appendix III</b>	<b>Analyzer Calibration Results</b>
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Nitrogen Dioxide
	Particulate Matter
	Wind System
	Calibrators
	Calibration Gases
<b>Appendix IV</b>	<b>Analytical Results</b>
	VOCs Results
	PAHs Results
<b>Appendix V</b>	<b>Chain of Custody</b>

## 1.0 Discussion

This monthly report consists of data for parameters SO<sub>2</sub>, H<sub>2</sub>S, THC, CH<sub>4</sub>, NMHC, NO<sub>x</sub>, NO, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>2.5</sub>, WS and WD. It also includes results for non-continuous parameters VOC and PAH.

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 and AC maintenance check were performed on June 10.

### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

The routine monthly calibration was performed on June 11. The analyzer was recording a zero drift. It was decided that it be replaced for maintenance. The LICA-owned API 100A, S/N: 467 analyzer was removed on June 24 following a removal calibration. The Maxxam-supplied API 100A, S/N: 722 was installed on the same day followed by an installation calibration. The analyzer was recalibrated to ensure the analyzer's functionality on June 25.

**HYDROGEN SULPHIDE (H2S)**

The analyzer started to drift upwards on May 30. An as found points check was performed on June 3 to verify the analyzer's functionality. No issue could be identified. The expected span value was adjusted after the as found points check. The routine monthly calibration was performed on June 11.

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

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on June 12.

**NITROGEN DIOXIDE (NO2)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on June 11.

**OZONE (O3)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on June 12.

**PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5)**

Two Teom audits were performed this month: one was completed on June 1, and the other audit was performed on June 19. Both the inlet filter and the FDMS filter were replaced on June 1. Data was corrected using Alberta air quality guideline. If the data was between 0 to  $-3 \text{ ug/m}^3$ , the data was corrected to  $0 \text{ ug/m}^3$ . If the data was below  $-3 \text{ ug/m}^3$ , the data was invalidated. 4 hours of data were invalidated as the data were below  $-3 \text{ ug/m}^3$  this month.

**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.

#### **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 June 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  $\mu\text{g}$  in 2 decimal places.

Samples were collected on June 5, 11, 17, 23 and 29. 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. Three canisters were collected this month: concentration of 0.30 ppm on June 6 at 23:15, concentration of 0.42 on June 19 at 0:55 and concentration of 0.30 on June 25 at 3:30.



## **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 Limin Li.

## **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-00001 - Methane, Non-Methane Hydrocarbon Analyzer Monitoring
- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00209: Ambient H<sub>2</sub>S Monitoring
- Maxxam AIR SOP-00211: Ambient SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00212: Ambient O<sub>3</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canister and Xontech

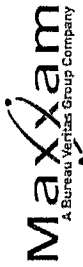
There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - Thermo 450i UV Fluorescent Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM<sub>2.5</sub>) - 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	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	0	0	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	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
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
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
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
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
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
HOURLY MAX	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
HOURLY AVG	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

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

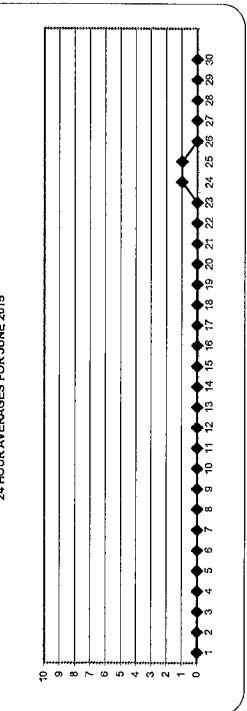
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	28	PPB
----------------------	------	-----	-----	-------	----	-----

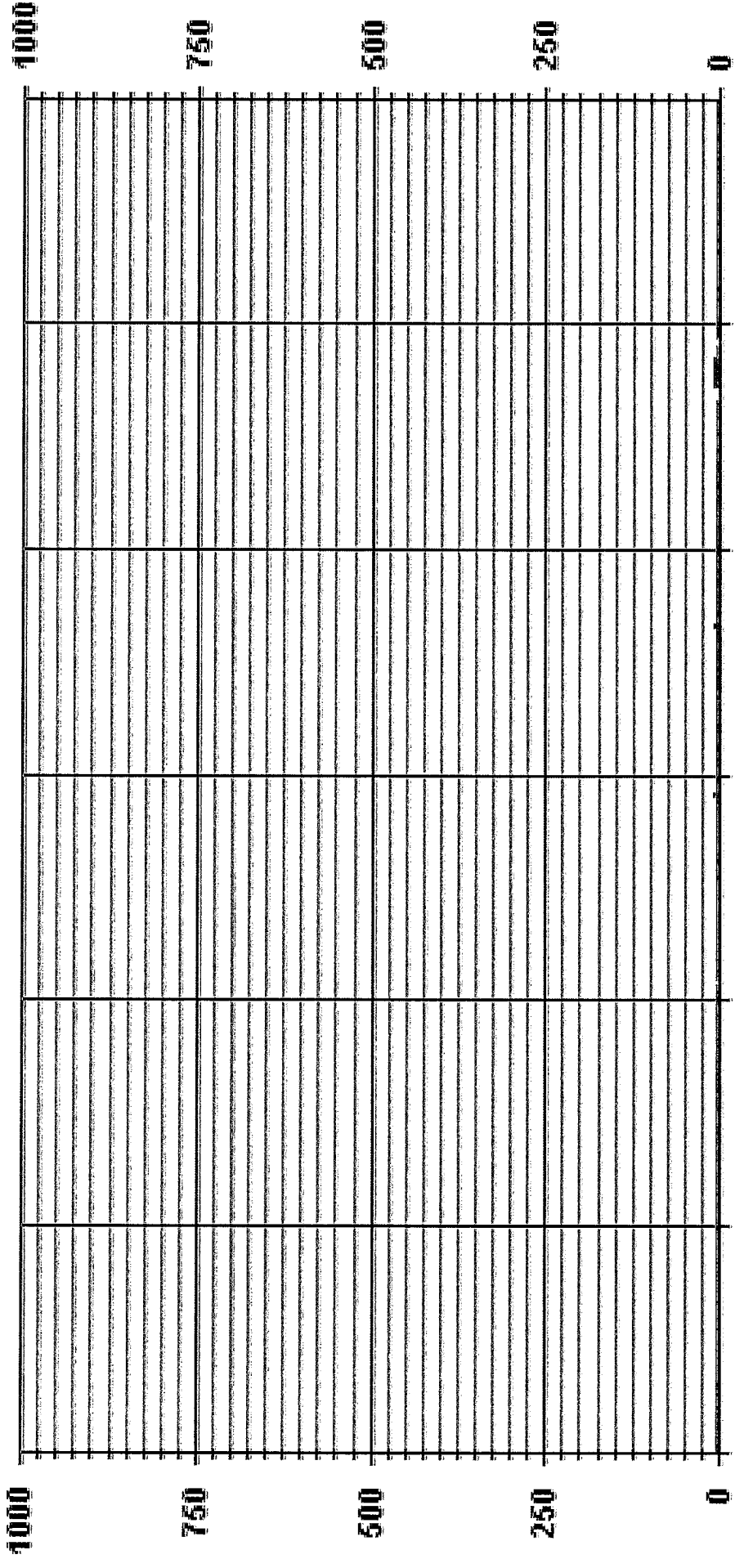
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF 24-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	18				
MAXIMUM 1-HR AVERAGE:	7	PPB @ HOUR(S)	19	ON DAY(S)	24
MAXIMUM 24-HR AVERAGE:	1.2	PPB		ON DAY(S)	24
12S CALIBRATION TIME:	35	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	18	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.38		MONTHLY AVERAGE:	0	PPB

24-HOUR AVERAGES FOR JUNE 2015

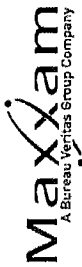


01 Hour Averages



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

— LICA35 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	
1	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	0	0	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	1	1	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	0	0	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	0
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	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	1	1
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	1
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	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
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
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
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	1	1
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
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	1
HOURLY MAX	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
HOURLY AVG	0.5	0.6	0.7	0.6	0.6	0.5	0.5	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	0.6	0.6	0.5	
DAILY MAX																										
DAILY AVG																										
24-HOUR AVG																										
ROSGS																										

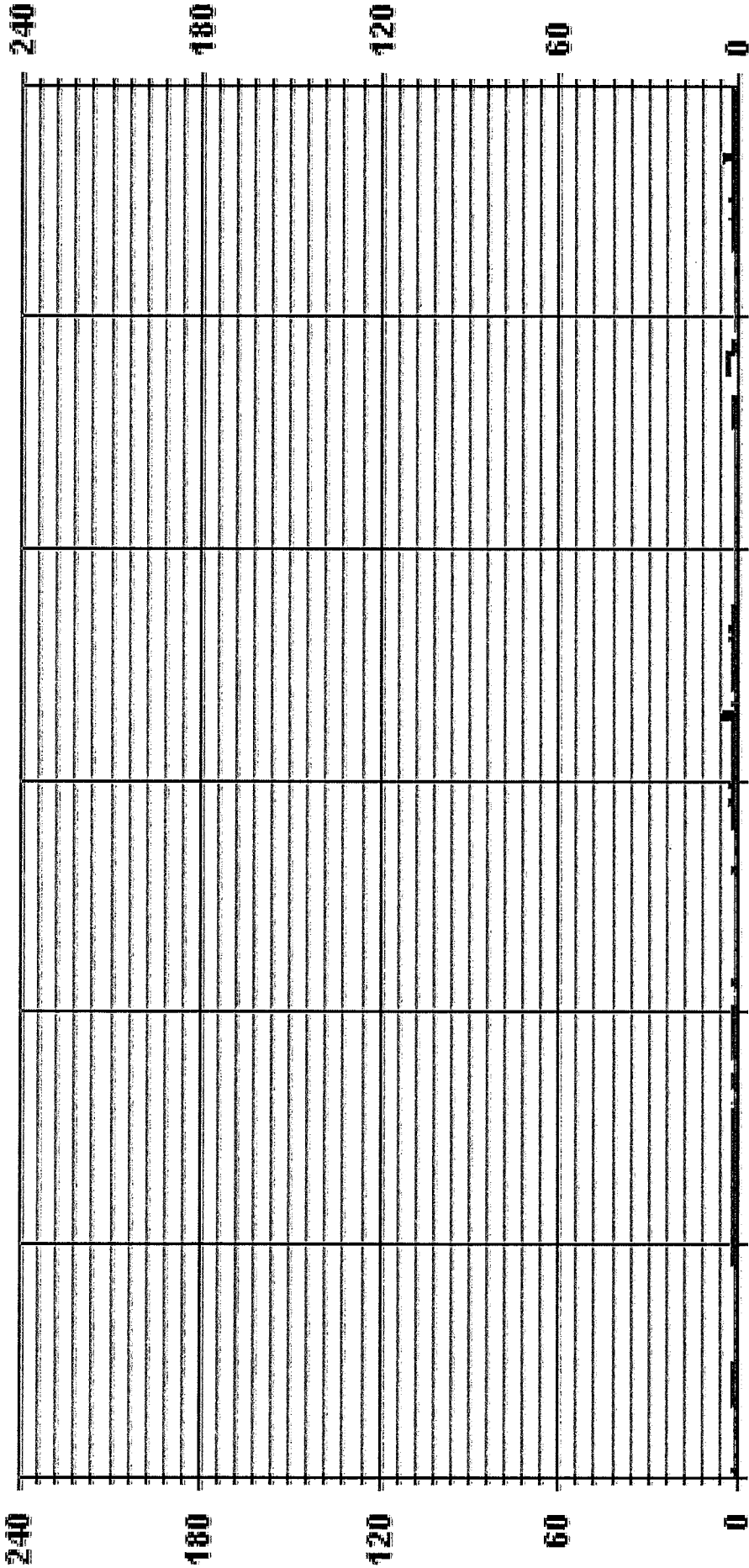
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	343
MAXIMUM INSTANTANEOUS VALUE:	5 PPB @ HOUR(S) 9, 10 ON DAY(S) 17, 17
1ZS CALIBRATION TIME:	38 HRS
MONTHLY CALIBRATION TIME:	19 HRS
STANDARD DEVIATION:	0.67
OPERATIONAL TIME:	719 HRS
VAR-VARIOUS	

01 Hour Averages



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

— LICA35 SO2MAX PPB



SO2\_ / WDR Joint Frequency Distribution (Percent)  
 LICA-EIK  
 June 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-EIK  
 Parameter : SO2  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

Limit	Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	2.39	1.79	1.04	1.79	5.99	6.14	2.39	2.54	1.64	.74	4.79	10.79	20.38	18.44	12.89	6.14	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	2.39	1.79	1.04	1.79	5.99	6.14	2.39	2.54	1.64	.74	4.79	10.79	20.38	18.44	12.89	6.14	

Calm : .00 %

Total # Operational Hours : 667

Distribution By Samples

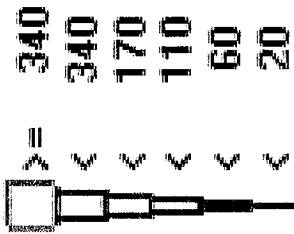
Limit	Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	16	12	7	12	40	41	16	17	11	5	32	72	136	123	86	41	667
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	16	12	7	12	40	41	16	17	11	5	32	72	136	123	86	41	

Calm : .00 %

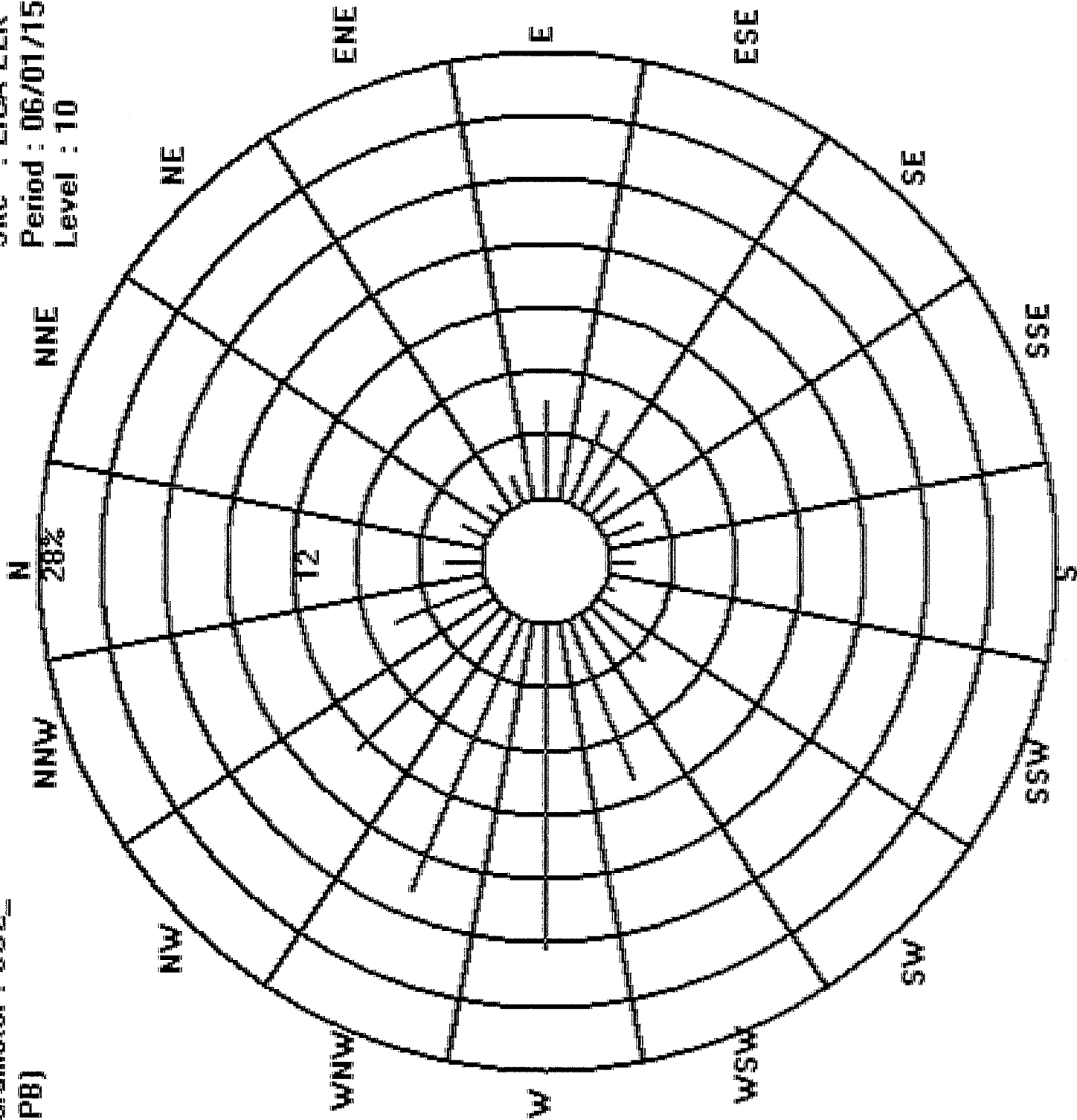
Total # Operational Hours : 667

Logger : 35 Parameter : SO2\_

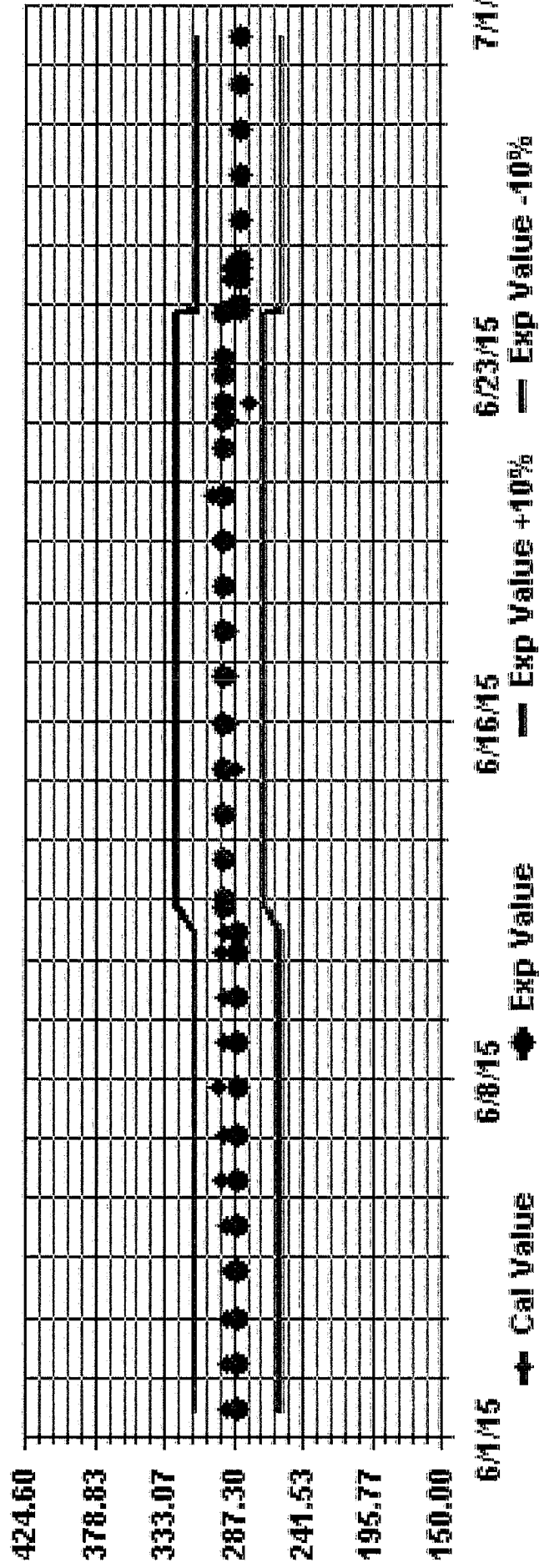
Class Limits (PPB)



Site : LICA-ELK  
Period : 06/01/15-06/30/15  
Level : 10



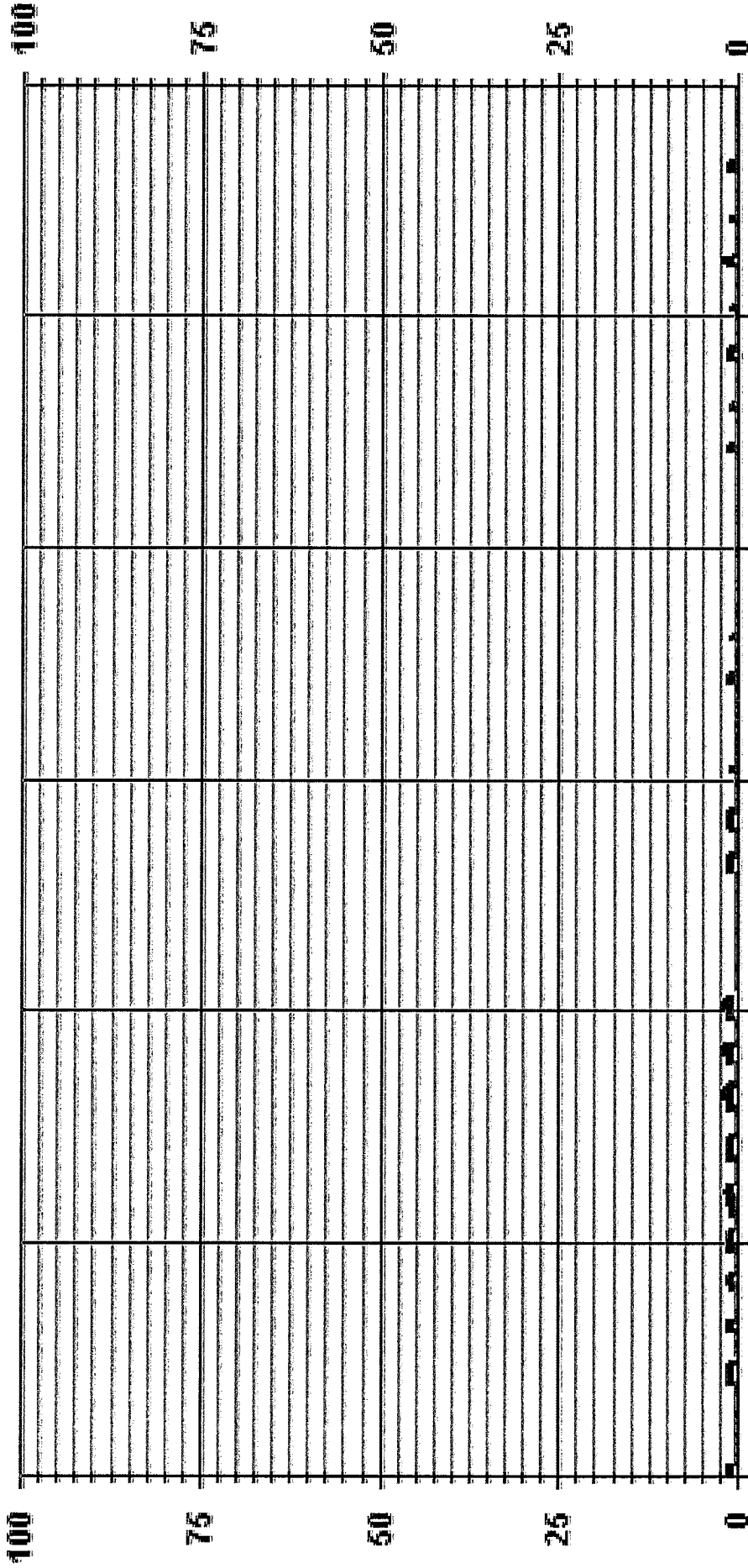
Calibration Graph for Site: LICA35 Parameter: SO2 Sequence: SO2 Phase: SPAN



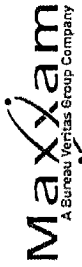
***HYDROGEN SULPHIDE***



01 Hour Averages



-- LICA35 H2S\_ PPB



HYDROGEN SULPHIDE 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	DAILY MAX	DAILY AVG	ROGS.
1	1	1	1	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	1	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	1	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	1	1	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	1	1	1	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	1	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	1	1	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	1	1	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	1	1	1	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	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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	
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	
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	
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	1	1	
15	1	1	1	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	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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	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	1	1	1	
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	
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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	
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	
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	1	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	1	1	1	
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	1	
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	
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	1	
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	1	1	1	
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	1	
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	1	1	
HOURLY MAX	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	
HOURLY AVG	0.4	0.6	0.8	1.0	1.1	1.1	1.1	0.9	0.8	0.7	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4		

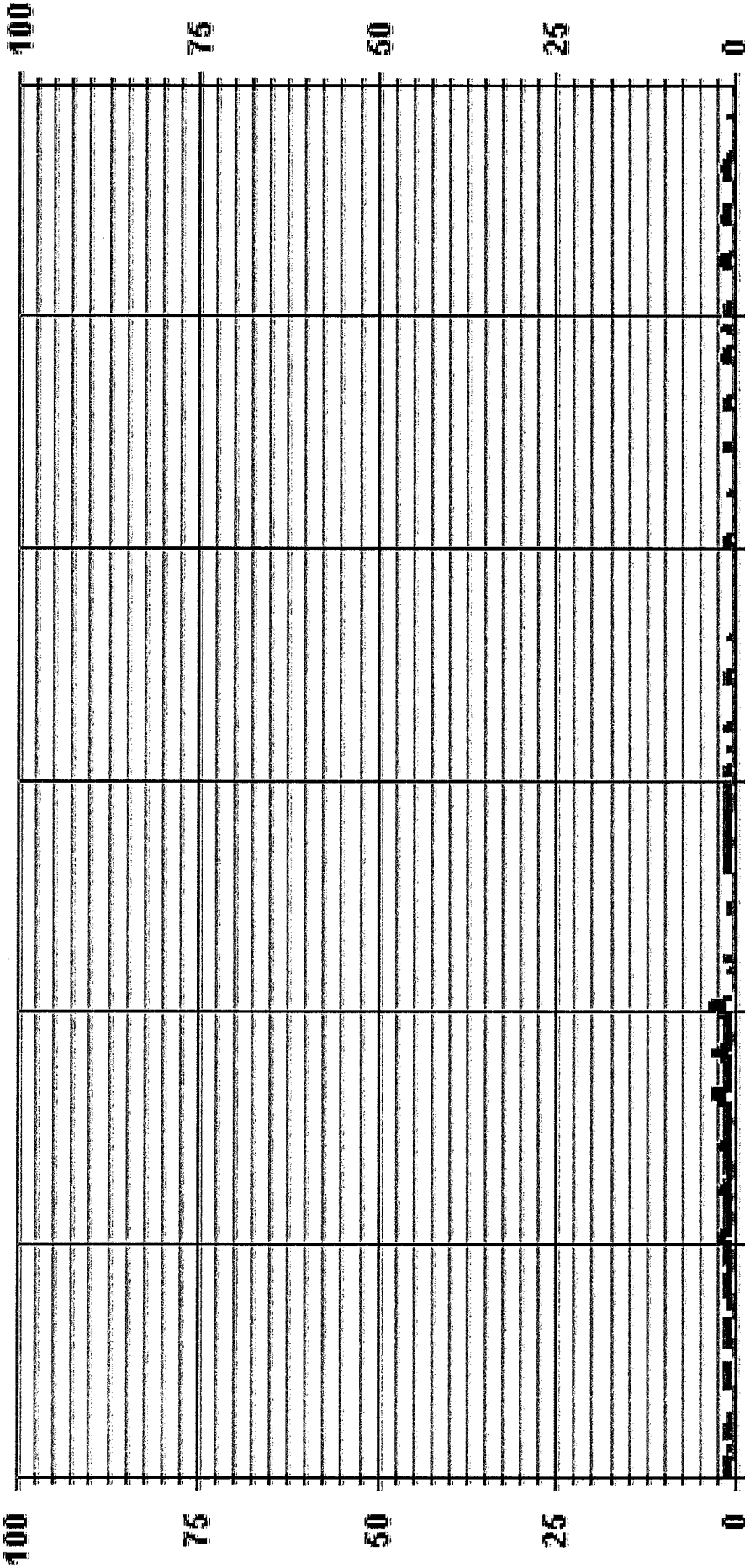
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	288
MAXIMUM INSTANTANEOUS VALUE:	3 PPB @ HOUR(S) VAR
OPERATIONAL TIME:	720 HRS
IZS CALIBRATION TIME:	34 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	0.62

01 Hour Averages



--- LICA35 H2S MAX PPB



H2S\_ / WDR Joint Frequency Distribution (Percent)  
 LIICA-ELK  
 June 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LIICA-ELK  
 Parameter : H2S  
 Units : PPM

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	NW				
< 3	2.35	1.76	1.03	1.76	5.89	5.44	2.35	2.50	1.62	1.03	5.44	11.04	20.91	18.11	12.66	6.03	100.00			
< 10	.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			
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
Totals	2.35	1.76	1.03	1.76	5.89	5.44	2.35	2.50	1.62	1.03	5.44	11.04	20.91	18.11	12.66	6.03				

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NW				
< 3	16	12	7	12	40	37	16	17	11	7	37	75	142	123	86	41	679			
< 10																				
< 50																				
>= 50																				
Totals	16	12	7	12	40	37	16	17	11	7	37	75	142	123	86	41				

Calm : .00 %

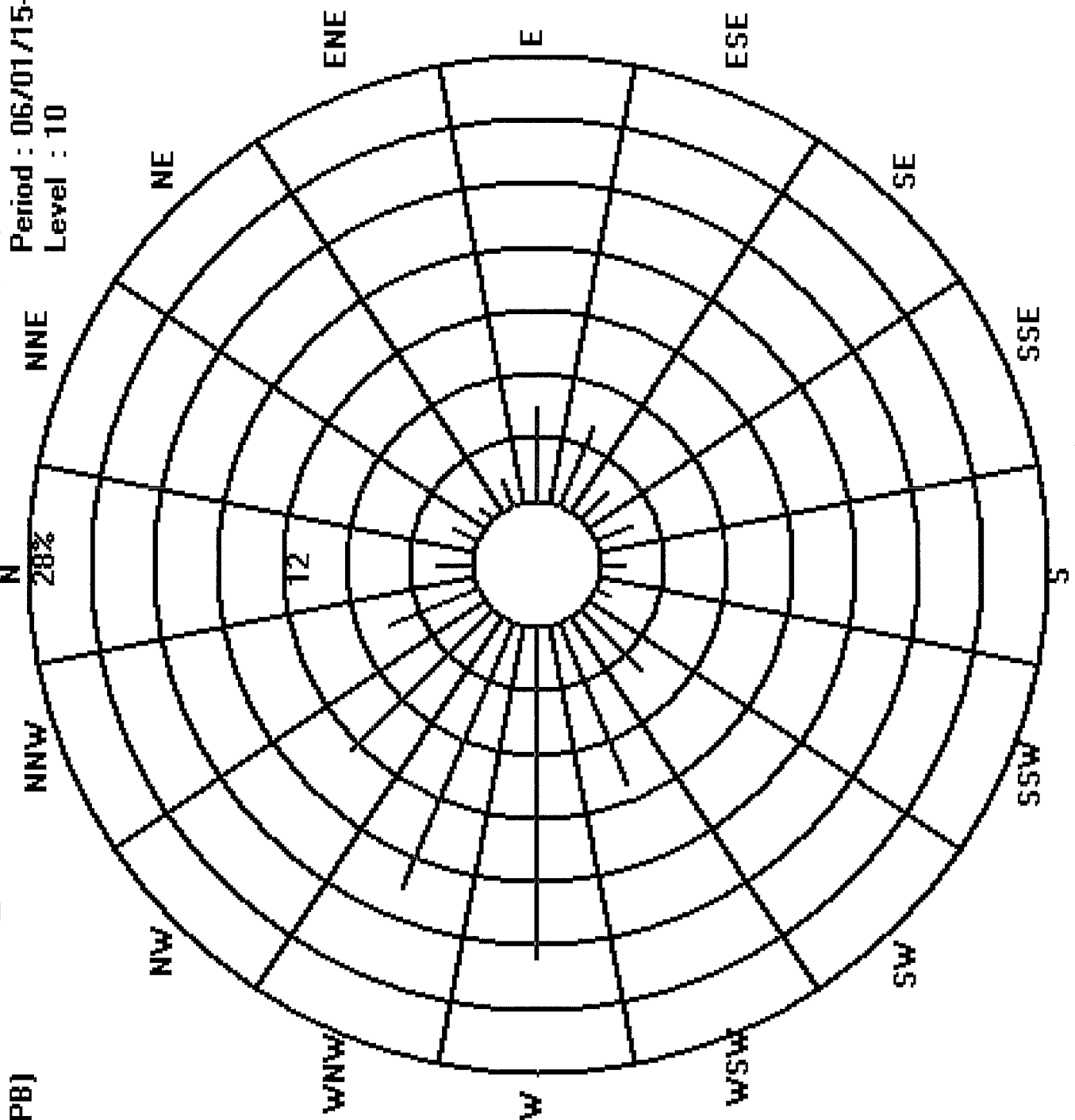
Total # Operational Hours : 679

Logger : 35 Parameter : H2S\_

Site : LICA-ELK

Period : 06/01/15-06/30/15

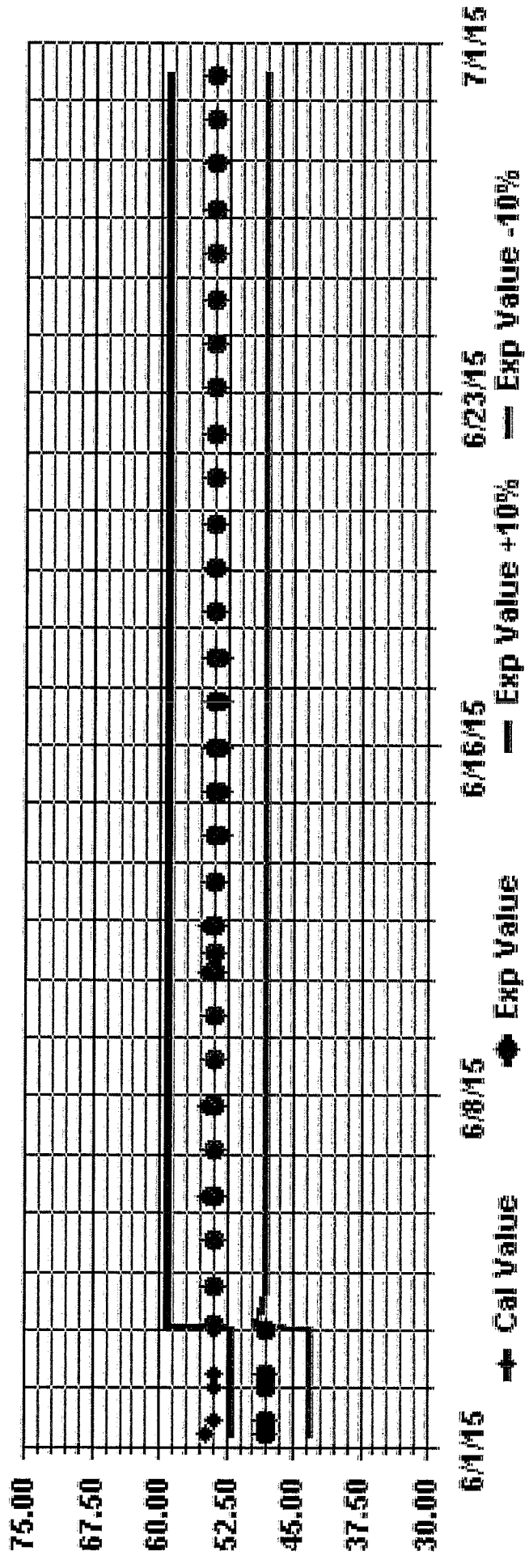
Level : 10



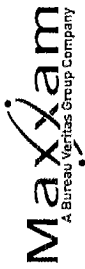
Class Limits (PPB)

>=	50
<	50
<	10
<	3

Calibration Graph for Site: LICA35 Parameter: H2S\_ Sequence: H2S Phase: SPAN



***TOTAL HYDROCARBON***

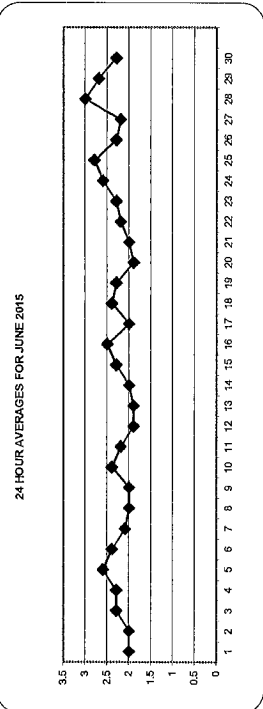


TOTAL HYDROCARBONS (THC) hourly averages in ppm

DAY	MST																								24-HOUR AVG.	RDGS		
	0100	1100	2100	3100	4100	5100	6100	7100	8100	9100	10100	11100	12100	13100	14100	15100	16100	17100	18100	19100	20100	21100	22100	23100				
1	2.8	3.1	2.3	2.1	2.1	2.1	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	3.1	2.1	24	
2	2.4	2.2	2.0	2.1	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	2.0	2.0	2.0	2.5	2.1	24	
3	2.6	2.5	2.5	2.7	2.8	2.8	2.7	2.5	2.4	2.4	2.4	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	2.1	24	
4	3.1	2.9	2.8	3.0	3.3	3.0	2.8	2.4	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	1.8	3.4	2.4	24	
5	3.1	3.3	4.3	3.2	3.6	3.8	3.4	3.3	3.2	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	4.3	2.7	24	
6	4.2	3.8	5.0	5.7	3.4	2.1	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	1.8	1.8	2.0	5.7	2.4	24	
7	1.9	1.9	2.1	2.2	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	2.0	2.0	2.1	2.0	2.4	24	
8	3.7	3.2	2.2	2.5	2.7	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	24	
9	2.2	2.1	2.3	2.1	2.0	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	1.8	1.8	1.8	1.8	2.1	2.1	2.1	24	
10	3.7	4.1	3.4	3.0	3.7	3.3	3.2	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	2.2	2.5	4.0	2.0	24	
11	3.0	3.0	3.2	3.4	3.4	3.4	3.1	2.4	2.3	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	2.5	2.9	2.8	4.1	2.4	24
12	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
13	1.9	2.0	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	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
14	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
15	4.5	3.8	3.4	2.7	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	2.1	2.1	2.1	2.1	2.1	24
16	2.7	3.0	3.4	4.2	4.0	4.1	4.1	3.2	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	1.9	2.0	2.0	2.4	24
17	1.9	2.0	2.0	1.9	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	24
18	3.2	3.4	3.4	3.4	3.4	3.4	2.8	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	24
19	3.0	3.4	4.9	3.7	3.3	2.6	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	2.0	2.0	24
20	2.0	1.9	1.9	1.9	1.9	1.9	2.1	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	2.0	1.9	24	
21	2.1	2.4	2.5	2.5	2.1	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	2.0	1.9	24	
22	3.1	3.3	2.6	2.3	2.7	2.9	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	2.1	2.1	2.1	2.1	24
23	2.4	2.6	2.8	3.1	3.4	3.0	2.2	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	1.9	1.9	1.9	2.0	2.0	2.4	24
24	3.2	3.7	4.2	3.9	3.8	3.3	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	24
25	3.5	3.4	4.4	6.0	5.7	5.1	4.4	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	1.9	1.9	1.9	1.9	1.9	24
26	2.5	2.3	2.5	3.1	3.3	3.2	2.9	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	24
27	2.5	2.4	2.5	2.6	2.6	2.3	2.2	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	1.8	1.8	1.8	1.8	1.8	1.8	24
28	4.7	4.3	5.5	6.3	5.0	4.5	4.8	4.1	2.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	24
29	2.9	4.5	5.2	4.4	3.2	3.3	3.1	4.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	24
30	2.1	2.0	2.7	2.7	3.2	3.1	3.3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	24
HOURLY MAX	4.7	4.5	5.5	6.3	5.7	5.1	4.8	4.1	4.3	2.5	3.2	2.6	2.2	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
HOURLY AVG	2.8	2.9	3.1	3.0	2.8	2.6	2.3	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	1.9	1.9	1.9	1.9	1.9	1.9	24

STATUS FLAG CODES

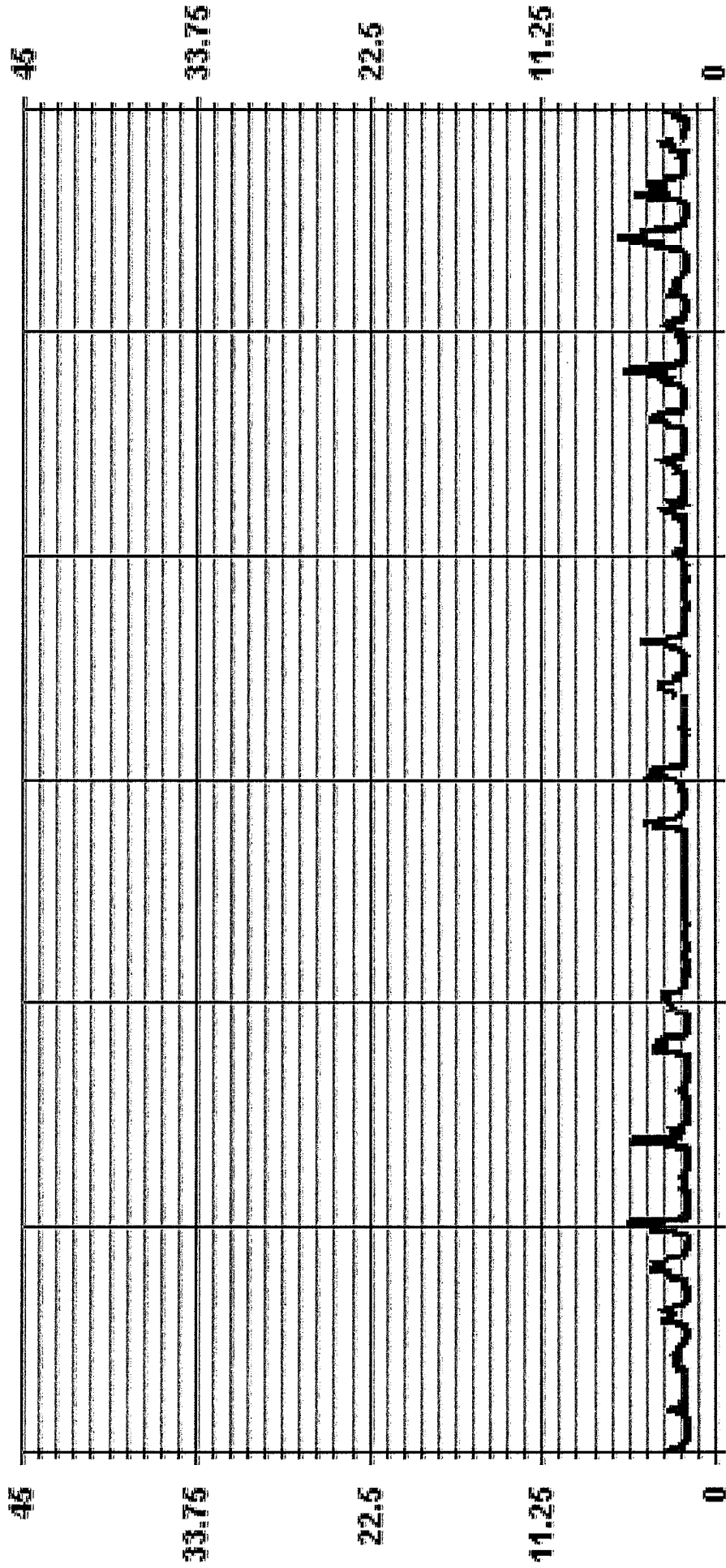
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



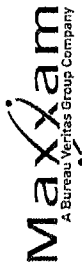
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	685	PPM @ HOUR(S)	3	ON DAY(S)	28
MAXIMUM 1-HR AVERAGE:	6.3	PPM		ON DAY(S)	28
MAXIMUM 24-HR AVERAGE:	3.0	PPM		VAR- VARIOUS	
ISZ CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.73		MONTHLY AVERAGE:	2.3	PPM

# 01 Hour Averages



— LICA35    - - - - THC55    PPM



TOTAL HYDROCARBONS MAX Instantaneous maximum in ppm

DAY	MST																								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		DAILY MAX.						
1	3.8	6.3	3.9	2.4	2.8	2.2	2.1	1.9	1.9	1.9	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	2.0	3.8	3.6	6.3	2.5	24				
2	2.9	3.1	2.2	2.1	2.3	2.3	2.2	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	2.1	2.4	2.5	2.9	2.9	3.1	2.3	24			
3	3.1	2.6	2.8	2.9	3.0	3.1	2.9	2.6	2.5	2.5	2.3	2.2	\$	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.4	3.1	4.0	4.0	2.6	24				
4	3.5	3.0	3.0	3.2	3.9	3.2	3.1	2.6	2.2	2.1	2.0	\$	1.9	2.0	2.0	2.0	2.2	2.1	2.0	2.0	2.0	2.4	2.7	3.3	4.3	4.3	2.6	24				
5	3.6	4.0	5.0	3.8	4.5	4.2	4.2	3.8	3.6	2.8	\$	2.2	1.9	2.1	1.9	1.8	1.8	1.8	1.8	1.8	1.8	2.8	5.5	3.2	6.3	6.3	3.2	24				
6	5.6	4.4	6.6	7.3	6.5	2.2	2.4	2.1	1.9	\$	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.5	2.5	2.2	7.3	2.9	24					
7	2.2	2.0	2.6	2.6	2.7	2.5	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	2.2	3.7	4.0	3.9	7.3	2.5	24					
8	5.4	4.0	3.0	2.9	3.1	2.4	2.8	\$	2.3	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	2.1	2.3	5.4	2.3	24				
9	2.3	2.2	2.4	2.3	2.0	2.5	\$	2.3	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	2.4	3.2	4.8	4.8	2.2	24				
10	5.1	5.9	4.2	3.3	6.1	\$	4.0	2.5	2.3	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	3.2	3.6	3.2	3.5	6.1	2.9	24				
11	3.5	3.2	3.5	3.7	\$	4.1	3.9	2.7	2.4	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	1.8	1.8	1.9	4.1	2.5	24				
12	2.6	2.6	2.2	\$	2.1	2.1	1.9	1.8	C	C	C	C	C	C	C	C	C	C	C	C	1.9	2.0	2.1	2.3	2.0	2.1	2.6	2.1	24			
13	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	2.0	2.1	2.3	2.0	2.3	2.0	2.4	24			
14	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	2.0	5.0	3.1	6.2	6.2	2.3	24				
15	\$	5.6	4.7	3.7	3.4	2.7	2.6	2.2	2.2	2.1	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.6	2.3	2.1	\$	5.6	2.6	2.4	24			
16	3.4	3.3	3.8	4.8	5.0	4.6	4.5	4.3	2.3	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	\$	2.1	5.0	2.8	24			
17	2.0	2.0	2.0	2.0	2.0	2.3	2.1	2.0	2.0	1.9	2.2	2.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	\$	3.2	3.3	3.3	2.1	24		
18	3.5	3.8	3.6	3.6	3.6	3.8	3.1	2.6	2.5	2.6	2.5	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.2	2.2	5	2.9	2.5	3.0	3.8	2.6	24
19	4.2	4.3	6.2	4.5	3.9	2.8	2.5	2.1	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.2	2.1	2.1	2.3	2.4	2.7	2.1	2.4	2.4	24	
20	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.3	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.3	2.0	2.3	2.0	2.0	2.4	2.4	24	
21	2.3	4.3	4.0	3.0	2.2	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	2.2	2.2	2.3	3.6	3.7	4.3	2.1	2.4	2.4	24	
22	4.9	5.1	2.9	2.4	3.7	3.6	2.1	2.1	2.4	2.7	2.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	3.3	3.2	2.7	5.1	2.7	2.4	2.4	24	
23	2.8	3.5	3.4	3.6	3.7	3.5	2.4	2.4	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	2.2	2.3	3.6	3.6	3.7	2.5	2.4	2.4	2.4	24	
24	3.8	5.7	5.2	4.3	4.8	4.1	3.0	2.3	2.2	2.1	2.0	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.4	2.6	6.0	5.1	3.7	6.0	3.2	2.4	2.4	2.4	24	
25	5.7	3.9	5.4	7.2	6.5	5.8	4.8	3.6	2.6	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6	3.6	2.4	2.4	2.6	7.2	3.3	2.4	2.4	2.4	24	
26	2.6	2.7	2.9	3.8	4.5	3.9	4.1	2.5	2.0	2.5	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	7.1	3.9	2.7	3.6	7.1	2.9	2.4	2.4	2.4	24	
27	3.4	2.7	4.8	3.2	2.8	2.6	2.2	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	2.1	4.5	2.9	5.0	4.2	5.0	2.7	2.4	2.4	2.4	24	
28	11.4	5.9	7.8	10.2	7.0	4.9	5.5	5.8	2.8	2.7	\$	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.2	2.2	2.4	2.6	11.4	4.0	2.4	2.4	2.4	24	
29	3.9	6.8	6.1	6.3	4.1	4.2	4.0	3.6	5.2	\$	3.5	3.1	2.5	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.8	2.6	6.8	3.3	2.4	2.4	2.4	24
30	2.2	2.3	3.3	3.5	4.0	3.4	4.2	3.9	\$	2.3	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	3.0	3.0	3.0	3.4	3.7	4.2	2.7	2.4	2.4	2.4	24	
HOURLY MAX	11.4	6.8	7.8	10.2	7.0	5.8	5.5	5.8	5.2	2.8	3.5	3.1	2.7	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.5	3.0	7.1	6.0	5.1	7.3						
HOURLY AVG	3.6	3.8	3.8	3.7	3.7	3.1	3.0	2.6	2.3	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.6	2.9	3.0	3.4						

