



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

April 10, 2015

**RE: February 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". The signature is written in a cursive style.

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 #:2833-2015-02-01- C**

**FEBRUARY 2015**


Prepared for:

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

**Attention: MIKE BISAGA**

DATE: **April 8, 2015**

Prepared by:

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

Reviewed by:

  
\_\_\_\_\_  
Lily Lin, B.Sc.  
Customer Service Supervisor, Air Services, Maxxam Analytics

## SUMMARY

In FEBRUARY 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.

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

23 hours of WS/WSMAX/WD/STDWDIR data were discarded due to a power plug issue.

5 hours of PM2.5 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, Cold Lake South Site.

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

**Monthly Continuous Data Summary**

Lakeland Industry & Community Association Cold Lake South Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	1-HOUR			24-HOUR		
	1-HR	24-HR	1-HR	24-HR				HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
SO2 (PPB)	172	48	0	0	0	3	10	VAR	VAR	VAR	1.1	10	100.0
TRS (PPB)	-	-	-	-	0	1	17, 26	5, 9	0.8 0.4	WSW SE	0.0	ALL	100.0
THC (PPM)	-	-	-	-	2.2	3.4	26, 26	8, 9	0.2 0.4	NE SE	2.6	26	100.0
NO2 (PPB)	159	-	0	-	6.1	34.5	26	9	0.4	SE	12.9	17	100.0
NO (PPB)	-	-	-	-	1.2	68.9	26	9	0.4	SE	6.8	26	100.0
NOX (PPB)	-	-	-	-	7.2	103.4	26	9	0.4	SE	19.2	26	100.0
O3 (PPB)	82	-	0	-	28	44	23	14	12.5	NW	38.0	23	100.0
PM2.5 (UG/M3)	-	30	-	0	6.9	38.0	6	8	10.1	E	14.5	12	99.3
RELATIVE HUMIDITY (%)	-	-	-	-	69.6	96	19, 20	VAR	VAR	VAR	83.0	19	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	-14.7	7.6	23, 23	14, 15	12.5 11.1	NW NW	2.1	23	100.0
VECTOR WS (KPH)	-	-	-	-	5.4	14.8	6	13	-	E	10.6	6	96.6
VECTOR WD (DEG)	-	-	-	-	NNE	-	-	-	-	-	-	-	96.6

NA-NOT AVAILABLE VAR-VARIOUS

## Passive Sampler Results

	Sulphur Dioxide (in ppb)
Mean	0.6
Minimum	0.3
Maximum	1.4

**Note:** There are no results for station 11 because the station was not accessible.

	Hydrogen Sulphide (in ppb)
Mean	0.16
Minimum	0.13
Maximum	0.24

**Note:** There are no results for station 11 because the station was not accessible.

	Nitrogen Dioxide (in ppb)
Mean	2.2
Minimum	0.6
Maximum	8.0

**Note:** There are no results for station 11 because the station was not accessible.

	Ozone (in ppb)
Mean	NA
Minimum	NA
Maximum	NA

**Note:** There are no results for Ozone this month due to a sample preparation error.

### Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
FEBRUARY 5, 2015	5.70	ACETONE
FEBRUARY 11, 2015	1.80	NAPHTHALENE
FEBRUARY 17, 2015	1.31	ETHANOL
FEBRUARY 23, 2015	7.68	NAPHTHALENE

**Note:** NA

### Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
FEBRUARY 5, 2015	0.62	NAPHTHALENE
FEBRUARY 11, 2015	0.45	2-METHYLNAPHTHALENE
FEBRUARY 17, 2015	1.99	NAPHTHALENE
FEBRUARY 23, 2015	0.19	PHENANTHRENE

**Note:** NA

### Partisol Sampler Summary

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Sample Collected Date	Concentration (mg)
FEBRUARY 5, 2015	0.020
FEBRUARY 11, 2015	0.082
FEBRUARY 17, 2015	0.101
FEBRUARY 23, 2015	0.025

**Note:** NA



## 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**

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

**No Exceedences Recorded During the Month**

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**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 Temperature. It also consists of results for non-continuous parameters Passives, VOCs, PAHs 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 is to be operational 90% of the time (minimum), on a monthly basis.

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

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor (greater than 15%).

Hourly data is corrected using daily zero information.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 18.

### **TOTAL REDUCED SULPHUR (TRS)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 18.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 18. The hydrogen cylinder was exchanged and re-connected on February 5. The span gas cylinder was replaced and reconnected on February 17.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 18.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 19.

#### **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 February 5, and the other audit was performed on February 17. Both the inlet filter and the FDMS filter were replaced before the audits were performed. 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. 5 hours of data were invalidated this month as the data were below -3 ug/m<sup>3</sup>.

#### **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 failed on February 18. It was discovered on February 19 that the power plug had lost contact. It was re-plugged and returned to sampling mode. No other issues were observed. 23 hours of WS/WSMAX/WD/STDWD/DIR data were discarded due to this event.

#### **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 MONITORING**

Samples were collected at all designated stations, except station 11. Samples installed at station 11 was not changed as access to the station was blocked by snow. Samples were sent to the lab for analysis. Results are included in this report. O3 lab results are not included in this report due to a sample preparation error which rendered the samples un-analyzable.

#### **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 February 5, 11, 17 and 23. They were sent to the lab for analysis. 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 February 5, 11, 17 and 23. They were sent to the lab for analysis. 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 3 decimal places.

Samples were collected on February 5, 11, 17 and 23. They were sent to the lab for analysis. Results are included in this report.

#### **TRAILER**

Thermostat temperature was adjusted on February 5.

## **2.0 Project Personnel**

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

## **3.0 Plant Monthly Required AMD Summary**

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

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

## **4.0 Calculations and Results**

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

## 5.0 Methods and Procedures

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

- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- 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
- Wind System - RM Young Unit
- Relative Humidity - Met One Unit
- Ambient Temperature - Met One Unit
- Datalogger - ESC 8832
- Partisol - R&P 2000H Unit



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

***SULPHUR DIOXIDE***



SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

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	24-HOUR	RDGS.	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	MAX.	AVG.		
DAY																												
1	S	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	S	1	0.1	24	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0.0	24		
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	0	1	0.0	24		
4	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	1	1	1	0	0	S	0	1	2	0.6	24		
5	1	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	1	0.3	24			
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0	24				
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.0	24		
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	1	0.0	24		
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.0	24	
10	0	0	0	0	0	0	1	1	0	1	2	3	3	2	S	3	3	2	1	1	1	1	1	0	3	1.1	24	
11	0	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
12	0	0	0	0	0	0	0	0	0	0	0	1	S	1	1	1	1	1	1	1	1	1	1	0	1	0.4	24	
13	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
14	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
15	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	0.2	24
16	1	1	1	1	0	0	0	0	S	0	0	0	0	0	1	2	2	1	1	0	0	0	0	0	0	2	0.5	24
17	0	0	0	0	0	0	0	S	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.2	24
18	0	0	0	0	0	S	0	S	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
19	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
20	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
21	0	0	0	S	0	0	0	0	0	1	1	1	1	1	2	1	1	1	0	0	0	0	0	0	2	0.5	24	
22	0	0	S	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6	24	
23	1	S	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.3	24
24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0.0	24	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	S	0	1	0.1	24
26	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.0	24
27	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	1	0	0	S	0	0	0	0	2	0.3	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.0	24
HOURLY MAX	1	1	1	1	1	1	1	1	1	1	2	3	3	2	2	3	3	2	1	1	1	1	1	1				
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.6	0.4	0.4	0.2	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

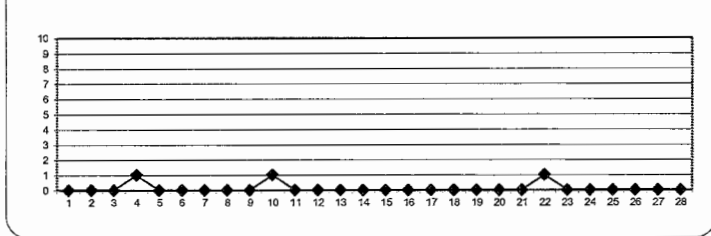
OBJECTIVE LIMIT:

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

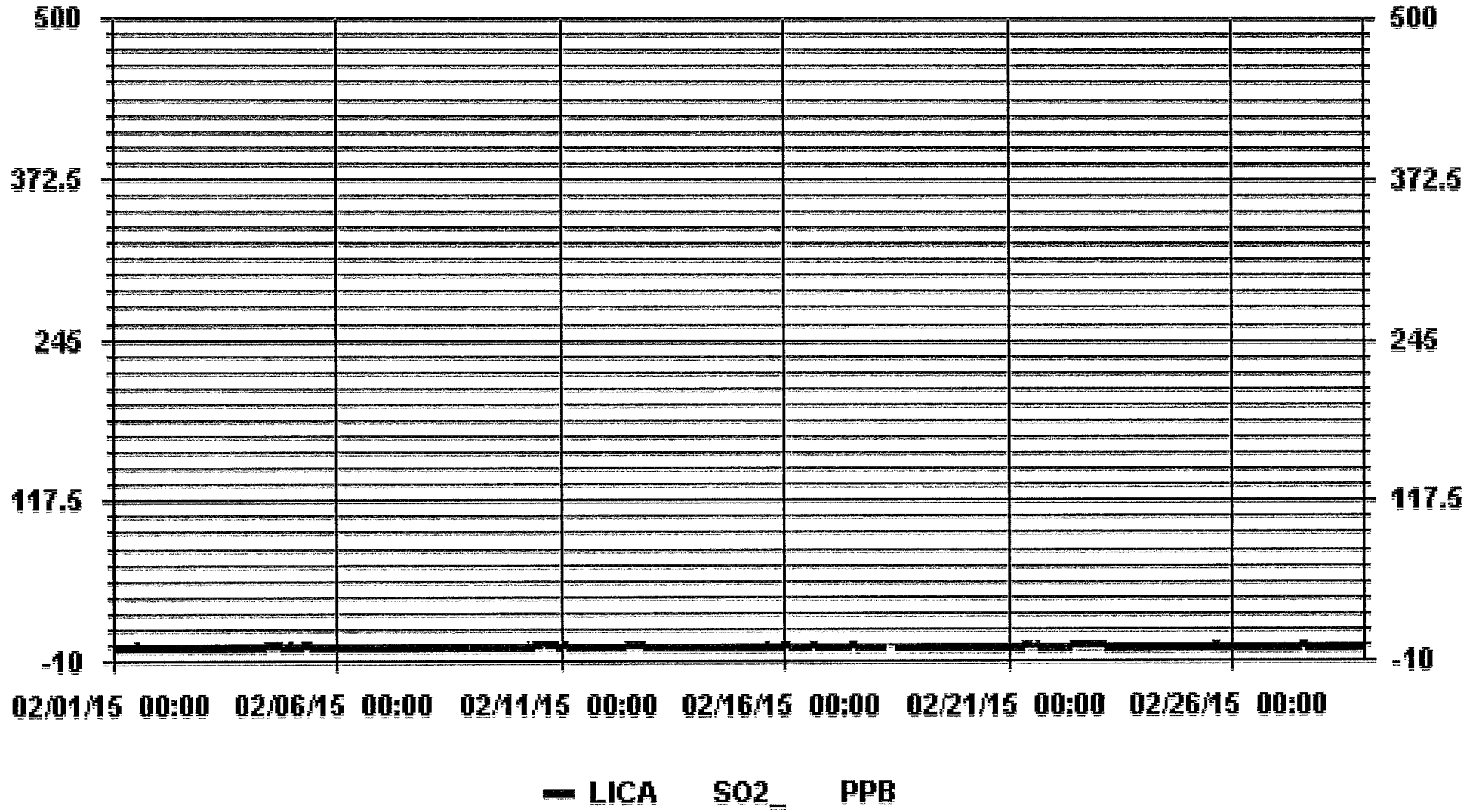
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	107					
MAXIMUM 1-HR AVERAGE:	3	PPB	@ HOUR(S)	VAR	ON DAY(S)	10
MAXIMUM 24-HR AVERAGE:	1.1	PPB			ON DAY(S)	10
					VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	672	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.48		MONTHLY AVERAGE:	0	PPB	

24 HOUR AVERAGES FOR FEBRUARY 2015



### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- 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	24-HOUR	
HOUREND	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.
DAY 1	S	0	0	0	0	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	S	2	0.9	24
2	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	S	1	1	1	0.8	24
3	0	1	0	0	0	0	0	1	1	0	1	0	1	1	1	1	1	1	1	1	0	S	0	0	1	0.5	24
4	0	0	0	1	0	1	1	1	1	2	2	2	2	2	2	3	2	2	1	1	S	1	1	1	3	1.3	24
5	2	1	1	0	1	1	1	2	2	2	1	1	1	1	1	1	1	1	S	1	1	1	1	1	2	1.1	24
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1.0	24
7	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	0	S	0	1	0	0	1	0	1	0.7	24
8	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	0.9	24
9	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1.0	24
10	0	1	1	1	1	1	1	1	1	1	5	5	5	3	S	4	3	3	2	2	2	1	1	1	5	2.0	24
11	1	2	2	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	2	1.1	24
12	1	1	1	1	1	1	1	1	0	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	2	1.0	24
13	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	0	1	1	1.0	24
14	1	0	0	0	1	1	1	1	0	1	S	1	1	0	1	1	0	1	1	1	1	1	0	1	1	0.7	24
15	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
16	1	1	1	1	1	0	0	0	S	1	1	1	1	1	2	2	2	2	1	1	0	0	0	0	2	0.9	24
17	0	0	1	0	0	0	0	S	1	0	1	1	1	2	2	1	1	1	0	1	0	0	0	1	2	0.6	24
18	0	1	1	1	1	1	S	1	C	C	C	C	C	C	C	1	1	1	1	1	1	1	1	1	1	0.9	24
19	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
20	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
21	1	1	1	S	1	1	1	1	2	2	1	1	1	2	3	2	2	2	1	1	1	1	1	1	3	1.3	24
22	0	1	S	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	2	1.1	24
23	1	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	24
24	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1.0	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	S	1	1.0	24
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1.0	24
27	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	2	1	1	1	S	1	0	1	3	1.3	24
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1.0	24
HOURLY MAX	2	2	2	2	1	1	1	2	2	2	5	5	5	3	3	4	3	3	2	2	2	1	1	1			
HOURLY AVG	0.8	0.9	0.9	0.9	0.8	0.8	0.9	1.0	1.0	1.0	1.2	1.2	1.2	1.3	1.3	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.8	0.9			

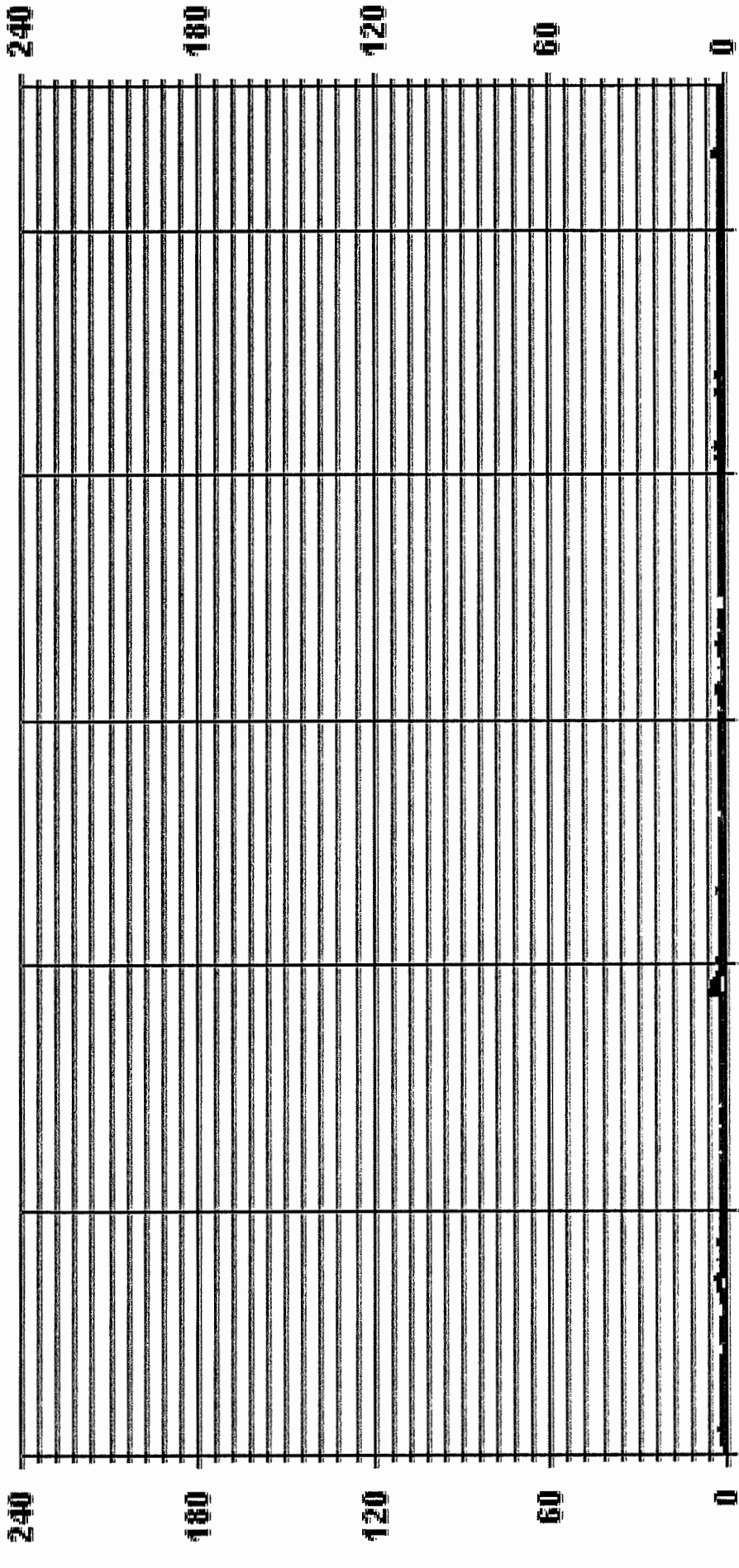
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	569
MAXIMUM INSTANTANEOUS VALUE:	5 PPB @ HOUR(S) VAR ON DAY(S) 10
VAR-VARIOUS	
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	0.55

01 Hour Averages



— LICA SO2MAX PPB

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

February 2015

Distribution By % Of Samples

Logger Id : 01  
 Site Name : LICA  
 Parameter : SO2\_  
 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	
< 20	7.44	5.50	7.11	5.17	10.51	5.33	6.63	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	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	7.44	5.50	7.11	5.17	10.51	5.33	6.63	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	

Calm : .00 %

Total # Operational Hours : 618

Distribution By Samples

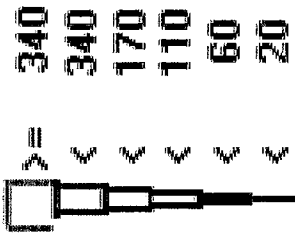
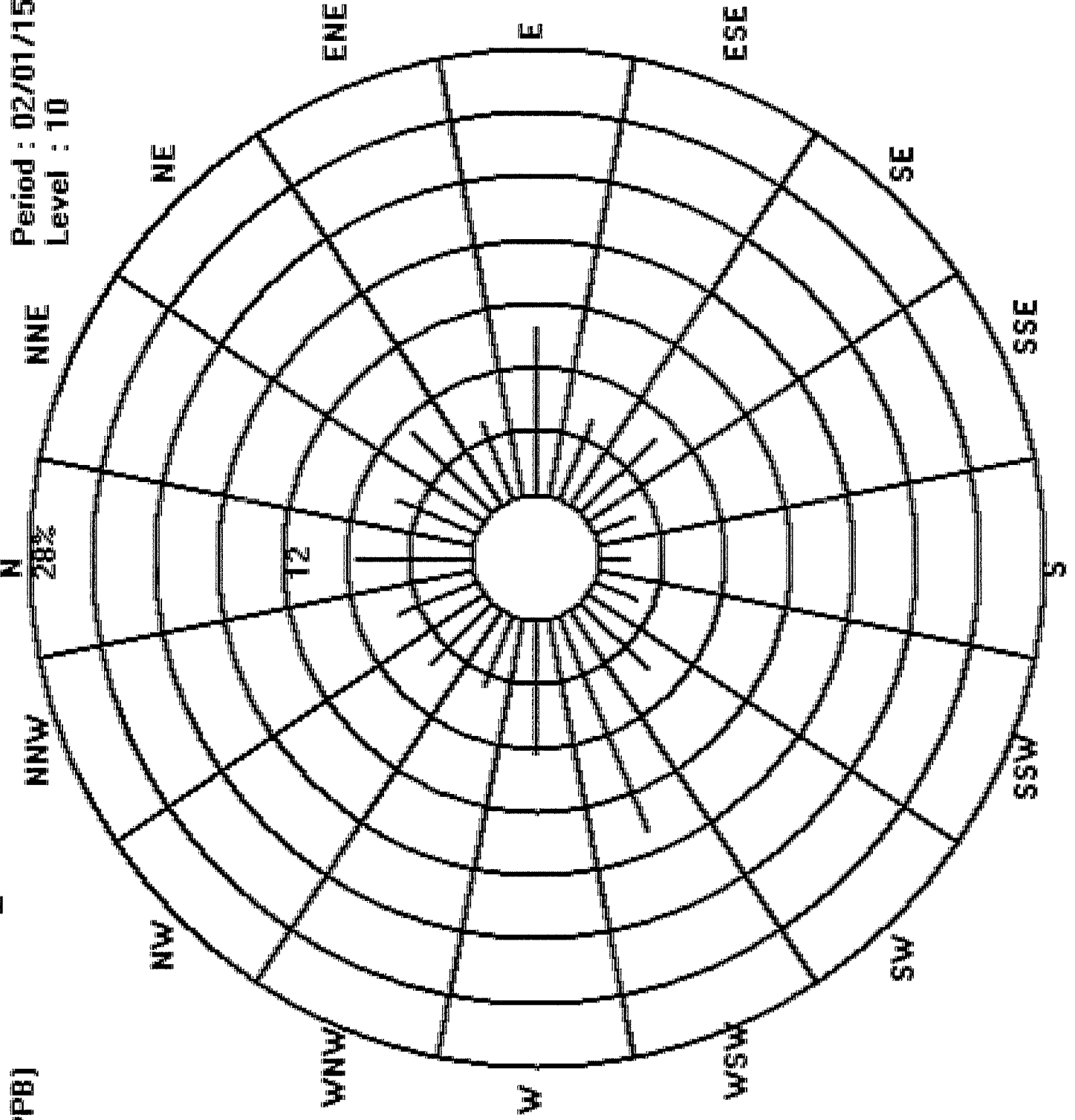
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	46	34	44	32	65	33	41	17	12	18	37	91	52	29	34	33	618
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	46	34	44	32	65	33	41	17	12	18	37	91	52	29	34	33	

Calm : .00 %

Total # Operational Hours : 618

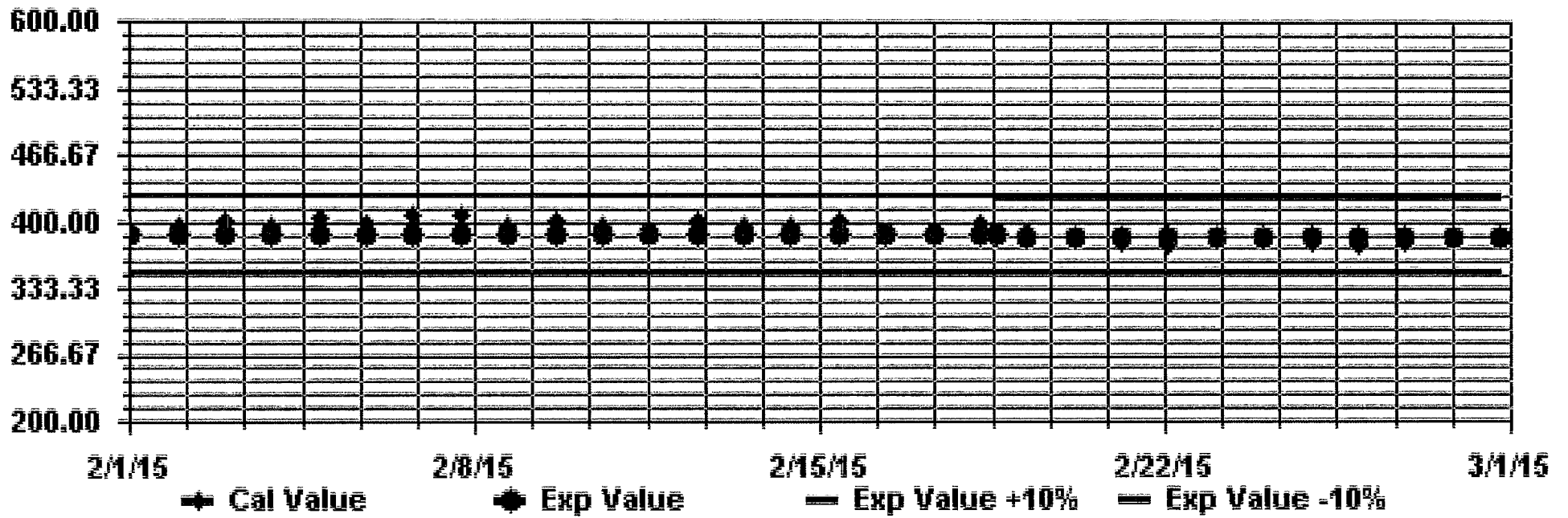
Logger : 01 Parameter : SO2\_

Site : LICA  
Period : 02/01/15-02/28/15  
Level : 10





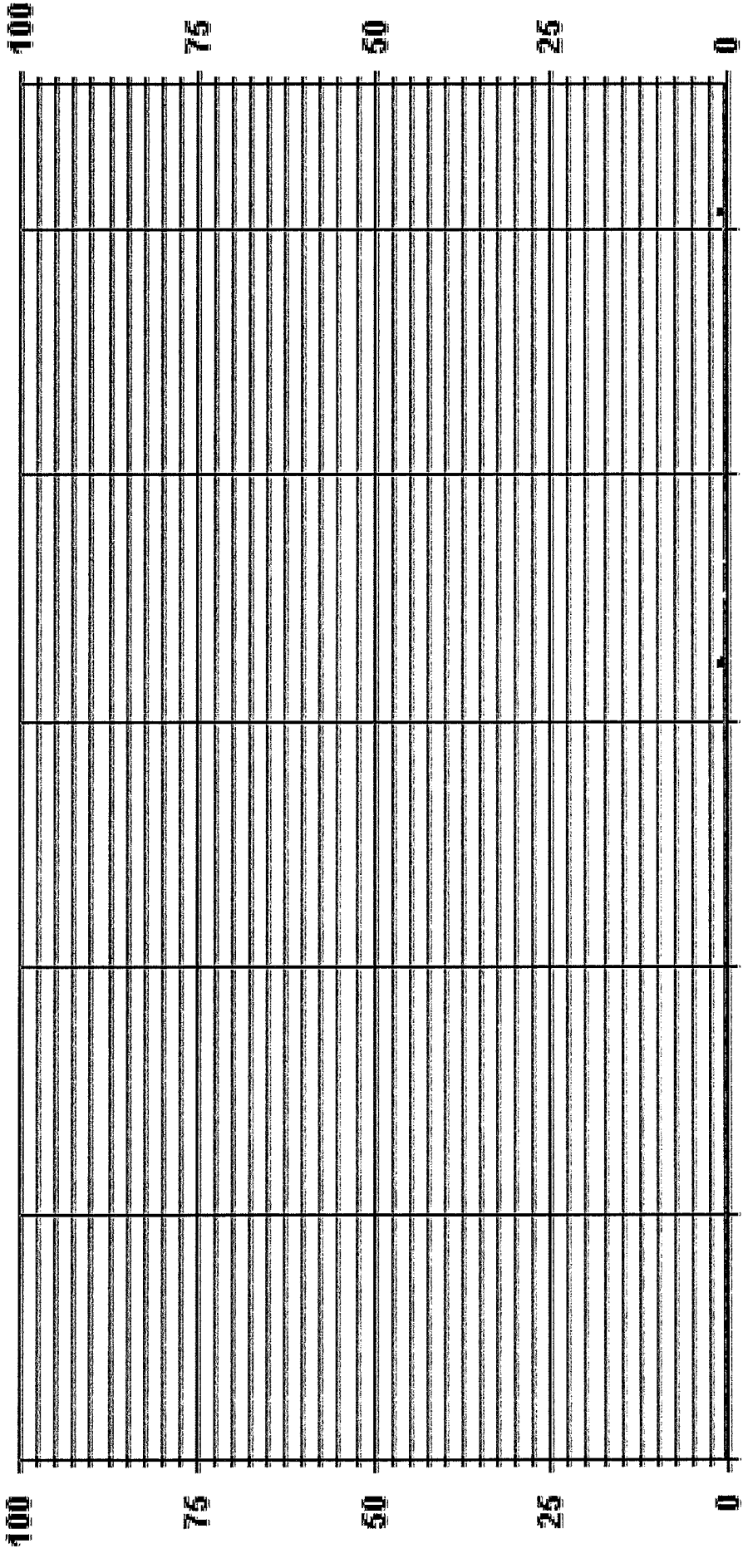
Calibration Graph for Site: LICA Parameter: SO2\_ Sequence: SO2 Phase: SPAN



***TOTAL REDUCED SULPHUR***



01 Hour Averages



— LICA    TRS\_    PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01 - C

TOTAL REDUCED SULPHUR MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.
DAY																											
1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1.0	24
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	S	1	1	0.9	24
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1.0	24
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1.0	24
5	1	1	1	0	1	1	1	0	0	1	1	0	0	1	1	1	0	1	S	1	1	1	1	0	1	0.7	24
6	0	1	0	0	1	1	0	1	0	0	1	0	1	0	1	0	0	0	S	1	1	1	1	0	1	0.4	24
7	0	0	0	0	1	1	0	0	0	0	0	1	1	1	0	0	1	S	1	0	1	0	1	0	1	0.4	24
8	0	0	0	0	1	1	1	1	1	1	0	1	0	1	1	S	0	1	0	1	0	1	1	0	1	0.6	24
9	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	S	1	0	0	0	0	1	1	0	1	0.7	24
10	0	1	0	0	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	0	0	1	0.8	24
11	1	1	1	0	0	1	1	1	1	1	1	1	S	1	0	1	0	0	1	0	0	0	0	0	1	0.6	24
12	0	0	1	1	0	0	1	1	1	1	1	0	S	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24
13	1	1	0	1	0	1	0	1	0	1	0	S	1	1	1	1	1	1	1	0	0	0	1	1	1	0.7	24
14	0	1	1	1	1	1	1	1	1	S	1	1	0	1	0	0	1	0	1	0	1	0	0	0	1	0.7	24
15	0	1	1	1	1	1	0	0	1	S	0	1	1	0	1	0	0	1	1	1	1	1	1	1	1	0.7	24
16	1	1	1	1	1	1	1	1	S	0	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0.8	24
17	1	1	1	1	1	1	1	S	1	1	1	0	1	1	1	0	1	0	1	0	1	1	1	1	1	0.8	24
18	1	1	1	1	1	1	S	1	S	1	1	1	C	C	C	C	C	1	1	1	1	1	1	1	1	1.0	24
19	1	1	1	1	1	S	1	S	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
20	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
21	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
22	1	1	S	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	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
24	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1.0	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	S	1	1.0	24
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1.0	24
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1.0	24
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1.0	24
HOURLY 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		
HOURLY AVG	0.7	0.9	0.8	0.8	0.9	1.0	0.8	0.9	0.8	0.9	0.8	0.9	0.8	1.0	0.9	0.8	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.7			

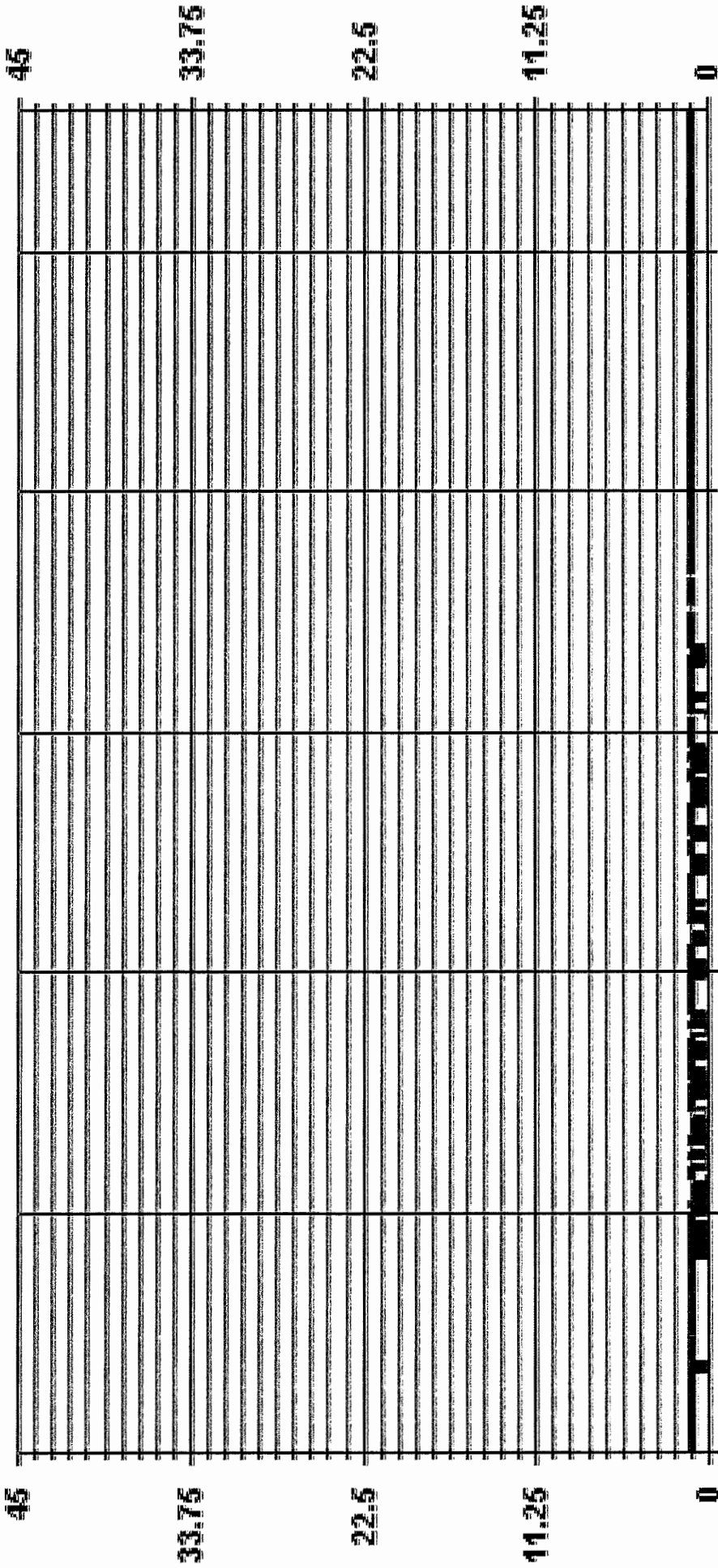
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	531
MAXIMUM INSTANTANEOUS VALUE:	1 PPB @ HOUR(S) VAR ON DAY(S) ALL
VAR-VARIOUS	
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	0.37

**01 Hour Averages**



— LICA TRSMAX PPB

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

February 2015

Distribution By % Of Samples

Logger Id : 01  
 Site Name : LICA  
 Parameter : TRS\_  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	7.43	5.49	7.10	5.16	10.50	5.33	6.78	2.74	1.93	2.90	5.97	14.70	8.40	4.68	5.49	5.33	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	7.43	5.49	7.10	5.16	10.50	5.33	6.78	2.74	1.93	2.90	5.97	14.70	8.40	4.68	5.49	5.33	

Calm : .00 %

Total # Operational Hours : 619

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	46	34	44	32	65	33	42	17	12	18	37	91	52	29	34	33	619
< 10																	
< 50																	
>= 50																	
Totals	46	34	44	32	65	33	42	17	12	18	37	91	52	29	34	33	

Calm : .00 %

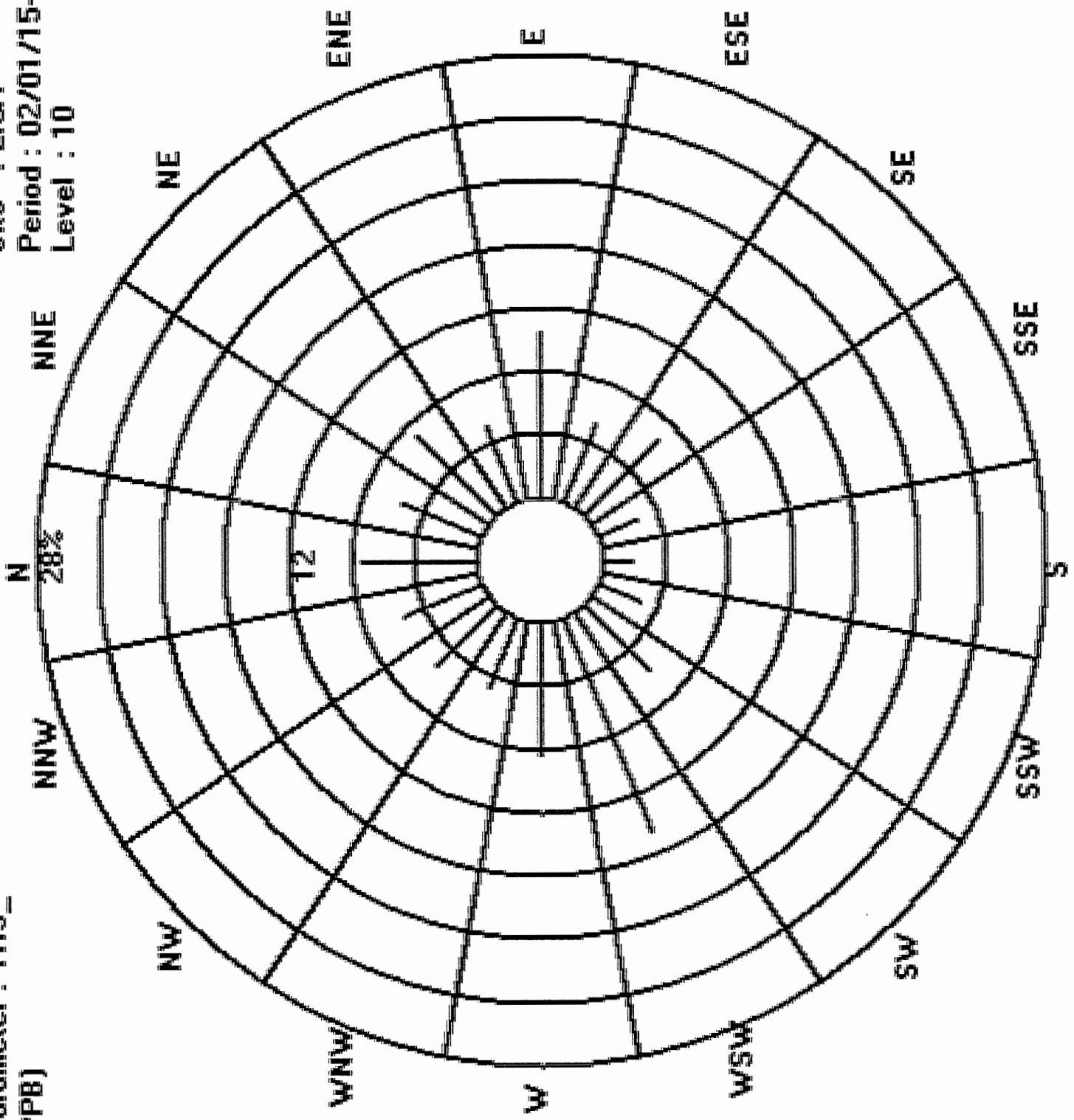
Total # Operational Hours : 619

Logger : 01 Parameter : TRS\_

Class Limits (PPB)

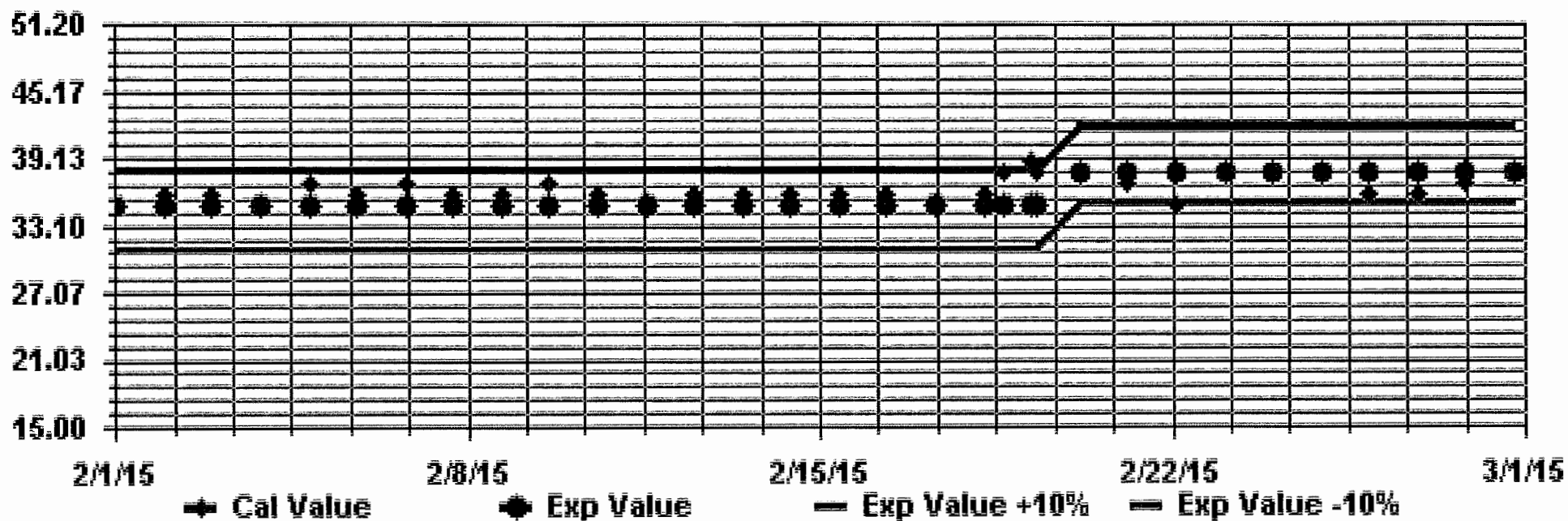


Site : LICA  
Period : 02/01/15-02/28/15  
Level : 10





Calibration Graph for Site: LICA Parameter: TRS\_ Sequence: TR5 Phase: SPAN



***TOTAL HYDROCARBON***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01-C

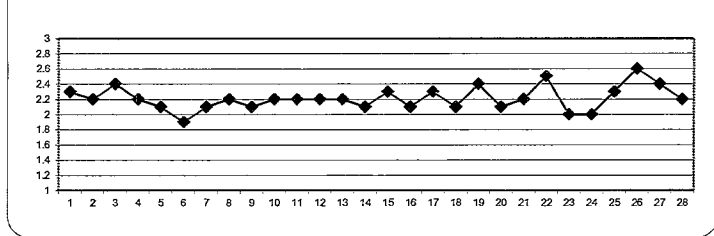
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.		
DAY	1	S	2.5	2.6	2.7	2.5	2.4	2.5	2.6	2.7	2.7	2.6	2.5	2.3	2.2	2.3	2.2	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	5	2.7	2.3	24	
	2	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.3	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	S	2.5	2.5	2.2	24
	3	2.6	2.6	2.6	2.7	2.7	2.7	2.8	2.6	2.4	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.1	2.1	2.3	2.4	2.4	5	2.2	2.2	2.8	2.4	2.4	24	
	4	2.3	2.4	2.3	2.5	2.9	2.7	2.4	2.3	2.2	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	5	2.3	2.3	2.1	2.9	2.2	2.4	24		
	5	2.2	2.1	2.1	2.1	2.4	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	5	1.9	1.9	2.0	2.0	2.4	2.1	24		
	6	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	5	2.0	2.1	2.0	2.1	2.0	2.1	1.9	24		
	7	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	24		
	8	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	24	
	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	2.0	2.0	2.0	5	2.0	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.1	2.1	24	
	10	2.1	2.1	2.1	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	5	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	24	
	11	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.5	2.4	2.4	2.3	2.3	5	1.9	1.9	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.2	24	
	12	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.1	5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.6	2.5	2.5	2.6	2.2	24	
	13	2.6	2.5	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	5	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.6	2.2	2.4	24	
	14	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	5	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.2	2.2	2.3	2.3	2.1	2.4	24	
	15	2.4	2.5	2.4	2.2	2.3	2.4	2.5	2.6	2.7	5	3.0	2.6	2.3	2.1	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	3.0	2.3	2.4	24	
	16	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.1	2.4	24	
	17	2.4	2.7	2.9	3.0	3.1	3.1	3.0	5	2.9	2.9	2.7	2.4	2.1	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	3.1	2.3	2.4	24	
	18	2.1	2.0	2.0	2.0	2.1	1.9	5	2.2	C	C	C	C	C	C	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.1	2.4	24	
	19	2.0	2.0	2.1	2.1	2.1	5	2.2	2.2	2.3	2.4	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.8	2.8	2.5	2.1	2.0	2.1	2.8	2.4	2.4	24		
	20	2.1	2.0	1.9	2.0	5	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.1	2.4	24	
	21	2.3	2.3	2.4	5	2.2	2.2	2.3	2.3	2.3	2.2	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.4	2.4	2.6	2.6	2.2	2.4	24	
	22	3.0	3.1	5	2.5	2.8	3.0	3.1	3.1	3.0	2.5	2.3	2.3	2.3	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.0	1.9	1.9	3.1	2.5	2.4	2.4	24	
	23	1.8	5	2.2	2.4	2.1	2.0	2.1	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.4	2.0	2.0	2.4	24	
	24	5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.1	5	2.2	2.0	2.4	24	
	25	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.6	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.5	5	2.5	2.6	2.3	2.4	2.4	24	
	26	2.5	2.6	2.6	2.7	2.7	2.8	2.9	3.1	3.4	3.4	2.7	2.5	2.4	2.3	2.3	2.2	2.3	2.2	2.2	2.3	2.3	5	2.4	2.5	3.4	2.6	2.4	24	
	27	2.5	2.6	2.6	2.5	2.7	2.9	2.6	3.0	3.3	3.0	2.1	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	5	2.2	2.3	2.3	3.3	2.4	2.4	24		
	28	2.4	2.5	2.5	2.2	2.2	2.2	2.3	2.5	2.4	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	5	2.0	2.0	2.1	2.3	2.5	2.2	2.4	24	
HOURLY MAX		3.0	3.1	2.9	3.0	3.1	3.1	3.1	3.1	3.4	3.4	3.0	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.8	2.8	2.5	2.6	2.5	2.6					
HOURLY AVG		2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.4	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	2.2				

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

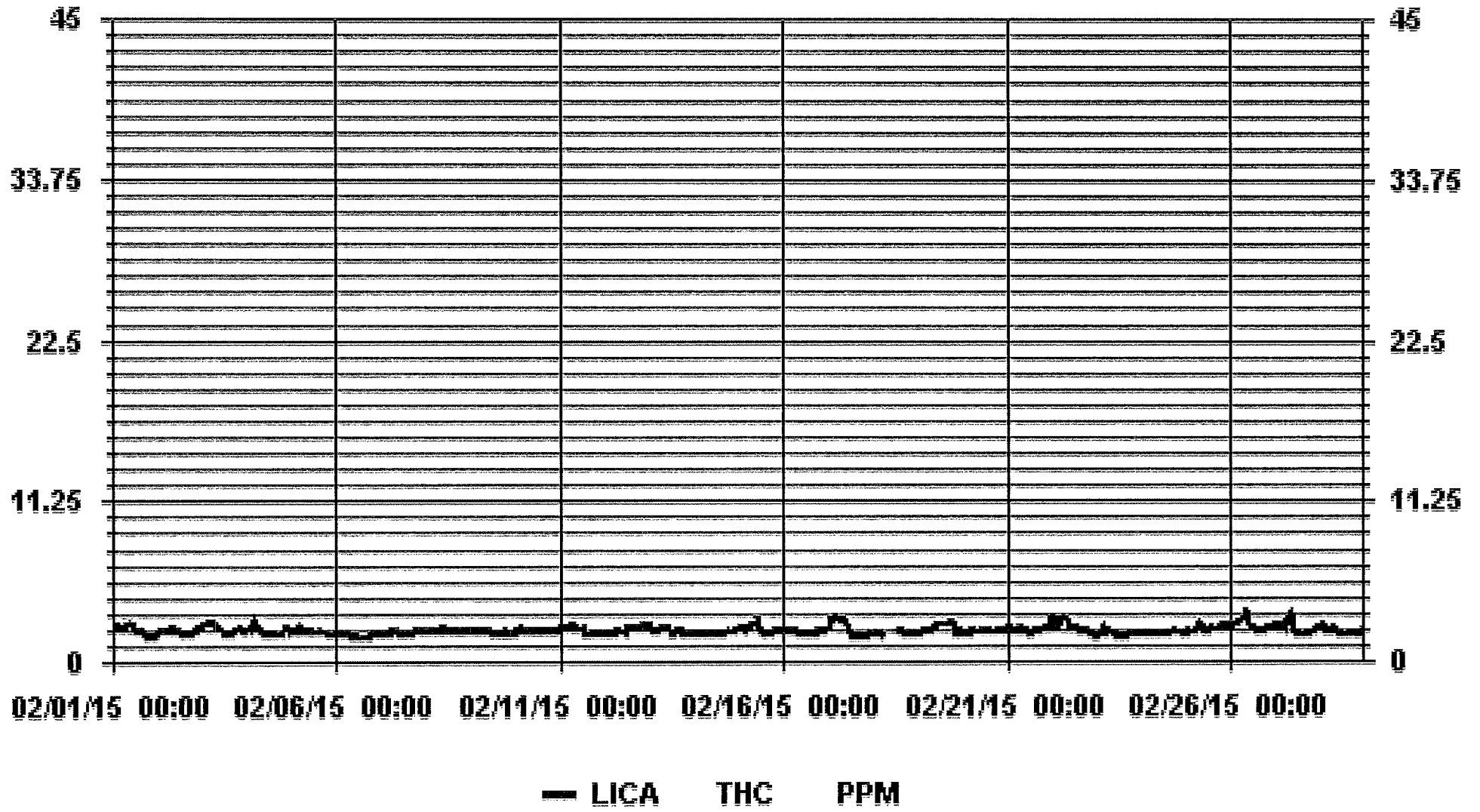
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	636				
MAXIMUM 1-HR AVERAGE:	3.4	PPM @ HOUR(S)	8, 9	ON DAY(S)	26, 26
MAXIMUM 24-HR AVERAGE:	2.6	PPM		ON DAY(S)	26
				VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	672	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.27		MONTHLY AVERAGE:	2.2	PPM

### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- C

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

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	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG.	RDGS.	
DAY																												
1	S	2.7	2.8	2.9	2.7	2.5	2.7	2.7	2.7	2.8	2.8	2.8	2.7	2.6	2.4	2.5	2.4	2.1	2.0	2.0	2.2	1.9	1.9	S	2.9	2.5	24	
2		2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.5	2.6	2.6	2.3	2.5	2.3	2.2	2.1	2.1	2.1	2.3	2.2	2.2	2.3	2.3	S	2.6	2.6	24	
3		2.7	2.7	2.8	2.8	2.8	2.9	2.9	2.5	2.5	2.4	2.3	2.3	2.1	2.1	2.2	2.2	2.2	2.7	2.5	2.5	S	2.3	2.3	2.9	2.5	24	
4		2.6	2.6	2.5	2.8	3.1	4.4	2.6	2.4	2.3	2.1	2.1	2.3	2.1	2.3	2.0	2.2	2.4	2.1	2.0	S	2.4	2.5	2.3	4.4	2.4	24	
5		2.3	2.1	2.2	2.3	2.8	2.3	2.3	2.3	2.4	2.3	2.3	2.4	2.2	2.2	2.2	2.2	2.2	2.3	S	2.0	2.0	2.1	2.0	2.8	2.2	24	
6		2.1	2.0	2.0	2.1	2.2	2.0	2.0	2.0	2.1	1.9	1.9	2.0	1.8	1.8	1.8	2.0	1.8	1.8	S	2.1	2.1	2.1	2.1	2.4	2.0	24	
7		2.9	2.7	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.4	2.1	2.6	2.2	2.1	2.1	S	2.2	2.3	2.2	2.2	2.2	2.2	2.9	2.2	24
8		2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.3	2.4	2.3	S	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.4	2.3	24
9		2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.4	2.2	2.2	2.4	2.1	2.1	2.3	S	2.1	2.3	2.7	2.1	2.2	2.2	2.1	2.1	2.7	2.2	24
10		2.2	2.2	2.2	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.6	2.3	S	2.2	2.2	2.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.7	2.3	24
11		2.4	2.4	2.4	2.5	2.5	2.8	2.6	3.5	2.9	2.7	2.5	2.4	2.4	S	2.5	2.0	2.1	2.1	2.2	2.1	2.1	2.3	2.1	2.1	3.5	2.4	24
12		2.0	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.5	2.2	2.3	2.3	S	2.6	2.5	2.9	2.7	2.5	2.5	2.7	2.6	3.4	2.6	2.6	3.4	2.4	24
13		2.7	2.7	2.4	2.3	2.4	2.4	2.4	2.9	2.4	2.4	2.4	S	2.2	2.1	2.1	2.1	2.5	2.2	2.2	2.1	2.1	2.1	2.1	2.3	2.9	2.3	24
14		2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	S	3.5	2.2	3.6	2.1	2.1	2.2	2.2	2.2	2.3	2.5	2.5	2.3	2.4	3.6	2.3	24
15		2.6	2.7	2.5	2.3	2.5	2.5	2.5	2.7	2.9	S	3.1	2.9	2.5	2.3	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.2	2.2	3.1	2.4	24
16		2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	S	2.1	2.2	2.1	3.6	2.1	2.1	2.1	2.1	2.2	2.4	2.3	2.4	2.3	2.3	2.5	3.6	2.3	24
17		2.8	2.9	3.0	3.2	3.3	3.3	3.2	S	3.2	3.6	3.0	2.6	2.6	2.4	1.9	2.1	2.1	1.9	1.9	1.9	2.0	2.0	2.1	2.2	3.6	2.6	24
18		2.2	2.1	2.1	2.1	2.2	2.1	S	2.3	C	C	C	C	C	2.4	2.3	2.6	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.6	2.2	24
19		2.1	2.1	2.2	2.2	2.3	S	2.4	2.3	2.4	2.6	2.7	2.8	2.7	2.8	2.8	3.1	2.9	2.9	2.9	2.9	2.2	2.1	2.1	3.1	2.5	24	
20		2.2	2.1	2.0	2.1	S	2.2	2.2	2.2	2.5	2.2	2.2	2.6	2.3	2.2	2.3	2.3	2.4	2.2	2.3	2.4	2.4	2.4	2.3	2.4	2.6	2.3	24
21		2.4	2.4	2.6	S	2.3	2.3	2.5	2.6	2.4	2.3	2.2	2.2	2.3	2.2	2.3	2.5	2.3	2.3	2.8	2.9	2.5	2.5	3.1	3.1	2.4	24	
22		3.9	3.6	S	2.8	3.1	3.2	3.3	3.3	3.2	3.0	3.2	2.6	2.5	2.6	2.5	2.3	2.5	2.3	2.3	2.2	2.2	2.1	2.0	2.0	3.9	2.7	24
23		1.9	S	2.4	2.6	2.3	2.1	2.1	2.2	2.1	2.1	2.0	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.0	1.9	1.9	2.0	2.0	2.6	2.0	24	
24		S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.4	2.1	2.1	2.1	2.5	2.7	2.5	2.1	2.1	2.2	2.4	2.2	S	2.7	2.2	24
25		2.1	2.2	2.2	2.2	2.3	2.6	2.7	3.5	2.6	3.1	2.4	2.4	2.4	3.0	2.4	2.5	3.1	2.5	2.5	3.0	2.8	2.6	S	2.6	3.5	2.6	24
26		2.6	2.7	2.7	2.9	3.0	3.0	3.2	3.3	3.8	3.9	3.1	2.8	2.5	2.4	2.4	2.6	2.4	2.3	2.3	2.4	2.5	S	2.5	2.6	3.9	2.8	24
27		2.7	2.8	2.8	2.7	3.0	3.1	2.8	3.3	3.5	3.3	2.3	2.1	2.0	2.0	2.0	2.0	3.0	2.2	2.2	S	2.4	2.4	2.4	3.5	2.6	24	
28		2.6	3.3	2.6	2.4	2.3	2.3	2.4	2.6	2.5	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.2	S	2.1	2.1	2.3	2.4	3.3	2.3	24
HOURLY MAX		3.9	3.6	3.0	3.2	3.3	4.4	3.3	3.5	3.8	3.9	3.2	3.5	3.6	3.6	2.8	2.9	3.1	3.0	2.9	3.0	2.9	3.4	2.6	3.1			
HOURLY AVG		2.4	2.5	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.5	2.4	2.4	2.4	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3			