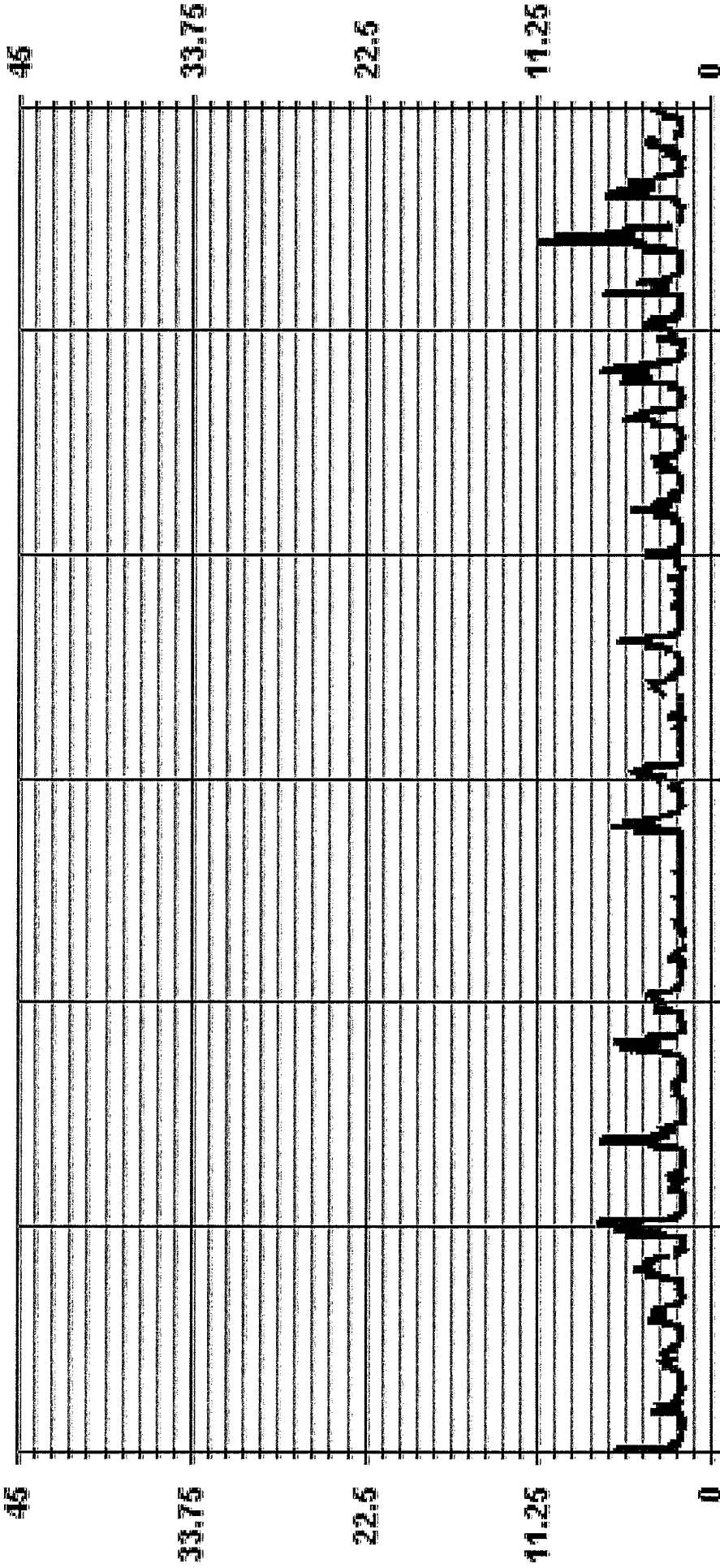
STATUS FLAG CODES

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:	684
MAXIMUM INSTANTANEOUS VALUE:	11.4 PPM @ HOUR(S) 0 ON DAY(S) 28
12S CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	1.19
OPERATIONAL TIME:	720 HRS
VAR-VARIOUS	

01 Hour Averages



--- LICA35 THC55MAX PPM



LICA35  
 THCS5 / WDR Joint Frequency Distribution (Percent)  
 June 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA35  
 Parameter : THCS5  
 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	2.33	1.60	1.02	1.31	3.79	4.96	1.89	2.48	1.31	.87	4.52	9.05	16.78	14.16	11.53	5.98	83.64
< 10.0	.00	.14	.00	.43	2.04	1.16	.87	.14	.29	.14	.87	1.89	3.94	3.35	1.02	.00	16.35
< 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	2.33	1.75	1.02	1.75	5.83	6.13	2.77	2.62	1.60	1.02	5.40	10.94	20.72	17.51	12.55	5.98	

Calm : .00 %

Total # Operational Hours : 685

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	16	11	7	9	26	34	13	17	9	6	31	62	115	97	79	41	573
< 10.0	1	1	3	14	8	6	1	1	2	1	6	13	27	23	7		112
< 50.0																	
>= 50.0																	
Totals	16	12	7	12	40	42	19	18	11	7	37	75	142	120	86	41	

Calm : .00 %

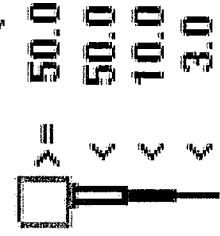
Total # Operational Hours : 685

Logger : 35 Parameter : THC55

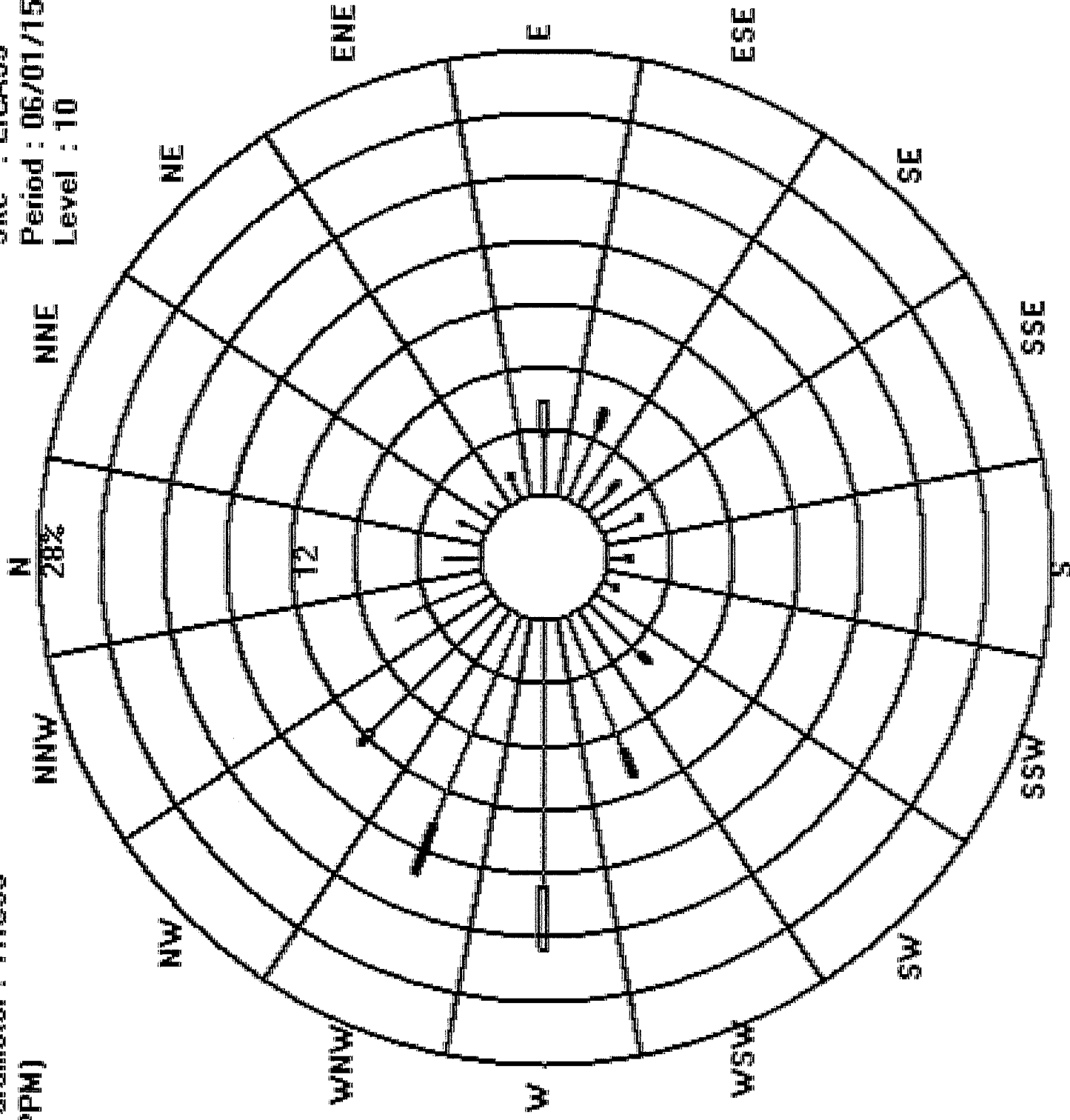
Site : LICA35

Class Limits (PPM)

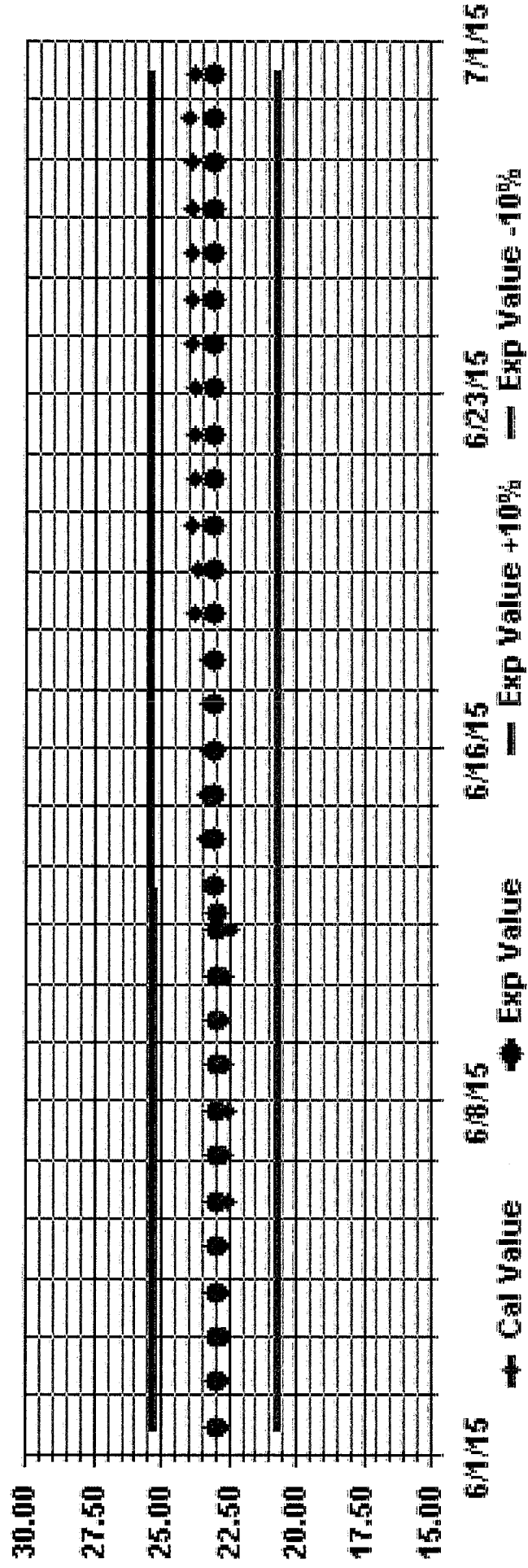
Period : 06/01/15-06/30/15



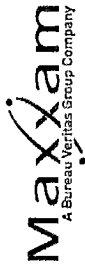
Level : 10



Calibration Graph for Site: LICA35 Parameter: THC55 Sequence: THC55 Phase: SPAN



***METHANE***



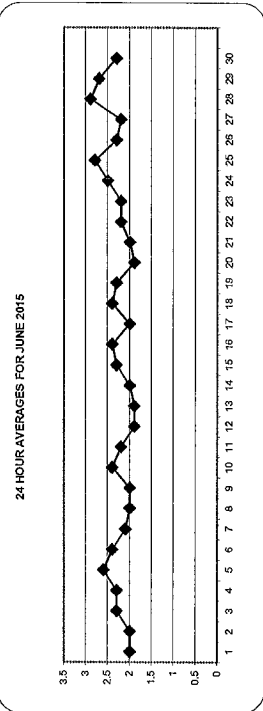
METHANE (CH4) hourly averages in ppm

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	24:00	
1	2.8	3.1	2.3	2.1	2.1	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	1.8	1.9	1.9	1.9	2.6	3.1	2.1
2	2.4	2.2	2.0	2.1	2.2	2.1	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	1.9	2.0	2.0	2.1	2.4	2.5	2.5
3	2.6	2.5	2.5	2.7	2.8	2.8	2.7	2.5	2.4	2.4	2.2	2.1	2.1	2.1	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	2.2	2.5	2.9	3.4
4	3.1	2.9	2.8	3.0	3.3	3.0	2.8	2.4	2.1	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	2.3	2.9	3.1
5	3.0	3.3	4.2	3.1	3.6	3.7	3.4	3.3	3.2	2.5	S	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.4	2.6	3.7	4.2
6	4.1	3.7	4.8	5.5	3.3	2.1	2.2	1.9	1.8	S	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	2.0	2.4
7	1.9	1.9	2.1	2.2	2.1	2.0	2.0	2.0	2.0	S	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.5	3.1	3.0	5.4	2.2
8	3.6	3.1	2.2	2.5	2.7	2.1	2.1	S	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	2.0	2.1	3.6	2.1
9	2.2	2.1	2.3	2.1	2.0	2.1	S	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	2.2	2.5	3.9	3.9	2.0
10	3.7	4.0	3.4	3.0	3.7	S	3.3	2.2	2.0	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.8	2.8	4.0	2.4
11	3.0	3.0	3.2	3.4	S	3.4	3.1	2.4	2.3	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	3.4	2.3
12	2.0	2.0	2.0	S	1.9	1.9	1.9	1.8	1.8	1.8	C	C	C	C	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	1.9	2.0	1.9
13	1.9	2.0	S	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	2.0	1.9	2.0
14	1.9	S	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	2.3	3.9	3.9	2.0
15	S	4.5	3.8	3.4	2.7	2.4	2.4	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	2.1	2.1	2.1	S	4.5	2.3
16	2.7	3.0	3.4	4.1	4.0	4.0	4.1	3.1	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	2.1	2.1	2.1	S	2.0
17	1.9	2.0	2.0	1.9	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	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.4
18	3.2	3.4	3.4	3.4	3.4	3.4	2.8	2.5	2.5	2.5	2.3	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	1.9	2.2	2.3	2.5
19	2.9	3.3	4.8	3.7	3.2	2.6	2.3	2.0	2.0	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	1.9	1.9	4.8	2.3
20	2.0	1.9	1.9	1.9	1.9	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.2	1.9
21	2.1	2.4	2.5	2.5	2.1	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	2.0	2.0	2.8	2.5	2.8
22	3.1	3.3	2.6	2.3	2.7	2.9	2.0	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	2.6	2.5	2.4	3.3
23	2.4	2.6	2.8	3.1	3.4	3.0	2.2	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	2.0	2.1	3.0	3.0	3.4	2.3
24	3.2	3.7	4.1	3.9	3.8	3.3	2.2	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	2.2	2.3	3.2	3.3	3.0	4.1
25	3.5	3.3	4.3	5.8	5.5	5.0	4.3	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	2.2	2.2	2.2	2.4	5.8	2.8
26	2.5	2.3	2.5	3.1	3.3	3.2	2.9	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	3.0	2.4	2.9	3.3
27	2.5	2.4	2.5	2.6	2.6	2.3	2.2	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	1.9	2.0	2.7	2.6	3.3	2.2
28	4.6	4.2	5.3	6.1	4.9	4.4	4.7	4.0	2.6	2.4	S	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	1.9	2.1	3.3	2.4
29	2.8	4.3	5.0	4.3	3.1	3.3	3.3	3.0	4.2	S	3.0	2.5	2.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.4	2.3	5.0
30	2.1	2.0	2.7	2.7	3.2	3.0	3.3	2.9	S	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.4	2.2	2.5	2.4	3.0
HOURLY MAX	4.6	4.5	5.3	6.1	5.5	5.0	4.7	4.0	4.2	2.5	3.0	2.5	2.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.4	3.0	3.2	5.4
HOURLY AVG	2.7	2.9	3.1	3.1	2.9	2.7	2.6	2.3	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	2.2	2.2	2.5	2.8

STATUS FLAG CODES

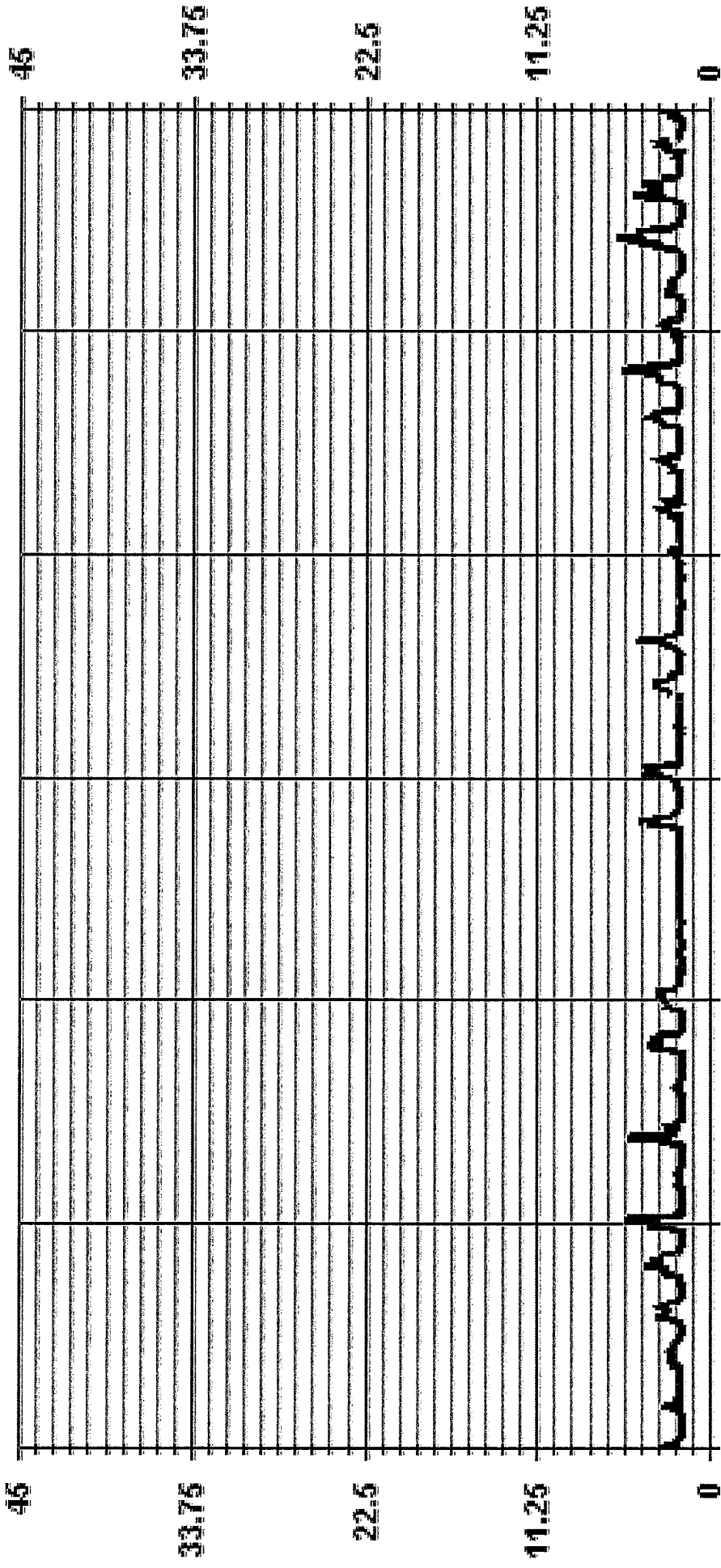
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	685
MAXIMUM 1-HR AVERAGE:	6.1 PPM
MAXIMUM 24-HR AVERAGE:	3.0 PPM
IS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.70
OPERATIONAL TIME:	720 HRS
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	2.3 PPM
ON DAY(S)	28
ON DAY(S) VAR-VARIOUS	28

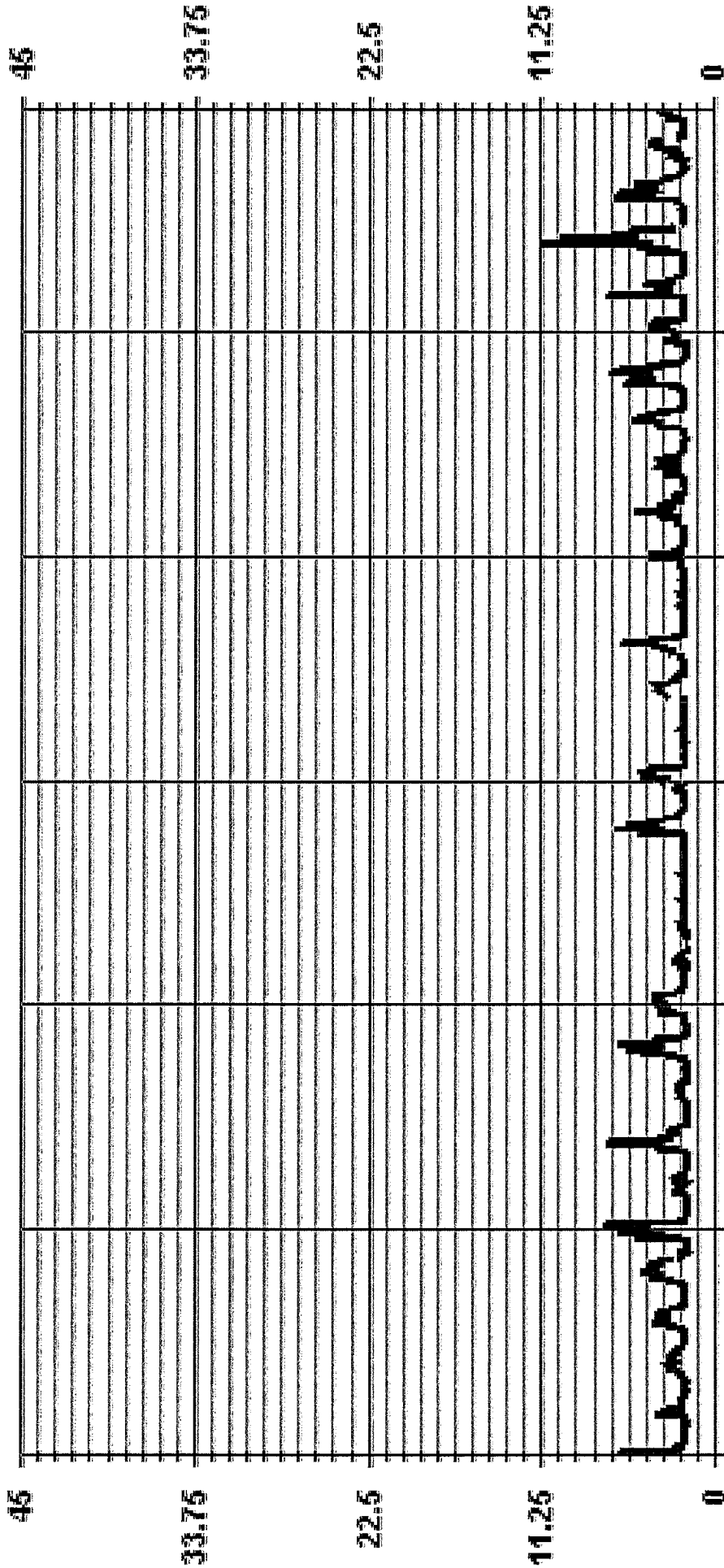
01 Hour Averages



— LICA35 METHANE PPM



01 Hour Averages



--- LICA35 MATHMAX PPM



LICA35  
METHANE / WDR Joint Frequency Distribution (Percent)

June 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	2.33	1.60	1.02	1.31	3.79	4.96	1.89	2.48	1.31	1.02	4.52	9.05	16.78	14.16	11.53	5.98	83.79
< 10.0	.00	.14	.00	.43	2.04	1.16	.87	.14	.29	.00	.87	1.89	3.94	3.35	1.02	.00	16.20
< 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	2.33	1.75	1.02	1.75	5.83	6.13	2.77	2.62	1.60	1.02	5.40	10.94	20.72	17.51	12.55	5.98	

Calm : .00 %

Total # Operational Hours : 685

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	16	11	7	9	26	34	13	17	9	7	31	62	115	97	79	41	574
< 10.0	1	1	3	3	14	8	6	1	2	2	6	13	27	23	7		111
< 50.0																	
>= 50.0																	
Totals	16	12	7	12	40	42	19	18	11	7	37	75	142	120	86	41	

Calm : .00 %

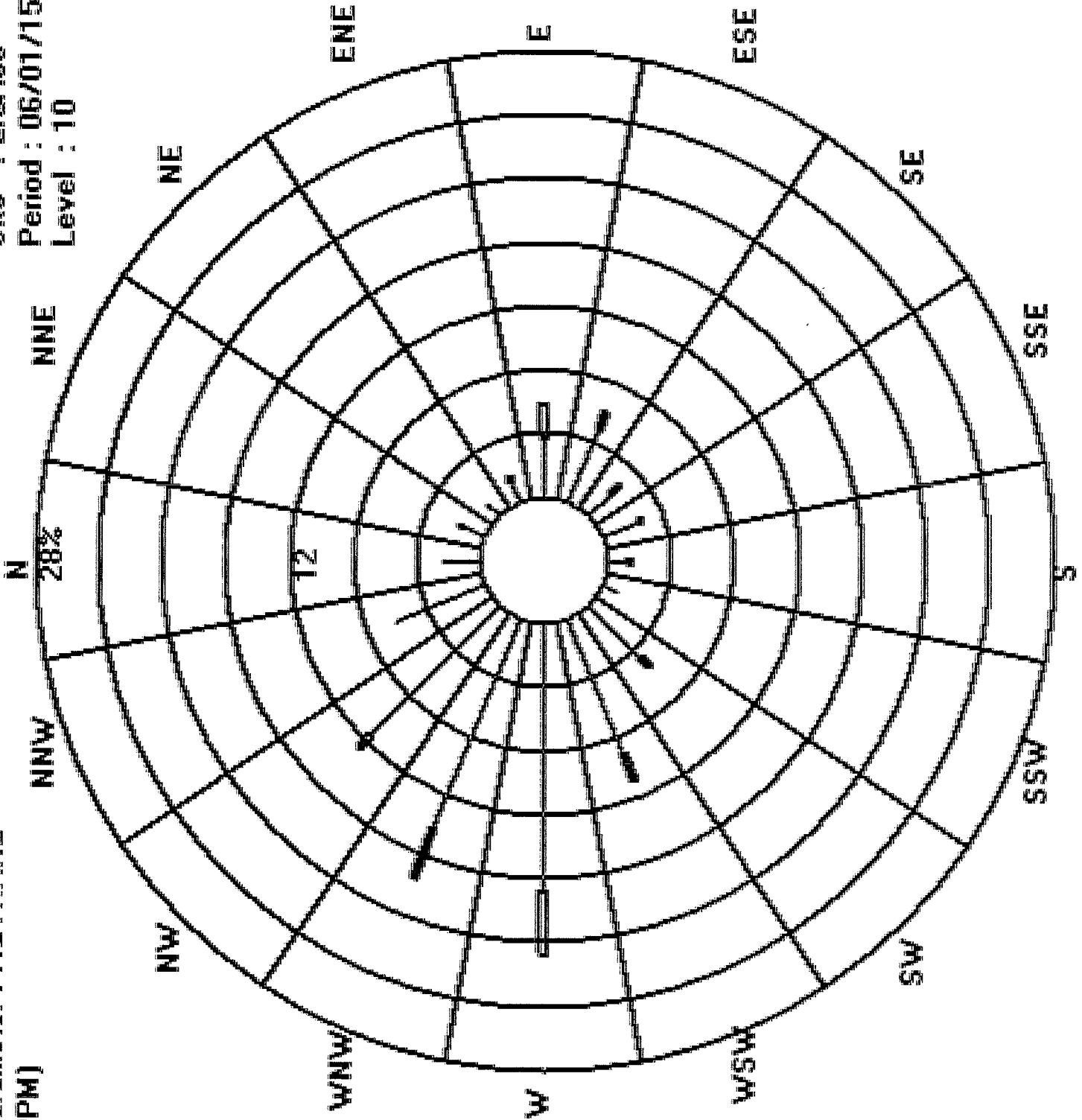
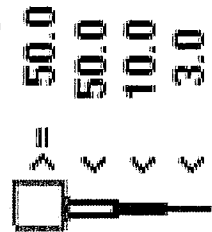
Total # Operational Hours : 685

Logger : 35 Parameter : METHANE

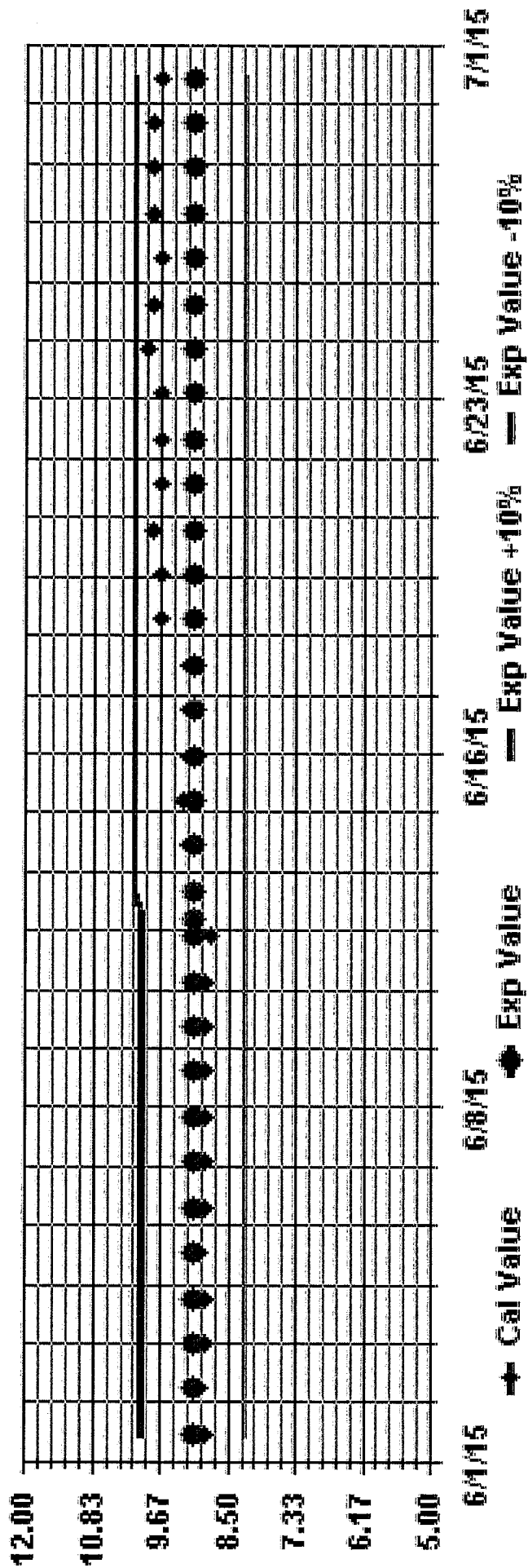
Site : LICA35

Class Limits (PPM)

Period : 06/01/15-06/30/15



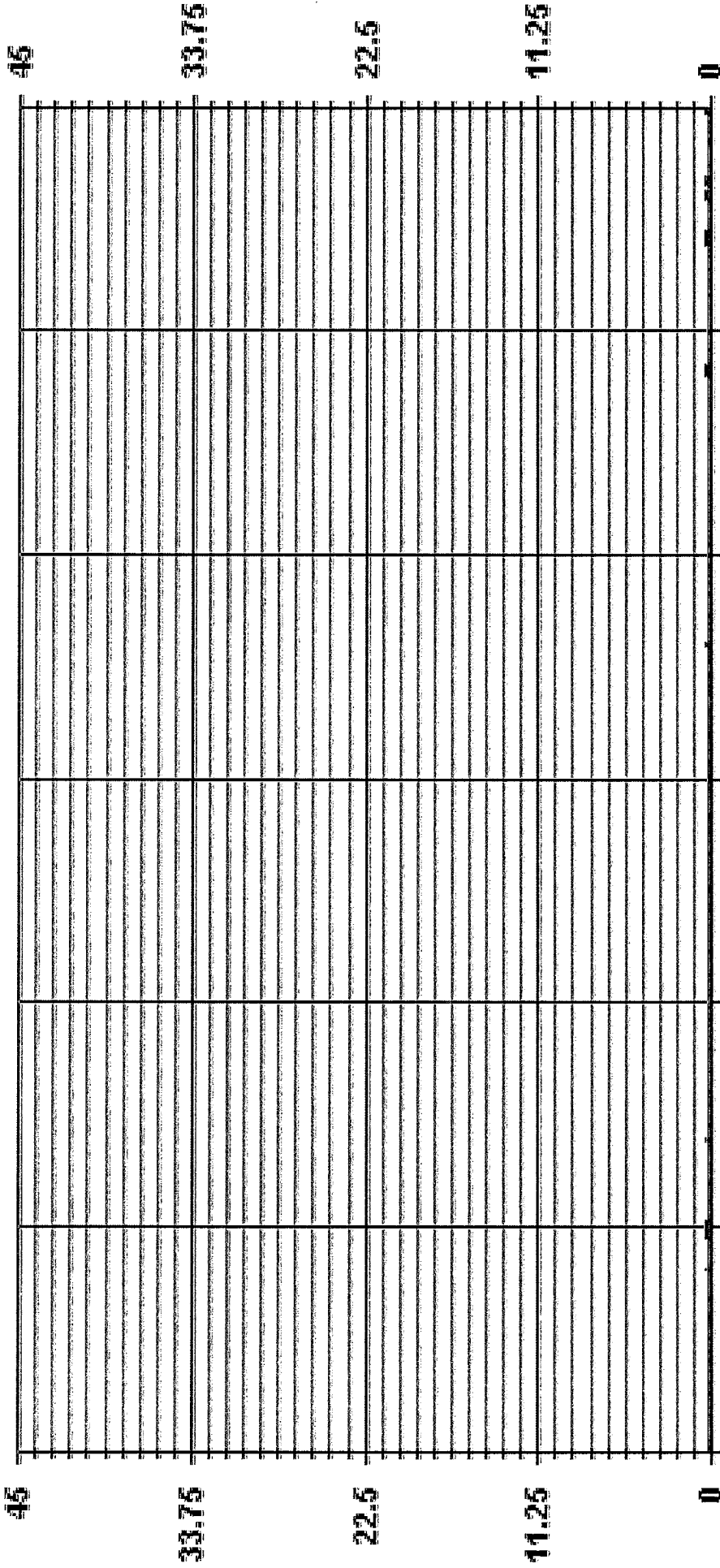
Calibration Graph for Site: LICA35 Parameter: METHANE Sequence: THC55 Phase: SPAN



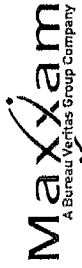
***NON-METHANE HYDROCARBON***



01 Hour Averages



— LICA35 NMHC PPM



NON-METHANE HYDROCARBONS MAX instantaneous maximum in ppm

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	DAILY MAX	24-HOUR AVG.	ROGS.	
1	0.14	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	0.00	0.17	0.03	24		
2	0.00	0.00	0.13	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	0.18	0.01	24		
3	0.14	0.00	0.00	0.12	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.02	24		
4	0.00	0.00	0.09	0.23	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.09	24		
5	0.32	0.19	0.24	0.18	0.18	0.19	0.21	0.18	0.14	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.15	24		
6	0.29	0.25	0.31	0.33	0.31	0.00	0.13	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	0.33	0.07	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	0.00	0.00	0.33	0.07	24		
8	0.23	0.19	0.12	0.12	0.21	0.12	0.16	0.14	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	0.35	0.04	24		
9	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.06	24		
10	0.17	0.19	0.13	0.13	0.23	0.16	0.19	0.30	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	0.22	0.03	24		
11	0.17	0.10	0.20	0.14	0.22	0.13	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.09	24		
12	0.10	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.06	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	0.00	0.00	0.10	0.01	24		
14	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	0.00	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	0.06	0.10	0.18	0.00	0.11	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	0.18	0.02	24		
16	0.00	0.31	0.15	0.80	0.15	0.29	0.40	0.16	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	0.18	0.03	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	0.00	0.00	0.10	0.01	24		
18	0.06	0.13	0.11	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	24		
19	0.67	0.91	0.25	0.28	0.30	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	0.91	0.14	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	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	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.10	0.15	0.00	0.00	0.10	0.12	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	0.10	0.00	0.00	0.00	24
23	0.20	0.12	0.12	0.12	0.10	0.10	0.09	0.13	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	0.23	0.08	24		
24	0.49	0.31	0.28	0.32	0.19	0.34	0.00	0.14	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	0.49	0.16	24		
25	0.19	0.18	0.28	0.35	0.46	0.36	0.21	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.14	24		
26	0.07	0.22	0.24	0.31	0.18	0.54	0.18	0.00	0.00	0.53	0.14	0.13	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	0.54	0.13	24		
27	0.15	0.08	0.00	0.11	0.08	0.09	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.06	24		
28	0.30	0.28	0.38	0.47	0.30	0.23	0.26	0.28	0.10	0.11	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	0.47	0.15	24		
29	0.23	0.36	0.36	0.22	0.24	0.18	0.19	0.24	0.25	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	0.36	0.15	24		
30	0.10	0.00	0.11	0.20	0.41	0.16	0.20	0.15	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.11	24		
HOURLY MAX	0.67	0.91	0.38	0.80	0.46	0.54	0.40	0.28	0.30	0.53	0.84	0.17	0.57	0.16	0.12	0.24	0.13	0.18	0.22	0.23	0.58	0.58	0.25	0.35										
HOURLY AVG	0.15	0.15	0.13	0.16	0.13	0.12	0.08	0.06	0.05	0.06	0.05	0.01	0.04	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

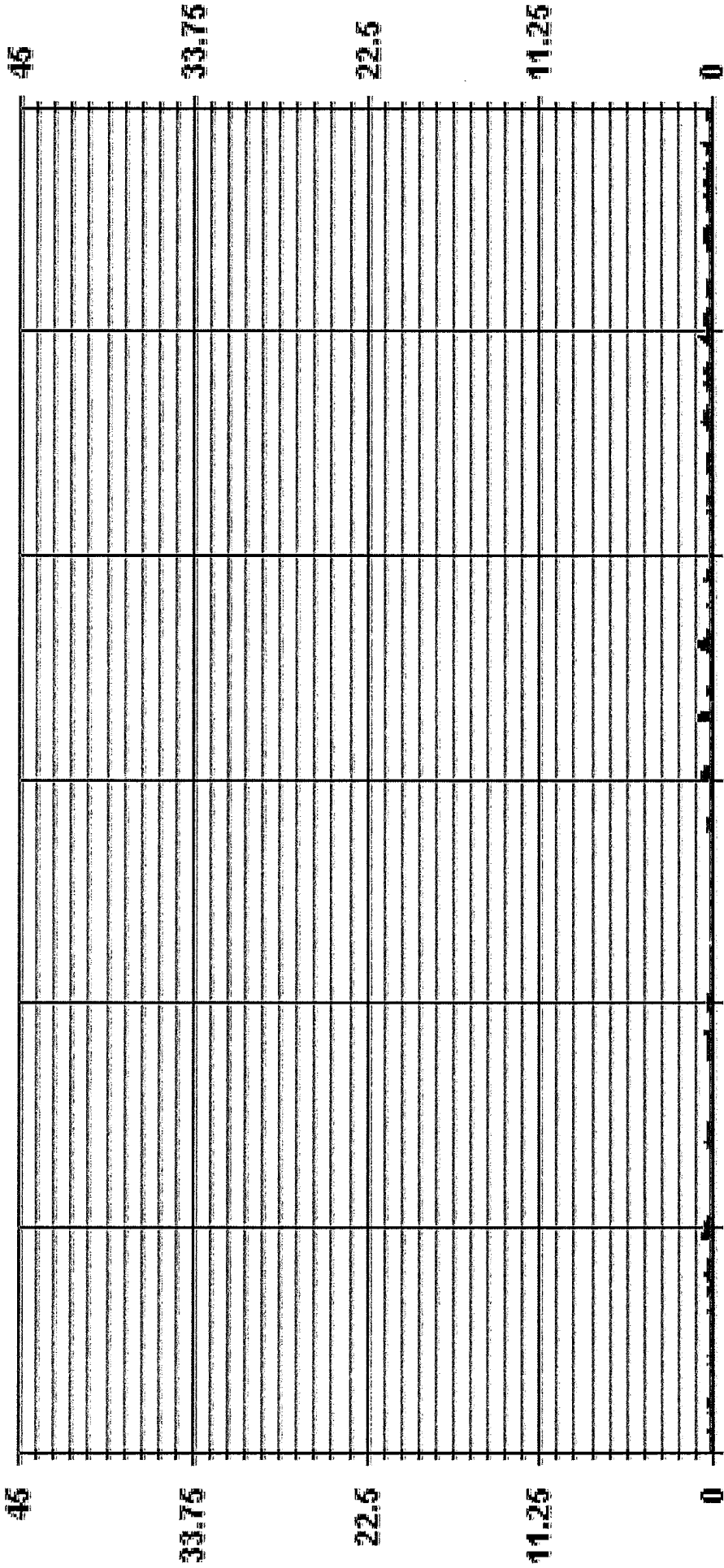
STATUS FLAG CODES

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:	251	PPM	@ HOUR(S)	1	ON DAY(S)	19	HRS	720
MAXIMUM INSTANTANEOUS VALUE:	0.91	AVG	0.11	VARIOUS				
IZS CALIBRATION TIME:	31	MONTHLY CALIBRATION TIME:	5	OPERATIONAL TIME:				
STANDARD DEVIATION:	0.12							

01 Hour Averages



— LICA35 NMHC MAX PPM



IICA35  
NMHC / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 35  
Site Name : IICA35  
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	WRW	NW	NNW	Freq
< .2	2.33	1.75	1.02	1.75	5.83	6.13	2.77	2.62	1.60	1.02	5.40	10.94	20.72	17.51	12.55	5.98	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	2.33	1.75	1.02	1.75	5.83	6.13	2.77	2.62	1.60	1.02	5.40	10.94	20.72	17.51	12.55	5.98	

Calm : .00 %

Total # Operational Hours : 685

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WRW	NW	NNW	Freq
< .2	16	12	7	12	40	42	19	18	11	7	37	75	142	120	86	41	685
< .5																	
< 1.0																	
< 2.0																	
< 4.0																	
>= 4.0																	
Totals	16	12	7	12	40	42	19	18	11	7	37	75	142	120	86	41	

Calm : .00 %

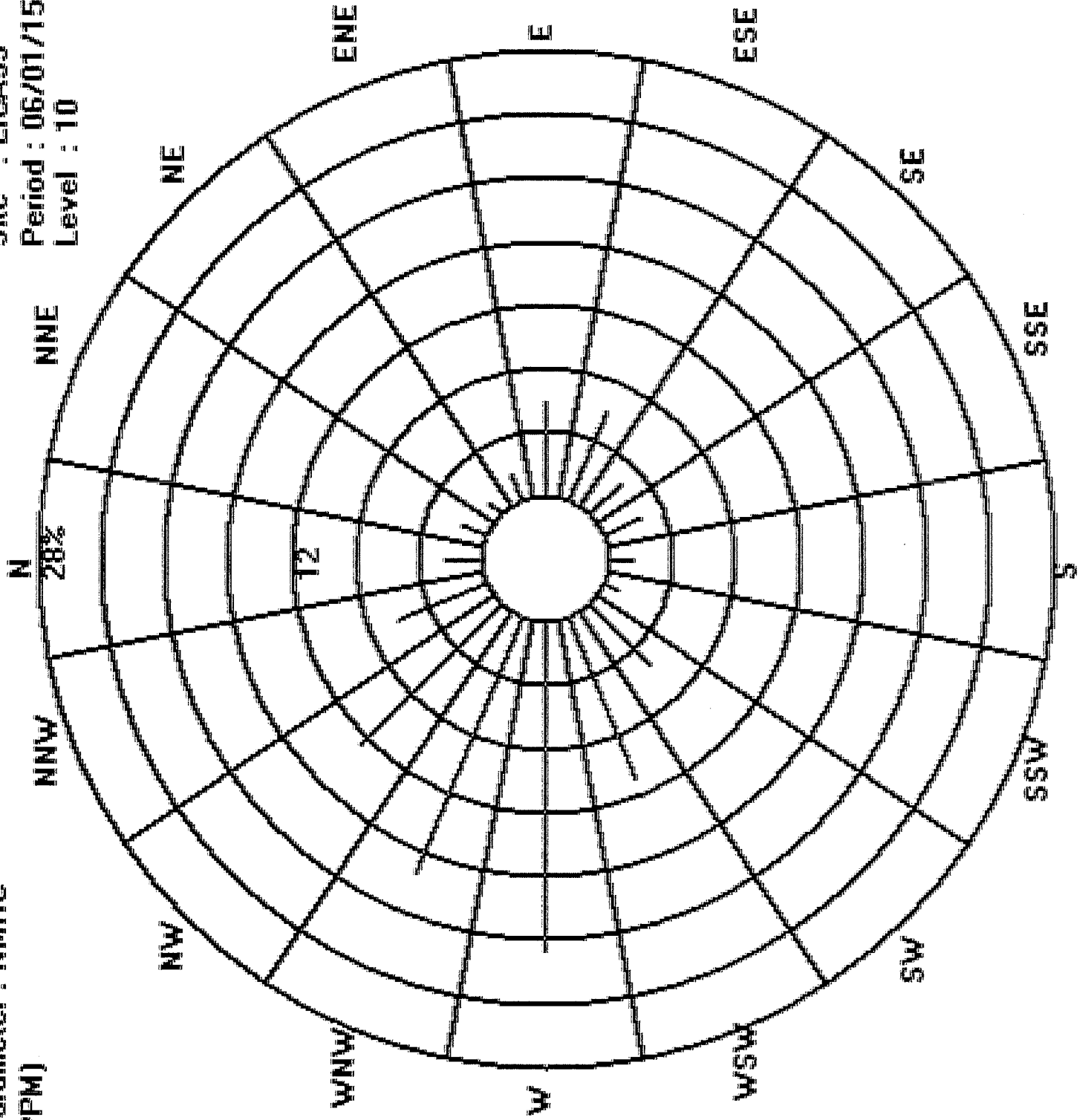
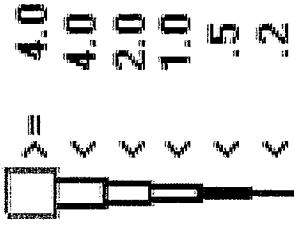
Total # Operational Hours : 685

Logger : 35 Parameter : NMHC

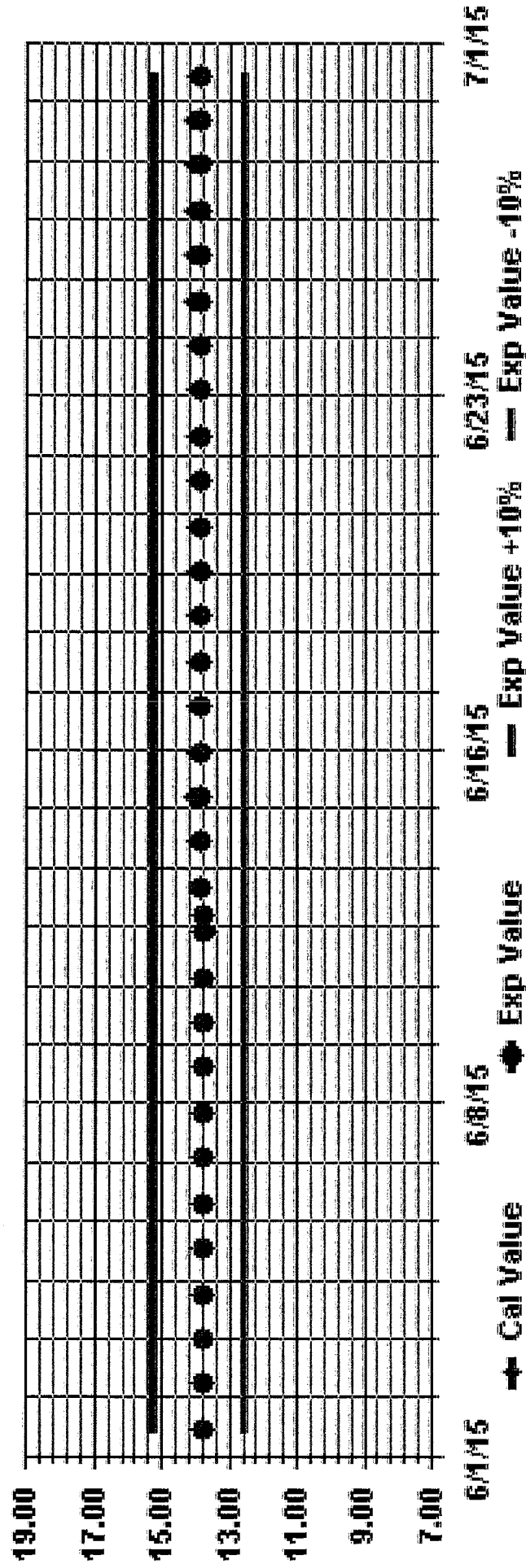
Site : LICA35

Class Limits (PPM)

Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA35 Parameter: NMHC Sequence: THC55 Phase: SPAN



***OXIDES OF NITROGEN***



OXIDES OF NITROGEN (NOx) hourly averages in ppb

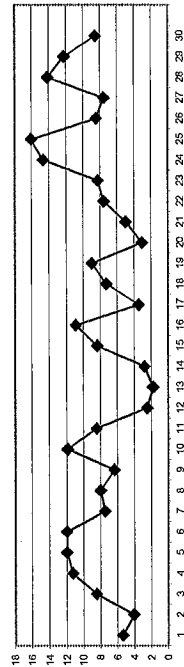
MST

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	17.1	13.8	10.7	7.6	7.8	6.5	3.3	1.7	0.6	0.8	0.7	0.4	0.6	0.7	0.7	0.7	0.6	0.4	0.4	0.6	0.6	1.3	14.2	34.2	34.2	5.4		
2	9.8	3.5	3.0	3.9	10.6	3.1	2.6	2.2	3.0	2.4	1.4	0.9	0.8	0.8	1.9	1.3	2.1	2.7	3.0	4.3	8.6	5.9	11.2	7.0	11.2	4.1		
3	7.5	9.2	9.0	9.0	9.7	13.8	9.1	9.3	7.5	8.3	5.9	5.5	5	1.5	1.5	1.3	1.5	1.5	1.6	5.7	18.2	15.6	15.9	26.2	26.2	8.5		
4	17.2	17.7	16.4	24.6	28.4	21.6	11.7	7.2	4.9	3.3	2.7	2.3	2.3	1.7	2.1	2.2	7.0	5.4	4.7	5.9	6.4	17.9	21.5	26.0	28.4	11.3		
5	21.2	16.9	27.7	13.6	19.6	32.0	24.2	16.1	13.1	6.7	5	2.6	1.6	2.2	1.5	1.1	0.8	0.8	0.9	5.3	8.9	22.7	36.2	36.2	12.0	24		
6	37.3	33.2	40.4	63.9	26.8	10.8	11.4	3.4	1.1	5	1.0	0.8	0.8	0.4	0.4	0.6	0.6	0.6	0.9	1.3	14.0	12.0	10.5	3.4	63.9	12.0	24	
7	7.2	5.2	7.4	9.7	7.9	8.3	7.0	6.8	2.4	1.2	0.8	0.8	0.7	0.5	0.7	0.5	0.4	1.2	2.8	12.4	15.4	23.8	48.8	48.8	7.5	24		
8	21.9	29.2	20.7	23.1	20.2	13.2	20.8	5	4.7	2.1	0.7	0.6	0.2	0.4	1.1	0.9	1.0	1.1	0.2	2.4	2.8	6.4	9.9	29.2	8.0	24		
9	11.6	6.3	12.9	7.6	5.4	8.7	5	7.5	2.9	1.4	0.7	1.0	0.8	0.7	0.9	1.4	2.2	1.3	1.1	2.2	2.4	9.0	21.1	37.4	6.4	24		
10	40.2	43.6	25.5	22.1	31.1	5	35.6	5.8	2.8	1.4	1.1	0.6	0.4	0.5	0.7	1.2	1.4	1.6	1.7	4.2	13.2	16.9	11.1	11.8	43.6	11.9	24	
11	15.7	12.5	17.9	17.2	5	21.1	15.9	8.2	7.4	1.1	0.9	0.9	0.9	0.9	1.1	1.1	1.2	2.5	6.1	2.0	4.6	3.8	1.7	2.1	6.1	2.5	24	
12	5.0	4.9	4.4	5	4.3	3.7	1.3	1.3	1.1	0.9	0.9	0.7	0.4	0.6	0.7	0.3	0.5	0.5	0.4	0.3	1.1	5.8	3.5	3.3	5.8	1.8	24	
13	1.9	2.6	5	3.7	2.5	2.9	2.8	2.7	2.4	0.5	0.7	0.7	0.4	0.6	0.7	0.4	0.1	0.3	0.3	0.8	1.0	2.9	10.5	10.4	29.2	2.8	24	
14	1.2	5	0.7	1.1	0.5	0.1	0.6	0.5	0.6	0.6	0.7	0.4	0.1	0.3	0.3	0.2	0.5	0.7	0.4	0.2	1.3	5	22.8	22.5	22.8	3.5	24	
15	5	30.5	25.6	23.7	15.2	12.2	13.9	7.3	7.3	3.6	2.3	1.5	1.9	1.9	1.8	1.9	2.3	2.2	2.4	5.6	10.3	6.4	4.7	5	30.5	8.4	24	
16	19.5	24.1	30.9	30.0	41.6	21.2	23.2	20.5	8.5	5.5	4.8	2.5	1.8	1.7	1.6	1.7	1.6	1.7	1.6	1.8	1.6	1.5	1.5	1.1	41.6	10.9	24	
17	1.0	1.1	2.0	3.2	4.8	4.1	3.1	1.5	0.8	5.7	1.9	0.6	0.5	0.3	0.3	0.2	0.5	0.7	0.4	0.2	1.3	5	22.8	22.5	22.8	3.5	24	
18	20.3	20.9	14.5	11.4	9.6	9.7	8.0	6.8	7.6	5.2	3.5	1.6	2.3	2.8	3.0	3.6	3.1	3.3	4.6	5.3	5	6.4	6.4	7.9	20.9	7.3	24	
19	16.7	22.2	58.1	32.7	23.4	14.3	5.7	4.9	4.7	3.6	2.0	1.8	1.3	1.0	0.8	0.7	0.7	0.7	0.8	5	2.3	2.0	3.1	3.8	58.1	9.0	24	
20	3.3	2.5	2.9	2.5	3.5	5.5	7.0	4.5	4.1	3.2	2.3	1.2	1.0	0.6	0.6	0.6	0.6	0.7	0.6	5	3.4	2.7	3.9	7.4	3.1	24		
21	9.6	9.6	13.8	13.9	5.7	4.5	3.8	1.7	1.4	1.7	1.3	1.1	0.9	1.0	0.8	0.5	0.7	5	6.5	7.7	4.5	5.2	10.2	7.9	13.9	5.0	24	
22	17.7	16.3	9.6	8.7	15.1	16.0	5.2	4.8	6.6	6.2	2.7	2.0	1.4	1.3	2.5	3.2	5	1.7	1.6	2.5	4.5	13.6	13.7	17.5	17.7	7.6	24	
23	18.9	18.8	18.6	18.5	18.6	18.7	8.2	11.4	4.3	1.7	0.8	2.0	1.5	1.2	1.4	5	1.1	1.4	1.9	7.8	8.3	14.0	24.9	18.0	17.1	52.8	14.7	24
24	18.2	30.3	52.8	38.2	36.8	23.8	11.4	9.1	9.3	5.0	3.3	2.0	1.6	1.4	5	1.1	1.4	1.9	7.8	8.3	14.0	24.9	18.0	17.1	52.8	14.7	24	
25	27.8	19.7	41.4	76.5	54.1	47.0	5	5	8.5	4.2	3.4	1.9	1.8	1.8	3.2	2.9	3.3	4.8	3.5	7.0	5.5	4.4	7.6	9.3	76.5	16.1	24	
26	7.3	6.3	11.2	18.7	18.3	15.0	15.5	7.1	2.8	2.0	2.0	1.9	5	2.0	1.8	1.5	1.5	1.4	1.5	4.3	11.8	15.4	18.8	26.9	8.5	24		
27	12.8	13.4	10.2	14.9	15.6	9.1	6.5	6.2	2.9	1.6	1.4	5	1.2	1.0	1.0	1.0	1.5	1.4	1.7	6.7	17.6	13.3	16.3	16.3	17.6	7.6	24	
28	17.3	37.5	51.0	58.4	37.4	28.5	23.7	25.4	8.3	6.0	5	1.4	1.1	1.4	1.2	0.6	0.4	0.2	1.1	2.4	4.5	1.3	6.2	10.5	58.4	14.2	24	
29	17.0	41.5	45.0	28.8	14.0	15.8	13.5	9.3	18.3	5	11.5	8.4	4.9	3.0	2.7	2.5	1.7	3.0	3.7	3.5	4.2	7.3	10.5	13.0	45.0	12.3	24	
30	6.8	5.1	14.3	15.5	21.8	18.1	15.8	11.3	5	3.9	2.4	2.3	1.8	1.8	1.8	1.3	1.6	1.5	1.7	2.8	8.0	8.0	16.5	14.8	20.7	21.8	8.6	24
HOURLY MAX	40.2	43.6	58.1	76.5	54.1	47.0	35.6	25.4	18.3	8.3	11.5	8.4	4.9	3.0	3.2	3.6	7.0	5.4	7.8	8.3	18.2	24.9	23.8	48.8				
HOURLY AVG	14.8	17.2	20.6	20.8	17.6	14.1	11.1	7.3	5.3	3.3	2.3	1.7	1.3	1.2	1.4	1.3	1.5	1.6	2.3	3.7	6.5	8.8	12.1	16.2				

STATUS FLAG CODES

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

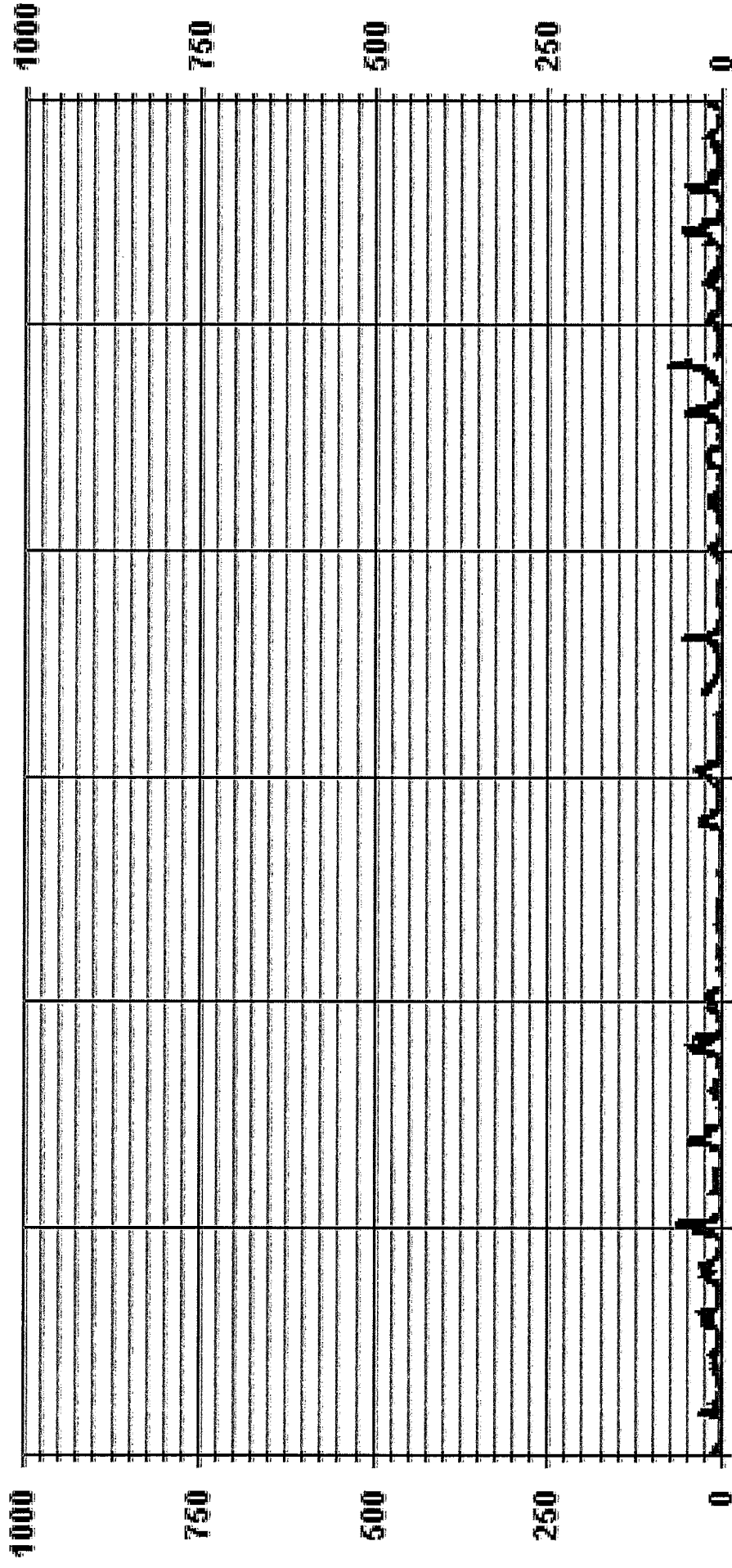
24 HOUR AVERAGES FOR JUNE 2015



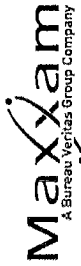
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679	ON DAY(S)	25
MAXIMUM 1-HR AVERAGE:	76.5	PPB @ HOUR(S)	3
MAXIMUM 24-HR AVERAGE:	16.1	ON DAY(S)	25
		VAR- VARIOUS	
IS CALIBRATION TIME:	33	HRS	720
MONTHLY CALIBRATION TIME:	8	HRS	100.0
STANDARD DEVIATION:	10.48	MONTHLY AVERAGE:	8.2
		OPERATIONAL TIME:	720
		AMD OPERATION UPTIME:	100.0
		PPB	8.2

01 Hour Averages



— LICA35 NOX\_ PPB



OXIDES OF NITROGEN 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			
1	298	197	195	158	213	12.6	40.4	3.0	1.3	1.5	1.5	1.2	1.3	1.3	1.3	1.3	1.3	1.1	0.9	1.4	1.4	6.6	31.7	54.8	54.8	11.8	24	
2	167	6.3	4.5	4.9	61.0	5.4	4.5	4.6	4.2	4.7	3.2	1.9	1.6	1.6	1.6	1.6	1.6	4.1	164	5.1	6.7	17.9	8.1	15.0	12.7	61.0	24	
3	8.9	13.4	18.3	12.9	11.2	21.8	10.9	9.5	11.2	8.3	8.2	3.0	2.4	2.2	2.5	2.4	2.9	3.1	11.9	57.4	66.8	25.9	74.2	74.2	74.2	17.4	24	
4	22.1	27.6	21.8	32.3	64.8	30.7	18.0	9.7	6.3	4.8	3.6	3.3	3.3	3.3	3.5	3.5	10.7	8.6	7.3	10.6	26.4	26.8	35.6	41.6	64.8	18.3	24	
5	26.9	31.7	34.6	21.9	24.5	50.2	41.1	18.5	15.0	10.3	5.0	4.0	3.4	3.4	2.4	1.9	1.6	1.5	1.5	21.9	19.7	35.7	63.6	63.6	18.9	24		
6	46.7	49.6	83.2	88.1	61.7	14.6	15.9	8.9	2.6	5.0	3.8	2.1	1.4	1.3	1.3	1.3	2.0	1.5	1.3	2.4	11.0	19.6	19.4	30.7	62.5	11.5	24	
7	13.5	12.6	13.4	15.3	17.1	12.6	8.7	8.5	5.0	3.8	2.1	1.4	1.7	1.5	1.3	2.0	1.5	1.3	2.4	11.0	19.6	19.4	30.7	62.5	62.5	11.5	24	
8	43.6	42.3	39.2	32.4	24.3	17.9	25.8	5.0	10.3	4.2	1.8	1.8	1.0	1.2	3.3	2.2	2.2	2.4	1.1	1.9	3.7	9.9	10.2	16.1	43.6	13.0	24	
9	17.9	8.2	14.3	13.5	7.5	18.5	5.0	8.9	9.9	2.0	1.7	1.4	1.2	1.2	1.7	2.6	2.7	2.4	4.1	7.7	30.1	28.2	23.5	18.3	67.0	19.0	24	
10	51.8	55.6	37.3	28.4	67.0	5.0	31.5	31.6	12.2	9.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	13.0	24
11	53.4	17.0	22.5	26.5	5.0	31.5	31.6	12.2	9.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	13.0	24
12	13.7	14.1	17.8	5.0	8.9	8.7	4.4	2.5	2.3	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	13.0	24
13	4.7	5.1	5.0	6.3	3.7	4.0	4.3	3.5	3.4	1.3	1.5	1.1	1.3	1.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	6.0	24
14	2.6	5.0	1.4	2.0	1.2	0.9	1.2	1.2	1.2	1.4	1.1	1.4	1.2	1.2	1.2	0.9	1.2	0.9	1.2	0.9	1.2	0.9	1.2	0.9	1.2	0.9	3.5	24
15	5.0	48.8	37.9	44.6	36.2	127.5	28.9	40.2	33.4	12.0	7.3	6.5	3.7	2.9	2.8	2.5	2.3	2.5	2.2	2.3	2.5	2.7	2.3	5.0	48.8	12.5	24	
16	1.9	1.8	3.6	4.0	10.2	5.6	3.8	2.9	1.6	99.9	99.5	1.2	1.3	0.9	1.0	1.0	1.0	1.1	1.4	1.1	1.0	5.3	3.0	127.5	19.0	24		
17	31.6	32.9	21.0	17.4	12.3	11.5	9.8	8.5	10.7	7.4	5.1	2.7	4.2	8.4	7.1	6.0	5.8	6.2	9.0	11.3	5.0	14.6	8.4	12.8	32.9	11.5	24	
18	26.5	32.0	87.9	44.3	34.7	23.7	8.4	5.8	5.8	5.0	2.9	2.7	1.9	1.7	1.7	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	11.5	24
19	5.5	3.4	5.4	4.8	6.9	13.7	11.5	5.9	5.7	6.0	7.0	2.2	3.0	1.3	1.2	1.3	1.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	13.6	24
20	14.4	14.0	23.8	28.9	8.9	5.7	5.8	2.5	2.3	2.8	2.3	1.7	1.5	2.0	1.8	1.1	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	13.6	24
21	37.6	32.8	12.0	11.9	29.0	26.6	7.1	6.8	8.3	10.2	3.8	3.0	2.5	2.0	4.8	7.1	5.0	2.8	3.1	9.5	10.1	22.4	17.0	29.3	37.6	8.4	24	
22	28.1	34.2	29.1	24.6	20.6	23.6	14.9	15.9	7.7	3.0	1.5	1.8	2.8	2.3	2.6	2.6	1.9	5.9	3.3	5.2	7.4	50.0	22.5	17.5	50.0	14.2	24	
23	25.5	75.2	75.5	59.1	51.4	33.3	20.4	12.1	10.7	7.8	5.0	2.9	2.6	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	14.2	24
24	50.3	26.6	73.4	90.1	66.1	58.2	5.0	12.1	7.1	5.5	3.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	25.1	24
25	11.7	11.8	20.9	52.5	26.1	21.0	26.8	10.0	4.1	2.9	2.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	23.3	24
26	20.2	17.2	13.9	24.7	18.4	15.5	8.7	9.0	7.6	2.7	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	15.1	24
27	32.7	80.0	95.4	115.1	71.4	33.7	42.0	45.9	10.7	8.6	5.0	2.6	1.9	2.2	1.9	1.4	1.3	1.3	2.9	6.0	9.6	36.6	9.6	13.9	115.1	25.8	24	
28	30.2	102.8	58.9	41.8	20.1	20.1	19.5	19.5	31.4	5.0	15.9	10.4	7.5	4.6	4.1	3.5	2.6	5.0	4.9	6.0	7.5	11.2	14.2	19.2	102.8	20.0	24	
29	8.7	8.9	27.0	22.1	30.8	22.2	26.6	16.6	5.0	7.5	3.7	3.4	3.2	2.5	1.8	2.5	2.5	2.5	2.8	7.3	14.3	20.4	22.1	19.1	27.7	13.2	24	
30	53.4	102.8	95.4	115.1	127.5	58.2	55.0	45.9	31.4	99.9	99.5	10.4	7.5	8.4	7.1	7.1	10.7	16.4	16.5	14.9	57.4	67.0	50.3	78.5	30.8	13.2	24	
HOURLY AVG	24.4	29.8	32.7	31.4	32.1	20.3	18.9	11.2	8.1	8.6	7.3	2.8	2.4	2.3	2.5	2.5	2.7	3.7	4.3	7.4	15.8	19.2	19.9	28.1	30.8	13.2	24	

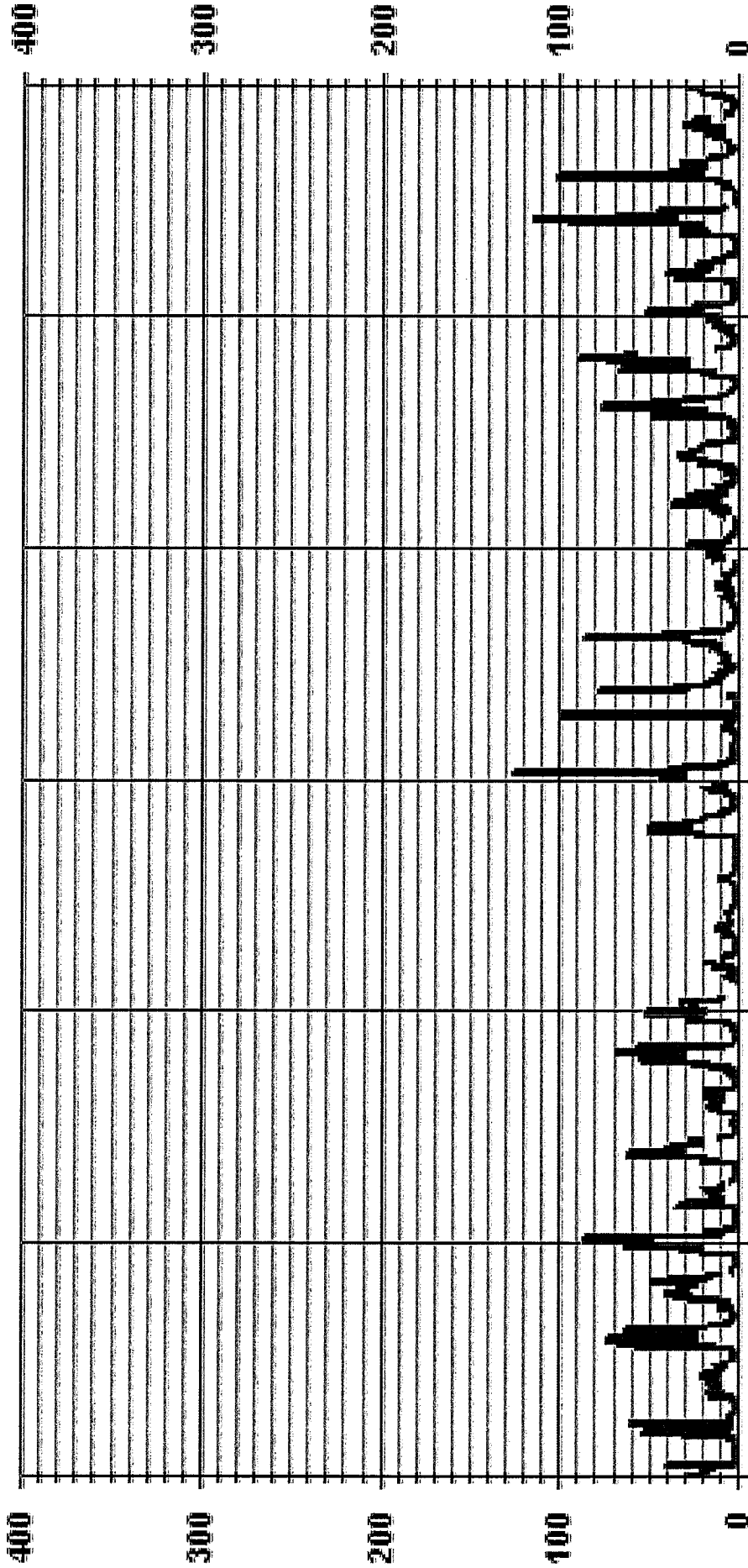
STATUS FLAG CODES

C	- CALIBRATION	Q	- QUALITY ASSURANCE
S	- MAINTENANCE	R	- RECOVERY
Y	- 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:	679	ON DAY(S)	16
MAXIMUM INSTANTANEOUS VALUE:	127.5 PPB	@ HOUR(S)	4
IZS CALIBRATION TIME:	33 HRS	OPERATIONAL TIME:	720 HRS
MONTHLY CALIBRATION TIME:	8 HRS	VAR- VARIOUS	
STANDARD DEVIATION:	18.44		

# 01 Hour Averages



— LICA35 NOXMAX PPB



LICA-ELK  
NOX\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 35  
Site Name : LICA-ELK  
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	2.35	1.76	1.03	1.76	5.89	6.03	1.91	2.50	1.62	1.03	5.44	10.89	20.47	17.96	12.22	6.03	98.96
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.29	.29	.44	.00	1.03
< 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	2.35	1.76	1.03	1.76	5.89	6.03	1.91	2.50	1.62	1.03	5.44	10.89	20.76	18.26	12.66	6.03	

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples




Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	16	12	7	12	40	41	13	17	11	7	37	74	139	122	83	41	672
< 110.0													2	2	3		7
< 210.0																	
>= 210.0																	
Totals	16	12	7	12	40	41	13	17	11	7	37	74	141	124	86	41	

Calm : .00 %

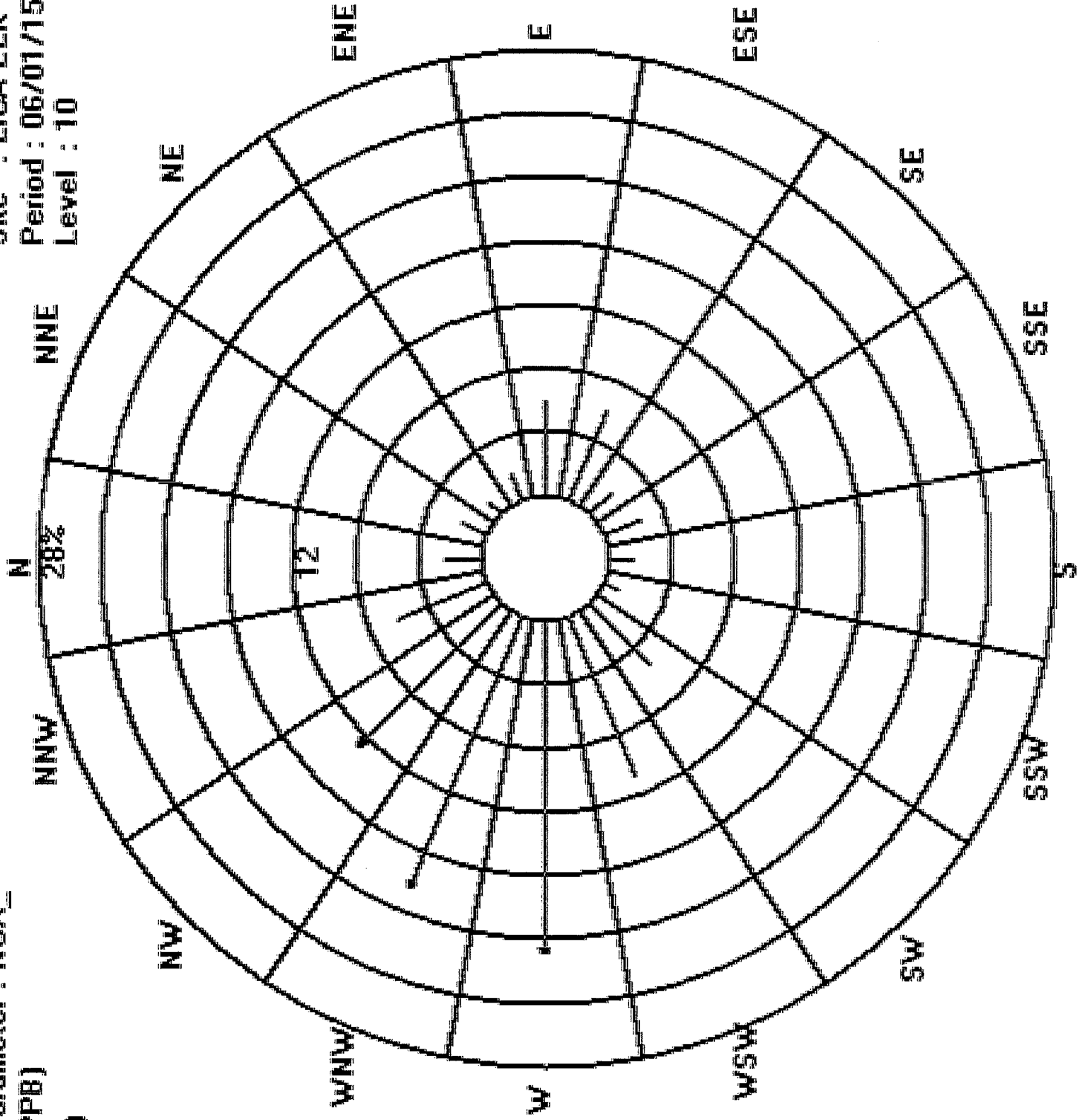
Total # Operational Hours : 679

Logger : 35 Parameter : NOX\_

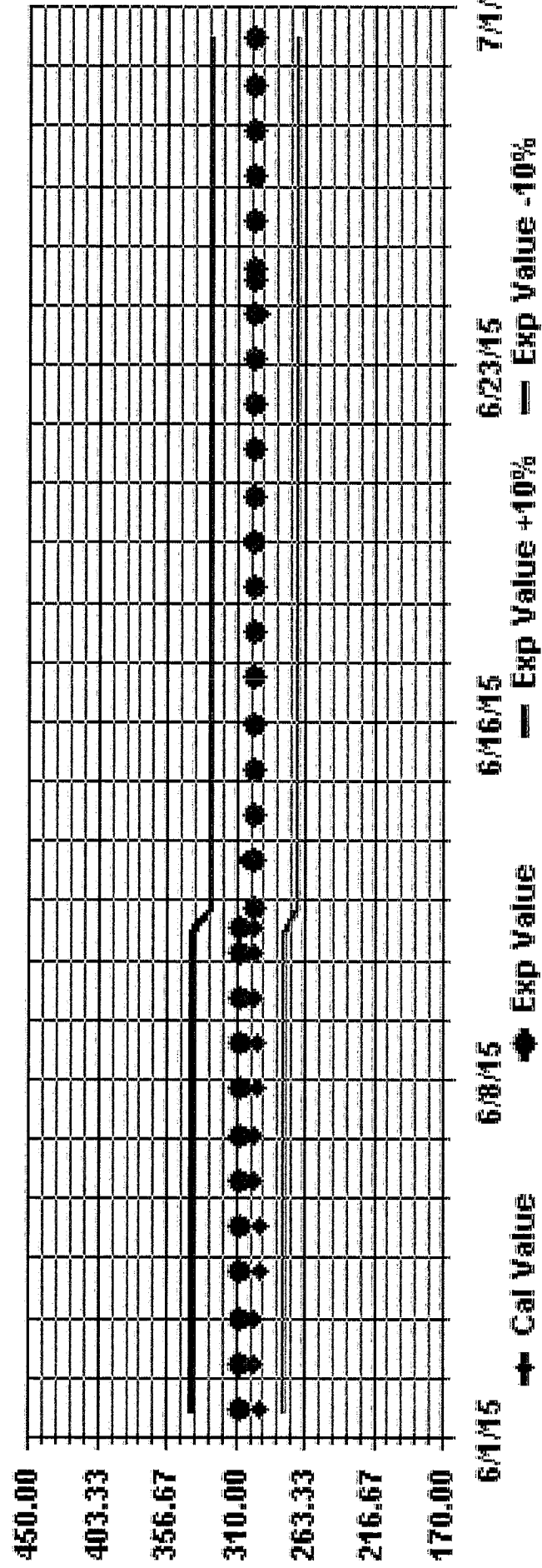
Class Limits (PPB)

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

Site : LICA-ELK  
Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA35 Parameter: NOX\_ Sequence: NO2 Phase: SPAN



***NITRIC OXIDES***



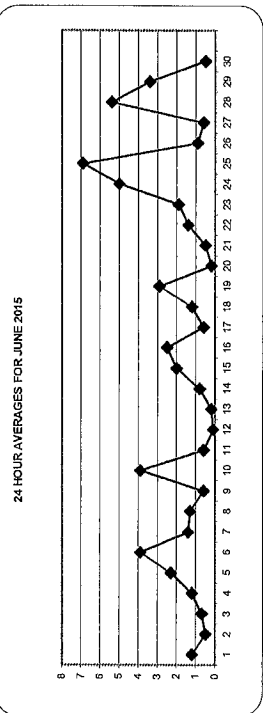
NITRIC OXIDE (NO) hourly averages in ppb

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				
1	2.2	1.2	1.0	0.4	1.7	1.5	1.3	0.7	0.3	0.4	0.4	0.1	0.4	0.4	\$	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.9	14.5	1.2	24	
2	1.7	0.0	0.0	3.8	0.5	0.8	0.6	0.6	0.4	0.1	0.0	0.0	\$	0.4	0.2	0.2	0.6	0.4	0.1	0.6	0.3	0.4	0.3	3.8	0.5	24	24	
3	0.3	0.3	0.4	0.2	0.4	1.4	1.0	1.2	0.8	1.1	0.8	1.2	\$	0.3	0.2	0.2	0.0	0.1	0.0	0.4	2.0	1.4	0.4	2.6	2.6	0.7	24	
4	0.3	0.5	0.3	1.5	5.4	4.8	2.2	1.7	1.1	0.5	0.4	\$	0.3	0.3	0.4	0.3	1.0	0.6	0.5	0.3	1.0	1.3	2.7	5.4	1.2	24		
5	1.1	1.2	3.6	0.5	3.3	14.0	7.8	3.8	2.8	1.0	\$	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	1.6	10.3	14.0	2.3	24	
6	12.9	7.4	15.8	35.7	8.8	1.6	2.9	0.6	0.1	\$	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	1.0	0.6	0.0	35.7	3.9	24	
7	0.0	0.0	0.2	0.1	0.0	0.9	1.1	1.0	\$	0.5	0.4	0.1	0.2	0.2	0.2	0.3	0.0	0.0	0.1	0.2	0.7	0.7	2.0	24.2	1.4	24		
8	4.4	6.4	3.7	3.9	3.0	1.7	6.0	\$	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	6.4	1.3	24		
9	0.0	0.0	0.0	0.0	0.0	1.3	\$	2.5	0.7	0.4	0.2	0.2	0.2	0.1	0.1	0.0	0.3	0.2	0.1	0.1	0.0	0.2	0.5	7.4	0.6	24		
10	12.6	19.6	6.5	5.7	17.9	\$	22.1	1.8	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.5	0.3	0.2	22.1	3.9	24	
11	1.2	0.1	0.6	1.3	\$	2.9	2.3	0.2	0.5	C	C	C	C	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	2.9	0.6	24	
12	0.0	0.0	0.0	\$	0.2	0.4	0.4	0.4	0.5	0.4	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	0.5	0.1	24		
13	0.0	0.0	\$	0.4	0.2	0.4	0.4	0.4	0.5	0.4	0.0	0.1	0.2	0.1	0.1	0.3	0.0	0.1	0.2	0.0	0.0	0.5	0.3	0.3	0.5	0.2	24	
14	\$	12.0	8.7	6.8	2.5	2.2	3.9	2.2	2.6	0.9	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.1	0.1	0.3	0.3	0.0	0.0	\$	12.0	2.0	24	
15	0.3	1.0	5.0	5.0	19.5	5.6	9.9	7.5	1.9	0.9	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	\$	19.5	2.5	24	
16	0.1	0.0	0.0	0.0	0.2	0.3	0.9	0.2	0.2	0.5	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.0	0.0	\$	4.1	6.8	0.6	24
17	3.8	3.8	0.9	1.4	1.7	3.2	2.6	1.8	2.1	1.0	1.0	1.0	0.0	0.2	0.6	0.6	0.7	0.5	0.2	0.4	0.6	\$	0.3	0.0	0.2	3.8	1.2	24
18	0.8	3.6	34.0	10.9	7.5	4.3	1.5	0.9	1.0	0.7	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	\$	34.0	2.9	24	
19	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.2	0.3	0.5	0.4	0.2	0.2	0.2	0.0	0.1	0.1	0.2	0.1	0.2	0.1	\$	0.2	0.0	0.5	0.2	24	
20	0.2	0.1	0.9	2.2	0.4	1.0	1.1	0.3	0.1	0.3	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	2.2	0.5	24	
21	5.0	4.2	0.7	0.4	3.9	6.8	1.5	1.1	1.7	1.8	0.2	0.0	0.1	0.0	0.1	0.3	\$	0.3	0.2	0.2	0.1	0.8	0.4	0.2	0.5	2.2	0.5	24
22	2.7	4.5	4.2	4.8	7.7	9.0	3.1	5.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$	0.3	0.2	0.2	0.1	0.8	0.4	1.3	6.8	1.4	24	
23	2.1	14.3	30.5	19.4	19.7	12.3	3.8	2.8	2.5	0.6	0.3	0.0	0.0	0.0	0.0	0.0	\$	0.3	0.0	0.1	0.5	0.5	0.5	0.4	1.3	6.8	1.4	24
24	9.8	3.0	17.4	47.1	30.4	28.1	\$	2.0	0.4	0.3	0.0	0.1	\$	0.9	0.8	0.7	1.0	0.4	0.5	0.5	0.4	0.4	0.4	47.1	6.9	24		
25	0.5	0.5	1.1	1.9	1.1	2.1	3.8	1.6	0.6	0.5	0.6	0.6	\$	0.5	0.4	0.2	0.4	0.0	0.1	0.3	1.2	0.7	0.6	2.4	3.8	0.9	24	
26	0.6	0.2	0.3	0.9	1.6	1.6	1.5	1.8	0.6	0.1	0.4	\$	0.3	0.1	0.2	0.1	0.3	0.1	0.1	0.5	0.6	0.2	0.4	0.5	1.8	0.6	24	
27	2.4	14.2	26.9	36.5	14.9	9.2	8.1	9.4	1.2	0.7	\$	0.4	0.1	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.2	36.5	5.4	24	
28	1.1	20.4	25.6	12.8	2.9	4.9	3.5	1.2	3.1	\$	1.1	0.3	0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	25.6	3.4	24	
29	0.0	0.0	0.6	0.4	2.3	2.7	2.7	1.7	\$	0.5	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.7	0.5	24	
30	12.9	20.4	34.0	47.1	30.4	28.1	22.1	9.4	3.1	1.8	1.1	1.2	0.4	0.6	0.9	0.8	1.0	1.0	1.1	0.8	2.3	3.1	4.1	24.2	2.7	0.5	24	
HOURLY MAX	2.3	4.1	6.5	6.9	5.6	4.3	3.4	1.9	1.0	0.5	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.4	0.5	0.7	3.0				
HOURLY AVG																												

STATUS FLAG CODES

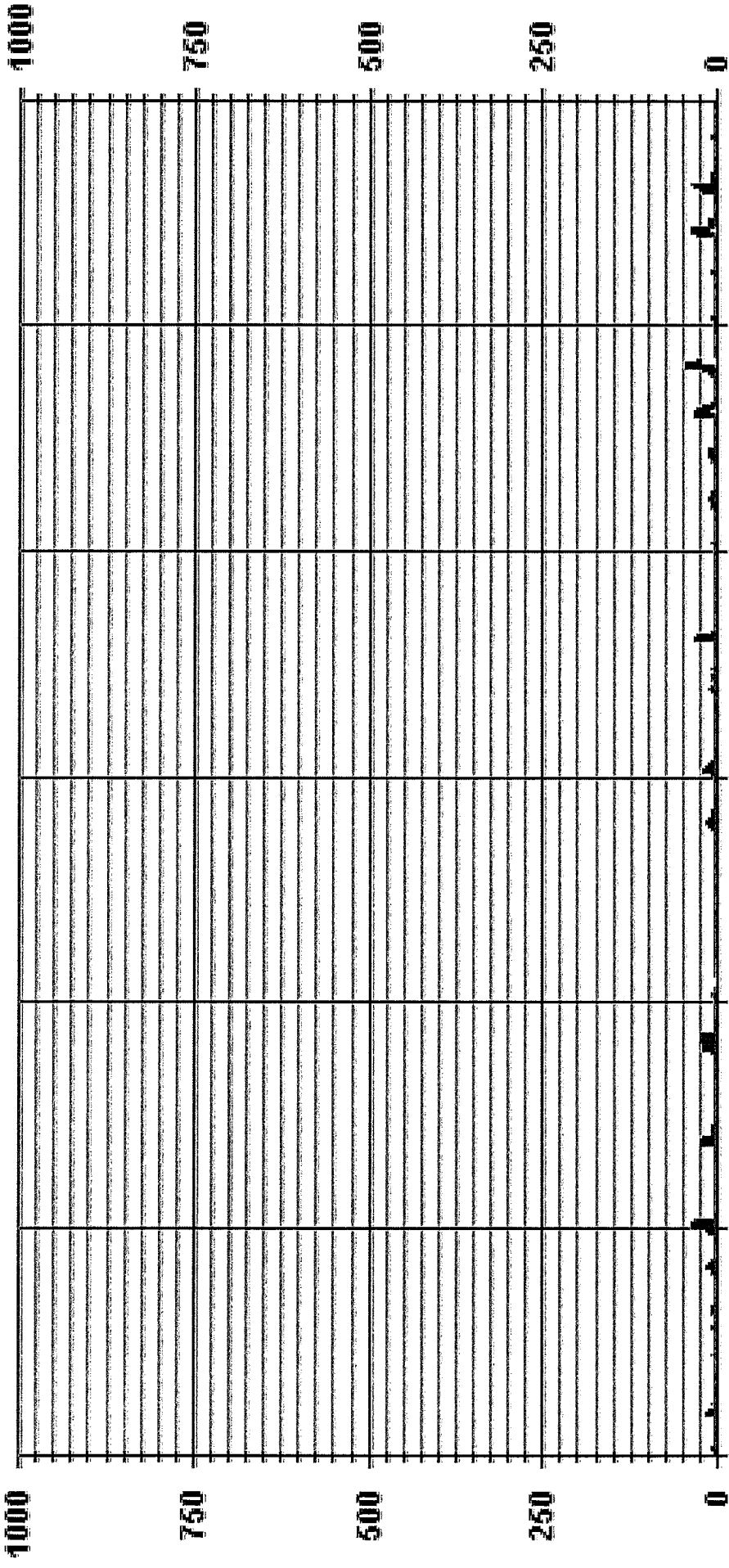
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



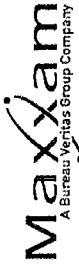
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	499
MAXIMUM 1-HR AVERAGE:	47.1
MAXIMUM 24-HR AVERAGE:	6.9
OPERATIONAL TIME:	33 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	4.86
PPB @ HOUR(S)	3
ON DAY(S)	25
ON DAY(S) VAR-VARIOUS	25
OPERATIONAL TIME:	720 HRS
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	1.8
PPB	

# 01 Hour Averages



--- LICA35 NO\_ PPB



NITRIC OXIDE MAX instantaneous maximum in ppb

DAY	MST																								24-HOUR AVG.	RDGS	
	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			00:00
1	7.3	2.6	2.9	1.3	6.8	4.2	25.9	1.5	1.0	1.0	1.0	0.8	0.9	1.1	\$	0.8	0.7	0.8	0.3	0.6	0.6	1.4	10.7	34.0	34.0	4.7	24
2	5.6	0.8	0.5	0.5	44.8	1.3	1.7	1.9	1.3	1.5	0.9	0.8	0.6	\$	1.1	0.9	1.3	13.5	1.3	0.7	3.0	1.0	1.3	1.1	44.8	3.8	24
3	0.9	1.1	2.7	0.8	1.1	3.9	2.8	2.1	1.5	2.1	1.5	2.0	\$	1.1	0.9	0.9	0.7	0.8	1.6	21.3	28.3	1.8	35.3	35.3	5.0	24	
4	1.2	2.8	1.2	4.3	36.2	11.2	4.8	3.2	1.8	1.4	1.2	\$	1.1	1.2	1.2	0.9	2.4	2.3	1.8	1.2	2.5	3.1	5.9	8.4	36.2	4.4	24
5	3.0	8.2	9.5	2.4	10.4	27.9	19.6	5.4	3.4	2.4	\$	1.1	1.2	0.8	0.8	0.4	0.4	0.6	0.3	2.8	2.1	6.5	34.5	34.5	6.3	24	
6	22.7	20.8	50.8	55.9	32.9	3.7	4.5	2.5	0.7	\$	0.8	0.6	0.8	0.4	0.6	0.9	0.7	0.7	0.9	0.4	8.2	5.2	2.6	0.7	55.9	9.5	24
7	1.0	0.9	1.0	0.8	0.9	2.2	1.7	2.0	\$	1.2	1.0	0.8	0.8	0.9	1.0	1.0	0.7	0.7	0.9	1.1	2.1	2.4	5.8	37.7	37.7	3.0	24
8	0.6	0.6	0.3	0.2	0.5	5.0	\$	5.7	1.6	1.0	0.8	0.8	0.8	0.8	0.8	0.8	1.3	0.8	0.8	0.7	1.4	1.1	18.4	18.4	2.0	24	
9	24.1	32.6	15.1	10.8	55.9	\$	38.3	3.8	0.9	0.7	0.7	0.7	0.3	0.8	0.3	1.7	1.7	0.8	0.6	5.6	2.3	3.6	2.1	55.9	8.9	24	
10	23.7	0.7	2.2	5.5	\$	9.3	9.5	1.4	1.3	C	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.7	3.6	24
11	0.0	0.0	0.0	\$	2.0	2.0	1.0	0.7	0.8	0.7	0.5	0.8	1.2	0.4	0.6	0.5	0.7	1.2	1.2	0.6	0.9	1.1	0.7	0.6	2.0	0.8	24
12	0.5	0.1	\$	1.2	0.9	1.1	1.1	1.3	1.2	0.6	0.9	0.8	0.8	0.7	0.9	0.5	0.7	0.8	0.6	0.6	0.6	1.3	1.0	1.1	1.3	0.8	24
13	0.7	\$	1.0	0.9	0.6	0.6	0.8	0.7	0.7	0.6	0.8	0.8	0.9	0.9	0.9	0.9	0.6	0.9	1.0	4.6	8.6	31.0	19.8	31.0	3.4	24	
14	\$	28.8	12.9	12.5	6.7	4.0	11.0	3.2	3.7	2.0	0.9	1.0	1.1	1.2	1.2	0.8	1.0	1.3	1.1	1.1	1.0	0.5	0.7	\$	28.8	4.4	24
15	1.9	9.8	14.6	10.1	105.0	9.4	23.8	16.9	3.3	2.0	1.5	0.7	0.5	0.6	0.5	0.3	0.4	0.5	0.2	0.8	0.5	0.3	\$	105.0	8.9	24	
16	0.7	0.6	0.5	0.7	1.4	1.2	1.7	0.9	0.8	5.1	4.4	0.8	0.7	0.5	0.7	0.4	0.7	1.0	0.6	0.5	0.7	\$	8.1	59.5	59.5	4.0	24
17	11.4	13.7	3.1	6.2	3.0	4.1	4.0	2.7	3.3	2.2	2.0	0.7	1.1	2.4	1.9	2.3	2.1	1.3	1.4	2.6	\$	1.0	0.6	1.0	13.7	3.2	24
18	2.6	10.4	63.6	19.3	16.7	9.8	2.5	1.5	1.6	1.5	1.0	0.9	0.6	0.4	0.6	0.4	0.6	0.3	0.4	0.7	\$	1.2	0.6	0.8	63.6	6.0	24
19	0.8	0.4	0.8	0.8	1.1	0.9	1.2	1.0	1.4	1.5	0.8	1.5	0.7	0.8	0.7	0.9	0.7	\$	2.0	0.7	0.7	0.6	0.6	2.0	0.9	24	
20	2.3	1.4	4.8	11.9	1.3	1.9	2.4	0.8	0.8	1.0	0.7	0.8	0.7	1.0	0.7	0.3	0.4	\$	2.2	1.9	1.2	1.0	2.3	9.3	11.9	2.2	24
21	19.9	19.2	1.7	2.0	13.3	15.7	2.5	2.5	2.8	3.6	1.2	0.8	0.8	0.6	0.9	1.6	\$	1.0	1.1	1.3	4.1	1.2	5.9	19.9	4.6	24	
22	6.2	52.3	53.0	45.0	34.5	21.6	9.6	4.5	3.4	1.9	1.1	0.9	0.8	\$	1.8	1.5	1.7	2.2	1.3	1.1	1.9	1.2	1.2	1.1	59.6	11.4	24
23	7.6	16.9	11.1	9.8	10.7	12.9	7.3	8.0	2.9	0.7	0.5	0.8	0.9	0.7	0.8	\$	1.2	1.2	0.3	0.8	0.5	28.3	3.0	1.2	28.3	5.6	24
24	1.3	1.9	3.3	24.6	3.0	4.8	11.1	3.0	1.3	1.2	1.5	1.3	\$	1.3	1.0	0.9	1.0	0.6	0.9	1.2	7.1	2.0	1.8	10.3	24.6	3.8	24
25	25.4	10.4	43.6	59.6	39.9	38.2	\$	3.8	1.4	1.1	0.9	0.8	\$	1.8	1.5	1.7	2.2	1.3	1.1	1.9	1.2	1.2	1.1	59.6	11.4	24	
26	1.2	0.7	0.9	5.0	3.3	3.0	2.3	2.8	2.2	1.1	0.9	\$	1.1	0.7	0.8	0.6	0.9	0.8	0.9	1.3	2.1	0.8	1.4	1.1	5.0	1.6	24
27	10.6	51.4	68.1	86.4	45.8	12.4	21.1	22.8	1.9	1.6	\$	1.1	0.7	0.9	1.2	0.7	0.7	0.5	0.7	0.9	1.4	0.5	0.8	1.5	86.4	14.5	24
28	7.4	81.4	36.6	25.0	8.4	8.5	6.3	3.5	7.0	\$	2.9	1.0	0.9	0.9	0.9	0.6	0.9	1.0	0.9	1.0	0.9	1.0	0.5	0.8	81.4	8.6	24
29	0.4	0.7	4.6	2.4	9.3	4.7	7.9	3.8	\$	2.0	1.1	0.9	0.7	0.6	0.3	0.5	0.4	0.7	0.9	1.0	0.5	0.5	1.0	1.9	9.3	2.0	24
30	25.4	81.4	68.1	86.4	105.0	38.2	38.3	22.8	7.0	5.1	4.4	2.0	1.5	2.4	1.9	2.3	2.4	13.5	2.2	2.6	21.3	33.1	31.0	59.5			
HOURLY MAX	7.3	13.4	14.7	14.4	17.3	7.9	8.5	3.9	2.1	1.6	1.2	0.9	0.8	0.8	0.9	0.9	0.9	1.3	0.9	1.0	2.6	4.6	3.4	10.7			
HOURLY AVG																											