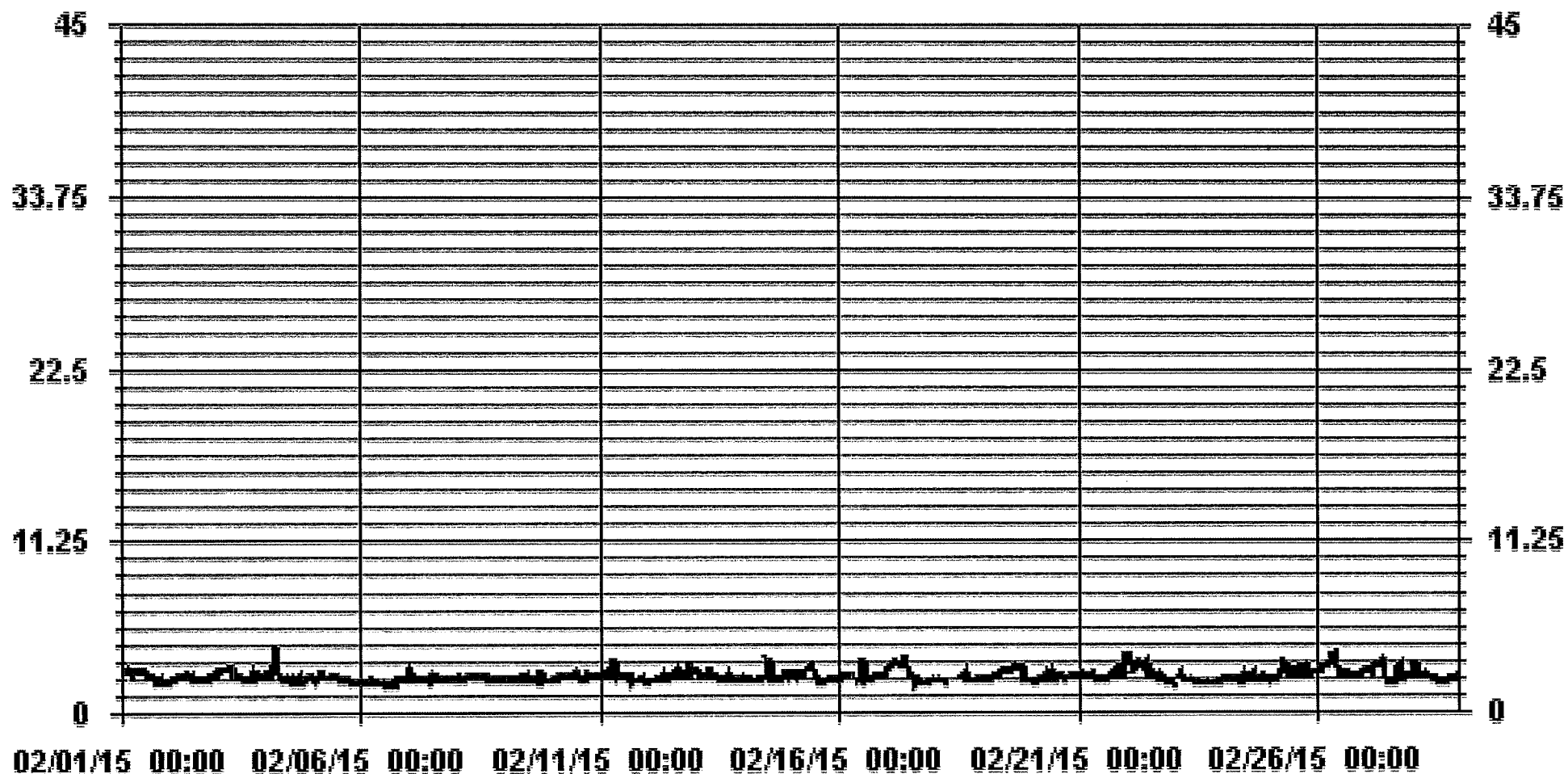
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	636				
MAXIMUM INSTANTANEOUS VALUE:	4.4	PPM	@ HOUR(S)	5	ON DAY(S) 4
				VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	672	HRS
MONTHLY CALIBRATION TIME:	6	HRS			
STANDARD DEVIATION:	0.36				

### 01 Hour Averages



— LICA THC MAX PPM

LICA  
 THC / WD Joint Frequency Distribution (Percent)

February 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	7.28	5.50	6.95	5.01	10.19	5.33	6.47	2.42	1.94	2.91	5.98	14.56	7.44	4.36	5.50	5.33	97.24
< 10.0	.16	.00	.16	.16	.32	.00	.16	.32	.00	.00	.00	.16	.97	.32	.00	.00	2.75
< 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	7.44	5.50	7.11	5.17	10.51	5.33	6.63	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	

Calm : .00 %

Total # Operational Hours : 618

Distribution By Samples

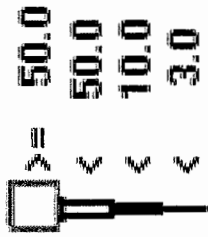
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	45	34	43	31	63	33	40	15	12	18	37	90	46	27	34	33	601
< 10.0	1		1	1	2		1	2				1	6	2			17
< 50.0																	
>= 50.0																	
Totals	46	34	44	32	65	33	41	17	12	18	37	91	52	29	34	33	

Calm : .00 %

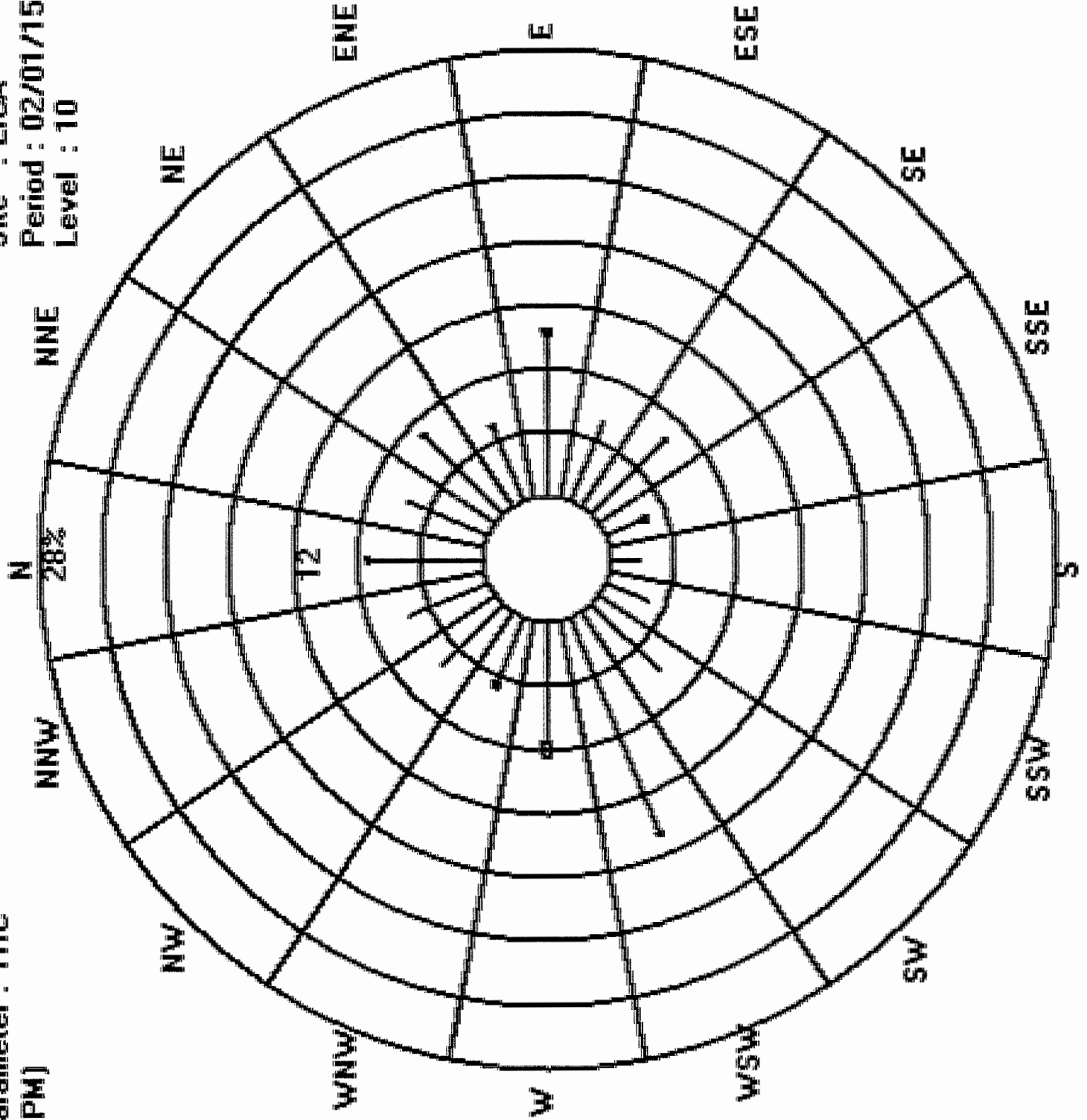
Total # Operational Hours : 618

Logger : 01 Parameter : THC

Class Limits (PPM)

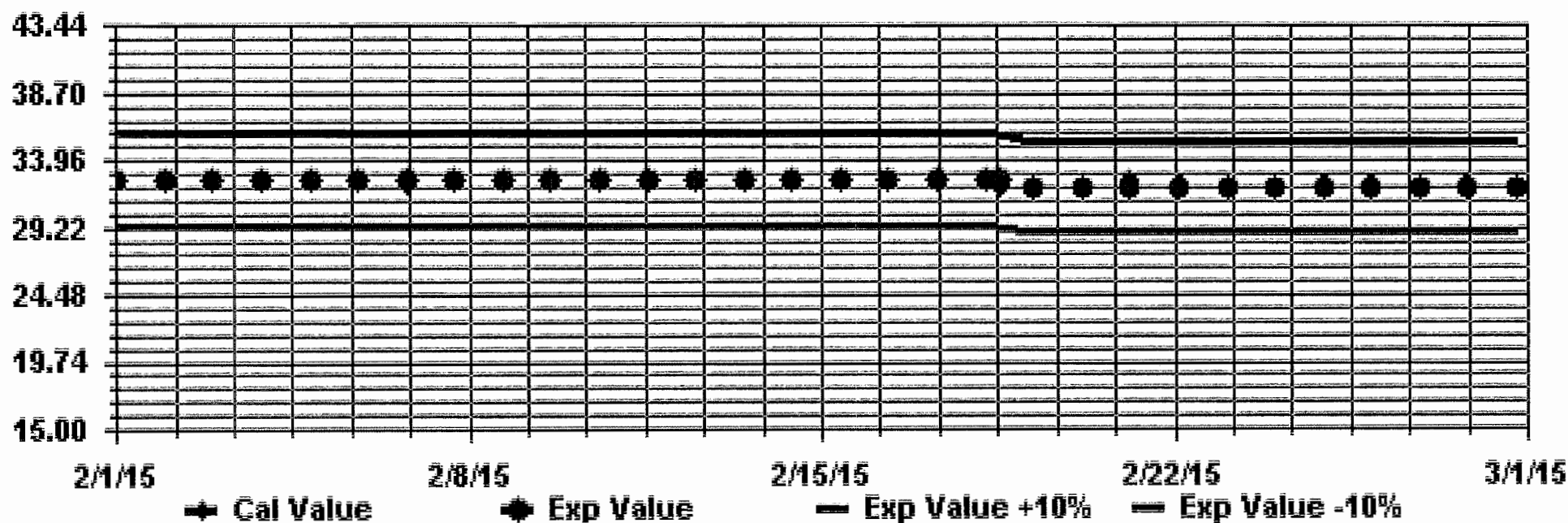


Site : LICA  
Period : 02/01/15-02/28/15  
Level : 10





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



***OXIDES OF NITROGEN***



OXIDES OF NITROGEN (NOx) hourly averages in ppb

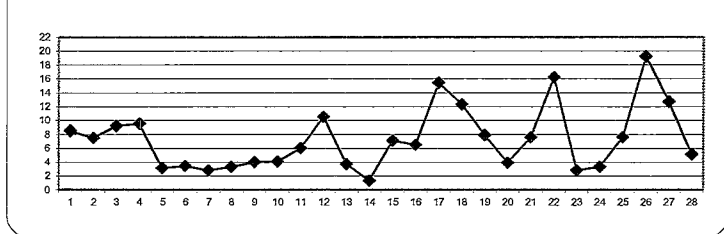
MST

HOURS START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOURS END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG	RDGS.	
DAY																												
1	S	19.9	19.1	18.3	4.9	5.7	8.1	8.5	6.3	6.1	7.5	9.2	10.1	11.6	11	12.6	9.6	5.6	4.6	2.1	1.7	1.5	2.2	S	19.9	8.5	24	
2	4.3	3	3.4	4	6.1	5.6	12	12.6	19.8	13.3	7.1	7.1	5.5	4.9	4.7	4	3.9	6.8	6.5	6.5	10.3	8.1	S	12.4	19.8	7.5	24	
3	15	15.6	14.1	14.1	11.6	12.3	14.9	11.8	11	10.3	6.9	5.2	3.5	2.1	2.7	2.6	3.5	3.9	7.4	15.1	10.2	S	9.2	8.1	15.6	9.2	24	
4	6.9	7.5	7.6	9.2	11.3	7.7	7	7.6	6.9	5.7	6	7.7	8.2	8.8	10.7	13.1	14.5	16.1	13.8	15	S	17.4	5.6	4.9	17.4	9.5	24	
5	4.9	1.7	2	2.8	3.7	3.5	2.8	3.2	3.2	3.9	3.8	3.4	3.1	2.1	2.3	4.5	2.6	3	S	3.4	2.6	2.5	2.2	4.9	3.1	24		
6	2.5	2.4	2.7	2.8	3.3	3.3	3.2	3.3	4.4	5.1	3.5	3.6	3.6	3.5	3.3	4.9	4.3	3.8	S	3.3	3.1	2.7	3	2.8	5.1	3.4	24	
7	2.9	2.5	2.5	3	3.2	5.1	3.4	4.4	3.5	3.1	2	1.9	2	1.1	1.1	2.4	2.5	S	4.9	4.2	4.2	1.6	2.3	1.7	5.1	2.8	24	
8	1	2.4	2.6	3	1.6	2.1	2.6	3.1	2.5	4.2	4.2	3.1	2.4	2.4	3	3.9	S	4.2	3.6	3.5	3.8	7	4	4.6	7	3.3	24	
9	2.2	2	2.4	2.2	2.9	5.5	5.1	4.5	5.2	4.8	5.6	4.3	4	4.4	4	S	4.8	5.3	4.3	5.2	4.7	4	2.5	1.5	5.6	4.0	24	
10	1.5	1.3	1.2	4.1	4.7	6	4.6	3.9	3.9	3.1	5.6	8.7	7.9	6.4	S	5.8	5.6	6.6	4	2	2.3	1.3	1.7	1.8	8.7	4.1	24	
11	2.3	4.6	4.7	3.7	5.7	14.1	13.1	23	23	8.3	4.4	3	2.3	S	3.5	2.4	1.8	2.1	2.3	2.3	2.7	2.9	2.8	2.5	23	6.0	24	
12	2.7	3.2	3.7	3.6	3	3.2	6	14.2	18.3	8.7	9.4	9.4	S	10.4	9.9	10.6	11.1	11.8	12.9	20.4	19.4	22.7	14.8	11.3	22.7	10.5	24	
13	12.6	10.2	4.1	4	4	6.1	5.3	4.9	4.2	4.4	3.1	S	1.5	1.3	2.2	3.2	3.2	2.7	1.9	2	0.9	1.1	1	0.7	12.6	3.7	24	
14	0.7	0.6	0.7	0.3	0	0	0.2	0.1	0.5	0.7	S	1.4	1	0.7	0.8	0.7	1.5	1.8	1.7	2	3.4	3.6	4	3.5	4	1.3	24	
15	6	7.6	7.8	5.7	8.1	11.3	12.4	14.2	14.3	S	20.1	12.8	9.2	6.1	3.8	2.5	2.7	2.2	2.7	2.4	2.8	2.3	2.6	2.7	20.1	7.1	24	
16	2.4	2.7	2.7	3.2	1.9	2.2	2.3	0.5	S	2.9	3.4	3.6	3	3.2	4.8	5.7	5.1	6.1	9	14.5	15.9	17.1	18.4	19.7	19.7	6.5	24	
17	14.2	14.9	16.8	16.9	19.5	17.2	21.4	S	29.1	23.4	20.6	15.2	9.4	8.8	7	6.1	6.1	8.5	12.4	12.1	11.4	15.5	22.3	26.3	29.1	15.4	24	
18	29.6	30.2	17.6	14.6	14.5	14.3	S	5.5	C	C	C	C	C	C	C	C	C	C	9.7	7.8	7.1	5.6	6.1	4.6	5.1	30.2	12.3	24
19	3.7	4.2	3.2	3.2	3.8	S	4.9	4.7	4.2	5.9	7.9	8.5	9.1	9.5	11.5	12.3	12.4	14.7	13.8	15.3	12.4	6.1	5	5.2	15.3	7.9	24	
20	5.1	3.4	2.1	2	S	2.7	2.1	2.6	1.8	2.2	2.1	1.4	1.2	2.3	1.9	2.6	3.6	4.4	S	8.2	14.7	11.8	3	3.4	14.7	3.9	24	
21	3.5	3.8	5.8	S	6	5.7	9.4	17.2	12.8	6.6	3.6	3.2	2.9	3.8	5.2	6.2	7	8.8	8.1	19.4	7.9	9.6	8	10.1	19.4	7.6	24	
22	17.8	22.1	S	26	27.2	36.3	40.5	42.3	43.2	23.1	6.7	7.3	6	10.6	11.3	5.3	5.7	6	5.8	5.5	5.5	5.8	5.7	6.2	43.2	16.2	24	
23	5.8	S	8.4	8.8	4.1	2.6	2.2	3.8	3.9	3	1.3	1.6	1.6	1	0.9	1.7	2.2	1.5	1.9	1.9	1.2	1.6	1.4	1	8.8	2.8	24	
24	S	1.5	2	2	2.1	3.4	3.3	2.9	4.9	4.3	3.3	4.3	4.2	3.9	3.7	5.2	5	7.5	3.3	1.6	1.8	2	1.1	5	7.5	3.3	24	
25	1.1	1.3	2.4	3.6	2.4	3.4	11.5	19.2	17.1	3.1	1.7	1.6	2.7	3	3.8	5.3	7.8	10.6	13.8	17.8	16.6	12.9	S	11.2	19.2	7.6	24	
26	10.8	13	13.6	13.4	19.2	18.9	29.7	44.5	77.3	103.4	10	6.5	3.5	2.4	2.8	2.7	2.7	2.6	3.9	6.1	16.8	S	14.8	24.1	103.4	19.2	24	
27	26	29.8	24.3	19.6	10.4	11.8	12.7	21.5	32.1	23.6	5.4	2.8	2.3	4.4	6.3	5.5	4.5	5.2	6.2	7	S	8.7	11.1	11.6	32.1	12.7	24	
28	6.2	6.2	6.8	5.8	5.7	5.6	6.3	9.8	8.6	6.1	5.4	3.9	3	2.3	2.1	2	1.9	1.8	2.3	S	6.1	5	4.7	9.9	9.9	5.1	24	
HOURLY MAX	29.6	30.2	24.3	26	27.2	36.3	40.5	44.5	77.3	103.4	20.6	15.2	10.1	11.6	11.5	13.1	14.5	16.1	13.8	20.4	19.4	22.7	22.3	26.3				
HOURLY AVG	7.4	8.1	6.8	7.4	7.1	8.0	9.1	10.9	13.9	11.1	6.2	5.4	4.4	4.7	4.8	5.1	5.2	6.0	6.2	7.8	7.3	7.0	6.1	7.5				

STATUS FLAG CODES

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

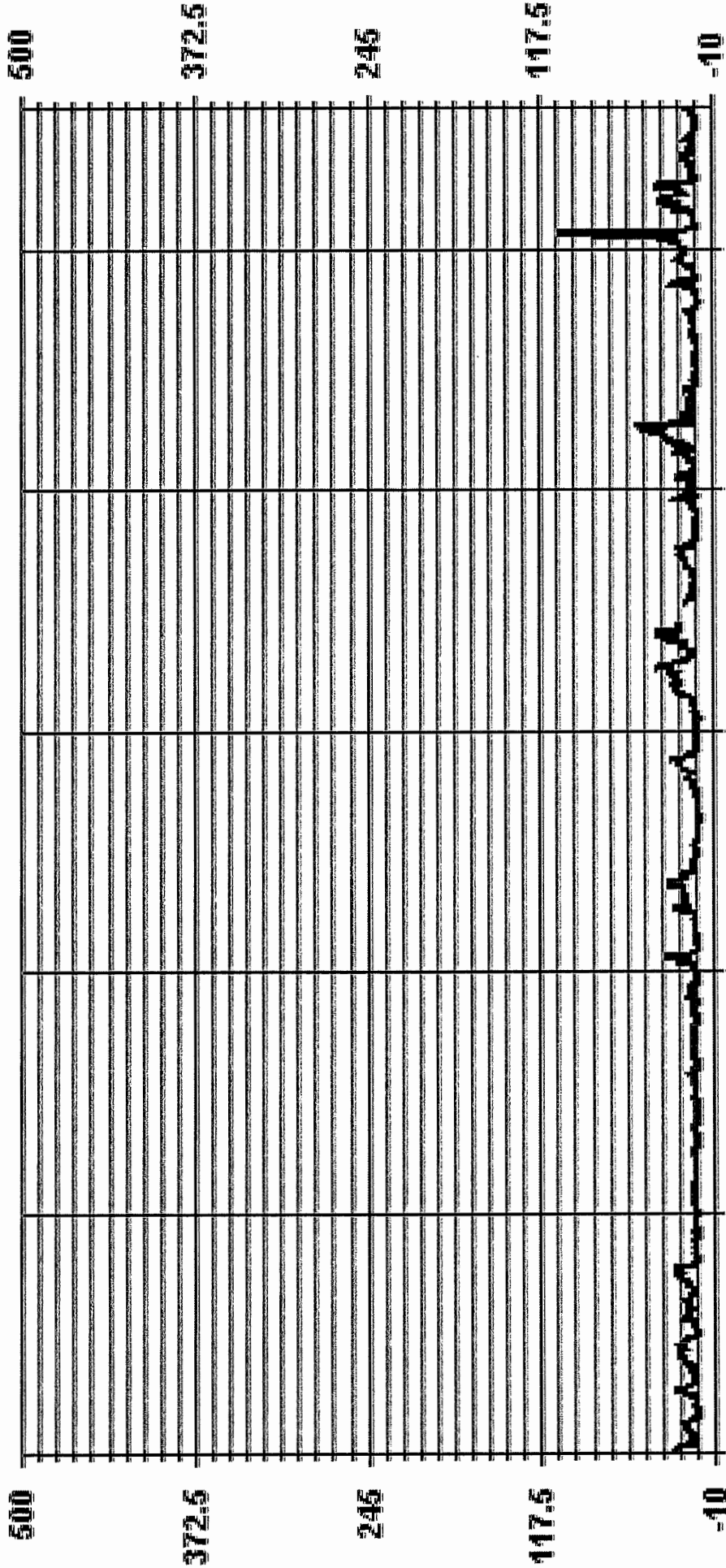
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	631			
MAXIMUM 1-HR AVERAGE:	103.4	PPB	@ HOUR(S)	9
MAXIMUM 24-HR AVERAGE:	19.2	PPB	ON DAY(S)	26
			ON DAY(S)	26
			VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	672
MONTHLY CALIBRATION TIME:	9	HRS	AMD OPERATION UPTIME:	100.0
				%
STANDARD DEVIATION:	8.09		MONTHLY AVERAGE:	7.2
				PPB

# 01 Hour Averages



— LICA    - - - NOX    . . . PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01 - C

OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY	24-HOUR
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG.	RDGS.
DAY 1	S	22.5	21.5	24	14.1	8	11	10.5	9.5	8	8	10	11.5	13	14	18.5	12	7.1	5.5	6.6	5.5	3	4.5	S	24	11.3	24
2	6.5	3.5	5	7	7.6	7	20	22	32	34	9.5	9.5	10	9	6.5	7.5	6	19.5	8.1	10	14.5	13	5	25	34	12.7	24
3	17.5	20.5	19.5	18.5	15.5	16	29.5	19.5	14.5	13.5	12.5	8.1	5.5	3	3	4	4	4.5	16.5	28	13	5	14	13	29.5	13.6	24
4	8.1	11	16.5	17.5	13.5	11.5	10	8.5	9.5	6.5	7	9.5	9.5	10.5	12	16.5	32	32	17.5	18.1	S	26.6	7.7	7.2	32	13.9	24
5	9.6	3.1	3.1	5.6	4.6	5.6	4.1	4.6	4.6	7.7	13.6	6.6	7.7	4.1	4.1	33.6	5.1	6.1	6.6	S	5.5	5	4.5	3.5	33.6	6.9	24
6	4	5.5	5.5	5.5	7.6	7.6	6	6.5	7	7	5.5	6.5	6	4.5	6.5	7.6	7.1	S	5	5	5.4	3.9	5.4	4.4	7.6	6.0	24
7	4.4	4.4	3.9	5.9	4.9	14.4	6.4	6.5	7	15.4	5	8.4	8.9	2.9	2.9	5	5	S	7.5	5.9	6	4.4	3.9	3.4	15.4	6.2	24
8	2.9	8.9	10.9	7	2.9	3.9	7.9	5	4.4	6	7.5	5.4	7.9	5.4	4.9	17.9	S	16.4	7.5	5.9	8.9	12.9	7	13.4	17.9	7.9	24
9	3.9	4.4	3.9	3.9	6.5	9.4	7.5	6	10.4	8.9	9.9	18.9	10.4	12.9	11.9	S	7.9	9.4	7.9	25.4	9.9	8.4	3.9	2.9	25.4	8.9	24
10	2.9	3.9	1.9	5.4	6.4	8.4	5.4	5.9	5.4	4.4	7.5	9.9	10.9	7.9	S	6.7	6.2	8.1	5.6	2.6	3.1	2.6	2.6	3.1	10.9	5.5	24
11	5.1	6.2	7.6	5.6	9.1	40.1	19.6	160.1	38.1	21.2	8.6	10.1	5.6	S	8	5.4	3.4	2.9	2.9	3.4	3.4	3.9	3.4	3.4	160.1	16.4	24
12	3.4	5.9	4.5	4.4	3.4	3.4	12.4	23.9	25.4	19.4	15.4	14.9	S	14.9	13.9	14.9	16.4	16.9	15.4	60.9	25.4	35.4	18.5	17.4	60.9	16.8	24
13	15.4	17.4	6	5.9	6.9	8.4	10.4	10.4	6.9	7.4	8.4	S	5.1	2.1	4.1	11.6	6.6	4.6	7.6	4.2	2.6	2.1	2.1	1.6	17.4	6.9	24
14	2.1	1.6	2.1	1.1	0.2	0.6	1.6	1.1	2.6	4.2	S	3.6	3.1	5.6	1.6	2.1	6.2	2.6	2.1	2.1	33.1	22.1	7.1	5.2	33.1	4.9	24
15	10.1	10.1	10.1	7.1	10.1	14.6	15.1	16.6	18.1	S	23.4	17.4	11.4	9	5	3	3	3	4.5	4.4	5.9	6.5	3.5	3.5	23.4	9.4	24
16	3.4	4.9	4.9	4	3.4	4.9	7.9	1.9	S	3.9	5.9	26.4	6.4	9.4	7	6.4	6	16.4	14.4	24.4	29.9	22.4	24.4	23.4	29.9	11.4	24
17	21.4	18.9	21.9	22.9	29.4	28.4	29.9	S	34.5	26	26.5	19.5	12	13	8.5	8.5	10	13.5	18.5	60	17.5	23.5	29.5	35.5	60	23.0	24
18	36	37	29.5	19.6	18.5	19	S	9.4	C	C	C	C	C	C	C	C	C	C	11.9	20.4	7.9	33.4	7.4	7.9	37	19.8	24
19	5.9	7.9	3.9	4.9	7	S	8.9	8.4	5.4	7.4	9.4	11.9	12.9	12.9	14	16.5	16	58	15.5	18.5	15	10	8.5	8	58	12.5	24
20	6	5	5.5	4	5	5	3.5	5	7	3.5	20.9	6.9	3.5	10.5	3.5	7.5	5	6.5	7	35	23	23.5	4.5	5	35	9.0	24
21	5.5	6.4	9.9	S	7.1	9.1	16.1	26.1	15.6	11.1	4.6	5.6	4.1	5.7	9.1	13.1	17.7	20.6	13.1	72.6	16.6	14.6	16.1	15.1	72.6	14.6	24
22	28.1	29.6	S	42.1	38.6	47.1	45.1	51.1	54.1	60.1	9.6	10.1	6.6	18.2	22.2	6.2	6.2	9.2	7.2	8.2	6.2	9.2	7.2	8.7	60.1	23.1	24
23	8.2	S	10.9	10.9	5.9	3.4	3.9	5.4	5.4	6.4	1.9	2.4	2.4	4.4	1.4	3.4	3.4	2.4	2.4	3.4	2.4	11.4	2.9	2.9	11.4	4.7	24
24	S	4.7	5.2	3.2	3.2	9.2	6.7	5.7	7.7	6.2	5.2	7.7	10.7	19.6	7.2	9.2	9.7	25.2	8.7	4.2	11.2	7.1	2.7	S	25.2	8.2	24
25	2.2	2.7	4.7	12.7	4.7	13.6	34.1	41.1	48.6	7.6	5.1	4.2	7.1	13.1	7.6	13.1	12.1	13.6	28.1	25.6	21.1	20.1	S	16.1	48.6	15.6	24
26	15.1	19.6	19.1	26.6	45.6	27.1	38.6	58.1	106.6	161.1	12.6	11.1	5.1	5.1	4.1	4.1	4.2	3.1	5.1	9.1	29.6	S	33.1	32.6	161.1	29.4	24
27	32.2	39.1	36.1	27.6	15.6	17.6	16.1	28.6	40.1	31.1	10.1	15.2	4.7	6.2	12.2	11.7	15.7	8.7	9.7	10.7	S	13	18	34	40.1	19.7	24
28	10.5	15.5	8.5	8	14	7	8.5	13	12	7	8.1	5.1	3.6	4.1	3.1	2.6	3.1	2.6	7.6	S	10	10.5	11.5	12.5	15.5	8.2	24
HOURLY MAX	36	39.1	36.1	42.1	45.6	47.1	45.1	160.1	106.6	161.1	26.5	26.4	12.9	19.6	22.2	33.6	32	58	28.1	72.6	33.1	35.4	33.1	35.5			
HOURLY AVG	10.4	11.9	10.4	11.5	11.3	13.0	14.3	20.8	20.5	19.0	10.1	10.2	7.4	8.7	7.6	9.9	8.9	12.3	9.8	18.3	12.8	13.4	9.8	11.9			

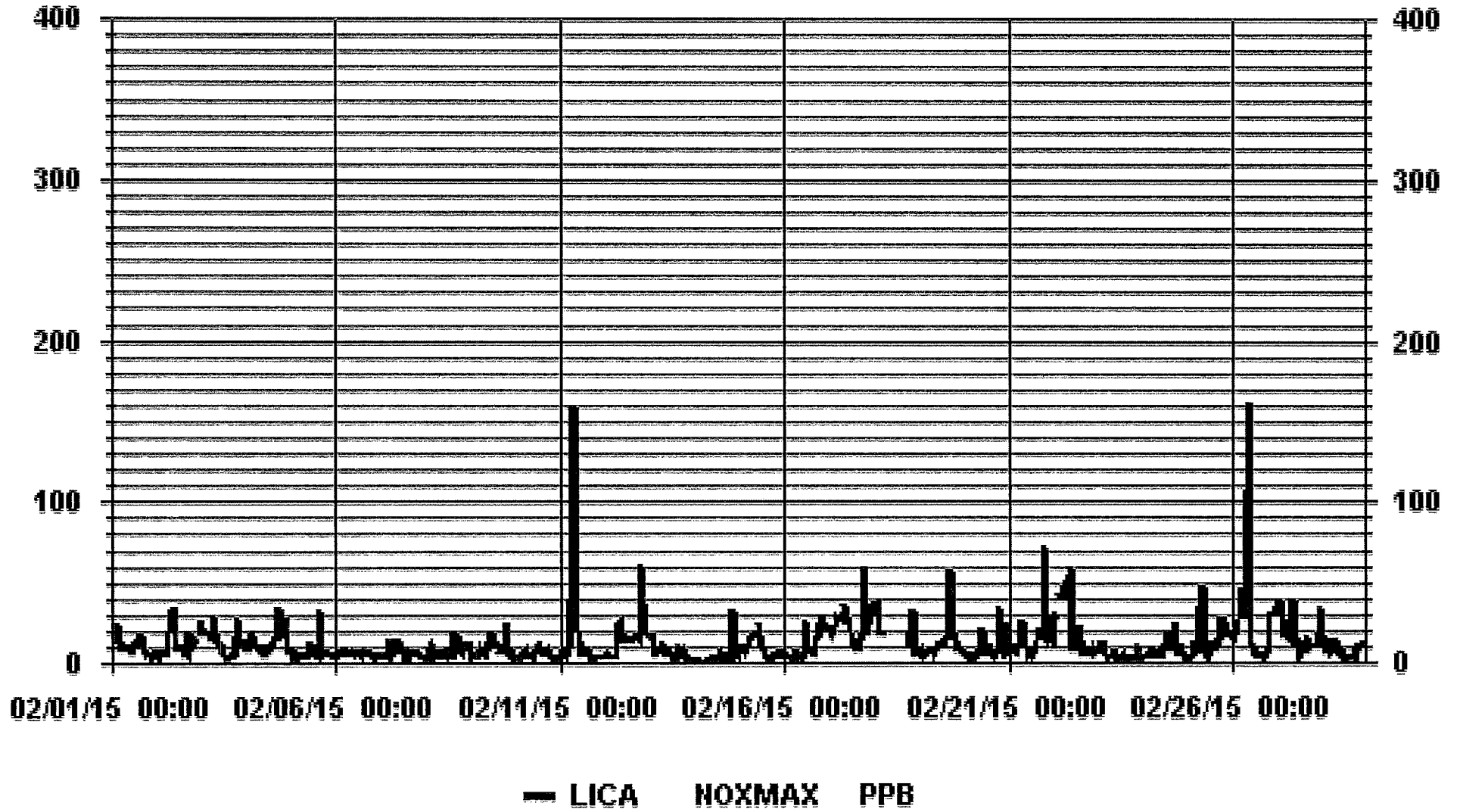
STATUS FLAG CODES

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:	632
MAXIMUM INSTANTANEOUS VALUE:	161.1 PPB @ HOUR(S) 9 ON DAY(S) 26
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	10 HRS
STANDARD DEVIATION:	13.81
OPERATIONAL TIME:	672 HRS

### 01 Hour Averages



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

February 2015

Distribution By % Of Samples

Logger Id : 01  
Site Name : LICA  
Parameter : NOX\_  
Units : PPB

Wind Parameter : WD  
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	7.44	5.50	6.95	5.17	10.51	5.33	6.47	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	99.67
< 110.0	.00	.00	.16	.00	.00	.00	.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.32
< 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	7.44	5.50	7.11	5.17	10.51	5.33	6.63	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	

Calm : .00 %

Total # Operational Hours : 618

Distribution By Samples





Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	46	34	43	32	65	33	40	17	12	18	37	91	52	29	34	33	616
< 110.0			1				1										2
< 210.0																	
>= 210.0																	
Totals	46	34	44	32	65	33	41	17	12	18	37	91	52	29	34	33	

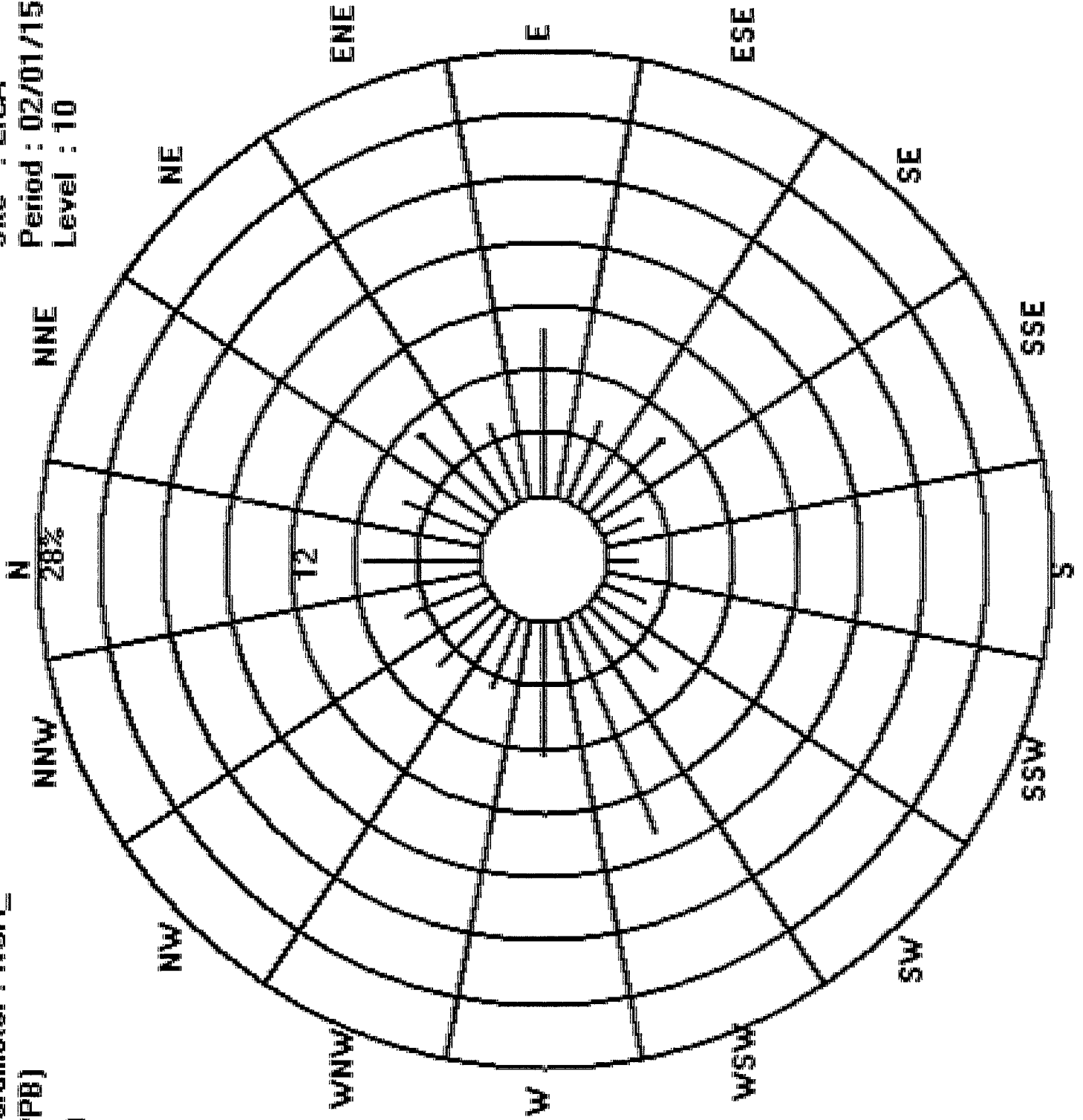
Calm : .00 %

Total # Operational Hours : 618

Site : LICA  
Period : 02/01/15-02/28/15  
Level : 10

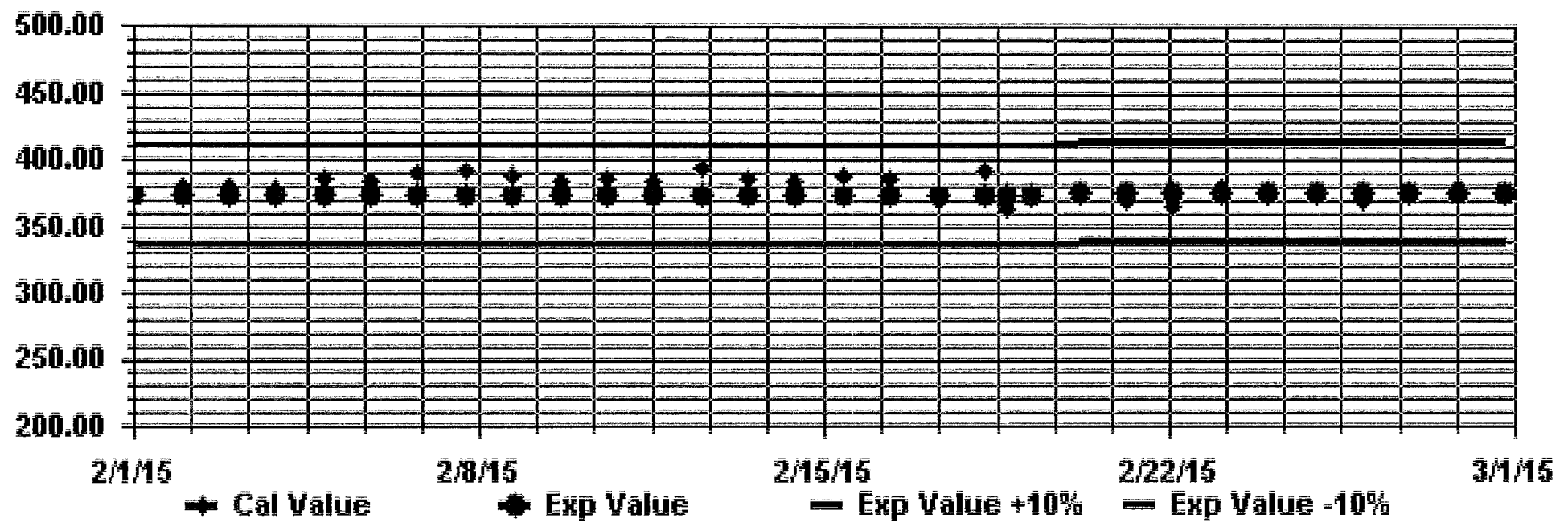
Logger : 01 Parameter : NDX\_  
Class Limits (PPB)

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





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



***NITRIC OXIDES***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- C

NITRIC OXIDE (NO) hourly averages in ppb

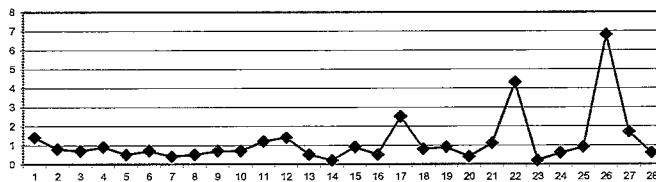
MST

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.	RDGS.	
DAY 1	S	1.7	0.9	0.8	0.1	0.1	0	0	0.5	1.5	2.9	4.1	4.6	4.9	3.9	3.3	1.4	0.2	0.1	0.2	0.1	0	0.1	S	4.9	1.4	24	
2	0	0	0	0.1	0.1	0	0.6	1	3	3.4	1.9	1.8	1.3	1.1	0.9	0.7	0.2	1	0.1	0.3	0.3	0.4	S	1.1	3.4	0.8	24	
3	0.1	1	1	0.7	0.2	0.5	1	0.6	1.4	2.5	2.1	1.7	0.9	0.4	0.4	0.5	0.2	0	0.2	0.5	0	S	0	0	2.5	0.7	24	
4	0	0.1	0.5	0.5	0.2	0.2	0.1	0.1	0.4	0.5	0.9	1.9	2.5	2.9	3.1	3	1.7	0.7	0.6	0.6	S	0.8	0	0	3.1	0.9	24	
5	0	0	0	0.1	0	0	0	0.1	0.3	0.8	1	1.1	1.1	0.7	0.6	1	0.6	0.7	0.7	S	0.7	0.7	0.4	0.5	1.1	0.5	24	
6	0.6	0.5	0.7	0.7	0.7	0.7	0.5	0.7	0.9	1	0.9	0.9	1.1	1.2	0.9	1.2	0.9	0.6	S	0.6	0.6	0.3	0.5	0.5	1.2	0.7	24	
7	0.5	0.3	0.5	0.5	0.5	0.8	0.4	0.5	0.6	0.9	0.5	1.1	0.5	0.2	0.2	0.6	0.3	S	0.4	0.3	0.3	0	0.3	0	1.1	0.4	24	
8	0	0.2	0.2	0.1	0	0	0.1	0	0	0.7	1.3	1	0.9	0.7	1	1.3	S	0.5	0.4	0.3	0.3	0.6	0.4	0.4	1.3	0.5	24	
9	0.1	0.1	0.2	0.1	0.3	0.9	0.6	0.4	0.7	0.9	1.9	1.6	1.3	1.4	1	S	0.7	0.9	0.6	1.2	0.5	0.4	0.1	0	1.9	0.7	24	
10	0	0	0	0	0	0.1	0	0	0.3	0.8	2.2	4.2	3.7	2.7	S	1.8	0.7	0.1	0.1	0	0	0	0	0	4.2	0.7	24	
11	0.1	0.3	0.2	0.1	0.4	1.5	0.6	7.7	6.8	3.4	2.6	1.4	1.2	S	1.1	0.5	0.1	0	0	0	0	0.2	0	0	7.7	1.2	24	
12	0	0	0	0	0	0	0.1	0.7	3.5	2.5	3.7	3.7	S	4	2.9	2.4	1.2	0.4	0.2	3	0.9	1.9	0.4	0.4	4	1.4	24	
13	0.5	0.8	0.2	0.5	0.4	0.6	0.4	0.8	0.7	1	0.9	S	0.5	0.4	0.8	1.1	0.8	0.2	0.2	0.2	0.1	0.1	0.2	0.1	1.1	0.5	24	
14	0.1	0.1	0.1	0	0	0	0	0	0.1	0.3	S	0.5	0.5	0.4	0.2	0	0.2	0	0	0	1.1	0.3	0	0	1.1	0.2	24	
15	0.1	0.1	0	0.1	0.3	0.3	0.2	0.8	2.4	S	6.6	4.4	2.9	1.7	0.6	0.1	0	0	0.1	0	0.1	0	0	0	0	6.6	0.9	24
16	0	0.1	0	0	0	0.2	0.2	0	S	0.5	0.9	1.1	1.1	1.2	1.4	1.3	0.7	0.2	0.2	0.2	0.8	0.3	0.8	1	1.4	0.5	24	
17	0.8	0.6	0.9	0.9	1.3	0.8	1.2	S	9.8	9	8.6	6.1	3.2	3.3	2.6	1.7	0.9	0.4	0	2.3	0.1	0.4	1.4	1.6	9.8	2.5	24	
18	2.2	2.4	1.1	0.7	0.7	1.2	S	0.3	C	C	C	C	C	C	C	C	C	0.9	0.4	0.6	0.2	0.7	0.1	0.2	2.4	0.8	24	
19	0	0.1	0	0	0	S	0	0	0.3	1.1	1.8	2.3	2.5	2.4	2.5	2.3	1.4	1.3	0.3	0.5	0.3	0.3	0.2	0.2	2.5	0.9	24	
20	0	0	0	0.2	S	0.3	0.1	0.2	0.4	0.4	0.7	0.5	0.3	0.8	0.5	0.5	0.3	0.2	0.9	0.5	0.7	0.1	0	0	0.9	0.4	24	
21	0	0	0	S	0.1	0	0.6	2.9	2.9	2.2	1.3	1.2	1.1	1.5	1.9	2	1.4	0.7	0.1	4.7	0.2	0.2	0.3	0.3	4.7	1.1	24	
22	0.7	0.7	S	2.6	2.5	8.7	12.4	15.4	22.4	11.7	2.8	3.2	2.5	4.7	4.6	1.5	0.9	0.3	0	0	0	0	0.1	0.1	22.4	4.3	24	
23	0.1	S	0.3	0.3	0	0	0	0.2	0.6	0.7	0.4	0.4	0.5	0.2	0	0.3	0.1	0	0	0	0	0.1	0	0.1	0.1	0.7	0.2	24
24	S	0.1	0.2	0.1	0.1	0.5	0.2	0.3	0.7	0.7	0.5	0.9	1	1.1	1.1	1.4	1.1	1.6	0.8	0.3	0.3	0.2	0.1	S	1.6	0.6	24	
25	0.1	0.1	0.2	0.5	0.2	0.3	0.5	2.2	S	1	0.7	0.5	1	1.1	1.3	1.6	1.8	0.8	0.4	0.5	0.4	0.3	S	0.2	5	0.9	24	
26	0.3	0.3	0.4	0.6	1.5	1	3.9	17.6	48.7	68.9	4	2.7	1.1	0.7	0.8	0.6	0.4	0	0.1	0.1	0.5	S	0.8	0.7	68.9	6.8	24	
27	1.1	2.3	0.8	0.4	0.3	0.4	0.5	2	9.3	7.9	1.5	0.9	0.8	1.6	2.4	1.7	1	0.5	0.4	0.2	S	0.1	0.2	1.7	9.3	1.7	24	
28	0.1	0.3	0.4	0.5	0.3	0.2	0.5	0.9	1.5	1.4	1.8	1.3	0.9	0.7	0.5	0.4	0.2	0	S	0.2	0.5	0.1	0.6	1.8	0.6	24		
HOURLY MAX	2.2	2.4	1.1	2.6	2.5	8.7	12.4	17.6	48.7	68.9	8.6	6.1	4.6	4.9	4.6	3.3	1.8	1.6	0.8	4.7	1.1	1.9	1.4	1.7				
HOURLY AVG	0.3	0.5	0.3	0.4	0.4	0.7	0.9	2.1	4.7	4.8	2.1	1.9	1.5	1.6	1.4	1.3	0.7	0.5	0.2	0.7	0.3	0.4	0.3	0.4				

STATUS FLAG CODES

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

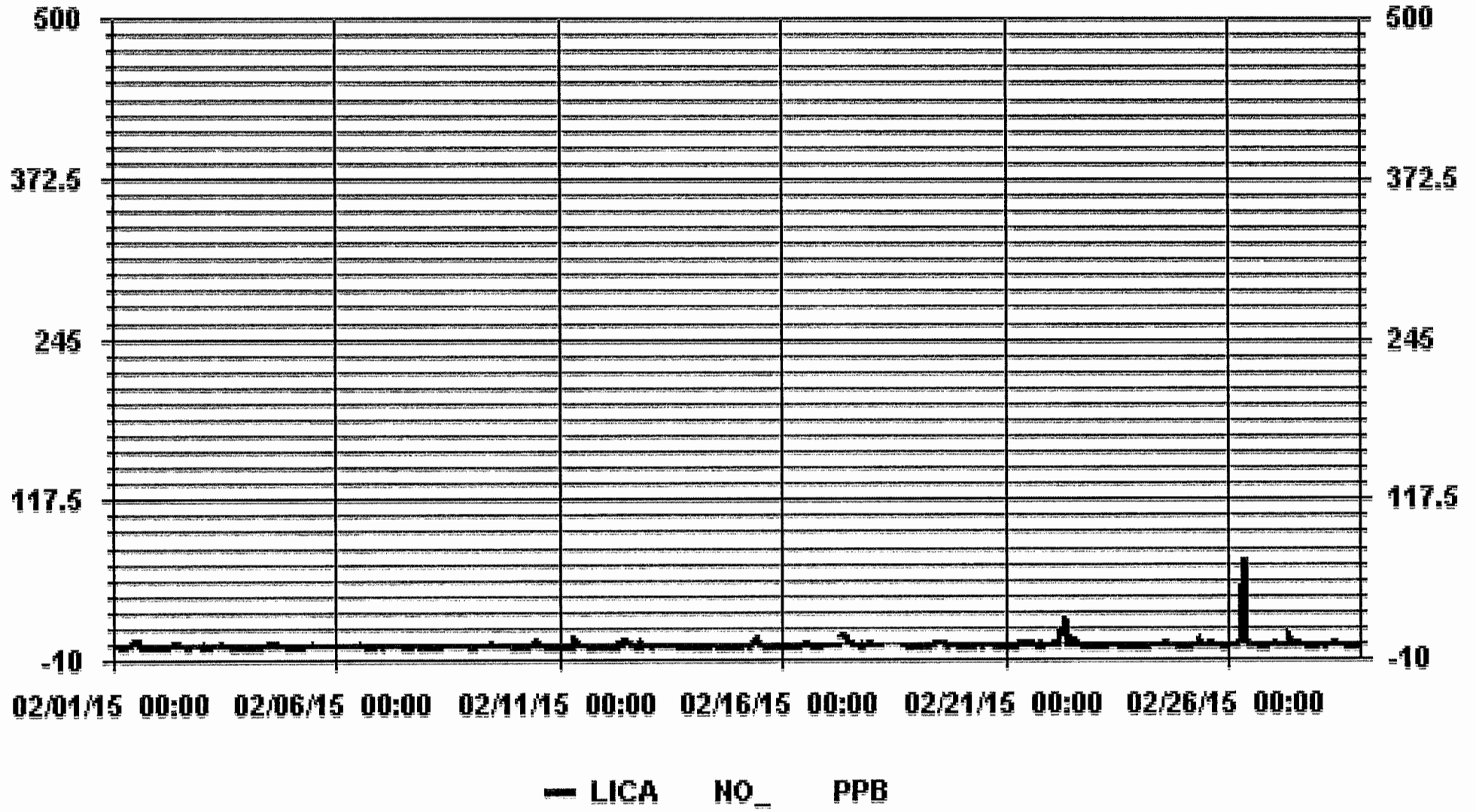
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	527		
MAXIMUM 1-HR AVERAGE:	68.9 PPB	@ HOUR(S)	9 ON DAY(S) 26
MAXIMUM 24-HR AVERAGE:	6.8 PPB		ON DAY(S) 26
			VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS	OPERATIONAL TIME:	672 HRS
MONTHLY CALIBRATION TIME:	9 HRS	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	3.80	MONTHLY AVERAGE:	1.2 PPB

### 01 Hour Averages





NITRIC OXIDE 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	0:00	DAILY MAX.	24-HOUR AVG.	RDGS.
1	S	2.9	1.9	2.9	0.4	0.5	0.9	0.9	1.9	2.4	3.4	5.4	5.9	5.4	4.9	2.4	0.4	0.4	1.9	0.9	0.4	0.9	S	5.9	2.4	24		
2	0.4	0	0.9	3.4	1.4	0	3.4	5.4	9.4	14.9	3.9	2.9	3.4	3.4	1.9	2.4	1.9	11.9	1.4	1.9	2.9	3.9	S	11.9	14.9	4.0	24	
3	2.4	4.4	4.9	2.9	1.9	2.4	8.9	3.9	2.9	4.4	3.9	3.9	1.9	0.9	0.9	0.5	0.5	1.9	3.4	0.4	S	0.5	0.9	8.9	2.6	24		
4	0.5	0.9	3.9	4.4	0.9	1.4	1.4	0.9	1.4	1.4	2.9	3.4	3.4	3.4	3.9	5.4	11.9	11.9	1.9	1.9	S	4.4	0	0.9	11.9	3.1	24	
5	0.9	0	0.4	0.9	0.5	0.5	0.9	0.9	0.9	3.4	2.9	3.4	4.4	1.4	1.9	3.4	2.4	2.9	2.4	S	1.9	2.4	1.4	1.4	4.4	1.8	24	
6	1.9	1.9	2.4	1.9	3.4	3.4	0.9	2.4	2.4	1.9	1.4	1.9	3.9	1.9	2.9	2.4	3.4	1.4	S	1.9	2.4	0.9	2.4	1.9	3.9	2.2	24	
7	1.9	0.9	1.4	1.4	1.4	3.9	1.9	1.4	2.4	9.9	2.9	16.9	1.9	0.9	0.9	1.9	1.4	S	1.4	1.4	0.9	0.9	5.9	0	16.9	2.8	24	
8	0	2.4	3.9	1.4	0.4	0.4	1.9	0	0.9	1.4	2.4	2.4	3.9	2.4	2.9	9.4	S	4.9	2.4	1.4	2.4	2.9	1.9	3.4	9.4	2.4	24	
9	0.9	0.9	0.9	0.9	0.9	4.4	2.4	1.9	1.9	2.4	14.4	12.4	5.4	2.9	4.4	S	1.9	5.9	2.4	18.4	2.4	3.4	0.9	1.4	18.4	4.1	24	
10	0.9	1.4	0	0.4	0.9	0.9	0.5	0.4	0.9	1.4	3.4	4.9	5.4	3.4	S	2.4	1.4	0.4	0.9	0.5	0.4	0	0	0.5	5.4	1.4	24	
11	0.5	0.9	0.9	0.9	1.4	10.4	2.9	161.5	16.9	12.9	22.9	4.9	4.4	S	3.9	3.4	0.9	0.9	0.5	0.5	0.9	7	0.4	0	161.5	11.3	24	
12	0	0.5	0.5	0.5	0	0	0.9	3.9	4.9	7.4	6.9	6.4	S	6.4	4.4	6.5	2.9	4.9	1.9	42.9	2.9	14.4	2.4	2.9	42.9	5.4	24	
13	1.9	3.9	1.4	2.4	1.4	1.4	2.4	4.4	1.9	2.9	6.5	S	0.9	0.9	2.4	6.4	6.9	0.9	2.9	0.9	0.4	0.4	0.9	0.4	6.9	2.4	24	
14	0.4	0.9	0.9	0.4	0	0	0.5	0.5	0.9	7.4	S	1.9	3.9	4.4	0.4	2.4	4.4	0	0.4	0	34.9	8.4	0.4	0.4	34.9	3.2	24	
15	1.9	0.9	0.4	0.9	1.4	2.4	1.9	3.4	4.9	S	8.9	5.4	3.9	4	1	0.5	0.5	0.5	2	0.9	1.9	2	0.5	0.5	8.9	2.2	24	
16	0.4	1.4	1.4	0.4	0.4	1.4	1.9	0.4	S	0.9	2.4	5.4	3.4	5.4	2.4	1.9	1.4	2.4	1.9	2.4	6.4	1.4	3.9	4.9	6.4	2.4	24	
17	3.4	1.9	5.4	4.9	4.9	3.9	4.4	S	12.9	11.4	11.9	8.9	4.9	4.9	116	2.9	4.4	1.9	0.9	65.9	1.9	2.4	5.9	7.4	116	12.8	24	
18	6.9	5.9	5.4	2.4	1.9	3.4	S	1.4	C	C	C	C	C	C	C	C	C	C	C	1.4	17.4	2.4	25.5	1.4	1.4	25.5	5.9	24
19	1.4	1.9	0.4	0.4	0.9	S	0.4	1.9	0.4	1.9	2.9	3.9	3.9	3.9	3.9	8	3	36.5	0.9	3	2.5	2	2	2.5	36.5	3.8	24	
20	0.5	0.9	2	2	S	1	1	2	14.9	1.4	8.5	7.4	1.5	4	1	3.5	1.4	0.9	1	19.4	5.5	2	0.9	0.5	19.4	3.6	24	
21	0.5	0.4	0.4	S	1.4	0.5	3.9	14.9	3.9	3.4	1.9	2.4	1.9	1.9	4.9	6.9	7.4	5.9	1.9	38.9	2.4	2.9	4.9	2.4	38.9	5.0	24	
22	2.4	3.9	S	10.9	8.4	16.4	16.4	21.9	30.4	34.4	3.9	4.9	3.9	10	10.5	2.5	3	1	0.5	1.4	0.5	0.9	1.5	1.5	34.4	8.3	24	
23	1.5	S	1	1	0.5	1	0.5	1	2	1.5	0.5	1	0.5	4.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3.5	0.5	1	4.5	1.1	24	
24	S	1	2	1	0.9	3.5	1	0.9	2	4	2	3	6	3	4	7.4	11	10.5	2.5	1	3	1.4	0.9	S	11	3.3	24	
25	1	0.5	2	6.5	0.5	2	5.4	12.4	17.9	2.9	4.4	1.9	4.4	4.4	2.4	5.4	5.9	2.4	2.9	4.9	1.4	0.9	S	1.9	17.9	4.1	24	
26	1.9	2.4	2.4	3.9	17.9	3.9	10.4	30.4	69.9	111.9	4.9	7.9	1.9	1.9	1.4	1.4	0.4	1.4	1.4	3.9	S	4.4	1.4	111.9	12.6	24		
27	4.4	5.9	4.4	0.9	1.9	4.4	1.4	5.9	13.4	11.4	3.9	11.5	2	3	4	5	6.5	2	2.5	1.5	S	0.5	0.9	15.4	15.4	4.9	24	
28	0.9	2.4	1.4	2.4	5.9	1.4	1.9	2.4	3.4	1.9	3	2	1.5	1.5	1	1	0.5	0.5	1.4	S	3.5	2.5	2	4.5	5.9	2.1	24	
HOURLY MAX	6.9	5.9	5.4	10.9	17.9	16.4	16.4	161.5	69.9	111.9	22.9	16.9	6	10	116	9.4	11.9	36.5	2.9	65.9	34.9	25.5	5.9	15.4				
HOURLY AVG	1.5	1.9	2.0	2.3	2.3	2.8	3.0	10.6	8.7	10.0	5.2	5.2	3.4	3.5	7.3	3.8	3.4	4.3	1.6	9.1	3.4	3.7	1.8	2.7				