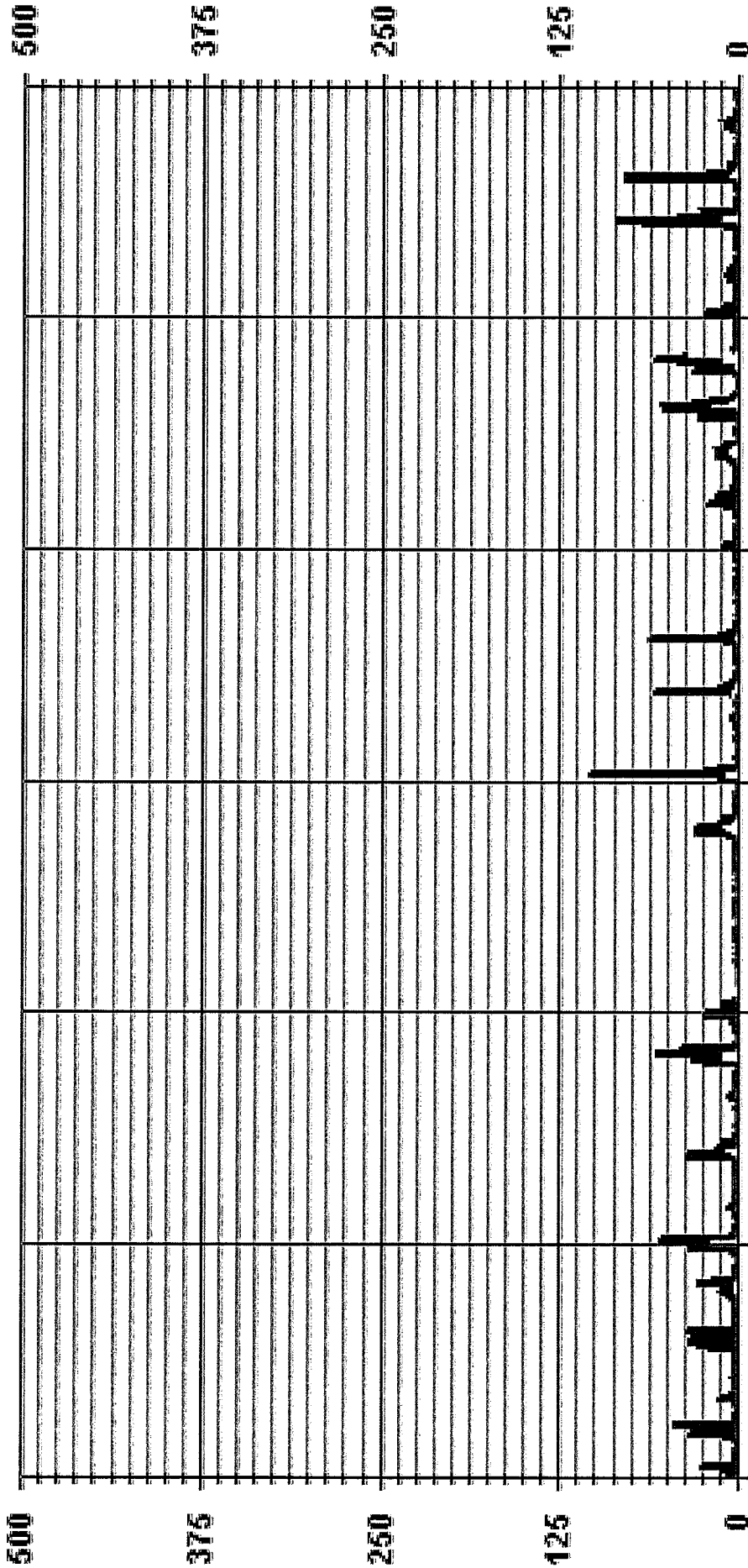
STATUS FLAG CODES

C	- CALIBRATION	Q	- QUALITY ASSURANCE
M	- MAINTENANCE	R	- RECOVERY
S	- 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:	669
MAXIMUM INSTANTANEOUS VALUE:	105.0 PPB @ HOUR(S) 4 ON DAY(S) 16
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	11.37
OPERATIONAL TIME:	720 HRS
VAR-VARIOUS	

01 Hour Averages



— LICA35    - - - NOMAX    ... PPB



LICA-FLK  
NO\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger id : 35  
Site Name : LICA-FLK  
Parameter : NO  
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	2.35	1.76	1.03	1.76	5.89	6.03	1.91	2.50	1.62	1.03	5.44	10.89	20.76	18.26	12.66	6.03	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	2.35	1.76	1.03	1.76	5.89	6.03	1.91	2.50	1.62	1.03	5.44	10.89	20.76	18.26	12.66	6.03	

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	16	12	7	12	40	41	13	17	11	7	37	74	141	124	86	41	679
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	16	12	7	12	40	41	13	17	11	7	37	74	141	124	86	41	

Calm : .00 %

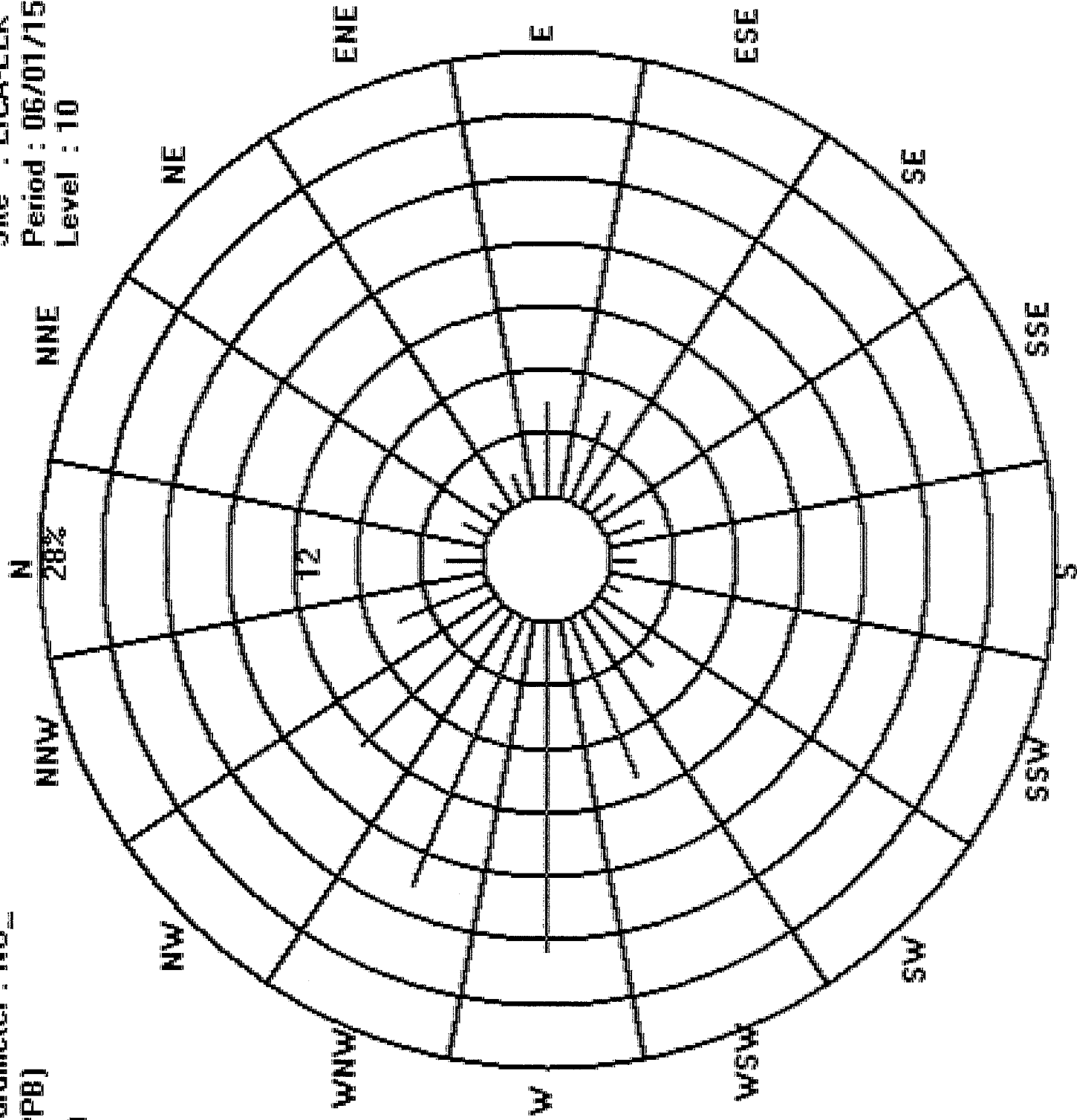
Total # Operational Hours : 679

Logger : 35 Parameter : NO<sub>x</sub>

Class Limits (PPB)

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

Site : LICA-ELK  
Period : 06/01/15-06/30/15  
Level : 10



***NITROGEN DIOXIDE***

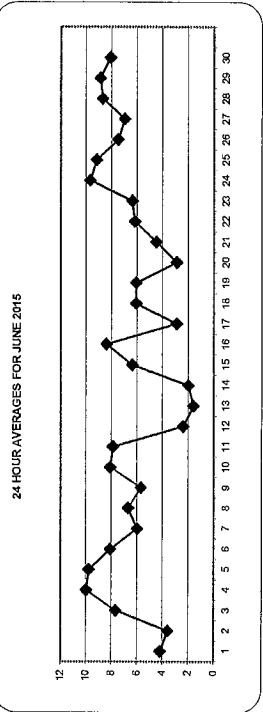
**NITROGEN DIOXIDE (NO2) hourly averages in ppb**

DAY	HOURS																								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			30:00	
1	14.9	12.6	9.7	7.2	6.1	5.0	2.0	1.0	0.3	0.4	0.3	0.3	0.2	0.3	\$	0.6	0.5	0.4	0.4	0.6	0.6	1.3	12.3	19.7	19.7	4.2	24	
2	8.1	3.5	3.0	3.9	6.8	2.6	1.8	1.6	2.4	2.0	1.3	0.9	0.8	\$	1.5	1.1	1.9	2.1	2.6	4.2	8.0	5.6	10.8	6.7	10.8	3.6	24	
3	7.2	8.9	8.8	8.8	9.3	12.4	8.1	8.1	6.7	7.2	5.1	4.3	\$	1.2	1.3	1.1	1.5	1.4	1.6	5.3	16.2	14.2	15.5	23.6	23.6	7.7	24	
4	16.9	17.2	16.1	23.1	23.0	16.8	9.5	5.5	3.8	2.8	2.3	\$	2.0	1.4	1.7	1.9	6.0	4.8	4.2	5.6	6.1	16.9	20.2	23.3	10.0	24		
5	20.1	15.7	24.1	13.1	16.3	18.0	16.4	12.3	10.3	5.7	\$	2.2	1.5	2.1	1.5	1.1	0.8	0.8	0.9	5.0	8.8	21.1	25.9	25.9	9.8	24		
6	24.4	25.8	24.6	28.2	18.0	9.2	8.5	2.8	1.0	\$	1.0	0.8	0.7	0.4	0.4	0.6	0.6	0.6	0.8	1.3	11.7	11.0	9.9	3.4	28.2	8.1	24	
7	7.2	5.2	7.2	9.6	7.9	7.4	5.9	5.8	\$	1.9	0.8	0.7	0.6	0.5	0.4	0.5	0.4	0.4	1.1	2.6	11.7	14.7	21.8	24.6	24.6	6.0	24	
8	17.5	22.8	17.0	19.2	17.2	11.5	14.8	\$	4.3	2.0	0.7	0.6	0.2	0.4	1.1	0.9	1.0	1.1	0.2	0.7	1.4	2.8	6.4	9.9	22.8	6.7	24	
9	11.6	6.3	12.9	7.6	5.4	7.4	\$	5.0	2.2	1.0	0.5	0.8	0.6	0.6	0.8	1.4	1.9	1.1	1.0	2.1	2.4	8.8	20.6	30.0	5.7	24		
10	27.6	24.0	19.0	16.4	13.2	\$	13.5	4.0	2.5	1.3	1.0	0.6	0.4	0.5	0.7	1.2	1.4	1.6	1.7	4.2	12.3	16.4	10.8	11.6	27.6	8.1	24	
11	14.5	12.4	17.3	15.9	\$	18.2	13.6	8.0	6.9	C	C	C	C	C	C	C	C	1.4	2.3	3.7	2.1	0.2	0.3	1.0	18.2	7.9	24	
12	5.0	4.9	4.4	\$	4.1	3.3	1.3	1.1	0.9	0.9	0.8	0.9	0.9	1.1	1.1	1.2	2.5	5.6	2.0	4.6	3.8	1.7	2.1	2.1	5.6	2.4	24	
13	1.9	2.6	\$	3.3	2.3	2.5	2.4	2.2	2.0	0.5	0.6	0.5	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	1.1	5.3	3.2	3.0	5.3	1.6	24
14	1.1	\$	0.5	0.9	0.5	0.1	0.4	0.4	0.5	0.5	0.5	0.3	0.4	0.3	0.5	0.1	0.3	0.3	0.7	0.7	2.5	8.6	8.1	18.7	2.0	24		
15	\$	18.5	16.9	16.9	12.7	10.0	10.0	5.1	4.7	2.7	2.0	1.2	1.5	1.6	1.5	1.6	2.0	2.1	2.3	5.3	10.0	6.4	4.7	\$	18.5	6.4	24	
16	19.2	23.1	25.9	25.0	22.1	15.6	13.3	13.0	6.6	4.6	4.1	2.5	1.8	1.8	1.7	1.6	1.7	1.6	1.6	1.8	1.6	1.5	5	1.0	25.9	8.4	24	
17	0.9	1.1	2.0	3.2	4.6	3.8	2.2	1.3	0.6	5.2	1.8	0.5	0.4	0.3	0.3	0.2	0.4	0.5	0.4	0.2	1.3	\$	18.7	15.7	18.7	2.9	24	
18	16.5	17.1	13.6	10.0	7.9	6.5	5.4	5.0	5.5	4.2	2.5	1.6	2.1	2.2	2.4	2.9	2.6	3.1	4.2	4.7	\$	6.1	6.4	7.7	17.1	6.1	24	
19	15.9	18.6	24.1	21.8	15.9	10.0	4.2	4.0	3.7	2.9	1.9	1.8	1.2	1.0	0.8	0.7	0.7	0.7	0.8	\$	1.8	1.9	2.9	3.8	24.1	6.1	24	
20	3.3	2.5	2.8	2.4	3.3	5.2	6.7	4.3	3.8	2.7	1.9	1.0	0.8	0.6	0.5	0.5	0.5	0.5	\$	3.2	2.7	3.9	7.4	6.5	7.4	2.9	24	
21	9.4	9.5	12.9	11.7	5.3	3.5	2.7	1.4	1.3	1.4	1.2	1.2	0.9	0.8	0.9	0.8	0.5	0.7	\$	5.4	6.9	4.1	5.0	9.7	7.4	4.5	24	
22	12.7	12.1	8.9	8.3	11.2	9.2	3.7	3.7	4.9	4.4	2.5	2.0	1.3	1.3	2.4	2.9	\$	1.4	2.3	4.4	12.8	13.3	16.2	16.2	6.2	24		
23	16.2	14.3	14.4	13.7	10.9	9.7	5.1	6.4	3.1	1.7	0.8	1.0	1.4	1.2	1.3	\$	1.1	1.4	1.8	7.3	7.8	13.5	21.8	17.4	15.1	22.3	9.7	24
24	16.1	16.0	22.3	18.8	17.1	11.5	7.6	6.3	6.8	4.4	3.0	2.0	1.6	1.4	\$	1.1	1.4	1.8	7.3	7.8	13.5	21.8	17.4	15.1	22.3	9.7	24	
25	18.0	16.7	24.0	29.4	23.7	18.9	\$	6.5	3.8	3.1	1.9	1.7	\$	2.3	2.1	2.6	3.8	3.1	6.5	5.0	4.0	7.2	8.9	29.4	9.2	24		
26	6.8	5.8	10.1	16.8	17.2	12.9	11.7	5.5	2.2	1.5	1.0	1.3	\$	0.9	1.4	1.3	1.1	1.4	1.4	4.0	10.6	14.7	18.2	24.5	24.5	7.5	24	
27	12.2	13.2	9.9	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	24
28	14.9	23.3	24.1	21.9	22.5	19.3	15.6	16.0	7.1	5.3	\$	1.0	1.0	1.2	0.9	0.5	0.3	0.2	1.1	2.4	4.3	1.3	6.1	10.3	24.1	8.7	24	
29	15.9	21.1	19.4	16.0	11.1	10.9	10.0	8.1	15.2	\$	10.4	8.1	4.7	3.0	2.5	2.4	1.7	3.0	3.5	3.3	4.1	7.3	10.5	12.9	21.1	8.9	24	
30	6.8	5.1	13.7	15.1	19.5	15.4	13.1	9.6	\$	3.4	2.0	2.1	1.8	1.8	1.3	1.6	1.5	1.7	2.8	7.7	8.0	16.5	14.6	20.5	20.5	8.1	24	
HOURLY MAX	27.6	25.8	25.9	29.4	23.7	19.3	16.4	16.0	15.2	7.2	10.4	8.1	4.7	3.0	2.5	2.9	6.0	4.8	7.3	7.8	17.0	21.8	21.8	30.0				
HOURLY AVG	13	13	14	14	12	10	8	5	4	3	2	2	1	1	1	1	1	1	1	2	2	3	6	8	11	13		

OBJECTIVE LIMIT: ALBERTA ENVIRONMENT: 1-HR: 159 PPB

**STATUS FLAG CODES**

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



**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES: 0

NUMBER OF NON-ZERO READINGS: 679

MAXIMUM 1-HR AVERAGE: 30 PPB @ HOUR(S) 23 ON DAY(S) 9

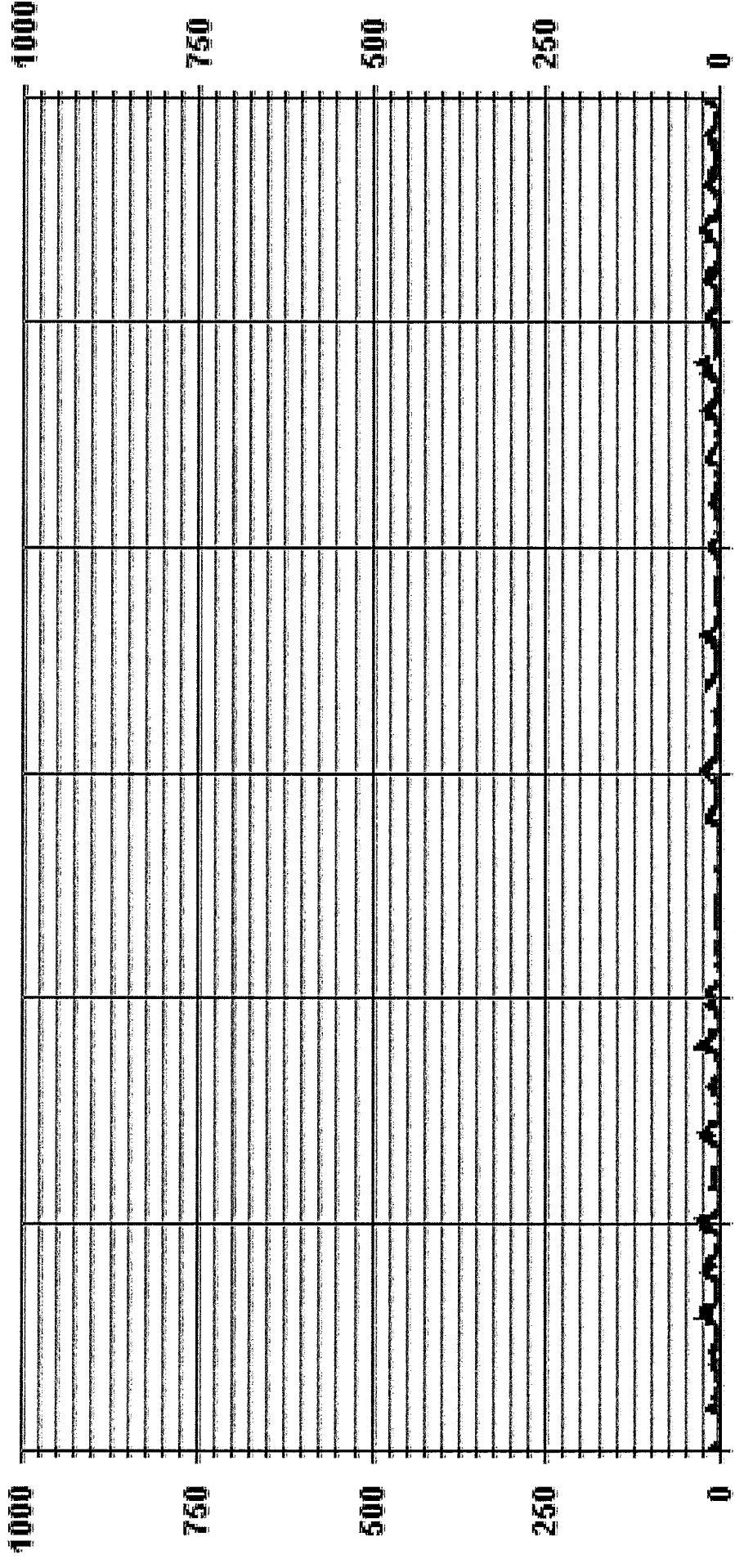
MAXIMUM 24-HR AVERAGE: 10.0 PPB ON DAY(S) 4 VAR-VARIOUS

12S CALIBRATION TIME: 33 HRS OPERATIONAL TIME: 720 HRS

MONTHLY CALIBRATION TIME: 8 HRS AWD OPERATION UPTIME: 100.0 %

STANDARD DEVIATION: 6.75 MONTHLY AVERAGE: 6.4 PPB

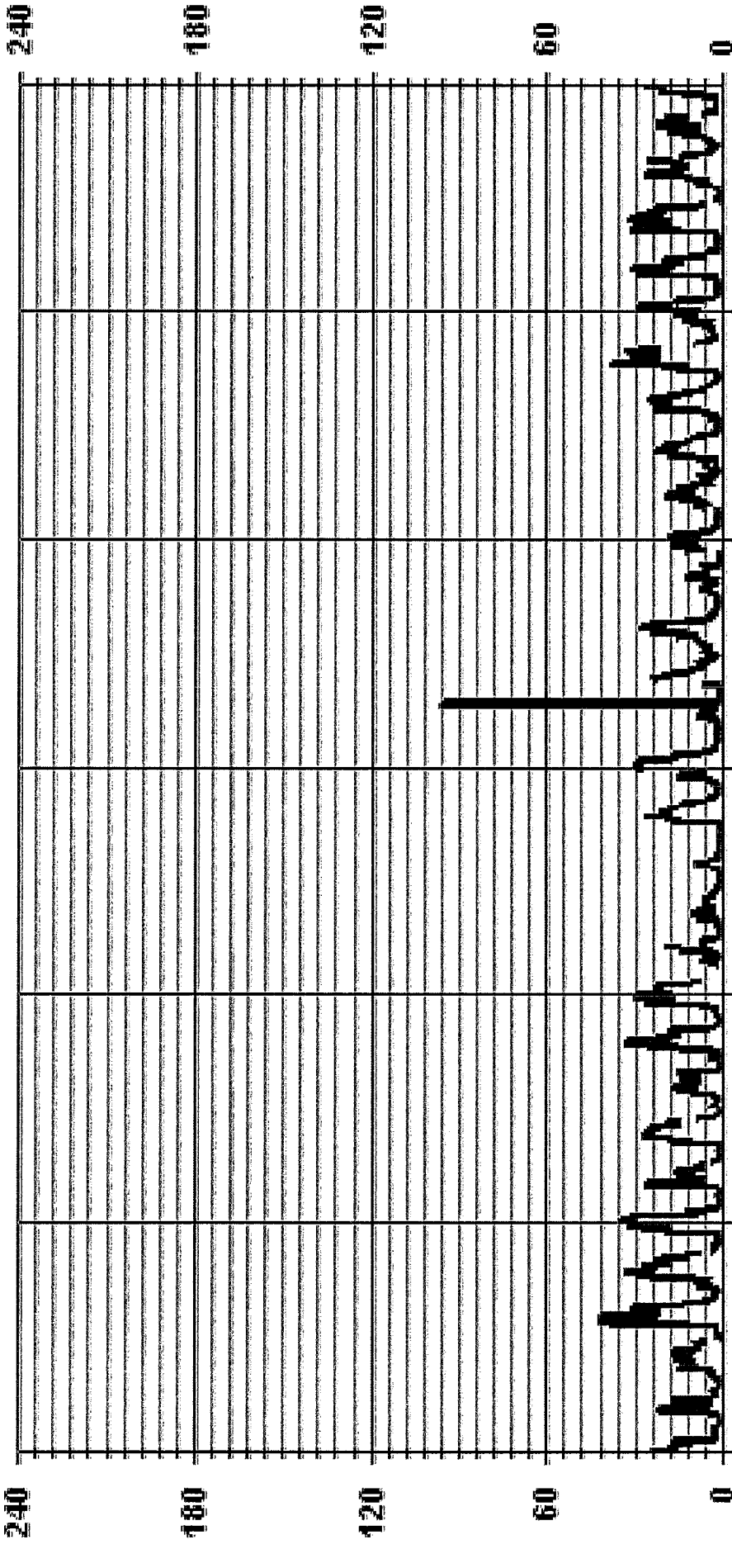
01 Hour Averages



— LICA35 NO2\_ PPB



01 Hour Averages



--- LICA35 NO2MAX PPB

LICA-ELK  
 NO2\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-ELK  
 Parameter : NO2  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

Limit	N	Direction																NNW	NW	NNW	Freq
		NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW					
< 50.0	2.35	1.76	1.03	1.76	5.89	6.03	1.91	2.50	1.62	1.03	5.44	10.89	20.76	18.26	12.66	6.03	100.00				
< 110.0	.00	.00	.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	.00	.00		
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
Totals	2.35	1.76	1.03	1.76	5.89	6.03	1.91	2.50	1.62	1.03	5.44	10.89	20.76	18.26	12.66	6.03					

Calm : .00 %

Total # Operational Hours : 679

Distribution By Samples

Limit	N	Direction																NNW	NW	NNW	Freq
		NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW					
< 50.0	16	12	7	12	40	41	13	17	11	7	37	74	141	124	86	41	679				
< 110.0																					
< 210.0																					
>= 210.0																					
Totals	16	12	7	12	40	41	13	17	11	7	37	74	141	124	86	41	679				

Calm : .00 %

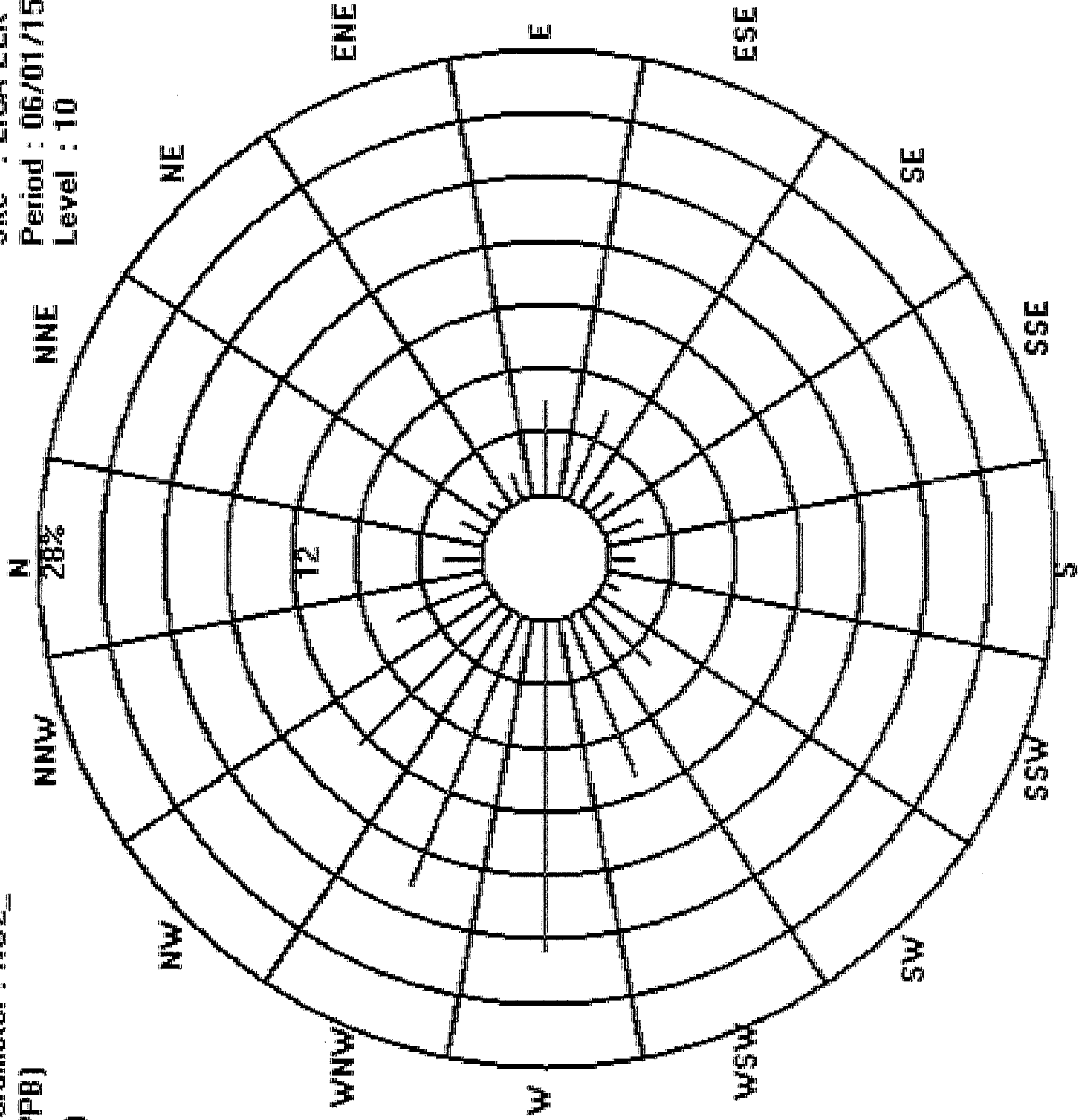
Total # Operational Hours : 679



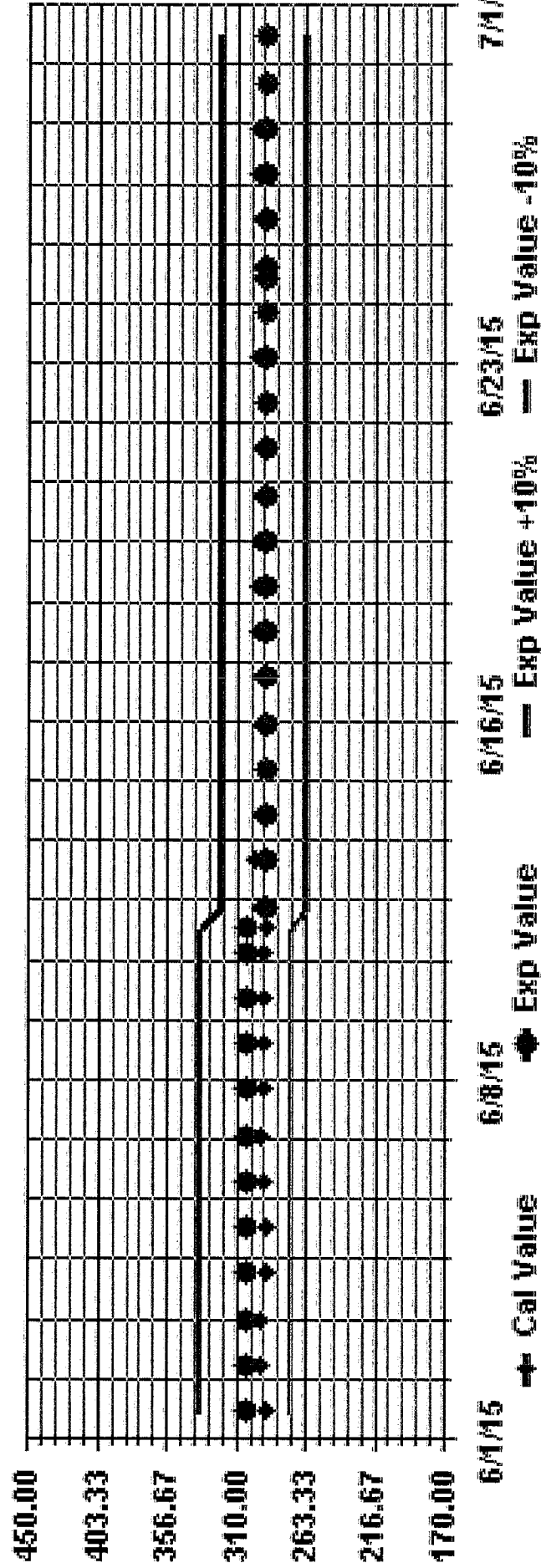
Site : LICA-ELK  
Period : 06/01/15-06/30/15  
Level : 10

Logger : 35 Parameter : ND2\_  
Class Limits (PPB)

-   $\geq$  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

MST

DAY	HOURLY START HOUR END																								DAILY		PPBS	
	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	MAX.	AVG.		
1	12	11	14	17	20	20	25	29	31	32	35	35	32	32	32	32	32	30	30	29	26	23	9	1	35	24.3	24	
2	8	13	18	20	14	19	23	27	28	29	30	32	33	33	35	35	35	36	36	33	27	26	17	19	36	25.7	24	
3	19	18	18	16	16	15	19	22	24	25	29	38	5	53	57	61	60	60	59	51	38	37	30	21	61	34.2	24	
4	23	18	19	10	9	13	31	35	37	42	45	5	49	53	55	51	46	48	46	43	41	27	18	9	55	33.4	24	
5	7	9	3	8	3	4	13	27	33	44	5	53	54	49	51	50	52	53	51	41	29	13	3	54	30.5	24		
6	1	2	2	2	14	22	23	33	38	5	43	46	47	47	47	49	51	52	50	34	32	35	43	52	33.0	24		
7	39	42	36	32	30	32	33	33	33	46	47	46	46	46	46	45	44	42	40	36	32	19	11	6	47	34.0	24	
8	5	2	7	3	4	9	7	5	24	28	35	39	42	41	39	38	40	42	41	42	41	38	31	25	42	27.1	24	
9	21	24	16	20	21	18	5	22	30	34	35	35	36	41	44	45	47	44	44	41	42	43	32	17	3	47	30.9	24
10	1	1	3	2	2	5	9	24	39	43	43	43	44	45	46	47	48	48	45	35	24	20	22	22	48	28.5	24	
11	17	16	9	9	5	15	22	31	32	42	50	56	57	58	60	61	64	63	58	48	48	52	53	51	64	42.3	24	
12	41	36	33	5	32	29	33	34	35	C	C	C	C	C	C	39	40	38	32	34	31	32	30	26	41	34.3	24	
13	24	22	5	19	20	20	19	17	17	27	28	29	34	33	35	39	39	38	40	39	35	29	28	28	40	28.7	24	
14	30	5	26	25	26	27	26	26	26	25	25	25	30	35	36	37	37	36	36	33	29	17	14	3	37	27.3	24	
15	5	1	1	3	9	12	14	20	26	34	40	43	44	46	48	49	51	52	53	46	38	41	42	5	53	32.4	24	
16	17	6	4	4	4	8	7	19	32	38	48	51	53	54	54	54	56	41	36	29	24	21	5	22	56	29.4	24	
17	20	18	18	16	18	16	18	25	31	34	38	37	38	38	37	36	36	37	35	30	5	7	7	7	38	28.2	24	
18	6	6	6	6	8	12	17	19	23	28	35	40	39	40	41	40	40	38	35	39	5	32	26	20	41	25.9	24	
19	8	3	2	3	6	13	22	32	36	40	46	47	45	45	44	43	43	43	43	43	38	36	40	47	47	31.6	24	
20	43	42	45	46	42	39	34	36	34	31	35	39	41	42	41	39	40	39	40	5	30	34	27	27	46	37.5	24	
21	20	15	11	9	12	14	16	20	21	27	33	36	33	35	39	41	39	5	28	23	22	19	11	14	41	23.4	24	
22	7	6	7	10	8	8	18	21	22	29	41	44	45	44	42	36	5	37	37	32	27	14	12	10	45	24.2	24	
23	7	6	4	2	3	7	16	17	28	35	39	40	42	42	41	5	40	40	44	38	36	27	14	13	44	25.3	24	
24	6	5	1	1	2	6	18	23	29	42	50	49	51	51	51	55	55	57	49	44	32	16	14	8	57	28.9	24	
25	6	5	2	2	3	5	9	27	38	50	54	56	57	5	52	51	57	57	52	48	43	41	35	31	57	34.0	24	
26	30	27	17	15	13	11	19	34	38	40	44	48	5	54	48	45	46	48	44	44	33	26	21	11	54	32.9	24	
27	21	21	25	19	15	24	30	31	40	43	43	5	45	48	52	51	50	50	49	47	35	31	20	16	52	35.0	24	
28	9	3	1	5	5	7	11	26	49	56	5	67	70	70	55	45	42	40	42	38	31	33	25	18	70	32.5	24	
29	10	2	2	4	9	10	19	31	24	5	58	67	55	47	46	48	47	43	39	35	32	26	20	16	67	30.0	24	
30	22	26	14	10	4	8	11	23	5	37	36	43	45	53	54	51	52	52	49	38	34	26	25	16	54	31.7	24	
HOURLY MAX	43	42	45	46	42	39	34	36	49	56	58	67	70	70	60	61	64	63	59	51	48	52	53	51				
HOURLY AVG	16.6	14.0	12.6	11.7	12.8	15.3	19.6	26.6	31.0	36.5	40.0	43.9	44.7	45.7	45.9	45.4	45.6	44.8	42.9	38.9	33.3	28.6	22.8	18.3				

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

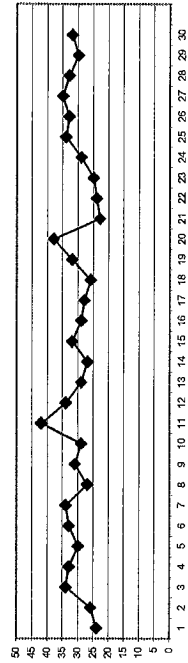
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR: 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES: 0

24 HOUR AVERAGES FOR JUNE 2015



NUMBER OF NON-ZERO READINGS: 685

MAXIMUM 1-HR AVERAGE: 70 PPB @ HOUR(S) 12, 13 ON DAY(S) 28, 28

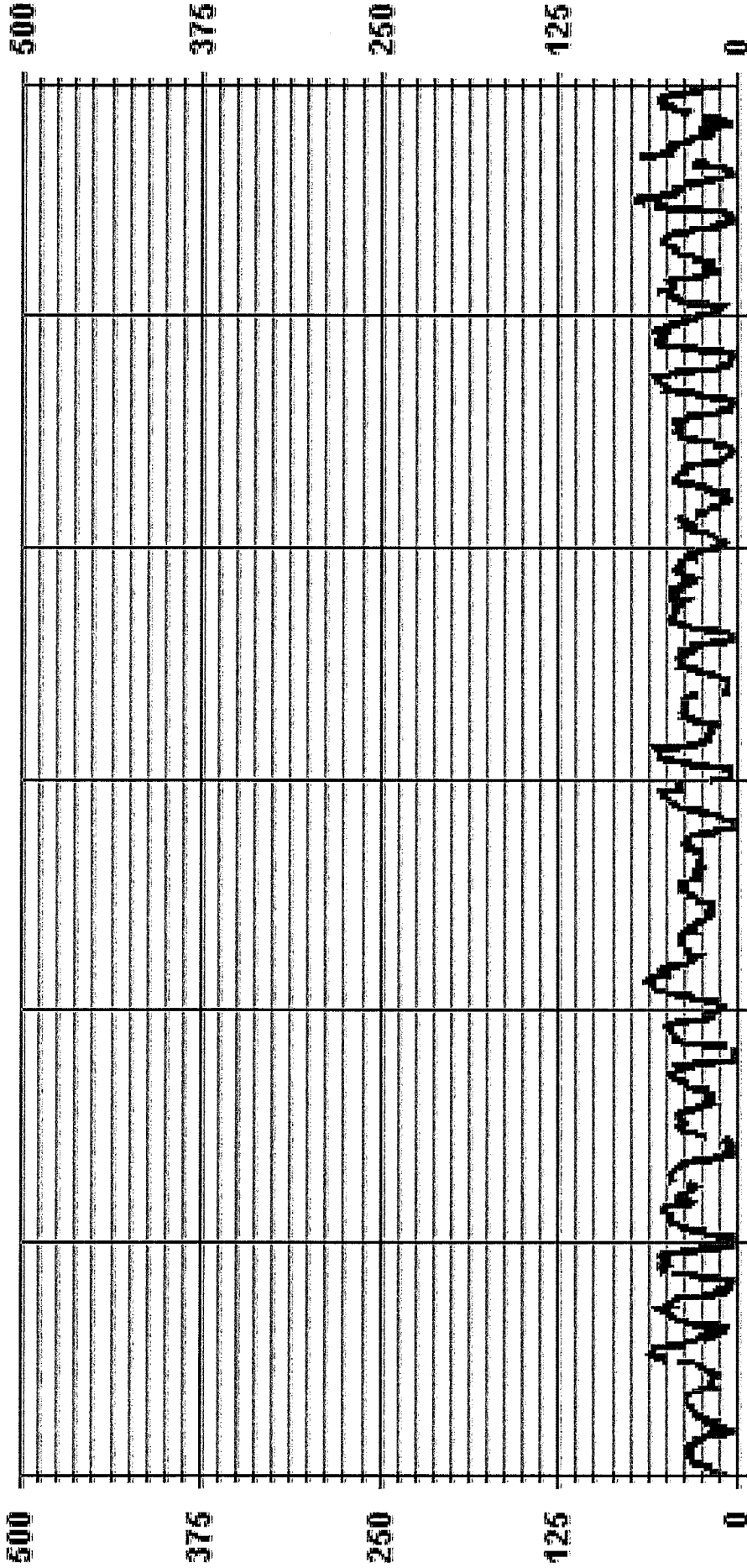
MAXIMUM 24-HR AVERAGE: 42.3 PPB VAR- VARIOUS ON DAY(S) 11

1/25 CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 720 HRS

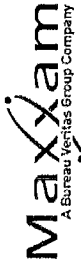
MONTHLY CALIBRATION TIME: 4 HRS AMID OPERATION UPTIME: 100.0 %

STANDARD DEVIATION: 15.62 MONTHLY AVERAGE: 31 PPB

01 Hour Averages



— LICA35 03\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 Elk Point Airport Site - JUNE 2015  
 JOB # 2833-2015-06-35-C

OZONE 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	19	20	21	21	25	23	28	32	33	35	37	37	36	36	\$	37	36	36	32	30	30	30	29	26	15	8	37	28.1	24
2	13	18	21	21	19	22	25	30	29	30	33	33	34	\$	36	36	37	36	37	36	37	35	31	28	24	21	37	28.2	24
3	21	21	22	19	18	18	22	24	26	29	32	42	\$	56	60	62	61	61	61	61	58	49	46	44	33	62	38.5	24	
4	29	24	37	18	19	28	35	38	39	45	47	\$	51	57	57	54	50	51	50	51	48	47	39	31	20	57	39.7	24	
5	13	16	7	12	5	7	21	34	39	49	\$	55	56	53	53	52	52	54	54	53	48	41	23	16	56	35.3	24		
6	3	6	6	2	22	25	27	37	40	\$	44	48	49	49	50	51	52	53	52	47	41	42	45	53	36.5	24			
7	46	45	41	36	36	33	34	35	\$	49	49	47	47	47	47	45	44	42	42	36	28	19	16	2	49	37.4	24		
8	10	6	13	11	9	12	11	\$	26	31	41	44	45	42	42	40	42	40	44	43	43	41	38	29	45	30.8	24		
9	26	27	18	24	24	23	\$	28	34	36	38	39	44	45	49	49	49	45	44	49	47	41	30	13	49	35.2	24		
10	7	2	10	5	5	5	22	35	43	44	45	44	46	46	47	48	50	50	50	43	32	30	28	31	50	33.1	24		
11	22	20	13	15	\$	26	36	36	36	48	54	59	60	60	62	64	65	65	62	57	52	53	54	55	65	46.7	24		
12	52	39	38	5	37	32	35	36	C	C	C	C	C	C	C	39	41	42	41	35	36	35	32	29	52	37.3	24		
13	26	24	5	22	21	21	21	20	23	28	30	32	36	35	37	40	40	40	40	41	38	36	31	32	41	31.1	24		
14	33	\$	28	27	28	28	28	28	27	26	26	34	37	38	38	38	38	37	37	35	33	27	22	10	38	30.0	24		
15	5	2	3	8	17	15	18	22	34	39	41	52	53	54	56	55	57	57	54	54	53	43	44	44	54	35.7	24		
16	25	9	9	10	8	11	11	11	27	39	41	42	40	42	43	42	41	41	38	45	\$	39	32	25	45	29.4	24		
17	23	19	19	19	20	24	28	34	36	67	54	40	40	38	38	38	39	39	38	38	37	35	22	2	57	34.2	24		
18	13	11	9	8	11	16	19	21	26	31	41	42	40	42	43	42	41	41	41	41	38	45	\$	39	32	25	45	29.4	24
19	16	8	3	7	12	20	27	35	39	46	48	48	47	47	46	45	44	44	44	\$	39	38	49	51	51	34.9	24		
20	45	43	50	50	45	44	39	40	37	35	47	45	45	45	44	42	41	42	\$	37	39	38	32	33	50	41.7	24		
21	25	20	17	12	14	16	20	22	23	31	38	38	35	38	40	43	43	\$	38	28	23	22	17	18	43	26.8	24		
22	14	9	12	12	15	17	21	25	28	37	44	46	46	45	50	40	\$	38	39	36	31	22	19	15	50	28.7	24		
23	15	10	9	6	5	14	19	24	34	37	40	42	43	43	43	\$	43	44	46	41	40	37	22	22	46	29.5	24		
24	14	14	2	2	4	11	22	25	37	49	53	52	52	54	\$	57	57	60	57	52	45	45	28	16	60	34.7	24		
25	15	14	5	2	3	7	16	35	45	53	57	58	59	\$	54	56	61	62	57	54	48	47	39	38	62	38.5	24		
26	35	33	24	25	24	15	34	41	40	43	45	52	\$	57	54	46	46	49	49	47	45	34	28	22	57	38.6	24		
27	28	28	28	25	19	27	33	34	43	44	45	\$	47	52	53	52	51	51	50	50	46	46	31	24	53	39.4	24		
28	15	9	2	16	14	13	14	48	52	62	\$	70	73	73	68	48	43	42	44	42	36	37	32	24	73	38.1	24		
29	24	3	3	10	18	17	28	36	31	\$	69	70	64	54	48	50	50	48	41	40	35	32	25	23	70	35.6	24		
30	26	31	21	15	7	11	18	27	\$	44	43	46	50	55	56	53	54	53	51	47	40	33	33	20	56	36.3	24		
HOURLY MAX	52	45	50	50	45	44	39	48	52	67	69	70	73	73	68	64	65	65	62	58	52	53	54	55					
HOURLY AVG	22.5	18.3	16.9	15.9	17.4	19.9	24.6	31.3	34.8	41.1	44.2	46.4	47.2	48.5	47.4	47.6	47.4	45.4	43.6	39.1	35.5	30.3	24.7						

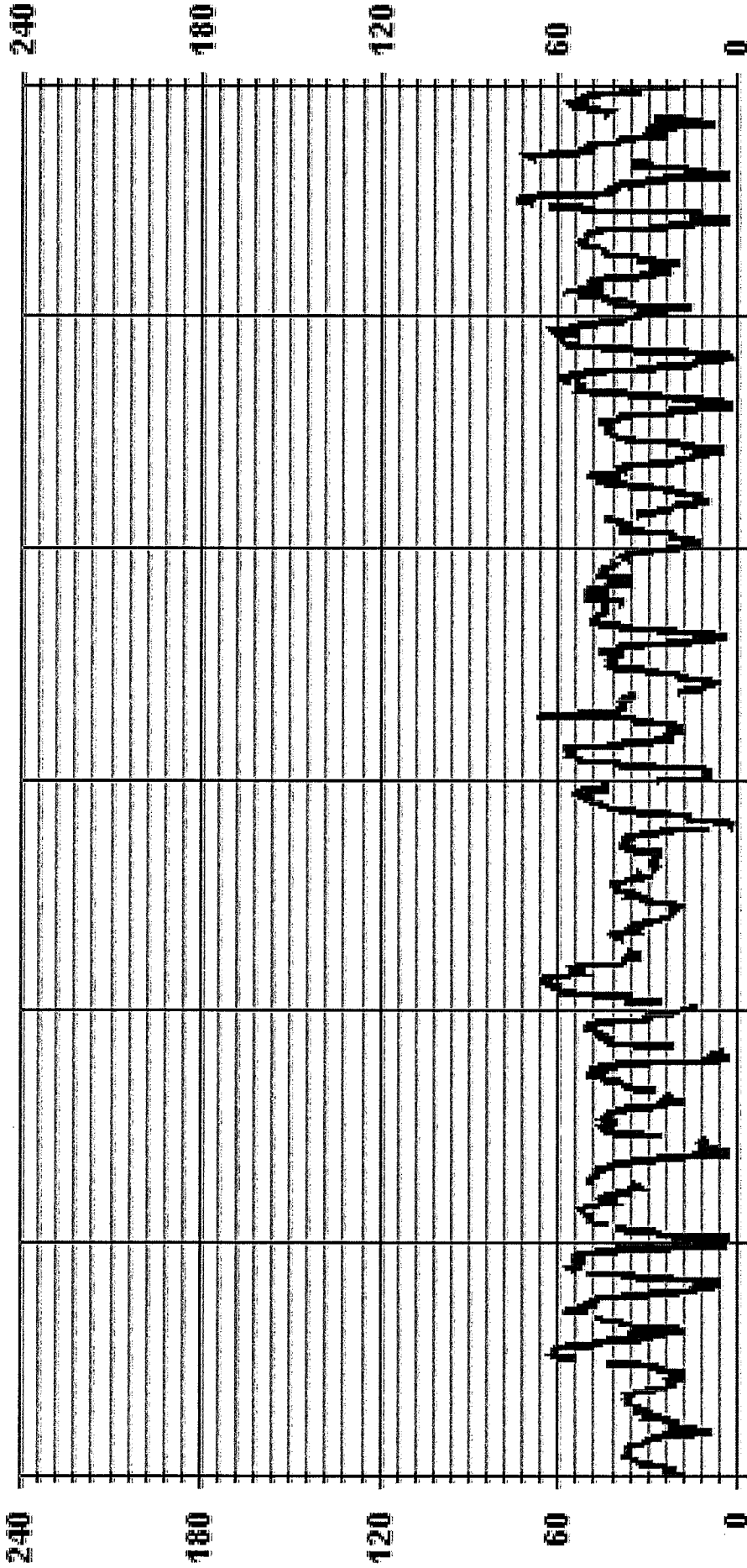
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	683
MAXIMUM INSTANTANEOUS VALUE:	73 PPB @ HOUR(S) 12, 13 ON DAY(S) 28, 28
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	14.99
OPERATIONAL TIME:	VAR-VARIOUS

01 Hour Averages



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

— LICA35 O3MAX PPB

LICA-ELK  
O3\_ / WDR Joint Frequency Distribution (Percent)

June 2015

Distribution By % Of Samples

Logger Id : 35  
Site Name : LICA-ELK  
Parameter : O3  
Units : PPS

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	2.33	1.60	1.02	1.60	5.69	4.81	2.04	1.75	1.45	.72	4.08	9.92	18.97	15.91	11.24	5.83	89.05
< 110	.00	.14	.00	.14	.14	1.31	.72	.87	.14	.29	1.31	1.02	1.75	1.60	1.31	.14	10.94
< 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	2.33	1.75	1.02	1.75	5.83	6.13	2.77	2.62	1.60	1.02	5.40	10.94	20.72	17.51	12.55	5.98	

Calm : .00 %

Total # Operational Hours : 685

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	16	11	7	11	39	33	14	12	10	5	28	68	130	109	77	40	610
< 110	1	1	1	1	1	9	5	6	1	2	9	7	12	11	9	1	75
< 210																	
>= 210																	
Totals	16	12	7	12	40	42	19	18	11	7	37	75	142	120	86	41	

Calm : .00 %

Total # Operational Hours : 685

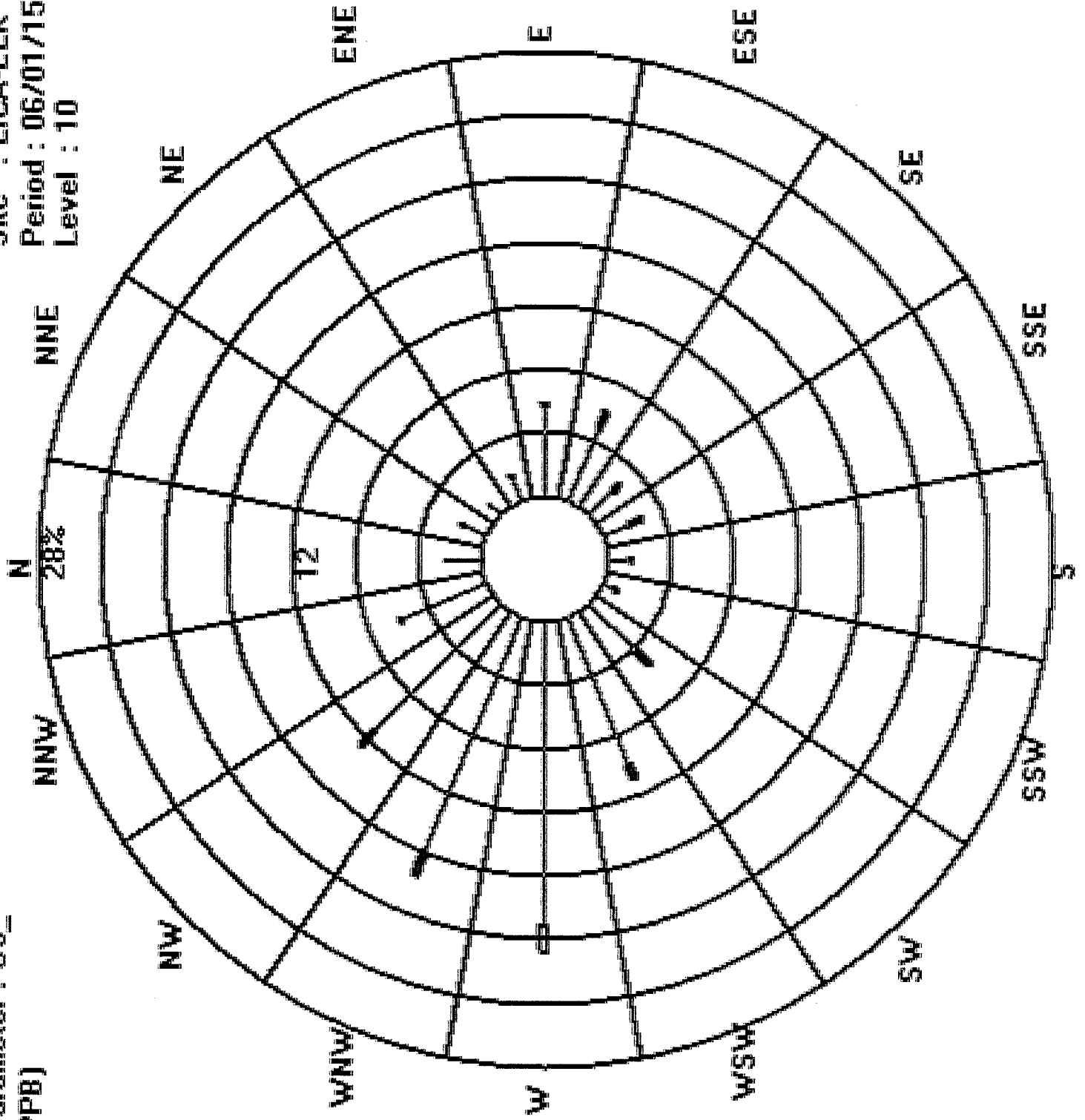


Logger : 35 Parameter : 03\_

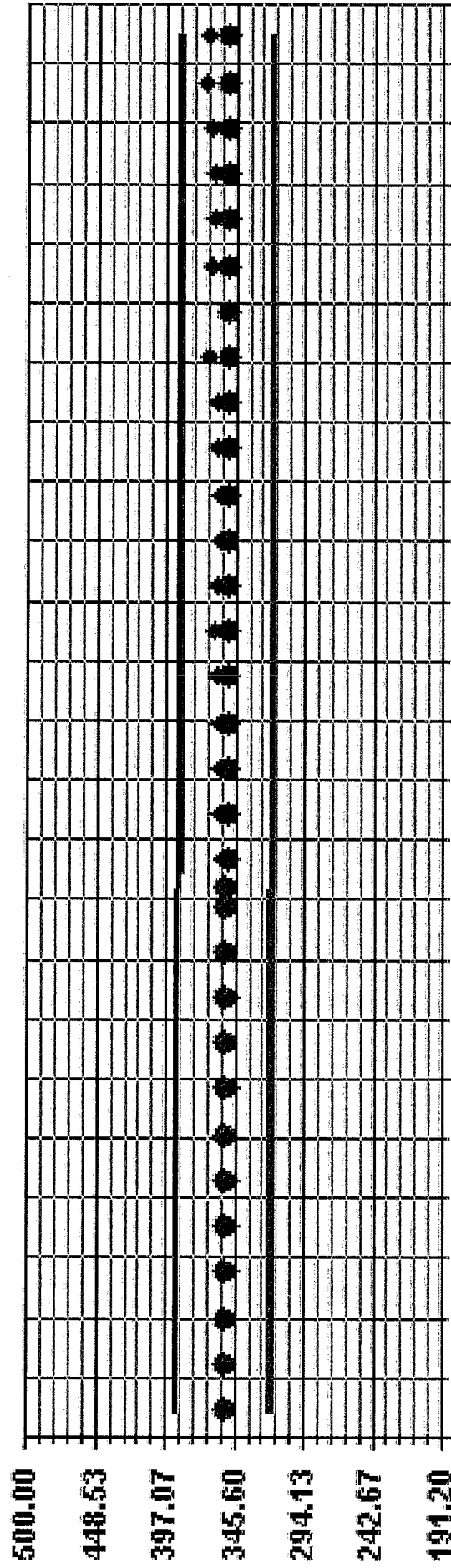
Site : LICA-ELK

Class Limits (PPB)

Period : 06/01/15-06/30/15  
Level : 10



Calibration Graph for Site: LICA35 Parameter: O3\_ Sequence: O3 Phase: SPAN



6/M/15 6/8/15 6/16/15 6/23/15 7/M/15  
 + Cal Value ● Exp Value — Exp Value +10% — Exp Value -10%

***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	24:00	ROGGS			
1	10	13	7	7	7	8	6	6	1	7	10	3	10	12	11	9	C	0	6	7	5	6	4	4	3	13	6.8	24	
2	4	5	3	7	6	6	10	10	11	4	8	8	7	6	6	8	8	9	7	6	3	5	8	9	12	12	6.9	24	
3	8	4	5	7	6	6	4	4	5	8	5	8	5	8	4	10	9	7	7	4	5	6	5	6	6	10	6.1	24	
4	8	6	8	8	8	6	11	8	10	12	6	5	4	3	8	10	9	2	6	3	3	1	2	9	12	12	6.5	24	
5	8	8	9	11	11	11	12	13	6	3	6	5	6	7	6	2	7	6	7	1	4	10	6	7	13	13	7.2	24	
6	9	10	13	8	15	12	4	8	4	3	6	7	0	4	5	3	3	8	5	7	7	2	3	7	15	6.4	24		
7	16	14	10	8	2	5	7	8	8	6	6	2	5	4	8	5	1	4	3	1	2	11	9	2	16	6.1	24		
8	3	2	2	5	17	13	10	8	9	1	2	5	9	12	10	3	3	4	7	3	4	6	0	17	6.1	24			
9	5	3	5	4	4	2	2	7	13	4	0	8	3	9	11	7	1	9	6	7	2	7	7	8	13	5.6	24		
10	7	6	7	6	7	8	8	7	5	4	1	7	5	4	8	1	0	13	7	10	15	7	10	15	14	6.6	24		
11	15	12	15	16	14	13	8	13	16	3	12	12	7	10	8	5	10	9	6	10	7	0	2	0	16	9.3	24		
12	2	4	3	5	2	2	2	2	2	3	X	4	0	4	8	1	0	6	3	6	2	5	1	4	1	8	3.2	23	
13	2	1	1	0	1	1	1	3	3	1	1	2	3	2	1	2	5	6	3	4	5	0	1	2	3	0	6	2.0	24
14	2	2	0	0	1	0	2	0	3	2	2	3	2	1	2	5	2	4	3	2	2	4	1	4	2	5	2.0	24	
15	2	3	1	6	4	2	5	6	7	3	2	1	0	13	11	0	2	6	6	6	5	3	9	10	13	4.7	24		
16	8	10	4	7	9	9	9	6	9	8	10	3	6	2	11	7	X	8	9	5	3	0	0	0	11	6.2	23		
17	3	0	1	5	4	3	7	3	1	3	3	8	0	1	4	0	1	4	0	0	6	5	3	3	8	2.8	24		
18	4	8	8	6	6	3	5	3	4	2	0	6	0	0	10	9	7	7	0	1	9	5	4	10	10	4.5	24		
19	3	5	4	13	10	8	4	4	1	10	9	7	C	0	4	6	4	6	2	6	6	6	0	1	13	5.2	24		
20	1	0	6	4	2	1	0	0	0	2	5	0	X	6	3	1	2	0	2	0	1	2	0	2	6	1.7	23		
21	0	3	1	5	5	4	3	5	2	11	10	10	9	14	10	8	8	10	8	6	9	4	14	14	6.6	24			
22	9	11	6	4	6	6	10	9	12	14	9	8	9	6	8	5	1	0	4	1	1	4	8	5	14	6.5	24		
23	8	8	6	6	4	3	7	9	6	5	4	5	9	6	5	5	6	5	0	0	8	8	9	5	9	5.7	24		
24	7	9	5	7	5	6	8	3	7	10	4	7	6	14	7	8	6	8	9	11	7	10	9	7	14	7.5	24		
25	9	13	8	11	11	8	3	6	7	9	3	8	6	5	7	4	8	9	6	5	5	5	5	5	13	7.2	24		
26	11	10	10	9	15	12	8	4	6	3	5	4	6	8	6	2	6	1	4	2	0	7	8	8	15	6.5	24		
27	6	6	5	5	17	5	0	13	2	4	0	0	0	0	5	1	0	5	4	3	8	1	7	X	17	4.4	23		
28	6	6	7	5	7	6	13	7	7	4	5	6	7	5	9	3	9	7	7	4	5	4	2	5	13	6.1	24		
29	10	12	13	14	19	31	54	80	71	82	114	102	42	19	9	7	5	7	8	1	6	6	5	3	114	30.0	24		
30	8	3	5	7	9	8	10	9	13	15	10	15	23	39	42	40	44	41	46	42	38	40	37	34	46	24.1	24		
HOURLY MAX	16	14	15	16	19	31	54	80	71	82	114	102	42	42	40	44	44	41	46	42	38	40	37	34	46				
HOURLY AVG	6.5	6.6	5.9	6.7	8.0	7.0	8.1	8.5	8.6	8.2	8.8	8.5	6.9	7.6	7.9	6.3	6.3	6.3	6.5	6.3	5.5	5.7	6.1	6.4	5.8				

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

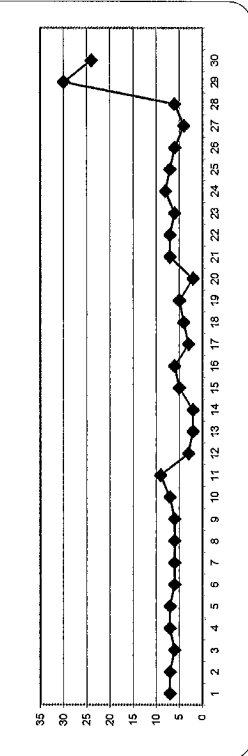
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR :30 ug/m3

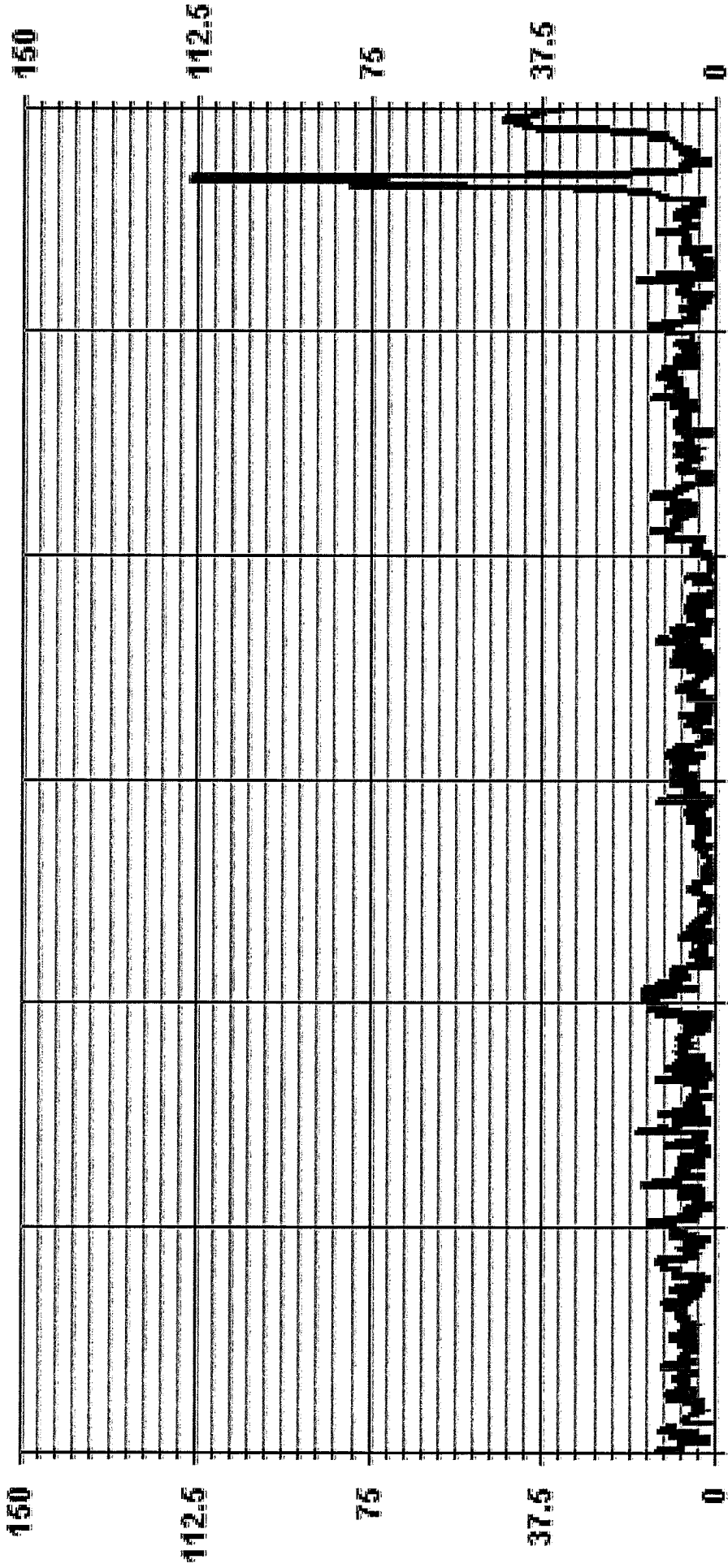
MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	661			
MAXIMUM 1-HR AVERAGE:	114 ug/m3 @ HOUR(S)	10	ON DAY(S)	
MAXIMUM 24-HR AVERAGE:	30.0 ug/m3		ON DAY(S)	
			VAR-VARIOUS	
MONTHLY CALIBRATION TIME:	2 HRS		OPERATIONAL TIME:	716 HRS
STANDARD DEVIATION:	9.36		AMD OPERATION UPTIME:	99.4 %
			MONTHLY AVERAGE:	7.0 ug/m3

24 HOUR AVERAGES FOR JUNE 2015



01 Hour Averages



— LICA35 PM2 UG/M3

LICA-ELK  
 PM2 / WDR Joint Frequency Distribution (Percent)

June 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																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30	2.10	1.82	.98	1.96	5.60	6.30	2.66	2.66	1.26	1.12	5.18	10.08	20.16	17.36	12.04	6.02	97.33
< 60	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.42	.84	.56	.00	.00	1.96
< 80	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14
< 120	.00	.00	.00	.00	.00	.00	.00	.00	.28	.00	.14	.00	.00	.00	.14	.00	.56
< 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.10	1.96	.98	1.96	5.74	6.30	2.66	2.66	1.54	1.12	5.32	10.50	21.00	17.92	12.18	6.02	

Calm : .00 %

Total # Operational Hours : 714

Distribution By Samples

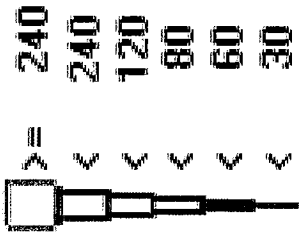
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30	15	13	7	14	40	45	19	19	9	8	37	72	144	124	86	43	695
< 60				1								3	6	4			14
< 80		1													1		1
< 120									2		1				1		4
< 240																	
>= 240																	
Totals	15	14	7	14	41	45	19	19	11	8	38	75	150	128	87	43	

Calm : .00 %

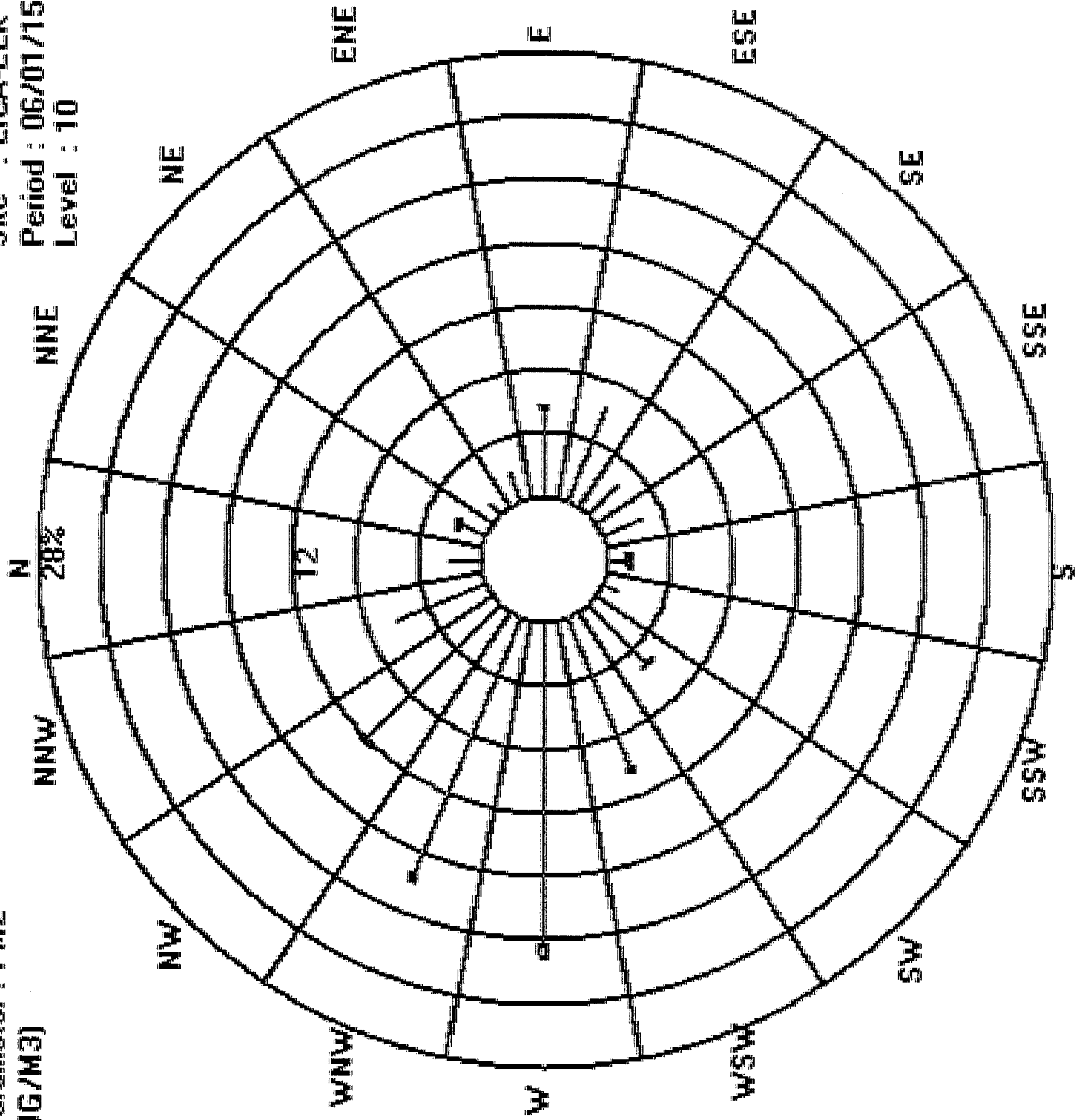
Total # Operational Hours : 714

Logger : 35 Parameter : PM2

Class Limits (UG/M3)

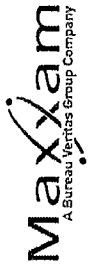


Site : LICA-ELK  
Period : 06/01/15-06/30/15  
Level : 10



***WIND SPEED***





WIND SPEED (WS) hourly averages in km/hr

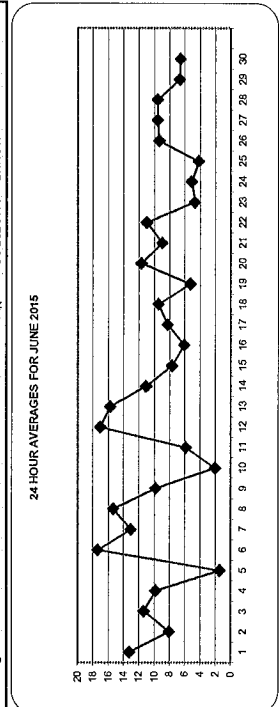
MST

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	6.9	7.0	5.2	6.6	14.0	11.1	15.2	15.4	16.6	17.4	16.1	18.1	22.0	18.2	23.2	25.5	23.5	21.7	17.3	12.9	7.1	6.2	7.2	8.0	23.5	14.2	24	
2	8.2	7.7	5.0	7.2	4.8	3.6	9.7	15.0	12.7	11.0	10.4	12.4	9.2	8.9	9.0	10.0	11.3	13.4	15.8	11.8	10.9	10.7	6.9	9.5	15.8	9.8	24	
3	11.0	7.1	5.7	7.1	8.8	7.9	7.5	9.4	8.8	10.9	10.2	14.8	11.1	15.7	17.3	20.0	18.8	19.9	19.4	15.2	10.9	8.7	6.9	4.8	20.0	11.6	24	
4	5.9	3.3	3.3	2.6	2.5	3.8	10.2	15.2	17.0	19.7	22.1	21.6	18.6	24.7	29.2	18.1	12.4	14.4	11.2	3.9	5.3	5.1	29.2	11.5	24			
5	1.3	3.8	0.8	0.6	0.9	1.5	3.0	3.5	2.4	2.8	3.4	9.5	10.1	8.8	8.0	8.4	8.9	5.9	0.4	1.4	0.0	0.8	10.1	4.4	24			
6	1.0	3.5	3.3	5.0	7.5	10.5	10.0	18.1	23.6	23.7	26.8	30.2	28.0	27.2	28.3	29.5	26.8	26.3	23.2	18.0	13.7	14.4	14.9	15.6	30.2	17.9	24	
7	15.7	11.7	8.8	12.3	10.1	7.7	7.8	11.0	10.8	16.3	26.3	27.4	22.5	18.6	19.6	19.4	21.7	23.0	15.0	6.5	4.4	3.1	2.8	4.3	27.4	13.6	24	
8	5.9	8.4	11.7	4.0	2.5	6.1	3.1	7.5	11.5	13.5	21.0	21.6	25.5	27.6	21.8	20.1	25.1	29.9	35.9	26.4	21.9	15.0	13.0	13.2	35.9	16.3	24	
9	10.4	10.2	9.2	9.8	11.5	12.4	9.8	11.1	10.6	11.9	16.9	23.8	11.9	9.4	11.8	13.5	7.7	8.5	12.5	14.4	3.3	7.1	7.8	6.8	23.8	10.9	24	
10	8.1	4.9	6.2	6.9	4.7	5.6	3.0	2.4	3.4	5.3	7.0	5.2	8.5	7.2	4.5	8.4	7.0	5.9	3.6	0.8	3.4	6.4	6.3	10.0	5.6	24		
11	7.2	1.9	3.9	3.1	5.7	11.3	7.7	5.6	11.0	14.5	14.5	12.8	14.4	20.9	13.3	12.3	8.3	13.1	17.4	11.2	21.8	30.2	22.2	12.1	30.2	12.4	24	
12	3.6	14.7	10.3	17.2	19.7	21.5	20.0	22.3	22.6	22.3	25.0	23.0	18.1	18.5	16.5	15.5	19.3	13.4	8.5	17.3	12.6	17.5	22.7	22.8	25.0	17.7	24	
13	22.2	19.4	20.0	20.2	17.5	14.5	16.1	16.8	14.0	9.1	15.5	16.6	17.3	17.5	17.8	24.2	20.1	18.5	22.8	18.7	14.2	12.7	13.6	15.0	24.2	17.3	24	
14	13.2	16.5	13.4	10.9	12.6	13.2	15.2	15.2	15.7	16.7	15.2	15.1	16.8	17.9	16.3	18.8	15.9	11.2	10.4	8.3	3.8	5.0	4.6	5.1	18.8	12.8	24	
15	2.6	3.0	3.6	3.2	3.3	2.7	5.3	6.6	6.7	9.3	12.2	13.5	14.7	12.5	12.7	12.7	10.7	11.4	12.9	8.2	9.2	10.1	7.0	1.0	14.7	8.1	24	
16	2.9	0.4	0.0	1.4	3.0	3.9	3.1	4.6	12.7	11.8	9.2	9.9	12.1	13.5	18.8	22.7	11.2	31.5	15.0	14.1	13.6	10.7	10.9	10.0	31.5	10.3	24	
17	10.8	7.6	8.2	7.9	8.1	9.9	9.8	11.4	11.4	12.0	12.8	10.9	11.7	12.7	13.3	13.3	11.3	10.4	9.0	5.8	1.8	0.6	1.7	5.1	13.3	9.1	24	
18	5.3	6.0	5.9	7.2	8.4	9.8	10.6	10.6	14.2	13.5	19.1	18.0	15.5	17.9	17.7	19.4	20.9	14.3	8.6	11.5	11.5	2.8	2.9	2.0	20.9	11.4	24	
19	1.1	3.1	6.5	6.5	3.2	3.7	6.7	8.3	10.3	3.9	8.3	9.9	10.4	14.6	13.0	13.5	13.7	11.6	10.5	7.4	4.3	6.6	19.5	26.2	9.3	24		
20	15.6	14.6	17.4	16.4	13.4	8.8	6.8	10.6	11.4	14.1	13.5	15.7	15.3	14.4	14.0	14.9	12.8	11.2	10.9	11.4	15.3	8.2	8.1	8.6	17.4	12.6	24	
21	7.4	7.9	6.8	11.2	8.8	8.9	13.1	12.7	15.5	16.3	15.0	15.4	17.8	13.5	9.6	13.6	22.3	10.1	6.8	10.0	10.1	8.9	5.9	8.3	22.3	11.5	24	
22	8.2	12.2	12.5	13.0	8.3	5.3	8.3	10.0	8.4	12.9	19.1	21.6	20.4	23.3	20.3	8.1	11.8	10.4	15.6	12.3	9.1	6.6	6.0	8.6	23.3	12.2	24	
23	8.2	9.1	7.8	3.5	4.4	5.9	6.2	3.4	4.7	4.6	5.8	5.4	4.1	6.3	6.4	6.5	10.3	11.4	6.7	4.2	2.8	4.0	3.7	2.1	11.4	5.7	24	
24	1.9	3.5	3.8	2.4	2.7	1.2	5.6	4.7	5.4	8.9	7.9	9.8	10.5	7.9	8.6	11.2	11.2	11.2	8.3	4.7	3.0	1.3	1.7	0.9	0.7	11.2	5.3	24
25	4.1	2.8	3.9	4.4	2.3	0.6	0.7	4.6	7.2	11.7	9.4	8.0	7.7	13.2	21.2	10.1	9.7	8.1	2.8	5.3	11.4	7.8	7.8	6.4	21.2	7.1	24	
26	3.4	2.7	1.9	6.4	2.8	1.2	5.1	8.4	15.1	16.8	7.4	8.1	14.2	13.8	16.5	19.4	22.2	24.8	20.7	13.8	9.0	9.1	8.9	7.4	24.8	10.8	24	
27	5.9	4.4	11.4	11.4	9.9	11.2	10.3	10.2	11.5	13.7	15.6	12.8	13.2	14.1	15.9	17.9	12.1	11.1	10.3	7.1	6.4	2.7	1.4	2.2	17.9	10.1	24	
28	2.2	2.6	3.1	3.8	3.4	2.4	0.9	5.6	10.3	12.3	11.4	14.7	14.2	17.1	21.5	22.8	20.0	20.5	18.3	14.1	8.2	7.7	6.3	6.0	22.8	10.4	24	
29	4.9	2.7	3.9	3.1	3.6	1.4	2.0	1.6	0.4	1.2	3.4	9.7	12.5	14.8	14.5	12.3	10.5	10.9	16.9	12.0	9.7	9.9	8.7	7.6	16.9	7.4	24	
30	6.2	6.8	4.5	3.3	2.1	1.7	5.5	3.2	5.4	9.4	11.9	10.2	13.2	11.1	12.3	11.3	9.2	9.3	9.9	6.7	7.4	4.4	5.8	5.1	13.2	7.3	24	
HOURLY MAX	22.2	19.4	20.0	20.2	19.7	21.5	20.0	22.3	23.6	23.7	26.8	30.2	28.0	27.6	29.2	29.5	26.8	31.5	35.9	26.4	21.9	30.2	22.7	26.2				
HOURLY AVG	7.0	7.0	6.9	7.3	7.0	7.0	7.0	7.9	9.5	11.0	12.3	13.7	14.9	14.7	15.4	15.8	15.7	14.9	14.8	13.4	10.6	8.8	8.2	7.9	7.9			

LAST CALIBRATION: February 21, 2014  
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

STATUS FLAG CODES

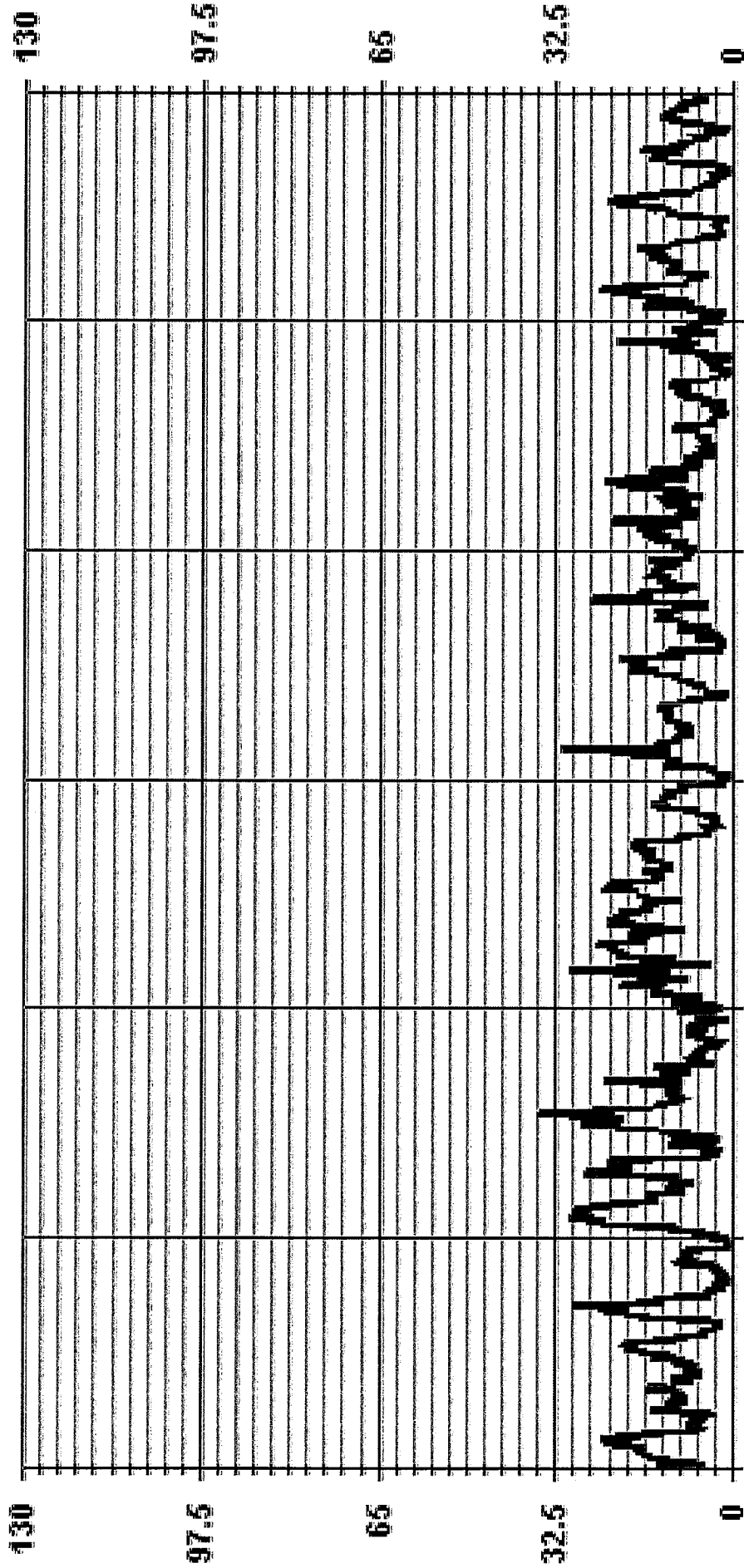
C	- CALIBRATION	Q	- QUALITY ASSURANCE
Y	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	718
MAXIMUM 1-HR AVERAGE:	35.9 KPH
MAXIMUM 24-HR AVERAGE:	17.9 KPH
MONTHLY CALIBRATION TIME:	0 HRS
STANDARD DEVIATION:	6.44
OPERATIONAL TIME:	
AMD OPERATION UPTIME:	
MONTHLY AVERAGE:	
ON DAY(S)	18
ON DAY(S)	8
VAR-VARIOUS	6
HRS	720
%	100.0
KPH	10.8

01 Hour Averages

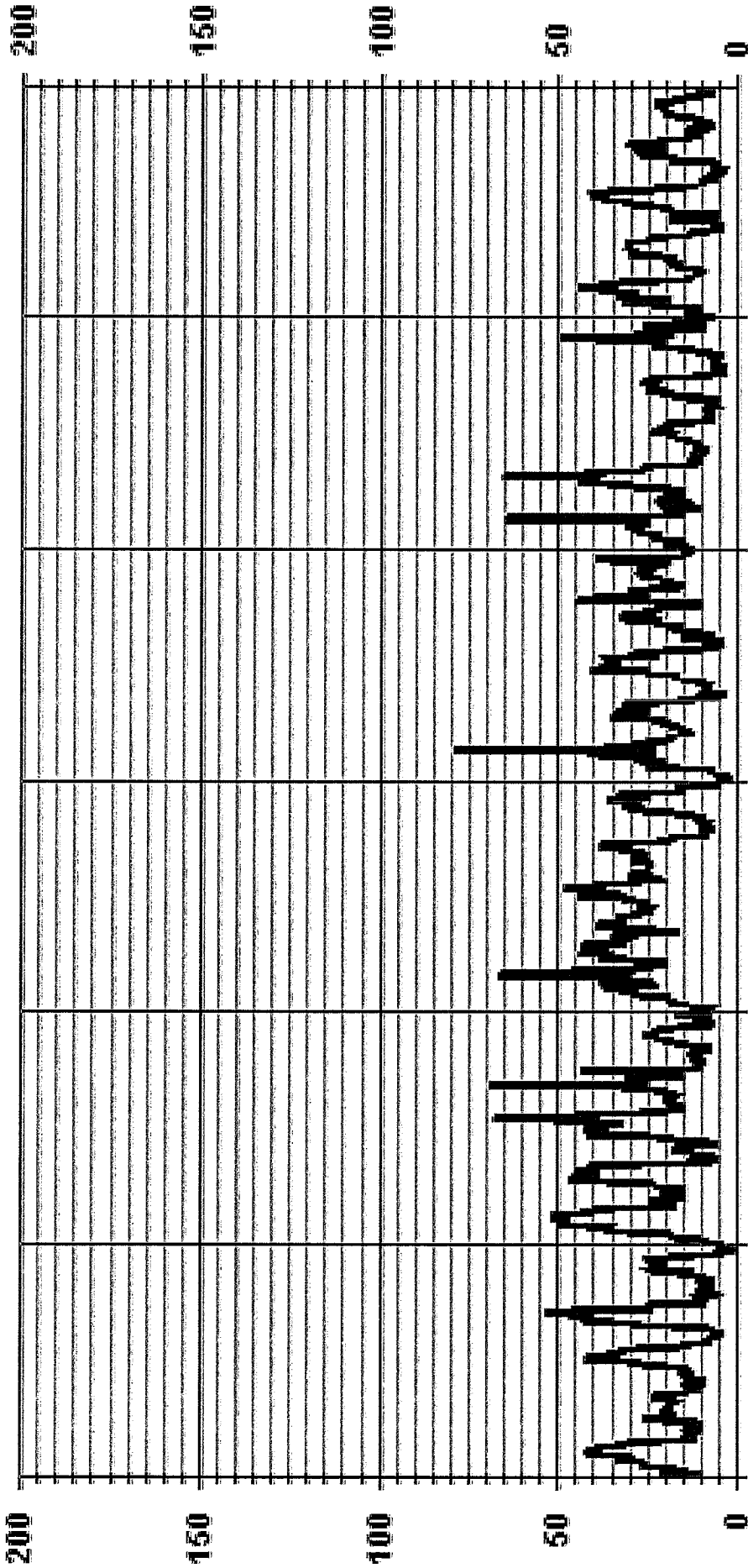


06/01/15 00:00 06/06/15 00:00 06/11/15 00:00 06/16/15 00:00 06/21/15 00:00 06/26/15 00:00

— LICA35 WSP KPH



01 Hour Averages



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

— LICA35 WSMAX KPH

LICA-ELK  
WSP / WDR Joint Frequency Distribution (Percent)

June 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																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	.13	.69	.27	1.25	2.08	1.66	.69	.83	.55	.69	1.52	2.22	5.55	4.44	2.08	.27	25.00
< 12.0	1.11	.69	.55	3.19	2.08	.83	.55	.27	.41	2.91	6.11	8.47	3.61	3.61	1.94	36.94	
< 20.0	.97	.41	.13	.13	.41	1.94	1.11	.97	.55	.00	.69	2.08	4.58	6.11	4.58	2.77	27.50
< 29.0	.00	.13	.00	.00	.00	.55	.00	.13	.13	.00	.13	.00	1.94	3.47	2.08	.69	9.30
< 39.0	.00	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.13	.27	.13	.27	.97
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.22	1.94	.97	1.94	5.69	6.25	2.63	2.63	1.52	1.11	5.27	10.41	20.69	17.91	12.50	5.97	

Calm : .27 %

Total # Operational Hours : 720

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	1	5	2	9	15	12	5	6	4	5	11	16	40	32	15	2	180
< 12.0	8	5	4	4	23	15	6	4	2	3	21	44	61	26	26	14	266
< 20.0	7	3	1	1	3	14	8	7	4		5	15	33	44	33	20	198
< 29.0		1				4		1	1	1		14	25	15	5	67	
< 39.0													1	2	1	2	7
>= 39.0																	
Totals	16	14	7	14	41	45	19	19	11	8	38	75	149	129	90	43	

Calm : .27 %

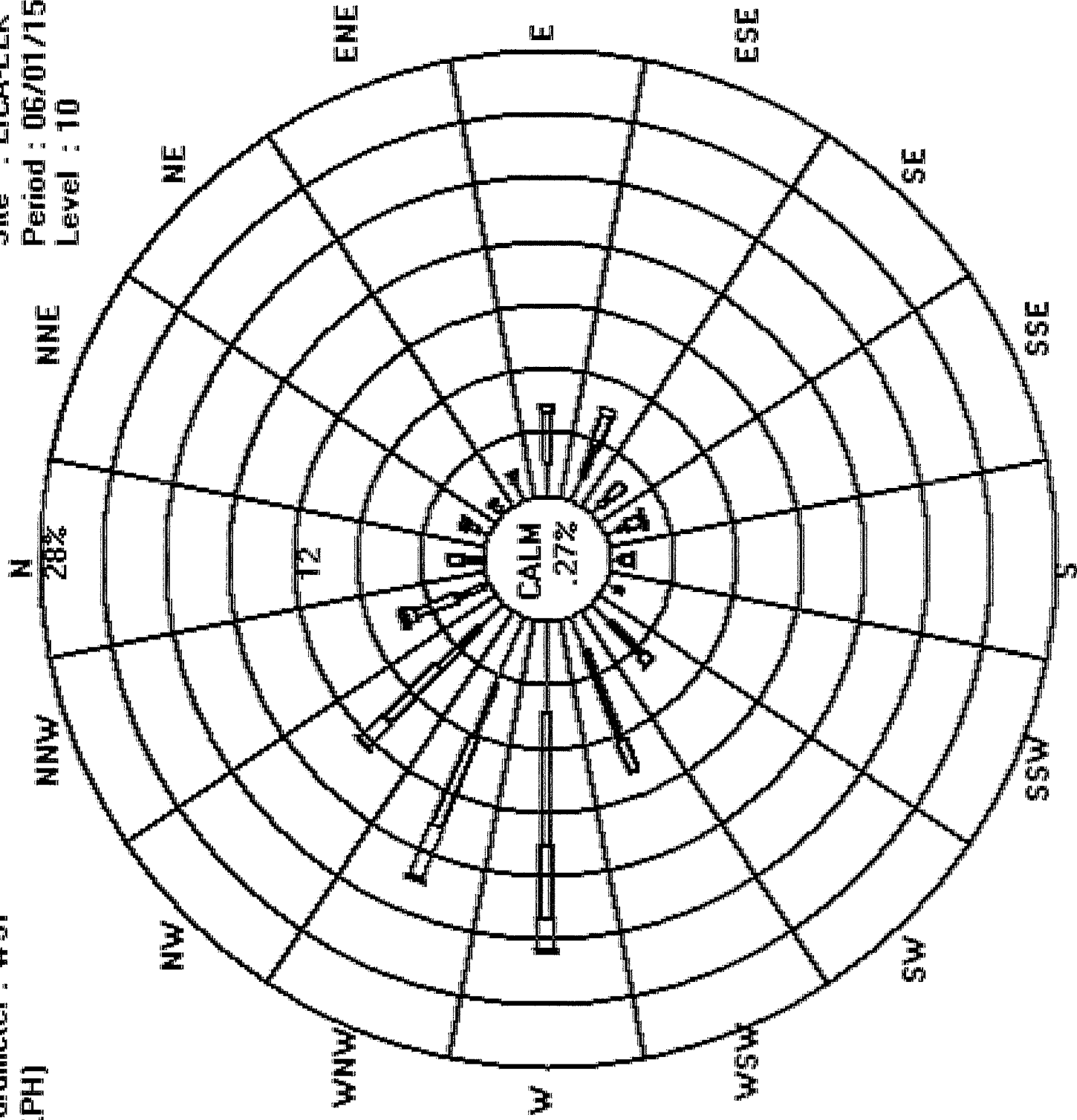
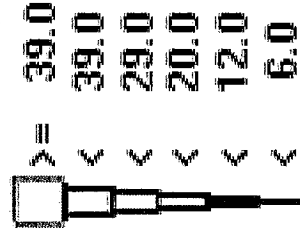
Total # Operational Hours : 720

Logger : 35 Parameter : WSP

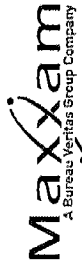
Site : LICA-ELK

Class Limits (KPH)

Period : 06/01/15-06/30/15



***WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 Elk Point Airport Site - JUNE 2015  
 JOB # 2833-2015-06-35-C

WIND DIRECTION (WD) hourly averages

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

STATUS FLAG CODES

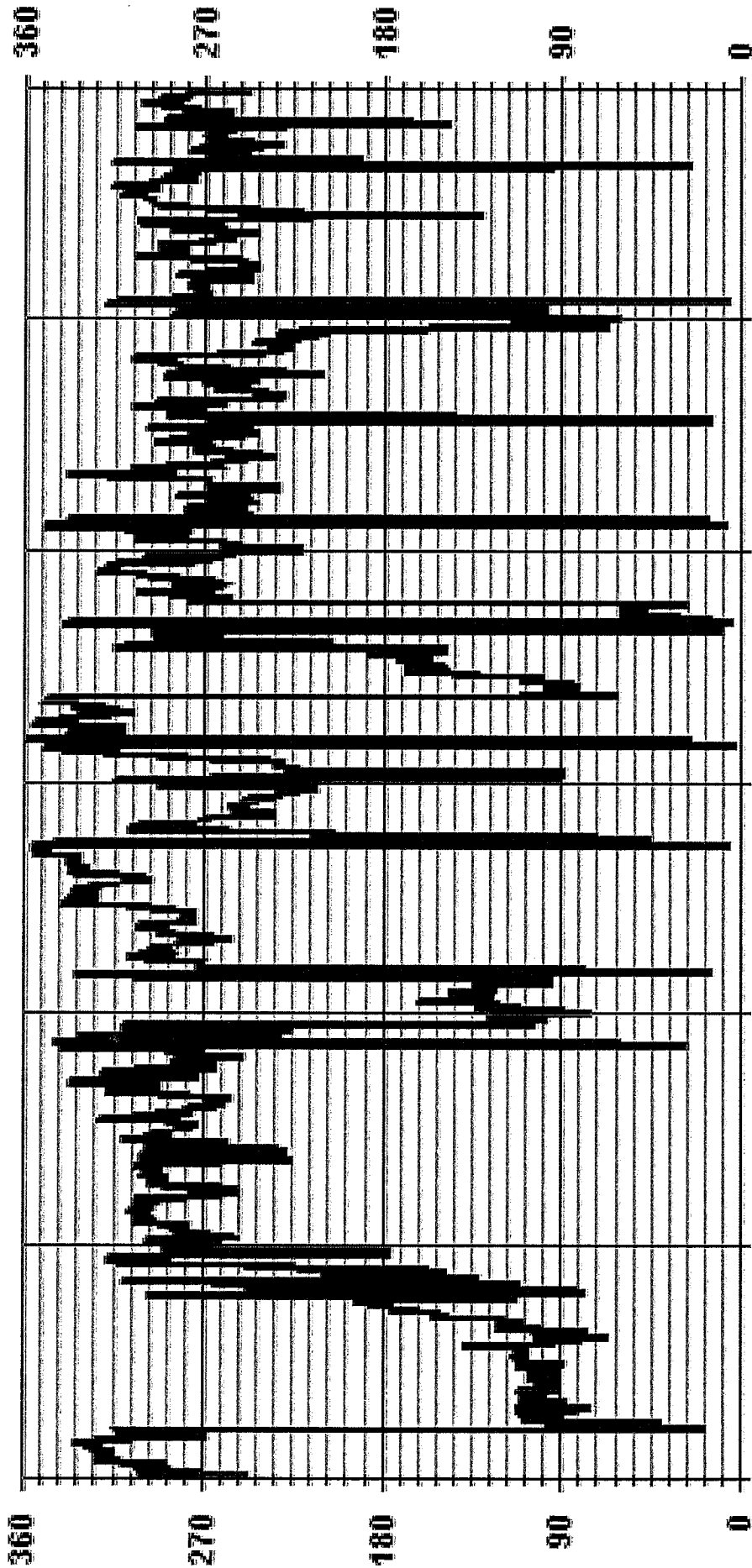
C	- CALIBRATION	Q	- QUALITY ASSURANCE
V	- MAINTENANCE	R	- RECOVERY
S	- DAILY ZERO/SPAN CHECK	X	- MACHINE MALFUNCTION
P	- POWER FAILURE	O	- OPERATOR ERROR
G	- OUT FOR REPAIR	K	- COLLECTION ERROR

LAST CALIBRATION: February 21, 2014  
 DECLINATION: MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	720	HRS
STANDARD DEVIATION:	85.41		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	WNW	



01 Hour Averages



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

— LICA35 WDR DEG

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
 Elk Point Airport Site - JUNE 2015  
 JOB # 2833-2015-06-35- C