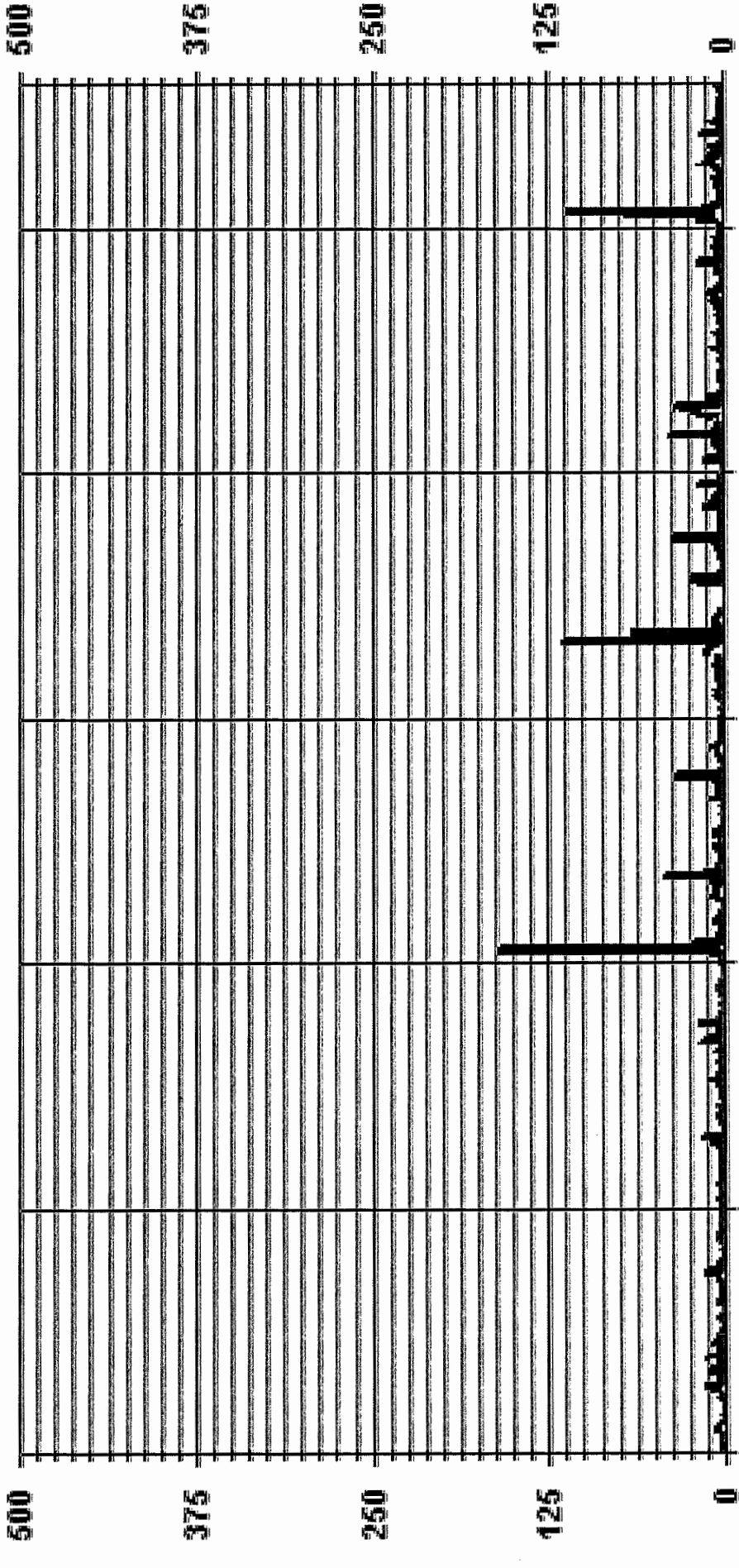
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	614
MAXIMUM INSTANTANEOUS VALUE:	161.5 PPB @ HOUR(S) 7 ON DAY(S) 11
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	10 HRS
STANDARD DEVIATION:	10.71
OPERATIONAL TIME:	672 HRS

# 01 Hour Averages



— LICA    - - - NOMAX    - - - PPB

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

February 2015

Distribution By % Of Samples

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

Wind Parameter : WD  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	7.44	5.50	7.11	5.17	10.51	5.33	6.47	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	99.83
< 110.0	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.16
< 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	7.44	5.50	7.11	5.17	10.51	5.33	6.63	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	

Calm : .00 %

Total # Operational Hours : 618

Distribution By Samples




Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	46	34	44	32	65	33	40	17	12	18	37	91	52	29	34	33	617
< 110.0							1										1
< 210.0																	
>= 210.0																	
Totals	46	34	44	32	65	33	41	17	12	18	37	91	52	29	34	33	

Calm : .00 %

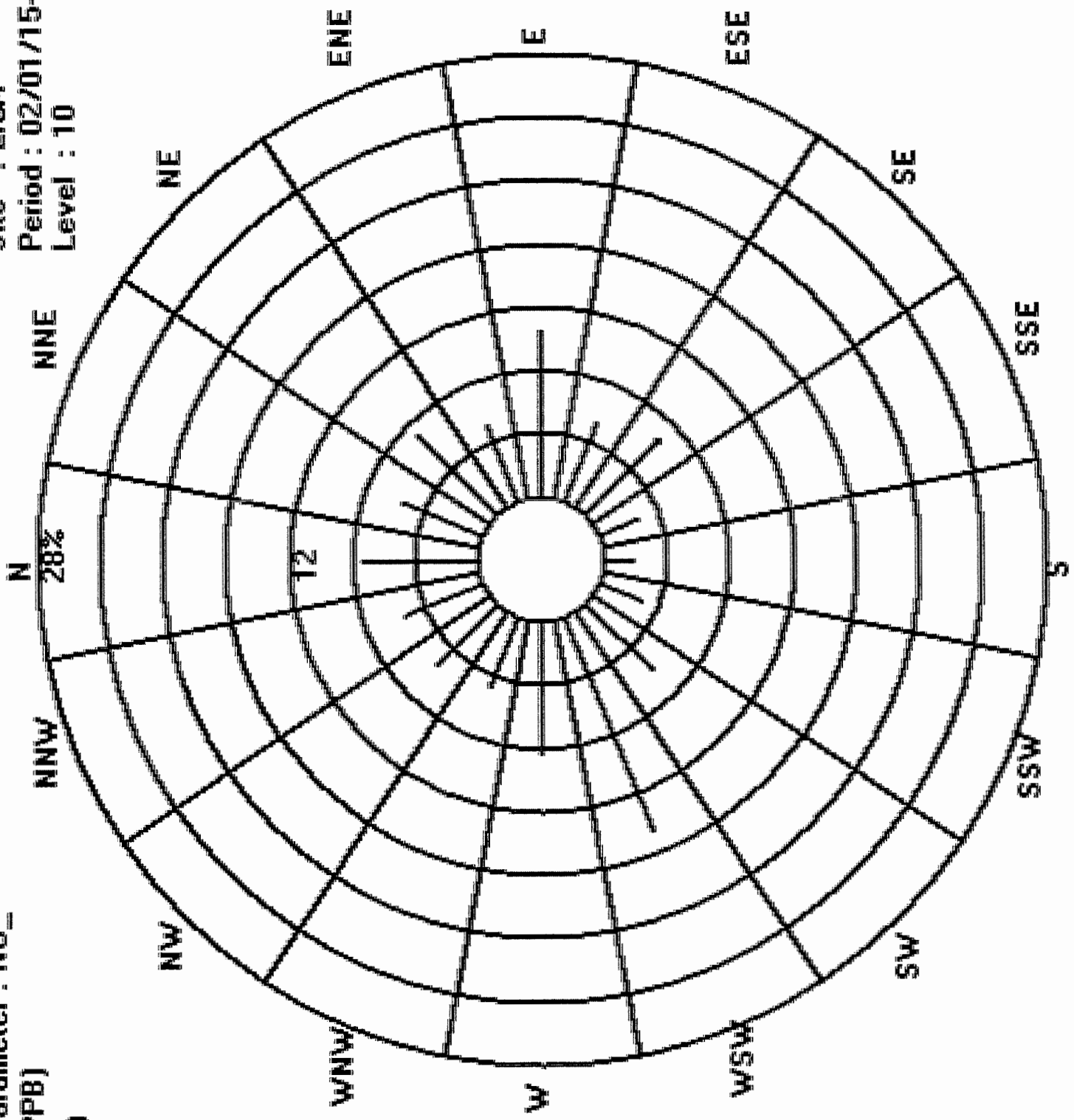
Total # Operational Hours : 618

Logger : 01 Parameter : NO\_

Class Limits (PPB)

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

Site : LICA  
Period : 02/01/15-02/28/15  
Level : 10

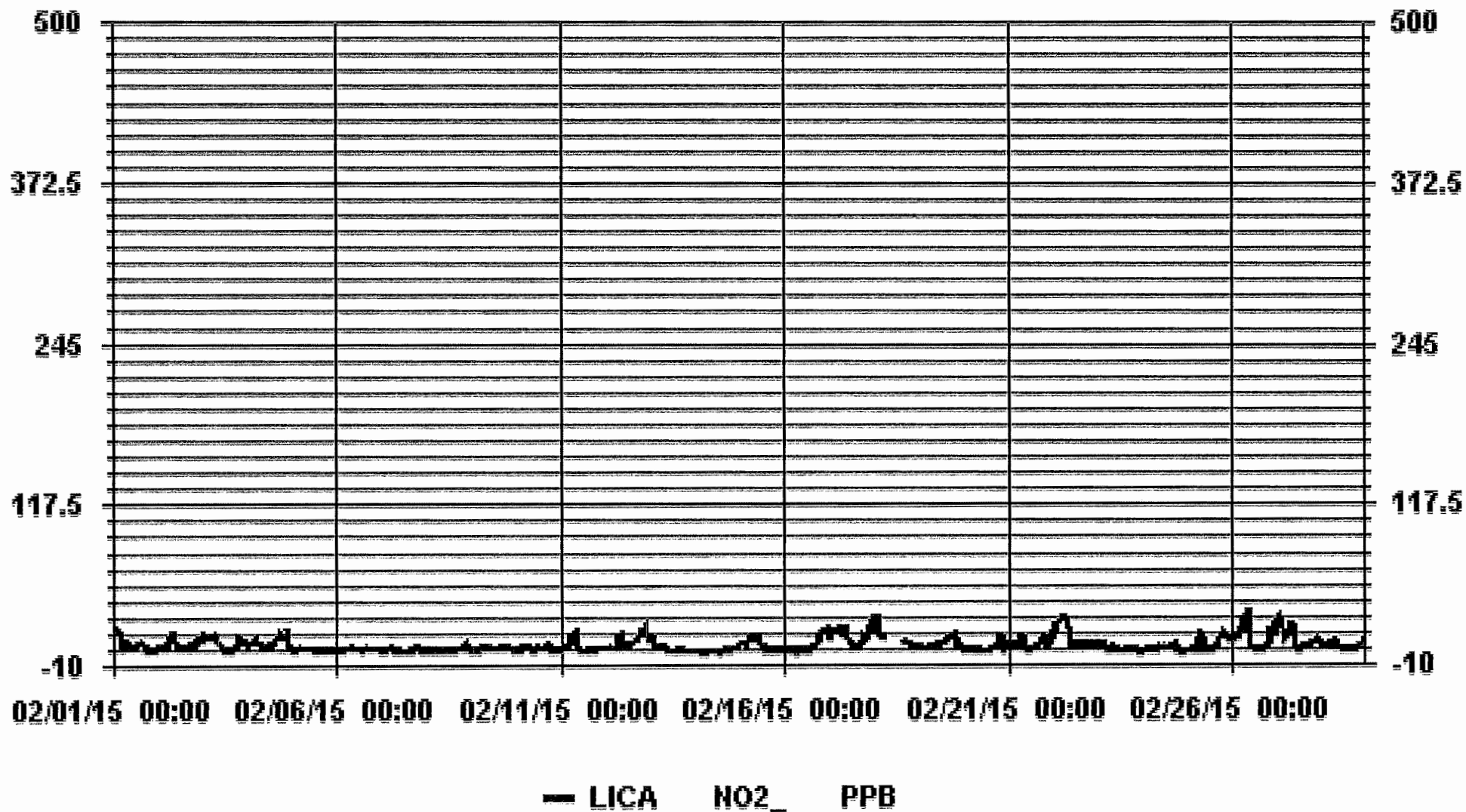




***NITROGEN DIOXIDE***



### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- 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	DAILY MAX	24-HOUR AVG.	RDGS.
1	S	20.3	20.8	22.3	14.3	8.3	10.8	11.3	8.3	6.3	5.8	6.3	7.3	8.8	9.8	14.8	10.8	7.3	6.3	5.3	6.3	3.8	4.8	S	22.3	10.0	24
2	6.3	3.3	3.8	4.8	6.8	6.8	16.3	16.8	22.3	19.3	6.3	6.3	6.3	5.3	4.8	5.8	4.3	10.8	6.8	7.8	12.8	10.8	S	15.2	22.3	9.1	24
3	16.7	18.2	15.2	16.2	13.2	13.7	20.2	17.2	11.7	9.7	8.7	5.2	3.7	1.7	2.2	3.2	3.7	4.2	15.7	25.7	12.7	S	13.2	12.2	25.7	11.5	24
4	8.2	10.2	13.2	13.2	12.7	10.7	8.7	8.2	8.7	6.2	5.7	7.7	6.2	7.2	8.7	12.7	20.2	20.7	16.2	17.2	S	23.6	7.1	5.6	23.6	11.3	24
5	8.1	2.6	2.6	4.1	4.1	4.6	3.6	3.6	3.1	5.1	10.6	3.6	4.1	2.1	2.1	31.6	2.6	3.1	4.1	S	4	3	3	3	31.6	5.1	24
6	3	3.5	3	3.5	4.5	5	5	5.5	5	5.5	4	4.5	4	3	3.5	6	6	6	S	3.9	3.9	3.4	3.4	3.4	6	4.3	24
7	3.4	2.9	2.9	4.4	3.9	10.9	4.4	4.9	4.9	7.9	2.9	3.4	6.9	1.9	1.9	2.9	4.4	S	6.4	5.4	4.9	4.4	3.4	3.4	10.9	4.5	24
8	2.9	6.9	7.5	4.9	2.9	3.4	5.9	4.9	3.9	4.4	4.9	3.4	4.4	2.9	3.4	8.9	S	11.9	4.9	4.9	6.4	10.9	5.9	9.9	11.9	5.7	24
9	3.4	3.4	2.9	2.9	5.4	6.4	6.4	5.4	8.9	6.9	6.9	10.4	7.9	9.9	7.9	S	5.9	6.9	6.4	7.9	7.4	6.4	3.4	2.9	10.4	6.2	24
10	2.4	2.9	1.9	5.4	5.9	8.4	5.4	5.4	4.4	2.9	3.9	4.9	5.4	4.4	S	5.3	6.3	8.3	5.8	3.3	3.8	3.3	3.3	3.8	8.4	4.6	24
11	5.3	6.3	7.3	5.3	8.3	30.3	17.8	42.8	22.3	14.8	4.8	5.8	3.3	S	4	3.5	3	3	2.5	3	3.5	3.5	3	3	42.8	9.0	24
12	3.5	6	4.5	4.5	3.5	3.5	12.5	20	21.5	12	11	9	S	8	9	10.5	14	14	14	30.5	22	25.5	17	14	30.5	12.6	24
13	13.5	13.5	4.5	4.5	5.5	7	7.5	7	5.5	5	6	S	4.8	2.3	3.3	6.8	4.8	4.8	6.3	3.8	2.8	2.8	2.8	1.8	13.5	5.5	24
14	2.3	1.8	1.8	1.8	0.9	1.3	2.3	1.8	2.8	2.3	S	3	2.5	3	2	2	3	3.5	3	3	14	15	7.5	5.5	15	3.7	24
15	10	10	10.5	7.5	10.5	14.5	15	16.5	14	S	15	12	8	6.6	4.1	2.6	3.1	2.6	4.1	3.5	5	4.1	3.6	3.6	16.5	8.1	24
16	3	4	4	4	3	4	6	1.5	S	3	4	21.5	3	5.5	4.5	5	5	15.5	14	22	25	22	21.5	21.5	25	9.7	24
17	17.5	17.5	17.5	19	25	25	25.5	S	23.5	16	15	11.5	7.5	8	5.5	6	6	12.5	18	14	16.5	22.5	27	31	31	16.8	24
18	31	31.5	26.5	18	16.5	17.5	S	7.5	C	C	C	C	C	C	C	C	C	C	10.5	14.5	6	11	6	6	31.5	15.6	24
19	4.5	5.5	3	3.5	5	S	8.5	7	5	5.5	7	8.5	9.5	9	10.6	13	13.5	21	15.5	17.6	15	8.6	6.5	6.5	21	9.1	24
20	5.6	4.6	4.1	2.6	S	4	3	4	6	3	15.4	2.5	2.5	6.9	2.5	4.5	4	5.5	6.5	17	20.9	22	4	5	22	6.8	24
21	5.4	6.4	9.9	S	6	8.5	15	20	12	7.5	3	3	2.5	3	4.5	6.5	12.5	14.5	12.5	36	14.5	14	13.5	14	36	10.6	24
22	26	27	S	31.1	30.6	30.6	30.6	29.6	25.6	26.6	5.6	5.6	4.1	10.7	12.2	4.7	5.2	8.7	6.6	6.6	6.1	8.7	6.1	7.7	31.1	15.5	24
23	6.6	S	10.5	10.5	6	3	3.5	5	4.4	5	1.5	2	1.5	2	1.5	3	3	2	2.5	3.5	2	8.5	3	2	10.5	4.0	24
24	S	4	4	2.5	2.5	6.4	5.9	4.5	6.9	4.5	4	5	9.4	18	4	6.4	6.9	16.4	7.9	3.5	8	5.4	1.5	S	18	6.3	24
25	2.1	2.1	4.1	8.1	4.1	12	31	29	30.5	5.5	2.5	3	3.5	8.5	4.5	8	8.5	13	25	23	20.5	19	S	14	31	12.2	24
26	13	17.5	18	22.5	28	23	29.5	32	37	50	8	6	3	3	3	3	2.5	3.5	5	8.5	26	S	29.4	30.9	50	17.5	24
27	30.4	33.4	31.4	26.9	13.9	16.4	14.4	22.9	26.9	19.9	7.4	6	3	4	8.5	7.9	9.5	6.9	8	9.9	S	12.4	16.9	20.4	33.4	15.5	24
28	9.9	12.9	7.9	7.4	8.4	6.4	7.9	10.9	9.9	5.4	5	3.5	2.5	2.5	2	2	2.5	2.5	5.9	S	8.6	8.5	11.1	12.6	12.9	6.8	24
HOURLY MAX	31	33	31	31	31	31	31	43	37	50	15	22	10	18	12	32	20	21	25	36	26	26	29	31			
HOURLY AVG	9.4	10.3	9.0	9.7	9.3	10.8	11.9	12.8	12.9	10.0	6.7	6.3	4.9	5.7	5.0	7.2	6.6	8.8	8.9	11.6	10.7	10.9	8.8	10.0			

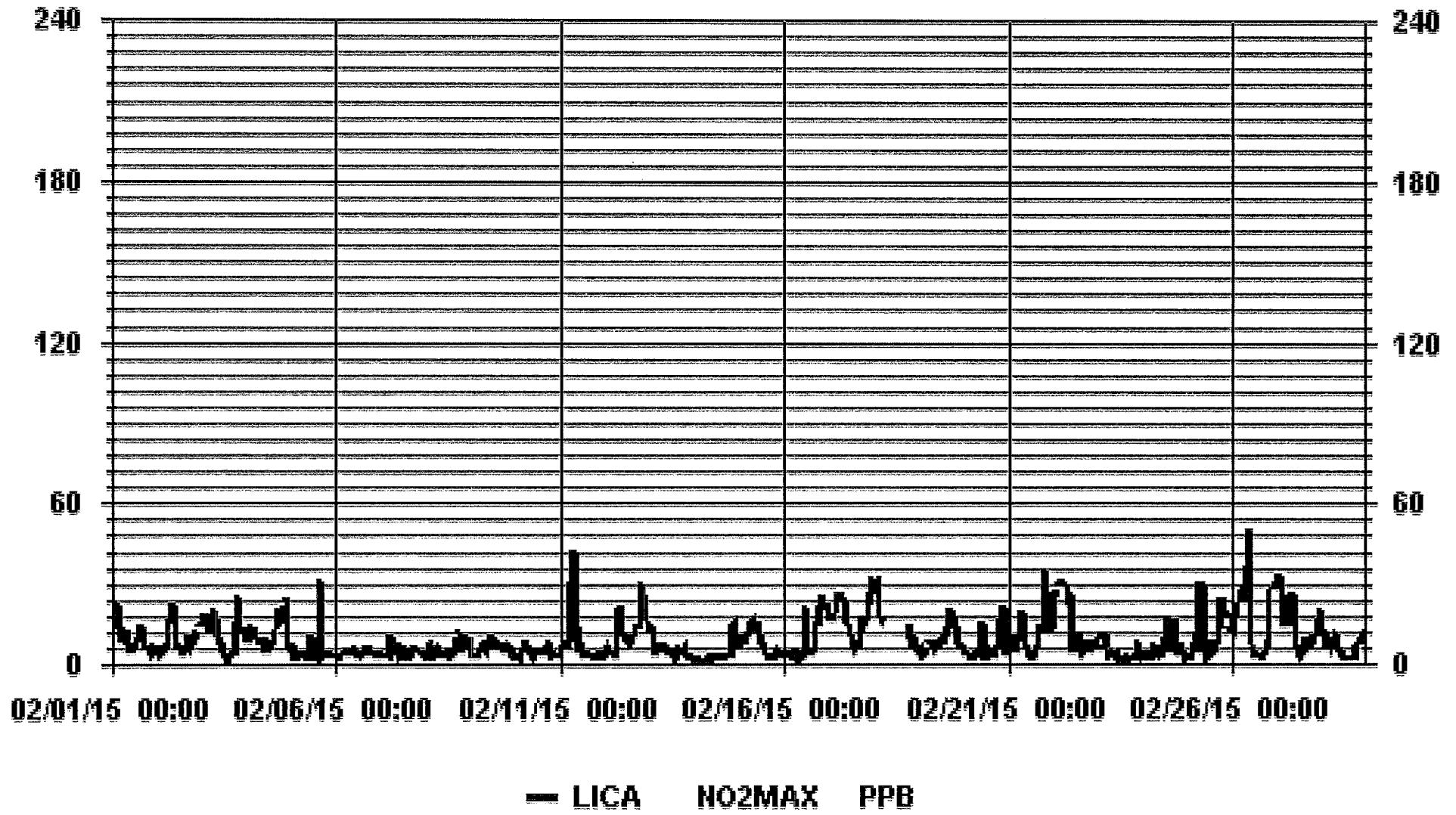
STATUS FLAG CODES

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:	632
MAXIMUM INSTANTANEOUS VALUE:	50 PPB @ HOUR(S) 9 ON DAY(S) 26
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	10 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	7.63

### 01 Hour Averages



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

February 2015

Distribution By % Of Samples

Logger Id : 01  
 Site Name : LICA  
 Parameter : NO2\_  
 Units : PPB

Wind Parameter : WD  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	7.44	5.50	7.11	5.17	10.51	5.33	6.63	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	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	7.44	5.50	7.11	5.17	10.51	5.33	6.63	2.75	1.94	2.91	5.98	14.72	8.41	4.69	5.50	5.33	

Calm : .00 %

Total # Operational Hours : 618

Distribution By Samples





Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	46	34	44	32	65	33	41	17	12	18	37	91	52	29	34	33	618
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	46	34	44	32	65	33	41	17	12	18	37	91	52	29	34	33	

Calm : .00 %

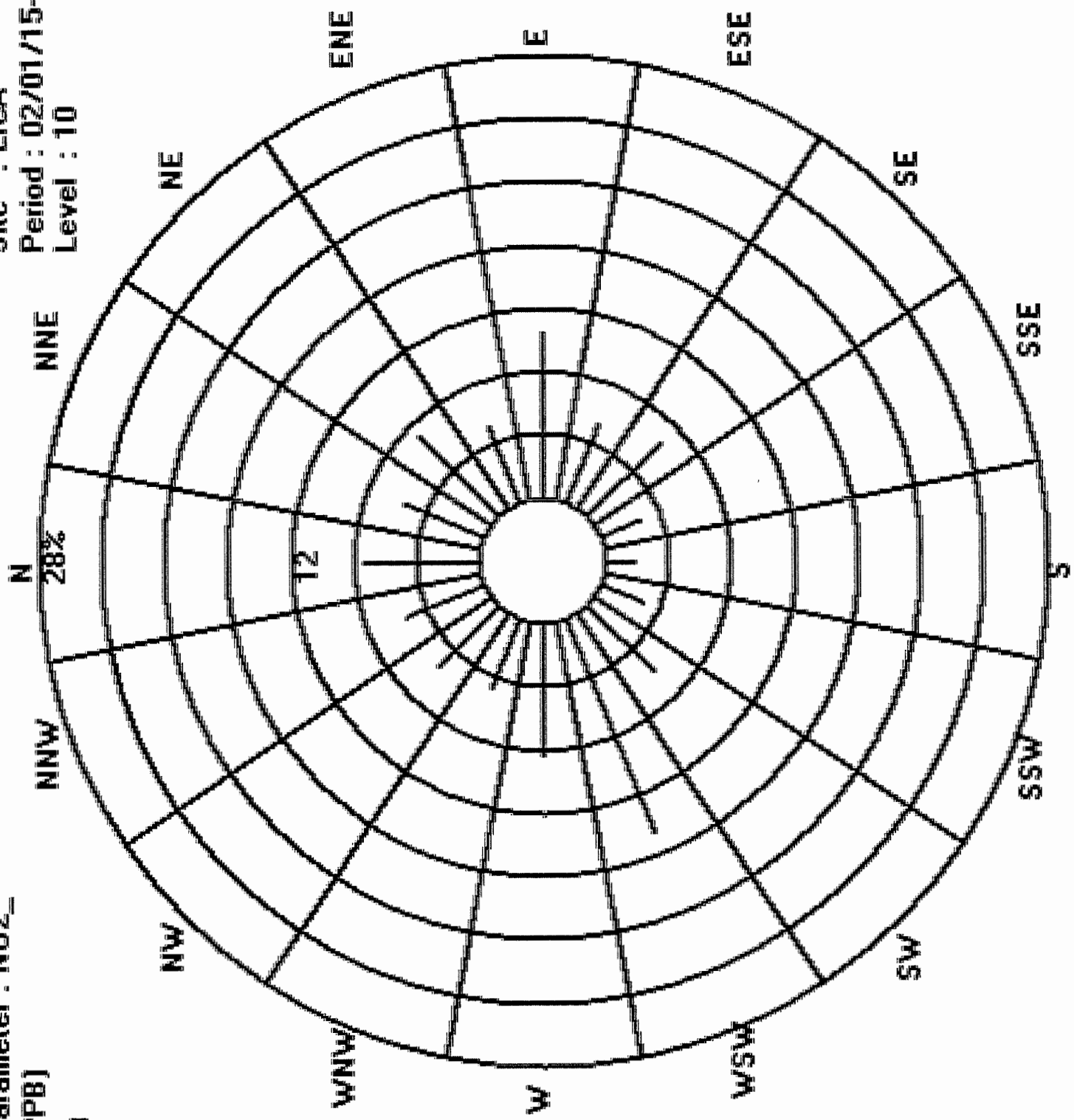
Total # Operational Hours : 618

Logger : 01 Parameter : ND2\_

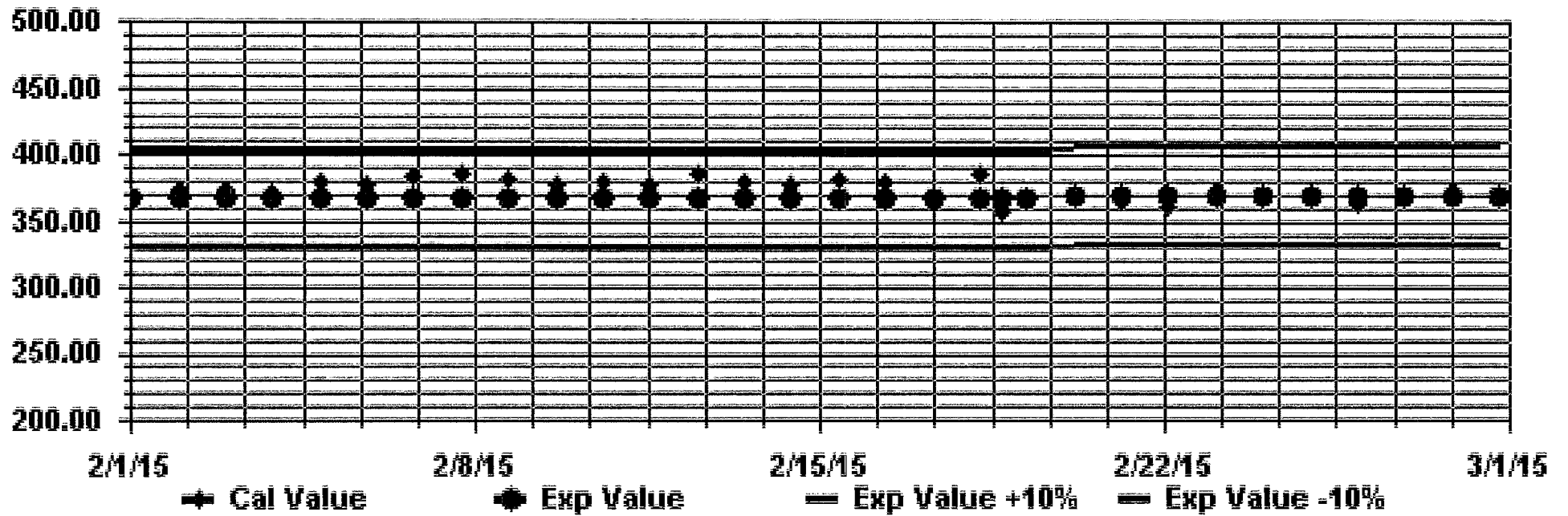
Class Limits (PPB)

-   $\geq$  210.0
-   $<$  210.0
-   $<$  110.0
-   $<$  50.0

Site : LICA  
Period : 02/01/15-02/28/15  
Level : 10



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





***OZONE***



OZONE (O3) hourly averages 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	24-HOUR	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.
DAY																											
1	5	4	5	7	23	22	18	16	17	22	23	23	23	22	21	19	21	24	23	28	31	31	30	5	31	20.6	24
2	27	25	22	19	20	19	12	14	13	22	29	29	31	31	30	30	29	27	25	26	22	22	5	16	31	23.5	24
3	13	12	11	15	16	13	10	18	24	26	31	33	34	36	36	36	35	35	30	20	20	5	18	18	36	23.5	24
4	19	18	18	21	22	25	26	25	27	29	29	28	28	30	29	27	24	21	23	21	5	18	34	35	35	25.1	24
5	35	37	36	34	32	33	34	34	33	33	34	35	37	37	36	35	36	35	34	5	34	35	35	35	37	34.7	24
6	34	34	34	33	33	33	33	33	32	32	33	33	33	33	33	32	32	32	5	32	32	32	32	32	34	32.7	24
7	32	32	32	32	32	31	32	31	32	32	33	33	33	34	34	33	32	5	30	31	30	32	32	32	34	32.0	24
8	32	32	31	30	31	30	30	30	30	28	29	30	31	31	31	30	5	29	29	28	28	25	28	27	32	29.5	24
9	30	30	29	30	29	27	26	27	26	27	27	28	28	28	28	5	27	26	27	27	27	27	27	27	30	27.6	24
10	27	28	27	24	22	21	22	24	25	27	25	24	26	28	5	25	23	21	24	26	26	28	27	27	28	25.1	24
11	28	26	26	26	19	18	14	14	30	33	36	36	5	37	38	39	38	37	36	35	33	33	34	39	30.1	24	
12	34	33	32	31	30	29	25	17	15	24	26	26	5	25	25	23	21	20	18	11	8	7	14	17	34	22.2	24
13	14	16	24	25	25	23	24	23	22	23	27	5	32	31	29	29	30	31	34	35	36	35	35	35	36	27.7	24
14	35	36	36	37	43	43	42	42	41	39	5	38	38	38	38	37	36	36	35	34	33	30	31	43	37.2	24	
15	29	27	26	28	26	22	19	17	17	5	21	26	29	31	33	34	33	33	28	28	29	33	31	28	34	27.3	24
16	29	29	29	28	32	34	34	36	5	35	35	36	38	40	39	39	38	37	32	23	21	17	16	16	40	31.0	24
17	21	19	17	16	15	14	9	5	13	21	26	30	34	35	36	37	36	33	26	26	23	18	12	6	37	22.7	24
18	5	7	18	24	25	27	5	34	35	36	37	34	32	30	34	31	33	32	33	36	38	38	40	40	40	30.4	24
19	40	39	39	39	37	5	34	33	C	C	C	C	28	29	27	26	22	18	17	15	14	19	18	17	40	26.9	24
20	16	20	26	28	5	28	27	26	30	30	30	31	32	32	35	35	35	35	33	24	27	34	33	35	29.7	24	
21	30	27	23	5	24	24	23	19	25	32	34	35	36	36	35	35	34	30	27	18	23	19	19	18	36	27.2	24
22	10	6	5	4	2	1	0	2	8	23	31	32	34	32	33	36	35	33	33	33	32	32	33	31	36	22.4	24
23	32	5	29	28	32	34	34	33	34	36	38	40	42	43	44	43	40	42	42	42	42	41	41	42	44	38.0	24
24	5	41	40	39	38	37	36	36	34	35	36	35	34	35	35	37	38	33	36	37	38	38	38	5	41	36.6	24
25	37	38	37	36	36	34	25	19	25	36	37	38	38	38	37	35	32	28	22	16	16	19	5	17	38	30.3	24
26	17	14	13	13	9	9	2	3	7	14	32	35	39	39	39	40	40	39	38	34	22	5	20	10	40	23.0	24
27	8	5	10	12	23	21	22	15	13	20	32	35	35	35	33	33	34	33	32	30	5	24	20	19	35	23.7	24
28	21	20	27	30	29	29	29	26	28	31	33	36	38	39	38	39	39	40	39	5	34	34	33	28	40	32.2	24
HOURLY MAX	40	41	40	39	43	43	42	42	41	39	38	40	42	43	44	43	40	42	42	42	42	41	41	42			
HOURLY AVG	25.2	24.3	25.8	25.5	26.4	25.3	23.9	24.0	23.8	28.6	30.8	32.3	33.3	33.3	33.5	33.1	32.4	31.1	30.0	28.0	27.7	27.6	28.1	25.8			

STATUS FLAG CODES

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

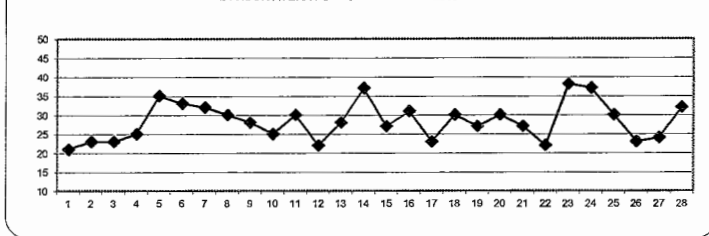
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1 HR - 82 PPB

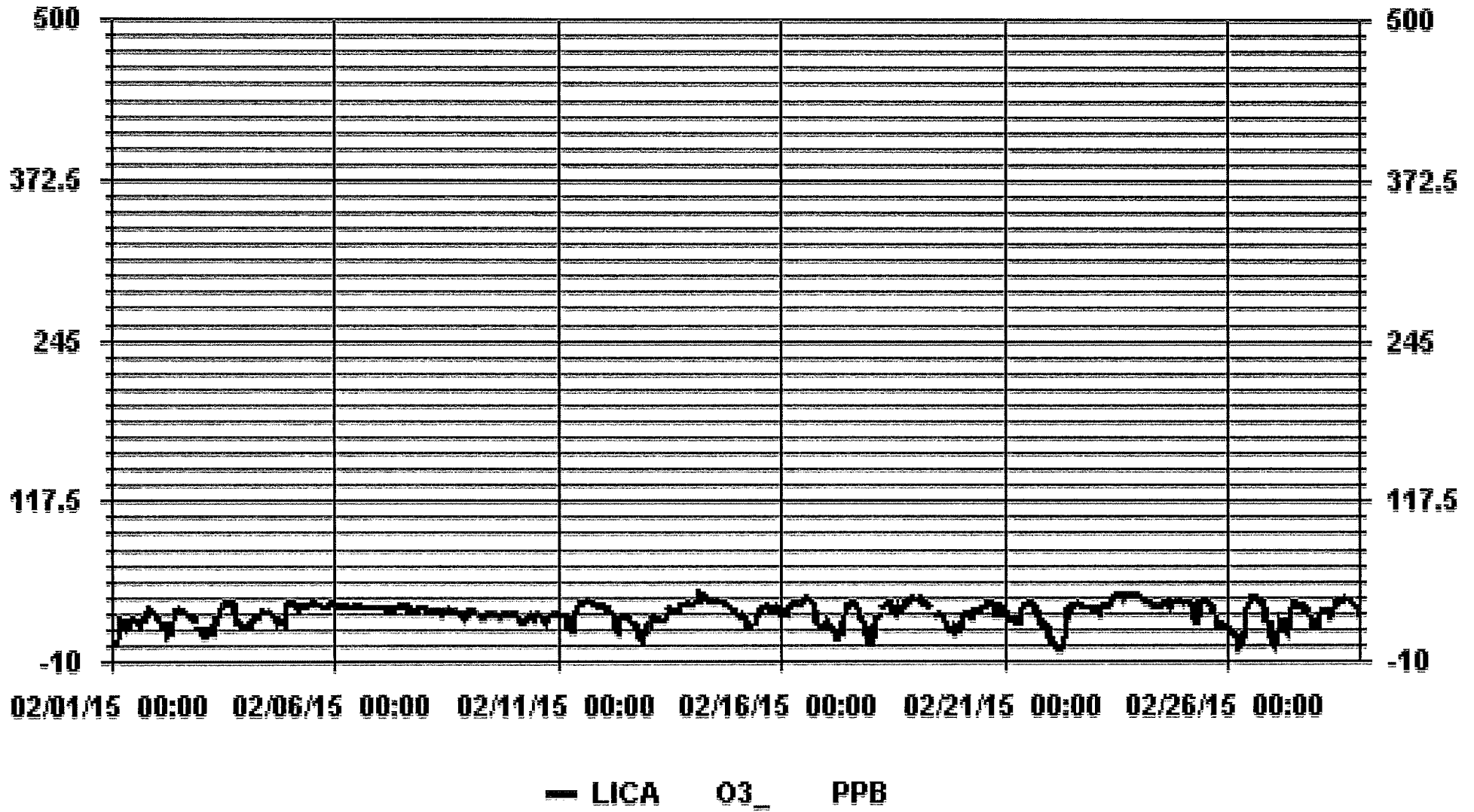
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	637			
MAXIMUM 1-HR AVERAGE:	44	PPB	@ HOUR(S)	14
MAXIMUM 24-HR AVERAGE:	38.0	PPB	ON DAY(S)	23
			ON DAY(S)	23
			VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	672
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0
STANDARD DEVIATION:	8.43		MONTHLY AVERAGE:	28
				PPB

24 HOUR AVERAGES FOR FEBRUARY 2015



### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- C

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	DAILY MAX	24-HOUR AVG.	RDGS.	
1	S	6	7	12	26	23	20	18	21	23	24	24	24	23	23	20	26	25	26	30	33	31	31	5	33	22.5	24	
2	29	28	25	22	23	21	18	18	19	28	30	30	32	33	31	38	30	29	27	28	24	25	5	18	38	26.3	24	
3	14	15	13	18	19	17	13	24	26	28	33	34	36	38	38	37	36	36	35	26	25	5	22	20	38	26.2	24	
4	20	20	20	25	24	27	28	26	28	30	29	29	29	31	30	28	26	22	25	24	5	29	35	37	37	27.0	24	
5	36	38	37	36	33	35	35	35	34	34	35	37	38	38	37	37	37	36	36	5	36	36	36	36	38	36.0	24	
6	35	35	35	35	34	34	33	34	34	34	34	34	34	34	34	34	33	34	33	5	35	36	33	33	36	34.0	24	
7	33	33	34	33	33	33	33	32	33	33	34	34	34	34	35	34	34	5	32	32	31	33	33	33	35	33.2	24	
8	33	33	33	32	32	31	32	31	31	30	30	31	32	32	31	31	5	30	30	30	30	30	28	29	29	33	30.9	24
9	31	31	30	30	31	28	28	29	29	28	28	29	29	29	29	5	29	28	29	29	29	28	28	28	31	29.0	24	
10	28	29	28	27	23	22	26	25	27	27	26	25	28	28	5	27	24	23	27	27	28	30	28	29	30	26.6	24	
11	29	27	28	28	29	27	23	23	25	34	36	37	37	5	38	41	40	39	38	37	36	34	34	35	41	32.8	24	
12	34	34	33	32	31	30	29	20	22	27	27	27	5	26	26	25	23	21	19	18	14	13	16	18	34	24.6	24	
13	17	23	26	26	26	25	25	25	23	24	30	5	33	32	30	30	32	34	35	36	37	37	36	36	37	29.5	24	
14	36	37	37	42	44	44	43	43	43	41	5	39	39	40	39	38	38	37	37	36	35	34	32	33	44	38.6	24	
15	31	29	28	29	28	24	21	20	19	5	23	29	30	33	35	35	33	34	29	29	32	34	33	29	35	29.0	24	
16	30	30	29	29	36	36	36	36	5	36	36	38	39	42	42	40	39	40	35	28	26	24	19	24	42	33.5	24	
17	25	21	19	20	21	17	14	5	20	23	30	32	36	37	39	39	38	37	30	30	28	25	18	10	39	26.5	24	
18	7	11	31	28	27	33	5	36	37	38	38	37	35	35	35	35	34	34	36	39	41	41	42	41	42	33.5	24	
19	41	40	40	40	39	5	35	34	C	C	C	C	30	30	28	27	25	20	18	17	18	20	19	18	41	28.4	24	
20	17	28	28	29	5	29	28	28	31	31	31	32	33	32	37	36	36	36	37	37	29	34	35	34	37	31.7	24	
21	33	31	27	5	27	26	26	24	28	34	35	37	37	37	36	36	36	33	32	24	28	23	23	21	37	30.2	24	
22	15	10	5	7	4	2	1	6	12	32	32	33	36	36	36	37	36	34	33	33	33	33	32	33	37	24.6	24	
23	32	5	30	30	34	35	35	34	35	38	39	42	43	44	44	44	41	43	43	43	43	42	42	42	44	39.0	24	
24	5	41	41	40	38	38	38	37	36	36	37	38	36	36	36	42	46	38	38	39	39	39	39	5	46	38.5	24	
25	38	38	38	37	37	37	35	26	34	37	38	38	39	38	38	36	34	31	26	19	19	22	5	20	39	32.8	24	
26	21	16	17	15	15	12	6	5	9	31	41	39	39	40	40	40	41	40	39	37	33	5	26	20	41	27.0	24	
27	14	8	16	20	27	27	24	20	17	29	35	36	36	36	34	35	35	36	33	32	5	27	24	23	36	27.1	24	
28	23	23	30	31	31	30	29	28	30	32	35	38	39	40	39	39	40	40	40	40	5	36	36	35	30	40	33.7	24
HOURLY MAX	41	41	41	42	44	44	43	43	43	41	41	42	43	44	44	44	46	43	43	43	43	42	42	42				
HOURLY AVG	27.0	26.5	28.1	27.9	28.6	27.5	26.4	26.6	27.0	31.5	32.5	33.8	34.6	34.6	34.8	34.8	34.2	32.9	32.0	30.6	30.7	30.4	30.0	28.1				

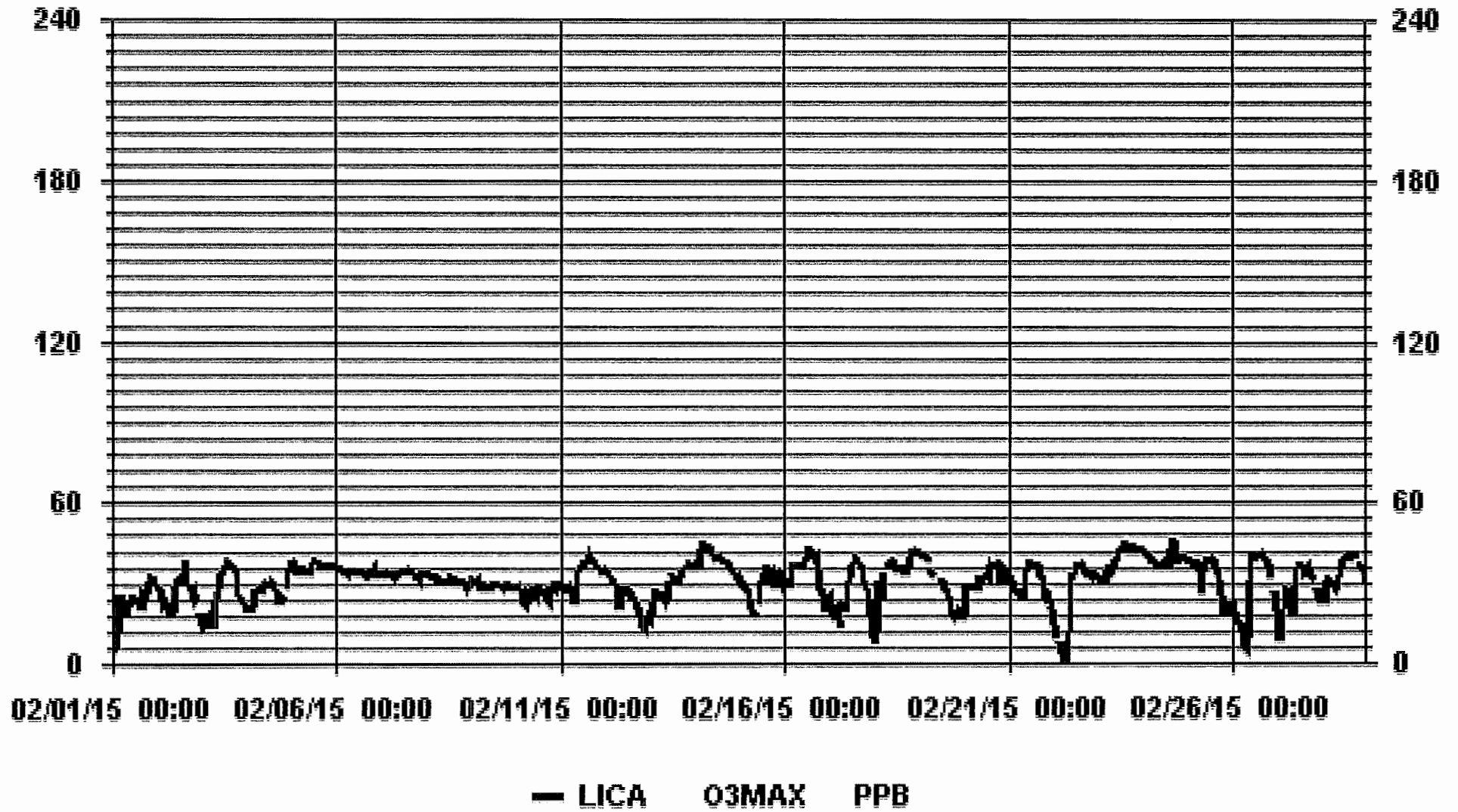
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	638
MAXIMUM INSTANTANEOUS VALUE:	46 PPB @ HOUR(S) 16 ON DAY(S) 24
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	7.67

### 01 Hour Averages



LICA  
 O3\_ / WD Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 01  
 Site Name : LICA  
 Parameter : O3\_  
 Units : PPB

Wind Parameter : WD  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	7.45	5.51	7.13	5.18	10.53	5.34	6.96	2.75	1.94	2.91	5.99	14.42	8.26	4.70	5.51	5.34	100.00
< 110	.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
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	7.45	5.51	7.13	5.18	10.53	5.34	6.96	2.75	1.94	2.91	5.99	14.42	8.26	4.70	5.51	5.34	

Calm : .00 %

Total # Operational Hours : 617

Distribution By Samples

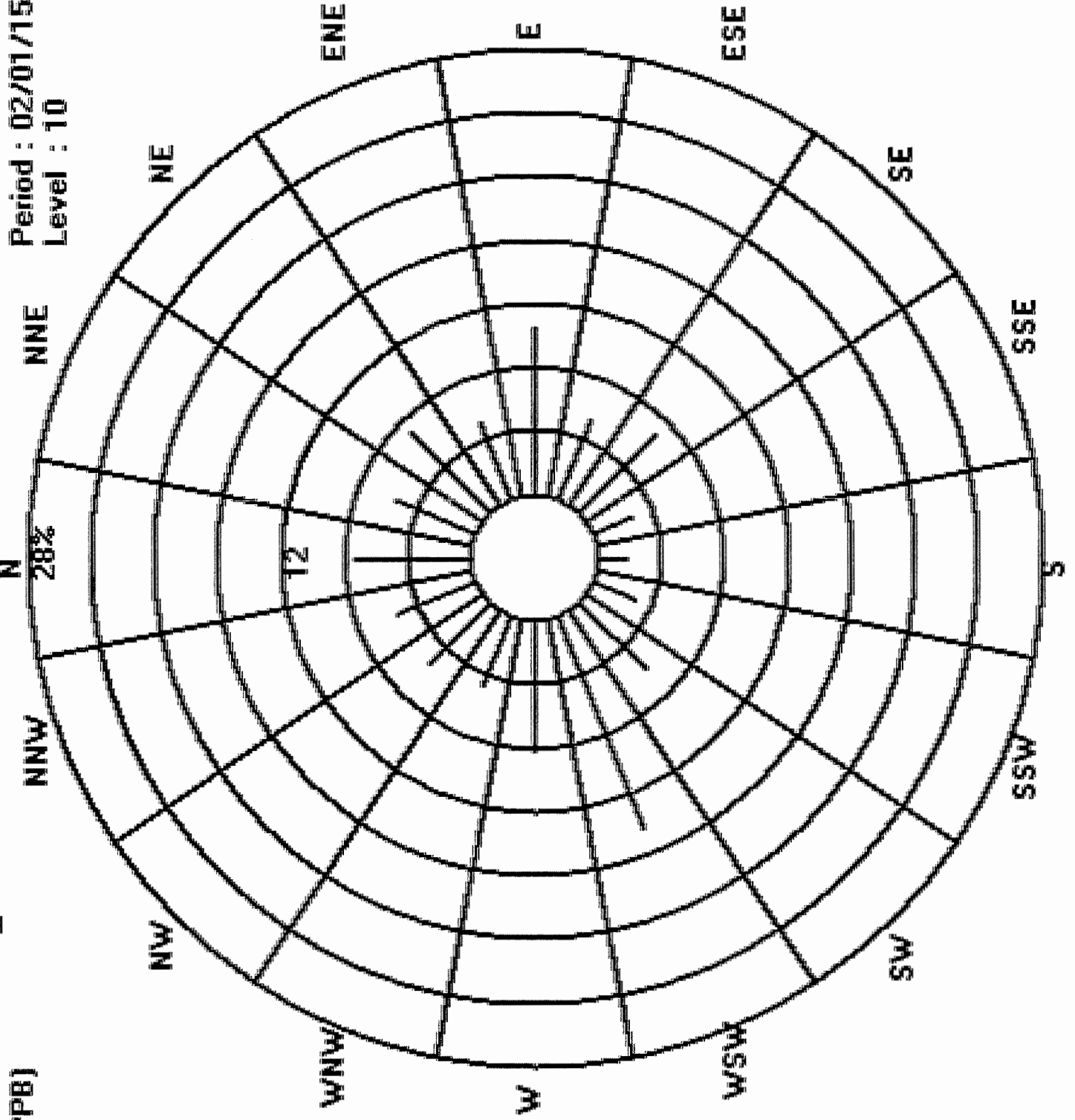
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	46	34	44	32	65	33	43	17	12	18	37	89	51	29	34	33	617
< 110																	
< 210																	
>= 210																	
Totals	46	34	44	32	65	33	43	17	12	18	37	89	51	29	34	33	

Calm : .00 %

Total # Operational Hours : 617

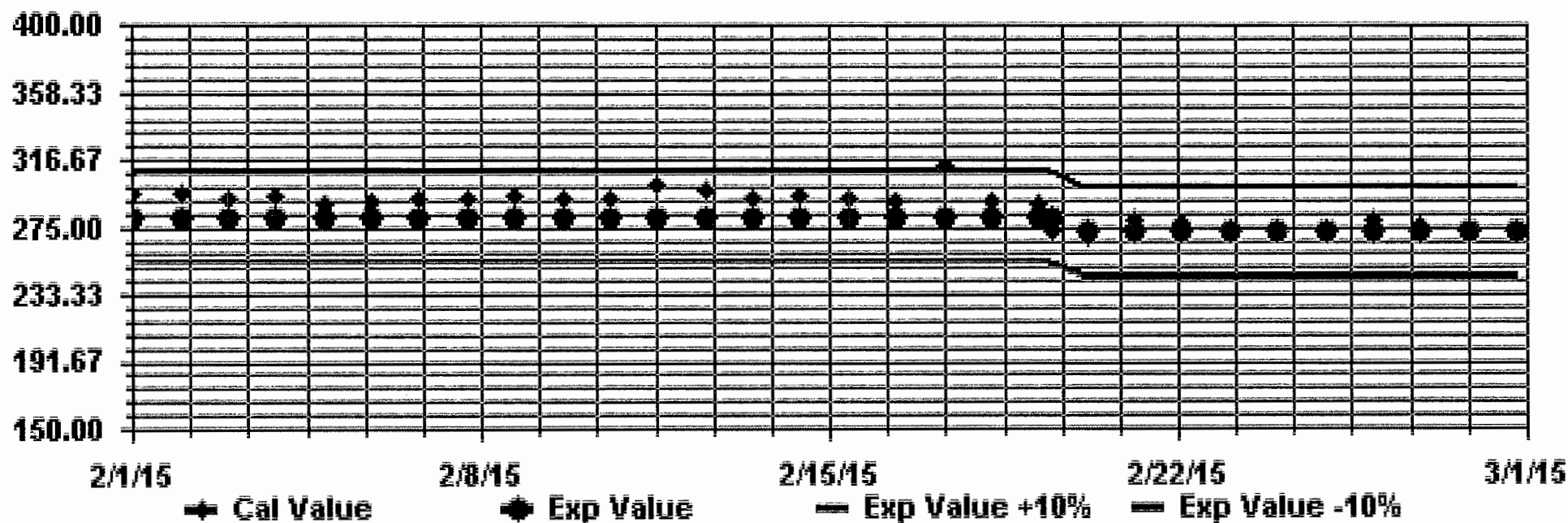
Logger : 01 Parameter : 03\_

Site : LICA  
Period : 02/01/15-02/28/15  
Level : 10



>= 210  
< 210  
< 110  
< 50

Calibration Graph for Site: LICA Parameter: O3\_ Sequence: 03 Phase: SPAN





***PARTICULATE MATTER 2.5***

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

**MST**

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00				
DAY																												
1	6.0	7.0	13.0	8.0	5.0	6.0	3.0	5.0	4.0	6.0	8.0	5.0	7.0	10.0	11.0	13.0	10.0	10.0	5.0	4.0	5.0	7.0	5.0	8.0	13.0	7.1	24	
2	3.0	4.0	3.0	3.0	2.0	5.0	2.0	5.0	5.0	0.0	5.0	5.0	5.0	2.0	1.0	4.0	6.0	7.0	6.0	7.0	7.0	7.0	5.0	5.0	7.0	4.3	24	
3	8.0	5.0	8.0	7.0	2.0	5.0	5.0	6.0	7.0	5.0	0.0	0.0	3.0	2.0	0.0	2.0	2.0	6.0	8.0	8.0	8.0	3.0	5.0	6.0	8.0	4.6	24	
4	7.0	4.0	6.0	2.0	6.0	4.0	8.0	10.0	3.0	6.0	3.0	8.0	7.0	9.0	9.0	16.0	13.0	14.0	14.0	11.0	14.0	10.0	4.0	5.0	16.0	8.0	24	
5	5.0	2.0	4.0	5.0	4.0	2.0	3.0	8.0	5.0	C	C	5.0	20.0	26.0	9.0	19.0	21.0	23.0	28.0	5.0	11.0	8.0	9.0	11.0	28.0	10.6	24	
6	15.0	8.0	1.0	24.0	12.0	20.0	16.0	33.0	38.0	32.0	4.0	8.0	5.0	9.0	16.0	7.0	3.0	4.0	4.0	12.0	8.0	5.0	3.0	5.0	38.0	12.2	24	
7	3.0	4.0	13.0	2.0	9.0	0.0	12.0	3.0	11.0	12.0	7.0	0.0	4.0	4.0	10.0	8.0	4.0	4.0	5.0	8.0	4.0	5.0	11.0	7.0	13.0	6.3	24	
8	5.0	10.0	6.0	10.0	4.0	3.0	6.0	8.0	10.0	1.0	4.0	12.0	7.0	8.0	7.0	2.0	6.0	4.0	5.0	0.0	0.0	7.0	4.0	6.0	12.0	5.6	24	
9	8.0	3.0	8.0	5.0	5.0	7.0	7.0	8.0	9.0	9.0	4.0	9.0	12.0	6.0	18.0	5.0	11.0	6.0	8.0	7.0	6.0	7.0	2.0	5.0	18.0	7.3	24	
10	7.0	7.0	6.0	7.0	8.0	5.0	7.0	4.0	7.0	5.0	6.0	11.0	13.0	5.0	3.0	4.0	10.0	16.0	13.0	10.0	9.0	7.0	13.0	10.0	16.0	8.0	24	
11	9.0	5.0	9.0	6.0	5.0	4.0	6.0	3.0	10.0	5.0	10.0	10.0	9.0	10.0	1.0	8.0	1.0	8.0	0.0	3.0	6.0	7.0	10.0	7.0	10.0	6.3	24	
12	6.0	6.0	2.0	11.0	12.0	12.0	11.0	14.0	15.0	12.0	20.0	21.0	21.0	12.0	19.0	21.0	21.0	18.0	13.0	11.0	21.0	19.0	17.0	21.0	14.5	24		
13	24.0	23.0	17.0	14.0	11.0	0.0	1.0	0.0	11.0	6.0	9.0	8.0	13.0	13.0	12.0	2.0	7.0	12.0	5.0	7.0	8.0	3.0	4.0	24.0	9.0	24		
14	7.0	0.0	4.0	7.0	7.0	4.0	7.0	4.0	3.0	0.0	17.0	4.0	0.0	2.0	0.0	2.0	8.0	11.0	3.0	1.0	6.0	7.0	1.0	9.0	17.0	4.8	24	
15	2.0	12.0	12.0	12.0	21.0	9.0	12.0	3.0	11.0	8.0	X	2.0	2.0	8.0	0.0	0.0	0.0	6.0	9.0	7.0	3.0	15.0	16.0	17.0	21.0	8.1	23	
16	11.0	1.0	15.0	4.0	0.0	0.0	6.0	7.0	6.0	2.0	5.0	6.0	X	0.0	0.0	0.0	13.0	8.0	4.0	0.0	9.0	4.0	7.0	15.0	5.0	23		
17	11.0	4.0	5.0	4.0	5.0	9.0	4.0	11.0	8.0	8.0	C	0.0	13.0	3.0	4.0	9.0	5.0	4.0	5.0	1.0	3.0	8.0	11.0	8.0	13.0	6.2	24	
18	4.0	8.0	9.0	5.0	8.0	9.0	4.0	4.0	4.0	9.0	7.0	6.0	3.0	1.0	5.0	2.0	2.0	9.0	11.0	6.0	0.0	0.0	5.0	5.0	11.0	5.3	24	
19	0.0	7.0	1.0	2.0	5.0	0.0	7.0	4.0	6.0	4.0	8.0	10.0	8.0	5.0	14.0	14.0	13.0	12.0	11.0	9.0	13.0	9.0	5.0	5.0	14.0	7.2	24	
20	6.0	5.0	5.0	5.0	11.0	1.0	8.0	3.0	11.0	2.0	9.0	8.0	3.0	9.0	0.0	0.0	5.0	6.0	5.0	6.0	4.0	5.0	4.0	3.0	11.0	5.2	24	
21	3.0	4.0	3.0	6.0	2.0	2.0	7.0	5.0	6.0	3.0	7.0	1.0	4.0	5.0	5.0	8.0	4.0	7.0	10.0	5.0	5.0	2.0	4.0	5.0	10.0	4.7	24	
22	5.0	7.0	9.0	10.0	9.0	8.0	8.0	9.0	15.0	8.0	13.0	11.0	10.0	14.0	10.0	11.0	17.0	13.0	15.0	11.0	X	6.0	3.0	17.0	10.0	23		
23	11.0	2.0	11.0	5.0	7.0	0.0	1.0	1.0	0.0	2.0	6.0	1.0	4.0	4.0	4.0	0.0	0.0	1.0	0.0	5.0	6.0	5.0	1.0	2.0	11.0	3.3	24	
24	1.0	3.0	1.0	6.0	6.0	7.0	2.0	8.0	8.0	8.0	14.0	0.0	3.0	14.0	13.0	24.0	31.0	15.0	2.0	1.0	3.0	8.0	0.0	1.0	31.0	7.5	24	
25	0.0	2.0	5.0	0.0	0.0	8.0	2.0	4.0	6.0	16.0	11.0	11.0	10.0	9.0	8.0	4.0	5.0	5.0	2.0	9.0	7.0	2.0	0.0	7.0	16.0	5.5	24	
26	7.0	2.0	1.0	5.0	4.0	4.0	3.0	10.0	10.0	25.0	9.0	12.0	5.0	10.0	2.0	3.0	8.0	5.0	3.0	2.0	7.0	3.0	7.0	16.0	25.0	6.8	24	
27	11.0	13.0	12.0	2.0	6.0	9.0	4.0	7.0	9.0	5.0	5.0	5.0	5.0	0.0	4.0	8.0	X	X	11.0	8.0	1.0	7.0	4.0	11.0	13.0	6.7	22	
28	4.0	11.0	3.0	1.0	2.0	4.0	3.0	1.0	5.0	8.0	2.0	12.0	10.0	2.0	4.0	6.0	2.0	4.0	0.0	0.0	4.0	4.0	0.0	1.0	12.0	3.9	24	
HOURLY MAX	24.0	23.0	17.0	24.0	21.0	20.0	16.0	33.0	38.0	32.0	17.0	20.0	21.0	26.0	18.0	24.0	31.0	23.0	28.0	15.0	14.0	21.0	19.0	17.0				
HOURLY AVG	6.8	6.0	6.9	6.4	6.4	5.3	5.9	6.6	8.5	8.2	7.1	6.8	7.6	7.7	6.6	7.1	7.7	9.3	7.6	6.1	6.0	6.9	5.8	7.0				

**STATUS FLAG CODES**

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

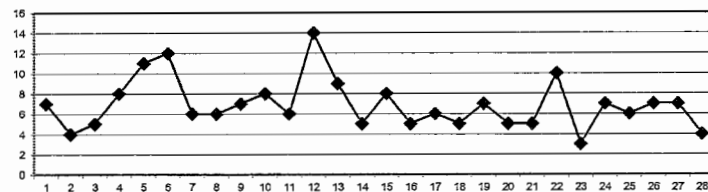
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR 30 ug/m3

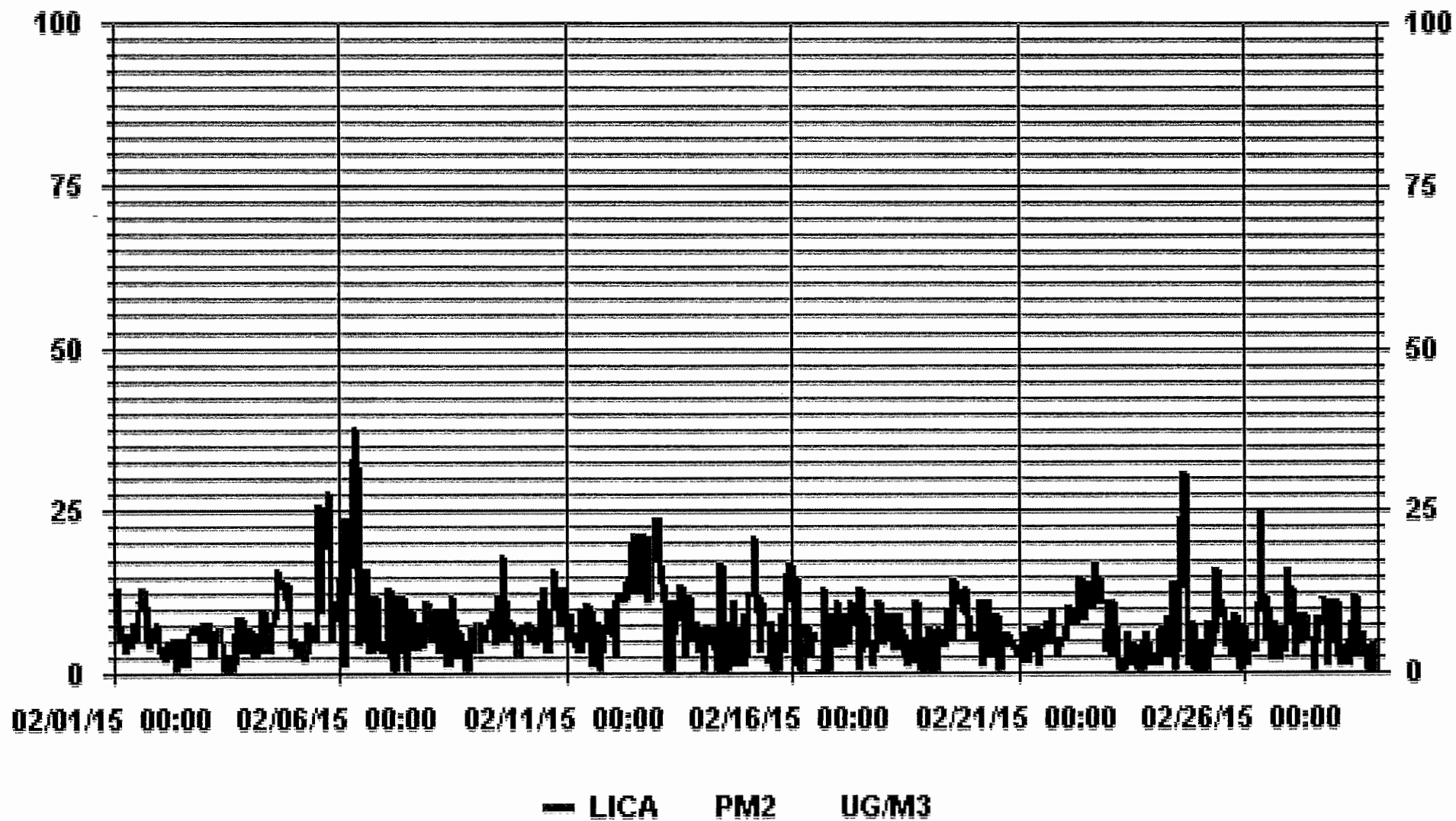
**MONTHLY SUMMARY**

NUMBER OF 24-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	618		
MAXIMUM 1-HR AVERAGE:	38.0 ug/m3 @ HOUR(S)	8	ON DAY(S) 6
MAXIMUM 24-HR AVERAGE:	14.5 ug/m3		ON DAY(S) 12
			VAR-VARIOUS
MONTHLY CALIBRATION TIME:	3 HRS	OPERATIONAL TIME:	667 HRS
STANDARD DEVIATION:	5.22	AMD OPERATION UPTIME:	99.3 %
		MONTHLY AVERAGE:	6.9 ug/m3

24 HOUR AVERAGES FOR FEBRUARY 2015



### 01 Hour Averages



LICA  
 PM2 / WD Joint Frequency Distribution (Percent)

February 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	7.33	5.30	7.33	5.14	9.98	5.61	7.02	2.65	2.02	2.80	5.92	14.50	8.58	4.52	5.30	5.30	99.37
< 60	.00	.00	.00	.00	.62	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.62
< 80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 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	7.33	5.30	7.33	5.14	10.60	5.61	7.02	2.65	2.02	2.80	5.92	14.50	8.58	4.52	5.30	5.30	

Calm : .00 %

Total # Operational Hours : 641

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	47	34	47	33	64	36	45	17	13	18	38	93	55	29	34	34	637
< 60					4												4
< 80																	
< 120																	
< 240																	
>= 240																	
Totals	47	34	47	33	68	36	45	17	13	18	38	93	55	29	34	34	

Calm : .00 %

Total # Operational Hours : 641

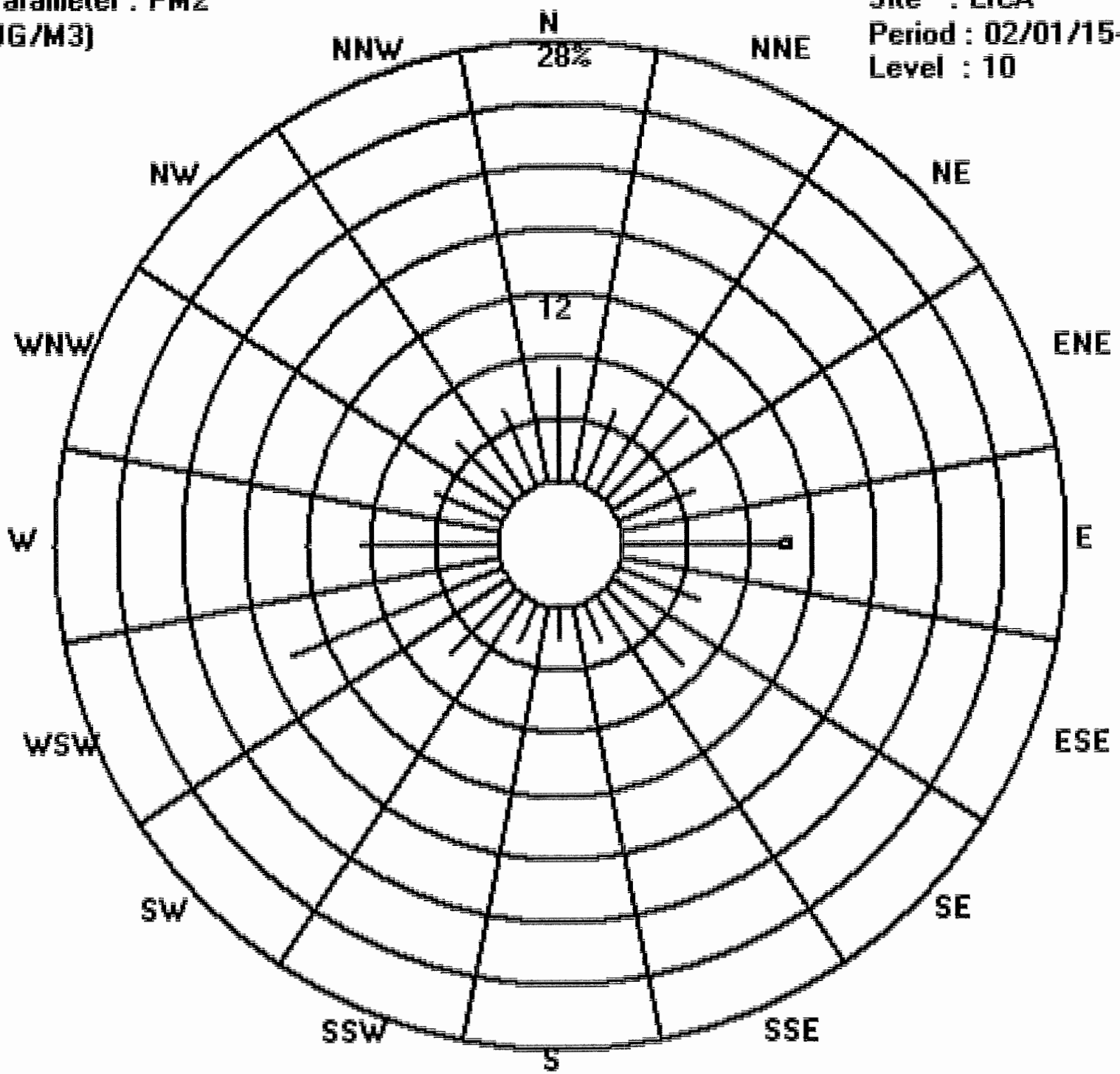
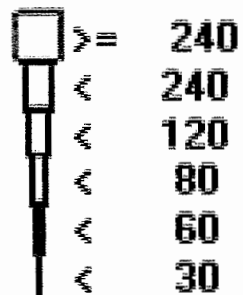
Logger : 01 Parameter : PM2

Class Limits (UG/M3)

Site : LICA

Period : 02/01/15-02/28/15

Level : 10



***WIND SPEED***



WIND SPEED (WS) hourly averages in km/hr

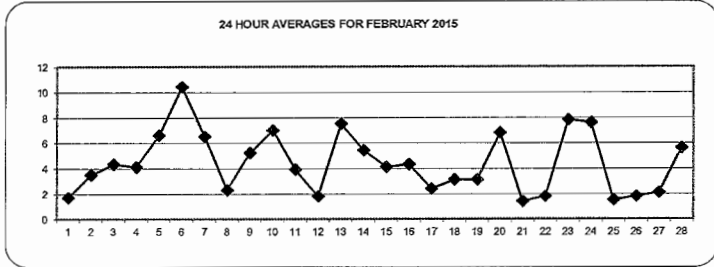
MST

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	24-HOUR	RDGS.
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MAX.	AVG.	
DAY 1	0.4	0.4	0.2	0.2	2.4	2.2	1.2	0.9	1.3	2.9	5.7	6.1	4.8	4.9	4.6	4.3	3.6	3.3	6.4	7.5	5.4	4.7	5.3	6.4	7.5	3.5	24
2	0.7	1.9	1.5	2.0	2.6	0.8	0.5	2.1	1.0	2.8	5.0	5.3	6.5	7.6	6.8	4.8	4.8	4.0	4.6	5.2	4.7	3.1	4.5	3.8	7.6	3.6	24
3	3.4	4.3	3.3	4.9	3.0	2.3	1.3	4.4	5.8	6.5	10.1	10.5	10.1	13.3	12.4	10.9	10.5	6.4	3.2	0.6	0.5	0.9	0.4	0.2	13.3	5.4	24
4	0.6	0.4	0.5	1.1	0.7	1.4	2.3	3.0	3.0	6.6	7.0	7.3	8.5	10.5	9.6	8.6	7.1	6.2	6.5	5.0	3.6	4.3	8.3	5.8	10.5	4.9	24
5	5.6	7.3	7.7	4.0	4.8	5.1	6.2	5.8	8.3	7.2	8.9	7.9	6.6	8.0	8.3	8.5	10.2	9.8	8.3	6.7	9.0	9.4	8.6	11.4	11.4	7.7	24
6	9.8	9.3	8.4	8.1	7.0	8.4	10.5	11.2	10.1	10.9	12.0	11.2	12.0	14.8	14.3	12.1	12.0	11.7	11.0	10.3	11.0	10.4	8.4	8.7	14.8	10.6	24
7	8.4	7.6	7.9	7.9	8.6	9.8	8.3	6.6	6.4	8.6	8.5	8.3	6.3	8.3	5.4	4.9	5.2	6.8	5.5	6.7	5.1	5.6	3.8	1.5	9.8	6.8	24
8	0.8	0.4	1.7	0.7	1.1	2.3	1.5	1.4	2.5	1.1	2.3	5.6	6.2	5.9	5.2	6.5	3.5	3.4	4.9	2.9	1.9	2.0	2.5	2.5	6.5	2.9	24
9	6.0	6.3	5.7	5.6	6.5	7.2	6.1	6.1	6.3	4.8	6.4	6.8	6.6	7.0	6.6	7.3	5.7	4.6	5.0	4.2	3.2	2.6	3.8	4.4	7.3	5.6	24
10	3.2	3.1	2.5	2.7	1.0	3.5	7.6	8.4	9.3	8.4	7.5	7.4	10.2	10.9	10.0	9.3	9.3	7.0	8.1	8.2	10.0	12.3	7.3	6.6	12.3	7.2	24
11	4.7	3.9	2.1	2.1	1.7	0.9	0.8	0.5	0.5	4.0	4.3	6.0	6.0	4.5	4.7	5.4	9.0	10.0	10.8	8.2	7.7	5.7	7.2	9.4	10.8	5.0	24
12	3.8	3.0	3.9	2.0	2.5	1.9	0.2	1.1	1.3	1.6	6.2	5.6	6.3	7.5	6.3	3.8	2.4	3.1	2.2	0.1	1.0	2.9	1.6	4.2	7.5	3.1	24
13	1.6	3.4	7.0	6.4	5.9	3.4	5.3	6.1	9.4	9.0	7.8	8.5	10.2	11.0	11.0	9.9	9.7	11.1	10.9	11.0	12.0	9.8	10.1	9.7	12.0	8.3	24
14	8.1	7.8	8.3	10.3	12.6	9.1	10.0	10.8	7.7	8.6	6.8	6.9	7.3	7.2	4.6	6.5	5.6	5.7	7.2	6.3	4.7	2.8	0.9	2.8	12.6	7.0	24
15	4.2	3.0	0.5	2.0	4.2	3.2	2.9	2.3	3.0	3.5	4.4	4.9	4.6	3.3	8.5	9.9	10.0	9.5	7.3	10.2	6.5	11.2	11.6	7.9	11.6	5.8	24
16	9.2	7.5	5.5	8.2	7.5	5.3	4.7	7.6	6.1	6.6	5.7	3.3	4.5	5.6	6.5	9.3	8.1	3.8	3.5	1.9	0.9	2.2	3.4	3.4	9.3	5.4	24
17	2.9	3.6	2.5	4.2	1.3	0.8	1.8	0.5	4.3	3.9	3.1	5.2	5.4	5.3	4.0	5.6	4.1	1.3	0.5	0.7	0.3	0.5	0.6	0.1	5.6	2.6	24
18	1.0	1.0	1.1	1.6	2.6	3.1	5.3	6.1	7.7	3.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	7.7	3.3	10
19	X	X	X	X	X	X	X	X	X	3.6	3.0	3.1	3.8	4.8	3.8	3.4	2.9	1.9	1.8	2.9	2.7	3.6	3.6	3.5	4.8	3.2	15
20	5.9	6.7	7.2	6.8	5.9	6.0	9.0	11.8	11.8	10.1	8.7	7.6	9.7	8.5	11.0	10.3	9.4	7.9	4.4	1.5	0.8	3.1	3.7	4.4	11.8	7.2	24
21	1.5	1.5	1.6	1.4	1.4	1.1	3.1	4.1	4.7	7.7	7.5	3.7	4.0	3.7	2.1	4.3	2.7	1.8	1.5	0.5	0.6	0.3	0.4	0.4	7.7	2.6	24
22	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.6	0.3	2.4	2.9	3.4	3.7	3.2	4.6	5.1	5.2	5.0	6.8	2.6	3.0	6.1	4.4	6.8	2.8	24	
23	6.4	8.2	7.1	9.3	12.0	11.6	10.1	9.1	8.4	8.3	9.9	11.7	14.4	13.6	12.5	11.1	8.4	11.8	11.1	10.1	8.5	6.8	8.4	9.2	14.4	9.9	24
24	6.9	6.9	7.1	8.9	10.2	9.5	9.0	9.5	9.7	9.0	9.1	9.2	8.3	9.0	9.1	5.8	5.9	5.4	7.2	9.0	9.0	8.0	10.1	9.2	10.2	8.4	24
25	8.5	8.2	4.5	4.1	4.6	1.7	0.5	0.2	1.2	4.9	5.3	4.4	1.5	4.9	5.4	6.9	5.0	3.5	1.4	0.5	0.3	0.3	0.2	0.3	8.5	3.3	24
26	0.3	0.4	0.6	0.3	0.6	0.4	0.2	0.4	0.2	0.4	3.0	3.4	5.4	6.8	8.2	4.9	4.6	3.2	5.2	2.3	0.5	1.5	0.5	0.1	8.2	2.2	24
27	0.3	0.0	0.4	0.7	1.8	1.4	2.1	1.8	1.8	1.7	4.9	5.3	5.5	5.4	5.3	6.4	7.2	6.2	5.3	5.0	2.9	0.6	0.7	0.3	7.2	3.0	24
28	0.6	0.7	5.1	5.5	3.5	5.1	5.9	6.6	6.6	7.5	8.7	9.8	11.4	11.6	12.9	11.3	10.8	11.0	4.7	3.9	4.7	3.6	3.9	5.3	12.9	6.7	24
HOURLY MAX	9.8	9.3	8.4	10.3	12.6	11.6	10.5	11.8	11.8	10.9	12.0	11.7	14.4	14.8	14.3	12.1	12.0	11.8	11.1	11.0	12.0	12.3	11.6	11.4			
HOURLY AVG	3.9	4.0	3.9	4.1	4.3	4.0	4.3	4.8	5.1	5.6	6.5	6.6	7.0	7.7	7.5	7.3	6.8	6.1	5.7	5.1	4.4	4.5	4.7	4.7			

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

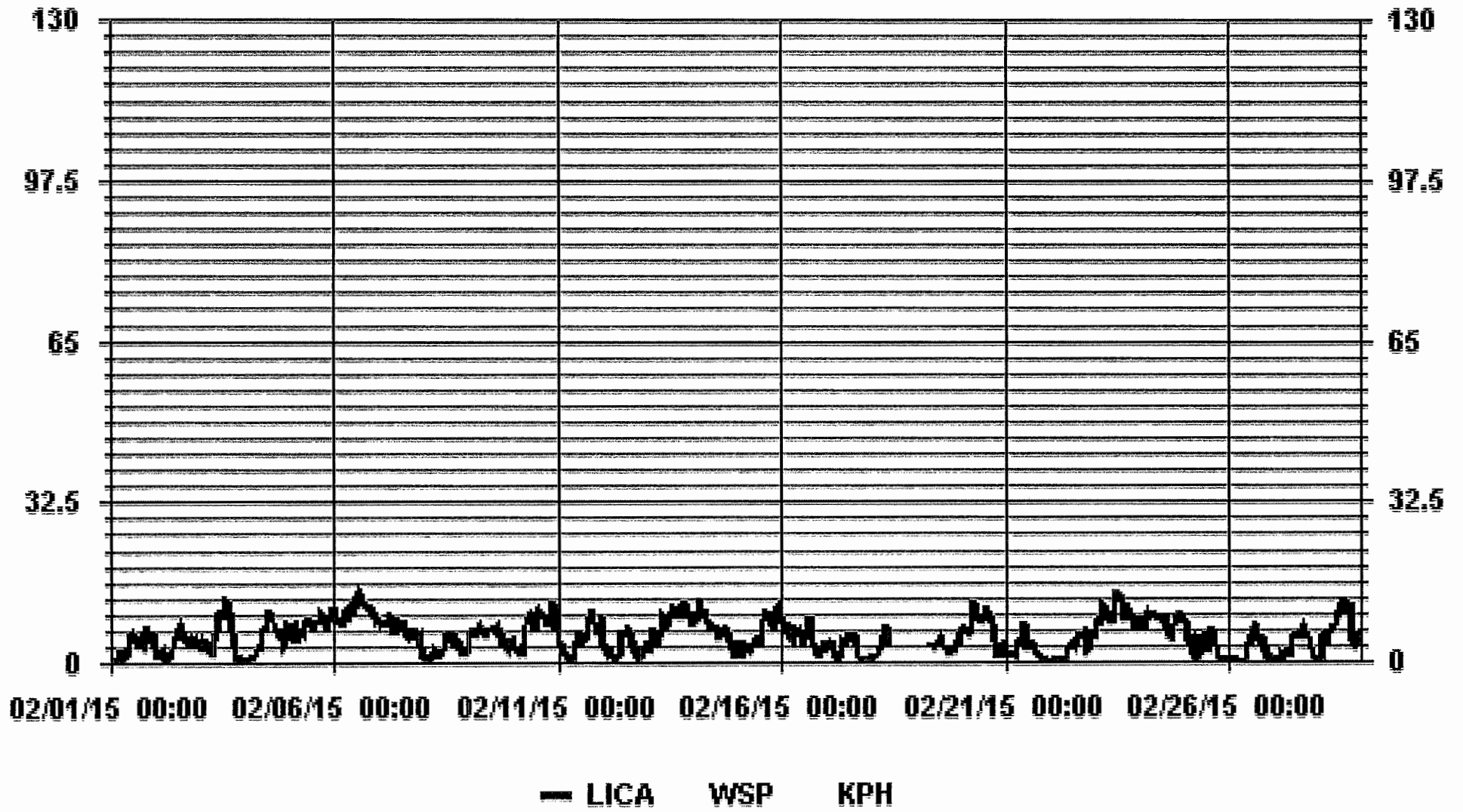
LAST CALIBRATION:	December 19, 2014
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	648
MAXIMUM 1-HR AVERAGE:	14.8 KPH @ HOUR(S) 13 ON DAY(S) 6
MAXIMUM 24-HR AVERAGE:	10.6 KPH ON DAY(S) 6 VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
OPERATIONAL TIME:	649 HRS
STANDARD DEVIATION:	3.39
AMD OPERATION UPTIME:	96.6 %
MONTHLY AVERAGE:	5.4 KPH

### 01 Hour Averages







LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- C

VECTOR WIND SPEED MAX instantaneous maximum 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	0.4	0.8	1.7	1.9	5.3	3.6	3.2	3.4	3.2	7.5	9.3	11.1	8.5	7.2	8.9	8.2	6.7	4.7	9.6	11.8	10.0	8.8	8.4	13.4	13.4	6.6	24	
2	3.3	3.0	3.9	3.6	4.6	2.0	1.6	4.6	3.6	6.3	9.8	9.3	11.4	12.4	11.6	7.5	7.1	5.4	8.7	8.5	6.6	5.1	6.0	5.2	12.4	6.3	24	
3	4.7	5.6	5.9	6.5	5.7	3.9	3.5	5.9	11.2	9.9	15.2	16.2	17.4	21.1	19.4	19.8	14.4	9.9	6.5	1.7	1.7	1.9	2.1	1.7	21.1	8.8	24	
4	2.0	1.5	1.8	3.2	3.4	5.3	6.5	6.1	6.0	12.3	12.8	12.2	14.9	15.0	14.7	12.3	11.2	11.9	10.2	7.6	7.1	8.6	13.4	14.0	15.0	8.9	24	
5	8.6	14.5	13.9	9.5	7.9	12.9	12.6	12.4	12.4	12.5	15.8	12.6	10.2	11.3	12.6	14.0	14.9	16.3	14.0	10.9	12.9	13.7	13.5	16.8	16.8	12.8	24	
6	15.6	15.2	13.9	13.1	11.7	14.0	16.7	18.3	15.1	20.4	20.2	15.7	21.7	23.9	22.4	19.1	20.6	20.2	18.7	19.3	18.0	16.7	14.4	13.5	23.9	17.4	24	
7	11.9	12.4	11.2	12.1	14.7	18.5	15.4	13.2	12.4	16.1	15.4	17.3	13.7	15.8	10.4	8.6	12.3	13.3	9.1	11.5	9.1	9.9	7.2	7.0	18.5	12.4	24	
8	3.3	3.0	3.5	3.8	3.6	4.0	3.8	4.3	5.1	3.5	8.5	9.7	11.1	9.2	8.3	9.9	7.5	7.5	8.8	7.3	4.4	4.9	6.1	4.8	11.1	6.1	24	
9	12.5	12.1	12.2	9.6	10.5	12.5	11.1	12.0	12.1	9.6	10.1	13.1	13.4	12.9	10.8	11.9	11.4	8.4	8.6	8.6	5.7	4.8	8.6	8.7	13.4	10.5	24	
10	5.8	5.9	4.6	4.6	3.6	6.3	16.0	14.1	17.0	12.4	12.5	13.9	16.8	19.9	16.4	13.5	14.1	12.0	14.2	14.4	16.3	17.8	10.4	11.7	19.9	12.3	24	
11	9.2	7.2	3.5	4.3	4.5	2.5	3.2	2.4	4.0	8.1	8.6	12.0	12.4	10.5	7.9	9.4	14.0	15.5	16.9	13.9	12.2	11.0	11.0	14.6	16.9	9.1	24	
12	7.6	6.1	6.4	5.2	6.1	3.6	4.1	2.7	3.3	5.1	10.6	9.3	9.6	12.5	9.7	8.2	6.3	6.3	6.6	3.5	3.2	10.0	5.2	7.9	12.5	6.6	24	
13	3.7	5.6	11.0	11.9	10.3	7.1	10.0	10.6	16.2	14.7	13.1	11.4	16.1	14.9	18.2	19.6	17.8	16.9	16.6	18.4	21.9	15.9	15.7	16.9	21.9	13.9	24	
14	16.0	14.6	13.5	22.6	23.2	17.6	16.7	16.6	15.2	13.2	12.6	13.5	13.7	12.4	9.8	10.6	12.7	12.7	11.4	12.4	8.2	6.5	1.9	6.6	23.2	13.1	24	
15	7.1	7.4	2.4	5.4	9.9	5.9	4.7	5.0	5.8	5.9	7.6	8.6	6.9	7.6	17.3	14.8	15.4	17.6	12.1	19.3	11.4	17.5	18.6	16.5	19.3	10.4	24	
16	16.6	12.9	10.7	13.6	12.6	8.9	10.5	10.8	9.6	10.1	10.5	8.2	8.2	11.5	11.0	14.2	13.9	6.9	6.1	3.3	2.7	4.1	5.1	5.7	16.6	9.5	24	
17	5.0	6.5	7.2	6.6	6.6	2.6	4.3	3.0	7.7	7.1	5.4	8.9	8.9	8.8	7.2	8.6	8.0	5.1	2.3	2.4	1.8	1.7	2.3	1.8	8.9	5.4	24	
18	3.8	2.8	4.1	3.4	5.6	5.6	12.3	11.9	12.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	12.6	6.9	9
19	X	X	X	X	X	X	X	X	X	6.6	6.8	6.2	6.7	8.9	7.5	6.6	5.1	3.5	3.2	4.4	4.6	5.1	5.3	5.7	8.9	5.7	15	
20	10.7	10.2	13.4	9.8	11.7	9.7	18.8	20.0	16.9	15.8	15.9	13.1	17.0	14.2	17.3	17.2	15.3	12.9	7.9	4.8	2.0	8.1	6.4	7.0	20.0	12.3	24	
21	5.0	3.2	3.0	3.4	2.3	3.5	4.6	6.6	8.3	12.9	12.9	10.7	11.0	10.7	9.6	7.8	5.0	3.8	3.5	1.6	2.4	1.2	1.1	3.2	12.9	5.7	24	
22	2.3	0.5	0.9	1.7	1.6	1.2	1.3	1.7	1.0	6.0	7.0	6.7	10.5	8.0	12.0	11.2	10.8	9.5	9.6	11.8	5.6	7.6	10.4	9.2	12.0	6.2	24	
23	10.5	11.8	13.0	13.4	16.3	16.9	15.0	12.6	12.4	11.9	15.6	22.9	22.3	21.5	21.4	19.4	12.1	20.2	16.7	14.0	13.3	11.2	15.5	16.0	22.9	15.7	24	
24	12.7	10.4	13.7	13.4	16.0	13.9	16.7	15.5	15.1	14.2	14.5	14.7	13.1	15.3	14.7	11.6	11.4	9.0	10.0	13.6	14.0	13.4	16.4	14.2	16.7	13.6	24	
25	13.9	12.9	9.6	6.6	8.1	6.3	2.2	2.0	5.3	8.1	10.7	8.5	8.3	8.6	8.6	10.7	7.6	6.0	4.5	1.8	1.3	1.1	1.4	2.5	13.9	6.5	24	
26	1.9	1.2	1.7	1.4	2.4	2.2	1.0	1.2	2.3	5.3	5.8	9.4	11.1	15.9	14.4	11.2	10.3	7.3	8.5	6.5	2.8	3.4	1.9	2.5	15.9	5.5	24	
27	2.1	4.2	2.1	1.8	3.1	3.1	4.4	4.1	3.3	6.1	7.9	10.2	11.4	11.6	10.4	12.5	13.0	10.1	7.4	7.0	4.3	2.0	2.7	1.8	13.0	6.1	24	
28	2.8	3.5	7.9	9.7	5.9	7.3	8.3	9.1	12.2	11.3	12.0	16.5	18.3	19.9	18.0	18.6	23.1	21.2	10.4	5.4	6.4	4.7	7.1	7.6	23.1	11.1	24	
HOURLY MAX	16.6	15.2	13.9	22.6	23.2	18.5	18.8	20.0	17.0	20.4	20.2	22.9	22.3	23.9	22.4	19.8	23.1	21.2	18.7	19.3	21.9	17.8	18.6	16.9				
HOURLY AVG	7.4	7.2	7.3	7.5	8.0	7.4	8.5	8.5	9.2	10.1	11.4	11.9	12.8	13.4	13.0	12.5	11.9	10.9	9.7	9.1	7.8	8.0	8.1	8.8				

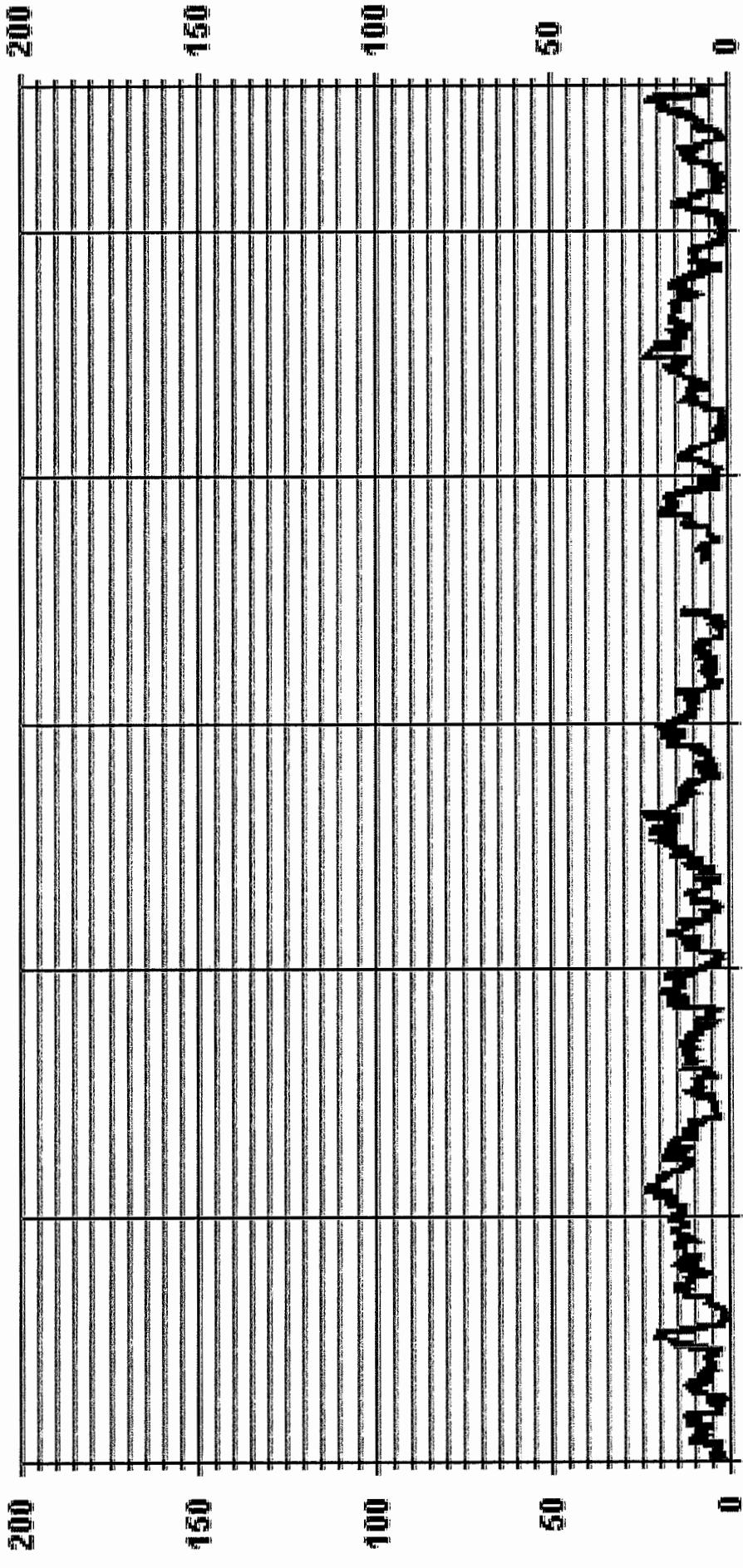
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	23.9	KPH	@ HOUR(S)	13	ON DAY(S)	6
					VAR-VARIOUS	
OPERATIONAL TIME:					648	HRS

# 01 Hour Averages



02/01/15 00:00 02/06/15 00:00 02/11/15 00:00 02/16/15 00:00 02/21/15 00:00 02/26/15 00:00

— LICA WSMAX KPH

LICA  
WSP / WD Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

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

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	
< 6.0	2.77	3.23	2.92	2.15	3.08	1.84	3.23	2.00	1.23	2.46	4.00	11.24	7.55	2.31	1.84	1.69	53.62
< 12.0	4.31	2.15	4.16	2.77	6.47	3.23	3.23	.15	.00	.15	1.69	3.23	1.07	1.84	2.00	3.23	39.75
< 20.0	.00	.00	.00	.00	.92	.15	.15	.00	.00	.00	.00	.00	.00	.00	.92	.30	2.46
< 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	7.08	5.39	7.08	4.93	10.47	5.23	6.62	2.15	1.23	2.61	5.70	14.48	8.62	4.16	4.77	5.23	

Calm : 4.16 %

Total # Operational Hours : 649

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	18	21	19	14	20	12	21	13	8	16	26	73	49	15	12	11	348
< 12.0	28	14	27	18	42	21	21	1		1	11	21	7	12	13	21	258
< 20.0					6	1	1								6	2	16
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	46	35	46	32	68	34	43	14	8	17	37	94	56	27	31	34	

Calm : 4.16 %

Total # Operational Hours : 649

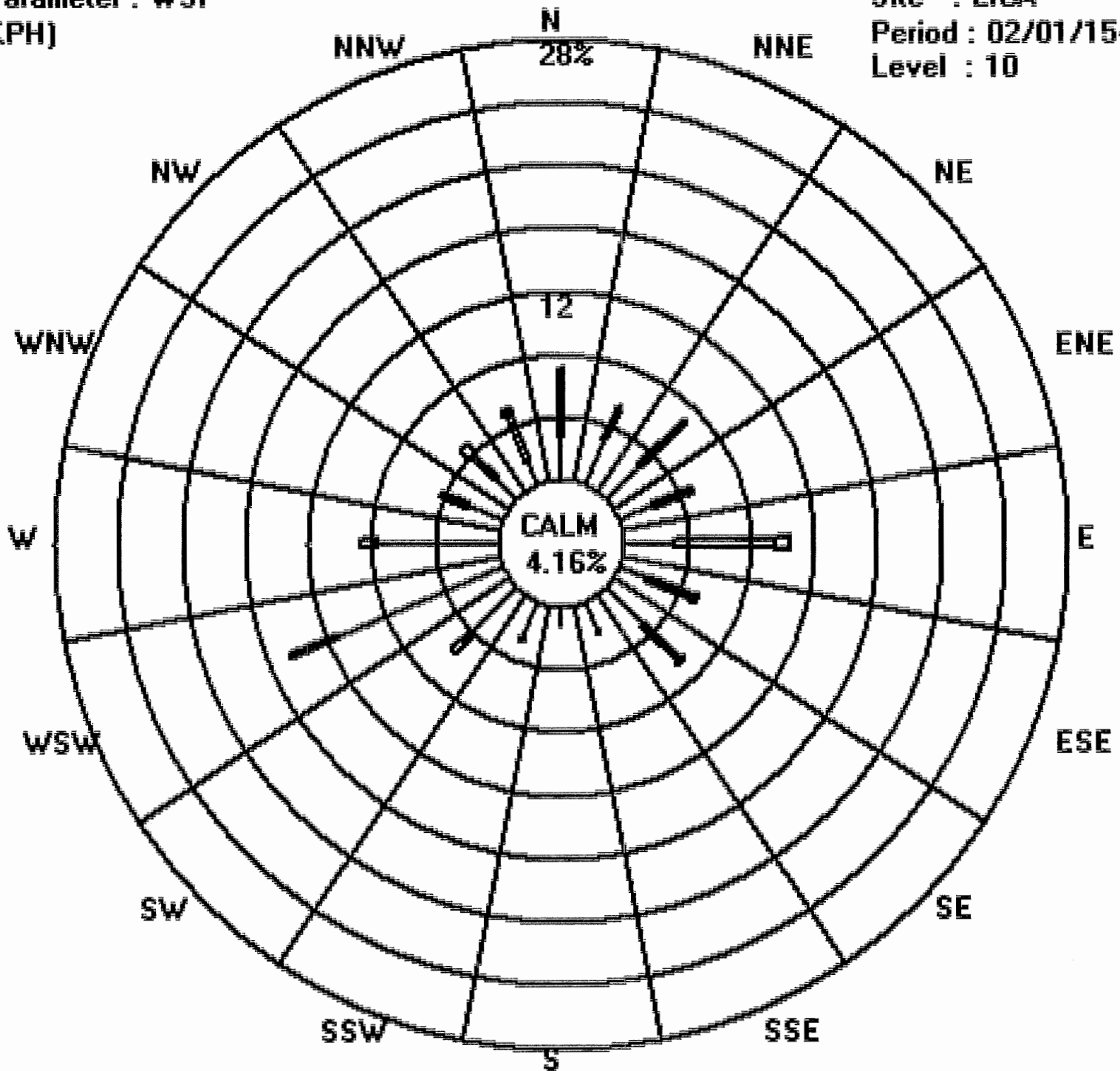
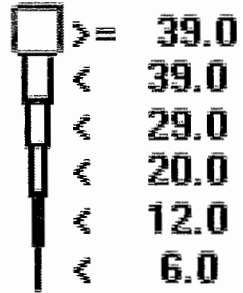
Logger : 01 Parameter : WSP

Site : LICA

Class Limits (KPH)

Period : 02/01/15-02/28/15

Level : 10



***WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- C

WIND DIRECTION (WD) hourly averages

MST

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

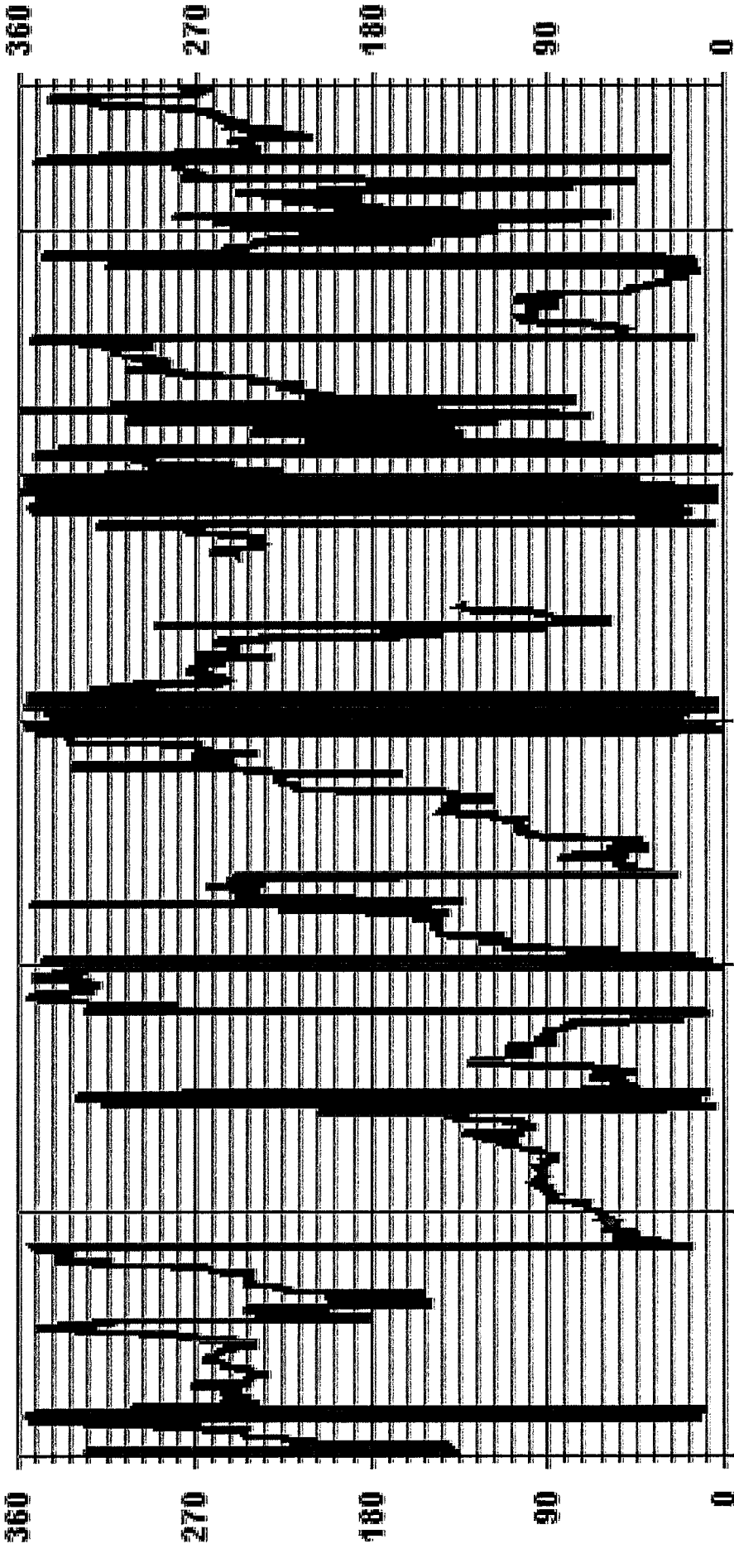
STATUS FLAG CODES

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

LAST CALIBRATION:	December 19, 2014
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	649	HRS
STANDARD DEVIATION:	105.77		AMD OPERATION UPTIME:	96.6	%
			MONTHLY AVERAGE:	NNE	

01 Hour Averages



— LICA    - - - WDR    . . . DEG

***STANDARD DEVIATION WIND DIRECTION***





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - FEBRUARY 2015

JOB # 2833-2015-02-01- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
DAY 1	13	18	22	56	25	17	23	27	16	23	19	23	25	22	23	23	16	11	16	17	15	15	14	17
2	21	5	16	10	9	12	9	13	21	21	21	21	21	21	19	20	15	13	13	14	12	7	11	8
3	9	7	9	9	9	12	28	13	18	19	20	20	21	19	17	17	14	11	15	23	19	19	29	31
4	35	32	34	53	70	55	33	26	36	31	24	21	21	21	20	18	18	20	18	13	11	14	12	16
5	16	15	16	18	13	21	16	23	21	21	21	20	22	20	19	20	17	17	17	17	17	16	17	17
6	18	19	18	19	20	21	20	20	21	20	21	21	21	19	20	18	20	21	20	20	19	22	20	20
7	20	20	20	21	19	18	21	22	23	22	25	23	25	26	30	23	23	18	20	20	22	17	20	47
8	35	34	21	24	26	22	37	36	20	30	29	25	23	21	22	20	23	21	20	30	36	19	25	23
9	23	22	21	24	22	20	21	22	20	23	21	23	22	21	21	21	21	20	20	20	20	18	18	21
10	21	22	18	10	30	20	15	15	17	19	17	21	19	21	20	18	15	16	16	17	16	16	13	15
11	19	18	16	20	24	32	58	48	46	21	26	23	25	38	25	28	20	15	19	20	17	29	18	18
12	33	48	15	39	27	26	53	26	27	38	21	23	19	20	22	24	43	16	21	55	40	24	34	19
13	27	20	18	17	20	25	20	19	17	18	21	20	20	21	18	20	21	21	22	21	23	23	23	23
14	24	25	24	20	19	20	16	14	22	20	20	22	21	20	36	29	31	28	27	23	20	20	24	20
15	17	27	40	23	18	17	12	21	19	18	18	19	20	34	14	15	14	20	19	18	18	16	17	22
16	21	21	21	16	16	21	20	15	18	19	24	36	28	29	26	17	15	14	15	8	13	5	8	8
17	8	8	15	8	52	32	10	39	11	17	22	20	20	21	27	17	19	39	32	31	36	15	10	18
18	12	23	35	20	16	27	20	18	15	15	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	X	X	X	X	X	X	X	X	X	22	26	25	23	20	20	19	18	15	15	11	13	16	15	16
20	15	17	22	22	22	20	19	18	17	18	22	23	20	21	19	18	17	15	16	19	10	24	18	15
21	29	25	17	27	25	24	12	9	12	17	20	31	37	49	68	26	20	19	15	13	16	7	8	53
22	32	25	20	46	46	17	9	17	36	49	34	43	30	36	30	38	31	34	29	19	30	30	20	24
23	18	18	19	18	17	17	18	18	19	18	19	20	18	19	19	19	19	15	14	16	19	20	19	20
24	20	19	17	19	17	21	23	23	19	21	21	20	21	20	18	24	21	19	18	20	21	22	22	22
25	21	19	20	22	17	34	38	50	37	24	26	28	41	29	21	18	18	14	10	40	21	30	39	59
26	43	23	34	45	43	49	13	10	34	53	28	36	41	36	25	41	39	34	17	31	37	20	46	47
27	39	45	16	12	20	14	18	17	21	28	23	29	31	27	36	22	21	17	14	11	8	16	25	29
28	50	45	15	17	11	14	14	16	18	18	20	21	20	20	18	17	17	17	15	13	11	13	9	12

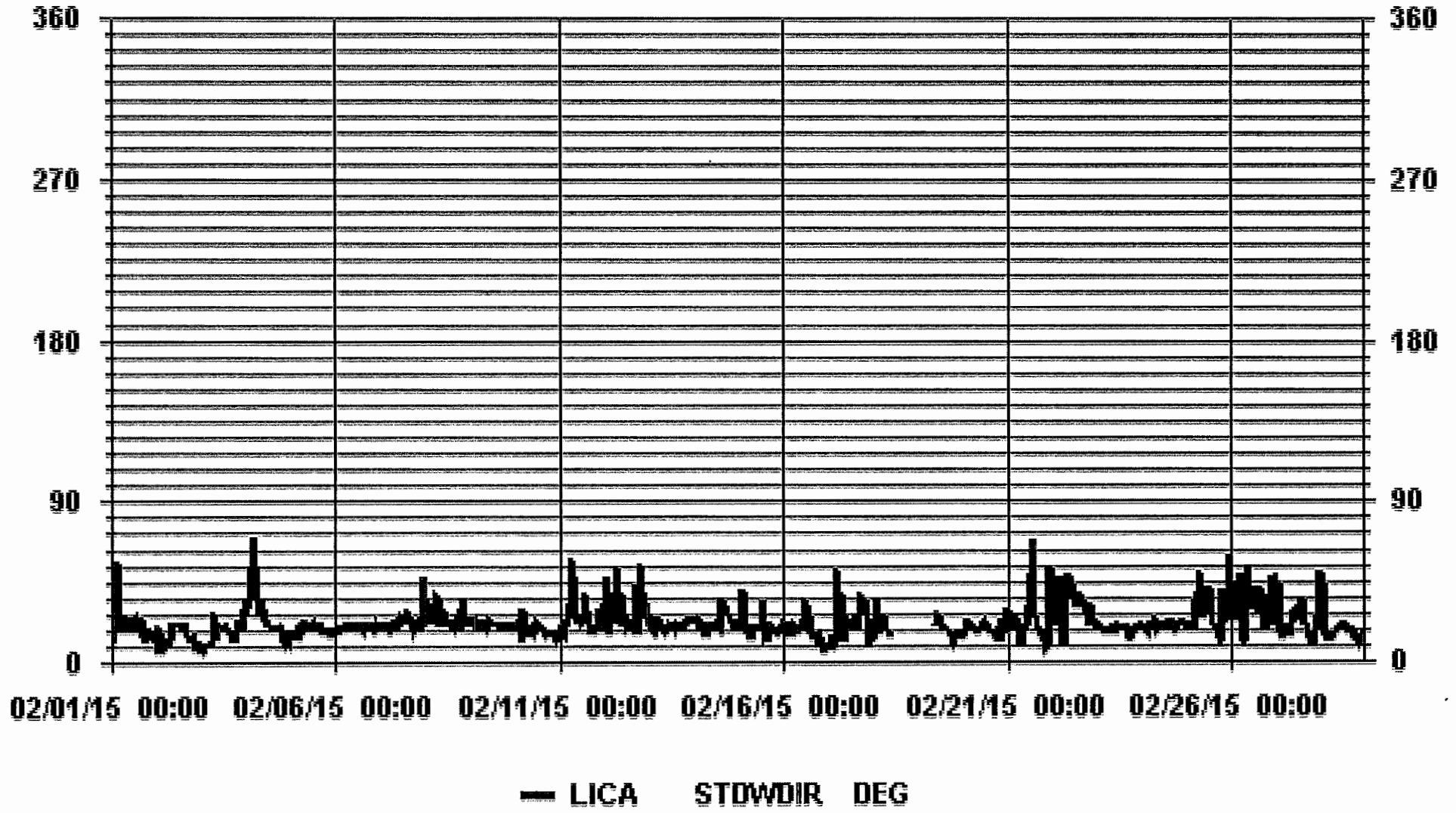
STATUS FLAG CODES

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: December 19, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 649 HRS