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	0:00	
1	11	7	11	15	6	7	9	11	12	13	15	12	11	13	12	11	9	10	11	9	9	9	14	13	8
2	7	6	27	16	14	22	16	14	13	13	14	16	16	19	19	13	14	9	9	7	5	5	5	5	8
3	5	35	11	5	5	12	8	9	7	12	13	25	25	24	17	18	11	10	7	5	8	11	7	7	5
4	6	19	17	21	22	11	10	10	13	13	13	14	17	15	14	14	11	13	12	13	10	18	29	16	16
5	33	18	43	34	36	18	15	57	56	53	42	32	28	28	29	19	23	27	15	8	16	43	17	7	7
6	11	4	7	19	11	11	10	11	10	12	12	13	14	14	10	11	11	10	7	3	4	5	6	6	6
7	6	6	10	7	12	13	13	12	15	17	13	13	14	21	20	15	12	9	11	12	8	9	26	32	32
8	14	7	6	15	13	12	12	20	10	11	11	11	10	9	9	11	12	10	11	9	7	8	7	4	4
9	7	10	8	12	10	11	7	11	19	23	18	16	14	26	22	18	17	19	11	21	18	10	5	5	5
10	6	12	20	14	9	9	14	29	50	43	49	47	32	54	53	25	36	18	13	19	27	9	10	9	9
11	7	40	33	26	31	10	14	42	14	15	18	26	22	13	25	19	29	21	14	33	17	9	15	14	14
12	23	7	8	6	6	6	9	9	9	10	12	13	16	13	16	17	11	10	8	7	6	7	7	7	7
13	7	5	6	6	8	8	7	6	9	13	10	10	15	11	13	9	12	10	9	8	7	6	7	8	6
14	22	8	8	8	8	8	8	10	9	9	10	12	13	13	15	19	17	19	17	14	20	12	20	16	16
15	16	8	17	33	40	34	14	17	22	24	22	18	21	22	19	23	21	14	12	8	8	9	18	8	8
16	12	19	29	47	33	28	32	30	15	19	24	26	21	21	17	10	13	13	16	11	16	17	13	12	12
17	7	11	8	9	11	9	13	18	19	21	22	34	21	22	19	19	16	16	17	15	18	50	32	12	12
18	8	5	7	6	6	9	12	13	12	14	15	13	14	16	14	14	12	18	24	9	56	17	12	12	12
19	19	15	14	19	12	10	11	24	22	57	36	22	37	27	23	16	18	16	12	13	12	28	7	7	7
20	12	10	8	10	10	8	14	11	10	9	14	12	13	15	17	13	15	13	9	8	13	12	11	10	10
21	8	8	25	11	10	13	11	11	10	11	16	18	13	17	25	21	17	42	16	10	12	10	8	6	6
22	8	7	7	7	9	15	15	14	13	15	15	15	15	12	33	17	19	10	8	8	9	7	8	8	8
23	9	4	10	10	8	10	12	24	30	46	35	25	39	39	27	24	19	16	12	6	36	24	35	25	25
24	18	18	10	13	15	37	14	20	24	19	28	28	29	30	25	18	23	16	9	13	9	22	6	13	13
25	8	8	6	8	11	19	36	19	18	17	23	32	26	16	17	17	15	16	20	9	26	13	5	10	10
26	44	44	29	17	40	48	38	14	11	13	30	35	22	19	14	14	13	9	6	8	7	8	7	7	7
27	12	11	7	4	11	9	11	11	14	17	18	19	20	23	14	14	17	18	12	8	18	16	21	11	11
28	12	13	8	32	44	27	53	20	16	14	16	15	18	16	17	13	11	11	8	6	9	9	5	8	8
29	8	14	11	7	14	4	47	53	53	32	59	18	16	15	15	14	16	12	11	12	11	12	8	8	8
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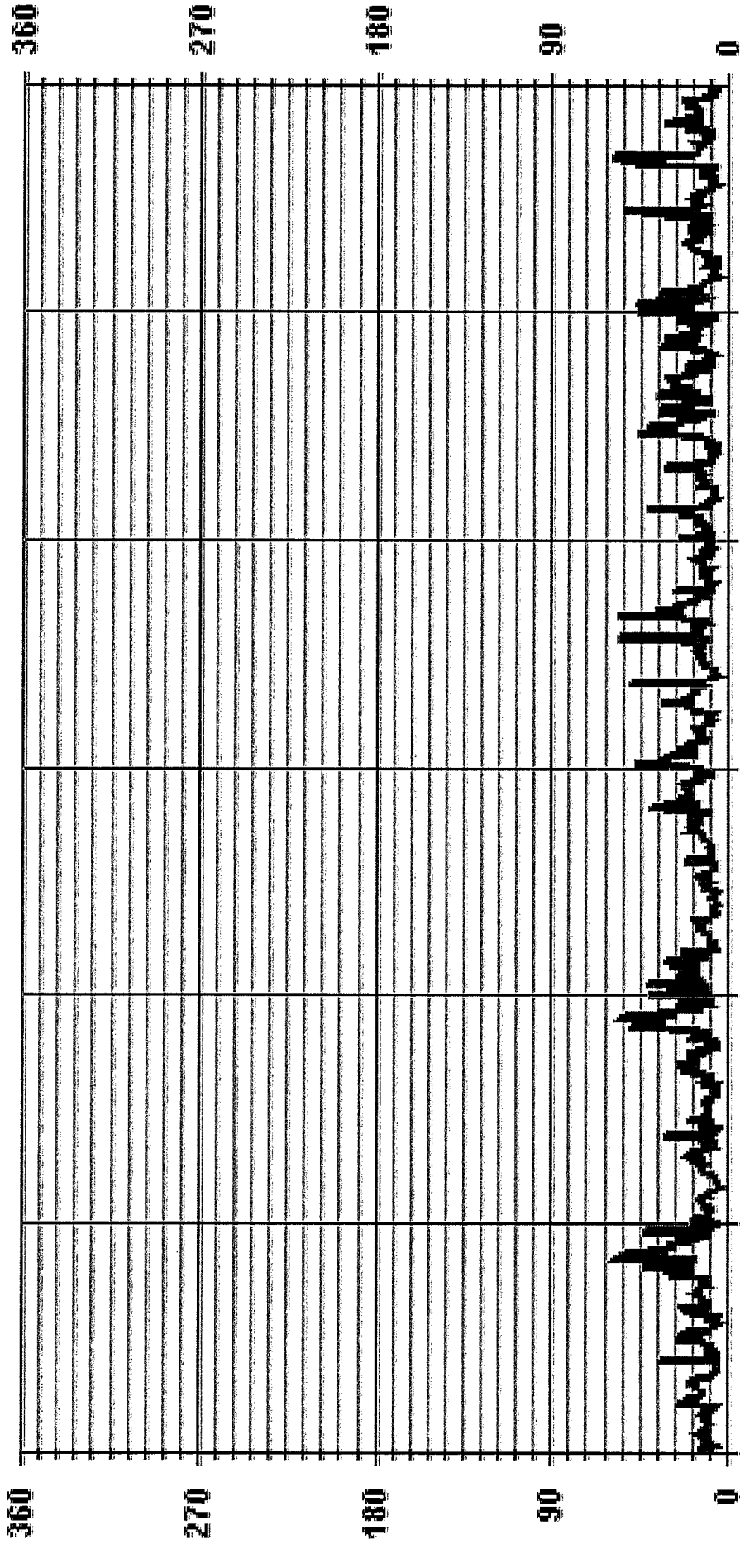
STATUS FLAG CODES

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

LAST CALIBRATION: February 21, 2014

CALIBRATION TIME: 0 HRS      OPERATIONAL TIME: 720 HRS

01 Hour Averages



--- LICA35 STDWDIR DEG

***APPENDIX II***  
***NON-CONTINUOUS MONITORING DATA RESULTS***

***VOC RESULTS***

Sample ID: 15060152-003

Customer ID: LICA

Cust Samp ID: LICAVOC/EPI/June 5, 2015

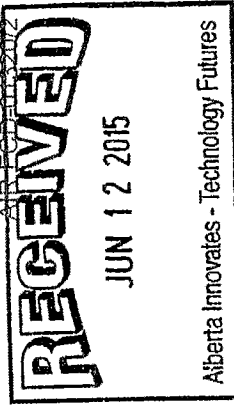
Priority: Normal

Maxxam

VOC Sample Collection Data Sheet

Client: LICA  
 Location: Elk Point Airport  
 Station ID: LICA 35  
 Field Sample ID: LICA/VOC/EPI June 5, 2015

Sampler S/N: 6200  
 Canister ID: H 2797  
 Canister Installation Date/Time: June 01, 2015 @ 16:16  
 Canister Removal Date/Time: June 10, 2015 @ 16:28



Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 5, 2015	00:00 June 5, 2015	00:00 June 6, 2015
		Elapsed Time (Hours) 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)	Final Canister Pressure (psig)
28.8	18.0

18psi JMP

can put use by date - March 5/15

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: June 10, 2015

## Volatile Organics Data Results

Date: JUNE 5, 2015  
Canister ID: H2797

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	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.03
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	0.05
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.17
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.01
2-Methylhexane	0.04
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.07
Acetone	5.8
Acrolein	< 0.3
Benzene	0.05
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.99
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
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	0.09
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	2.6
Ethyl acetate	< 0.4
Ethylbenzene	0.06
Freon-11	0.29



## Volatile Organics Data Results

Date: JUNE 5, 2015  
Canister ID: H2797

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	< 0.02
Freon-12	0.61
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.67
Isopentane	0.62
Isoprene	0.31
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.13
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.9
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.15
Methylcyclopentane	0.09
Methylene chloride	< 0.3
n-Butane	1.25
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.06
n-Hexane	0.13
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	0.04
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.15
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: 15060265-003

Customer ID: LICA

Cust Samp ID: LICAVOC/EP/June 11, 2015

Maxxam

VOC Sample Collection Data Sheet

Client: LICA

Sampler S/N: 6200

Location: Elk Point Airport

Canister ID: 14736

Station ID: LICA 35

Canister Installation Date/Time: June 10, 2015 @ 16:30

Field Sample ID: LICA/VOC/EP/June 11, 2015

Canister Removal Date/Time: June 15, 2015 @ 11:50

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

Canister Information	
Initial Canister Vacuum (inHg)	18.4
Final Canister Pressure (psig)	19 psi JNR

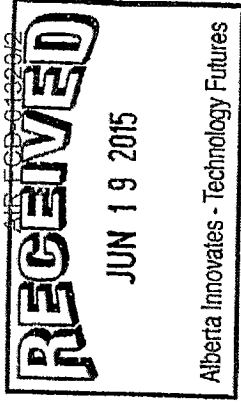
Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	4.94	24

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 Signiture:

Sample in - by Alex Yakupov  
 Sample out - by Alex Yakupov  
 Date: June 15, 2015



## Volatile Organics Data Results

Date: JUNE 11, 2015  
Canister ID: 14735

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	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.05
Acetone	4.7
Acrolein	< 0.3
Benzene	0.18
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.25
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.65
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.07
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.0
Ethyl acetate	< 0.4
Ethylbenzene	0.03
Freon-11	0.22

## Volatile Organics Data Results

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Date: JUNE 11, 2015  
Canister ID: 14735

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.04
Freon-114	< 0.02
Freon-12	0.51
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.34
Isopentane	0.31
Isoprene	0.14
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	0.6
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.13
Methylcyclopentane	0.06
Methylene chloride	< 0.3
n-Butane	0.55
n-Decane	< 0.06
n-Dodecane	0.9
n-Heptane	< 0.01
n-Hexane	0.65
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	0.21
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

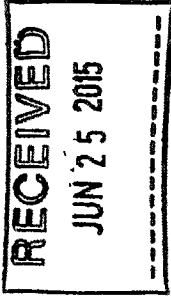
Sample ID: 15060384-008

Customer ID: LICA  
Cust Samp ID: LICAVOC/EPI/June 17, 2015

Maxxam

VOC Sample Collection Data Sheet

Client: LICA  
Location: Elk Point Airport  
Station ID: LICA 35  
Field Sample ID: LICA/VOC/EPI/June 17, 2015  
Sampler S/N: 6200  
Canister ID: 2533  
Canister Installation Date/Time: June 15, 2015 @ 11:52  
Canister Removal Date/Time: June 22, 2015 @ 11:56



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

Canister Information	
Initial Canister Vacuum (inHg)	28.8
Final Canister Pressure (psig)	17.1

17 psi  
SND

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 Yokoyev  
Sample out - by Alex Yokoyev  
Date June 22, 2015

## Volatile Organics Data Results

Date: JUNE 17, 2015  
Canister ID: 2533

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	0.06
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	0.12
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	< 0.01
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.03
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.07
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.08
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.06
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	0.04
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.03
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	2.4
Acrolein	< 0.3
Benzene	0.02
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.35
Carbon tetrachloride	0.08
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.45
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	1.0
Ethyl acetate	< 0.4
Ethylbenzene	0.05
Freon-11	0.20

## Volatile Organics Data Results

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Date: JUNE 17, 2015  
Canister ID: 2533

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.04
Freon-114	< 0.02
Freon-12	0.51
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.09
Isopentane	0.27
Isoprene	0.26
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.14
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	< 0.02
Methylene chloride	< 0.3
n-Butane	0.24
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	0.7
o-Ethyltoluene	0.05
o-Xylene	0.06
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: 15060384-004

Customer ID: LICA

Cust Samp ID: LICA/VOC/EP/June 23, 2015

Maxxam

VOC Sample Collection Data Sheet

Client: LICA  
Location: Elk Point Airport  
Station ID: LICA 35  
Field Sample ID: LICA/VOC/EP/June 23, 2015

Sampler S/N: 6200  
Canister ID: H2826  
Canister Installation Date/Time: June 22, 2015 @ 11:58  
Canister Removal Date/Time: June 24, 2015 @ 12:32

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 23, 2015	00:00 June 23, 2015	00:00 June 24, 2015

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	4.94	24

Canister Information	
Initial Canister Vacuum (inHg)	18.5
Final Canister Pressure (psig)	162.5 SR

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

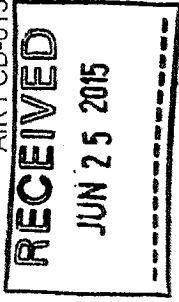
Comments:

Technician Signature:

Sample in - by Alex Yampov  
Sample out - by Alex Yampov

Date: June 24, 2015

AIR FCD-01320/2





## Volatile Organics Data Results

Date: JUNE 23, 2015  
Canister ID: H2826

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	0.09
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.05
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.09
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.05
3-Methylheptane	< 0.02
3-Methylhexane	0.02
3-Methylpentane	0.03
Acetone	4.1
Acrolein	< 0.3
Benzene	0.02
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.04
Carbon tetrachloride	0.08
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	1.0
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.20

## Volatile Organics Data Results

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Date: JUNE 23, 2015  
Canister ID: H2826

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.04
Freon-114	< 0.02
Freon-12	0.53
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.29
Isopentane	0.28
Isoprene	0.67
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	0.11
Methylcyclopentane	0.06
Methylene chloride	< 0.3
n-Butane	0.37
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	0.07
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: 15070024-004

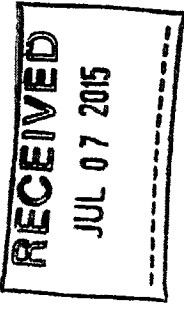
Customer ID: LICA

Cust Samp ID: LICA/VOC/EP/June 29, 2015

AIR FCD-01320/2

# Maxxam

## VOC Sample Collection Data Sheet



Client: LICA  
 Location: Elk Point Airport  
 Station ID: LICA 35  
 Field Sample ID: LICA/VOC/EP/June 29, 2015

Sampler S/N: 6200  
 Canister ID: H 2818  
 Canister Installation Date/Time: June 24, 2015 @ 12:36  
 Canister Removal Date/Time: July 3, 2015 @ 12:20

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 29, 2015	00:00 June 29, 2015	00:00 June 30, 2015
		Elapsed Time (Hours) 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)	Final Canister Pressure (psig)
28.8	14.6

12951  
JSS

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 3, 2015

## Volatile Organics Data Results

Date: JUNE 29, 2015  
Canister ID: H2818

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	0.16
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	0.26
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.03
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.05
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	0.04
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.18
2-Methylhexane	< 0.01
2-Methylpentane	0.17
3-Methylheptane	0.18
3-Methylhexane	0.13
3-Methylpentane	0.10
Acetone	14.6
Acrolein	< 0.3
Benzene	0.35
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	1.21
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	0.38
Chloroform	0.07
Chloromethane	< 0.02
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.12
cis-2-Pentene	0.04
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	3.2
Ethyl acetate	< 0.4
Ethylbenzene	0.15
Freon-11	0.24

## Volatile Organics Data Results

Date: JUNE 29, 2015  
Canister ID: H2818

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.06
Freon-114	< 0.02
Freon-12	0.49
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.54
Isopentane	0.53
Isoprene	2.31
Isopropyl alcohol	0.8
Isopropylbenzene	< 0.01
m,p-Xylene	0.32
m-Diethylbenzene	< 0.04
m-Ethyltoluene	0.23
Methyl butyl ketone	0.86
Methyl ethyl ketone	1.7
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.26
Methylcyclopentane	0.12
Methylene chloride	0.5
n-Butane	0.92
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	0.13
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	0.11
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.13
o-Xylene	0.20
p-Diethylbenzene	< 0.04
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	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	0.04

***PAH RESULTS***

Sample ID: 15060152-004

Customer ID: LICA  
Cust Samp ID: LICA/PUF/EP/June 5, 2015

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: 7E 02  
Location: Elk Point Airport Motor S/N: 1139  
Station ID: LICA 35 Installation Date/Time: June 01, 2015 @ 16:04  
Field Sample ID: LICA/PUF/EP/June 05, 2015 Removal Date/Time: June 10, 2015 @ 16:45

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
June 05, 2015	00:00	00:00	24.0
	June 05, 2015	June 06, 2015	

Set Flow Rate (slpm): 230

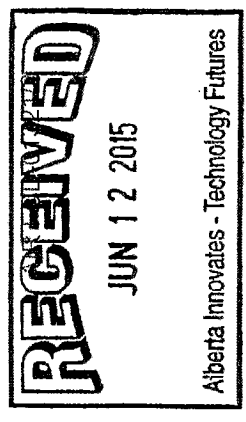
Date of Last Calibration: 22-sept-11

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: June 10, 2015



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

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)	Volume (Vstd m³)
709	229	16.7 °C	330.20

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 5, 2015  
PUF S/N: TE02

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.05
2-Methylnaphthalene	0.08
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	0.02
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.06
Perylene	< 0.01
Phenanthrene	0.13
Pyrene	0.01
Retene	0.02



Sample ID: 15060265-004

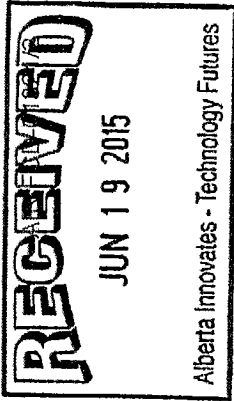
Customer ID: LICA

Cust Samp ID: LICA/PUF/EPS/June 11, 2015

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: June 10, 2015 @ 16:47  
 Field Sample ID: LICA/PUF/EP/June 11, 2015 Removal Date/Time: June 15, 2015 @ 11:55



Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
June 11, 2015	00:00	00:00	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) (Vstd m <sup>3</sup> )
703	229	16.6
		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

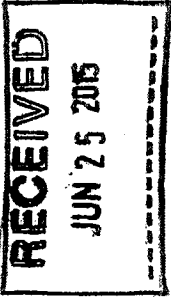
Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Technician Signature: Sample in. by Alex Yakupov  
Sample out by Alex Yakupov  
 Date: June 15, 2015

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 11, 2015  
PUF S/N: TE03

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.04
2-Methylnaphthalene	0.06
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,l)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.02
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.04
Perylene	< 0.01
Phenanthrene	0.07
Pyrene	< 0.01
Retene	0.02



Sample ID: 15060384-009

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/June 17, 2015

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ SIN: TE-04  
 Location: Elk Point Airport Motor SIN: 1139  
 Station ID: LICA 35 Installation Date/Time: June 15, 2015 @ 11:56  
 Field Sample ID: LICA/PUF/EP/June 17, 2015 Removal Date/Time: June 22, 2015 @ 11:48

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
June 17, 2015	00:00	00:00	24.0
	June 17, 2015	June 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) (Vstd m <sup>3</sup> )
711	229	12.8 °
		330.18

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 ID: by Alex Yakupov  
 Sample out. by Alex Yakupov  
 Date June 22, 2015

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 17, 2015  
PUF S/N: TE04

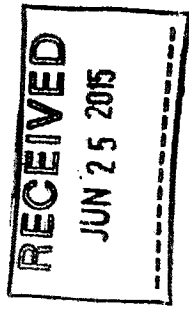
PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.07
2-Methylnaphthalene	0.12
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
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	0.03
Fluorene	0.05
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.05
Perylene	< 0.01
Phenanthrene	0.12
Pyrene	0.03
Retene	< 0.01

Sample ID: 15060384-005

Customer ID: LICA

Cust Smp ID: LICA/PUF/EP/June 23, 2015

AIR FCD-01321/2



### Maxxam

## Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: P13-01  
 Location: Elk Point Airport Motor S/N: 1139  
 Station ID: LICA 35 Installation Date/Time: June 22, 2015 @ 11:52  
 Field Sample ID: LICA/PUF/EP/June 23, 2015 Removal Date/Time: June 24, 2015 @ 12:07

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 23, 2015	00:00	00:00
	June 23, 2015	June 24, 2015
		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: 22 - Sept - 11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
708	229	17.3
		Volume (Vstd m <sup>3</sup> )
		330.21

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: June 24, 2015

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 23, 2015  
PUF S/N: P1301

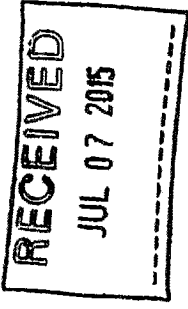
PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.08
2-Methylnaphthalene	0.14
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
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,l)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.11
Pyrene	0.02
Retene	0.01

Sample ID: 15070024-005

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/June 29, 2015

AIR FCD-01321/2



# Maxxam

## Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: TE-06  
 Location: ELK POINT Airport Motor S/N: 1139  
 Station ID: LICA 35 Installation Date/Time: June 24, 2015 @ 12:09  
 Field Sample ID: LICA/PUF/EP/June 29, 2015 Removal Date/Time: July 3, 2015 @ 12:26

Date and Time Information		
Sample Date	Start Time (MST)	End Time (MST)
June 29, 2015	00:00 June 29, 2015	00:00 June 30, 2015
		Elapsed Time (Hours) 24

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: 22 - Sept - 11

Sampling Data		
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)
710	229	20.0°
		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  YES

Comments:

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Technician Signature:

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

Date: July 3, 2015

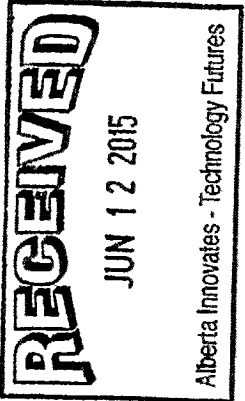
## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: JUNE 29, 2015  
PUF S/N: TE06

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
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	0.02
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	0.07
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.45
Pyrene	0.03
Retene	0.37



***NMHC CANISTER RESULTS***



Sample ID: 15060149-001  
Customer ID: LICA  
Cust Samp ID: LICAVOC/ELK/June 6, 2015

# Maxxam Analytics Inc.

## Canister Collection Data Sheet

Client: LICA  
Location: ELK Point Airport  
Station ID: Lica 35  
Field Sample ID: LICA VOC/ELK/ June 6, 2015  
Canister ID: 15603 14698 A.Y.  
Canister Installation Date/Time: June 25, 2015 (MST) @ 13:08  
Canister Removal Date/Time: June 10, 2015 (MST) @ 16:16

Date and Time Information	
Sample Date and time (MST)	
June 6, 2015	12:15


Canister Information	
Initial Canister Vacuum (inHg)	-28.8
Final Canister Pressure (psig)	-2.3

-2" Hg  
Canisters beyond use by date. - evac Jan 7/15  
FC #:

Canister valve open after to connection? YES

Canister valve closed prior to disconnection? YES

Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Technician Signature: Sample in - by Alex Yakupov  
sample out - by Alex Yakupov  
Date: June 10, 2015

## Volatile Organics Data Results (NMHC Canister System)

Date: JUNE 6, 2015  
Canister ID: 14698

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	0.05
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.04
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	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.18
2,3,4-Trimethylpentane	0.04
2,3-Dimethylbutane	0.53
2,3-Dimethylpentane	0.21
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.05
2-Methylhexane	0.12
2-Methylpentane	0.36
3-Methylheptane	0.05
3-Methylhexane	0.13
3-Methylpentane	0.21
Acetone	8.7
Acrolein	< 0.3
Benzene	0.15
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	< 0.01
Carbon tetrachloride	0.11
Chlorobenzene	0.02
Chloroethane	< 0.02
Chloroform	0.04
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	0.38
Cyclopentane	0.13
Dibromochloromethane	< 0.01
Ethanol	4.5
Ethyl acetate	< 0.4
Ethylbenzene	0.06
Freon-11	0.28

## Volatile Organics Data Results (NMHC Canister System)

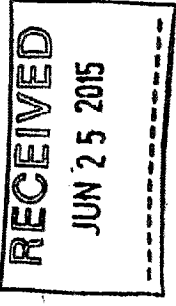
Date: JUNE 6, 2015  
Canister ID: 14698

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.02
Freon-12	0.61
Hexachloro-1,3-butadiene	< 0.54
Isobutane	1.88
Isopentane	1.00
Isoprene	1.56
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.16
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.09
Methyl butyl ketone	< 0.54
Methyl ethyl ketone	0.8
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.82
Methylcyclopentane	0.31
Methylene chloride	0.4
n-Butane	1.93
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.26
n-Hexane	0.45
n-Nonane	0.04
n-Octane	0.10
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.02
o-Xylene	0.07
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	0.05
Tetrachloroethylene	0.10
Tetrahydrofuran	< 0.4
Toluene	0.29
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: 15060384-001

Customer ID: LICA

Cust Samp ID: LICA VOC/ELK/June 19, 2015



# Maxxam Analytics Inc.

## Canister Collection Data Sheet

Client: LICA A.Y.  
 Location: ELK Point Airport ~~14698~~ 2471  
 Station ID: Lica 35 June 10, 2015 (MST) 16:18  
 Field Sample ID: LICA VOC/ELK/June 19, 2015 June 19, 2015 (MST) 11:56

Date and Time Information	
Sample Date and time (MST)	n/a
June 19, 2015 @ 00:55	n/a

Canister Information	
Initial Canister Vacuum (inHg)	0.0
Final Canister Pressure (psig)	0.0

0.91  
SR

Canister valve open after to connection? **YES**

Canister valve closed prior to disconnection? **YES**

Comments: (NMHC - canister)

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Technician Signature: Sample in - by Alex Yakupov

Sample out - by Alex Yakupov

Date: June 19, 2015

## Volatile Organics Data Results (NMHC Canister System)

Date: JUNE 19, 2015  
Canister ID: 2471

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	0.03
1,1,2,2-Tetrachloroethane	0.04
1,1,2-Trichloroethane	0.04
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	0.08
1,2-Dibromoethane	0.04
1,2-Dichlorobenzene	0.05
1,2-Dichloroethane	0.05
1,2-Dichloropropane	0.03
1,3,5-Trimethylbenzene	0.05
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	0.14
2,2-Dimethylbutane	0.07
2,3,4-Trimethylpentane	0.05
2,3-Dimethylbutane	0.19
2,3-Dimethylpentane	0.19
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.20
3-Methylheptane	< 0.02
3-Methylhexane	0.07
3-Methylpentane	0.12
Acetone	3.2
Acrolein	< 0.3
Benzene	0.10
Benzyl chloride	< 0.4
Bromodichloromethane	0.03
Bromoform	0.03
Bromomethane	0.03
Carbon disulfide	0.52
Carbon tetrachloride	0.12
Chlorobenzene	0.04
Chloroethane	0.03
Chloroform	0.05
Chloromethane	< 0.02
cis-1,2-Dichloroethene	0.02
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.22
Cyclopentane	< 0.01
Dibromochloromethane	0.03
Ethanol	1.1
Ethyl acetate	< 0.4
Ethylbenzene	0.06
Freon-11	0.27

## Volatile Organics Data Results (NMHC Canister System)

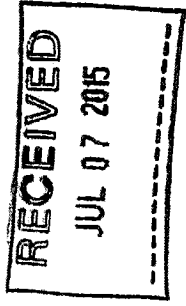
Date: JUNE 19, 2015  
Canister ID: 2471

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.02
Freon-12	0.41
Hexachloro-1,3-butadiene	< 0.52
Isobutane	0.92
Isopentane	0.72
Isoprene	0.12
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.15
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.52
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	0.03
Methylcyclohexane	0.36
Methylcyclopentane	0.16
Methylene chloride	< 0.3
n-Butane	0.94
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.15
n-Hexane	0.31
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	0.07
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	0.08
Tetrachloroethylene	0.07
Tetrahydrofuran	< 0.4
Toluene	0.21
trans-1,2-Dichloroethylene	0.02
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: 15070024-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/June 25, 2015



# Maxxam Analytics Inc.

## Canister Collection Data Sheet

Client: LICA

Location: ELK Point Airport

Station ID: Lica 35

Field Sample ID: LICA/VOC/ELK/June 25, 2015

Canister ID: \_\_\_\_\_

Canister Installation Date/Time: June 19, 2015 @ (MST)

Canister Removal Date/Time: July 03, 2015 @ (MST)

A.Y.

1704 2475

11:58

12:07

Date and Time Information
Sample Date and time (MST)
<u>June 25, 2015 @ 03:30</u>

<u>NA</u>	<u>NA</u>

Canister Information	
Initial Canister Vacuum (inHg)	
<u>- 28.8</u>	
Final Canister Pressure (psig)	
<u>- 6.3</u>	

- 0.6" Hg  
TP Gauge is off/broken.

Canister valve open after to connection?: YES

Canister valve closed prior to disconnection?: YES

Comments: NMHC canister

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

Date: July 3, 2015 @ 12:07



## Volatile Organics Data Results (NMHC Canister System)

Date: JUNE 25, 2015  
Canister ID: 2475

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	0.11
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.06
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	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.32
2,3,4-Trimethylpentane	0.40
2,3-Dimethylbutane	0.93
2,3-Dimethylpentane	0.41
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	0.20
2-Methylpentane	0.73
3-Methylheptane	0.08
3-Methylhexane	0.27
3-Methylpentane	0.42
Acetone	5.5
Acrolein	< 0.3
Benzene	0.22
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.26
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
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	0.75
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.9
Ethyl acetate	< 0.4
Ethylbenzene	0.23
Freon-11	0.25

## Volatile Organics Data Results (NMHC Canister System)

Date: JUNE 25, 2015  
Canister ID: 2475

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.02
Freon-12	0.35
Hexachloro-1,3-butadiene	< 0.50
Isobutane	3.21
Isopentane	3.74
Isoprene	1.59
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.31
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.6
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	1.45
Methylcyclopentane	0.65
Methylene chloride	< 0.3
n-Butane	4.42
n-Decane	0.07
n-Dodecane	< 0.4
n-Heptane	0.34
n-Hexane	0.77
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	0.03
o-Xylene	0.08
p-Diethylbenzene	0.05
p-Ethyltoluene	< 0.07
Styrene	1.30
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	2.20
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

***APPENDIX III***  
***ANALYZER CALIBRATION RESULTS***

***SULPHUR DIOXIDE***

## API 100E SO2 Analyzer Calibration

---

Date: 11-Jun-15

Company: LICA

Station Name/Location: Elk Point

Performed by: Alex Yakupov

Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: SO2

Start/End Time (mst): 9:19 - 13:53

Calibration Purpose: Monthly

Converter Make & Model: na

Converter Serial #: na

Cal Gas Expiry Date: 12-Mar-19

---

Analyzer:

Serial Number: 467

Last Calibration Date: 19-May-15

Previous Cal High Point C.F.: 0.996

Range ppb: 1000

As Found C.F.: 0.995

New C.F.: 1.002

---

As found:

SLOPE: 0.958

OFFSET: 118.0

HVPS: 524

RCELL TEMP: 50.0

BOX TEMP: 33.0

PMT TEMP: 8.1

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 24.5

SAMP FL: 613

PMT: 128.7

NORM PMT: 120.8

UV LAMP: 3177.3

LAMP RATIO: 115.5

STR. LGT: 56.5

DRK PMT: 15.1

DRK LMP: 2.8

Internal Span: 284.4

As left:

SLOPE: 0.953

OFFSET: 120.9

HVPS: 524

RCELL TEMP: 50.0

BOX TEMP: 32.2

PMT TEMP: 8.1

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 24.4

SAMP FL: 611

PMT: 127.6

NORM PMT: 121.4

UV LAMP: 3181.8

LAMP RATIO: 115.5

STR. LGT: 57.6

DRK PMT: 15.3

DRK LMP: 2.8

Internal Span: 295

---

Calibrator:

Flow Meter ID's: na

Make & Model: EnviroNics 6100

Serial #: 4760

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	5000	64	5064
mid	5000	35	5035
low	5000	17	5017

---

Calibration:

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	4994	0.0	4994	0	3.0	NA
adjusted zero	4994	0.0	4994	0	1.0	NA
as found high	4921	73.88	4995	732.2	737.0	0.995
adjusted high	4921	73.88	4995	732.2	735.0	0.998
mid	4959	37.42	4996	370.7	371.0	1.002
low	4976	18.69	4995	185.2	185.0	1.007
calibrator zero	4994	0.00	4994	0	2.0	NA
Average C.F. =						1.002

---

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS > or = 0.995	Pass/Fail ?
Slope = <u>0.997</u>	0.85-1.15	PASS
b (Intercept as % of full scale) = <u>0.00%</u>	± 3% F.S.	PASS
% change in C.F. from last cal = <u>0.12%</u>	± 15%	PASS

Converter Efficiency Check for H<sub>2</sub>S/TRS application:

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

SO<sub>2</sub> High Point gas concentration: NA      Time gas run (mst): NA

Zero corrected analyzer response: NA

---

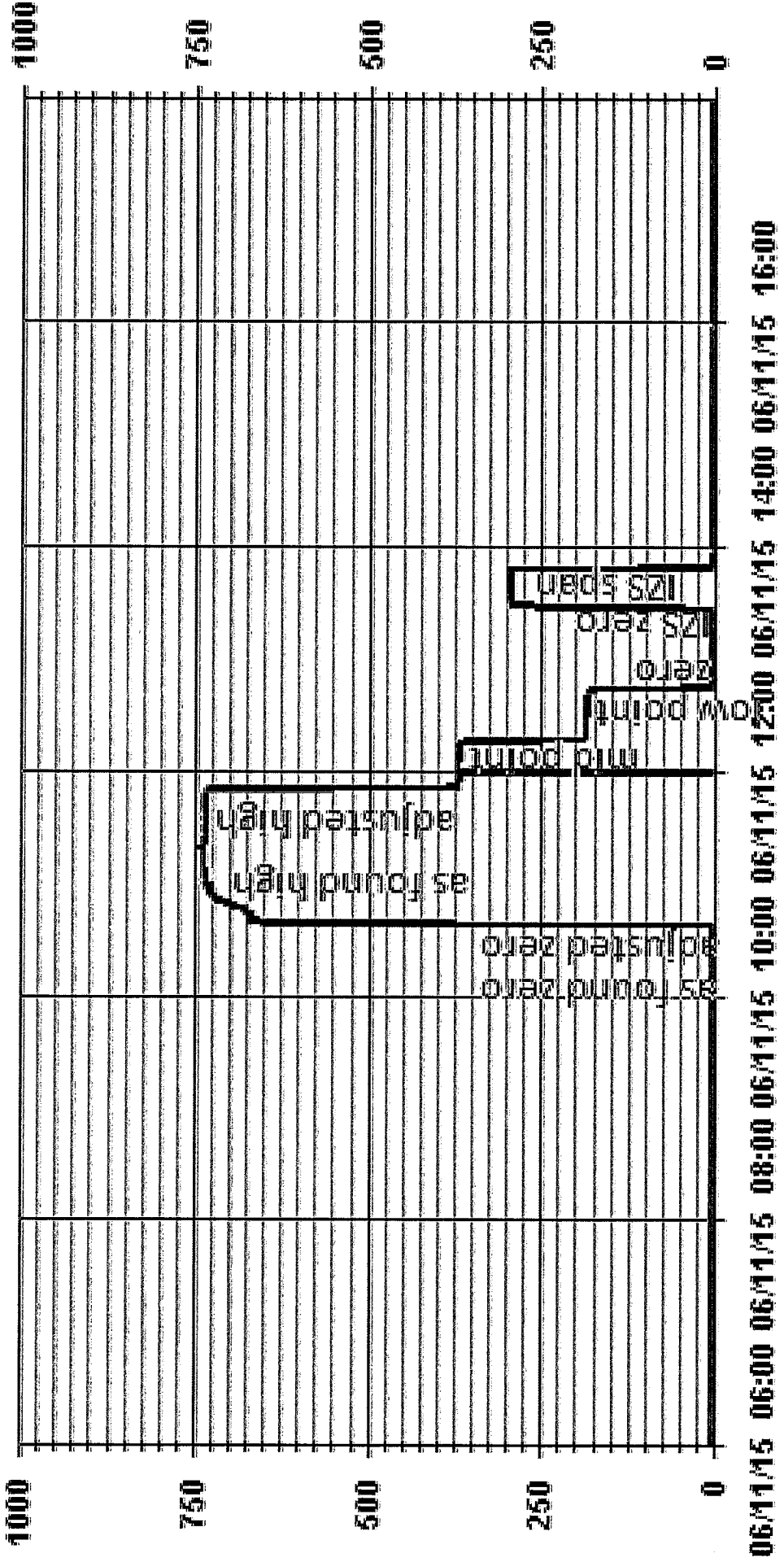
Comments:

Filter Changed.

API 100E SO2 Analyzer Calibration

Calculated ppb	Indicated ppb
0	0
185	185
371	371
735	735

01 Minute Averages



— LICA35 SO2\_ PPB

## API 100A SO2 Analyzer Calibration

---

Date: 24-Jun-15

Company: LICA

Station Name/Location: Elk Point

Performed by: U/min LI

Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: SO2

Start/End Time (mst): 0900-1126

Calibration Purpose: removal calibration

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Aug-17

---

Analyzer:

Serial Number: 467

Last Calibration Date: 11-Jun-15

Previous Cal High Point C.F.: 0.998

Range ppb: 1000

As Found C.F.: 1.004

New C.F.: 1.008

---

As found:

SLOPE: 0.953

OFFSET: 120.9

HVPS: 524

DCPS: n/a

RCELL TEMP: 50

BOX TEMP: 31.8

PMT TEMP: 8.1

IZS TEMP: 45.0

STABIL: 0.1

PRES: 24.8

SAMP FL: 604

PMT: 132

UV LAMP: 3205(116.4%)

STR. LGT: 57.6

DRK PMT: 15

DRK LMP: 2.8

Internal Span: 340

As left:

SLOPE: NA

OFFSET: NA

HVPS: NA

DCPS: NA

RCELL TEMP: NA

BOX TEMP: NA

PMT TEMP: NA

IZS TEMP: NA

STABIL: NA

PRES: NA

SAMP FL: NA

PMT: NA

UV LAMP: NA

STR. LGT: NA

DRK PMT: NA

DRK LMP: NA

Internal Span: NA

---

Calibrator:

Flow Meter ID's: na

Make & Model: Enviroics 6100

Serial #: 4760

Cal Gas Cylinder I.D. #: LL42475

Cal Gas Conc. (ppm): 50.3

Callibrator Flow Targets:

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4924	78	5000
mld	4962	38	5000
low	4982	18	5000

---

Calibration:

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors
	Diluent	Cal Gas	Total			
as found zero	4995	0.0	4995	0	1.5	NA
as found high	4924	77.50	5002	779.4	778.0	1.004
mld	4955	37.90	4993	381.8	380.7	1.007
low	4978	17.94	4996	180.6	180.0	1.012
Average C.F.=						1.008

---

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>0.02%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-0.58%</u>	± 3% F.S.	PASS
		± 15%	PASS

Converter Efficiency Check for H<sub>2</sub>S/TRS application:

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

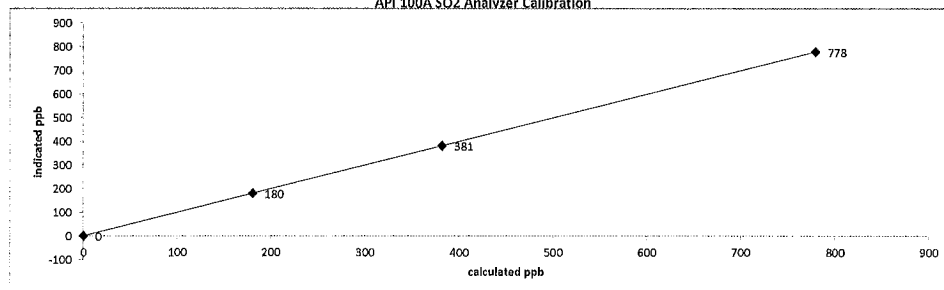
SO<sub>2</sub> High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

---

Comments:

API 100A SO2 Analyzer Calibration



## API 100A SO2 Analyzer Calibration

---

Date: 24-Jun-15

Company: LICA

Station Name/Location: Elk Point

Performed by: Limin Li

Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: SO2

Start/End Time (mst): 1245-1715

Calibration Purpose: installation calibration

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Aug-17

---

**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.: 1.000

New C.F.: 1.013

---

**As found:**

SLOPE: NA

OFFSET: NA

HVPS: NA

DCPS: NA

RCELL TEMP: NA

BOX TEMP: NA

PMT TEMP: NA

IZS TEMP: NA

STABIL: NA

PRES: NA

SAMP FL: NA

PMT: NA

UV LAMP: NA

STR. LGT: NA

DRK PMT: NA

DRK LMP: NA

Internal Span: NA

**As left:**

SLOPE: 0.973

OFFSET: 38.3

HVPS: 579

DCPS: n/a

RCELL TEMP: 50

BOX TEMP: 31.8

PMT TEMP: 8.2

IZS TEMP: 45.0

STABIL: 0.1

PRES: 27.4

SAMP FL: 581

PMT: 152.5

UV LAMP: 2261(99.5%)

STR. LGT: 18.6

DRK PMT: 101.4

DRK LMP: 2.8

Internal Span: 283

---

**Calibrator:**

Flow Meter ID's: na

Make & Model: Enviroincs 6100

Serial #: 4760

Cal Gas Cylinder I.D. #: LL42475

Cal Gas Conc. (ppm): 50.3

**Calibrator Flow Targets:**

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4922	77	4999
mid	4962	38	5000
low	4982	18	5000

---

**Calibration:**

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	4995	0.0	4995	0	0.0	NA
adjusted high	4916	77.44	4993	780.1	780.0	1.000
mid	4956	37.88	4994	381.5	377.0	1.012
low	4978	18.04	4996	181.6	177.0	1.026
calibrator zero	4995	0.00	4995	0	0.0	NA
Average C.F. =						1.013

---

**Linear Regression/Calibration Results:**

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>0.999</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>0.28%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-0.21%</u>	± 3% F.S.	PASS
		± 15%	PASS

**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**

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

SO<sub>2</sub> High Point gas concentration: NA      Time gas run (mst): NA

Zero corrected analyzer response: NA

---

**Comments:**

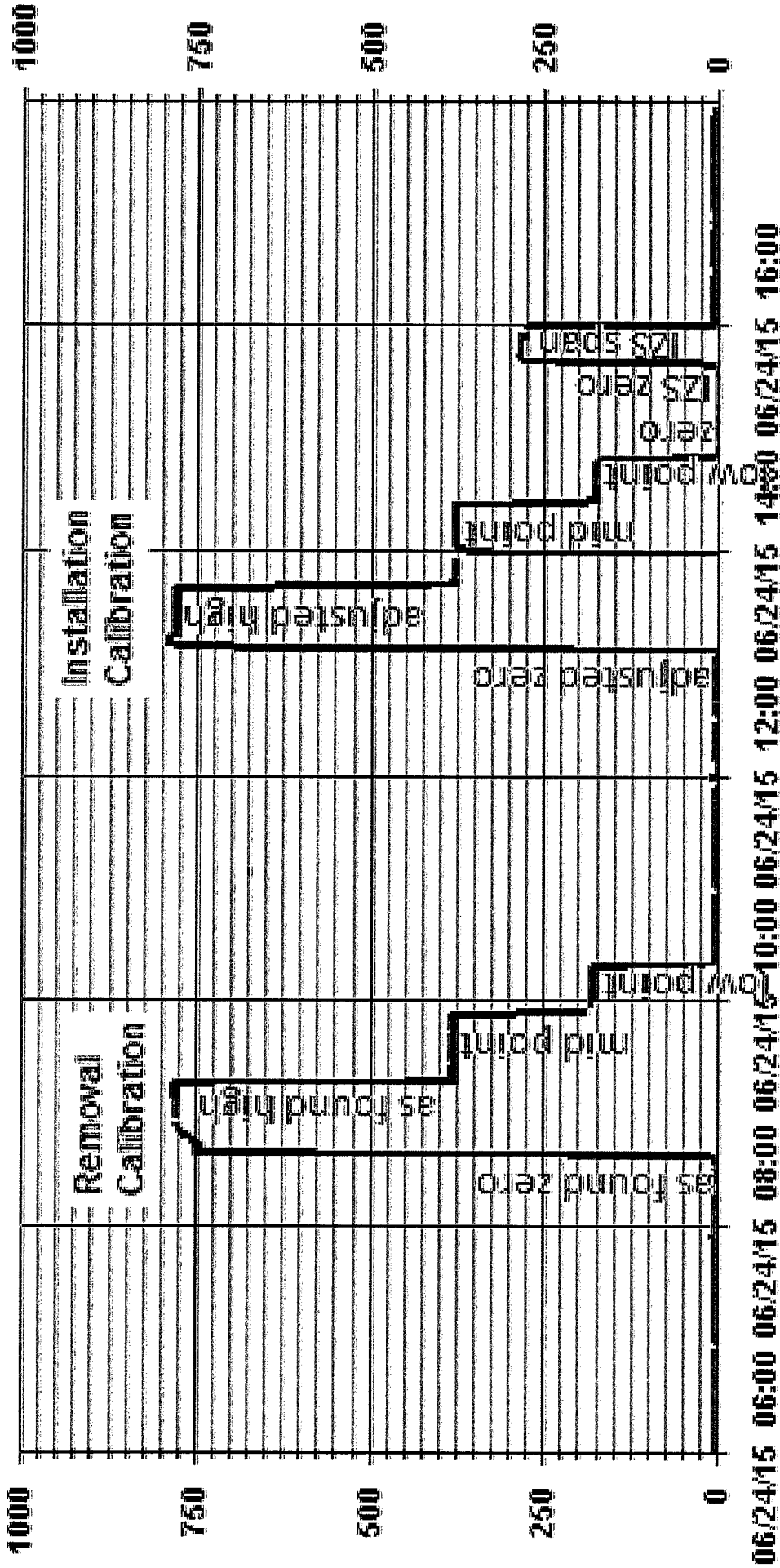
Rebuilt pump.

API 100A SO2 Analyzer Calibration

Calculated ppb	Indicated ppb
0	0
177	177
377	377
780	780



01 Minute Averages



— LICA35 SO2\_ PPB

# Maxxam API 100A SO2 Analyzer Calibration

Date: 25-Jun-15 Start/End Time (mst): 14:50/17:50  
 Company: LICA Calibration Purpose: Installation calibration  
 Station Name/Location: Elk Point Converter Make & Model: NA  
 Performed by: Limin Li Converter Serial #: NA  
 Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: SO2 Cal Gas Expiry Date: 12-Aug-17

**Analyzer:**  
 Serial Number: 722 Range ppb: 1000  
 Last Calibration Date: 24-Jun-15 As Found C.F.: 1.001  
 Previous Cal High Point C.F.: 0.998 New C.F.: 1.008

<b>As found:</b>		<b>As left:</b>	
SLOPE:	<u>0.973</u>	SLOPE:	<u>1.006</u>
OFFSET:	<u>38.3</u>	OFFSET:	<u>52.8</u>
HVPS:	<u>579</u>	HVPS:	<u>579</u>
DCPS:	<u>NA</u>	DCPS:	<u>NA</u>
RCELL TEMP:	<u>50</u>	RCELL TEMP:	<u>50</u>
BOX TEMP:	<u>29.7</u>	BOX TEMP:	<u>31.8</u>
PMT TEMP:	<u>8.2</u>	PMT TEMP:	<u>8.2</u>
IZS TEMP:	<u>45.0</u>	IZS TEMP:	<u>45.0</u>
STABIL:	<u>0.1</u>	STABIL:	<u>0.1</u>
PRES:	<u>273</u>	PRES:	<u>27.5</u>
SAMP FL:	<u>581</u>	SAMP FL:	<u>581</u>
PMT:	<u>108.3</u>	PMT:	<u>152.5</u>
UV LAMP:	<u>2193(100.1%)</u>	UV LAMP:	<u>2193(100.1%)</u>
STR. LGT:	<u>25.7</u>	STR. LGT:	<u>25.7</u>
DRK PMT:	<u>61.1</u>	DRK PMT:	<u>60.8</u>
DRK LMP:	<u>2.5</u>	DRK LMP:	<u>2.5</u>
Internal Span:	<u>283</u>	Internal Span:	<u>283</u>

Calibrator:		Calibrator Flow Targets:			
Flow Meter ID's:	<u>NA</u>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
Make & Model:	<u>Envirotronics 6100</u>	zero	<u>5000</u>	<u>0</u>	<u>5000</u>
Serial #:	<u>4760</u>	high	<u>4922</u>	<u>77</u>	<u>4999</u>
Cal Gas Cylinder I.D. #:	<u>LL42475</u>	mid	<u>4962</u>	<u>38</u>	<u>5000</u>
Cal Gas Conc. (ppm):	<u>50.3</u>	low	<u>4982</u>	<u>18</u>	<u>5000</u>

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	<u>4995</u>	<u>0.0</u>	<u>4995</u>	<u>0</u>	<u>0.0</u>	<u>NA</u>
adjusted high	<u>4916</u>	<u>77.49</u>	<u>4993</u>	<u>780.6</u>	<u>780.0</u>	<u>1.001</u>
mid	<u>4956</u>	<u>37.89</u>	<u>4994</u>	<u>381.6</u>	<u>378.3</u>	<u>1.009</u>
low	<u>4978</u>	<u>17.94</u>	<u>4996</u>	<u>180.6</u>	<u>178.3</u>	<u>1.013</u>
calibrator zero	<u>4995</u>	<u>0.00</u>	<u>4995</u>	<u>0</u>	<u>-0.1</u>	<u>NA</u>

Average C.F. = 1.008

**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>0.15%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-0.27%</u>	± 3% F.S.	PASS
		± 15%	PASS

**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**

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

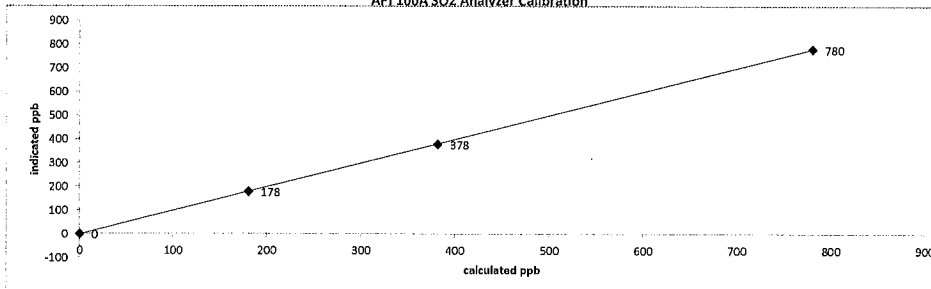
SO<sub>2</sub> High Point gas concentration: NA Time gas run (mst): NA

Zero corrected analyzer response: NA

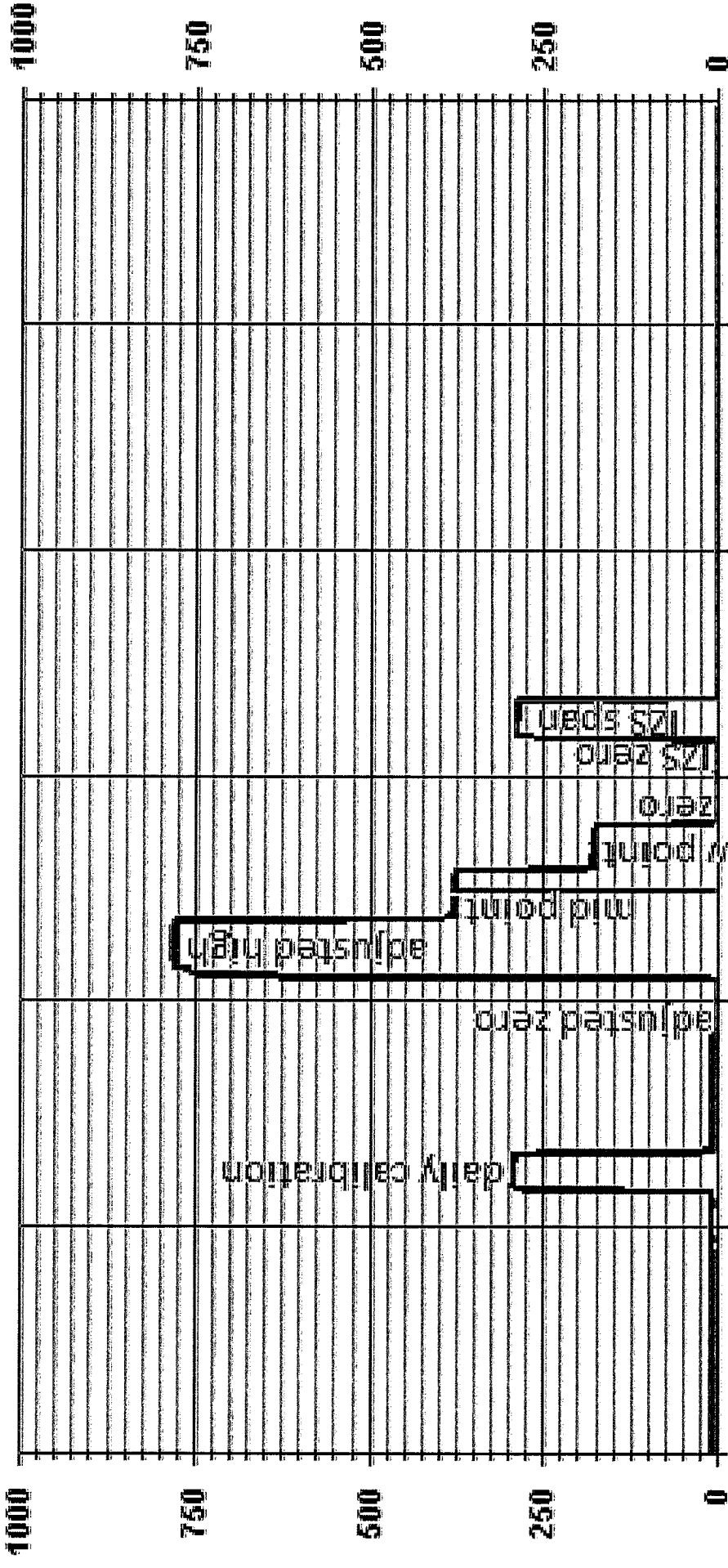
**Comments:**

This is a repeat of the installation calibration. Following the initial installation calibration the analyzer was not stable as it demonstrated excessive noise. The analyzer was then allowed more time to stabilize and the next calibration was successful and subsequent data was stable.