### 01 Hour Averages



***RELATIVE HUMIDITY***



RELATIVE HUMIDITY (RH) hourly averages in %

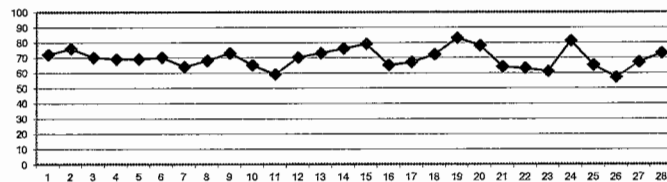
MST

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	24-HOUR				
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.			
DAY																														
1	73	74	75	75	75	76	76	77	75	71	69	66	62	61	63	65	68	75	75	72	72	75	75	76	77	77	71.7	24		
2	76	76	75	74	74	75	75	76	77	76	75	73	71	70	73	74	77	80	80	80	79	77	77	76	80	80	75.7	24		
3	75	74	74	76	74	73	73	75	75	74	74	71	68	63	58	55	58	58	64	72	74	72	73	72	76	76	69.8	24		
4	71	71	71	75	75	76	75	75	74	70	65	60	58	56	55	57	61	68	70	72	76	80	68	67	80	80	68.6	24		
5	69	70	71	72	75	72	68	68	66	67	65	61	61	61	60	68	74	75	76	75	73	70	70	70	76	76	68.9	24		
6	70	70	69	70	68	69	72	72	71	70	71	73	72	66	65	67	68	69	70	71	73	72	72	72	73	73	70.1	24		
7	71	71	70	69	68	68	69	70	70	67	65	60	59	55	52	54	56	60	62	63	64	64	66	66	71	71	64.1	24		
8	68	73	70	67	67	69	69	71	73	69	64	67	65	64	63	63	64	67	66	67	68	71	70	72	73	73	67.8	24		
9	71	69	70	72	73	75	76	76	76	75	74	72	72	71	70	71	71	73	73	73	73	75	77	77	77	77	73.1	24		
10	77	76	75	75	76	75	74	70	69	64	61	59	56	54	55	54	57	60	63	64	64	59	61	63	77	77	65.0	24		
11	66	70	71	72	72	73	73	72	70	65	59	54	50	46	43	40	39	44	47	53	57	60	62	64	73	73	59.3	24		
12	67	71	72	75	78	78	79	80	77	68	66	62	60	58	60	61	64	68	70	72	75	75	77	76	80	80	70.4	24		
13	79	81	81	81	82	80	78	80	80	77	75	72	74	74	75	69	67	68	66	63	59	62	64	64	82	82	73.0	24		
14	70	75	75	79	78	81	81	80	80	79	77	75	72	70	66	66	70	73	79	79	78	78	81	79	81	81	75.9	24		
15	79	80	81	80	81	83	83	84	86	82	81	76	72	69	73	74	77	81	85	79	80	80	76	77	86	86	79.1	24		
16	75	74	74	72	71	73	74	72	69	66	63	57	53	50	47	46	47	54	63	72	76	74	73	73	76	76	65.3	24		
17	73	73	74	74	74	71	70	71	73	72	67	64	59	54	48	50	53	55	64	69	73	75	75	73	75	75	66.8	24		
18	74	73	73	69	65	66	67	66	65	66	68	70	69	68	67	69	72	75	80	80	80	80	81	81	81	81	71.8	24		
19	83	82	82	81	80	82	82	81	79	76	76	74	75	74	71	76	84	90	91	93	93	95	96	96	96	96	83.0	24		
20	96	94	94	91	89	90	85	80	78	78	73	71	68	67	65	65	65	67	69	71	76	77	77	79	96	96	77.7	24		
21	77	78	76	76	74	73	73	75	72	66	58	52	47	43	40	42	43	51	60	68	72	72	72	71	78	78	63.8	24		
22	71	71	71	70	71	71	71	71	69	64	60	53	49	46	47	48	50	61	66	69	70	69	66	66	71	71	63.3	24		
23	64	65	64	64	69	72	73	75	72	65	61	54	49	46	44	44	55	52	51	55	60	67	68	73	75	75	60.9	24		
24	74	84	88	88	88	88	87	83	83	82	79	80	80	78	77	77	75	79	84	82	80	79	74	70	88	88	80.8	24		
25	70	69	70	68	71	73	76	75	73	64	61	58	52	47	47	48	49	55	67	74	75	74	74	74	76	76	65.2	24		
26	72	73	71	71	70	70	70	69	69	65	54	43	34	33	32	32	31	36	42	53	62	68	70	72	73	73	56.8	24		
27	72	72	71	70	71	71	70	69	68	68	69	65	61	57	51	50	55	61	68	71	76	78	77	76	78	78	67.4	24		
28	75	75	78	78	77	77	77	79	77	75	72	70	70	65	63	62	72	62	62	70	78	81	83	85	85	85	73.5	24		
HOURLY MAX	96	94	94	91	89	90	87	84	86	82	81	80	80	78	77	77	84	90	91	93	93	95	96	96	96					
HOURLY AVG	73.5	74.4	74.5	74.4	74.5	75.0	74.9	74.7	73.8	70.8	68.0	64.9	62.1	59.5	58.3	58.5	61.3	64.9	68.3	70.8	72.8	73.6	73.4	73.6	73.6					

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

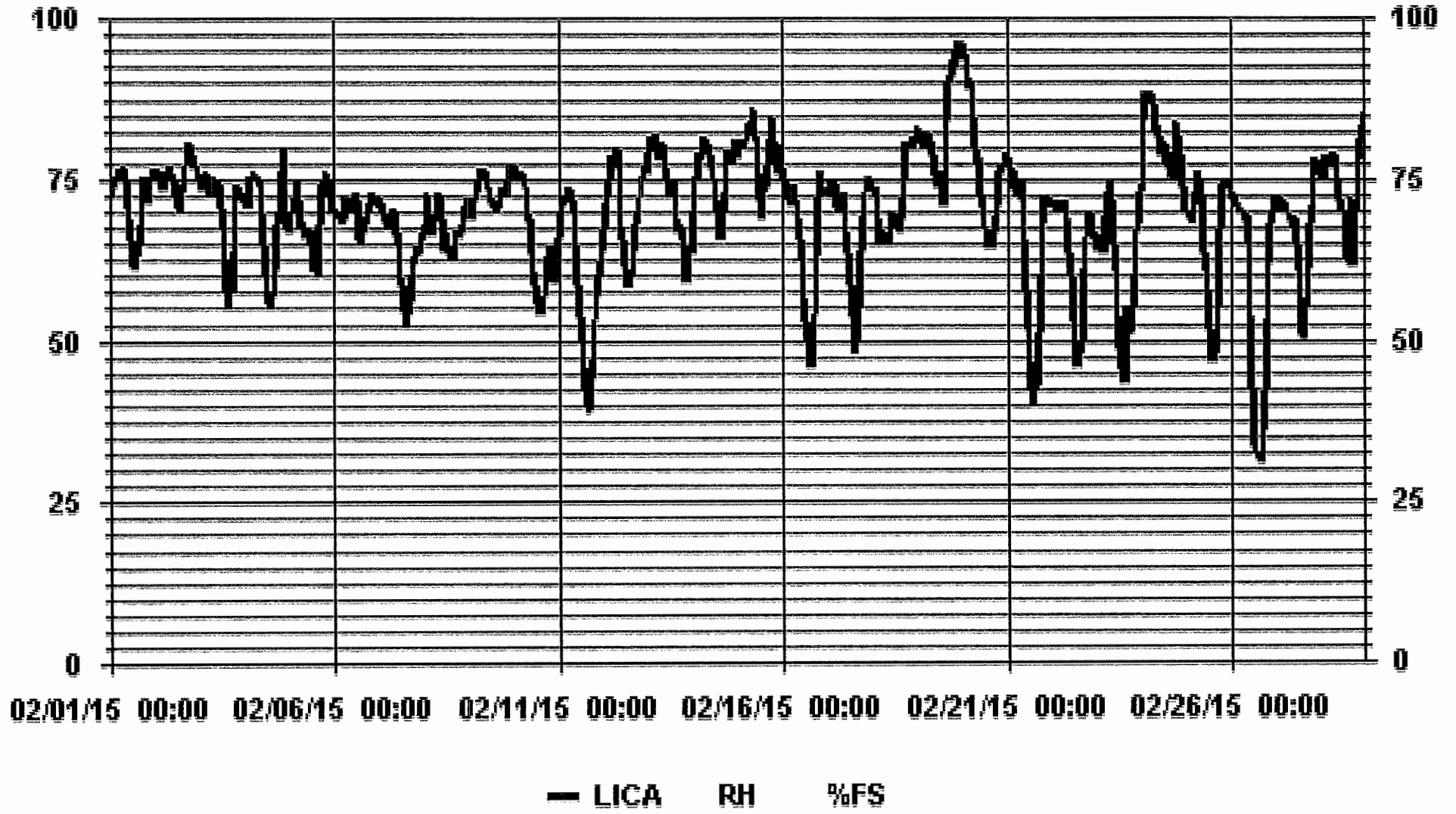
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	96	%	@ HOUR(S)	VAR	ON DAY(S)	19 , 20
MAXIMUM 24-HR AVERAGE:	83.0	%			ON DAY(S)	19
					VAR-VARIOUS	
OPERATIONAL TIME:						672 HRS
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	10.02				MONTHLY AVERAGE:	70 %

### 01 Hour Averages



***AMBIENT TEMPERATURE***



AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

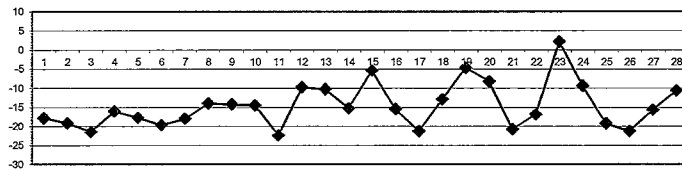
MST

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.	RDGS.	
HOUR END:	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00				
DAY																												
1	-26.0	-24.1	-21.8	-20.5	-19.7	-19.0	-18.7	-20.1	-21.2	-18.5	-17.6	-16.6	-14.9	-13.7	-13.4	-13.5	-13.9	-15.1	-15.4	-15.1	-15.9	-17.2	-17.8	-18.7	-13.4	-17.9	24	
2	-19.5	-21.5	-23.0	-23.4	-23.0	-23.2	-23.1	-21.7	-19.8	-18.0	-16.8	-15.8	-15.3	-15.2	-14.9	-14.7	-15.4	-16.6	-17.5	-17.9	-19.1	-20.7	-21.2	-22.5	-14.7	-19.2	24	
3	-22.3	-23.9	-24.9	-23.6	-24.5	-25.8	-26.3	-24.5	-22.4	-20.5	-17.7	-16.2	-15.1	-14.5	-14.8	-15.2	-16.2	-17.9	-19.8	-22.8	-24.9	-26.3	-27.2	-28.0	-14.5	-21.5	24	
4	-28.5	-28.8	-28.6	-25.3	-22.6	-21.6	-20.7	-20.5	-18.5	-16.6	-15.4	-13.5	-12.0	-9.9	-8.6	-8.1	-8.4	-9.3	-9.3	-10.3	-12.4	-13.3	-11.1	-11.9	-8.1	-16.1	24	
5	-13.3	-14.5	-15.7	-16.9	-17.7	-17.9	-18.3	-18.7	-19.3	-19.4	-19.5	-19.2	-18.3	-18.0	-17.6	-17.2	-17.3	-17.7	-17.7	-17.7	-18.2	-18.6	-18.8	-19.4	-13.3	-17.8	24	
6	-19.6	-19.8	-19.9	-20.0	-19.8	-19.9	-20.3	-20.6	-20.5	-20.3	-20.2	-20.0	-19.5	-18.9	-19.1	-19.2	-19.3	-19.4	-19.5	-19.5	-19.5	-19.5	-19.5	-19.6	-18.9	-19.7	24	
7	-19.8	-20.0	-19.9	-20.0	-20.2	-20.6	-20.9	-20.9	-20.7	-20.4	-19.6	-18.4	-17.6	-16.3	-15.2	-15.1	-15.1	-16.1	-16.4	-16.6	-16.6	-16.4	-16.4	-16.3	-15.1	-18.1	24	
8	-16.2	-16.2	-16.2	-16.1	-15.9	-15.9	-15.6	-15.3	-15.2	-14.1	-12.7	-12.7	-12.6	-12.5	-12.7	-12.8	-12.8	-12.9	-12.9	-12.9	-12.9	-13.3	-13.0	-13.0	-12.5	-14.0	24	
9	-13.2	-13.6	-13.9	-14.4	-14.9	-15.2	-15.4	-15.5	-15.5	-15.1	-14.8	-14.3	-14.1	-13.8	-13.6	-13.7	-13.7	-13.8	-13.9	-13.9	-13.9	-13.9	-14.1	-14.9	-13.2	-14.3	24	
10	-15.2	-15.2	-14.9	-14.8	-14.5	-14.1	-13.8	-13.9	-14.6	-15.0	-14.3	-13.3	-12.4	-11.6	-11.7	-11.9	-12.7	-13.2	-14.1	-15.1	-15.8	-17.0	-18.3	-19.5	-11.6	-14.5	24	
11	-21.0	-22.4	-23.7	-25.5	-26.2	-27.5	-28.5	-29.8	-29.1	-26.0	-24.6	-23.0	-21.8	-19.9	-18.3	-17.0	-17.6	-19.2	-19.7	-20.0	-19.7	-19.1	-19.0	-19.0	-17.0	-22.4	24	
12	-18.6	-18.3	-18.4	-17.6	-16.6	-16.3	-16.3	-17.2	-16.7	-13.2	-11.2	-8.7	-6.9	-5.5	-4.2	-3.0	-2.6	-2.8	-2.7	-2.8	-3.2	-3.2	-4.0	-5.1	-2.6	-9.8	24	
13	-6.8	-8.3	-7.8	-7.6	-7.7	-7.4	-7.6	-8.0	-8.6	-8.9	-9.2	-9.3	-10.1	-10.6	-10.9	-10.6	-10.5	-11.7	-12.8	-13.2	-13.9	-14.4	-14.9	-15.5	-6.8	-10.3	24	
14	-15.9	-16.0	-15.7	-15.2	-15.4	-15.9	-16.2	-16.3	-16.4	-16.3	-16.2	-16.1	-15.7	-14.7	-13.4	-13.6	-14.2	-14.6	-15.2	-15.5	-15.1	-14.8	-15.1	-14.1	-13.4	-15.3	24	
15	-13.1	-12.7	-12.4	-11.4	-10.2	-9.2	-8.5	-8.4	-8.1	-5.9	-3.9	-1.5	0.4	1.6	1.5	1.2	0.7	-0.1	-2.6	-3.2	-4.5	-5.3	-6.1	-8.3	1.6	-5.4	24	
16	-10.2	-11.4	-12.4	-12.8	-13.7	-15.2	-16.1	-16.5	-16.6	-16.3	-15.9	-14.5	-13.3	-12.0	-10.6	-10.7	-11.1	-13.0	-15.1	-19.0	-21.9	-23.7	-24.5	-25.2	-10.2	-15.5	24	
17	-26.3	-26.9	-26.8	-27.2	-26.3	-28.1	-29.7	-29.2	-26.1	-21.6	-18.9	-17.3	-16.0	-14.3	-11.9	-12.6	-13.6	-15.5	-16.9	-18.6	-20.9	-22.2	-22.1	-21.8	-11.9	-21.3	24	
18	-20.7	-19.6	-18.5	-17.1	-16.2	-14.9	-14.7	-14.1	-14.0	-13.4	-12.6	-12.2	-11.3	-11.0	-10.2	-10.3	-10.4	-10.7	-10.7	-9.9	-9.4	-9.5	-9.4	-9.4	-9.4	-9.4	-12.9	24
19	-9.6	-9.5	-9.6	-9.3	-9.0	-8.9	-8.6	-8.1	-7.5	-6.6	-5.6	-4.1	-3.1	-2.8	-1.9	-1.4	-1.3	-1.3	-1.2	-0.7	-0.2	-0.2	-0.2	-0.2	-0.2	-4.7	24	
20	-0.2	-0.7	-1.8	-3.3	-4.4	-5.1	-5.5	-7.2	-8.7	-9.4	-9.7	-9.5	-9.2	-8.6	-8.7	-9.0	-9.4	-10.3	-11.5	-12.0	-12.9	-13.0	-14.2	-15.5	-0.2	-8.3	24	
21	-17.8	-20.9	-23.0	-23.3	-24.6	-26.1	-26.6	-26.2	-23.0	-20.2	-18.7	-17.3	-16.0	-14.4	-12.9	-13.4	-13.6	-15.5	-19.0	-22.0	-24.0	-25.7	-26.8	-27.9	-12.9	-20.8	24	
22	-28.4	-28.5	-28.2	-29.3	-29.8	-30.0	-30.7	-30.8	-27.8	-19.9	-16.3	-12.5	-9.9	-9.1	-6.9	-5.2	-6.3	-9.1	-9.7	-9.4	-9.0	-7.7	-6.0	-4.4	-4.4	-16.9	24	
23	-3.0	-2.6	-2.6	-2.1	-0.9	-0.4	-0.4	-0.7	0.1	2.1	3.7	5.2	6.2	7.0	7.6	7.6	6.0	5.6	5.0	4.2	2.9	1.3	0.1	-1.7	7.6	2.1	24	
24	-2.8	-4.1	-4.5	-5.2	-7.0	-7.8	-8.7	-9.3	-9.9	-10.0	-9.8	-10.0	-10.1	-9.7	-9.7	-9.6	-9.8	-9.9	-10.5	-11.6	-12.5	-13.2	-14.3	-14.8	-2.8	-9.4	24	
25	-15.5	-16.5	-17.6	-18.6	-20.1	-20.8	-23.4	-24.7	-22.3	-20.2	-19.6	-17.6	-15.5	-13.7	-13.4	-13.5	-13.6	-15.6	-18.8	-21.4	-23.3	-24.9	-26.3	-27.2	-13.4	-19.3	24	
26	-28.4	-29.1	-30.3	-30.7	-31.5	-32.0	-32.5	-32.6	-29.1	-21.3	-16.8	-11.3	-10.7	-10.2	-10.0	-10.5	-12.3	-14.2	-16.8	-19.9	-21.7	-22.7	-23.6	-23.6	-10.0	-21.3	24	
27	-23.4	-22.3	-20.9	-19.8	-19.4	-19.3	-18.2	-17.5	-16.3	-14.0	-12.4	-11.7	-10.8	-9.5	-7.9	-7.5	-8.6	-10.5	-12.4	-14.1	-16.7	-19.4	-21.3	-22.6	-7.5	-15.7	24	
28	-23.3	-22.9	-18.0	-15.8	-15.8	-15.1	-14.5	-13.7	-12.2	-10.6	-8.4	-5.9	-4.7	-3.6	-3.2	-3.8	-4.5	-6.2	-8.1	-9.5	-9.6	-11.1	-11.6	-3.2	-10.6	24		
HOURLY MAX	-0.2	-0.7	-1.8	-2.1	-0.9	-0.4	-0.4	-0.7	0.1	2.1	3.7	5.2	6.2	7.0	7.6	7.6	6.0	5.6	5.0	4.2	2.9	1.3	0.1	-0.2				
HOURLY AVG	-17.1	-17.5	-17.5	-17.4	-17.4	-17.6	-17.9	-17.9	-17.1	-15.3	-14.1	-12.9	-11.8	-10.9	-10.2	-10.1	-10.5	-11.5	-12.5	-13.4	-14.4	-15.1	-15.5	-16.1				

STATUS FLAG CODES

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

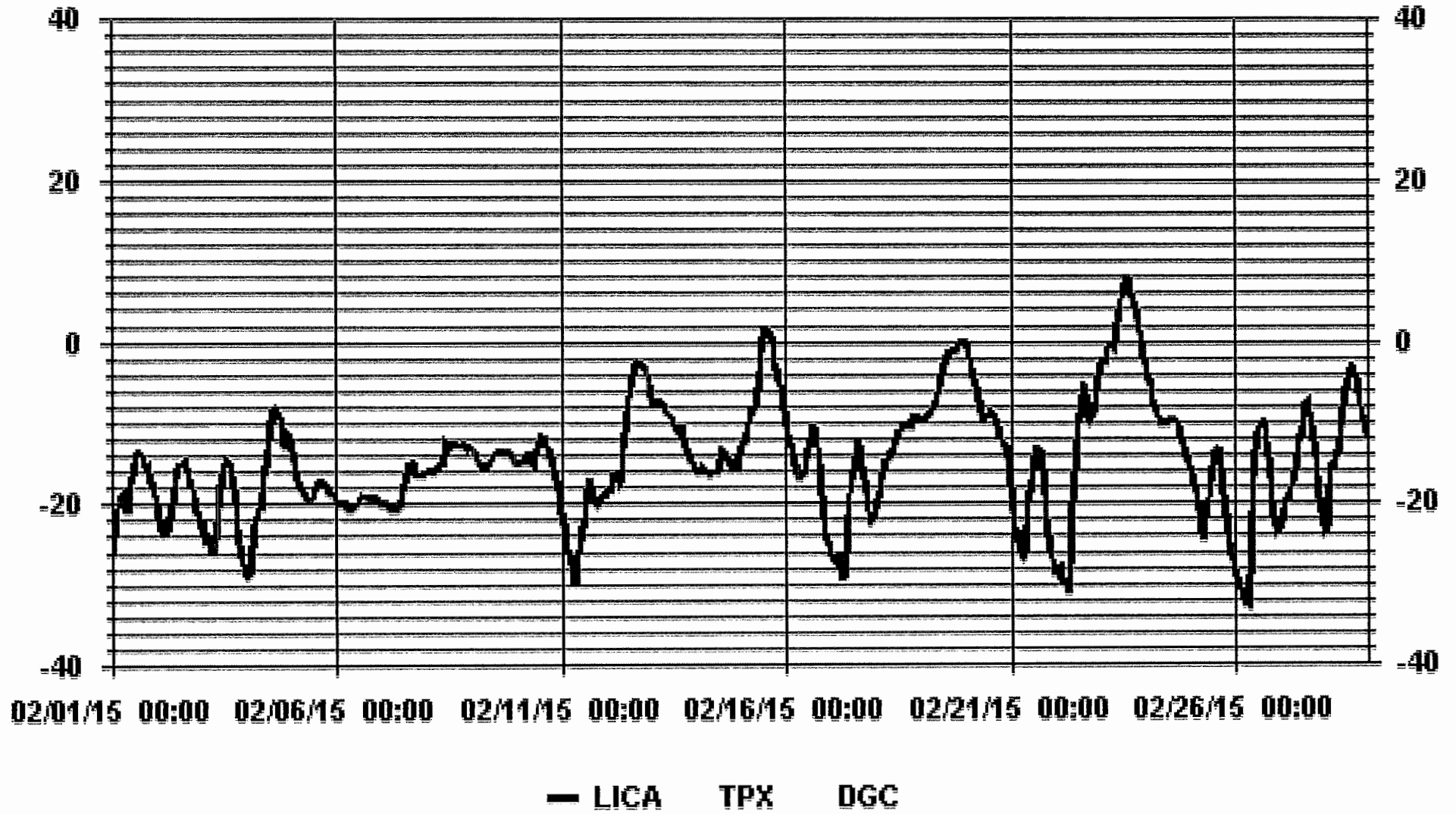
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-32.6 °C	@ HOUR(S)	7	ON DAY(S)	26
MAXIMUM 1-HR AVERAGE:	7.6 °C	@ HOUR(S)	14, 15	ON DAY(S)	23, 23
MAXIMUM 24-HR AVERAGE:	2.1 °C			ON DAY(S)	23
				VAR-VARIOUS	
OPERATIONAL TIME:				672	HRS
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	7.32			MONTHLY AVERAGE:	-14.7 °C

### 01 Hour Averages



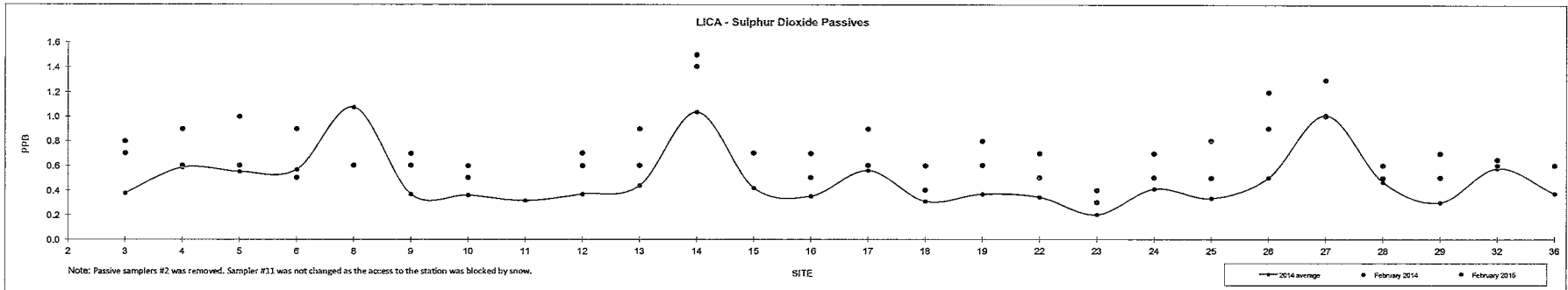


***APPENDIX II***  
***NON-CONTINUOUS MONITORING DATA RESULTS***

***PASSIVE RESULTS***

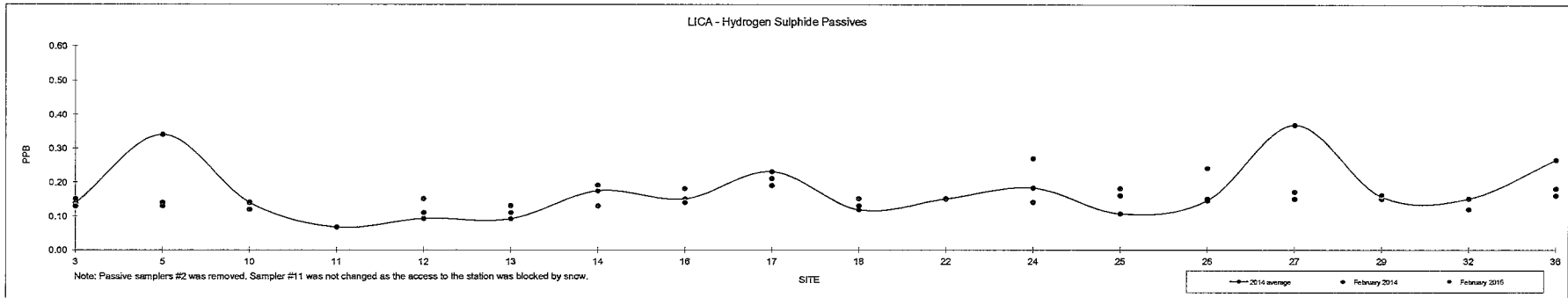
### Passive Summary Results for February 2015 Lakeland Industry & Community Association

	Sulphur Dioxide ppb																																February 2015	Site
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	25	26	27	28	29	32	36	Reading	-					
Mean	NA	0.4	0.6	0.6	0.6	1.1	0.4	0.4	0.3	0.4	0.4	1.0	0.4	0.4	0.6	0.3	0.4	0.3	0.2	0.4	0.3	0.5	1.0	0.5	0.3	0.6	0.4	0.6	-					
Minimum	NA	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.4	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.3	#23					
Maximum	NA	0.8	0.9	1.0	1.5	3.2	0.7	0.6	0.8	0.6	0.9	2.4	0.8	0.8	1.1	0.7	0.8	0.7	0.4	0.8	0.5	1.2	1.9	0.8	0.7	2.0	0.9	1.4	#28					



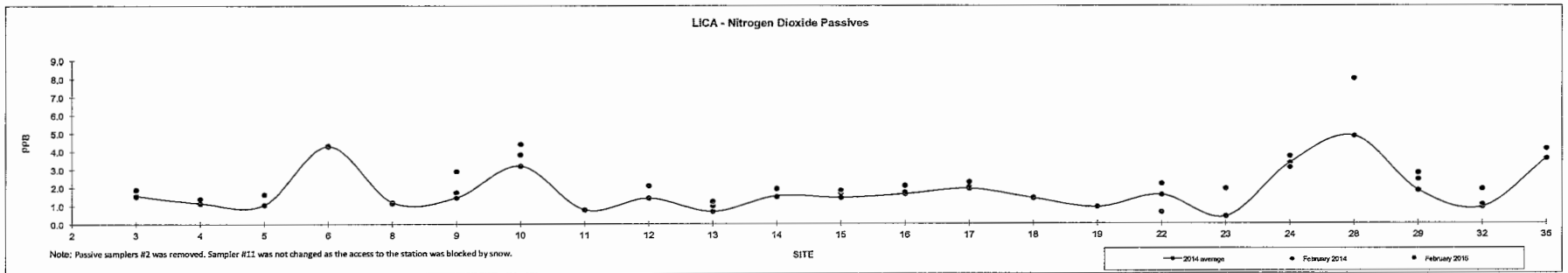
### Passive Summary Results for February 2015 Lakeland Industry & Community Association

	Hydrogen Sulphide ppb																February 2015			
	3	5	10	11	12	13	14	2014 16	17	18	22	24	25	26	27	29	32	36	Reading	Site
Mean	0.14	0.34	0.14	0.07	0.09	0.09	0.17	0.15	0.23	0.12	0.15	0.18	0.11	0.15	0.37	0.16	0.15	0.27	0.16	-
Minimum	0.05	0.07	0.06	0.04	0.02	0.02	0.05	0.07	0.11	0.04	0.04	0.05	0.03	0.06	0.04	0.05	0.05	0.07	0.13	#5, #13
Maximum	0.24	0.97	0.31	0.11	0.20	0.16	0.30	0.29	0.44	0.17	0.32	0.32	0.16	0.21	1.23	0.33	0.26	1.36	0.24	#26



### Passive Summary Results for February 2015 Lakeland Industry & Community Association

	Nitrogen Dioxide ppb																				February 2015					
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	28	29	32	36	Reading	Site
Mean	NA	1.5	1.1	1.0	4.3	1.2	1.4	3.2	0.8	1.4	0.7	1.5	1.4	1.8	1.9	1.4	0.9	1.8	0.4	3.3	4.8	1.8	0.9	3.8	2.2	-
Minimum	NA	0.5	0.3	0.1	2.1	0.5	0.5	1.4	0.2	0.5	0.1	0.5	0.4	0.5	1.1	0.6	0.2	0.6	0.1	1.6	1.6	0.3	0.2	1.4	0.6	#22
Maximum	NA	4.2	2.3	2.4	6.8	2.8	2.9	5.3	2.5	2.8	1.4	4.0	3.1	3.7	3.1	2.7	2.3	3.2	1.2	5.7	11.3	4.2	2.0	7.9	8.0	#28

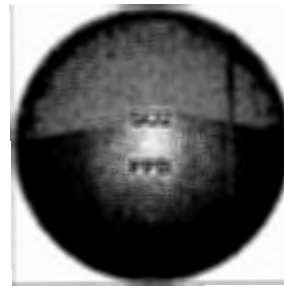


# Lakeland Industry & Community Association SO<sub>2</sub> Passive Bubble Map

FEBRUARY 2015

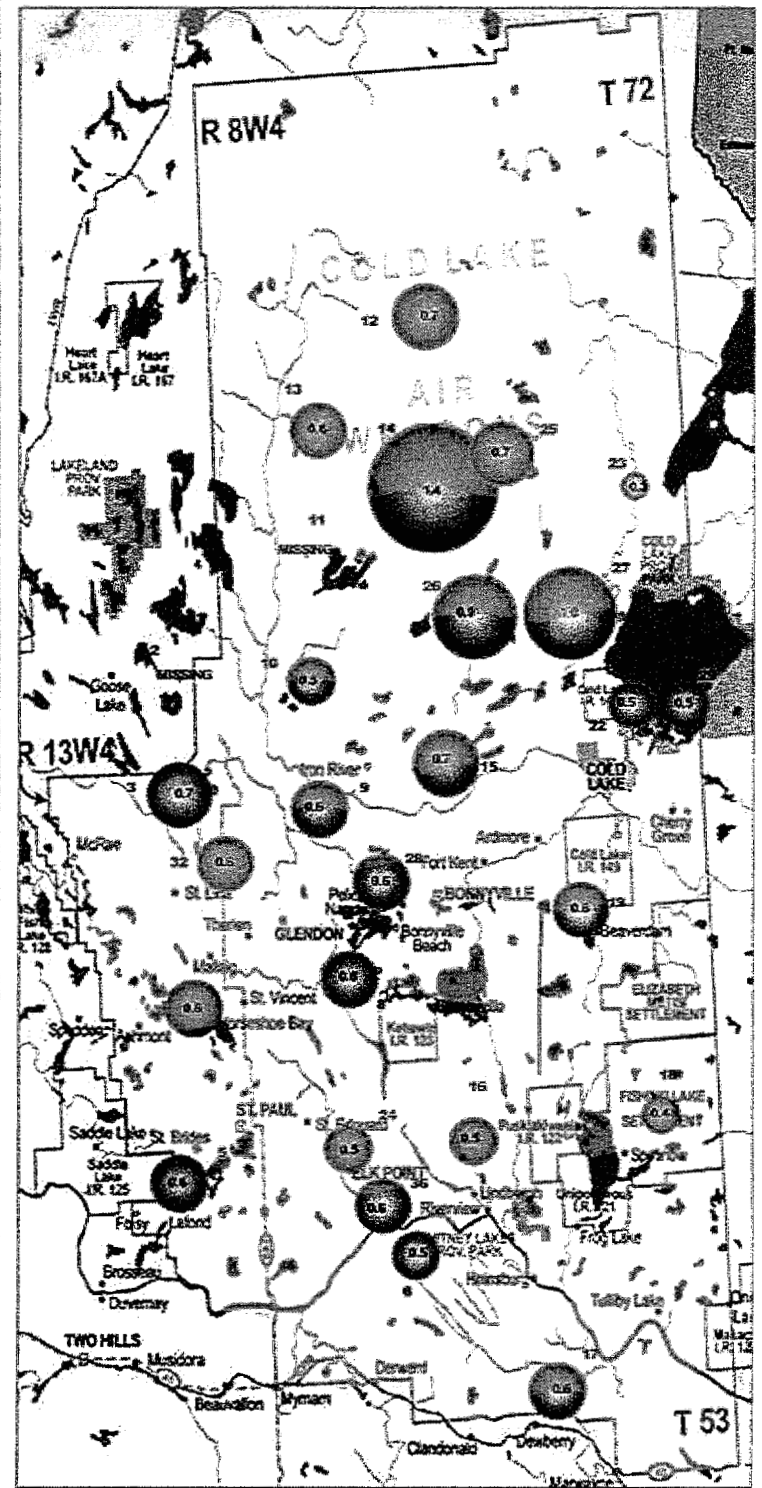
## PASSIVE STATIONS

Station Number	Location	SO <sub>2</sub> Concentration (PPB)	Duplicate
2	Sand River	MISSING	NA
3	Therien	0.7 PPB	NA
4	Flat Lake	0.6 PPB	NA
5	Lake Eliza	0.6 PPB	NA
6	Telegraph Creek	0.5 PPB	NA
8	Murfi-Kehewin	0.6 PPB	NA
9	Dupre	0.6 PPB	NA
10	La Corey	0.5 PPB	NA
11	Wolf Lake	MISSING	NA
12	Foster Creek	0.7 PPB	NA
13	Primrose	0.6 PPB	NA
14	Maskwa	1.4 PPB	NA
15	Ardmore	0.7 PPB	NA
16	Frog Lake	0.5 PPB	NA
17	Clear Range	2.0 PPB	NA
18	Fishing Lake	0.4 PPB	NA
19	Beaverdam	0.6 PPB	NA
22	Cold Lake South	0.5 PPB	NA
23	Medley-Martineau	0.3 PPB	NA
24	Fort George	0.5 PPB	NA
25	Burnt Lake	0.8 PPB	NA
26	Mahikan	0.9 PPB	NA
27	Mahkeses	1.0 PPB	NA
28	Town of Bonnyville	0.6 PPB	0.5 PPB
29	Cold Lake South 2	0.5 PPB	0.5 PPB
32	St. Lina	0.6 PPB	0.6 PPB
36	Elk Point	0.6 PPB	NA



## Summary

Minimum : 0.3 PPB – Medley-Martineau  
 Maximum: 1.4 PPB – Maskwa  
 Average: 0.6 PPB \*includes Duplicates

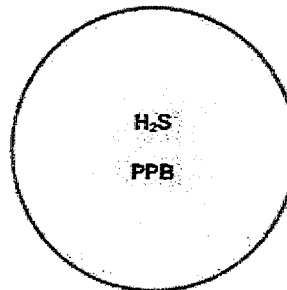


# Lakeland Industry & Community Association H<sub>2</sub>S Passive Bubble Map

FEBRUARY 2015

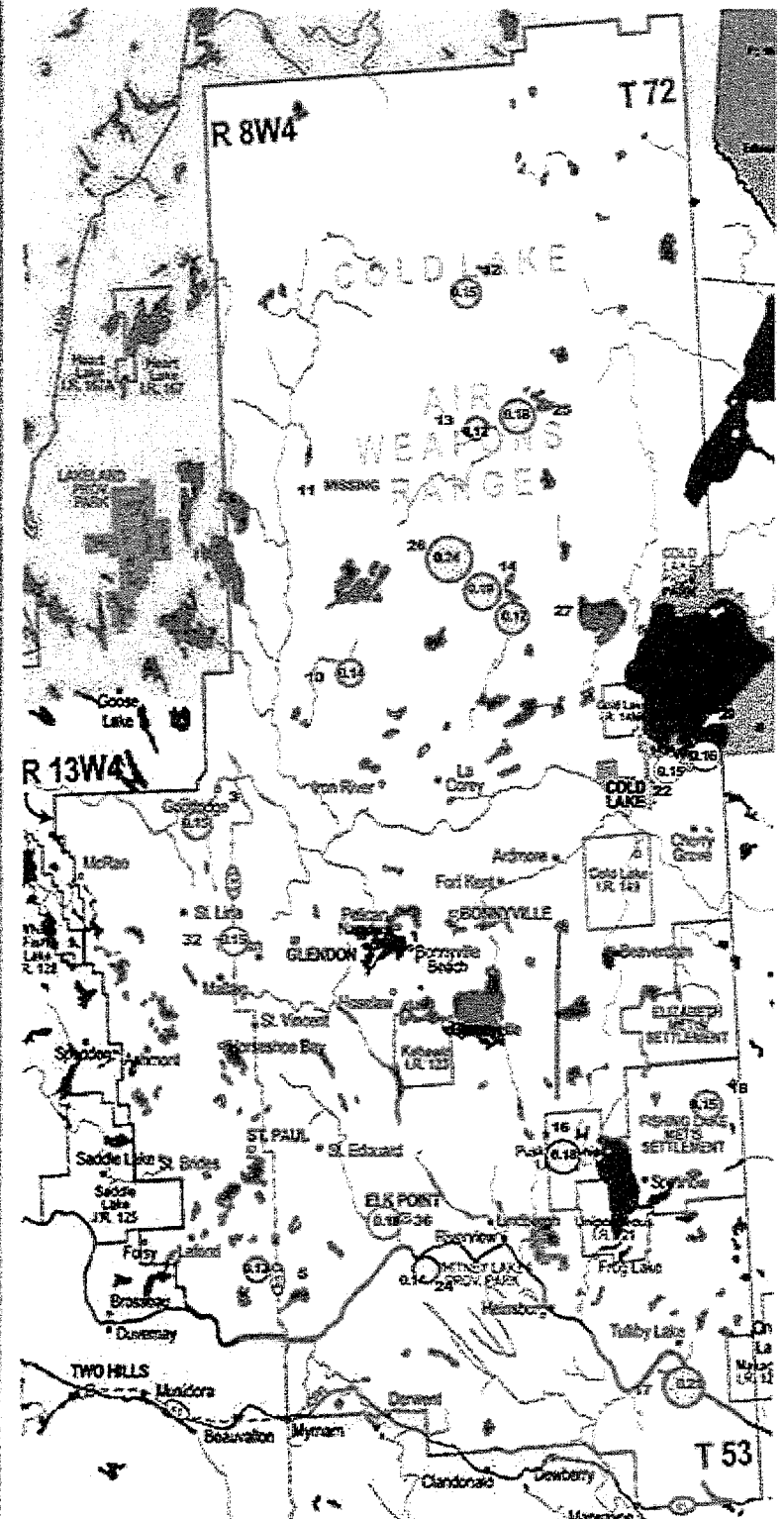
## PASSIVE STATIONS

Station Number	Location	Reading 1	Reading 2
3	Therien	0.15 PPB	0.15 PPB
5	Lake Eliza	0.13 PPB	0.13 PPB
10	La Corey	0.14 PPB	NA
11	Wolf Lake	MISSING	NA
12	Foster Creek	0.15 PPB	NA
13	Primrose	0.13 PPB	NA
14	Maskwa	0.19 PPB	NA
16	Frog Lake	0.18 PPB	NA
17	Clear Range	0.21 PPB	NA
18	Fishing Lake	0.15 PPB	NA
22	Cold Lake South	0.15 PPB	NA
24	Fort George	0.14 PPB	NA
25	Burnt Lake	0.18 PPB	NA
26	Mahihkan	0.24 PPB	NA
27	Mahkeses	0.17 PPB	NA
29	Cold Lake South 2	0.16 PPB	NA
32	St. Lina	0.15 PPB	NA
36	Elk Point	0.18 PPB	NA



## Summary

Minimum : 0.13 PPB – Lake Eliza and Primrose  
 Maximum: 0.2416 PPB – Mahihkan  
 Average: 0.16 PPB (Includes Duplicates)

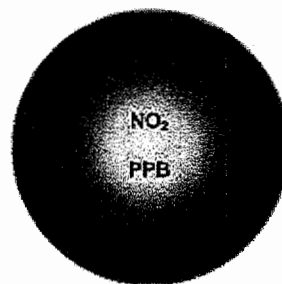


# Lakeland Industry & Community Association NO<sub>2</sub> Passive Bubble Map

FEBRUARY 2015

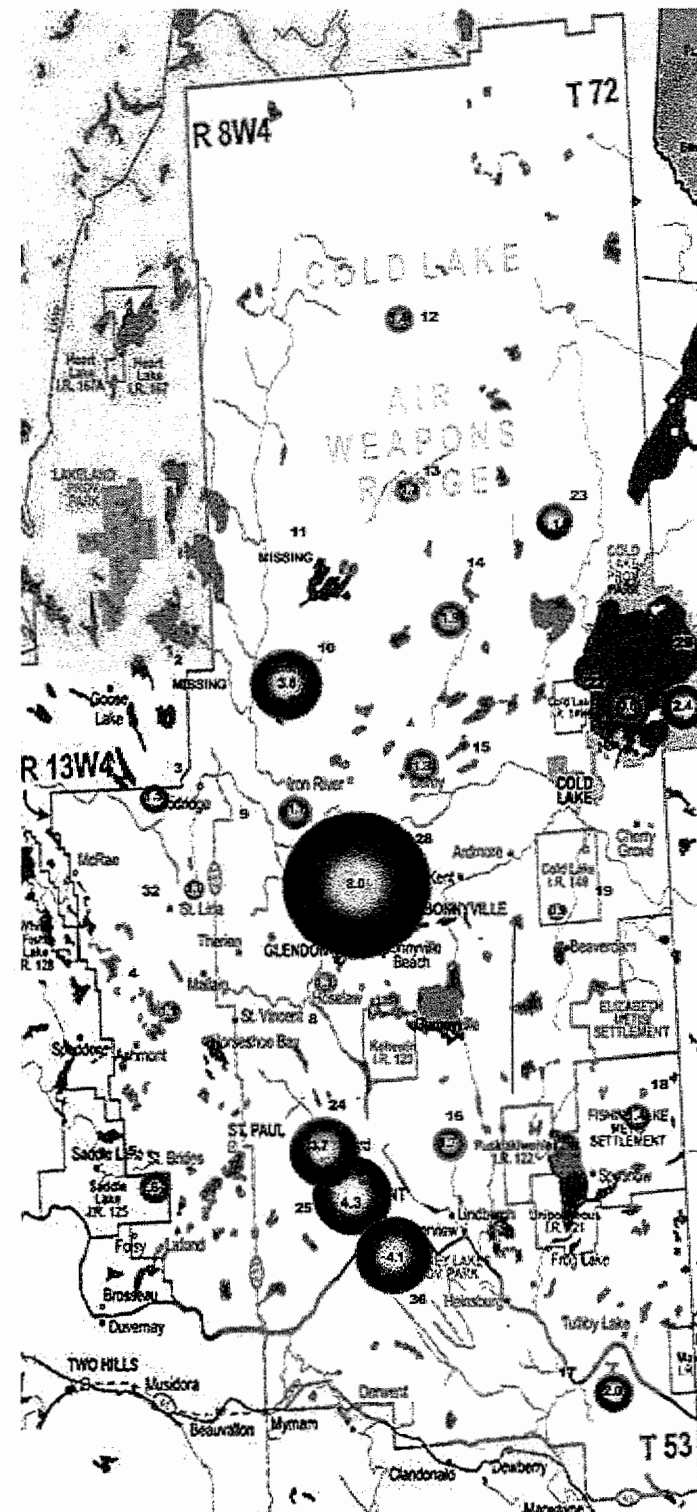
## PASSIVE STATIONS

		DUPLICATE
2 – Sand River	MISSING	NA
3 – Therien	1.4 PPB	1.5 PPB
4 – Flat Lake	1.1 PPB	NA
5 – Lake Eliza	1.6 PPB	NA
6 – Telegraph Creek	4.3 PPB	NA
8 – Muriel-Kehewin	1.1 PPB	NA
9 – Dupre	1.7 PPB	NA
10 – La Corey	3.8 PPB	NA
11 – Wolf Lake	MISSING	NA
12 – Foster Creek	1.4 PPB	NA
13 – Primrose	1.2 PPB	NA
14 – Maskwa	1.9 PPB	NA
15 – Ardmore	1.8 PPB	NA
16 – Frog Lake	1.7 PPB	NA
17 – Clear Range	2.0 PPB	NA
18 – Fishing Lake	1.4 PPB	NA
19 – Beavertam	0.9 PPB	NA
22 – Cold Lake South	0.6 PPB	NA
23 – Medley-Martineau	1.9 PPB	NA
24 – Fort George	3.7 PPB	NA
28 – Town of Bonnyville	8.0 PPB	NA
29 – Cold Lake South 2	2.4 PPB	NA
32 – St. Lina	1.0 PPB	NA
36 – Elk Point	4.1 PPB	4.1 PPB



## Summary

Minimum : 0.6 PPB – Cold Lake South  
 Maximum: 8.0 PPB – Town of Bonnyville  
 Average: 2.2 PPB \*Includes Duplicates





Passive Sampler Data Sheet for       LICA             February             2015      

ID	SAMPLER				START		END		NOTES
					DATE	TIME	DATE	TIME	
2		SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	NA	NA	NA	NA	Samplers were removed
3	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	16:54	Feb 27, 2015	14:28	See "Duplicates" (+3)
4	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	15:44	March 2, 2015	19:53	
5	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	17:10	March 2, 2015	19:02	See "Duplicates" (+1)
6	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	12:27	March 2, 2015	17:21	
8	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	19:23	March 2, 2015	20:58	
9	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	20:05	Feb 27, 2015	15:34	
10	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 29, 2015	14:13	March 2, 2015	07:04	
11	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	-----	-----	-----	-----	Not accessible due to deep snow
12	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 29, 2015	11:46	Feb 27, 2015	12:07	
13	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 29, 2015	15:21	Feb 27, 2015	17:36	
14	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 29, 2015	16:13	March 2, 2015	08:53	
15	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	20:52	Feb 27, 2015	11:17	
16	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	11:11	March 2, 2015	14:22	
17	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	12:44	March 2, 2015	16:27	
18	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	11:51	March 2, 2015	15:04	
19	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	10:41	March 2, 2015	13:29	
22	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	14:15	Feb 27, 2015	10:55	
23	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 29, 2015	17:32	March 2, 2015	11:33	
24	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	13:56	March 2, 2015	18:03	
25	H <sub>2</sub> S	SO <sub>2</sub>	---	---	Jan 29, 2015	12:45	Feb 27, 2015	18:58	
26	H <sub>2</sub> S	SO <sub>2</sub>	---	---	Jan 29, 2015	15:56	March 2, 2015	08:28	
27	H <sub>2</sub> S	SO <sub>2</sub>	---	---	Jan 29, 2015	16:25	March 2, 2015	10:13	
28	---	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	16:06	Feb 27, 2015	12:26	See "Duplicates" (+1)
29	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	14:15	Feb 27, 2015	10:56	See "Duplicates" (+1)
32	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	16:21	Feb 27, 2015	13:36	See "Duplicates" (+1)
36	H <sub>2</sub> S	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	17:23	March 2, 2015	18:22	See "Duplicates" (+2)
<b>D U P L I C A T E S</b>									
3	H <sub>2</sub> S	---	NO <sub>2</sub>	O <sub>3</sub>	Jan 28, 2015	16:54	Feb 27, 2015	14:28	
5	H <sub>2</sub> S	---	---	---	Jan 28, 2015	17:10	March 2, 2015	19:02	
28	---	SO <sub>2</sub>	---	---	Jan 28, 2015	16:06	Feb 27, 2015	12:26	
29	---	SO <sub>2</sub>	---	---	Jan 27, 2015	14:15	Feb 27, 2015	10:56	
32	---	SO <sub>2</sub>	---	---	Jan 28, 2015	16:21	Feb 27, 2015	13:36	
36	---	---	NO <sub>2</sub>	O <sub>3</sub>	Jan 27, 2015	17:23	March 2, 2015	18:22	

***VOC RESULTS***

Sample ID: 15020077-001

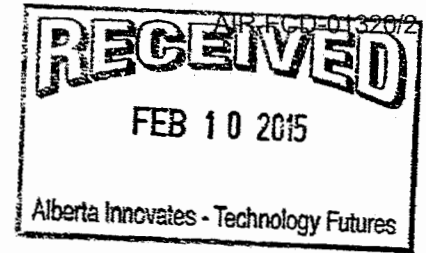
Customer ID: LICA

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

Priority: Normal

Maxxam

VOC Sample Collection Data Sheet



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

Sampler S/N: 6167  
Canister ID: 85680  
Canister Installation Date/Time: Feb 02, 2015 @ 19:48  
Canister Removal Date/Time: Feb 06, 2015 @ 09:44

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
Feb 05, 2015	00:00	00:00	24

Feb 05, 2015 Feb 06, 2015

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
—	—	—

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
28.8	23.4

23.4 psi  
SWR

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 - Alex Yakupov  
Sample out - Alex Yakupov

## Volatile Organics Data Results

Date: FEBRUARY 5, 2015  
Canister ID: 55680

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.03
1,1,2,2-Tetrachloroethane	< 0.03
1,1,2-Trichloroethane	< 0.03
1,1-Dichloroethane	< 0.03
1,1-Dichloroethylene	< 0.03
1,2,3-Trimethylbenzene	0.08
1,2,4-Trichlorobenzene	0.09
1,2,4-Trimethylbenzene	0.11
1,2-Dibromoethane	< 0.03
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	< 0.03
1,2-Dichloropropane	< 0.03
1,3,5-Trimethylbenzene	0.07
1,3-Butadiene	< 0.03
1,3-Dichlorobenzene	< 0.03
1,4-Dichlorobenzene	< 0.03
1,4-Dioxane	< 0.03
1-Butene	0.73
1-Hexene	< 0.03
1-Pentene	0.14
2,2,4-Trimethylpentane	< 0.03
2,2-Dimethylbutane	0.06
2,3,4-Trimethylpentane	< 0.03
2,3-Dimethylbutane	0.09
2,3-Dimethylpentane	0.12
2,4-Dimethylpentane	< 0.03
2-Methylheptane	0.03
2-Methylhexane	< 0.03
2-Methylpentane	0.22
3-Methylheptane	0.07
3-Methylhexane	0.20
3-Methylpentane	0.17
Acetone	5.70
Acrolein	< 0.03
Benzene	0.19
Benzyl chloride	< 0.03
Bromodichloromethane	< 0.03
Bromoform	< 0.03
Bromomethane	< 0.03
Carbon disulfide	0.60
Carbon tetrachloride	0.08
Chlorobenzene	< 0.03
Chloroethane	< 0.03
Chloroform	< 0.03
Chloromethane	0.57
cis-1,2-Dichloroethene	< 0.03
cis-1,3-Dichloropropene	< 0.03
cis-2-Butene	0.31
cis-2-Pentene	0.16
Cyclohexane	0.22
Cyclopentane	< 0.03
Dibromochloromethane	< 0.03
Ethanol	0.39
Ethyl acetate	< 0.03
Ethylbenzene	0.23
Freon-11	0.24

## Volatile Organics Data Results

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Date: FEBRUARY 5, 2015  
Canister ID: S5680

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.12
Freon-114	< 0.03
Freon-12	0.56
Hexachloro-1,3-butadiene	< 0.03
Isobutane	0.34
Isopentane	0.49
Isoprene	< 0.03
Isopropyl alcohol	< 0.03
Isopropylbenzene	0.06
m,p-Xylene	0.20
m-Diethylbenzene	< 0.03
m-Ethyltoluene	< 0.03
Methyl butyl ketone	< 0.03
Methyl ethyl ketone	2.13
Methyl isobutyl ketone	< 0.03
Methyl methacrylate	< 0.03
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.59
Methylcyclopentane	0.14
Methylene chloride	< 0.03
n-Butane	0.64
n-Decane	< 0.03
n-Dodecane	< 0.03
n-Heptane	0.07
n-Hexane	0.10
n-Nonane	< 0.03
n-Octane	< 0.03
n-Pentane	< 0.03
n-Propylbenzene	0.07
n-Undecane	< 0.03
Naphthalene	0.14
o-Ethyltoluene	0.07
o-Xylene	0.15
p-Diethylbenzene	< 0.03
p-Ethyltoluene	0.06
Styrene	< 0.03
Tetrachloroethylene	< 0.03
Tetrahydrofuran	< 0.03
Toluene	0.82
trans-1,2-Dichloroethylene	< 0.03
trans-1,3-Dichloropropylene	< 0.03
trans-2-Butene	0.60
trans-2-Pentene	0.39
Trichloroethylene	< 0.03
Vinyl acetate	< 0.03
Vinyl chloride	< 0.03



Sample ID: 15020208-002

Customer ID: LICA  
Cust Samp ID: LICA/VOC/CLS/Feb 11, 2015

# Maxxam

## VOC Sample Collection Data Sheet

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

Sampler S/N: 6167  
Canister ID: 1532  
Canister Installation Date/Time: Feb 6, 2015 @ 09:47  
Canister Removal Date/Time: Feb 14, 2015 @ 11:06

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>Feb 11, 2015</u>	<u>00:00</u>	<u>00:00</u>	<u>24</u>

Feb 11, 2015    Feb 12, 2015

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>                    </u>	<u>                    </u>	<u>                    </u>

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
<u>28.8</u>	<u>24.1</u>

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 - Alex Yakupov  
Sample out - Alex Yakupov

## Volatile Organics Data Results

Date: FEBRUARY 11, 2015  
Canister ID: 1532

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.03
1,1,2,2-Tetrachloroethane	< 0.03
1,1,2-Trichloroethane	< 0.03
1,1-Dichloroethane	< 0.03
1,1-Dichloroethylene	< 0.03
1,2,3-Trimethylbenzene	< 0.03
1,2,4-Trichlorobenzene	0.14
1,2,4-Trimethylbenzene	0.04
1,2-Dibromoethane	< 0.03
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	< 0.03
1,2-Dichloropropane	< 0.03
1,3,5-Trimethylbenzene	< 0.03
1,3-Butadiene	< 0.03
1,3-Dichlorobenzene	< 0.03
1,4-Dichlorobenzene	< 0.03
1,4-Dioxane	< 0.03
1-Butene	< 0.03
1-Hexene	< 0.03
1-Pentene	< 0.03
2,2,4-Trimethylpentane	< 0.03
2,2-Dimethylbutane	< 0.03
2,3,4-Trimethylpentane	< 0.03
2,3-Dimethylbutane	< 0.03
2,3-Dimethylpentane	0.05
2,4-Dimethylpentane	< 0.03
2-Methylheptane	< 0.03
2-Methylhexane	< 0.03
2-Methylpentane	0.09
3-Methylheptane	< 0.03
3-Methylhexane	< 0.03
3-Methylpentane	0.07
Acetone	1.38
Acrolein	< 0.03
Benzene	0.17
Benzyl chloride	< 0.03
Bromodichloromethane	< 0.03
Bromoform	< 0.03
Bromomethane	< 0.03
Carbon disulfide	0.23
Carbon tetrachloride	0.08
Chlorobenzene	< 0.03
Chloroethane	< 0.03
Chloroform	< 0.03
Chloromethane	0.57
cis-1,2-Dichloroethene	< 0.03
cis-1,3-Dichloropropene	< 0.03
cis-2-Butene	< 0.03
cis-2-Pentene	< 0.03
Cyclohexane	< 0.03
Cyclopentane	< 0.03
Dibromochloromethane	< 0.03
Ethanol	0.38
Ethyl acetate	< 0.03
Ethylbenzene	< 0.03
Freon-11	0.22

## Volatile Organics Data Results

Date: FEBRUARY 11 , 2015  
Canister ID: 1532

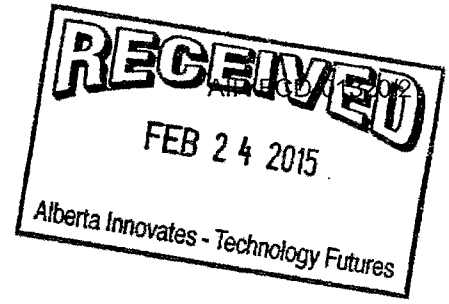
PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	< 0.03
Freon-12	0.48
Hexachloro-1,3-butadiene	0.03
Isobutane	0.07
Isopentane	0.16
Isoprene	< 0.03
Isopropyl alcohol	< 0.03
Isopropylbenzene	< 0.03
m,p-Xylene	0.08
m-Diethylbenzene	< 0.03
m-Ethyltoluene	< 0.03
Methyl butyl ketone	< 0.03
Methyl ethyl ketone	< 0.03
Methyl isobutyl ketone	< 0.03
Methyl methacrylate	< 0.03
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.07
Methylcyclopentane	< 0.03
Methylene chloride	0.16
n-Butane	0.30
n-Decane	< 0.03
n-Dodecane	< 0.03
n-Heptane	0.05
n-Hexane	0.10
n-Nonane	< 0.03
n-Octane	< 0.03
n-Pentane	0.34
n-Propylbenzene	< 0.03
n-Undecane	< 0.03
Naphthalene	1.80
o-Ethyltoluene	< 0.03
o-Xylene	< 0.03
p-Diethylbenzene	< 0.03
p-Ethyltoluene	< 0.03
Styrene	< 0.03
Tetrachloroethylene	< 0.03
Tetrahydrofuran	< 0.03
Toluene	0.12
trans-1,2-Dichloroethylene	< 0.03
trans-1,3-Dichloropropylene	< 0.03
trans-2-Butene	< 0.03
trans-2-Pentene	< 0.03
Trichloroethylene	< 0.03
Vinyl acetate	< 0.03
Vinyl chloride	< 0.03



Sample ID: 15020240-002

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Feb 17, 2015



# Maxxam

## VOC Sample Collection Data Sheet

Client: LICA Sampler S/N: 8167  
 Location: CLS Canister ID: 2663  
 Station ID: LICA 01 Canister Installation Date/Time: Feb 14, 2015 @ 11:11  
 Field Sample ID: LICA/VOC/CLS/Feb 17, 2015 Canister Removal Date/Time: Feb 20, 2015 @ 15:52

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
Feb 17, 2015	00:00 Feb 17, 2015	00:00 Feb 18, 2015	24

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
_____	_____	_____

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
28.8	24.1

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 - Alex Vakupov  
Sample out - Alex Vakupov

## Volatile Organics Data Results

Date: FEBRUARY 17 , 2015  
Canister ID: 2663

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.03
1,1,2,2-Tetrachloroethane	< 0.03
1,1,2-Trichloroethane	< 0.03
1,1-Dichloroethane	< 0.03
1,1-Dichloroethylene	< 0.03
1,2,3-Trimethylbenzene	< 0.03
1,2,4-Trichlorobenzene	< 0.03
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.03
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	< 0.03
1,2-Dichloropropane	< 0.03
1,3,5-Trimethylbenzene	< 0.03
1,3-Butadiene	< 0.03
1,3-Dichlorobenzene	< 0.03
1,4-Dichlorobenzene	< 0.03
1,4-Dioxane	< 0.03
1-Butene	0.59
1-Hexene	< 0.03
1-Pentene	< 0.03
2,2,4-Trimethylpentane	0.06
2,2-Dimethylbutane	< 0.03
2,3,4-Trimethylpentane	< 0.03
2,3-Dimethylbutane	0.11
2,3-Dimethylpentane	0.09
2,4-Dimethylpentane	< 0.03
2-Methylheptane	< 0.03
2-Methylhexane	0.07
2-Methylpentane	0.19
3-Methylheptane	< 0.03
3-Methylhexane	0.07
3-Methylpentane	0.14
Acetone	1.16
Acrolein	< 0.03
Benzene	0.22
Benzyl chloride	< 0.03
Bromodichloromethane	< 0.03
Bromoform	< 0.03
Bromomethane	< 0.03
Carbon disulfide	0.06
Carbon tetrachloride	0.09
Chlorobenzene	< 0.03
Chloroethane	< 0.03
Chloroform	< 0.03
Chloromethane	0.60
cis-1,2-Dichloroethene	< 0.03
cis-1,3-Dichloropropene	< 0.03
cis-2-Butene	< 0.03
cis-2-Pentene	< 0.03
Cyclohexane	0.25
Cyclopentane	0.10
Dibromochloromethane	< 0.03
Ethanol	1.31
Ethyl acetate	< 0.03
Ethylbenzene	< 0.03
Freon-11	0.21

## Volatile Organics Data Results

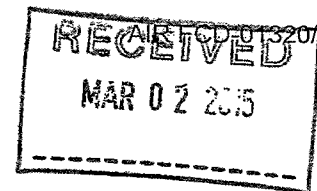
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Date: FEBRUARY 17 , 2015  
Canister ID: 2663

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	< 0.03
Freon-12	0.57
Hexachloro-1,3-butadiene	< 0.03
Isobutane	0.78
Isopentane	0.63
Isoprene	< 0.03
Isopropyl alcohol	< 0.03
Isopropylbenzene	< 0.03
m,p-Xylene	0.12
m-Diethylbenzene	< 0.03
m-Ethyltoluene	< 0.03
Methyl butyl ketone	< 0.03
Methyl ethyl ketone	0.16
Methyl isobutyl ketone	< 0.03
Methyl methacrylate	< 0.03
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.33
Methylcyclopentane	< 0.03
Methylene chloride	< 0.03
n-Butane	1.11
n-Decane	< 0.03
n-Dodecane	< 0.03
n-Heptane	0.09
n-Hexane	0.17
n-Nonane	< 0.03
n-Octane	< 0.03
n-Pentane	< 0.03
n-Propylbenzene	< 0.03
n-Undecane	< 0.03
Naphthalene	< 0.03
o-Ethyltoluene	< 0.03
o-Xylene	0.04
p-Diethylbenzene	< 0.03
p-Ethyltoluene	< 0.03
Styrene	< 0.03
Tetrachloroethylene	0.03
Tetrahydrofuran	< 0.03
Toluene	0.20
trans-1,2-Dichloroethylene	< 0.03
trans-1,3-Dichloropropylene	< 0.03
trans-2-Butene	< 0.03
trans-2-Pentene	< 0.03
Trichloroethylene	< 0.03
Vinyl acetate	< 0.03
Vinyl chloride	< 0.03

Sample ID: 15030004-001

Customer ID: LICA  
Cust Samp ID: LICA/VOC/CLS/Feb 23, 2015



# Maxxam Analytics Inc.

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA  
Location: CLS  
Station ID: Lica 01  
Field Sample ID: LICA/VOC/CLS/Feb 23, 2015  
Sampler s/n: 6167  
Canister ID: S 5609  
Canister Installation Date/Time: Feb 20, 2015 @ 15:57  
Canister Removal Date/Time: Feb 26, 2015 @ 10:51

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

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

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
28.8	22.0

Canister valve open prior to sampling? YES  
Timer set to 0.00 minutes prior to sampling? YES  
Canister valve closed prior to disconnection? YES

Comments:

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

## Volatile Organics Data Results

Date: FEBRUARY 23 , 2015  
Canister ID: S5609

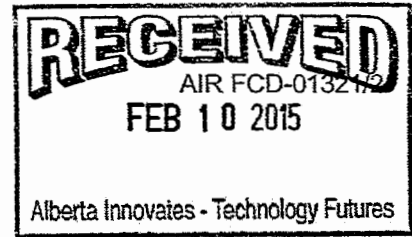
PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.03
1,1,2,2-Tetrachloroethane	< 0.03
1,1,2-Trichloroethane	< 0.03
1,1-Dichloroethane	< 0.03
1,1-Dichloroethylene	< 0.03
1,2,3-Trimethylbenzene	0.23
1,2,4-Trichlorobenzene	3.07
1,2,4-Trimethylbenzene	0.22
1,2-Dibromoethane	< 0.03
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	< 0.03
1,2-Dichloropropane	< 0.03
1,3,5-Trimethylbenzene	0.08
1,3-Butadiene	< 0.03
1,3-Dichlorobenzene	< 0.03
1,4-Dichlorobenzene	< 0.03
1,4-Dioxane	< 0.03
1-Butene	< 0.03
1-Hexene	< 0.03
1-Pentene	< 0.03
2,2,4-Trimethylpentane	< 0.03
2,2-Dimethylbutane	< 0.03
2,3,4-Trimethylpentane	< 0.03
2,3-Dimethylbutane	< 0.03
2,3-Dimethylpentane	< 0.03
2,4-Dimethylpentane	< 0.03
2-Methylheptane	< 0.03
2-Methylhexane	< 0.03
2-Methylpentane	0.07
3-Methylheptane	< 0.03
3-Methylhexane	< 0.03
3-Methylpentane	0.05
Acetone	1.99
Acrolein	< 0.03
Benzene	0.11
Benzyl chloride	< 0.03
Bromodichloromethane	< 0.03
Bromoform	< 0.03
Bromomethane	< 0.03
Carbon disulfide	0.68
Carbon tetrachloride	0.09
Chlorobenzene	< 0.03
Chloroethane	< 0.03
Chloroform	< 0.03
Chloromethane	0.84
cis-1,2-Dichloroethene	< 0.03
cis-1,3-Dichloropropene	< 0.03
cis-2-Butene	< 0.03
cis-2-Pentene	< 0.03
Cyclohexane	0.06
Cyclopentane	< 0.03
Dibromochloromethane	< 0.03
Ethanol	1.13
Ethyl acetate	< 0.03
Ethylbenzene	0.06
Freon-11	0.23

## Volatile Organics Data Results

Date: FEBRUARY 23 , 2015  
Canister ID: S5609

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.03
Freon-12	0.67
Hexachloro-1,3-butadiene	< 0.03
Isobutane	0.82
Isopentane	0.26
Isoprene	< 0.03
Isopropyl alcohol	< 0.03
Isopropylbenzene	< 0.03
m,p-Xylene	0.16
m-Diethylbenzene	< 0.03
m-Ethyltoluene	0.08
Methyl butyl ketone	< 0.03
Methyl ethyl ketone	0.32
Methyl isobutyl ketone	< 0.03
Methyl methacrylate	< 0.03
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.11
Methylcyclopentane	0.05
Methylene chloride	< 0.03
n-Butane	1.15
n-Decane	< 0.03
n-Dodecane	< 0.03
n-Heptane	< 0.03
n-Hexane	0.08
n-Nonane	< 0.03
n-Octane	< 0.03
n-Pentane	< 0.03
n-Propylbenzene	0.04
n-Undecane	< 0.03
Naphthalene	7.68
o-Ethyltoluene	0.10
o-Xylene	0.08
p-Diethylbenzene	0.12
p-Ethyltoluene	0.05
Styrene	< 0.03
Tetrachloroethylene	< 0.03
Tetrahydrofuran	< 0.03
Toluene	0.12
trans-1,2-Dichloroethylene	< 0.03
trans-1,3-Dichloropropylene	< 0.03
trans-2-Butene	< 0.03
trans-2-Pentene	< 0.03
Trichloroethylene	< 0.03
Vinyl acetate	< 0.03
Vinyl chloride	< 0.03

***PAH RESULTS***



Sample ID: 15020077-002

Customer ID: LICA

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

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

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

Puf+ S/N: 100-1020
Motor S/N: 1138
Installation Date/Time: Feb 02, 2015 @ 19:25
Removal Date/Time: Feb 06, 2015 @ 09:21

P13-01

Table with 4 columns: Sample Date, Start Time (MST), End Time (MST), Elapsed Time (Hours). Row 1: Feb 5, 2015, 00:00 Feb 5, 2015, 00:00 Feb 6, 2015, 24

Table with 4 columns: Date Received, Date Shipped, Puf Expiration Date, QFF Prep Date. Row 1: (blank)

Set Flow Rate (slpm): 230
Date of Last Calibration: 22 - Sep - 11

Table with 4 columns: Average Pressure (mmHg), Average Flow (Qstd slpm), Average Temperature (C), Volume (Vstd m^3). Row 1: 716, 229, -17.1, 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: (blank lines)

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



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

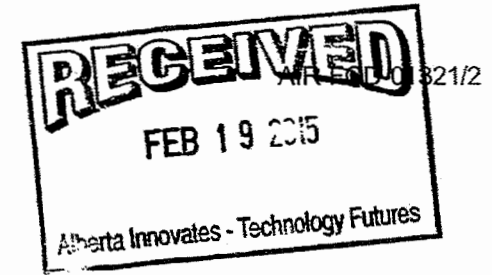
Date: FEBRUARY 5, 2015  
PUF S/N: P13-01

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.19
2-Methylnaphthalene	0.31
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.04
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.04
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	0.04
Fluorene	0.08
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.62
Perylene	< 0.01
Phenanthrene	0.08
Pyrene	0.03
Retene	0.02

Sample ID: 15020208-003

Customer ID: LICA

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



# Maxxam

## Hi-Vol PUF+ Sample Collection Data Sheet

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

Puf+ S/N: 100-1020 TE-09  
Motor S/N: 113P  
Installation Date/Time: Feb 6 @ 09:22  
Removal Date/Time: Feb 14 2015 @ 10:50

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
Feb 11, 2015	00:00 Feb 11, 2015 A.V.	00:00 Feb 12, 2015	24

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

Set Flow Rate (slpm): 230  
Date of Last Calibration: 22 - Sep - 11

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (	Volume (Vstd m <sup>3</sup> )
730	229	- 21.9	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 in - Alex Yakupov  
Sample out - Alex Yakupov

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

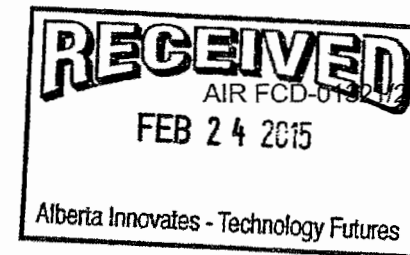
Date: FEBRUARY 11, 2015  
PUF S/N: TE09

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.25
2-Methylnaphthalene	0.45
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.06
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.04
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	0.06
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.41
Perylene	< 0.01
Phenanthrene	0.07
Pyrene	0.03
Retene	0.03

Sample ID: 15020240-003

Customer ID: LICA

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



# Maxxam

## Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puff S/N: 100-1020 TE-04  
 Location: CLS Motor S/N: 1138  
 Station ID: LICA 01 Installation Date/Time: Feb 14 @ 10:52 (2015)  
 Field Sample ID: LICA/PUF/CLS/Feb 17, 2015 Removal Date/Time: Feb 20 2015 @ 15:30

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
Feb 17, 2015	00:00 Feb 17, 2015	00:00 Feb 18, 2015	24

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

Set Flow Rate (slpm): 230  
 Date of Last Calibration: 01.22. sep - 11  
A.Y.

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature ( )	Volume (Vstd m <sup>3</sup> )
725	229	-20.0	330.10

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 - Alex Yakupov  
Sample out - Alex Yakupov

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

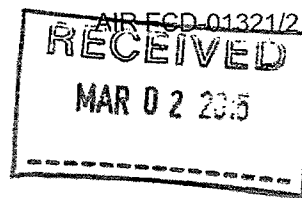
Date: FEBRUARY 17, 2015  
PUF S/N: TE04

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.87
2-Methylnaphthalene	1.44
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.17
Acenaphthylene	0.04
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.05
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	0.02
Fluoranthene	0.10
Fluorene	0.15
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	1.99
Perylene	< 0.01
Phenanthrene	0.20
Pyrene	0.05
Retene	0.07

Sample ID: 15030004-002

Customer ID: LICA

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



# Maxxam Analytics Inc.

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica Puf+ s/n: 100-1020 **TE 02**  
 Location: CLS Motor s/n: 1138  
 Station ID: LICA 01 Installation Date/Time: Feb 20, 2015 @ 15:32  
 Field Sample ID: LICA/PUF/CLS/Feb 23, 2015 Removal Date/Time: ~~Feb 20, 2015~~ @ 10:31

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

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

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)	Volume (Vstd m <sup>3</sup> )
712	229	(+) 2.9	330.21

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

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: FEBRUARY 23 , 2015  
PUF S/N: TE02

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.04
2-Methylnaphthalene	0.07
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.05
Acenaphthylene	0.02
Acridine	< 0.01
Anthracene	.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	< 0.01
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	0.09
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.07
Perylene	< 0.01
Phenanthrene	0.19
Pyrene	0.03
Retene	0.01

***PARTISOL RESULTS***



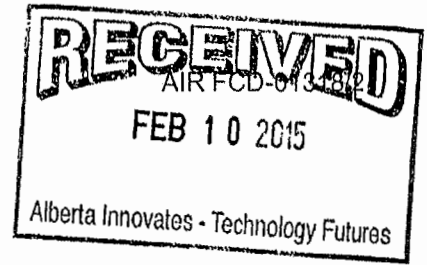
Sample ID: 15020080-001

Customer ID: LICA

Cust Samp ID: CLS Filter # P4089565

Priority: Normal

Artisoul Sample Data Sheet



Date Sampled: Feb 5, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: P4089 565

Start Time 00:00 Feb 5, 2015

End Time 00:00 Feb 6, 2015

Status OK

Std Vol 21.023

Valid Time 19:17

Total Time 24

Comments: Weather Conditions, etc.

Horizontal lines for handwritten comments.

Technician Signature: Alex Yakupov

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

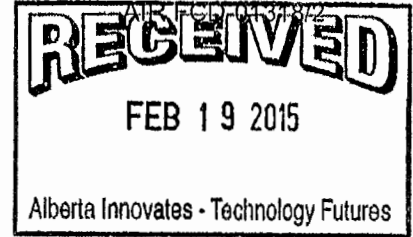
Note: Beginning & End Date should be same date

Sample ID: 15020205-001

Customer ID: LICA

Cust Samp ID: CLS Filter # LICA  
P4130541

Partisol Sample Data Sheet



Date Sampled: Feb 11, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: LICA P4130541

Start Time 00:00 Feb 11, 2015

End Time 00:00 Feb 12, 2015

Status OK

Std Vol 21.021

Valid Time 17:51

Total Time 24

Comments: Weather Conditions, etc.

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

Technician Signature: Alex Yakupov

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: 15020239-001

Customer ID: LICA

Cust Samp ID: CLS Filter # P4130543

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: Feb 17, 2015

Location: CLS

Parameter: TSP PM10

Filter #: LICA P4130543

Start Time 00:00 Feb 17, 2015

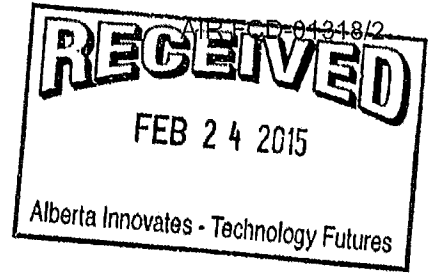
End Time 00:00 Feb 18, 2015

Status OK

Std Vol 20.100

Valid Time 15:21

Total Time 24



PM2.5

Comments: Weather Conditions, etc.

Horizontal lines for handwritten comments.

Technician Signature: Alex Yakupov

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

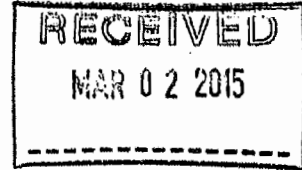
Sample ID: 15030003-001

Customer ID: LICA

Cust Samp ID: CLS LICA P4130540

AIR FCD-01318/2

Partisol Sample Data Sheet



Priority: Normal

Date Sampled: Feb 23, 2015

Location: CLS

Parameter: TSP PM10

PM2.5

Filter #: LICA P4130540

Start Time 00:00 Feb 23, 2015

End Time 00:00 Feb 24, 2015

Status OFF

Std Vol 24,299

Valid Time 23:58

Total Time 24

Comments: Weather Conditions, etc.

Horizontal lines for handwritten comments.

Technician Signature: Alex Yakupov

Programming

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

Note: Beginning & End Date should be same date



### Partisol Sampler Results

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Date	Filter NO.	Concentration (mg)
FEBRUARY 5	P4089565	0.020
FEBRUARY 11	P4130541	0.082
FEBRUARY 17	P4130543	0.101
FEBRUARY 23	P4130540	0.025

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

***SULPHUR DIOXIDE***

## Maxxam Thermo 43i SO2 Analyzer Calibration

Date: <u>18-Feb-15</u> Company: <u>LICA</u> Station Name/Location: <u>Cold Lake South</u> Performed by: <u>Chris W / Alex Y</u> Application H <sub>2</sub> S/TRS/SO <sub>2</sub> : <u>SO2</u>	Start/End Time (mst): <u>9:45 - 14:09</u> Calibration Purpose: <u>Monthly</u> Converter Make & Model: <u>NA</u> Converter Serial #: <u>NA</u> Cal Gas Expiry Date: <u>26-Mar-17</u>
---	---

---

Analyzer: Serial Number: <u>806528242</u> Last Calibration Date: <u>6-Jan-15</u> Previous Cal High Point C.F.: <u>1.001</u>	Range ppb: <u>500</u> As Found C.F.: <u>0.963</u> New C.F.: <u>0.995</u>
--	--

As found:

MOTHERBOARD:

BKG:	<u>7.1</u>
COEF:	<u>1.151</u>
3.3	<u>3.3</u>
5.0	<u>5.0</u>
15.0	<u>15.0</u>
24.0	<u>23.9</u>
-3.3	<u>-3.2</u>

INTERFACE BOARD:

PMT:	<u>-631.6</u>
FLASH:	<u>716</u>
3.3	<u>3.3</u>
5.0	<u>5.0</u>
15.0	<u>14.8</u>
-15.0	<u>-15.1</u>
24.0	<u>23.6</u>

INTERNAL:

INTERNAL:	<u>28.6</u>
CHAMBER:	<u>45.1</u>
PERM OVEN GAS:	<u>45.0</u>
PERM OVEN HEATER:	<u>44.19</u>
PRESSURE:	<u>680.7</u>
SAMPLE FLOW:	<u>0.441</u>
LAMP INTENSITY:	<u>75%</u>
CONVERTER:	<u>NA</u>
CONVERTER SET:	<u>NA</u>
Internal Span:	<u>387</u>

As left:

MOTHERBOARD:

BKG:	<u>6.9</u>
COEF:	<u>1.107</u>
3.3	<u>3.3</u>
5.0	<u>5.0</u>
15.0	<u>15.0</u>
24.0	<u>23.9</u>
-3.3	<u>-3.2</u>

INTERFACE BOARD:

PMT:	<u>-631.6</u>
FLASH:	<u>715</u>
3.3	<u>3.3</u>
5.0	<u>5.0</u>
15.0	<u>14.8</u>
-15.0	<u>-15.1</u>
24.0	<u>23.6</u>

INTERNAL:

INTERNAL:	<u>28.9</u>
CHAMBER:	<u>44.9</u>
PERM OVEN GAS:	<u>45.0</u>
PERM OVEN HEATER:	<u>44.19</u>
PRESSURE:	<u>679.8</u>
SAMPLE FLOW:	<u>0.440</u>
LAMP INTENSITY:	<u>76 %</u>
CONVERTER:	<u>NA</u>
CONVERTER SET:	<u>NA</u>
Internal Span:	<u>386.2</u>

---

Callibrator: Flow Meter ID's: <u>NA</u> Make & Model: <u>Environconcs</u> Serial #: <u>4760</u> Cal Gas Cylinder I.D. #: <u>LI42475</u> Cal Gas Conc. (ppm): <u>50.3</u>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <caption>Callibrator Flow Targets:</caption> <thead> <tr> <th>point</th> <th>diluent (cc/min)</th> <th>cal gas (cc/min)</th> <th>total (cc/min)</th> </tr> </thead> <tbody> <tr><td>zero</td><td>5000</td><td>0</td><td>5000</td></tr> <tr><td>high</td><td>5000</td><td>40</td><td>5040</td></tr> <tr><td>mid</td><td>5000</td><td>20</td><td>5020</td></tr> <tr><td>low</td><td>5000</td><td>10</td><td>5010</td></tr> </tbody> </table>	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
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																		

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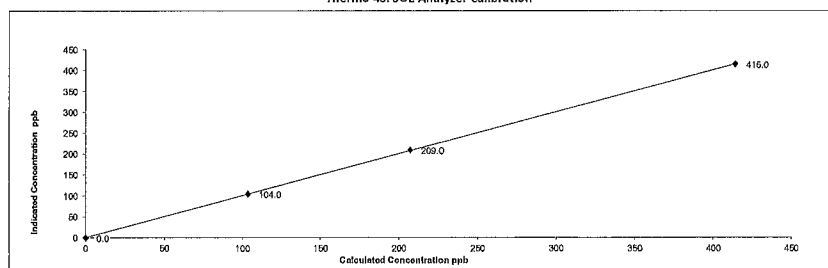
Calibration: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Point</th> <th>Diluent</th> <th>Cal Gas</th> <th>Total</th> <th>Calculated Concentration (ppb)</th> <th>Indicated Concentration (ppb)</th> <th>Correction Factors</th> </tr> </thead> <tbody> <tr><td>as found zero</td><td>5000</td><td>0.0</td><td>5000</td><td>0</td><td>0.0</td><td>NA</td></tr> <tr><td>adjusted zero</td><td>5000</td><td>0.0</td><td>5000</td><td>0</td><td>0.0</td><td>NA</td></tr> <tr><td>as found high</td><td>4953</td><td>41.12</td><td>4994</td><td>414.2</td><td>430.0</td><td>0.963</td></tr> <tr><td>adjusted high</td><td>4953</td><td>41.14</td><td>4994</td><td>414.4</td><td>415.0</td><td>0.999</td></tr> <tr><td>mid</td><td>4972</td><td>20.57</td><td>4993</td><td>207.2</td><td>209.0</td><td>0.992</td></tr> <tr><td>low</td><td>4985</td><td>10.28</td><td>4995</td><td>103.5</td><td>104.0</td><td>0.995</td></tr> <tr><td>callibrator zero</td><td>4995</td><td>0.00</td><td>4995</td><td>0</td><td>0.0</td><td>NA</td></tr> <tr><td colspan="6" style="text-align: right;">Average C.F. =</td><td>0.995</td></tr> </tbody> </table>	Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors	as found zero	5000	0.0	5000	0	0.0	NA	adjusted zero	5000	0.0	5000	0	0.0	NA	as found high	4953	41.12	4994	414.2	430.0	0.963	adjusted high	4953	41.14	4994	414.4	415.0	0.999	mid	4972	20.57	4993	207.2	209.0	0.992	low	4985	10.28	4995	103.5	104.0	0.995	callibrator zero	4995	0.00	4995	0	0.0	NA	Average C.F. =						0.995	<p style="text-align: center;">Linear Regression/Calibration Results:</p> <table border="0" style="width: 100%;"> <tr> <td>Correlation Coefficient = <u>1.000</u></td> <td>LIMITS</td> <td>Pass/Fail ?</td> </tr> <tr> <td>Slope = <u>0.998</u></td> <td>&gt; or = 0.995</td> <td>PASS</td> </tr> <tr> <td>b (Intercept as % of full scale) = <u>-0.08%</u></td> <td>0.85-1.15</td> <td>PASS</td> </tr> <tr> <td>% change in C.F. from last cal = <u>3.78%</u></td> <td>± 3% F.S.</td> <td>PASS</td> </tr> <tr> <td></td> <td>± 15%</td> <td>PASS</td> </tr> </table> <p style="text-align: center;">Converter Efficiency Check for H<sub>2</sub>S/TRS application:</p> <p style="text-align: center;">**run converter efficiency test immediately following zero adjust**</p> <p>SO<sub>2</sub> High Point gas concentration: <u>NA</u>      Time gas run (mst): <u>NA</u></p> <p>Zero corrected analyzer response: <u>NA</u></p>	Correlation Coefficient = <u>1.000</u>	LIMITS	Pass/Fail ?	Slope = <u>0.998</u>	> or = 0.995	PASS	b (Intercept as % of full scale) = <u>-0.08%</u>	0.85-1.15	PASS	% change in C.F. from last cal = <u>3.78%</u>	± 3% F.S.	PASS		± 15%	PASS
Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors																																																																									
as found zero	5000	0.0	5000	0	0.0	NA																																																																									
adjusted zero	5000	0.0	5000	0	0.0	NA																																																																									
as found high	4953	41.12	4994	414.2	430.0	0.963																																																																									
adjusted high	4953	41.14	4994	414.4	415.0	0.999																																																																									
mid	4972	20.57	4993	207.2	209.0	0.992																																																																									
low	4985	10.28	4995	103.5	104.0	0.995																																																																									
callibrator zero	4995	0.00	4995	0	0.0	NA																																																																									
Average C.F. =						0.995																																																																									
Correlation Coefficient = <u>1.000</u>	LIMITS	Pass/Fail ?																																																																													
Slope = <u>0.998</u>	> or = 0.995	PASS																																																																													
b (Intercept as % of full scale) = <u>-0.08%</u>	0.85-1.15	PASS																																																																													
% change in C.F. from last cal = <u>3.78%</u>	± 3% F.S.	PASS																																																																													
	± 15%	PASS																																																																													

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Comments:

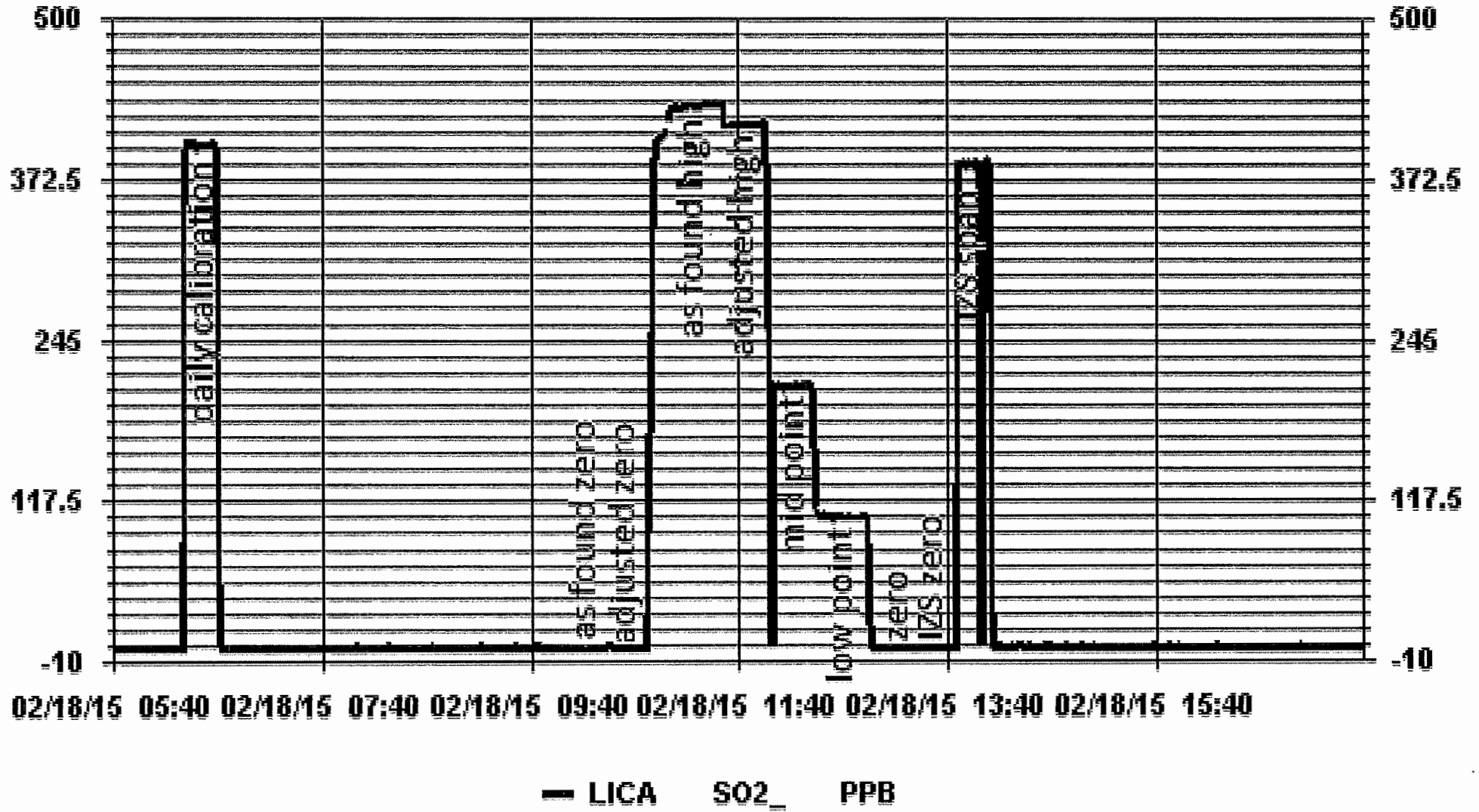
Sample filter changed  
10:55 High point target changed from 380 to 400 ppb

Thermo 43i SO2 Analyzer Calibration





### 01 Minute Averages



***TOTAL REDUCED SULPHUR***

## Maxxam Thermo 450i TRS Analyzer Calibration

**Date:** 18-Feb-15 **Start/End Time (mst):** 13:05 - 16:54  
**Company:** LICA **Calibration Purpose:** Monthly  
**Station Name/Location:** Cold Lake South **Converter Make & Model:** Thermo CDN -101  
**Performed by:** Chris W / Alex Y **Converter Serial #:** 501  
**Application H<sub>2</sub>S/TRS/SO<sub>2</sub>:** TRS **Cal Gas Expiry Date:** 25-Dec-15

---

**Analyzer:**  
**Serial Number:** 812728560 **Range ppb:** 100  
**Last Calibration Date:** 6-Jan-15 **As Found C.F.:** 1.040  
**Previous Cal High Point C.F.:** 1.000 **New C.F.:** 1.000

**MOTHERBOARD:**  
**As found:** **As left:**  
**BKG:** 12.8 **BKG:** 13.2  
**COEF:** 0.926 **COEF:** 0.955  
 3.3 3.3 3.3 3.3  
 5.0 5.0 5.0 5.0  
 15.0 15.0 15.0 15.0  
 24.0 23.9 24.0 23.9  
 -3.3 -3.2 -3.3 -3.2

**INTERFACE BOARD:**  
**PMT:** -650.5 **PMT:** -650.5  
**FLASH:** 724 **FLASH:** 724  
 3.3 3.2 3.3 3.2  
 5.0 5.0 5.0 5.0  
 15.0 14.7 15.0 14.6  
 -15.0 -15.0 -15.0 -15.0  
 24.0 23.4 24.0 23.4  
**INTERNAL:** 31.8 **INTERNAL:** 31.7  
**CHAMBER:** 45.2 **CHAMBER:** 45.1  
**CONVERTER TEMP:** 323.1 **CONVERTER TEMP:** 326.2  
**CONVERTER SET:** 325 **CONVERTER SET:** 325  
**PERM OVEN GAS:** 45.0 **PERM OVEN GAS:** 45.0  
**PERM OVEN HTR:** 44.38 **PERM OVEN HTR:** 44.38  
**PRESSURE:** 654.4 **PRESSURE:** 655.3  
**SAMPLE FLOW:** 0.510 **SAMPLE FLOW:** 0.509  
**LAMP INTENSITY:** 91 % **LAMP INTENSITY:** 91 %  
**Internal Span:** 34.83 **Internal Span:** 38.34

---

**Calibrator:** **Calibrator Flow Targets:**  
**Flow Meter ID's:** NA 

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

  
**Make & Model:** API 700  
**Serial #:** 831  
**Cal Gas Cylinder I.D. #:** BLM005049  
**Cal Gas Conc. (ppm):** 10.1

---

**Calibration:**  

Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors
as found zero	5000	0.0	5000	0	0.0	NA
adjusted zero	NA	0.0	0	0	0	NA
as found high	4960	38.60	4999	78.0	75.0	1.040
adjusted high	4960	38.60	4999	78.0	78.0	1.000
mid	4979	18.80	4998	38.0	38.0	1.000
low	4985	10.90	4996	22.0	22.0	1.002
calibrator 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 =	1.000	> or = 0.995	PASS
b (Intercept as % of full scale) =	0.00%	0.85-1.15	PASS
% change in C.F. from last cal	-3.99%	± 3% F.S.	PASS
		± 15%	PASS

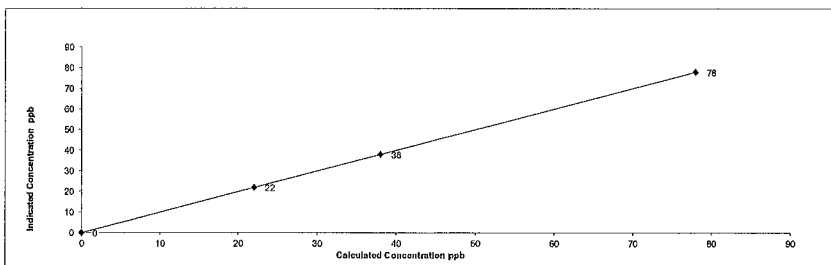
**Converter Efficiency Check for H<sub>2</sub>S/TRS application:**  
**\*\*run converter efficiency test immediately following zero adjust\*\***

**SO<sub>2</sub> High Point gas concentration:** NA **Time gas run (mst):** NA  
**Zero corrected analyzer response:** NA

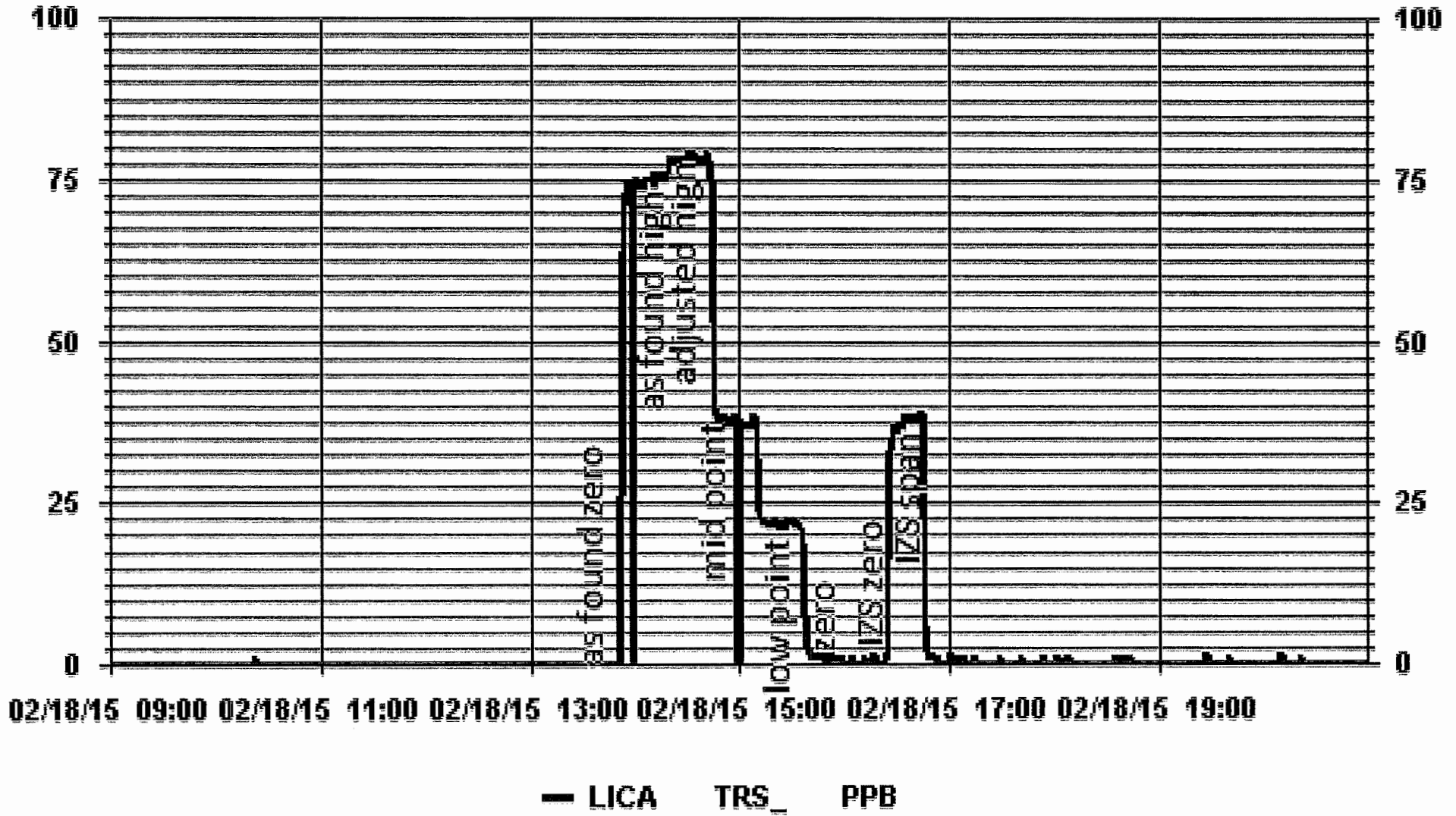
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**Comments:**  
 Filter changed

Thermo 450i TRS Analyzer Calibration



### 01 Minute Averages



***TOTAL HYDROCARBON***

# Maxxam Thermo 51C THC Analyzer Calibration

Date: 18-Feb-15 Start Time (mst): 9:45  
 Company: LICA End Time (mst): 13:33  
 Station Name/Location: Cold Lake South Calibration Purpose: Monthly Calibration  
 Performed by: Chris W / Alex Y Cal Gas Expiry Date: 12-Aug-17

Analyzer: Serial Number: 427408718 Range ppm: 50  
 Last Calibration Date: 18-Feb-15 As Found C.F.: 0.999  
 Previous Cal High Point C.F.: 1.003 New C.F.: 1.004

	<b>As found:</b>		<b>As left:</b>
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>22</u>	H <sub>2</sub> cylinder reg set (psi):	<u>22</u>
Span Cylinder (psi):	<u>100</u>	Span Cylinder (psi):	<u>100</u>
Span Cylinder Reg Set (psi):	<u>32</u>	Span Cylinder Reg Set (psi):	<u>32</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>2464</u>	FID status:	cnt: <u>1485</u>
	rng: <u>1</u>		rng: <u>1</u>
	try: <u>1</u>		try: <u>1</u>
	flm: <u>184.8</u>		flm: <u>184.6</u>
	det: <u>125.4</u>		det: <u>125.2</u>
Oven Readings:	Flame: <u>184</u>	Oven Readings:	Flame: <u>184</u>
	Filter: <u>125</u>		Filter: <u>125</u>
	Base: <u>125</u>		Base: <u>125</u>
	Pump: <u>6.52</u>		Pump: <u>6.51</u>
Voltages:	+5 <u>5</u>	Voltages:	+5 <u>5</u>
	+15 <u>14.8</u>		+15 <u>14.8</u>
	-15 <u>-15.0</u>		-15 <u>-15.1</u>
	Internal Span: <u>32.59</u>		Internal Span: <u>32.03</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>831</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)	
as found zero	2000	0.00	2000	0	0.40	NA
adjusted zero	2000	0.00	2000	0	0.00	NA
as found high	1997	65.00	2062	36.47	36.50	0.999
adjusted high	1997	65.00	2062	36.47	36.50	0.999
mid	1965	31.00	1996	17.97	17.90	1.004
low	1981	16.00	1997	9.27	9.20	1.008
calibrator zero	2000	0.00	2000	0	0.00	NA
Average C.F. =						1.004

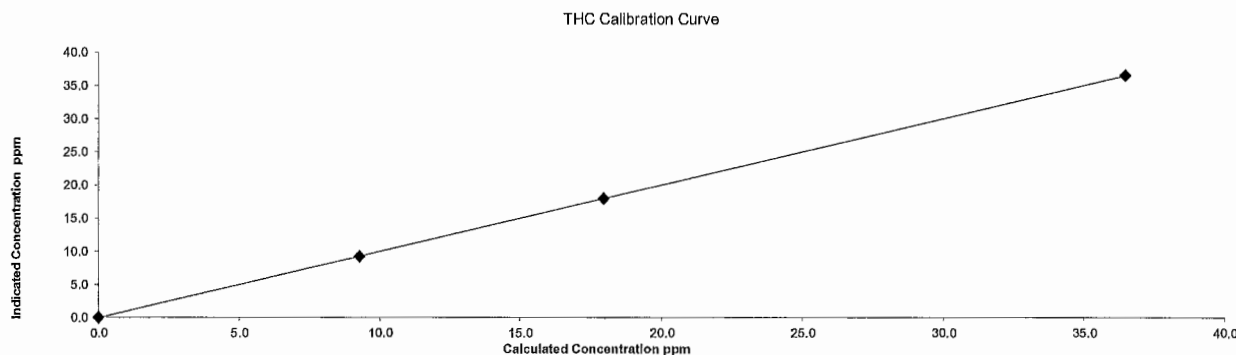
**Linear Regression/Calibration Results:**

Correlation Coefficient =	<u>1.000</u>	<b>LIMITS</b>	<b>Pass/Fail ?</b>
Slope =	<u>1.001</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>-0.096%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0.39%</u>	± 3% F.S.	PASS
		± 15%	PASS

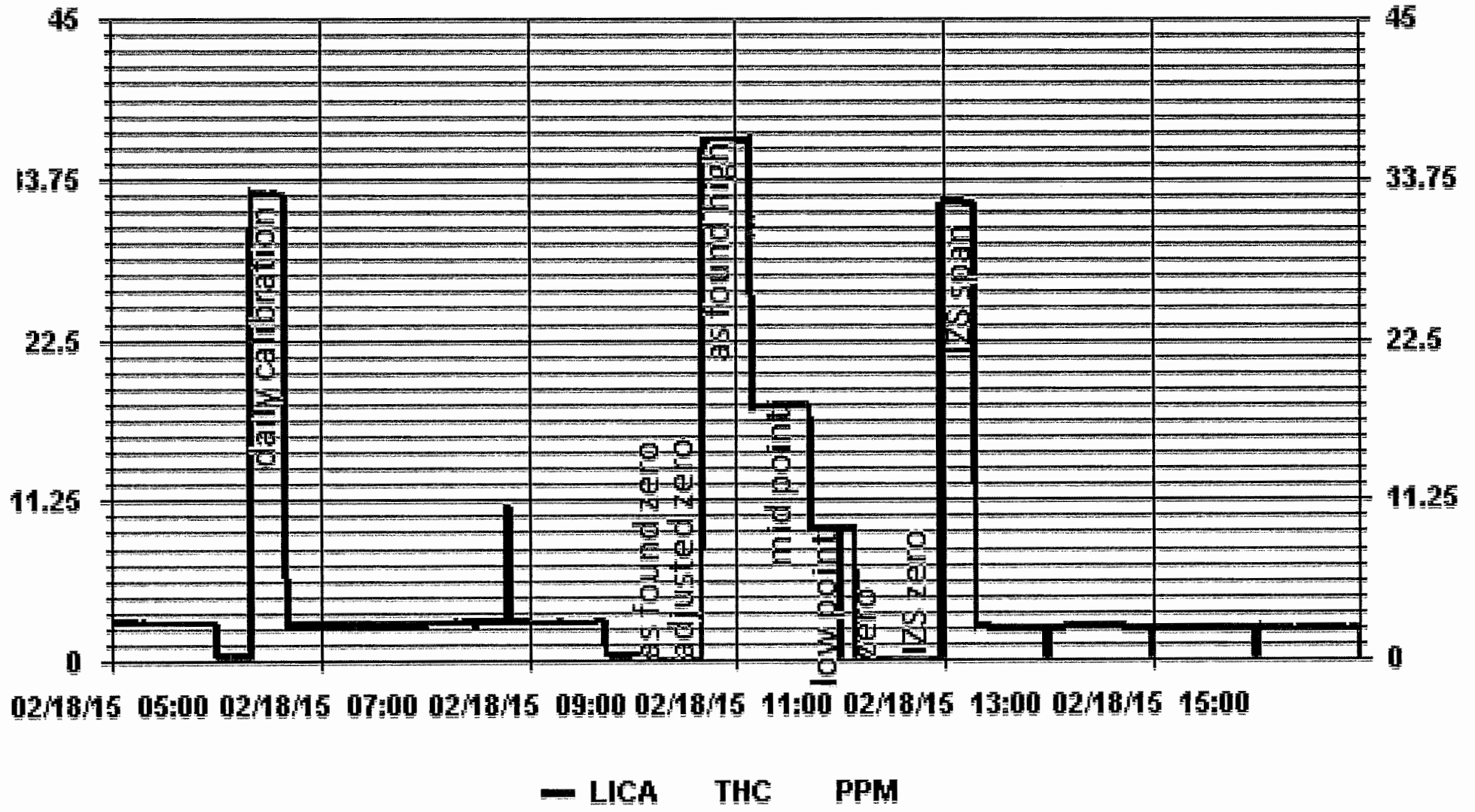
**Comments:**

Sample filter changed. New gas cylinder for span gas (CH<sub>4</sub>) was connected  
 No high-point adjustment made. Values copied from as-found for calculation only.

**Thermo 51C THC Analyzer Calibration**

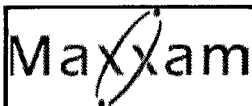


### 01 Minute Averages



***NITROGEN DIOXIDE***





Thermo 42C NOx Analyzer Calibration

Date: 18-Feb-15  
 Company: LICA  
 Station Name/Locaton: Cold Lake South  
 Performed by: Chris W / Alex Y

Start Time (mst): 9:45  
 End Time (mst): 17:08  
 Calibration Purpose: Monthly  
 Cal Gas Expiry Date: 26-Mar-17

Analyzer Serial Number: 427408716  
 Last Calibration Date: 6-Jan-15  
 Range ppb: 500

Correction Factors:

As found C.F. Previous Cal High Point C.F.:  
 NO= 0.958 NO= 1.000  
 NOx= 0.958 NOx= 0.993  
 NO<sub>2</sub>= 1.002 NO<sub>2</sub>= 0.992

**As found:**  
 NO Bkg ppb: 4.9  
 NOx Bkg ppb: 6.0  
 NO Coef: 0.969  
 NOx Coef: 1.016  
 NO<sub>2</sub> Coef: 1.003  
 PMT: -850  
 +15: 15.1  
 +5: 5.0  
 +15: 15.1  
 -15: -15.1  
 Battery: 3.2  
 Internal: 24.4  
 Chamber: 49.8  
 Cooler: -2.5  
 Converter: 318  
 Converter Set: 320  
 Pressure: 188.0  
 Sample Flow: 0.548  
 Ozonator Flow: OK  
 Internal Span: 372/6/367

**As left:**  
 NO Bkg ppb: 4.6  
 NOx Bkg ppb: 4.8  
 NO Coef: 0.929  
 NOx Coef: 1.014  
 NO<sub>2</sub> Coef: 1.003  
 PMT: -850  
 +15: 15.1  
 +5: 5.0  
 +15: 15.1  
 -15: -15.1  
 Battery: 3.2  
 Internal: 27.2  
 Chamber: 49.2  
 Cooler: -2.5  
 Converter: 318  
 Converter Set: 320  
 Pressure: 188.0  
 Sample Flow: 0.546  
 Ozonator Flow: OK  
 Internal Span: 375.8/5.9/369.6

Calibrator Flow Targets:

Make & Model: Envirotronics 6100  
 Serial #: 4760  
 Cal Gas Cylinder I.D. #: LL42475  
 NO Cylinder Conc. (ppm): 48.5  
 NOx Cylinder Conc. (ppm): 48.5

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	260.00	4956
mid	4957	20	130.00	4977
low	4975	10	50.00	4985

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	5000	0.0	5000	0	0	0.0	-1.0	NA	NA
adjusted zero	5000	0.0	5000	0	0	0.0	0.0	NA	NA
as found high	4953	41.12	4994	399.3	399.3	417	417	0.958	0.958
adjusted high	4953	41.14	4994	399.5	399.5	399	398	1.001	1.004
mid	4972	20.57	4993	199.8	199.8	200	200	0.999	0.999
low	4985	10.30	4996	100.0	100.0	101	101	0.990	0.990
calibrator zero	4995	0.00	4995	0	0	0.0	0.0	NA	NA
Average C.F.=								0.997	0.998

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	4954	41.13	4995	0.0	397.0	397.0	-0.5	0.0	0.0	
as found NO <sub>2</sub>	4954	41.13	4995	260.0	98.0	396.0	298.0	299.0	298.5	1.002
adjusted NO <sub>2</sub>	4954	41.13	4995	260.0	98.0	396.0	298.0	299.0	298.5	1.002
gpt mid	4954	41.13	4995	130.0	244.0	396.0	152.0	153.0	152.5	1.003
gpt low	4954	41.13	4995	50.0	341.0	397.0	56.0	56.0	56.5	0.991
Average NO <sub>2</sub> C.F.=										0.999

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.998	0.995	0.997	0.85-1.15
b (Intercept as % of full scale) =	0.11%	0.15%	0.04%	± 3% F.S.
% change in C.F. from last cal =	4.24%	3.56%	-0.98%	+/-15%
NO <sub>2</sub> converter efficiency			100.1%	>85%

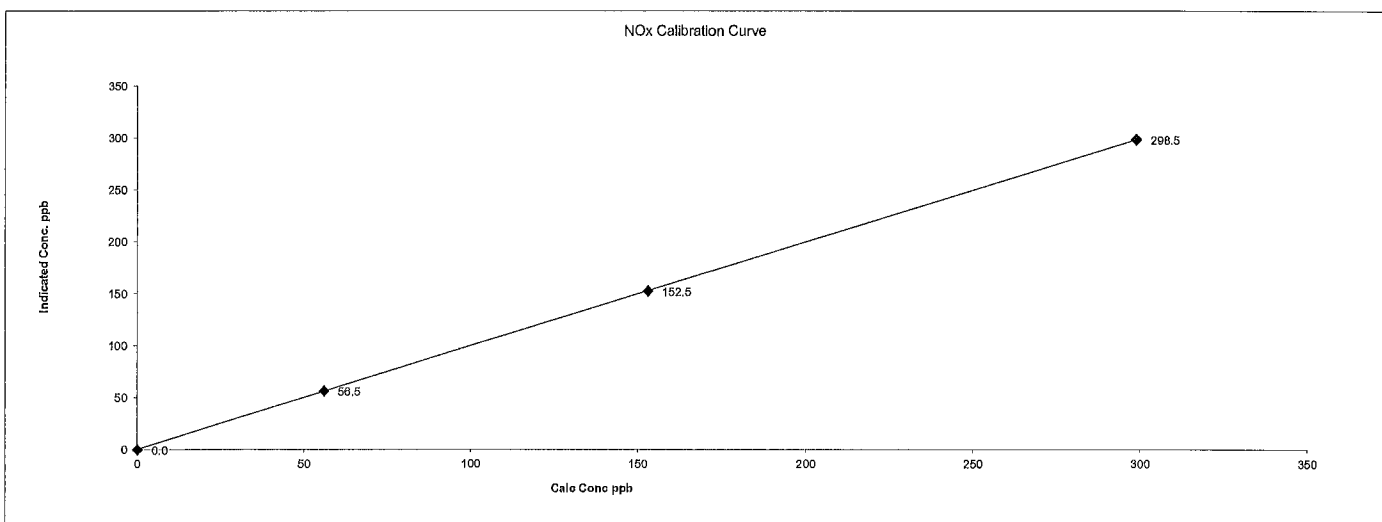
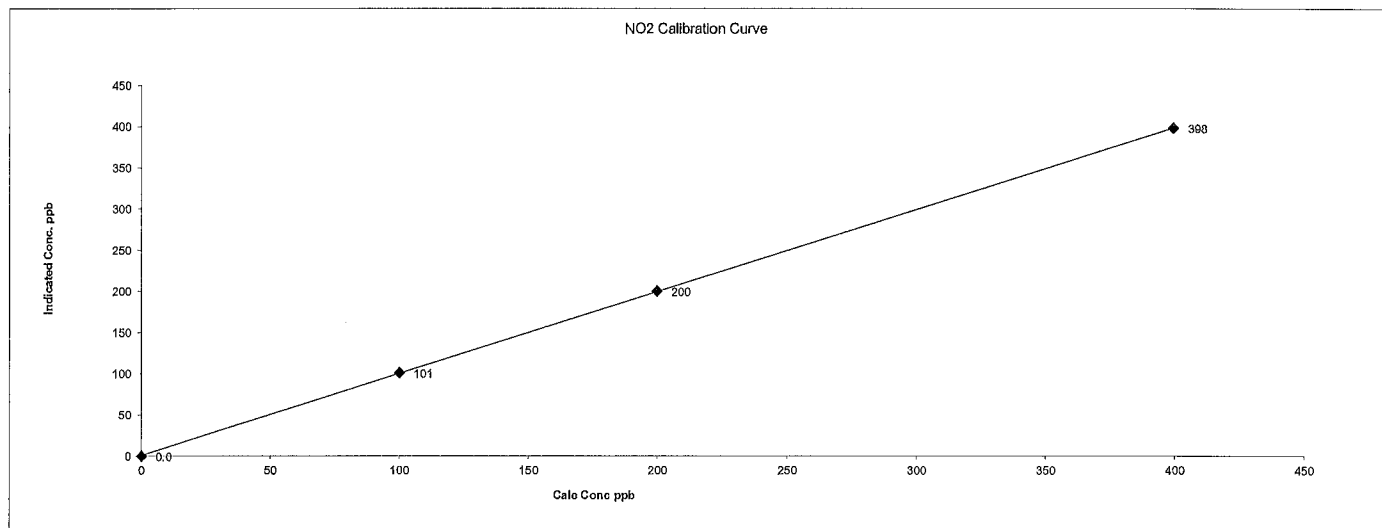
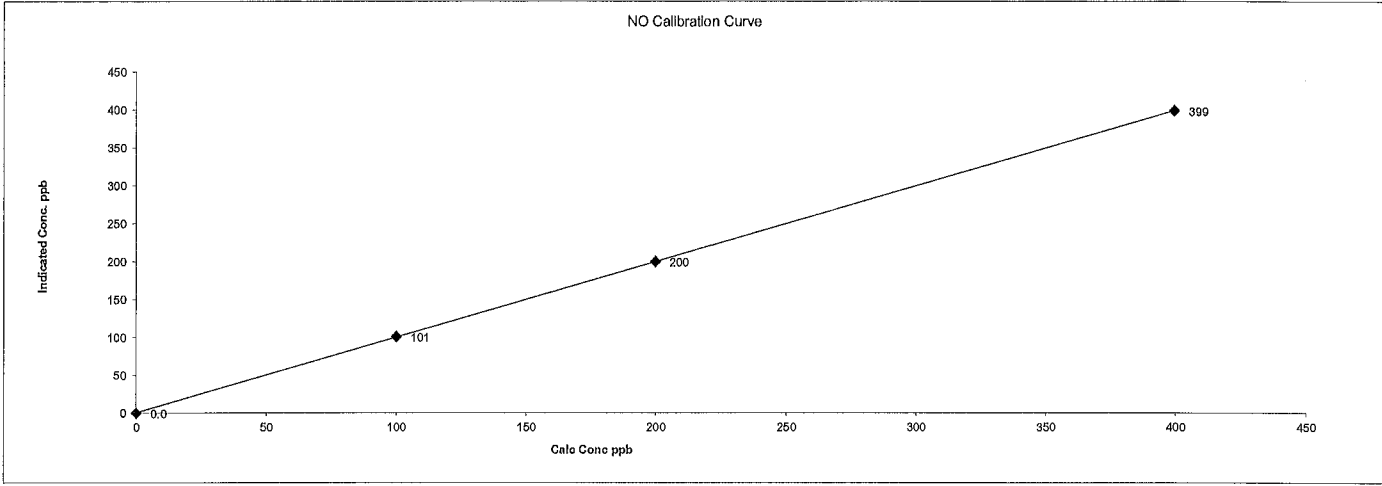
Comments:

Sample filter changed  
 10:55 High point target changed from 380 to 400 ppb  
 GPT reference: Instability due to changing pump cabinet temp. Point restarted at 14:10  
 NO<sub>2</sub> adjustment not made. Values copied from GPT as-found for calculation only.