API 100A SO2 Analyzer Calibration



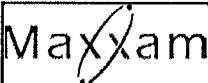
01 Minute Averages



06/25/15 11:00 06/25/15 13:00 06/25/15 15:00 06/25/15 17:00 06/25/15 19:00 06/25/15 21:00

— LICA35 SO2\_ PPB

***HYDROGEN SULPHIDE***



## API 101E H2S Analyzer Calibration

---

**Date:** 3-Jun-15

**Company:** LICA

**Station Name/Location:** Elk Point

**Performed by:** Alex Yakupov

**Application H<sub>2</sub>S/TRS/SO<sub>2</sub>:** H2S

**Start/End Time (mst):** 13:21 - 15:33

**Calibration Purpose:** As Found

**Converter Make & Model:** Internal

**Converter Serial #:** NA

**Cal Gas Expiry Date:** 15-Jul-17

---

**Analyzer:**

**Serial Number:** 510

**Last Calibration Date:** 22-May-15

**Previous Cal High Point C.F.:** 0.994

**Range ppb:** 100

**As Found C.F.:** NA

**New C.F.:** NA

---

**As found:**

SLOPE: 1.218

OFFSET: 26.5

HVPS: 526

RCELL TEMP: 50.0

BOX TEMP: 35.5

PMT TEMP: 8.4

IZS TEMP: 45.0

TEST: 314.7

STABIL: 0.0

PRES: 22.0

SAMP FL: 570

PMT: 60.7

NORM PMT: 27.6

UV LAMP: 3174.8

LAMP RATIO: 100.0

STR. LGT: 16.2

DRK PMT: 40.1

DRK LMP: -1.8

Internal Span: 47.53

**As left:**

SLOPE: 1.218

OFFSET: 26.5

HVPS: 526

RCELL TEMP: 50.0

BOX TEMP: 35.4

PMT TEMP: 8.4

IZS TEMP: 45.0

TEST: 314.7

STABIL: 0.1

PRES: 22.0

SAMP FL: 570

PMT: 61.2

NORM PMT: 28.6

UV LAMP: 3169.1

LAMP RATIO: 99.9

STR. LGT: 16.2

DRK PMT: 39.9

DRK LMP: -1.8

Internal Span: 53.54

---

**Callibrator:**

Flow Meter ID's: na

Make & Model: API 700

Serial #: 830

Cal Gas Cylinder I.D. #: LL36837

Cal Gas Conc. (ppm): 10.0

**Callibrator 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	0.0	NA
adjusted zero		NA				NA
as found high	4958	39.00	4997	78.0	78.8	0.990
adjusted high		NA				
mid		NA				
low		NA				
calibrator zero	5000	0.00	5000	0	0.0	NA

Average C.F.= \_\_\_\_\_

---

**Linear Regression/Calibration Results:**

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

**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**

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

SO<sub>2</sub> High Point gas concentration: NA      Time gas run (mst): NA

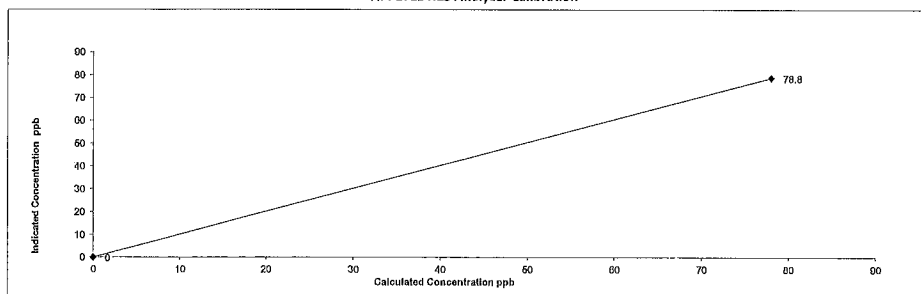
Zero corrected analyzer response: NA

---

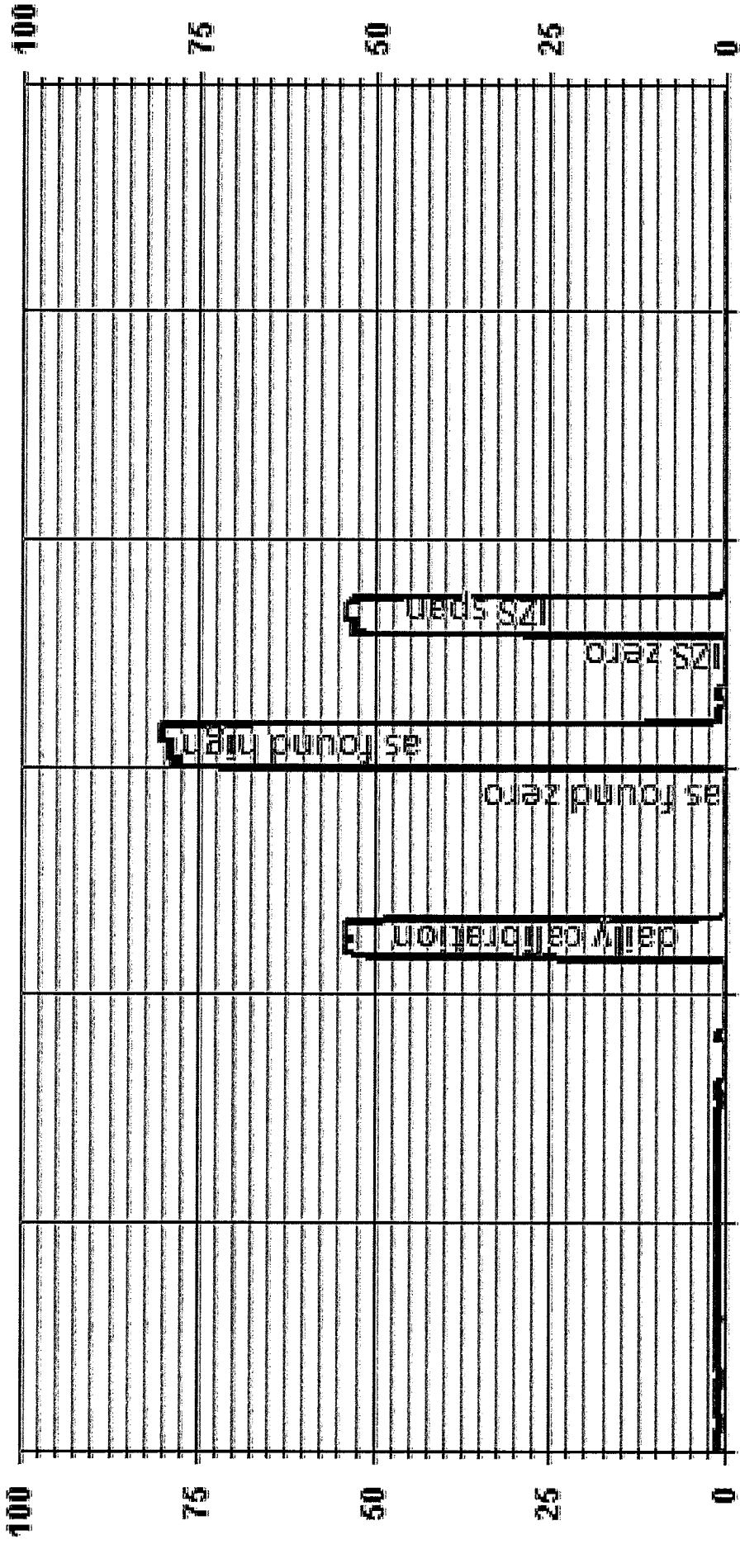
**Comments:**

"As Found" calibration and perm tube installation check was required as span drift was 12.5%

API 101E H2S Analyzer Calibration



01 Minute Averages



— LICA35 H2S\_ PPB

## Maxxam API 101E H2S Analyzer Calibration

Date: 11-Jun-15	Start/End Time (mst): 9:19 - 13:56
Company: LICA	Calibration Purpose: Monthly
Station Name/Location: Elk Point	Converter Make & Model: Internal
Performed by: Alex Yakupov	Converter Serial #: NA
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> : H2S	Cal Gas Expiry Date: 15-Jul-17

Analyzer: Serial Number: 510	Range ppb: 100
Last Calibration Date: 21-May-15	As Found C.F.: 0.985
Previous Cal High Point C.F.: 0.997	New C.F.: 1.006

<p style="text-align: center; margin: 0;">As found:</p> <p>SLOPE: 1.218</p> <p>OFFSET: 26.5</p> <p>HVPS: 526</p> <p>RCELL TEMP: 50.0</p> <p>BOX TEMP: 35.5</p> <p>PMT TEMP: 8.3</p> <p>IZS TEMP: 45.0</p> <p>TEST: NA</p> <p>STABIL: 0.1</p> <p>PRES: 22.1</p> <p>SAMP FL: 572</p> <p>PMT: 57.7</p> <p>NORM PMT: 27.8</p> <p>UV LAMP: 3144.3</p> <p>LAMP RATIO: 99.1</p> <p>STR. LGT: 16.2</p> <p>DRK PMT: 38.3</p> <p>DRK LMP: -1.9</p> <p>Internal Span: 53.54</p>	<p style="text-align: center; margin: 0;">As left:</p> <p>SLOPE: 1.207</p> <p>OFFSET: 27.5</p> <p>HVPS: 526</p> <p>RCELL TEMP: 50.0</p> <p>BOX TEMP: 35.1</p> <p>PMT TEMP: 8.4</p> <p>IZS TEMP: 45.0</p> <p>TEST: NA</p> <p>STABIL: 0.1</p> <p>PRES: 22.0</p> <p>SAMP FL: 571</p> <p>PMT: 59.8</p> <p>NORM PMT: 28.1</p> <p>UV LAMP: 3148.9</p> <p>LAMP RATIO: 99.2</p> <p>STR. LGT: 16.6</p> <p>DRK PMT: 38.4</p> <p>DRK LMP: -1.9</p> <p>Internal Span: 53.64</p>
--	---

<p>Calibrator:</p> <p>Flow Meter ID's: na</p> <p>Make &amp; Model: API 700</p> <p>Serial #: 830</p> <p>Cal Gas Cylinder I.D. #: LL36837</p> <p>Cal Gas Conc. (ppm): 10.0</p>	<p style="text-align: center; margin: 0;">Calibrator Flow Targets:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">point</th> <th style="width: 20%;">diluent (cc/min)</th> <th style="width: 20%;">cal gas (cc/min)</th> <th style="width: 45%;">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																		

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	4958	39.00	4997	78.0	79.2	0.985
adjusted high	4958	39.00	4997	78.0	78.0	1.001
mid	4980	19.00	4999	38.0	37.9	1.003
low	4990	1.00	5001	22.0	21.7	1.014
calibrator zero	5000	0.00	5000	0	0.0	NA
Average C.F. =						1.006

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS	Pass/Fail ?
Slope = 0.999	> or = 0.995	PASS
b (Intercept as % of full scale) = 0.14%	0.85-1.15	PASS
% change in C.F. from last cal = 1.16%	± 3% F.S.	PASS
	± 15%	PASS

Converter Efficiency Check for H<sub>2</sub>S/TRS application:

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

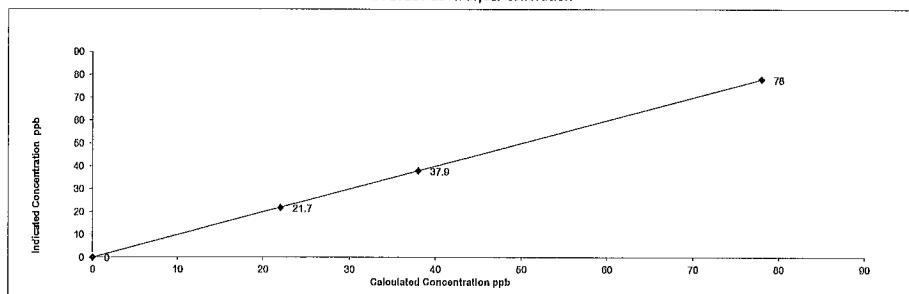
SO <sub>2</sub> High Point gas concentration: 20 ppb	Time gas run (mst): 10:30 - 10:36
Zero corrected analyzer response: 0.1	

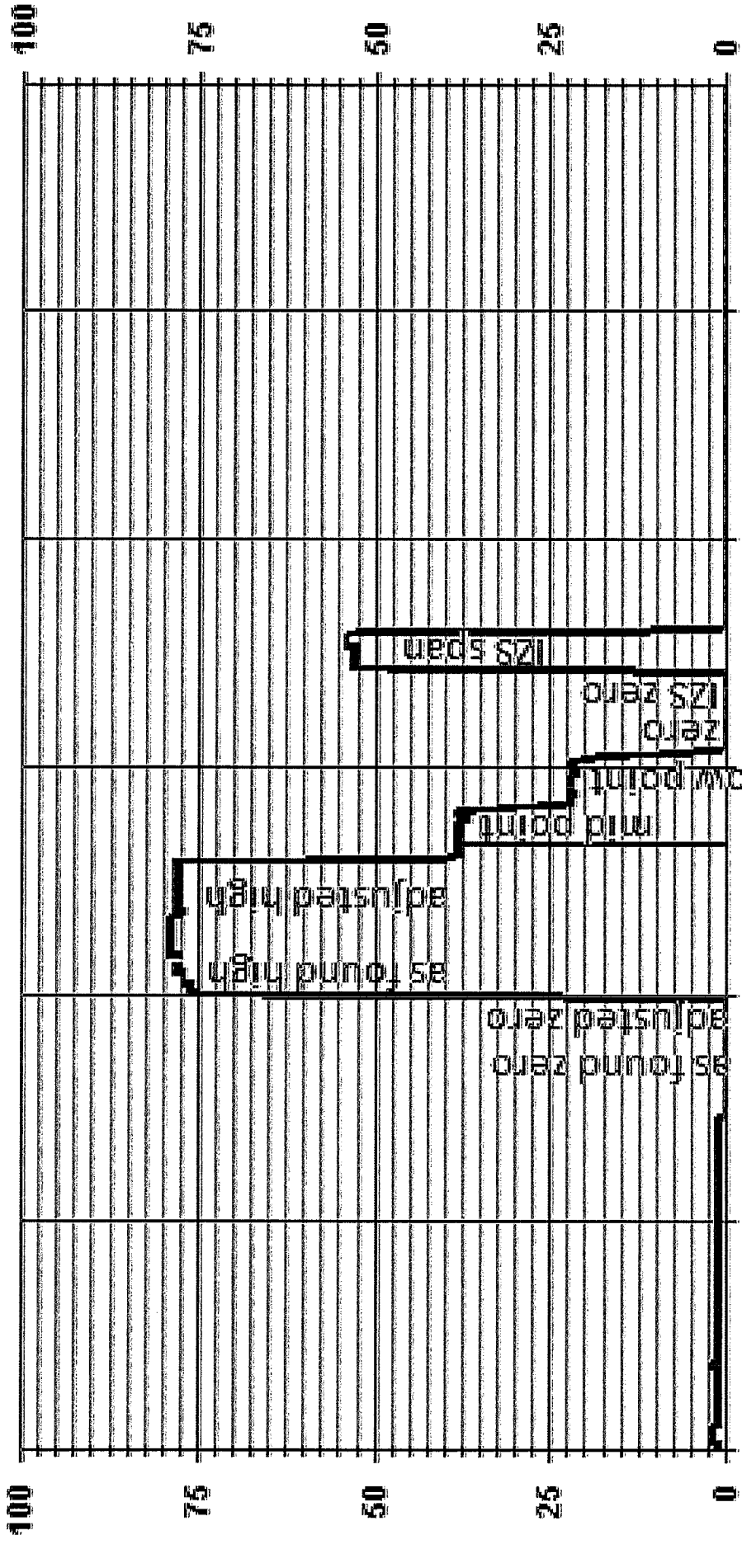
Comments:

Filter changed.

API 101E H2S Analyzer Calibration



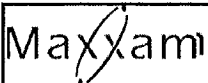
01 Minute Averages



— LICA35 H2S\_ PPB



***TOTAL HYDROCARBON***



## Thermo 55I Methane/Non-Methane Analyzer Calibration

---

Date: 12-Jun-15

Company: LICA

Station Name: Elk Point

Performed by: Alex Yakupov

Start Time (mst): 8:52

End Time (mst): 12:30

Calibration Purpose: routine monthly

Cal Gas Expiry Date: 26-Mar-17

---

**Analyzer & Diagnostics:**

Serial Number: 1236656107

Last Calibration Date: 19-May-15

**As found C.F.**

CH<sub>4</sub>= 1.038

NMHC= 1.025

THC= 1.030

**Previous Cal High Point C.F.**

CH<sub>4</sub>= 1.000

NMHC= 0.999

THC= 0.999

**Analyzer Range**

CH<sub>4</sub>= 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

3.3: 3.3

5.0: 5.0

15.0: 15.0

24.0: 23.6

-15.0: -15.1

Bias Supply: -293.2

Detector Oven: 175.1

Filter: 175.0

Column Oven: 74.9

Flame: 379.2

Internal: 34.4

Pressures cylinder/reg.:

Carrier:	450	50
Fuel:	750	45.0
Alr:	46	32.2

FID Status:

Status: LIT

Counts: 25554

Flame: 378.9

Det Base: 175.1

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: May 19, 2015 @ 14:07

Type: SPAN

Status: Good

Check/Adjust: Adjust

CH<sub>4</sub> Span Conc: 15.53

**Run History>1:**

CH<sub>4</sub> SP Ratio: 0.00069

CH<sub>4</sub> RT: 12.2

CH<sub>4</sub> PK IDX: 21

CH<sub>4</sub> PK HT: 22509

NM Span Conc: 14.34

NM SP Ratio: 0.00015

NM Peak Area: 95297

Date: June 12, 2015

Time: 10:57

CH<sub>4</sub> PK HT: 0

CH<sub>4</sub> RT: 8.0

CH<sub>4</sub> Baseline: 2131

CH<sub>4</sub> LOD: 69

CH<sub>4</sub> SD: 23

CH<sub>4</sub> CONC: 0.00

NM PK HT: 0

NM Peak Area: 0

NM CONC: 0

NM Base Start: 2084

NM Base End: 2103

NM LOD: 11

NM Start IDX: 14

NM End IDX: 77

NM Max Slope: 1.1e+00

NM Min Slope: -2.6e-01

NM PT Count: 0

Previous CH<sub>4</sub>: 9.14

Previous NMHC: 13.89

Previous THC: 23.06

New CH<sub>4</sub>: 9.19

New NMHC: 13.9

New THC: 23.11

**Daily Zero/Span Values:**

---

**Calibrator and Gas Information:**

Make & Model: API 700

Serial #: 830

Cal Gas Cylinder I.D. #: LL33674

CH<sub>4</sub> Cylinder Conc.= 601.4 202.0 =C<sub>3</sub>H<sub>8</sub> Cylinder Conc.

CH<sub>4</sub> as C<sub>3</sub>H<sub>8</sub>= 555.5 1156.9 =total CH<sub>4</sub> 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:

Calibrator Flow Rates (cc/min)				Calculated CH <sub>4</sub> (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH <sub>4</sub> (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
Point	Diluent	Cal Gas	Total Flow							CH <sub>4</sub>	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	14.96	13.99	29.00	1.038	1.025	1.030
20 min adjusted high	2000	53.00	2053	15.53	14.34	29.87	15.51	14.30	30.00	1.001	1.003	0.996
20 min mid	2000	25.00	2025	7.42	6.86	14.28	7.46	6.91	14.00	0.995	0.993	1.020
20 min low	2000	12.00	2012	3.59	3.31	6.90	3.61	3.38	7.00	0.994	0.980	0.986
20 min calibrator zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA

Average C.F.= 0.997 0.992 1.000

---

Linear Regression/Calibration Results:

	CH <sub>4</sub>	NMHC	THC	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.999	0.996	1.003	0.85-1.15
b (Intercept as % of full scale)=	0.10%	0.23%	-0.11%	± 3% F.S.
% change in C.F. from last cal=	-3.64%	2.55%	3.00%	+/-15%

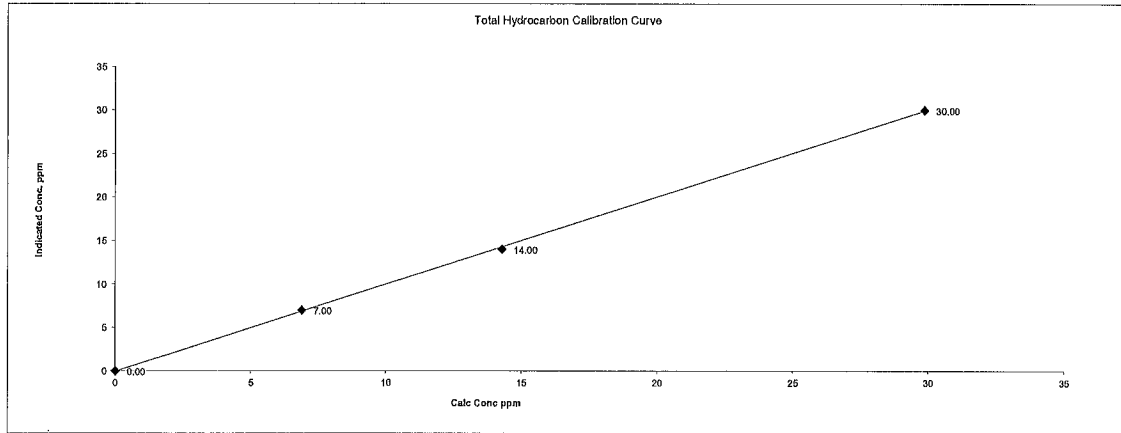
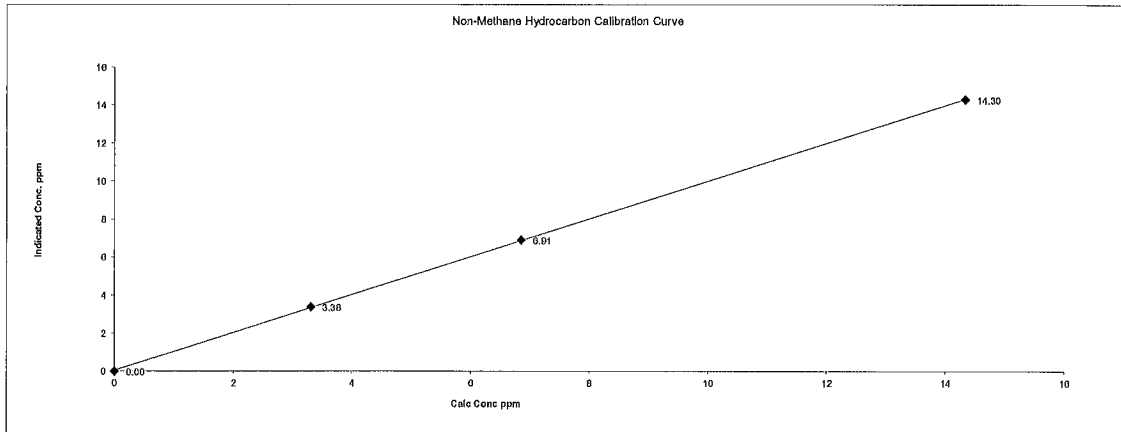
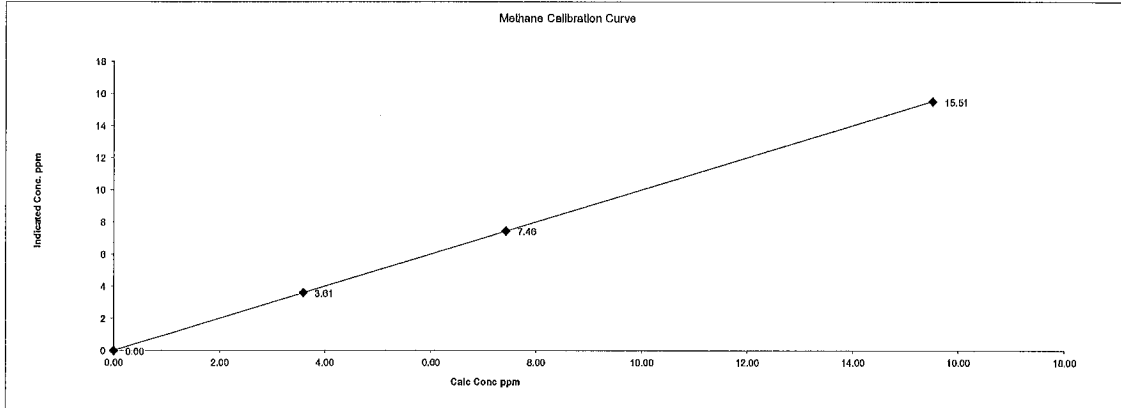
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**Comments:**

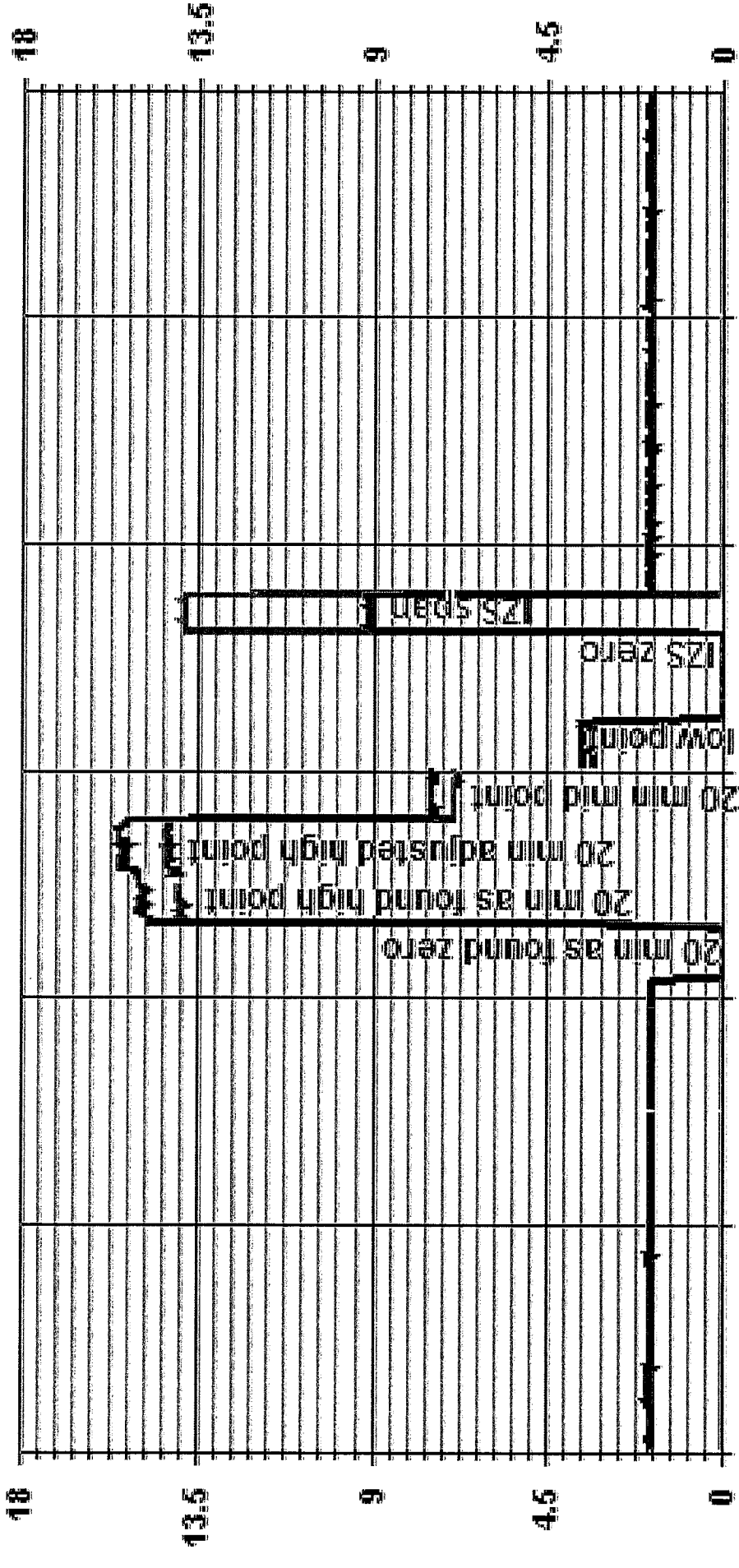
Filter changed, no zero adjustment made

Date:	12-Jun-15	Start Time (mst):	8:52
Company:	LICA	End Time (mst):	12:30
Station Name:	Elk Point	Calibration Purpose:	routine monthly
Performed by:	Alex Yakupov	Cal Gas Expiry Date:	26-Mar-17

Thermo 55C Methane/Non-Methane Analyzer Calibration



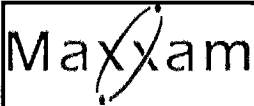
01 Minute Averages



06/12/15 04:55 06/12/15 06:55 06/12/15 08:55 06/12/15 10:55 06/12/15 12:55 06/12/15 14:55

— LICA35 METHANE PPM  
 — LICA35 NMHC PPM

***NITROGEN DIOXIDE***



API 200E NOx Analyzer Calibration

Date: 11-Jun-15  
 Company: LICA  
 Station Name/Location: Elk Point  
 Performed by: Alex Yakupov

Start Time (mst): 9:19  
 End Time (mst): 16:35  
 Calibration Purpose: Monthly Calibration  
 Cal Gas Expiry Date: 12-Mar-19

Analyzer Serial Number: 592  
 Last Calibration Date: 19-May-15  
 Range ppb: 1000

Correction Factors:  
 As found C.F. Previous Cal High Point C.F.:  
 NO= 1.018 NO= 1.001  
 NOx= 1.014 NOx= 1.001  
 NO<sub>2</sub>= 1.000 NO<sub>2</sub>= 1.000

As found:  
 NOx SLOPE: 1.054  
 NOx OFFS: 0.1  
 NO SLOPE: 1.050  
 NO OFFS: -0.3  
 TEST: 127.5  
 SAMP FLW: 481  
 OZONE FL: 74  
 PMT: 20.7  
 NORM PMT: -2.3  
 AZERO: 17.4  
 HVPS: 637  
 RCELL TEMP: 50.0  
 BOX TEMP: 30.9  
 PMT TEMP: 6.9  
 IZS TEMP: 40.2  
 MOLY TEMP: 314.7  
 RCEL: 6.9  
 SAMP: 27.1  
 Internal Span: 307.7/5.1/303.5

As left:  
 NOx SLOPE: 1.068  
 NOx OFFS: 3.3  
 NO SLOPE: 1.070  
 NO OFFS: 0.0  
 TEST: 127.5  
 SAMP FLW: 481  
 OZONE FL: 74  
 PMT: 23.4  
 NORM PMT: -0.5  
 AZERO: 17.3  
 HVPS: 637  
 RCELL TEMP: 50.0  
 BOX TEMP: 29.9  
 PMT TEMP: 6.9  
 IZS TEMP: 40.2  
 MOLY TEMP: 313.9  
 RCEL: 6.9  
 SAMP: 26.5  
 Internal Span: 297/6.7/291

Calibrator Flow Targets:

Make & Model: EnviroNics 6100  
 Serial #: 4760  
 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 <sub>3</sub> setting (v or ppb)	total (cc/min)
zero	5000	0	0	5000
high	5000	74	430.00	5074
mid	5000	37	264.00	5037
low	5000	19	85.00	5019

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	4994	0.0	4994	0	0	0.0	4.0	NA	NA
adjusted zero	4994	0.0	4994	0	0	0.0	0.0	NA	NA
as found high	4921	73.88	4995	748.4	748.4	735	738	1.018	1.014
adjusted high	4921	73.88	4995	748.4	748.4	750	750	0.998	0.998
mid	4959	37.42	4996	379.0	379.0	379	379	1.000	1.000
low	4976	18.69	4995	189.3	189.3	189	189	1.002	1.002
calibrator zero	4994	0.00	4994	0	0	0.0	0.0	NA	NA
Average C.F.=								1.000	1.000

Calibrator Flow Rates (cc/mln)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO <sub>2</sub>	NO drop	NO <sub>2</sub> Increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4921	73.86	4995	0.0	752.0	749.0	-3.0	0.0	0.0	
adjusted NO <sub>2</sub>	4921	73.86	4995	430.0	255.0	749.0	494.0	497.0	497.0	1.000
gpt mid	4921	73.86	4995	264.0	448.0	747.0	300.0	304.0	303.0	1.003
gpt low	4921	73.86	4995	85.0	657.0	749.0	92.0	95.0	95.0	1.000
Average NO <sub>2</sub> C.F.=										1.001

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.002	1.002	0.999	0.85-1.15
b (Intercept as % of full scale) =	-0.04%	-0.04%	-0.01%	± 3% F.S.
% change in C.F. from last cal =	-1.73%	-1.31%	0.00%	+/-15%
NO <sub>2</sub> converter efficiency			99.9%	>85%

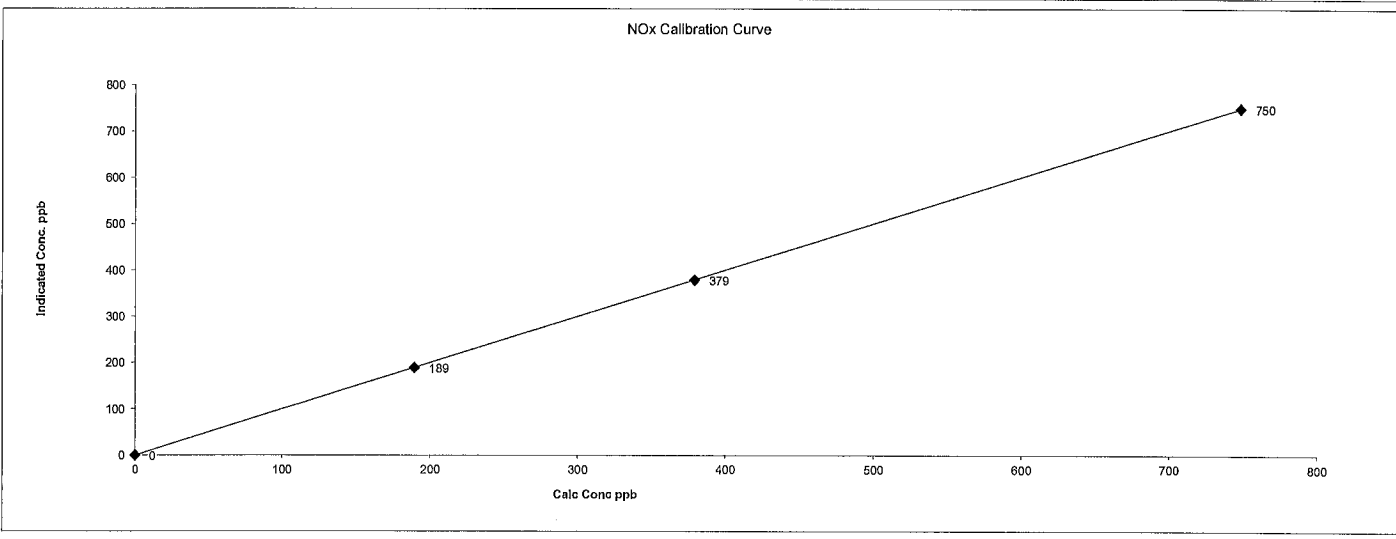
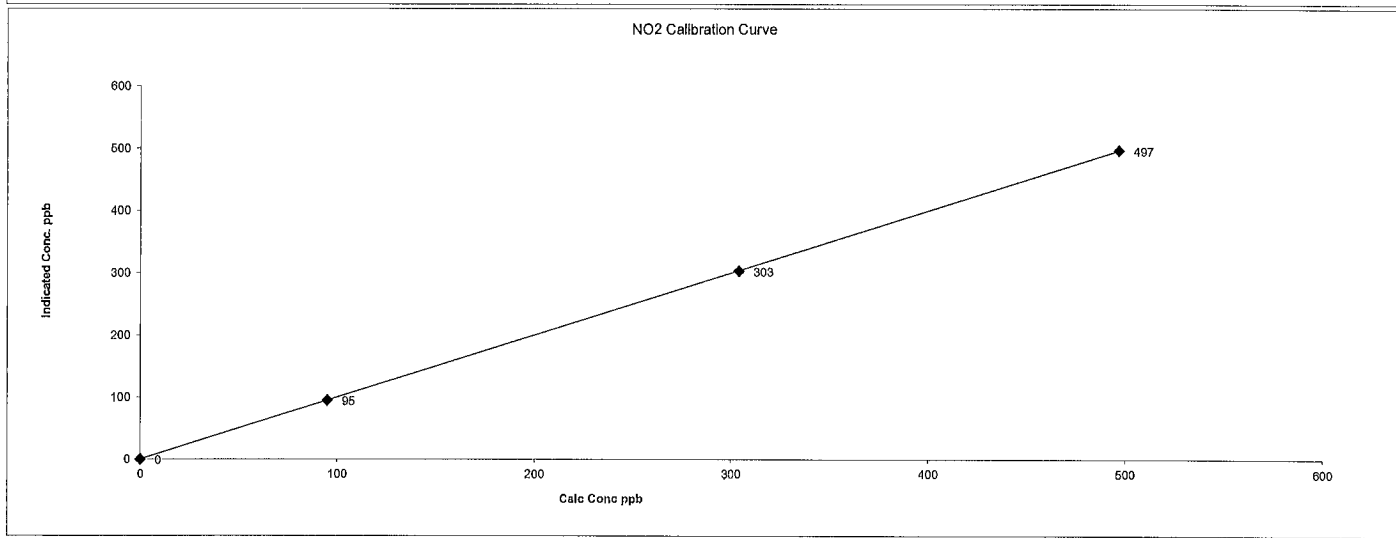
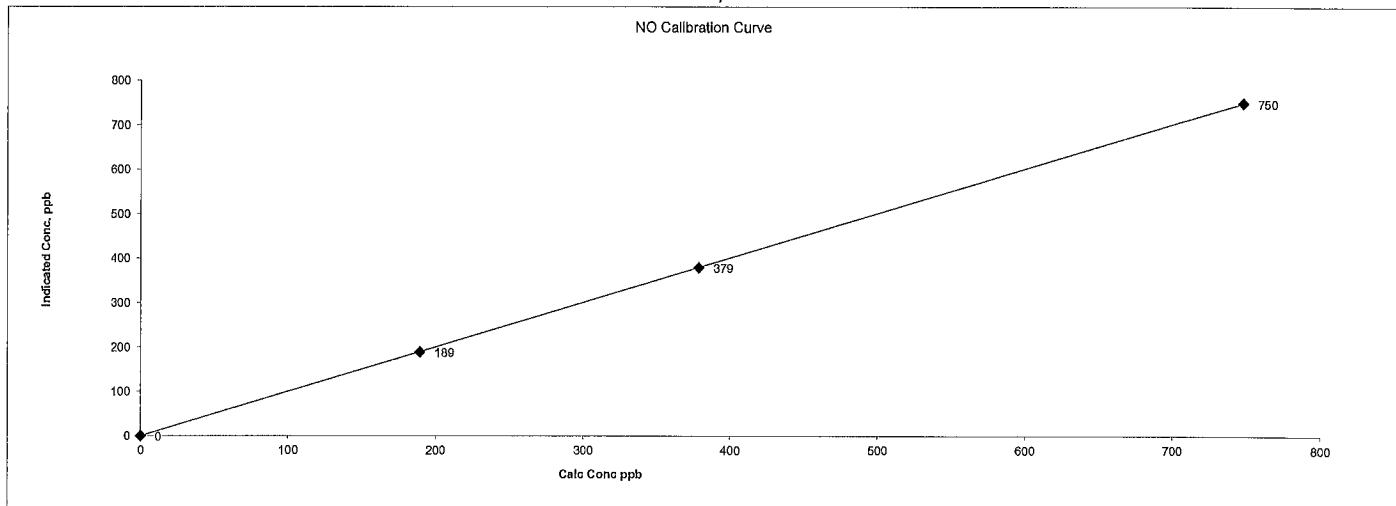
Comments:

Filter Changed. No NO<sub>2</sub> adjustment made. GPT low point O<sub>3</sub> concentration was reduced at 14:41. GPT low point starts at 14:46. After GPT calibration, at 15:11 an additional point was taken to provide for O<sub>3</sub> calibration: Ind. NO=556, Ind. Nox=748, Ind. NO<sub>2</sub>=193, NO drop=196, NO<sub>2</sub> Increase = 196, O<sub>3</sub> concentration = 170 ppb, NO<sub>2</sub> C.F.= 1.000

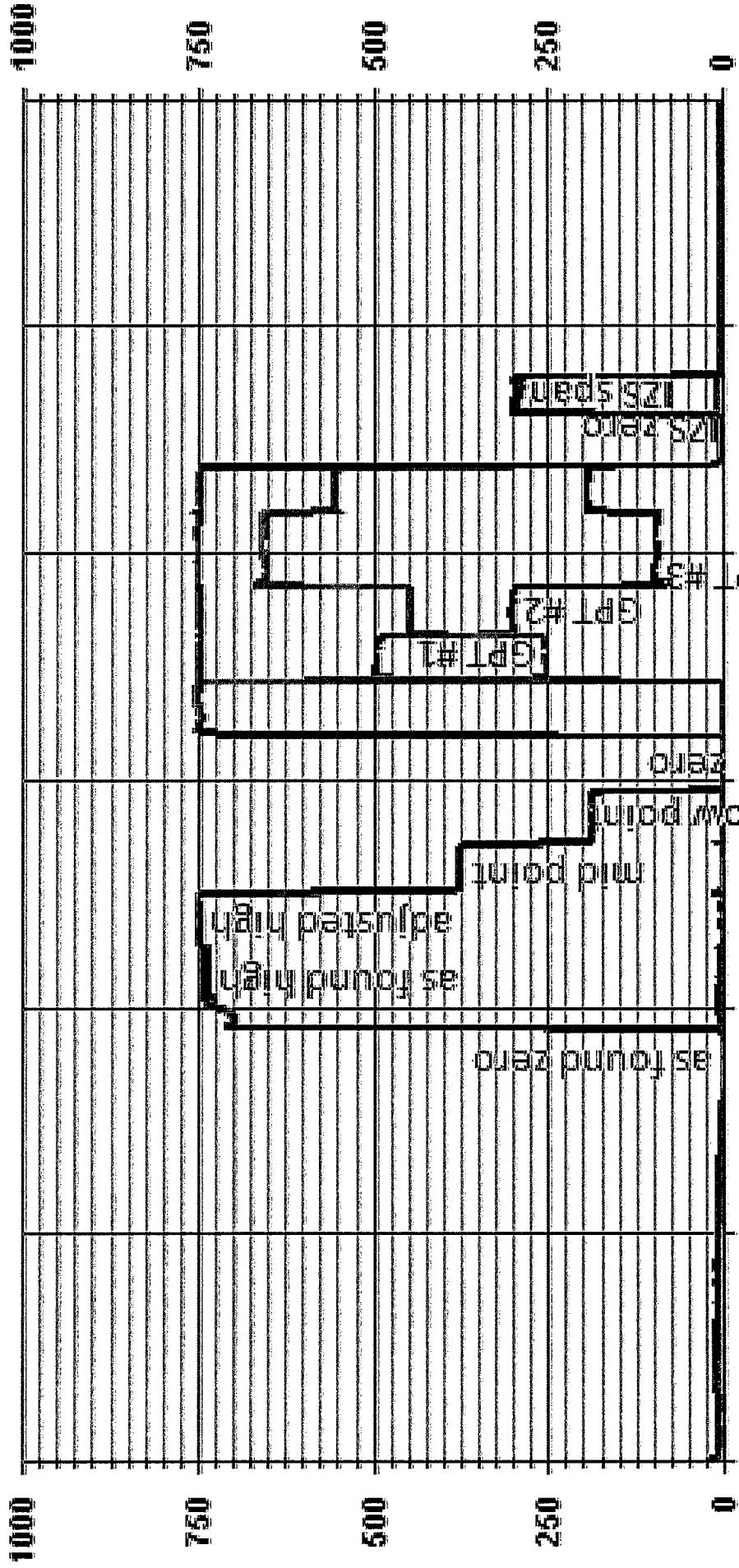
Date: 11-Jun-15  
Company: LICA  
Station Name/Location: Elk Point  
Performed by: Alex Yakupov

Start Time (mst): 9:19  
End Time (mst): 16:35  
Calibration Purpose: Monthly Calibration  
Cal Gas Expiry Date: 12-Mar-19

API 200E NOx Analyzer Calibration



01 Minute Averages



06/11/15 06:50 06/11/15 08:50 06/11/15 10:50 06/11/15 12:50 06/11/15 14:50 06/11/15 16:50

— LICA35 NOX\_ PPB — LICA35 NO\_ PPB — LICA35 NO2\_ PPB



**OZONE**

## Maxxam Thermo 49i O<sub>3</sub> Analyzer Calibration

**Date:** 12-Jun-15 **Start Time (mst):** 8:52  
**Company:** LICA **End Time (mst):** 13:05  
**Station Name/Location:** Elk Point **Calibration Purpose:** Monthly  
**Performed by:** Alex Yakupov **G.P.T. Date:** 11-Jun-15

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**Analyzer:**  
**Serial Number:** 1002240372 **Range ppm:** 500  
**Last Calibration Date:** 20-May-15 **As Found C.F.:** 0.997  
**Previous Cal High Point C.F.:** 0.999 **New C.F.:** 0.996

<p style="text-align: center;"><b>As found:</b></p> <p>O<sub>3</sub> Bkg: <u>-0.1</u>  O<sub>3</sub> Coef: <u>1.019</u>  Motherboard:  <u>3.3</u> <u>3.3</u>  <u>15.0</u> <u>15.0</u>  <u>24.0</u> <u>23.9</u>  <u>-3.3</u> <u>-3.2</u>  Interface Board:  <u>3.3</u> <u>3.3</u>  <u>5.0</u> <u>5.0</u>  <u>15.0</u> <u>14.9</u>  <u>-15.0</u> <u>-15.1</u>  Photo Lamp  <u>9.8</u>  <u>24.0</u> <u>23.5</u>  O<sub>3</sub> Lamp <u>9.4</u>  Bench: <u>30.6</u>  Bench Lamp: <u>54.1</u>  O<sub>3</sub> Lamp: <u>68.2</u>  Pressure: <u>698.3</u>  Cell A lpm: <u>0.746</u>  Cell B lpm: <u>0.756</u>  O<sub>3</sub> ppb: <u>0.1</u>  Cell A ppb: <u>0.1</u>  Cell B ppb: <u>-2.4</u>  Cell A Int: <u>47647</u>  Cell B Int: <u>44082</u>  Internal Span: <u>353.6</u></p>	<p style="text-align: center;"><b>As left:</b></p> <p>O<sub>3</sub> Bkg: <u>-0.3</u>  O<sub>3</sub> Coef: <u>1.015</u>  <u>3.3</u> <u>3.3</u>  <u>15.0</u> <u>15.0</u>  <u>24.0</u> <u>23.9</u>  <u>-3.3</u> <u>-3.2</u>  <u>3.3</u> <u>3.3</u>  <u>5.0</u> <u>5.0</u>  <u>15.0</u> <u>14.9</u>  <u>-15.0</u> <u>-15.1</u>  Photo Lamp <u>9.8</u>  <u>24.0</u> <u>23.5</u>  O<sub>3</sub> Lamp <u>9.4</u>  Bench: <u>31.0</u>  Bench Lamp: <u>54.1</u>  O<sub>3</sub> Lamp: <u>68.2</u>  Pressure: <u>698.3</u>  Cell A lpm: <u>0.746</u>  Cell B lpm: <u>0.755</u>  O<sub>3</sub> ppb: <u>0.3</u>  Cell A ppb: <u>1.1</u>  Cell B ppb: <u>0.3</u>  Cell A Int: <u>47658</u>  Cell B Int: <u>44091</u>  Internal Span: <u>351.3</u></p>
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**Calibrator:** **Callibrator Flow Targets:**