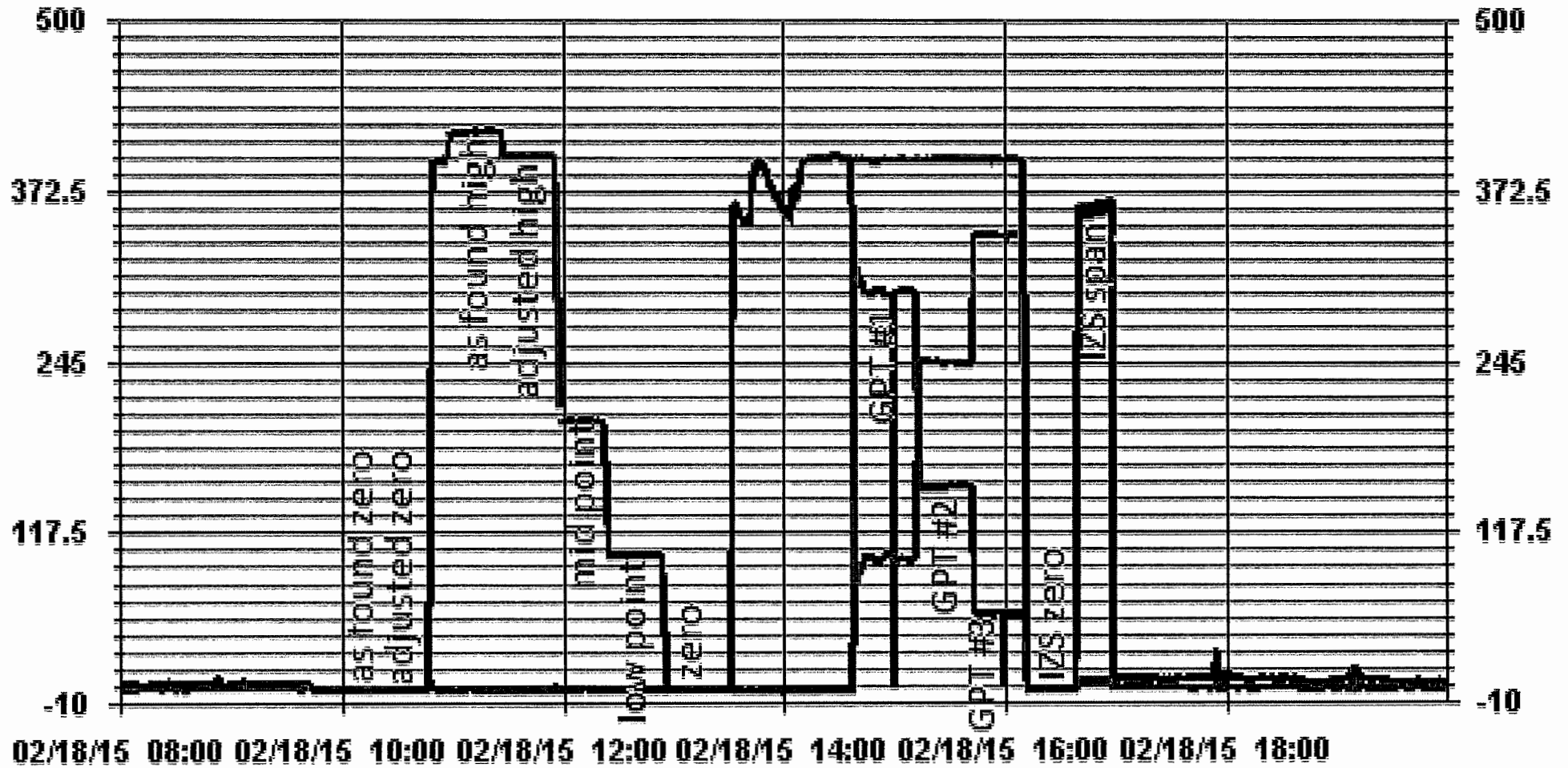
Date: 18-Feb-15  
Company: LICA  
Station Name/Location: Cold Lake South  
Performed by: Chris W / Alex Y

Start Time (mst): 9:45  
End Time (mst): 17:08  
Calibration Purpose: Monthly  
Cal Gas Expiry Date: 26-Mar-17

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>19-Feb-15</u>	Start Time (mst): <u>8:17</u>
Company: <u>LICA</u>	End Time (mst): <u>11:42</u>
Station Name/Location: <u>Cold Lake South</u>	Calibration Purpose: <u>Monthly Calibration</u>
Performed by: <u>Chris W / Alex Y</u>	G.P.T. Date: <u>18-Feb-15</u>

---

**Analyzer:**

Serial Number: <u>700419951</u>	Range ppm: <u>500</u>
Last Calibration Date: <u>6-Jan-15</u>	As Found C.F.: <u>0.940</u>
Previous Cal High Point C.F.: <u>0.998</u>	New C.F.: <u>1.004</u>

	As found:	As left:
Motherboard:	O <sub>3</sub> Bkg: <u>0.2</u>	O <sub>3</sub> Bkg: <u>0.2</u>
	O <sub>3</sub> Coef: <u>1.059</u>	O <sub>3</sub> Coef: <u>0.933</u>
	<u>3.3</u>	<u>3.3</u>
	<u>15.0</u>	<u>15.1</u>
	<u>24.0</u>	<u>23.9</u>
Interface Board:	<u>-3.3</u>	<u>-3.2</u>
	<u>3.3</u>	<u>3.2</u>
	<u>5.0</u>	<u>4.9</u>
	<u>15.0</u>	<u>14.8</u>
	<u>-15.0</u>	<u>-14.8</u>
Photo Lamp:	<u>8.7</u>	<u>8.7</u>
	<u>24.0</u>	<u>23.6</u>
	O <sub>3</sub> Lamp: <u>9.0</u>	O <sub>3</sub> Lamp: <u>9.0</u>
	Bench: <u>28.0</u>	Bench: <u>28.2</u>
	Bench Lamp: <u>53.4</u>	Bench Lamp: <u>53.4</u>
O <sub>3</sub> Lamp:	<u>67.4</u>	<u>67.4</u>
	Pressure: <u>697.4</u>	Pressure: <u>697.7</u>
	Cell A lpm: <u>0.707</u>	Cell A lpm: <u>0.708</u>
	Cell B lpm: <u>0.746</u>	Cell B lpm: <u>0.746</u>
	O <sub>3</sub> ppb: <u>1.2</u>	O <sub>3</sub> ppb: <u>-0.5</u>
Cell A ppb:	<u>-25.6</u>	<u>-1.3</u>
	Cell B ppb: <u>28.1</u>	Cell B ppb: <u>1.3</u>
	Cell A Int: <u>60077</u>	Cell A Int: <u>60113</u>
	Cell B Int: <u>58143</u>	Cell B Int: <u>58169</u>
	Internal Span: <u>282</u>	Internal Span: <u>272.7</u>

---

**Calibrator:** Make & Model: Envirotronics 6100

Serial #: <u>4760</u>	<b>Calibrator Flow Targets:</b>	
NOx Gas Cylinder I.D. #: <u>LL42475</u>	point	total flow (cc/min)
NOx Cylinder Conc. (ppm): <u>48.5</u>	zero	4995
	high	4995
	mid	4995
	low	4995
	O <sub>3</sub> setting (v or ppb)	0
		260
		130
		50

---

**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	0.0	0.0	NA
adjusted zero	4993	0.0	4993	0.0	0.0	NA
as found high	4994	260.00	5254	299.0	318.0	0.940
adjusted high	4994	260.00	5254	299.0	299.0	1.000
mid	4994	130.00	5124	153.0	151.0	1.013
low	4994	50.00	5044	56.0	56.0	1.000
calibrator zero	4994	0.00	4994	0.0	0.0	NA
Average C.F.=						1.004

\*\* copy and paste flows and NO decrease from NOx cal in to calculated concentration\*\*

---

**Linear Regression/Calibration Results:**

Correlation Coefficient = <u>1.000</u>	LIMITS > or = 0.995	PASS
Slope = <u>0.999</u>	0.85-1.15	PASS
b (Intercept as % of full scale) = <u>-0.074%</u>	± 3% F.S.	PASS
% change in C.F. from last cal = <u>6%</u>	± 15%	PASS

---

**Comments:**

Filter changed

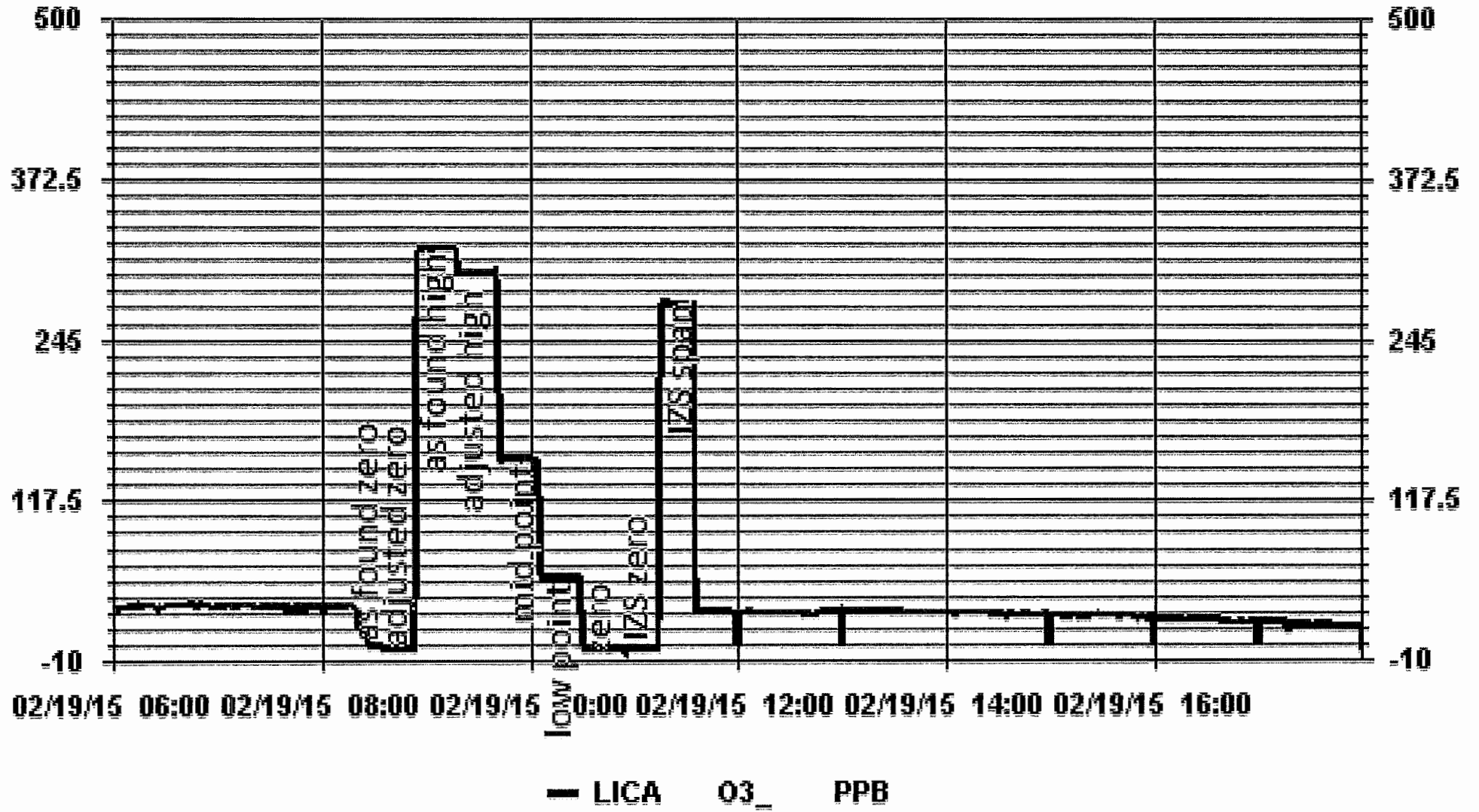
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**Thermo 49i O<sub>3</sub> Analyzer Calibration**

O<sub>3</sub> Calibration Curve

Calc Conc (ppb)	Indicated Conc (ppb)
0	0.0
60	66.0
300	299.0

# 01 Minute Averages



***PARTICULATE MATTER***



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 5-Feb-15  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: 26-Jan-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 09:50 - 11:16  
 Calibration Purpose: 1st Audit

**1400A Information and Status:**

Serial Number: 1405A20620804      As Found Filter Loading %: 24.10  
 Ko Factor: 14578      As Left Filter Loading %: 19.20  
 Ambient Temperature °C: -19.85      As Found Noise: 0.006  
 Ambient Pressure atm: 0.927      As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00      Pump Vacuum: 0.36  
 Aux Flow Reading lpm: 13.69      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>11-Apr-14</u>	<u>11-Apr-14</u>

**As found leak check:**

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.03	0.20	0.04	0.20
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.33	0.26	0.26	0.26
	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	0.20	0.04	0.20
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.33	0.26	0.26	0.26
	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>-19.85</u>		1405F pressure atm: <u>0.944</u>
reference temperature °C: <u>-19.4</u>		reference pressure: <u>0.935</u>
difference °C: <u>0.5</u>		difference: <u>0.009</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>-19.85</u>		1405F pressure atm: <u>0.927</u>
reference temperature °C: <u>-19.4</u>		reference pressure: <u>0.920</u>
difference °C: <u>0.5</u>		difference: <u>-0.007</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>13.64</u>
reference main flow lpm: <u>3.03</u>		reference total/aux flow lpm: <u>13.92</u>
difference lpm: <u>0.03</u>		difference lpm: <u>0.28</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>13.64</u>
reference main flow lpm: <u>3.03</u>		reference total/aux flow lpm: <u>13.92</u>
difference lpm: <u>0.03</u>		difference lpm: <u>0.28</u>

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

Last K<sub>o</sub> audit date: 1-May-14  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: NA  
 % difference: NA

**Comments:**

Filters changed





# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 17-Feb-15  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: 5-Feb-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 10:02 - 11:54  
 Calibration Purpose: 2nd Audit

**1400A Information and Status:**

Serial Number: 1405A20620804      As Found Filter Loading %: 23.48  
 Ko Factor: 14578      As Left Filter Loading %: 18.17  
 Ambient Temperature °C: -20.46      As Found Noise: 0.014  
 Ambient Pressure atm: 0.935      As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00      Pump Vacuum: 0.39  
 Aux Flow Reading lpm: 13.67      Warnings: None

**Reference Standards:**

	Flow:	Pressure:	Temperature:
Make:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB61291	FB61291
Serial Number:	NA	130168457	130168457
Calibration Date:	NA	11-Apr-14	11-Apr-14

**As found leak check:**

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.02	0.20	0.04	0.20
	limit	0.15	<del>0.20</del>	0.15	<del>0.20</del>
Bypass Flow	actual	0.32	0.26	0.24	0.26
	limit	0.60	<del>0.26</del>	0.60	<del>0.26</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.02	0.20	0.04	0.20
	limit	0.15	<del>0.20</del>	0.15	<del>0.20</del>
Bypass Flow	actual	0.32	0.26	0.24	0.26
	limit	0.60	<del>0.26</del>	0.60	<del>0.26</del>

**As found temperature and pressure:**

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>-20.5</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>-19.8</u>	reference pressure: <u>0.930</u>
difference °C: <u>0.7</u>	difference : <u>0.005</u>

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

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>-20.5</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>-19.8</u>	reference pressure: <u>0.930</u>
difference °C: <u>0.7</u>	difference : <u>-0.005</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>13.64</u>
reference main flow lpm: <u>2.96</u>	reference total/aux flow lpm: <u>13.62</u>
difference lpm: <u>-0.04</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>13.64</u>
reference main flow lpm: <u>2.96</u>	reference total/aux flow lpm: <u>13.62</u>
difference lpm: <u>-0.04</u>	difference lpm: <u>-0.02</u>

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

Last K<sub>o</sub> audit date: 1-May-14  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: NA  
 % difference: NA

**Comments:**

The bypass flow line on the roof has been renewed  
 Filters changed

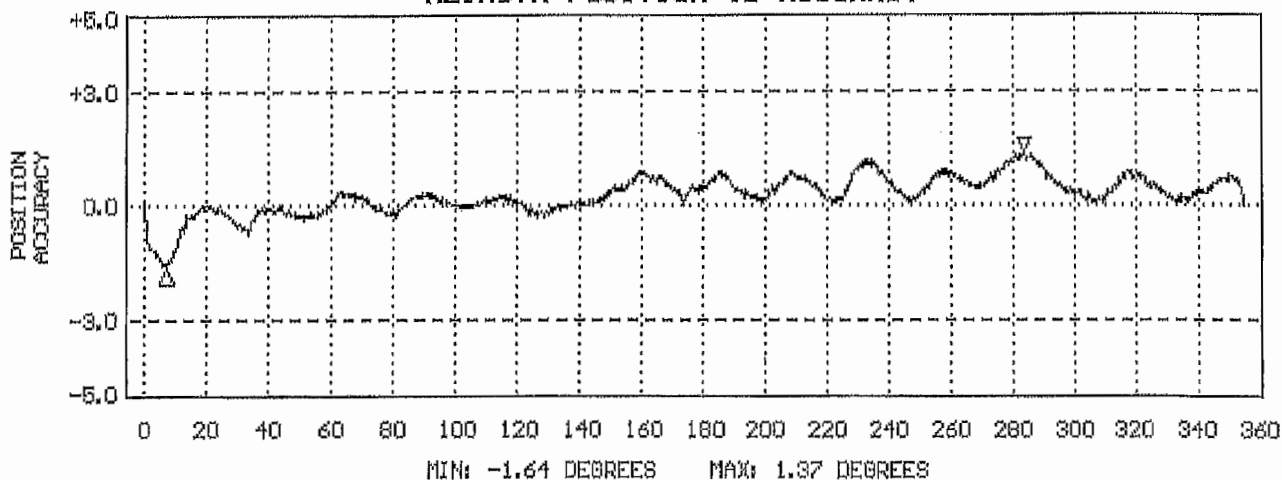
***WIND SYSTEM***

-----  
 R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE  
 -----

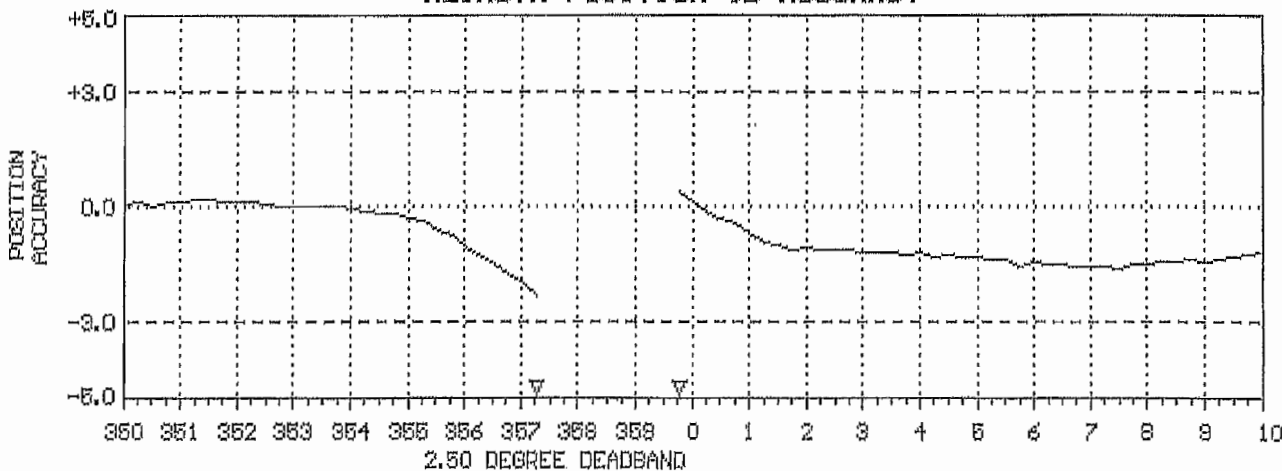
SENSOR: 05103 WIND MONITOR  
 SENSOR SERIAL NUMBER: WM129612  
 BEARINGS: SEALED/GREASE LUBE  
 DATE: OCT 21 2013  
 WIND SPEED THRESHOLD TEST: PASS  
 LOW WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS  
 HIGH WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS  
 VANE TORQUE TEST: PASS  
 SPECIAL NOTES:  
 SPECIAL NOTES:



**AZIMUTH POSITION vs ACCURACY**



**AZIMUTH POSITION vs ACCURACY**



NOTE: Azimuth Position vs Accuracy graphs are accurate to within 0.5 degrees. The accuracy shown in the potentiometer deadband region between 355 and 0 degrees is the result of no resistance change while position changes. The gap represents the actual deadband (open circuit).

## ***CALIBRATORS***



# Calibrator Performance Audit

## Hydrogen Sulphide (by Cylinder Dilution)

File No. 2012-301A

Company: Maxxam Operator: Ting Xu

Calibrator:	Flow Measurement Device:
Make/Model <u>API 700</u>	Make/Model <u>N/A</u>
Serial Number <u>831</u>	Serial Number <u>N/A</u>
Last Verification Date <u>Dec 21/11</u>	Temperature (°C) <u>N/A</u>
H <sub>2</sub> S Cylinder Conc. <u>LL42648</u>	Barometric Pressure <u>N/A</u>
H <sub>2</sub> S Cylinder S/N <u>10.0</u>	

**Flow Measurements**

Pt. No. 1 40 Pt. No. 2 20 Pt. No. 3 11.5

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.0000	0.0000		
4960	0.0800	0.0809	1%	± 10%
4977	0.0400	0.0404	1%	± 10%
4987	0.0230	0.0234	2%	± 10%
Absolute Average Percent Difference			1%	± 10%

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

H <sub>2</sub> S	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0107	0.90-1.10
b (Intercept % of FS)= 0.0439	± 3% F.S.

AENV Standards	H <sub>2</sub> S Analyzer
Audit Calibrator	Make/Model <u>Teco 45C</u>
Make/Model <u>R&amp;R MFC 201</u>	Serial/AMU Number <u>AMU 1624</u>
Serial/AMU Number <u>AMU 1690</u>	Last Calibration Date <u>Dec13/12</u>
	Full Scale (ppm) <u>0.1</u>

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

Auditor: Al Clark Date: December 13, 2012  
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

<b>Company</b> <u>Maxxam</u>		<b>Operator:</b> <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>		

<b>Dilution Flow (sccm)</b>			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
<b>Gas Flow (sccm)</b>			
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>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)*

<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: [Signature] Location: McIntyre Center Edmonton

***CALIBRATION GASES***



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2013-324CGA

Company: Maxxam Operator's Name: Chris Wesson  
Cylinder #: BLM006049 Concentration PPM: 10.1 Tolerance(%) 2 Certified By: Air Liquide

**Reference Calibrator and Gas:**

Make/Model: R&R MFC 201  
Serial Number: AMU 1690  
Last Verification Date: February 21, 2013  
Gas Type: H2S Conc. 20.02  
Cylinder Number: D249556

**Flow Measurement Device:**

Make/Model: Bios DC2  
Serial Number: AMU 1659  
Temp. °C: 21.0 C  
B.P. 696 mmhg

**Reference Analyzer:**

Make/Model: Teco 45C Serial/AMU Number: 1624  
Instrument Settings: Zero: 7.5 Span: 1.023 Range: 0.1  
Last Calibration: Date: Feb 21/13 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>0.0000</del>	<del>0.0000</del>
5103	38.2	0.0768	0.00749	133.586	10.3
5087	17.9	0.0355	0.00352	284.190	10.1
5064	9.2	0.0182	0.00182	550.435	10.0
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.1

Percent variance from Stated: 0.2

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

Auditor: Al Clark  
Operator Signature: *Chris Wesson*

Date: February 21, 2013  
Location: McIntyre Center Edmonton





# Calibration Gas Audit

## NO Cylinder Gas

File No. 2014-2520GA

**Company:** Maxxam      **Operators name:** Limin Li  
**Cylinder #:** LL42475   **Conc (PPM)** 48.5/48.5   **Tolerance (%)** 1   **Certified By:** Air Liquide

**Reference Calibrator and Gas:**

Make/Model      Teco 146i  
 Serial Number      AMU 1809  
 Last Verification Date      December 15, 2014  
 Gas Type      NO      Conc.      48.79  
 Cylinder Number      CAL017892

**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 42i      Serial/AMU Number:      1868  
 Instrument Settings      Zero: 4.3      Span: 1.017      Range: 1.0  
 Last Calibration:      Date: Dec15/14      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				
4983	82.8	0.830	0.832	0.01662	60.181	50.0	50.1
4998	40.9	0.414	0.415	0.00818	122.200	50.6	50.7
4981	20.3	0.206	0.206	0.00408	245.369	50.5	50.5
Average Cylinder Concentration:						<b>50.4</b>	<b>50.4</b>

	<b><u>NO</u></b>		<b><u>NOx</u></b>
Previous Stated Concentration PPM:	<u>48.5</u>		<u>48.5</u>
Percent variance from Stated:	<u>3.8</u>		<u>4.0</u>

**Cylinder gas tolerances based on NO only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:** \_\_\_\_\_  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration  Contains 50.3 ppm of SO2.  
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark      Date: December 16, 2014  
 Operator Signature: *Al Clark*      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: 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

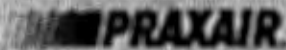
Previous Stated Concentration PPM: 50.3

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



Praxair Canada, Inc.  
 8501 16th Street  
 Edmonton, AB T6B 2W9  
 Tel: 780-443-0175  
 Fax: 780-443-0300

03/27/2014

MAXAM ANALYTICS INC "NA"  
 8372 49TH ST  
 EDMONTON, AB T6B 2L7

Work Order No. 20248656  
 Customer Reference No.

Product Lot/Batch No. 2582 4 085 02  
 Product Part No. NI ME600P2P-AQ


**CERTIFICATE OF ANALYSIS**  
 Primary Standard

Component	Requested Concentration	Detected Concentration	Analytical Principle	Analytical Accuracy
Methane	600.0ppm	601.0ppm	U	±1% rel
Propane	200.0ppm	202ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler-Toledo Analytical Balance-102g/USA---  
 Hewlett-Packard (Agilent)-8890---GC-FID

Cylinder Style: AQ  
 Cylinder Pressure @ 20°C: 2200 psig  
 Cylinder Volume: 82.0 lbs  
 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

This gas cylinder is filled and re-weighed by Praxair Canada, Inc. or its authorized service agent. The product is produced, analyzed, or performed in accordance with the applicable standard. The analysis was performed in accordance with Praxair Canada, Inc. Reference Method and was subject to weight tolerance in the National Institute of Standards and Technology (NIST) Standard Gas-1000 or its equivalent. Praxair Canada, Inc. warrants that the analysis was performed in accordance with the applicable standard.

- None of the following is guaranteed, if it is not specifically stated in the certificate of analysis:
- |   |   |   |   |
|---|---|---|---|
| 1. The gas purity will be maintained.     | 2. The concentration will be maintained.  | 3. The concentration will be maintained.  | 4. The concentration will be maintained.  |
| 5. The concentration will be maintained.  | 6. The concentration will be maintained.  | 7. The concentration will be maintained.  | 8. The concentration will be maintained.  |
| 9. The concentration will be maintained.  | 10. The concentration will be maintained. | 11. The concentration will be maintained. | 12. The concentration will be maintained. |
| 13. The concentration will be maintained. | 14. The concentration will be maintained. | 15. The concentration will be maintained. | 16. The concentration will be maintained. |

Praxair Canada, Inc. warrants that the gas purity will be maintained in accordance with the applicable standard. The analysis was performed in accordance with the applicable standard. The analysis was performed in accordance with the applicable standard. The analysis was performed in accordance with the applicable standard.

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

***PASSIVE SAMPLES***

Your Project #: 2015/01/28 - 2015/02/27

Site Location: LICA

**Attention: MICHAEL BISAGA**

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

**Report Date: 2015/03/16**

Report #: R1821639

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B518769**

**Received: 2015/03/09, 09:54**

Sample Matrix: Air  
# Samples Received: 32

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
H2S Passive Analysis (1)	20	2015/03/12	2015/03/16	PTC SOP-00150	Tang, Passive H2S in
NO2 Passive Analysis (1)	18	2015/03/12	2015/03/16	PTC SOP-00148	Passive NO2 in ATM
NO2 Passive Analysis (1)	7	2015/03/13	2015/03/16	PTC SOP-00148	Passive NO2 in ATM
O3 Passive Analysis (1)	24	2015/03/16	2015/03/16	PTC SOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	29	2015/03/12	2015/03/16	PTC SOP-00149	Tang Passive SO2 in

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key **Levi** Levi Manchak  
**Manchak** 17 Mar 2015 08:51:03 -06:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service

Email: LManchak@maxxam.ca

Phone# (780) 378-8500

=====

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

Maxxam Job #: B518769  
Report Date: 2015/03/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
Client Project #: 2015/01/28 - 2015/02/27  
Site Location: LICA  
Sampler Initials: WA

**RESULTS OF CHEMICAL ANALYSES OF AIR**

<b>Maxxam ID</b>		LV2683	LV2684	LV2685	LV2686	LV2687	LV2688	LV2689		
<b>Sampling Date</b>		2015/01/28 16:54	2015/01/28 15:44	2015/01/28 17:10	2015/01/28 12:27	2015/01/27 19:23	2015/01/27 20:05	2015/01/29 14:13		
	<b>Units</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>										
Calculated H2S	ppb	0.15		0.13				0.14	0.02	7834628
Calculated NO2	ppb	1.4	1.1	1.6	4.3	1.1	1.7	3.8	0.1	7833796
Calculated O3	ppb	NA	NA	NA	NA	NA	NA	NA	0.1	7837883
Calculated SO2	ppb	0.7	0.6	0.6	0.5	0.6	0.6	0.5	0.1	7833720
RDL = Reportable Detection Limit										

<b>Maxxam ID</b>		LV2690	LV2691	LV2692	LV2693	LV2694	LV2695	LV2696		
<b>Sampling Date</b>		2015/01/28 16:54	2015/01/29 11:46	2015/01/29 15:21	2015/01/29 16:13	2015/01/27 20:52	2015/01/28 11:11	2015/01/28 12:44		
	<b>Units</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>										
Calculated H2S	ppb	MISSING	0.15	0.13	0.19		0.18	0.21	0.02	7834628
Calculated NO2	ppb	MISSING	1.4	1.2	1.9	1.8	1.7	2.0	0.1	7833796
Calculated O3	ppb	MISSING	NA	NA	NA	NA	NA	NA	0.1	7837883
Calculated SO2	ppb	MISSING	0.7	0.6	1.4	0.7	0.5	0.6	0.1	7833720
RDL = Reportable Detection Limit										

<b>Maxxam ID</b>		LV2697	LV2698	LV2699	LV2700		LV2701	LV2702		
<b>Sampling Date</b>		2015/01/28 11:51	2015/01/28 10:41	2015/01/27 14:15	2015/01/29 17:32		2015/01/28 13:56	2015/01/29 12:45		
	<b>Units</b>	<b>18</b>	<b>19</b>	<b>22</b>	<b>23</b>	<b>QC Batch</b>	<b>24</b>	<b>25</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>										
Calculated H2S	ppb	0.15		0.15		7834628	0.14	0.18	0.02	7834628
Calculated NO2	ppb	1.4	0.9	0.6	1.9	7833796	3.7		0.1	7835288
Calculated O3	ppb	NA	NA	NA	NA	7837883	NA		0.1	7837883
Calculated SO2	ppb	0.4	0.6	0.5	0.3	7833720	0.5	0.8	0.1	7833724
RDL = Reportable Detection Limit										

<b>Maxxam ID</b>		LV2703	LV2704	LV2705	LV2706	LV2707	LV2708	LV2711		
<b>Sampling Date</b>		2015/01/29 15:56	2015/01/29 16:25	2015/01/27 16:06	2015/01/27 14:15	2015/01/28 16:21	2015/01/27 17:23	2015/01/28 16:54		
	<b>Units</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>32</b>	<b>36</b>	<b>28 DUP</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>										
Calculated H2S	ppb	0.24	0.17		0.16	0.15	0.18		0.02	7834628
Calculated NO2	ppb			8.0	2.4	1.0	4.1		0.1	7835288
Calculated O3	ppb			NA	NA	NA	NA		0.1	7837883
Calculated SO2	ppb	0.9	1.0	0.6	0.5	0.5	0.6	0.5	0.1	7833724
RDL = Reportable Detection Limit										

Maxxam Job #: B518769  
Report Date: 2015/03/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
Client Project #: 2015/01/28 - 2015/02/27  
Site Location: LICA  
Sampler Initials: WA

**RESULTS OF CHEMICAL ANALYSES OF AIR**

Maxxam ID		LV2712	LV2713	LV2714	LV2716	LV2717		
Sampling Date		2015/01/28 16:54	2015/01/28 16:54	2015/01/28 16:54	2015/01/28 16:54	2015/01/28 16:54		
	Units	29 DUP	32 DUP	36 DUP	3 DUP	5 DUP	RDL	QC Batch
<b>Passive Monitoring</b>								
Calculated H2S	ppb				0.15	0.13	0.02	7834628
Calculated NO2	ppb			4.1	1.5		0.1	7835288
Calculated O3	ppb			NA			0.1	7837883
Calculated SO2	ppb	0.5	0.6				0.1	7833724
RDL = Reportable Detection Limit								



Maxxam Job #: B518769  
Report Date: 2015/03/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
Client Project #: 2015/01/28 - 2015/02/27  
Site Location: LICA  
Sampler Initials: WA

**GENERAL COMMENTS**

Samples from Station #11 not able to be changed due to site inaccessibility.  
O3 Samples invalid due to preparation error.

**Results relate only to the items tested.**

Maxxam Job #: B518769  
Report Date: 2015/03/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
Client Project #: 2015/01/28 - 2015/02/27  
Site Location: LICA  
Sampler Initials: WA

**QUALITY ASSURANCE REPORT**

QA/QC				Date					
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits	
7833720	DF4	Spiked Blank	Calculated SO2	2015/03/12		100	%	90 - 110	
7833720	DF4	Method Blank	Calculated SO2	2015/03/12	<0.1		ppb		
7833724	DF4	Spiked Blank	Calculated SO2	2015/03/12		101	%	90 - 110	
7833724	DF4	Method Blank	Calculated SO2	2015/03/12	<0.1		ppb		
7833796	SS6	Spiked Blank	Calculated NO2	2015/03/12		100	%	90 - 110	
7833796	SS6	Method Blank	Calculated NO2	2015/03/12	<0.1		ppb		
7834628	SS2	Spiked Blank	Calculated H2S	2015/03/12		100	%	90 - 110	
7835288	SS6	Spiked Blank	Calculated NO2	2015/03/13		100	%	90 - 110	
7835288	SS6	Method Blank	Calculated NO2	2015/03/13	<0.1		ppb		

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


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

Maxxam Job #: B518769  
Report Date: 2015/03/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
Client Project #: 2015/01/28 - 2015/02/27  
Site Location: LICA  
Sampler Initials: WA

**VALIDATION SIGNATURE PAGE**

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



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Linda Lin, Supervisor, Centre for Passive Sampling Technology

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

***VOCS SAMPLES***

<b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15020077-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 5, 2015  <b>CANISTER ID:</b> S5680  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 05-Feb-15 0:00  <b>DATE RECEIVED:</b> 10-Feb-15  <b>REPORT CREATED:</b> 04-Mar-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	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,1,2-Trichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,1-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,1-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,2,3-Trimethylbenzene	I	0.08	ppbv	0.03	AC-058	13-Feb-15
1,2,4-Trichlorobenzene	I	0.09	ppbv	0.03	AC-058	13-Feb-15
1,2,4-Trimethylbenzene	I	0.11	ppbv	0.03	AC-058	13-Feb-15
1,2-Dibromoethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,3,5-Trimethylbenzene	I	0.07	ppbv	0.03	AC-058	13-Feb-15
1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,3-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,4-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1,4-Dioxane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1-Butene		0.73	ppbv	0.03	AC-058	13-Feb-15
1-Hexene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
1-Pentene	I	0.14	ppbv	0.03	AC-058	13-Feb-15
2,2,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
2,2-Dimethylbutane	I	0.06	ppbv	0.03	AC-058	13-Feb-15
2,3,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
2,3-Dimethylbutane	I	0.09	ppbv	0.03	AC-058	13-Feb-15
2,3-Dimethylpentane	I	0.12	ppbv	0.03	AC-058	13-Feb-15
2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-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, Ops Manager <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 LICA 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> 15020077-001  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 5, 2015  <b>CANISTER ID:</b> S5680  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 05-Feb-15 0:00  <b>DATE RECEIVED:</b> 10-Feb-15  <b>REPORT CREATED:</b> 04-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	I	0.03	ppbv	0.03	AC-058	13-Feb-15
2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
2-Methylpentane	I	0.22	ppbv	0.03	AC-058	13-Feb-15
3-Methylheptane	I	0.07	ppbv	0.02	AC-058	13-Feb-15
3-Methylhexane	I	0.20	ppbv	0.03	AC-058	13-Feb-15
3-Methylpentane	I	0.17	ppbv	0.03	AC-058	13-Feb-15
Acetone		5.70	ppbv	0.03	AC-058	13-Feb-15
Acrolein	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Benzene	I	0.19	ppbv	0.03	AC-058	13-Feb-15
Benzyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Bromoform	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Bromomethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Carbon disulfide		0.60	ppbv	0.03	AC-058	13-Feb-15
Carbon tetrachloride	I	0.08	ppbv	0.03	AC-058	13-Feb-15
Chlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Chloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Chloroform	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Chloromethane		0.57	ppbv	0.03	AC-058	13-Feb-15
cis-1,2-Dichloroethene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
cis-2-Butene		0.31	ppbv	0.03	AC-058	13-Feb-15
cis-2-Pentene	I	0.16	ppbv	0.03	AC-058	13-Feb-15
Cyclohexane	I	0.22	ppbv	0.03	AC-058	13-Feb-15
Cyclopentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Dibromochloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-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, Ops Manager <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 LICA 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> 15020077-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 5, 2015</p> <p><b>CANISTER ID:</b> S5680</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 10-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		0.39	ppbv	0.03	AC-058	13-Feb-15
Ethyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Ethylbenzene	I	0.23	ppbv	0.03	AC-058	13-Feb-15
Freon-11	I	0.24	ppbv	0.03	AC-058	13-Feb-15
Freon-113	I	0.12	ppbv	0.03	AC-058	13-Feb-15
Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Freon-12		0.56	ppbv	0.03	AC-058	13-Feb-15
Hexachloro-1,3-butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Isobutane		0.34	ppbv	0.03	AC-058	13-Feb-15
Isopentane		0.49	ppbv	0.03	AC-058	13-Feb-15
Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Isopropyl alcohol	K, T, U	< 0.03	ppbv	0.06	AC-058	13-Feb-15
Isopropylbenzene	I	0.06	ppbv	0.03	AC-058	13-Feb-15
m,p-Xylene	I	0.20	ppbv	0.03	AC-058	13-Feb-15
m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Methyl butyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Methyl ethyl ketone		2.13	ppbv	0.03	AC-058	13-Feb-15
Methyl isobutyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Methyl methacrylate	K, T, U	< 0.03	ppbv	0.05	AC-058	13-Feb-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Methylcyclohexane		0.59	ppbv	0.03	AC-058	13-Feb-15
Methylcyclopentane	I	0.14	ppbv	0.03	AC-058	13-Feb-15
Methylene chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
n-Butane		0.64	ppbv	0.03	AC-058	13-Feb-15
n-Decane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-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, Ops Manager</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 LICA 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> 15020077-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 5, 2015</p> <p><b>CANISTER ID:</b> S5680</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 10-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-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	< 0.03	ppbv	0.03	AC-058	13-Feb-15
n-Heptane	I	0.07	ppbv	0.03	AC-058	13-Feb-15
n-Hexane	I	0.10	ppbv	0.03	AC-058	13-Feb-15
n-Octane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
n-Pentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
n-Propylbenzene	I	0.07	ppbv	0.03	AC-058	13-Feb-15
n-Undecane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Naphthalene	I	0.14	ppbv	0.03	AC-058	13-Feb-15
n-Nonane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
o-Ethyltoluene	I	0.07	ppbv	0.03	AC-058	13-Feb-15
o-Xylene	I	0.15	ppbv	0.03	AC-058	13-Feb-15
p-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
p-Ethyltoluene	I	0.06	ppbv	0.03	AC-058	13-Feb-15
Styrene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Tetrachloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Tetrahydrofuran	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Toluene		0.82	ppbv	0.03	AC-058	13-Feb-15
trans-1,2-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
trans-1,3-Dichloropropylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
trans-2-Butene		0.60	ppbv	0.03	AC-058	13-Feb-15
trans-2-Pentene		0.39	ppbv	0.03	AC-058	13-Feb-15
Trichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Vinyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-15
Vinyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Feb-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, Ops Manager</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 LICA 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> 15020208-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 11, 2015  <b>CANISTER ID:</b> 1532  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 11-Feb-15 0:00  <b>DATE RECEIVED:</b> 19-Feb-15  <b>REPORT CREATED:</b> 04-Mar-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	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,1,2-Trichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,1-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,1-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,2,3-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,2,4-Trichlorobenzene	I	0.14	ppbv	0.03	AC-058	20-Feb-15
1,2,4-Trimethylbenzene	I	0.04	ppbv	0.03	AC-058	20-Feb-15
1,2-Dibromoethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,3-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,4-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1,4-Dioxane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1-Hexene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
2,2,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
2,2-Dimethylbutane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
2,3,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
2,3-Dimethylbutane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
2,3-Dimethylpentane	I	0.05	ppbv	0.03	AC-058	20-Feb-15
2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-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, Ops Manager <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 LICA 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> 15020208-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 11, 2015</p> <p><b>CANISTER ID:</b> 1532</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-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	< 0.03	ppbv	0.03	AC-058	20-Feb-15
2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
2-Methylpentane	I	0.09	ppbv	0.03	AC-058	20-Feb-15
3-Methylheptane	K, T, U	< 0.03	ppbv	0.02	AC-058	20-Feb-15
3-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
3-Methylpentane	I	0.07	ppbv	0.03	AC-058	20-Feb-15
Acetone		1.38	ppbv	0.03	AC-058	20-Feb-15
Acrolein	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Benzene	I	0.17	ppbv	0.03	AC-058	20-Feb-15
Benzyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Bromoform	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Bromomethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Carbon disulfide	I	0.23	ppbv	0.03	AC-058	20-Feb-15
Carbon tetrachloride	I	0.08	ppbv	0.03	AC-058	20-Feb-15
Chlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Chloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Chloroform	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Chloromethane		0.57	ppbv	0.03	AC-058	20-Feb-15
cis-1,2-Dichloroethene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Cyclohexane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Cyclopentane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Dibromochloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-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, Ops Manager  
**On behalf of:** PJ Pretorius, Portfolio Manager, EAS

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

<b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15020208-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 11, 2015  <b>CANISTER ID:</b> 1532  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 11-Feb-15 0:00  <b>DATE RECEIVED:</b> 19-Feb-15  <b>REPORT CREATED:</b> 04-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		0.38	ppbv	0.03	AC-058	20-Feb-15
Ethyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Freon-11	I	0.22	ppbv	0.03	AC-058	20-Feb-15
Freon-113	I	0.07	ppbv	0.03	AC-058	20-Feb-15
Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Freon-12		0.48	ppbv	0.03	AC-058	20-Feb-15
Hexachloro-1,3-butadiene	I	0.03	ppbv	0.03	AC-058	20-Feb-15
Isobutane	I	0.07	ppbv	0.03	AC-058	20-Feb-15
Isopentane	I	0.16	ppbv	0.03	AC-058	20-Feb-15
Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Isopropyl alcohol	K, T, U	< 0.03	ppbv	0.06	AC-058	20-Feb-15
Isopropylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
m,p-Xylene	I	0.08	ppbv	0.03	AC-058	20-Feb-15
m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Methyl butyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Methyl ethyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Methyl isobutyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Methyl methacrylate	K, T, U	< 0.03	ppbv	0.05	AC-058	20-Feb-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Methylcyclohexane	I	0.07	ppbv	0.03	AC-058	20-Feb-15
Methylcyclopentane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Methylene chloride	I	0.16	ppbv	0.03	AC-058	20-Feb-15
n-Butane	I	0.30	ppbv	0.03	AC-058	20-Feb-15
n-Decane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-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, Ops Manager <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 LICA 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> 15020208-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 11, 2015  <b>CANISTER ID:</b> 1532  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 11-Feb-15 0:00  <b>DATE RECEIVED:</b> 19-Feb-15  <b>REPORT CREATED:</b> 04-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
n-Heptane	I	0.05	ppbv	0.03	AC-058	20-Feb-15
n-Hexane	I	0.10	ppbv	0.03	AC-058	20-Feb-15
n-Octane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
n-Pentane		0.34	ppbv	0.03	AC-058	20-Feb-15
n-Propylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
n-Undecane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Naphthalene		1.80	ppbv	0.03	AC-058	20-Feb-15
n-Nonane	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
o-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
p-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
p-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Styrene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Tetrachloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Tetrahydrofuran	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Toluene	I	0.12	ppbv	0.03	AC-058	20-Feb-15
trans-1,2-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
trans-1,3-Dichloropropylene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
trans-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Trichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Vinyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15
Vinyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Feb-15

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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15020240-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 17, 2015</p> <p><b>CANISTER ID:</b> 2663</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 24-Feb-15</p> <p><b>REPORT CREATED:</b> 05-Mar-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	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,1,2-Trichloroethane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,1-Dichloroethane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,1-Dichloroethylene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,2,3-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,2,4-Trichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,2-Dibromoethane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,2-Dichloroethane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,2-Dichloropropane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,3,5-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,3-Butadiene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,3-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,4-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1,4-Dioxane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1-Butene		0.59 ppbv	0.03	AC-058	25-Feb-15
1-Hexene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
1-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
2,2,4-Trimethylpentane	I	0.06 ppbv	0.03	AC-058	25-Feb-15
2,2-Dimethylbutane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-15
2,3-Dimethylbutane	I	0.11 ppbv	0.03	AC-058	25-Feb-15
2,3-Dimethylpentane	I	0.09 ppbv	0.03	AC-058	25-Feb-15
2,4-Dimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	25-Feb-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, Ops Manager</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 LICA 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> 15020240-002</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 17, 2015</p> <p><b>CANISTER ID:</b> 2663</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 24-Feb-15</p> <p><b>REPORT CREATED:</b> 05-Mar-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	< 0.03	ppbv	0.03	AC-058	25-Feb-15
2-Methylhexane	I	0.07	ppbv	0.03	AC-058	25-Feb-15
2-Methylpentane	I	0.19	ppbv	0.03	AC-058	25-Feb-15
3-Methylheptane	K, T, U	< 0.03	ppbv	0.02	AC-058	25-Feb-15
3-Methylhexane	I	0.07	ppbv	0.03	AC-058	25-Feb-15
3-Methylpentane	I	0.14	ppbv	0.03	AC-058	25-Feb-15
Acetone		1.16	ppbv	0.03	AC-058	25-Feb-15
Acrolein	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Benzene	I	0.22	ppbv	0.03	AC-058	25-Feb-15
Benzyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Bromoform	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Bromomethane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Carbon disulfide	I	0.06	ppbv	0.03	AC-058	25-Feb-15
Carbon tetrachloride	I	0.09	ppbv	0.03	AC-058	25-Feb-15
Chlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Chloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Chloroform	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Chloromethane		0.60	ppbv	0.03	AC-058	25-Feb-15
cis-1,2-Dichloroethene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Cyclohexane	I	0.25	ppbv	0.03	AC-058	25-Feb-15
Cyclopentane	I	0.10	ppbv	0.03	AC-058	25-Feb-15
Dibromochloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-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, Ops Manager</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 LICA 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> 15020240-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 17, 2015  <b>CANISTER ID:</b> 2663  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 17-Feb-15 0:00  <b>DATE RECEIVED:</b> 24-Feb-15  <b>REPORT CREATED:</b> 05-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.31	ppbv	0.03	AC-058	25-Feb-15
Ethyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Freon-11	I	0.21	ppbv	0.03	AC-058	25-Feb-15
Freon-113	I	0.07	ppbv	0.03	AC-058	25-Feb-15
Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Freon-12		0.57	ppbv	0.03	AC-058	25-Feb-15
Hexachloro-1,3-butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Isobutane		0.78	ppbv	0.03	AC-058	25-Feb-15
Isopentane		0.63	ppbv	0.03	AC-058	25-Feb-15
Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Isopropyl alcohol	K, T, U	< 0.03	ppbv	0.06	AC-058	25-Feb-15
Isopropylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
m,p-Xylene	I	0.12	ppbv	0.03	AC-058	25-Feb-15
m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Methyl butyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Methyl ethyl ketone	I	0.16	ppbv	0.03	AC-058	25-Feb-15
Methyl isobutyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Methyl methacrylate	K, T, U	< 0.03	ppbv	0.05	AC-058	25-Feb-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Methylcyclohexane		0.33	ppbv	0.03	AC-058	25-Feb-15
Methylcyclopentane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Methylene chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
n-Butane		1.11	ppbv	0.03	AC-058	25-Feb-15
n-Decane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15

**Qualifiers**

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 T Value reported is less than the laboratory method detection limit  
 U Compound was analyzed for but not detected  
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**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15020240-002  <b>MATRIX:</b> Ambient Air  <b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 17, 2015  <b>CANISTER ID:</b> 2663  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 17-Feb-15 0:00  <b>DATE RECEIVED:</b> 24-Feb-15  <b>REPORT CREATED:</b> 05-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
n-Heptane	I	0.09	ppbv	0.03	AC-058	25-Feb-15
n-Hexane	I	0.17	ppbv	0.03	AC-058	25-Feb-15
n-Octane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
n-Pentane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
n-Propylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
n-Undecane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Naphthalene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
n-Nonane	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
o-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
o-Xylene	I	0.04	ppbv	0.03	AC-058	25-Feb-15
p-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
p-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Styrene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Tetrachloroethylene	I	0.03	ppbv	0.03	AC-058	25-Feb-15
Tetrahydrofuran	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Toluene	I	0.20	ppbv	0.03	AC-058	25-Feb-15
trans-1,2-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
trans-1,3-Dichloropropylene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
trans-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Trichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Vinyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-15
Vinyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	25-Feb-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, Ops Manager <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 LICA 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> 15030004-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 23, 2015</p> <p><b>CANISTER ID:</b> S5609</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 02-Mar-15</p> <p><b>REPORT CREATED:</b> 07-Apr-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	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,1,2-Trichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,1-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,1-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,2,3-Trimethylbenzene	I	0.23	ppbv	0.03	AC-058	03-Mar-15
1,2,4-Trichlorobenzene		3.07	ppbv	0.03	AC-058	03-Mar-15
1,2,4-Trimethylbenzene	I	0.22	ppbv	0.03	AC-058	03-Mar-15
1,2-Dibromoethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,3,5-Trimethylbenzene	I	0.08	ppbv	0.03	AC-058	03-Mar-15
1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,3-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,4-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1,4-Dioxane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1-Hexene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2,2,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2,2-Dimethylbutane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2,3,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2,3-Dimethylbutane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2,3-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-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, Ops Manager</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 LICA 4000, 19 St NE  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> 15030004-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 23, 2015</p> <p><b>CANISTER ID:</b> S5609</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 02-Mar-15</p> <p><b>REPORT CREATED:</b> 07-Apr-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	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
2-Methylpentane	I	0.07	ppbv	0.03	AC-058	03-Mar-15
3-Methylheptane	K, T, U	< 0.03	ppbv	0.02	AC-058	03-Mar-15
3-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
3-Methylpentane	I	0.05	ppbv	0.03	AC-058	03-Mar-15
Acetone		1.99	ppbv	0.03	AC-058	03-Mar-15
Acrolein	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Benzene	I	0.11	ppbv	0.03	AC-058	03-Mar-15
Benzyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Bromoform	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Bromomethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Carbon disulfide		0.68	ppbv	0.03	AC-058	03-Mar-15
Carbon tetrachloride	I	0.09	ppbv	0.03	AC-058	03-Mar-15
Chlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Chloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Chloroform	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Chloromethane		0.84	ppbv	0.03	AC-058	03-Mar-15
cis-1,2-Dichloroethene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Cyclohexane	I	0.06	ppbv	0.03	AC-058	03-Mar-15
Cyclopentane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Dibromochloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-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, Ops Manager  
**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 LICA 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> 15030004-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 23, 2015</p> <p><b>CANISTER ID:</b> S5609</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 02-Mar-15</p> <p><b>REPORT CREATED:</b> 07-Apr-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.13	ppbv	0.03	AC-058	03-Mar-15
Ethyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Ethylbenzene	I	0.06	ppbv	0.03	AC-058	03-Mar-15
Freon-11	I	0.23	ppbv	0.03	AC-058	03-Mar-15
Freon-113	I	0.08	ppbv	0.03	AC-058	03-Mar-15
Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Freon-12		0.67	ppbv	0.03	AC-058	03-Mar-15
Hexachloro-1,3-butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Isobutane		0.82	ppbv	0.03	AC-058	03-Mar-15
Isopentane	I	0.26	ppbv	0.03	AC-058	03-Mar-15
Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Isopropyl alcohol	K, T, U	< 0.03	ppbv	0.06	AC-058	03-Mar-15
Isopropylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
m,p-Xylene	I	0.16	ppbv	0.03	AC-058	03-Mar-15
m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
m-Ethyltoluene	I	0.08	ppbv	0.03	AC-058	03-Mar-15
Methyl butyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Methyl ethyl ketone		0.32	ppbv	0.03	AC-058	03-Mar-15
Methyl isobutyl ketone	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Methyl methacrylate	K, T, U	< 0.03	ppbv	0.05	AC-058	03-Mar-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Methylcyclohexane	I	0.11	ppbv	0.03	AC-058	03-Mar-15
Methylcyclopentane	I	0.05	ppbv	0.03	AC-058	03-Mar-15
Methylene chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
n-Butane		1.15	ppbv	0.03	AC-058	03-Mar-15
n-Decane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-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, Ops Manager</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 LICA 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> 15030004-001</p> <p><b>MATRIX:</b> Ambient Air</p> <p><b>CLIENT SAMPLE ID:</b> LICA/VOC/CLS/Feb 23, 2015</p> <p><b>CANISTER ID:</b> S5609</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 02-Mar-15</p> <p><b>REPORT CREATED:</b> 07-Apr-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	< 0.03	ppbv	0.03	AC-058	03-Mar-15
n-Heptane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
n-Hexane	I	0.08	ppbv	0.03	AC-058	03-Mar-15
n-Octane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
n-Pentane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
n-Propylbenzene	I	0.04	ppbv	0.03	AC-058	03-Mar-15
n-Undecane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Naphthalene		7.68	ppbv	0.03	AC-058	03-Mar-15
n-Nonane	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
o-Ethyltoluene	I	0.10	ppbv	0.03	AC-058	03-Mar-15
o-Xylene	I	0.08	ppbv	0.03	AC-058	03-Mar-15
p-Diethylbenzene	I	0.12	ppbv	0.03	AC-058	03-Mar-15
p-Ethyltoluene	I	0.05	ppbv	0.03	AC-058	03-Mar-15
Styrene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Tetrachloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Tetrahydrofuran	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Toluene	I	0.12	ppbv	0.03	AC-058	03-Mar-15
trans-1,2-Dichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
trans-1,3-Dichloropropylene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
trans-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Trichloroethylene	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Vinyl acetate	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-15
Vinyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	03-Mar-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, Ops Manager</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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***PAHS SAMPLES***