<b>Make &amp; Model:</b> <u>EnviroNics 6100</u>	<b>point</b>	<b>total flow (cc/min)</b>	<b>O<sub>3</sub> setting (v or ppb)</b>
<b>Serial #:</b> <u>4760</u>	zero	5000	0
<b>NOx Gas Cylinder I.D. #:</b> <u>BLM002073</u>	high	5000	264
<b>NOx Cylinder Conc. (ppm):</b> <u>50.6</u>	mid	5000	170
	low	5000	85

---

**Calibration:**

Callibrator 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	-0.1	NA
adjusted zero	4994	0.0	4994	0.0	0.0	NA
as found high	4994	0.00	4994	304.0	305.0	0.997
adjusted high	4994	0.00	4994	304.0	304.0	1.000
mid	4994	0.00	4994	196.0	198.0	0.990
low	4994	0.00	4994	95.0	95.1	0.999
calibrator zero	4994	0.00	4994	0.0	0.2	NA
Average C.F.=						0.996

\*\*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	Pass/Fail ?
Slope =	<u>1.002</u>	> or = 0.995	PASS
b (Intercept as % of full scale)=	<u>0.053%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0%</u>	± 3% F.S.	PASS
		± 15%	PASS

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**Comments:**

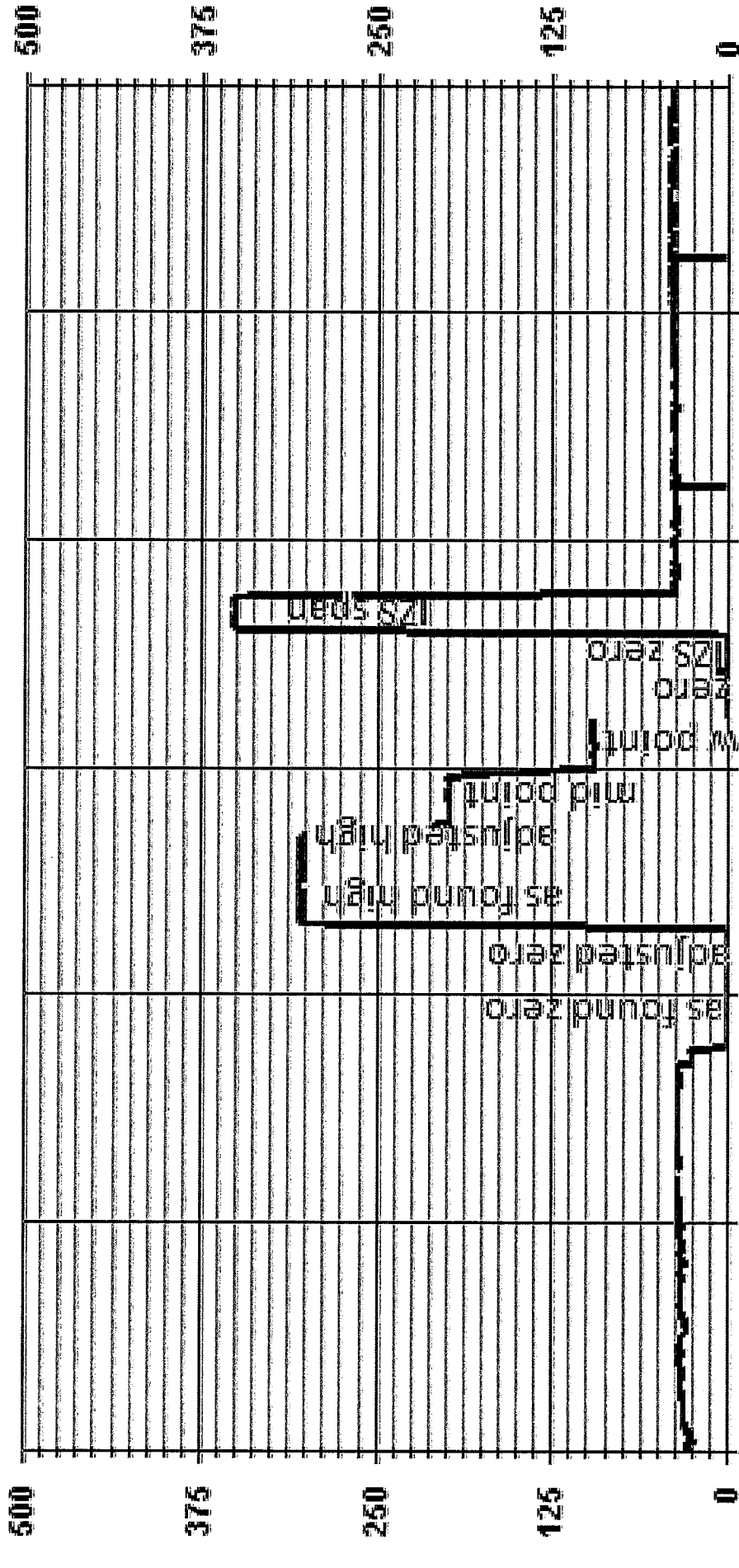
Filter changed

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**Thermo 49i O<sub>3</sub> Analyzer Calibration**

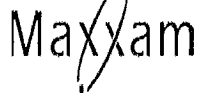
**O<sub>3</sub> Calibration Curve**

01 Minute Averages



— LICA35 03\_ PPB

***PARTICULATE MATTER***



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 1-Jun-15  
 Company: LICA  
 Station Name/Location: Elk Point  
 Previous Audit Date: 19-May-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 15:29 - 16:09  
 Calibration Purpose: Monthly Audit #1

**1400A Information and Status:**

Serial Number:	<u>1405A207691003</u>	As Found Filter Loading %:	<u>34.31</u>
Ko Factor:	<u>15634</u>	As Left Filter Loading %:	<u>19.20</u>
Ambient Temperature °C:	<u>15.63</u>	As Found Noise:	<u>0.004</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	0.06	0.00	0.06
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-0.45	0.00	-0.45
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**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	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-0.45	0.00	-0.45
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**As found temperature and pressure:**

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>15.6</u>	1405F pressure atm:	<u>0.932</u>
reference temperature °C:	<u>20.7</u>	reference pressure:	<u>0.932</u>
difference °C:	<u>5.1</u>	difference :	<u>0.000</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>20.7</u>	1405F pressure atm:	<u>0.932</u>
reference temperature °C:	<u>20.7</u>	reference pressure:	<u>0.932</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>3.10</u>	reference total/aux flow lpm:	<u>17.04</u>
difference lpm:	<u>0.10</u>	difference lpm:	<u>0.38</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>3.06</u>	reference total/aux flow lpm:	<u>16.93</u>
difference lpm:	<u>0.06</u>	difference lpm:	<u>0.27</u>

**K<sub>o</sub> Audit:**

Last K<sub>o</sub> audit date: 20-Mar-15  
 1405F K<sub>o</sub> factor: 15634  
 Measured K<sub>o</sub> factor: 15712.9000  
 % difference: 0.50

**Comments:**



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 19-Jun-15  
 Company: LICA  
 Station Name/Location: Elk Point  
 Previous Audit Date: 1-Jun-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 12:05 - 13:28  
 Calibration Purpose: Monthly Audit #2

**1400A Information and Status:**

Serial Number:	<u>1405A207691003</u>	As Found Filter Loading %:	<u>35.74</u>
Ko Factor:	<u>15634</u>	As Left Filter Loading %:	<u>27.98</u>
Ambient Temperature °C:	<u>25.6</u>	As Found Noise:	<u>0.020</u>
Ambient Pressure atm:	<u>0.927</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	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-0.45	0.00	-0.45
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**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	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-0.45	0.00	-0.45
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

**As found temperature and pressure:**

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1405F temperature °C:	<u>25.6</u>	1405F pressure atm:	<u>0.927</u>
reference temperature °C:	<u>22.2</u>	reference pressure:	<u>0.927</u>
difference °C:	<u>-3.4</u>	difference :	<u>0.000</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>22.2</u>	1405F pressure atm:	<u>0.927</u>
reference temperature °C:	<u>22.2</u>	reference pressure:	<u>0.927</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>3.13</u>	reference total/aux flow lpm:	<u>17.29</u>
difference lpm:	<u>0.13</u>	difference lpm:	<u>0.63</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>3.11</u>	reference total/aux flow lpm:	<u>17.04</u>
difference lpm:	<u>0.11</u>	difference lpm:	<u>0.38</u>

**K<sub>o</sub> Audit:**

Last K<sub>o</sub> audit date: 20-Mar-15  
 1405F K<sub>o</sub> factor: 15634  
 Measured K<sub>o</sub> factor: 15712.9000  
 % difference: 0.50

**Comments:**

## ***WIND SYSTEM***



# Meteorological Sensor Audit

## Station Information

Company:	LICA	Performed By:	Chrs Wasson/Kevin Hope
Location:	Elk Point	Reason:	BI-annual audit
Audit Date:	21-Feb-14	Start Time (mst):	15:10
Previous Audit Date:	24-Nov-11	End Time (mst):	15:40

## Wind Speed

Sensor make:	RM Young	Sensor height:	10M
Sensor model:	5103VK	Serial Number:	56589
Calibrator:	RM Young	Variable speed motor:	CA 03309
Voltage range:	0 - 1	Output signal range:	0 - 200 KPH

## 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	35.20	35.64	35.63	0.99
3000	52.92	53.29	53.31	0.99
4000	70.66	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	124.6	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:	RM Young	Sensor height:	10M
Sensor model:	5103VK	Serial Number:	56589
Calibrator:	RM Young	Variable speed motor:	CA03309
Voltage range:	0 - 1	Output signal range:	0 - 360

## 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:

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## ***CALIBRATORS***

Company Maxxam Operator: Limin Li

<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>Envionics 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>
Gas Flow (sccm)		Pt. #3	<u>5000</u>
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 <sub>2</sub>	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)*

<b>NO</b>	<b>LIMITS</b>	<b>NOx</b>
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0511	<b>0.90-1.10</b>	m (Slope)= 1.0496
b (Intercept % of FS)= 0.0400	± 3% F.S.	b (Intercept % of FS)= 0.0400


Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
4993	0.000	0.000	0.823	-0.001	0.822	NO <sub>2</sub>	% 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)*

<b>NO<sub>2</sub></b>	<b>LIMITS</b>
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0006	<b>0.90-1.10</b>
b (Intercept % of FS)= -0.0132	± 3% F.S.

<b>AENV Standards</b>	<b>NO<sub>x</sub> Analyzer</b>
<b>Audit Calibrator</b>	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>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 <sub>2</sub> Cylinder Conc.	<u>50.3</u>	Barometric Pressure	<u>N/A</u>
SO <sub>2</sub> 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 (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)*

SO <sub>2</sub>		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 <sub>2</sub> Analyzer	
<b>Audit Calibrator</b>		Make/Model	<u>Teco 43C</u>
Make/Model	<u>R&amp;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  
Operator Signature: \_\_\_\_\_

Date: December 16, 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: 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	<del>0.01660</del>	<del>60.242</del>	<del>48.3</del>
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:					<b>48.0</b>

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. 2014-257CGA

Company: Maxxam Operator's Name: Limin Li  
Cylinder #: LL42475 Concentration PPM: 50.3 Tolerance(%) 1 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: 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. 701 mmhg

**Reference Analyzer:**

Make/Model: Teco 43C Serial/AMU Number: 1623  
Instrument Settings: Zero: 7.7 Span: 1.018 Range: 1.0  
Last Calibration: Date: Dec15/14 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.000</del>	<del>0.000</del>	<del>0.000</del>
5114	52.1	0.502	0.01019	98.157	49.3
5093	22.3	0.214	0.00438	228.386	48.9
5073	10.9	0.105	0.00215	465.413	48.9
Average Cylinder Concentration:					49.0

Previous Stated Concentration PPM: 50.3

Percent variance from Stated: 2.6

Meets Manufacturer Tolerance. Use manufacturers stated concentration

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

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

COMMENTS: \_\_\_\_\_

Auditor: Al Clark

Date: December 16, 2014

Operator Signature: *Limin Li*

Location: McIntyre 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:**

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	<del>0.0000</del>	<del>132.442</del>	<del>10.0</del>
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:					<b>9.9</b>

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: *Limin Li*

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:**

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	<del>0.01660</del>	<del>60.242</del>	<del>51.5</del>	<del>51.1</del>
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:						<b>52.0</b>	<b>51.3</b>

<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.  
 5501-34th Street  
 Edmonton, AB T6B 2X5  
 Tel: 780-449-0778  
 Fax: 780-449-5302

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: 03/26/2014  
 Expiration Date: 03/26/2017

Analyst: Todd Hryniv

The gas calibration cylinder standard prepared by Praxair Canada, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The composition standard provided is certified against Praxair Canada, Inc. Reference Materials which was either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Massachusetts, USA or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume, e.g., (molar) unless otherwise noted.

M	Mass Spectrometry	R	Gas Chromatography with Charge Transfer Detector	G	Gas Chromatography with Electrode Conductivity Detector	S	Gas Chromatography with Flame Ionization Detector
F	Gas Chromatography with Flame Ionization Detector	P	Gas Chromatography with Hydrogen Ionization Detector	Q	Gas Chromatography with Methanone Fehdecolor	H	Gas Chromatography with Alkylaluminum Chloride
I	Gas Chromatography with Reaction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	A	Static Gas Analysis with Thermal Conductivity Detector	L	Wet Gas - FTIR or GC/MS
W	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Analyzers	D	Permeation	F	Specific Vapor Analysis
O	Total Hydrocarbon Analysis	B	Wet Chemical	K	General Tests	T	Scrub
U	Orthonic Method	V	Electrochemical	X	Gas Chromatography with Chemisorption		

**IMPORTANT**  
 The information contained herein has been prepared at your request by personnel within Praxair Canada, Inc. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any 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. arise out of the use of the information contained herein except to the extent established for providing such information.

***APPENDIX IV***  
***ANALYTICAL RESULTS***

**VOCs**

<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-003</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 5, 2015</p> <p><b>CANISTER ID:</b> H2797</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	13-Jun-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Jun-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	13-Jun-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jun-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jun-15
1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	13-Jun-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jun-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
2,2-Dimethylbutane	I	0.05	ppbv	0.01	AC-058	13-Jun-15
2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	13-Jun-15
2,3-Dimethylbutane	I	0.17	ppbv	0.02	AC-058	13-Jun-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-003</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 5, 2015</p> <p><b>CANISTER ID:</b> H2797</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.01	ppbv	0.01	AC-058	13-Jun-15
2-Methylhexane	I	0.04	ppbv	0.01	AC-058	13-Jun-15
2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
3-Methylhexane	I	0.03	ppbv	0.02	AC-058	13-Jun-15
3-Methylpentane	I	0.07	ppbv	0.01	AC-058	13-Jun-15
Acetone		5.8	ppbv	0.4	AC-058	13-Jun-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jun-15
Benzene	I	0.05	ppbv	0.01	AC-058	13-Jun-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
Carbon disulfide		0.99	ppbv	0.01	AC-058	13-Jun-15
Carbon tetrachloride	I	0.10	ppbv	0.01	AC-058	13-Jun-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Chloroform	I	0.03	ppbv	0.02	AC-058	13-Jun-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Cyclohexane	I	0.09	ppbv	0.02	AC-058	13-Jun-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-003</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 5, 2015</p> <p><b>CANISTER ID:</b> H2797</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		2.6	ppbv	0.3	AC-058	13-Jun-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Ethylbenzene	I	0.06	ppbv	0.01	AC-058	13-Jun-15
Freon-11	I	0.29	ppbv	0.02	AC-058	13-Jun-15
Freon-113	I	0.07	ppbv	0.01	AC-058	13-Jun-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Freon-12		0.61	ppbv	0.02	AC-058	13-Jun-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	13-Jun-15
Isobutane		0.67	ppbv	0.02	AC-058	13-Jun-15
Isopentane		0.62	ppbv	0.03	AC-058	13-Jun-15
Isoprene		0.31	ppbv	0.01	AC-058	13-Jun-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
m,p-Xylene	I	0.13	ppbv	0.03	AC-058	13-Jun-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	13-Jun-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	13-Jun-15
Methyl ethyl ketone		0.9	ppbv	0.3	AC-058	13-Jun-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Jun-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Jun-15
Methylcyclohexane	I	0.15	ppbv	0.01	AC-058	13-Jun-15
Methylcyclopentane	I	0.09	ppbv	0.02	AC-058	13-Jun-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jun-15
n-Butane		1.25	ppbv	0.03	AC-058	13-Jun-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-003</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 5, 2015</p> <p><b>CANISTER ID:</b> H2797</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	13-Jun-15
n-Heptane	I	0.06	ppbv	0.01	AC-058	13-Jun-15
n-Hexane	I	0.13	ppbv	0.01	AC-058	13-Jun-15
n-Octane	I	0.02	ppbv	0.02	AC-058	13-Jun-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	13-Jun-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Jun-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Jun-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Jun-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
o-Xylene	I	0.04	ppbv	0.01	AC-058	13-Jun-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Jun-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Toluene	I	0.15	ppbv	0.01	AC-058	13-Jun-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-003</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 11, 2015</p> <p><b>CANISTER ID:</b> 14735</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	22-Jun-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	22-Jun-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	22-Jun-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	22-Jun-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	22-Jun-15
1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	22-Jun-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	22-Jun-15
2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-003</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 11, 2015</p> <p><b>CANISTER ID:</b> 14735</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.02	ppbv	0.01	AC-058	22-Jun-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
2-Methylpentane	I	0.07	ppbv	0.01	AC-058	22-Jun-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
3-Methylhexane	I	0.03	ppbv	0.02	AC-058	22-Jun-15
3-Methylpentane	I	0.05	ppbv	0.01	AC-058	22-Jun-15
Acetone		4.7	ppbv	0.4	AC-058	22-Jun-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-15
Benzene	I	0.18	ppbv	0.01	AC-058	22-Jun-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
Carbon disulfide	I	0.25	ppbv	0.01	AC-058	22-Jun-15
Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	22-Jun-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Chloromethane		0.65	ppbv	0.02	AC-058	22-Jun-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Cyclohexane	I	0.07	ppbv	0.02	AC-058	22-Jun-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060265-003  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 11, 2015  <b>CANISTER ID:</b> 14735  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 11-Jun-15 0:00  <b>DATE RECEIVED:</b> 19-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.0	ppbv	0.3	AC-058	22-Jun-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Ethylbenzene	I	0.03	ppbv	0.01	AC-058	22-Jun-15
Freon-11	I	0.22	ppbv	0.02	AC-058	22-Jun-15
Freon-113	I	0.04	ppbv	0.01	AC-058	22-Jun-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Freon-12		0.51	ppbv	0.02	AC-058	22-Jun-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	22-Jun-15
Isobutane		0.34	ppbv	0.02	AC-058	22-Jun-15
Isopentane		0.31	ppbv	0.03	AC-058	22-Jun-15
Isoprene	I	0.14	ppbv	0.01	AC-058	22-Jun-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
m,p-Xylene	I	0.08	ppbv	0.03	AC-058	22-Jun-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	22-Jun-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	22-Jun-15
Methyl ethyl ketone		0.6	ppbv	0.3	AC-058	22-Jun-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	22-Jun-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	22-Jun-15
Methylcyclohexane	I	0.13	ppbv	0.01	AC-058	22-Jun-15
Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	22-Jun-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-15
n-Butane		0.55	ppbv	0.03	AC-058	22-Jun-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	22-Jun-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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-003</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 11, 2015</p> <p><b>CANISTER ID:</b> 14735</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane		0.9	ppbv	0.4	AC-058	22-Jun-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
n-Hexane		0.65	ppbv	0.01	AC-058	22-Jun-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	22-Jun-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	22-Jun-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	22-Jun-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	22-Jun-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
o-Xylene	I	0.02	ppbv	0.01	AC-058	22-Jun-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	22-Jun-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Toluene	I	0.21	ppbv	0.01	AC-058	22-Jun-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-008</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 17, 2015</p> <p><b>CANISTER ID:</b> 2533</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
1,2,3-Trimethylbenzene	I	0.06	ppbv	0.05	AC-058	02-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	02-Jul-15
1,2,4-Trimethylbenzene	I	0.12	ppbv	0.03	AC-058	02-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
1,2-Dichloroethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
1,3,5-Trimethylbenzene	I	0.03	ppbv	0.02	AC-058	02-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1-Butene	I	0.07	ppbv	0.02	AC-058	02-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2,2,4-Trimethylpentane	I	0.08	ppbv	0.01	AC-058	02-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	02-Jul-15
2,3-Dimethylbutane	I	0.06	ppbv	0.02	AC-058	02-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
2,4-Dimethylpentane	I	0.04	ppbv	0.01	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-008</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 17, 2015</p> <p><b>CANISTER ID:</b> 2533</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
2-Methylpentane	I	0.03 ppbv	0.01	AC-058	02-Jul-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
3-Methylhexane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
3-Methylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
Acetone		2.4 ppbv	0.4	AC-058	02-Jul-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	02-Jul-15
Benzene	I	0.02 ppbv	0.01	AC-058	02-Jul-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	02-Jul-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
Carbon disulfide		0.35 ppbv	0.01	AC-058	02-Jul-15
Carbon tetrachloride	I	0.08 ppbv	0.01	AC-058	02-Jul-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Chloroform	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Chloromethane		0.45 ppbv	0.02	AC-058	02-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	02-Jul-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Cyclohexane	K, T, U	< 0.02 ppbv	0.02	AC-058	02-Jul-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.0	ppbv	0.3	AC-058	02-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Ethylbenzene	I	0.05	ppbv	0.01	AC-058	02-Jul-15
Freon-11	I	0.20	ppbv	0.02	AC-058	02-Jul-15
Freon-113	I	0.04	ppbv	0.01	AC-058	02-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Freon-12		0.51	ppbv	0.02	AC-058	02-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Isobutane	I	0.09	ppbv	0.02	AC-058	02-Jul-15
Isopentane	I	0.27	ppbv	0.03	AC-058	02-Jul-15
Isoprene	I	0.26	ppbv	0.01	AC-058	02-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
m,p-Xylene	I	0.14	ppbv	0.03	AC-058	02-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	02-Jul-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
Methylcyclohexane	I	0.05	ppbv	0.01	AC-058	02-Jul-15
Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
n-Butane	I	0.24	ppbv	0.03	AC-058	02-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	02-Jul-15

**Qualifiers**

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 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  
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**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-008  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 17, 2015  <b>CANISTER ID:</b> 2533  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 17-Jun-15 0:00  <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> 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	02-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
n-Hexane	I	0.03	ppbv	0.01	AC-058	02-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	02-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	02-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	02-Jul-15
Naphthalene		0.7	ppbv	0.5	AC-058	02-Jul-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
o-Ethyltoluene	I	0.05	ppbv	0.01	AC-058	02-Jul-15
o-Xylene	I	0.06	ppbv	0.01	AC-058	02-Jul-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Toluene	I	0.08	ppbv	0.01	AC-058	02-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15

<b>Qualifiers</b> I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-004</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 23, 2015</p> <p><b>CANISTER ID:</b> H2826</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	02-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	02-Jul-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
1,2-Dichloroethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1-Butene	I	0.09	ppbv	0.02	AC-058	02-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2,2,4-Trimethylpentane	I	0.05	ppbv	0.01	AC-058	02-Jul-15
2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	02-Jul-15
2,3-Dimethylbutane	I	0.09	ppbv	0.02	AC-058	02-Jul-15
2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-004  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 23, 2015  <b>CANISTER ID:</b> H2826  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 23-Jun-15 0:00  <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2-Methylpentane	I	0.05	ppbv	0.01	AC-058	02-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
3-Methylhexane	I	0.02	ppbv	0.02	AC-058	02-Jul-15
3-Methylpentane	I	0.03	ppbv	0.01	AC-058	02-Jul-15
Acetone		4.1	ppbv	0.4	AC-058	02-Jul-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
Benzene	I	0.02	ppbv	0.01	AC-058	02-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Carbon disulfide	I	0.04	ppbv	0.01	AC-058	02-Jul-15
Carbon tetrachloride	I	0.08	ppbv	0.01	AC-058	02-Jul-15
Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15

<b>Qualifiers</b> I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-004</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 23, 2015</p> <p><b>CANISTER ID:</b> H2826</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.0	ppbv	0.3	AC-058	02-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Ethylbenzene	I	0.02	ppbv	0.01	AC-058	02-Jul-15
Freon-11	I	0.20	ppbv	0.02	AC-058	02-Jul-15
Freon-113	I	0.04	ppbv	0.01	AC-058	02-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Freon-12		0.53	ppbv	0.02	AC-058	02-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Isobutane	I	0.29	ppbv	0.02	AC-058	02-Jul-15
Isopentane	I	0.28	ppbv	0.03	AC-058	02-Jul-15
Isoprene		0.67	ppbv	0.01	AC-058	02-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	02-Jul-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	02-Jul-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	02-Jul-15
Methylcyclohexane	I	0.11	ppbv	0.01	AC-058	02-Jul-15
Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	02-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
n-Butane		0.37	ppbv	0.03	AC-058	02-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-004</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 23, 2015</p> <p><b>CANISTER ID:</b> H2826</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
n-Hexane	I	0.05	ppbv	0.01	AC-058	02-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	02-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	02-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	02-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	02-Jul-15
n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
o-Xylene	I	0.01	ppbv	0.01	AC-058	02-Jul-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Toluene	I	0.07	ppbv	0.01	AC-058	02-Jul-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-005  <b>MATRIX:</b> Air Filter  <b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 23, 2015  <b>CANISTER ID:</b> P13-01  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 23-Jun-15 0:00  <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.08 ug/PUF	0.01	NA-017	08-Jul-15
2-Methylnaphthalene		0.14 ug/PUF	0.01	NA-017	08-Jul-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Chrysene		0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Fluoranthene		0.02 ug/PUF	0.01	NA-017	08-Jul-15
Fluorene		0.03 ug/PUF	0.01	NA-017	08-Jul-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Naphthalene		0.03 ug/PUF	0.01	NA-017	08-Jul-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Phenanthrene		0.11 ug/PUF	0.01	NA-017	08-Jul-15
Pyrene		0.02 ug/PUF	0.01	NA-017	08-Jul-15

<b>Qualifiers</b> I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-005</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 23, 2015</p> <p><b>CANISTER ID:</b> P13-01</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 23-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Retene		0.01	ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-004</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 29, 2015</p> <p><b>CANISTER ID:</b> H2818</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> 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	I	0.16	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	I	0.26	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	0.03	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	0.05	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	K, T, U	< 0.01	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	0.04	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	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-004</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 29, 2015</p> <p><b>CANISTER ID:</b> H2818</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.18 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	I	0.18 ppbv	0.02	AC-058	10-Jul-15
3-Methylhexane	I	0.13 ppbv	0.02	AC-058	10-Jul-15
3-Methylpentane	I	0.10 ppbv	0.01	AC-058	10-Jul-15
Acetone		14.6 ppbv	0.4	AC-058	10-Jul-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	10-Jul-15
Benzene		0.35 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	I	0.01 ppbv	0.01	AC-058	10-Jul-15
Carbon disulfide		1.21 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		0.38 ppbv	0.02	AC-058	10-Jul-15
Chloroform	I	0.07 ppbv	0.02	AC-058	10-Jul-15
Chloromethane	K, T, U	< 0.02 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	I	0.12 ppbv	0.02	AC-058	10-Jul-15
cis-2-Pentene	I	0.04 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

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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-004</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 29, 2015</p> <p><b>CANISTER ID:</b> H2818</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		3.2	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	0.15	ppbv	0.01	AC-058	10-Jul-15
Freon-11	I	0.24	ppbv	0.02	AC-058	10-Jul-15
Freon-113	I	0.06	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		0.49	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		0.54	ppbv	0.02	AC-058	10-Jul-15
Isopentane		0.53	ppbv	0.03	AC-058	10-Jul-15
Isoprene		2.31	ppbv	0.01	AC-058	10-Jul-15
Isopropyl alcohol		0.8	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		0.32	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	0.23	ppbv	0.08	AC-058	10-Jul-15
Methyl butyl ketone		0.86	ppbv	0.5	AC-058	10-Jul-15
Methyl ethyl ketone		1.7	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	0.26	ppbv	0.01	AC-058	10-Jul-15
Methylcyclopentane	I	0.12	ppbv	0.02	AC-058	10-Jul-15
Methylene chloride		0.5	ppbv	0.3	AC-058	10-Jul-15
n-Butane		0.92	ppbv	0.03	AC-058	10-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Jul-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15070024-004  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/EP/June 29, 2015  <b>CANISTER ID:</b> H2818  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 29-Jun-15 0:00  <b>DATE RECEIVED:</b> 07-Jul-15  <b>REPORT CREATED:</b> 28-Jul-15  <b>REPORT VERSION:</b> 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	10-Jul-15
n-Heptane	K, T, U	< 0.01	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	I	0.11	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	I	0.13	ppbv	0.01	AC-058	10-Jul-15
o-Ethyltoluene	I	0.13	ppbv	0.01	AC-058	10-Jul-15
o-Xylene	I	0.20	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	I	0.08	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		0.41	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	I	0.04	ppbv	0.02	AC-058	10-Jul-15

**Qualifiers**

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 T Value reported is less than the laboratory method detection limit  
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**E-mail:** EAS.Results@albertainnovates.ca

***PAHs***

<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-004</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 5, 2015</p> <p><b>CANISTER ID:</b> TE02</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.05	ug/PUF	0.01	NA-017	30-Jun-15
2-Methylnaphthalene		0.08	ug/PUF	0.01	NA-017	30-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Acridine	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Chrysene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Fluoranthene		0.02	ug/PUF	0.01	NA-017	30-Jun-15
Fluorene		0.03	ug/PUF	0.01	NA-017	30-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Naphthalene		0.06	ug/PUF	0.01	NA-017	30-Jun-15
Perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	30-Jun-15
Phenanthrene		0.13	ug/PUF	0.01	NA-017	30-Jun-15
Pyrene		0.01	ug/PUF	0.01	NA-017	30-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060152-004</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 5, 2015</p> <p><b>CANISTER ID:</b> TE02</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 05-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Retene		0.02	ug/PUF	0.01	NA-017	30-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-004</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EPS/June 11, 2015</p> <p><b>CANISTER ID:</b> TE03</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.04 ug/PUF	0.01	NA-017	30-Jun-15
2-Methylnaphthalene		0.06 ug/PUF	0.01	NA-017	30-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Chrysene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Fluoranthene		0.02 ug/PUF	0.01	NA-017	30-Jun-15
Fluorene		0.02 ug/PUF	0.01	NA-017	30-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Naphthalene		0.04 ug/PUF	0.01	NA-017	30-Jun-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15
Phenanthrene		0.07 ug/PUF	0.01	NA-017	30-Jun-15
Pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	30-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060265-004</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EPS/June 11, 2015</p> <p><b>CANISTER ID:</b> TE03</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 11-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Retene		0.02	ug/PUF	0.01	NA-017	30-Jun-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-009</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 17, 2015</p> <p><b>CANISTER ID:</b> TE-04</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.07 ug/PUF	0.01	NA-017	09-Jul-15
2-Methylnaphthalene		0.12 ug/PUF	0.01	NA-017	09-Jul-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Chrysene		0.01 ug/PUF	0.01	NA-017	09-Jul-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Fluoranthene		0.03 ug/PUF	0.01	NA-017	09-Jul-15
Fluorene		0.05 ug/PUF	0.01	NA-017	09-Jul-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Naphthalene		0.05 ug/PUF	0.01	NA-017	09-Jul-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15
Phenanthrene		0.12 ug/PUF	0.01	NA-017	09-Jul-15
Pyrene		0.03 ug/PUF	0.01	NA-017	09-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-009</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 17, 2015</p> <p><b>CANISTER ID:</b> TE-04</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 17-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	09-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-005</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 29, 2015</p> <p><b>CANISTER ID:</b> TE-06</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.03 ug/PUF	0.01	NA-017	08-Jul-15
2-Methylnaphthalene		0.04 ug/PUF	0.01	NA-017	08-Jul-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(b,j,k)fluoranthene		0.02 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Chrysene		0.02 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Fluoranthene		0.07 ug/PUF	0.01	NA-017	08-Jul-15
Fluorene		0.03 ug/PUF	0.01	NA-017	08-Jul-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Naphthalene		0.02 ug/PUF	0.01	NA-017	08-Jul-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	08-Jul-15
Phenanthrene		0.45 ug/PUF	0.01	NA-017	08-Jul-15
Pyrene		0.03 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-005</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/June 29, 2015</p> <p><b>CANISTER ID:</b> TE-06</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 29-Jun-15 0:00</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.37 ug/PUF	0.01	NA-017	08-Jul-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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***NMHC CANISTER SAMPLES***

<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060149-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 6, 2015</p> <p><b>CANISTER ID:</b> 14698</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 06-Jun-15 23:15</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 26-Jun-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	I	0.02 ppbv	0.02	AC-058	13-Jun-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	13-Jun-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	13-Jun-15
1,2,4-Trichlorobenzene	K, T, U	< 0.9 ppbv	0.8	AC-058	13-Jun-15
1,2,4-Trimethylbenzene	I	0.05 ppbv	0.03	AC-058	13-Jun-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	13-Jun-15
1,2-Dichloroethane	I	0.04 ppbv	0.01	AC-058	13-Jun-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15
1,3,5-Trimethylbenzene	I	0.03 ppbv	0.02	AC-058	13-Jun-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	13-Jun-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	13-Jun-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	13-Jun-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15
2,2,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15
2,2-Dimethylbutane	I	0.18 ppbv	0.01	AC-058	13-Jun-15
2,3,4-Trimethylpentane	I	0.04 ppbv	0.01	AC-058	13-Jun-15
2,3-Dimethylbutane		0.53 ppbv	0.02	AC-058	13-Jun-15
2,3-Dimethylpentane	I	0.21 ppbv	0.02	AC-058	13-Jun-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15

**Qualifiers**

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

**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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060149-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 6, 2015</p> <p><b>CANISTER ID:</b> 14698</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 06-Jun-15 23:15</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 26-Jun-15</p> <p><b>REPORT VERSION:</b> 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	13-Jun-15
2-Methylhexane	I	0.12	ppbv	0.01	AC-058	13-Jun-15
2-Methylpentane		0.36	ppbv	0.01	AC-058	13-Jun-15
3-Methylheptane	I	0.05	ppbv	0.02	AC-058	13-Jun-15
3-Methylhexane	I	0.13	ppbv	0.02	AC-058	13-Jun-15
3-Methylpentane	I	0.21	ppbv	0.01	AC-058	13-Jun-15
Acetone		8.7	ppbv	0.4	AC-058	13-Jun-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Jun-15
Benzene	I	0.15	ppbv	0.01	AC-058	13-Jun-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Bromomethane	I	0.02	ppbv	0.01	AC-058	13-Jun-15
Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	13-Jun-15
Chlorobenzene	I	0.02	ppbv	0.02	AC-058	13-Jun-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Chloroform	I	0.04	ppbv	0.02	AC-058	13-Jun-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
cis-1,2-Dichloroethene	I	0.01	ppbv	0.01	AC-058	13-Jun-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Cyclohexane		0.38	ppbv	0.02	AC-058	13-Jun-15
Cyclopentane	I	0.13	ppbv	0.01	AC-058	13-Jun-15
Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060149-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 6, 2015</p> <p><b>CANISTER ID:</b> 14698</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 06-Jun-15 23:15</p> <p><b>DATE RECEIVED:</b> 12-Jun-15</p> <p><b>REPORT CREATED:</b> 26-Jun-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Ethanol		4.5 ppbv	0.3	AC-058	13-Jun-15
Ethyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	13-Jun-15
Ethylbenzene	I	0.06 ppbv	0.01	AC-058	13-Jun-15
Freon-11	I	0.28 ppbv	0.02	AC-058	13-Jun-15
Freon-113	I	0.08 ppbv	0.01	AC-058	13-Jun-15
Freon-114	K, T, U	< 0.02 ppbv	0.02	AC-058	13-Jun-15
Freon-12		0.61 ppbv	0.02	AC-058	13-Jun-15
Hexachloro-1,3-butadiene	K, T, U	< 0.54 ppbv	0.5	AC-058	13-Jun-15
Isobutane		1.88 ppbv	0.02	AC-058	13-Jun-15
Isopentane		1.00 ppbv	0.03	AC-058	13-Jun-15
Isoprene		1.56 ppbv	0.01	AC-058	13-Jun-15
Isopropyl alcohol	K, T, U	< 0.4 ppbv	0.4	AC-058	13-Jun-15
Isopropylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	13-Jun-15
m,p-Xylene	I	0.16 ppbv	0.03	AC-058	13-Jun-15
m-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	13-Jun-15
m-Ethyltoluene	K, T, U	< 0.09 ppbv	0.08	AC-058	13-Jun-15
Methyl butyl ketone	K, T, U	< 0.54 ppbv	0.5	AC-058	13-Jun-15
Methyl ethyl ketone		0.8 ppbv	0.3	AC-058	13-Jun-15
Methyl isobutyl ketone	K, T, U	< 0.4 ppbv	0.4	AC-058	13-Jun-15
Methyl methacrylate	K, T, U	< 0.07 ppbv	0.07	AC-058	13-Jun-15
Methyl tert butyl ether	K, T, U	< 0.03 ppbv	0.03	AC-058	13-Jun-15
Methylcyclohexane		0.82 ppbv	0.01	AC-058	13-Jun-15
Methylcyclopentane	I	0.31 ppbv	0.02	AC-058	13-Jun-15
Methylene chloride		0.4 ppbv	0.3	AC-058	13-Jun-15
n-Butane		1.93 ppbv	0.03	AC-058	13-Jun-15
n-Decane	K, T, U	< 0.06 ppbv	0.06	AC-058	13-Jun-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060149-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 6, 2015  <b>CANISTER ID:</b> 14698  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 06-Jun-15 23:15  <b>DATE RECEIVED:</b> 12-Jun-15  <b>REPORT CREATED:</b> 26-Jun-15 <b>REPORT VERSION:</b> 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	13-Jun-15
n-Heptane	I	0.26	ppbv	0.01	AC-058	13-Jun-15
n-Hexane		0.45	ppbv	0.01	AC-058	13-Jun-15
n-Octane	I	0.10	ppbv	0.02	AC-058	13-Jun-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	13-Jun-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Jun-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Jun-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Jun-15
n-Nonane	I	0.04	ppbv	0.01	AC-058	13-Jun-15
o-Ethyltoluene	I	0.02	ppbv	0.01	AC-058	13-Jun-15
o-Xylene	I	0.07	ppbv	0.01	AC-058	13-Jun-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Jun-15
Styrene	I	0.05	ppbv	0.04	AC-058	13-Jun-15
Tetrachloroethylene	I	0.10	ppbv	0.04	AC-058	13-Jun-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Toluene	I	0.29	ppbv	0.01	AC-058	13-Jun-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Jun-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Jun-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Jun-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Jun-15

**Qualifiers**

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

**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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 19, 2015</p> <p><b>CANISTER ID:</b> 2471</p> <p><b>DESCRIPTION:</b> Elk Point Airport - NMHC canister</p> <p><b>DATE SAMPLED:</b> 19-Jun-15 0:55</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	I	0.03	ppbv	0.02	AC-058	02-Jul-15
1,1,2,2-Tetrachloroethane	I	0.04	ppbv	0.02	AC-058	02-Jul-15
1,1,2-Trichloroethane	I	0.04	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	02-Jul-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	02-Jul-15
1,2,4-Trimethylbenzene	I	0.08	ppbv	0.03	AC-058	02-Jul-15
1,2-Dibromoethane	I	0.04	ppbv	0.02	AC-058	02-Jul-15
1,2-Dichlorobenzene	I	0.05	ppbv	0.03	AC-058	02-Jul-15
1,2-Dichloroethane	I	0.05	ppbv	0.01	AC-058	02-Jul-15
1,2-Dichloropropane	I	0.03	ppbv	0.01	AC-058	02-Jul-15
1,3,5-Trimethylbenzene	I	0.05	ppbv	0.02	AC-058	02-Jul-15
1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2,2,4-Trimethylpentane	I	0.14	ppbv	0.01	AC-058	02-Jul-15
2,2-Dimethylbutane	I	0.07	ppbv	0.01	AC-058	02-Jul-15
2,3,4-Trimethylpentane	I	0.05	ppbv	0.01	AC-058	02-Jul-15
2,3-Dimethylbutane	I	0.19	ppbv	0.02	AC-058	02-Jul-15
2,3-Dimethylpentane	I	0.19	ppbv	0.02	AC-058	02-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15060384-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 19, 2015</p> <p><b>CANISTER ID:</b> 2471</p> <p><b>DESCRIPTION:</b> Elk Point Airport - NMHC canister</p> <p><b>DATE SAMPLED:</b> 19-Jun-15 0:55</p> <p><b>DATE RECEIVED:</b> 25-Jun-15</p> <p><b>REPORT CREATED:</b> 16-Jul-15</p> <p><b>REPORT VERSION:</b> 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	02-Jul-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
2-Methylpentane	I	0.20	ppbv	0.01	AC-058	02-Jul-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
3-Methylhexane	I	0.07	ppbv	0.02	AC-058	02-Jul-15
3-Methylpentane	I	0.12	ppbv	0.01	AC-058	02-Jul-15
Acetone		3.2	ppbv	0.4	AC-058	02-Jul-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
Benzene	I	0.10	ppbv	0.01	AC-058	02-Jul-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Bromodichloromethane		0.03	ppbv	0.02	AC-058	02-Jul-15
Bromoform	I	0.03	ppbv	0.02	AC-058	02-Jul-15
Bromomethane	I	0.03	ppbv	0.01	AC-058	02-Jul-15
Carbon disulfide		0.52	ppbv	0.01	AC-058	02-Jul-15
Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	02-Jul-15
Chlorobenzene	I	0.04	ppbv	0.02	AC-058	02-Jul-15
Chloroethane	I	0.03	ppbv	0.02	AC-058	02-Jul-15
Chloroform	I	0.05	ppbv	0.02	AC-058	02-Jul-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
cis-1,2-Dichloroethene	I	0.02	ppbv	0.01	AC-058	02-Jul-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Cyclohexane	I	0.22	ppbv	0.02	AC-058	02-Jul-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
Dibromochloromethane	I	0.03	ppbv	0.01	AC-058	02-Jul-15

<p><b>Qualifiers</b></p> <p>I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit</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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 19, 2015  <b>CANISTER ID:</b> 2471  <b>DESCRIPTION:</b> Elk Point Airport - NMHC canister  <b>DATE SAMPLED:</b> 19-Jun-15 0:55  <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.1	ppbv	0.3	AC-058	02-Jul-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Ethylbenzene	I	0.06	ppbv	0.01	AC-058	02-Jul-15
Freon-11	I	0.27	ppbv	0.02	AC-058	02-Jul-15
Freon-113	I	0.08	ppbv	0.01	AC-058	02-Jul-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Freon-12		0.41	ppbv	0.02	AC-058	02-Jul-15
Hexachloro-1,3-butadiene	K, T, U	< 0.52	ppbv	0.5	AC-058	02-Jul-15
Isobutane		0.92	ppbv	0.02	AC-058	02-Jul-15
Isopentane		0.72	ppbv	0.03	AC-058	02-Jul-15
Isoprene	I	0.12	ppbv	0.01	AC-058	02-Jul-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
m,p-Xylene	I	0.15	ppbv	0.03	AC-058	02-Jul-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	02-Jul-15
Methyl butyl ketone	K, T, U	< 0.52	ppbv	0.5	AC-058	02-Jul-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Methyl tert butyl ether	I	0.03	ppbv	0.03	AC-058	02-Jul-15
Methylcyclohexane		0.36	ppbv	0.01	AC-058	02-Jul-15
Methylcyclopentane	I	0.16	ppbv	0.02	AC-058	02-Jul-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	02-Jul-15
n-Butane		0.94	ppbv	0.03	AC-058	02-Jul-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	02-Jul-15

<b>Qualifiers</b> I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca
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<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15060384-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 19, 2015  <b>CANISTER ID:</b> 2471  <b>DESCRIPTION:</b> Elk Point Airport - NMHC canister  <b>DATE SAMPLED:</b> 19-Jun-15 0:55  <b>DATE RECEIVED:</b> 25-Jun-15  <b>REPORT CREATED:</b> 16-Jul-15  <b>REPORT VERSION:</b> 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	02-Jul-15
n-Heptane	I	0.15	ppbv	0.01	AC-058	02-Jul-15
n-Hexane	I	0.31	ppbv	0.01	AC-058	02-Jul-15
n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	02-Jul-15
n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	02-Jul-15
n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	02-Jul-15
Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	02-Jul-15
n-Nonane	I	0.02	ppbv	0.01	AC-058	02-Jul-15
o-Ethyltoluene	I	0.01	ppbv	0.01	AC-058	02-Jul-15
o-Xylene	I	0.07	ppbv	0.01	AC-058	02-Jul-15
p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	02-Jul-15
Styrene	I	0.08	ppbv	0.04	AC-058	02-Jul-15
Tetrachloroethylene	I	0.07	ppbv	0.04	AC-058	02-Jul-15
Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Toluene	I	0.21	ppbv	0.01	AC-058	02-Jul-15
trans-1,2-Dichloroethylene	I	0.02	ppbv	0.01	AC-058	02-Jul-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	02-Jul-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	02-Jul-15
Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	02-Jul-15
Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	02-Jul-15
Vinyl chloride	I	0.02	ppbv	0.02	AC-058	02-Jul-15

**Qualifiers**

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

**Certified By:** Graham Knox, Team Lead

**On behalf of:** PJ Pretorius, Portfolio Manager, EAS

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8  <b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>LABORATORY SAMPLE ID:</b> 15070024-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 25, 2015  <b>CANISTER ID:</b> 2475  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 25-Jun-15 3:30  <b>DATE RECEIVED:</b> 07-Jul-15  <b>REPORT CREATED:</b> 28-Jul-15  <b>REPORT VERSION:</b> 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	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	I	0.11	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	0.02	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	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	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15
2,2-Dimethylbutane		0.32	ppbv	0.01	AC-058	10-Jul-15
2,3,4-Trimethylpentane		0.40	ppbv	0.01	AC-058	10-Jul-15
2,3-Dimethylbutane		0.93	ppbv	0.02	AC-058	10-Jul-15
2,3-Dimethylpentane		0.41	ppbv	0.02	AC-058	10-Jul-15
2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	10-Jul-15

<b>Qualifiers</b> 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	<b>Certified By:</b> Graham Knox, Team Lead <b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS  <b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> 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:** 15070024-001

**MATRIX:** Ambient Air

**CLIENT SAMPLE ID:** LICA/VOC/ELK/June 25, 2015

**CANISTER ID:** 2475

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 25-Jun-15 3:30

**DATE RECEIVED:** 07-Jul-15

**REPORT CREATED:** 28-Jul-15

**REPORT VERSION:** Version 01

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	I	0.20	ppbv	0.01	AC-058	10-Jul-15
2-Methylpentane		0.73	ppbv	0.01	AC-058	10-Jul-15
3-Methylheptane	I	0.08	ppbv	0.02	AC-058	10-Jul-15
3-Methylhexane	I	0.27	ppbv	0.02	AC-058	10-Jul-15
3-Methylpentane		0.42	ppbv	0.01	AC-058	10-Jul-15
Acetone		5.5	ppbv	0.4	AC-058	10-Jul-15
Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Jul-15
Benzene	I	0.22	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	0.26	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	I	0.03	ppbv	0.02	AC-058	10-Jul-15
Chloromethane		0.69	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		0.75	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

**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><b>RESULTS TO:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE TO:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15070024-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/ELK/June 25, 2015</p> <p><b>CANISTER ID:</b> 2475</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 25-Jun-15 3:30</p> <p><b>DATE RECEIVED:</b> 07-Jul-15</p> <p><b>REPORT CREATED:</b> 28-Jul-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.9	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	0.23	ppbv	0.01	AC-058	10-Jul-15
Freon-11	I	0.25	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		0.35	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		3.21	ppbv	0.02	AC-058	10-Jul-15
Isopentane		3.74	ppbv	0.03	AC-058	10-Jul-15
Isoprene		1.59	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		0.31	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		0.6	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		1.45	ppbv	0.01	AC-058	10-Jul-15
Methylcyclopentane		0.65	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		4.42	ppbv	0.03	AC-058	10-Jul-15
n-Decane	I	0.07	ppbv	0.06	AC-058	10-Jul-15

<p><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> 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	10-Jul-15
n-Heptane		0.34	ppbv	0.01	AC-058	10-Jul-15
n-Hexane		0.77	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	0.03	ppbv	0.01	AC-058	10-Jul-15
o-Xylene	I	0.08	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	< 0.07	ppbv	0.07	AC-058	10-Jul-15
Styrene		1.30	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		2.20	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><b>Qualifiers</b></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><b>Certified By:</b> Graham Knox, Team Lead</p> <p><b>On behalf of:</b> PJ Pretorius, Portfolio Manager, EAS</p> <p><b>Inquiries:</b> (780) 632 8455</p> <p><b>E-mail:</b> EAS.Results@albertainnovates.ca</p>
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***APPENDIX V***  
***CHAIN OF CUSTODY***





# Maxxam Analytics - Air Services Group

## Project Chain of Custody

**Client:** Lakeland Industry & Community Association  
**Site:** Elk Point Airport Site

**Project #:** 2833-2015-06-35- C  
**Contact:** Mike Bisaga

QA Check Complete msdmbg Date 29-July-2015

QA Check Review msdmbg Date 29-July-2015

Report Complete msdmbg Date 31-July-2015

Report Reviewed [Signature] Date 8-Aug-15

Report Shipped \_\_\_\_\_ Date \_\_\_\_\_

Notes