<b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15020077-002  <b>MATRIX:</b> Air Filter  <b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 5, 2015  <b>CANISTER ID:</b> P13-01  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 05-Feb-15 0:00  <b>DATE RECEIVED:</b> 10-Feb-15  <b>REPORT CREATED:</b> 04-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.19 ug/PUF	0.01	NA-017	01-Mar-15
2-Methylnaphthalene		0.31 ug/PUF	0.01	NA-017	01-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthene		0.04 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(b,j,k)fluoranthene		0.04 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Chrysene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Fluoranthene		0.04 ug/PUF	0.01	NA-017	01-Mar-15
Fluorene		0.08 ug/PUF	0.01	NA-017	01-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Naphthalene		0.62 ug/PUF	0.01	NA-017	01-Mar-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Phenanthrene		0.08 ug/PUF	0.01	NA-017	01-Mar-15
Pyrene		0.03 ug/PUF	0.01	NA-017	01-Mar-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, Ops Manager <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 LICA 4000, 19 St NE  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> 15020077-002</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 5, 2015</p> <p><b>CANISTER ID:</b> P13-01</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 10-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-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	01-Mar-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

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**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 LICA 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> 15020208-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 11, 2015</p> <p><b>CANISTER ID:</b> TE09</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.25	ug/PUF	0.01	NA-017	01-Mar-15
2-Methylnaphthalene		0.45	ug/PUF	0.01	NA-017	01-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthene		0.06	ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Acridine	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Benzo(b,j,k)fluoranthene		0.04	ug/PUF	0.01	NA-017	01-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Chrysene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Fluoranthene		0.03	ug/PUF	0.01	NA-017	01-Mar-15
Fluorene		0.06	ug/PUF	0.01	NA-017	01-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Naphthalene		0.41	ug/PUF	0.01	NA-017	01-Mar-15
Perylene	K, T, U	< 0.01	ug/PUF	0.01	NA-017	01-Mar-15
Phenanthrene		0.07	ug/PUF	0.01	NA-017	01-Mar-15
Pyrene		0.03	ug/PUF	0.01	NA-017	01-Mar-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, Ops Manager</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 LICA 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> 15020208-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 11, 2015</p> <p><b>CANISTER ID:</b> TE09</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 11-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-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	01-Mar-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, Ops Manager  
**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 LICA 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> 15020240-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 17, 2015</p> <p><b>CANISTER ID:</b> TE-04</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 24-Feb-15</p> <p><b>REPORT CREATED:</b> 05-Mar-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.87 ug/PUF	0.01	NA-017	01-Mar-15
2-Methylnaphthalene		1.44 ug/PUF	0.01	NA-017	01-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthene		0.17 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthylene		0.04 ug/PUF	0.01	NA-017	01-Mar-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(b,j,k)fluoranthene		0.05 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Chrysene		0.02 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(ah)anthracene		0.02 ug/PUF	0.01	NA-017	01-Mar-15
Fluoranthene		0.10 ug/PUF	0.01	NA-017	01-Mar-15
Fluorene		0.15 ug/PUF	0.01	NA-017	01-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Naphthalene		1.99 ug/PUF	0.01	NA-017	01-Mar-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Phenanthrene		0.20 ug/PUF	0.01	NA-017	01-Mar-15
Pyrene		0.05 ug/PUF	0.01	NA-017	01-Mar-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, Ops Manager</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 LICA 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> 15020240-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 17, 2015</p> <p><b>CANISTER ID:</b> TE-04</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 17-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 24-Feb-15</p> <p><b>REPORT CREATED:</b> 05-Mar-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Retene		0.07 ug/PUF	0.01	NA-017	01-Mar-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, Ops Manager  
**On behalf of:** PJ Pretorius, Portfolio Manager, EAS

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

<b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15030004-002  <b>MATRIX:</b> Air Filter  <b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 23, 2015  <b>CANISTER ID:</b> TE 02  <b>DESCRIPTION:</b> CLS  <b>DATE SAMPLED:</b> 23-Feb-15 0:00  <b>DATE RECEIVED:</b> 02-Mar-15  <b>REPORT CREATED:</b> 07-Apr-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.04	ug/Filter	0.01	NA-017	15-Mar-15
2-Methylnaphthalene		0.07	ug/Filter	0.01	NA-017	15-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Acenaphthene		0.05	ug/Filter	0.01	NA-017	15-Mar-15
Acenaphthylene		0.02	ug/Filter	0.01	NA-017	15-Mar-15
Acridine	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Anthracene		0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(b,j,k)fluoranthene		0.02	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Chrysene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Fluoranthene		0.06	ug/Filter	0.01	NA-017	15-Mar-15
Fluorene		0.09	ug/Filter	0.01	NA-017	15-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Naphthalene		0.07	ug/Filter	0.01	NA-017	15-Mar-15
Perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Phenanthrene		0.19	ug/Filter	0.01	NA-017	15-Mar-15
Pyrene		0.03	ug/Filter	0.01	NA-017	15-Mar-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

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**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 LICA 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> 15030004-002</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/CLS/Feb 23, 2015</p> <p><b>CANISTER ID:</b> TE 02</p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 23-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 02-Mar-15</p> <p><b>REPORT CREATED:</b> 07-Apr-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/Filter	0.01	NA-017	15-Mar-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, Ops Manager</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 LICA 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> 15020080-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> CLS Filter # P4089565</p> <p><b>CANISTER ID:</b></p> <p><b>DESCRIPTION:</b> CLS</p> <p><b>DATE SAMPLED:</b> 05-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 10-Feb-15</p> <p><b>REPORT CREATED:</b> 23-Feb-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Particulate Weight		0.020 mg	0.004	AC-029	13-Feb-15

<p><b>Qualifiers</b></p>	<p><b>Certified By:</b> Graham Knox, Ops Manager <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> Lily Lin LICA 4000, 19 St NE  Calgary AB</p> <p><b>INVOICE TO:</b> Mike Bisaga PO Box 8237 5107W-50 St Bonnyville AB</p>	<p>403-219-3661  T2E 6P8  780 812-2182  T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15020205-001 <b>MATRIX:</b> Air Filter <b>CLIENT SAMPLE ID:</b> CLS Filter # LICA P4130541 <b>CANISTER ID:</b> <b>DESCRIPTION:</b> <b>DATE SAMPLED:</b> 11-Feb-15 0:00 <b>DATE RECEIVED:</b> 19-Feb-15 <b>REPORT CREATED:</b> 02-Mar-15 <b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Particulate Weight		0.082	mg	0.004	AC-029	24-Feb-15

Qualifiers

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

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca



<p><b>RESULTS TO:</b> Lily Lin LICA 4000, 19 St NE  Calgary AB</p> <p><b>INVOICE TO:</b> Mike Bisaga PO Box 8237 5107W-50 St Bonnyville AB</p>	<p>403-219-3661  T2E 6P8  780 812-2182  T9N 2J5</p>	<p><b>LABORATORY SAMPLE ID:</b> 15020239-001 <b>MATRIX:</b> Air Filter <b>CLIENT SAMPLE ID:</b> CLS Filter # P4130543 <b>CANISTER ID:</b> <b>DESCRIPTION:</b> <b>DATE SAMPLED:</b> 17-Feb-15 0:00 <b>DATE RECEIVED:</b> 24-Feb-15 <b>REPORT CREATED:</b> 23-Mar-15 <b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Particulate Weight		0.101	mg	0.004	AC-029	05-Mar-15

<p><b>Qualifiers</b></p>	<p><b>Certified By:</b> Graham Knox, Ops Manager <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 LICA 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> 15030003-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> CLS LICA P4130540</p> <p><b>CANISTER ID:</b></p> <p><b>DESCRIPTION:</b></p> <p><b>DATE SAMPLED:</b> 23-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 02-Mar-15</p> <p><b>REPORT CREATED:</b> 18-Mar-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Particulate Weight		0.025	mg	0.004	AC-029	09-Mar-15

<p><b>Qualifiers</b></p>	<p><b>Certified By:</b> Graham Knox, Ops Manager <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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***APPENDIX V***  
***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>2833-2015-02-01- C</u>
<b>Site:</b> <u>Cold Lake South Site</u>	<b>Contact:</b> <u>Mike Bisaga</u>

QA Check Complete msdmba Date March 02, 2015

QA Check Review msdmba Date March 02, 2015

Report Complete msdmba Date April 08, 2015

Report Reviewed [Signature] Date 1- Apr -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**  
**MASKWA SITE**

**JOB #:2833-2015-02-30- C**

**FEBRUARY 2015**

Prepared for:

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

**Attention: MIKE BISAGA**

DATE: **March 13, 2015**

Prepared by:

Wunmi Adekanmbi, M.Sc.

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:

Lily Lin, B.Sc.

Customer Service Supervisor, Air Services, Maxxam Analytics

## SUMMARY

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

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 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 Maskwa 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	1	17	23	3	7.3	NW	4.3	23	100.0
H2S (PPB)	10	3	0	0	0	1	VAR	VAR	VAR	VAR	0.7	14, 17	97.8
THC (PPM)	-	-	-	-	2.2	8.5	22	9	0.2	SE	2.7	22	99.7
NO2 (PPB)	159	-	0	-	3.9	20.2	1	0	0.7	E	9.8	1	99.9
NO (PPB)	-	-	-	-	1.1	13.6	1	7	2.3	SW	4.2	1	99.9
NOX (PPB)	-	-	-	-	5.0	32	1	7	2.3	SW	13.9	1	99.9
RELATIVE HUMIDITY (%)	-	-	-	-	67.2	88	19	VAR	VAR	VAR	80.0	19	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	945	965	11	8	2.2	ESE	958	VAR	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	-14.5	9.3	23	14	9.2	NW	1.8	23	100.0
PRECIPITATION (MM)	-	-	-	-	0.0	1.0	14, 15	S, 9	6.1, 4.2	SE W	0.2	14	100.0
VECTOR WS (KPH)	-	-	-	-	5.5	12.7	24	22	-	NNE	9.8	6	100.0
VECTOR WD (DEG)	-	-	-	-	NNE	-	-	-	-	-	-	-	100.0

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



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## 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 is to be operational 90% of the time (minimum), on a monthly basis.

All data was within Provincial objectives for the month.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 11. The inlet filter was changed before the calibration was started.

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

The analyzer started drifting low on January 29. An as found points check was performed to check the analyzer's functionality on February 2. The analyzer took extensive time to achieve the target value. The as found points check was repeated on February 3 using a different calibrator and the result was good. It confirmed the analyzer was working properly. A shut-down calibration was performed on February 10 before maintenance was performed. The scrubber material was changed and the analyzer was allowed time to stabilize overnight. A post-repair calibration was performed on February 11. Fifteen hours of data were not valid due to this maintenance.

**TOTAL HYDROCARBONS (THC)**

The routine monthly calibration was performed on February 10. On February 19, a zero/span check was done before a major maintenance was performed. The zero-air pump was rebuilt, the tubing was replaced, the scrubber material was renewed and the pump cabinet was replaced with a new unit. Another zero/span check was performed after the maintenance to confirm the analyzer's functionality. The result was good. Two hours of data were invalid because of this maintenance.

**NITROGEN DIOXIDE (NO2)**

The routine monthly calibration was performed on February 11. The inlet filter was changed before the calibration was started. The case fan was replaced on February 19. Some daily span readings were outside the +/-10% acceptance limits due to an unstable zero/span system. The issue was fixed after the calibration on February 11. Data quality was not affected.

**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. One hourly maximum data collected on February 21 at hour 23 was invalidated due to a spike: Reason unknown.

**RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month.

**BAROMETRIC PRESSURE (BP)**

The pressure sensor was working well throughout the month.

**PRECIPITATION**

Both the rain gauge system and heating system were working well throughout the month.

**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 team consisted of Alexander Yakupov, Raja Ashraf, and Christopher Wesson.

## **3.0 Plant Monthly Required AMD Summary**

All data collected this month was 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-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-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

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY	24-HOUR	RDGS.
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG.		
DAY																												
1	0	0	0	0	0	0	0	1	1	1	2	S	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24
2	0	0	0	1	0	0	0	0	0	0	S	0	1	0	0	0	0	0	1	1	0	6	6	7	7	1.0	24	
3	3	1	0	0	0	0	0	0	0	S	0	3	3	2	0	0	0	0	0	1	0	0	0	0	3	0.6	24	
4	0	0	0	0	0	0	0	1	S	1	1	1	2	2	2	2	2	2	2	1	1	2	2	1	2	1.1	24	
5	2	0	0	0	1	1	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24	
6	0	0	0	0	0	0	S	0	0	0	0	0	0	0	2	2	2	1	0	0	1	1	0	0	2	0.4	24	
7	0	0	0	0	0	S	1	4	2	4	3	1	1	0	0	0	1	0	0	1	0	0	0	0	4	0.8	24	
8	0	0	0	0	S	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
9	0	0	1	S	2	0	0	2	0	1	0	1	1	0	0	1	1	1	0	0	0	0	0	0	2	0.5	24	
10	0	0	S	0	0	0	0	0	0	1	1	1	4	2	3	2	1	0	0	0	0	0	0	0	4	0.7	24	
11	0	S	0	0	0	0	0	0	C	C	C	C	C	1	1	1	1	1	3	2	2	2	1	2	3	0.9	24	
12	S	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	0	S	1	0.3	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3	S	3	3	0.5	24	
14	3	2	4	2	0	1	0	0	0	0	0	1	1	1	0	0	1	0	1	1	1	S	0	0	4	0.8	24	
15	0	1	0	0	0	0	0	0	0	0	0	11	1	1	0	0	0	0	0	0	S	0	0	1	11	0.7	24	
16	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	2	S	6	8	1	1	8	1.1	24	
17	4	9	3	3	4	4	2	1	2	3	5	3	2	1	2	1	1	0	S	0	0	0	0	0	9	2.2	24	
18	0	0	0	0	1	1	1	1	1	1	2	1	3	3	3	4	1	S	0	0	0	0	0	0	4	1.0	24	
19	0	0	0	0	0	0	0	1	1	1	1	1	2	1	1	1	S	0	1	7	3	5	2	0	7	1.2	24	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0	24	
21	0	0	0	0	0	0	0	4	0	0	0	0	1	0	S	1	1	0	0	0	0	0	0	0	4	0.3	24	
22	0	0	0	0	0	0	0	0	0	0	1	1	1	S	1	1	1	1	1	1	2	2	2	2	2	0.7	24	
23	2	3	2	17	9	12	2	2	15	10	4	3	S	4	3	4	6	0	0	0	0	0	1	0	17	4.3	24	
24	0	0	0	0	0	0	3	2	3	4	2	S	0	0	0	0	0	0	0	0	0	0	0	0	4	0.6	24	
25	0	0	0	0	0	0	0	0	0	0	S	0	1	2	1	1	0	0	0	0	0	0	0	0	2	0.2	24	
26	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0.3	24	
27	1	1	1	1	1	2	2	1	S	0	0	1	2	4	2	1	1	2	2	0	0	0	0	0	4	1.1	24	
28	0	0	0	0	0	0	0	S	0	0	1	1	6	1	1	0	0	0	4	9	6	1	0	0	9	1.3	24	
HOURLY MAX	4	9	4	17	9	12	3	4	15	10	5	11	6	4	3	4	6	2	4	9	6	8	6	7				
HOURLY AVG	0.6	0.7	0.4	0.9	0.7	0.8	0.4	0.8	1.0	1.1	1.0	1.2	1.3	1.0	0.9	0.9	0.8	0.4	0.7	1.0	1.0	1.1	0.6	0.7				

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

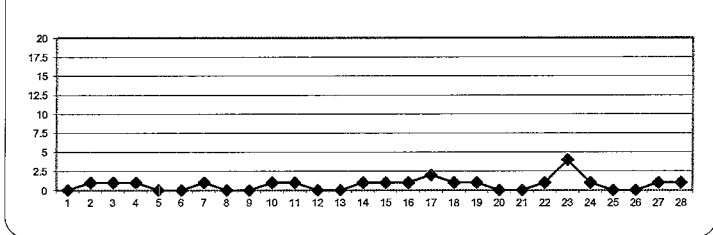
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 172 PPB, 24-HR 48 PPB

MONTHLY SUMMARY

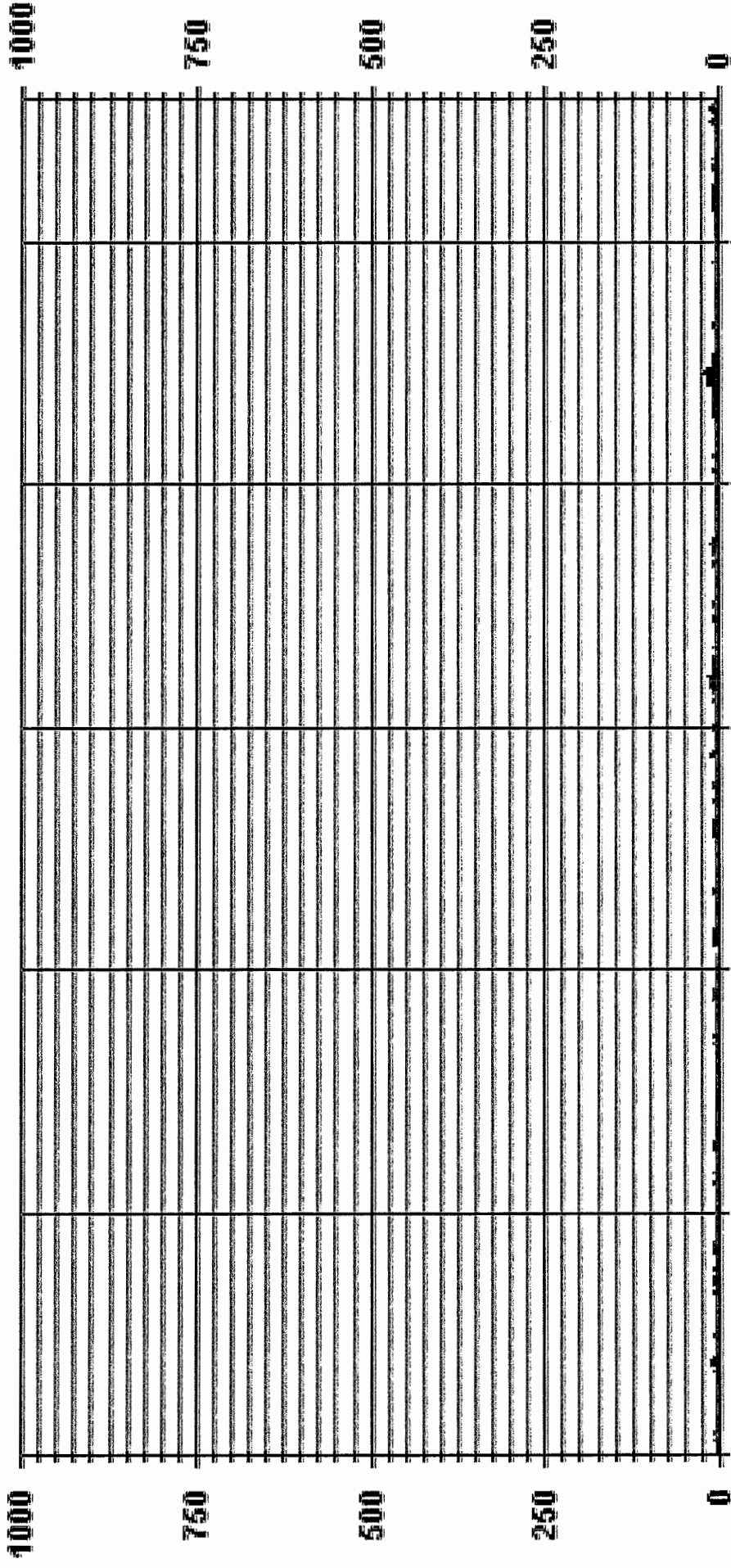
NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	245
MAXIMUM 1-HR AVERAGE:	17 PPB @ HOUR(S) 3 ON DAY(S) 23
MAXIMUM 24-HR AVERAGE:	4.3 PPB ON DAY(S) 23 VAR-VARIOUS
12S CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	672 HRS
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	1.73
MONTHLY AVERAGE:	1 PPB

24 HOUR AVERAGES FOR FEBRUARY 2015





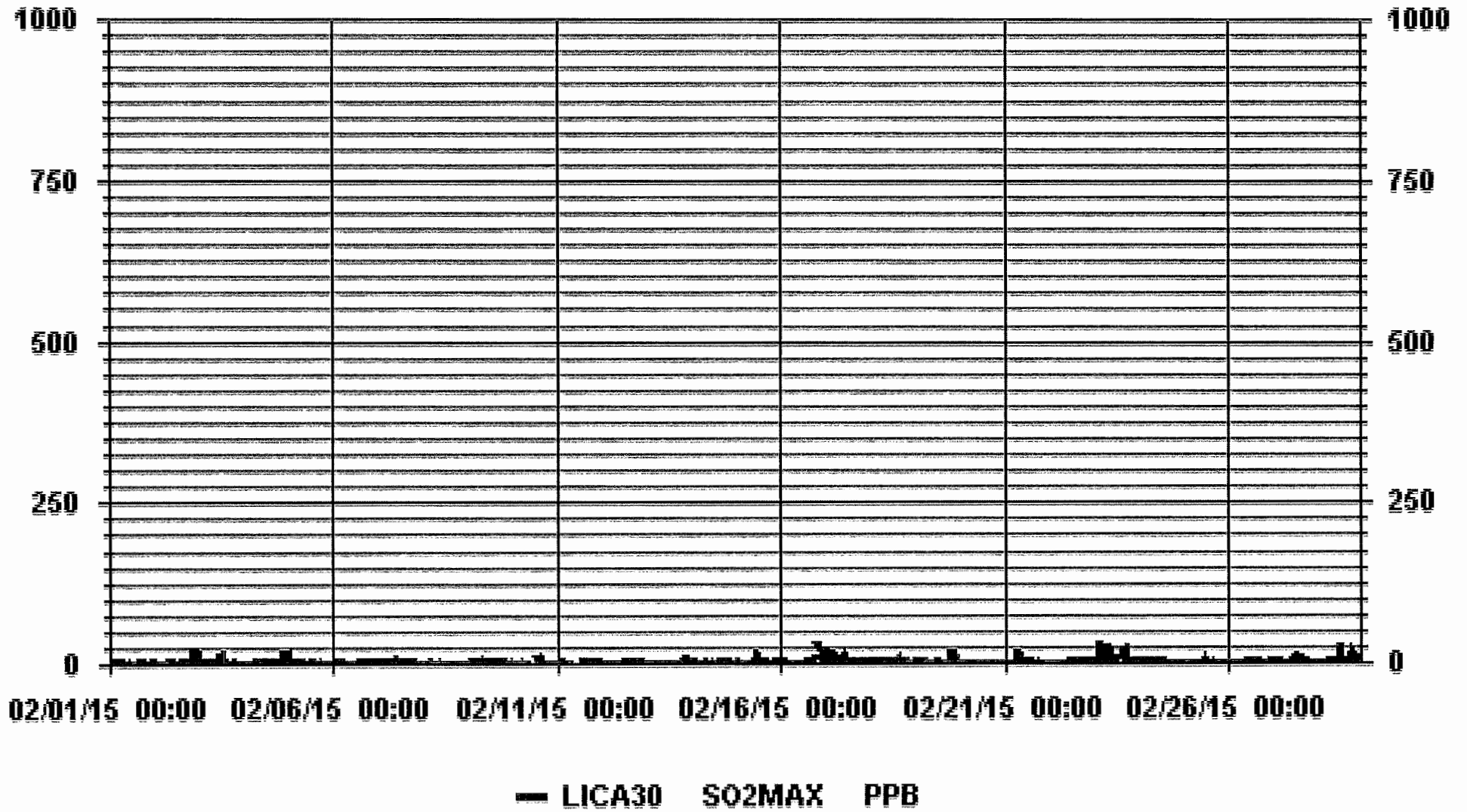
01 Hour Averages



— LICA30 SO2\_ PPB



### 01 Hour Averages



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

February 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LICA30  
 Parameter : SO2\_  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 20	12.22	6.58	9.71	7.52	5.95	5.64	3.13	2.82	2.03	9.56	8.77	4.38	4.85	5.01	6.42	5.32	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	12.22	6.58	9.71	7.52	5.95	5.64	3.13	2.82	2.03	9.56	8.77	4.38	4.85	5.01	6.42	5.32		

Calm : .00 %

Total # Operational Hours : 638

Distribution By Samples

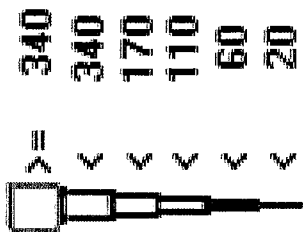
		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 20	78	42	62	48	38	36	20	18	13	61	56	28	31	32	41	34	638	
< 60																		
< 110																		
< 170																		
< 340																		
>= 340																		
Totals	78	42	62	48	38	36	20	18	13	61	56	28	31	32	41	34		

Calm : .00 %

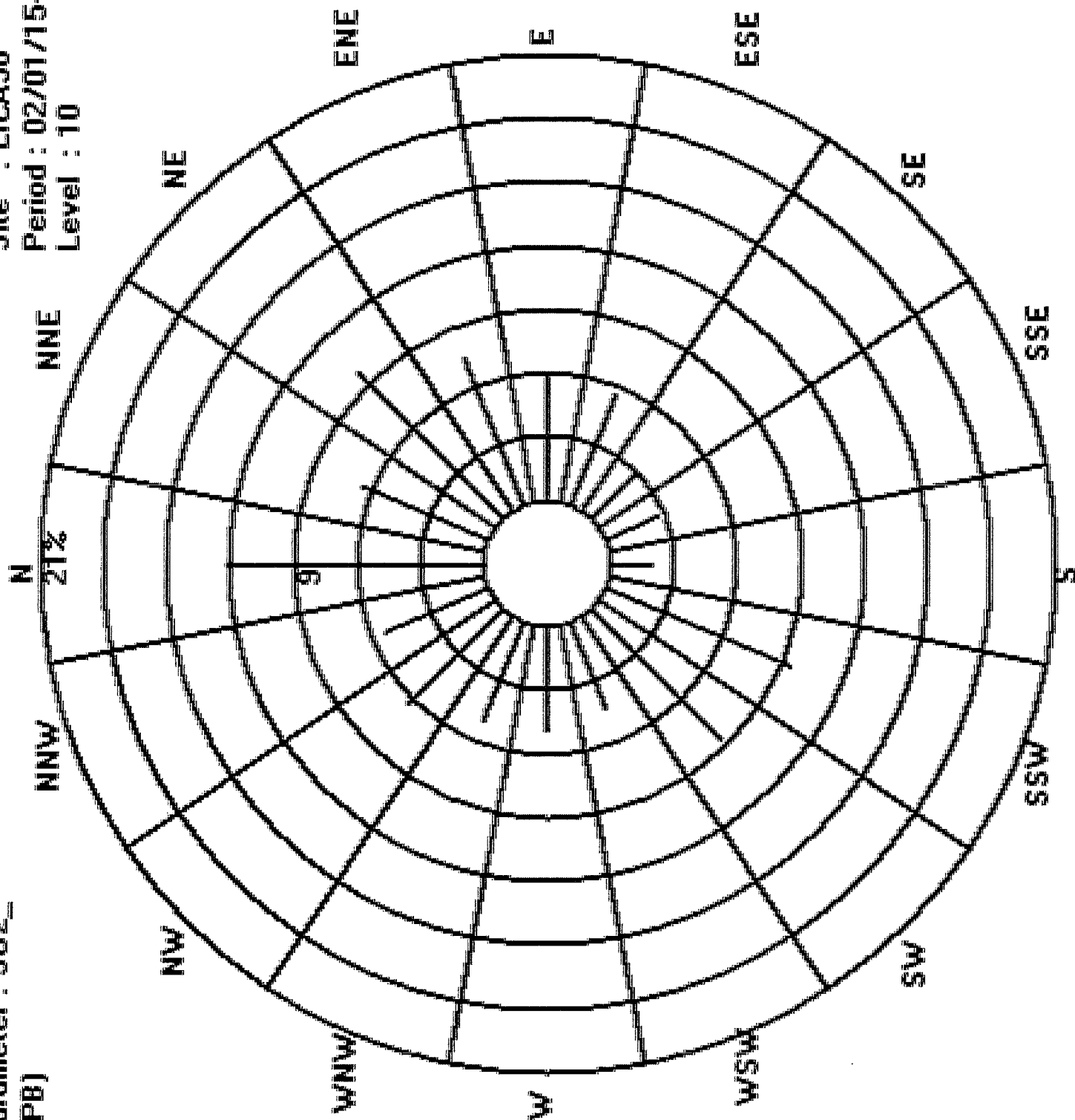
Total # Operational Hours : 638

Logger : 30 Parameter : SO2\_

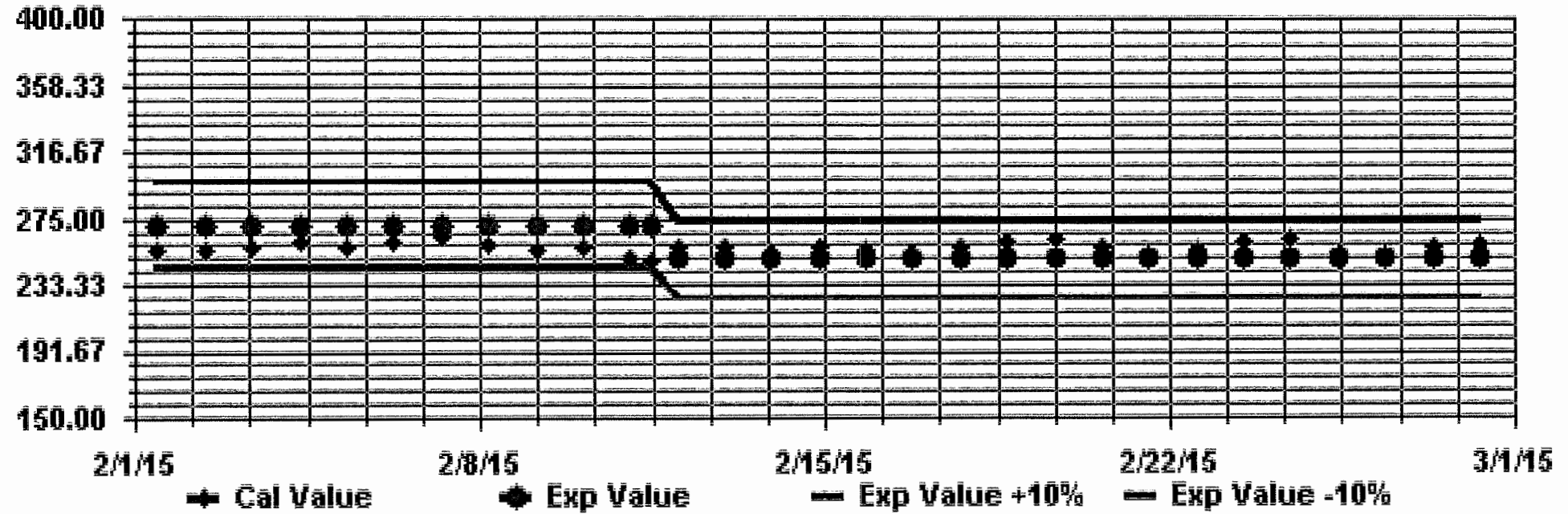
Class Limits (PPB)



Site : LICA30  
Period : 02/01/15-02/28/15  
Level : 10



Calibration Graph for Site: LICA30 Parameter: S02\_ Sequence: S02 Phase: SPAN



***HYDROGEN SULPHIDE***



HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

HOURLY START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	1	1	1	1	1	1	1	S	0	0	0	S	0	0	0	0	0	0	0	0	0	S	0	0	1	0.3	24	
2	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	C	C	C	C	1	1	1	S	0	0.0	24	
3	0	0	0	0	0	0	0	0	0	S	0	1	1	1	1	1	1	1	C	C	1	1	1	S	0	0.5	24	
4	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
5	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
6	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.0	24	
7	0	0	0	0	0	S	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	24	
8	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
9	0	0	0	S	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	S	1	1	1	0	1	0	0	0	0	C	C	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	0.4	17	
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.0	16	
12	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0.0	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0.0	24	
14	1	1	1	1	0	1	0	0	1	1	0	1	1	1	1	1	1	1	0	1	1	1	S	0	0	0.7	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0.0	24	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	0.2	24	
17	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	S	0	0	0	0	0	0.7	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.0	24	
19	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	S	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	S	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	S	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	S	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	S	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	S	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	S	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0.1	24	
26	1	0	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	24	
27	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
28	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
HOURLY 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			
HOURLY AVG	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1			

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

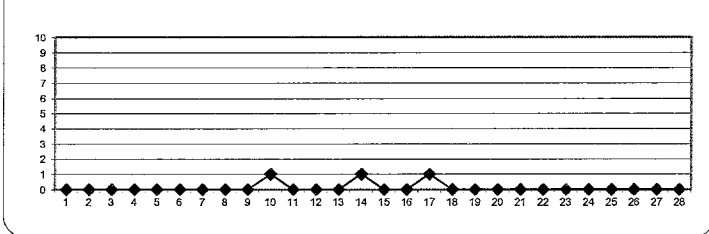
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR: 10 PPB, 24-HR: 5 PPB

MONTHLY SUMMARY

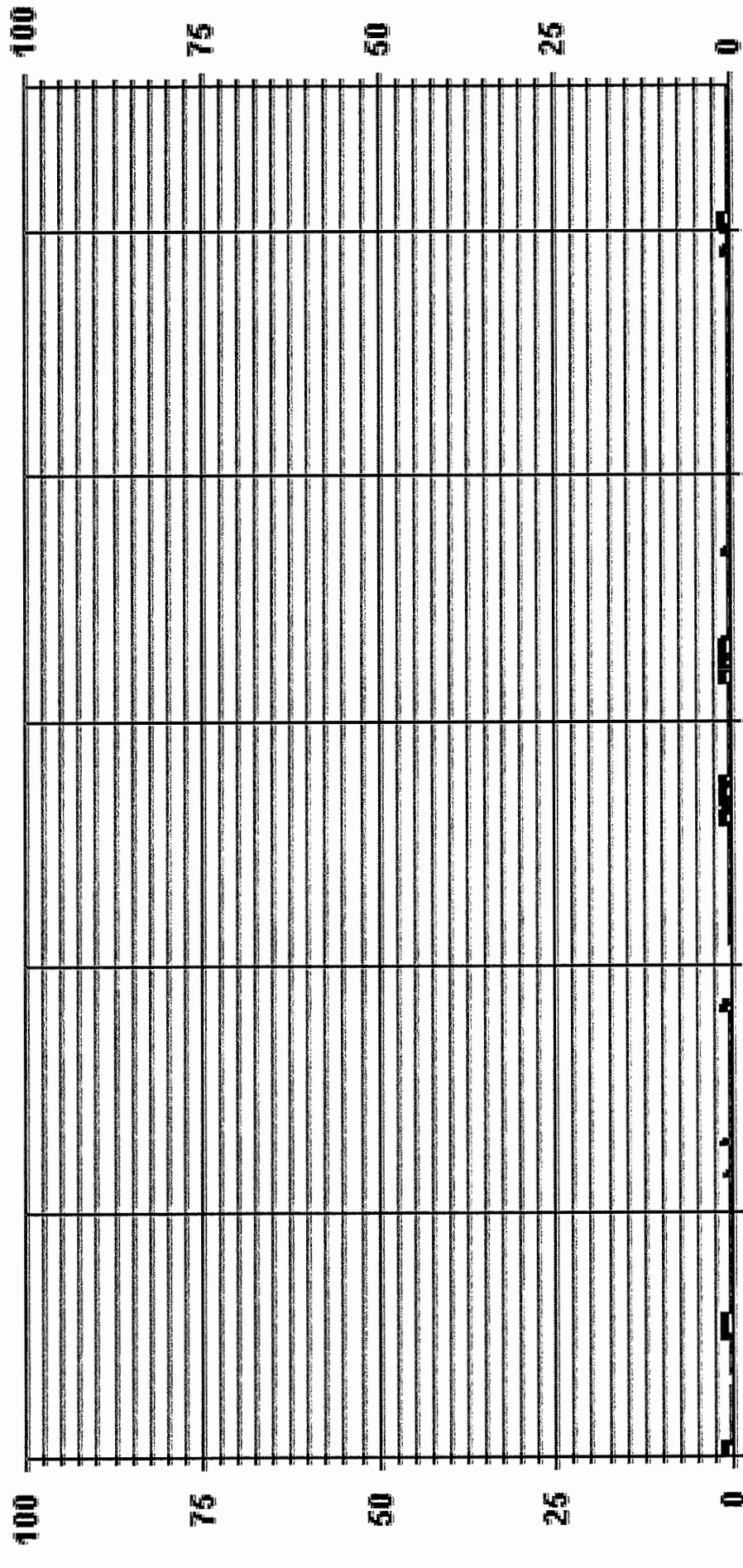
NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	70
MAXIMUM 1-HR AVERAGE:	1 PPB @ HOUR(S) VAR ON DAY(S) VAR
MAXIMUM 24-HR AVERAGE:	0.7 PPB ON DAY(S) VAR-VARIOUS 14, 17
IZS CALIBRATION TIME:	30 HRS OPERATIONAL TIME: 657 HRS
MONTHLY CALIBRATION TIME:	19 HRS AMD OPERATION UPTIME: 97.8 %
STANDARD DEVIATION:	0.32 MONTHLY AVERAGE: 0 PPB

24 HOUR AVERAGES FOR FEBRUARY 2015





# 01 Hour Averages



— LIC30 H2S\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - FEBRUARY 2015

JOB # 2833-2015-02-30- C

HYDROGEN SULPHIDE 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	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY 1	1	1	2	1	1	1	1	S	S	0	1	S	0	0	0	0	0	1	1	0	S	S	0	1	2	0.6	24	
2	1	1	0	1	0	0	1	0	0	1	C	C	C	C	C	C	C	C	0	1	1	1	1	1	1	1	0.6	24
3	0	0	0	0	0	0	0	0	0	S	1	2	2	1	1	1	C	C	C	1	1	1	S	S	2	0.6	24	
4	1	0	0	0	1	0	0	1	S	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	24
5	0	0	0	0	0	0	0	S	0	0	0	1	1	1	0	0	0	0	0	1	1	0	0	0	0	1	0.2	24
6	0	0	0	1	1	0	S	0	0	1	0	1	1	1	1	0	1	1	1	2	1	1	1	1	1	2	0.7	24
7	1	0	1	1	0	S	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	0	1	0.7	24
8	0	1	0	0	S	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0.2	24
9	0	0	0	S	0	0	0	1	0	1	0	1	0	0	1	0	0	0	1	0	0	1	1	3	3	0.4	24	
10	0	0	S	1	1	1	1	1	0	0	1	0	C	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	1	0.5	17
11	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	16
12	S	0	1	1	0	1	1	0	1	0	1	1	1	1	1	1	1	0	0	1	1	0	0	S	1	0.6	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0.0	24	
14	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	0	0	2	1.0	24
15	1	1	0	0	0	1	1	1	0	1	1	1	0	0	1	0	0	1	0	0	S	0	0	0	0	1	0.4	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	2	2	0.2	24	
17	2	1	1	2	2	1	1	1	1	2	1	2	2	1	1	1	2	1	S	0	1	0	0	0	0	2	1.1	24
18	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	S	1	0	0	0	1	1	1	1	0.3	24	
19	1	1	1	1	1	1	1	3	0	0	1	1	1	1	0	1	S	3	1	1	1	0	1	1	3	1.0	24	
20	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	1	0.3	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	1	0.0	24
23	0	1	1	1	1	1	0	0	0	1	1	1	S	1	1	1	1	1	0	0	0	0	0	0	0	1	0.6	24
24	0	0	1	1	1	1	1	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
25	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6	24
26	1	1	1	1	1	1	2	2	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0.6	24
27	1	0	2	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0.4	24	
28	1	1	0	0	0	0	0	S	0	0	0	0	1	2	1	0	0	0	1	1	1	0	0	0	0	2	0.3	24
HOURLY MAX	2	1	2	2	2	1	2	3	2	2	1	2	2	2	1	1	2	3	1	2	1	1	1	3				
HOURLY AVG	0.5	0.4	0.5	0.6	0.5	0.5	0.5	0.5	0.3	0.4	0.5	0.7	0.5	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.2	0.4	0.6				

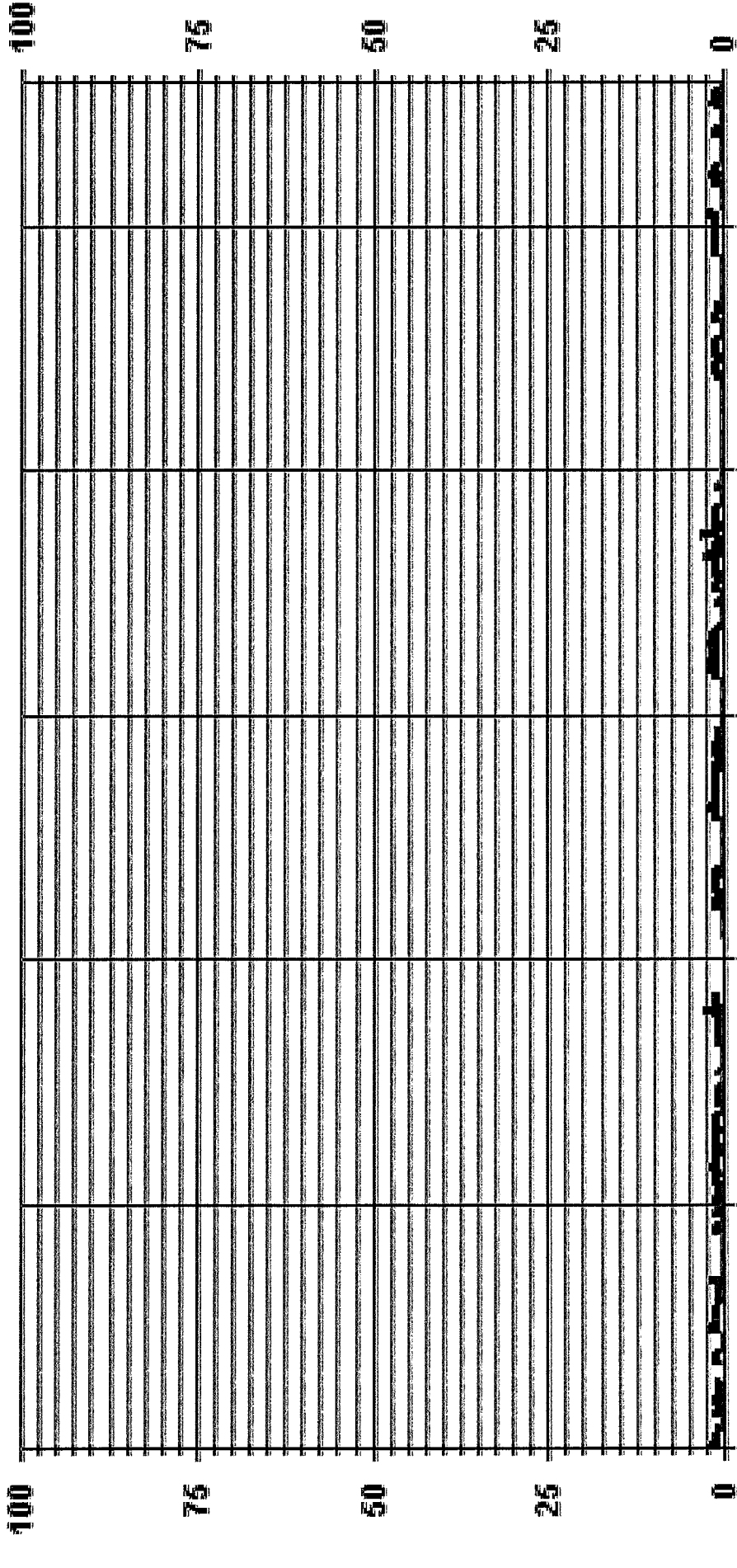
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	251
MAXIMUM INSTANTANEOUS VALUE:	3 PPB @ HOUR(S) VAR ON DAY(S) 9, 19
	VAR-VARIOUS
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	20 HRS
STANDARD DEVIATION:	0.59
OPERATIONAL TIME:	657 HRS

01 Hour Averages



02/01/15 00:00 02/06/15 00:00 02/11/15 00:00 02/16/15 00:00 02/21/15 00:00 02/26/15 00:00

— LICA30 H2SMAX PPB

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

February 2015

Distribution By % Of Samples

Logger Id : 30  
Site Name : LICA30  
Parameter : H2S\_  
Units : PPB

Wind Parameter : WDR  
Instrument Height : 10 Meters

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 3	11.25	6.62	9.93	7.78	6.29	5.96	3.31	3.14	2.15	9.93	8.60	4.13	4.80	5.29	6.29	4.47	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	11.25	6.62	9.93	7.78	6.29	5.96	3.31	3.14	2.15	9.93	8.60	4.13	4.80	5.29	6.29	4.47		

Calm : .00 %

Total # Operational Hours : 604

Distribution By Samples

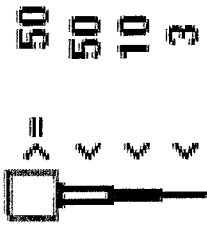
		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 3	68	40	60	47	38	36	20	19	13	60	52	25	29	32	38	27	604	
< 10																		
< 50																		
>= 50																		
Totals	68	40	60	47	38	36	20	19	13	60	52	25	29	32	38	27		

Calm : .00 %

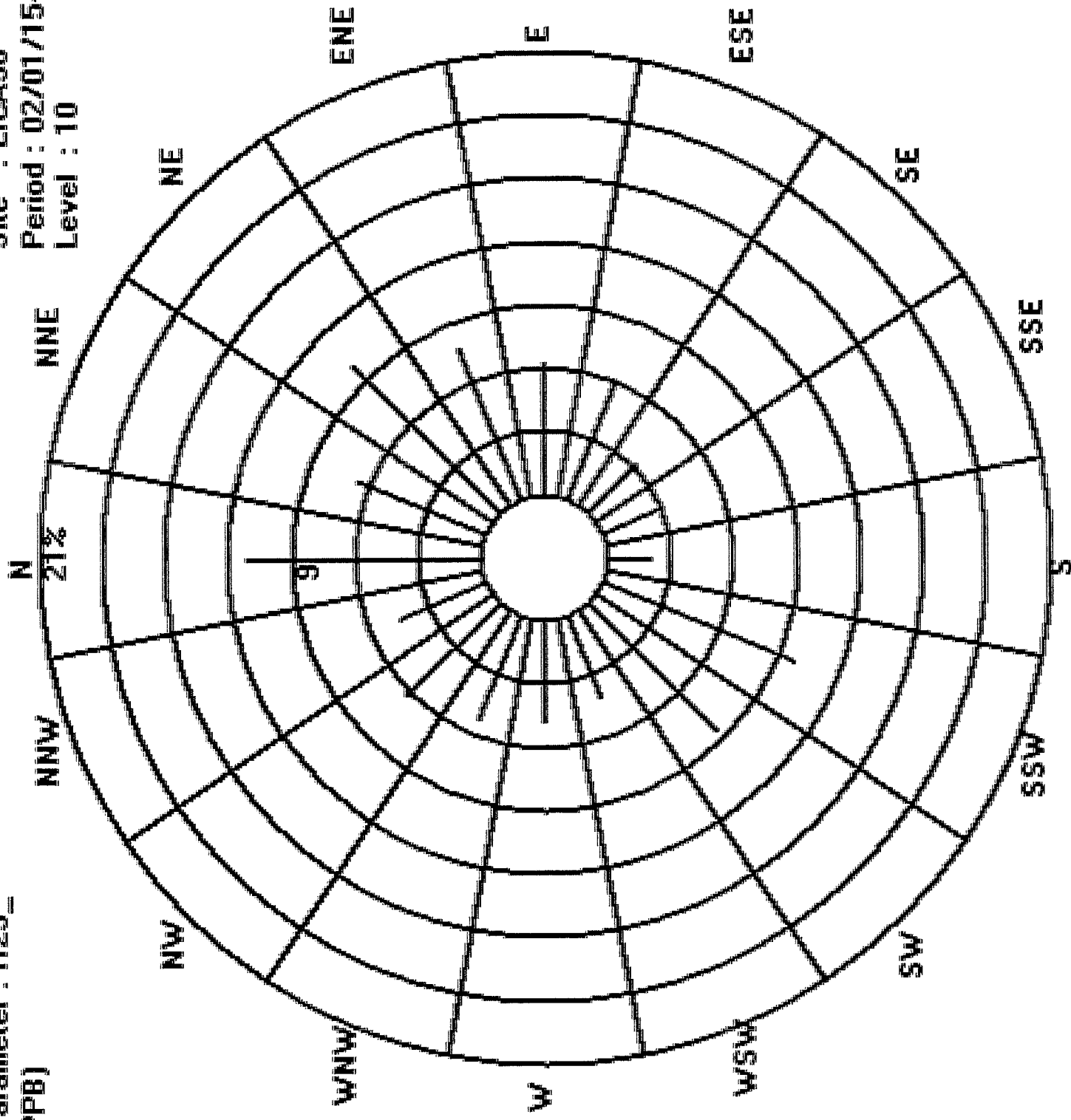
Total # Operational Hours : 604

Logger : 30 Parameter : H2S\_

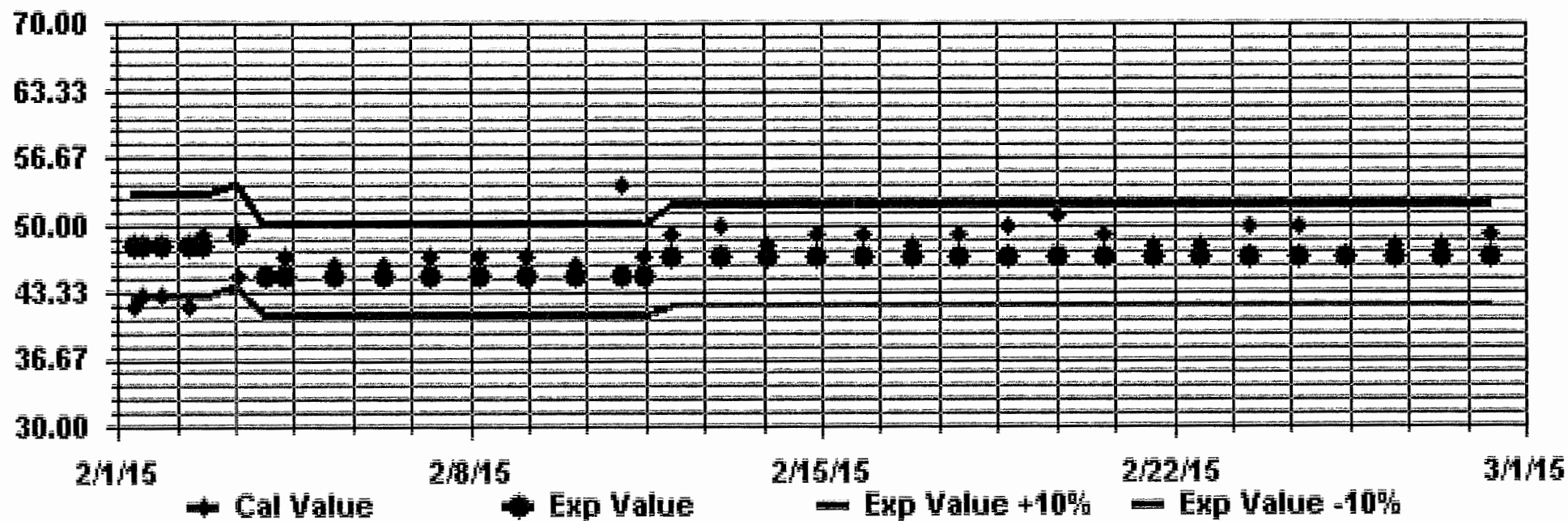
Class Limits (PPB)



Site : LICA30  
Period : 02/01/15-02/28/15  
Level : 10



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



***TOTAL HYDROCARBON***

TOTAL HYDROCARBONS (THC) hourly averages in ppm

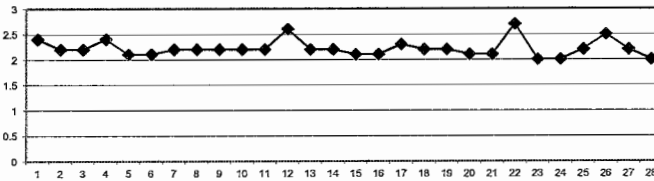
MST

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.	RDGS.	
1	2.4	2.4	2.4	2.5	2.5	2.9	2.5	2.6	2.9	3.0	2.8	S	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	3.0	2.4	24	
2	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	S	2.2	2.2	2.2	2.2	2.2	2.4	2.5	2.5	2.2	2.2	2.2	2.3	2.5	2.2	24	
3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	S	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.4	2.4	2.2	24	
4	2.5	2.5	2.5	2.4	2.5	2.6	2.8	2.7	S	2.5	2.5	2.4	2.3	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.8	2.4	24	
5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	24	
6	2.1	2.1	2.1	2.1	2.1	2.1	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	24	
7	2.1	2.0	2.0	2.0	2.1	S	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	24	
8	2.2	2.2	2.2	2.2	S	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	24	
9	2.2	2.2	2.2	S	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	24	
10	2.1	2.2	S	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	C	C	C	C	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	24	
11	2.2	S	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.3	2.3	2.2	2.2	2.2	2.3	2.2	24	
12	S	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.6	2.8	2.9	2.9	2.9	2.8	2.7	2.7	2.8	S	2.9	2.6	24
13	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	S	2.1	2.4	2.2	24	
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	2.2	2.2	2.2	2.3	2.4	S	2.3	2.3	2.4	2.2	24	
15	2.3	2.4	2.4	2.4	2.4	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	S	2.1	2.1	2.1	2.4	2.1	24	
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	S	2.2	2.2	2.1	2.2	2.1	2.2	24	
17	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.3	2.5	2.4	2.4	2.4	S	2.4	2.4	2.4	2.4	2.4	2.5	2.3	24	
18	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.2	S	2.2	2.1	2.1	2.1	2.1	2.4	2.2	24	
19	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.5	2.5	2.6	S	Y	Y	S	S	2.4	2.2	2.2	2.1	2.1	2.1	2.6	2.2	22	
20	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	S	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.1	24	
21	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	S	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	24	
22	2.2	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.2	8.5	2.7	2.6	2.5	S	2.5	2.5	2.6	2.6	2.7	2.6	2.5	2.4	2.4	2.3	8.5	2.7	24
23	2.3	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	S	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.4	2.0	24	
24	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	24	
25	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	S	2.1	2.1	2.1	2.2	2.2	2.3	2.4	2.3	2.4	2.4	2.5	2.5	2.5	2.2	24	
26	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.6	S	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.4	2.7	2.5	24	
27	2.4	2.4	2.4	2.5	2.5	2.5	2.4	2.2	S	2.1	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.5	2.2	24	
28	2.1	2.1	2.0	2.2	2.1	2.0	2.1	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.2	2.0	24	
HOURLY MAX	2.5	2.6	2.6	2.7	2.7	2.9	2.8	2.7	2.9	8.5	2.8	2.6	2.6	2.5	2.6	2.8	2.9	2.9	2.8	2.7	2.7	2.8	2.5				
HOURLY AVG	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.5	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	

STATUS FLAG CODES

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

24 HOUR AVERAGES FOR FEBRUARY 2015

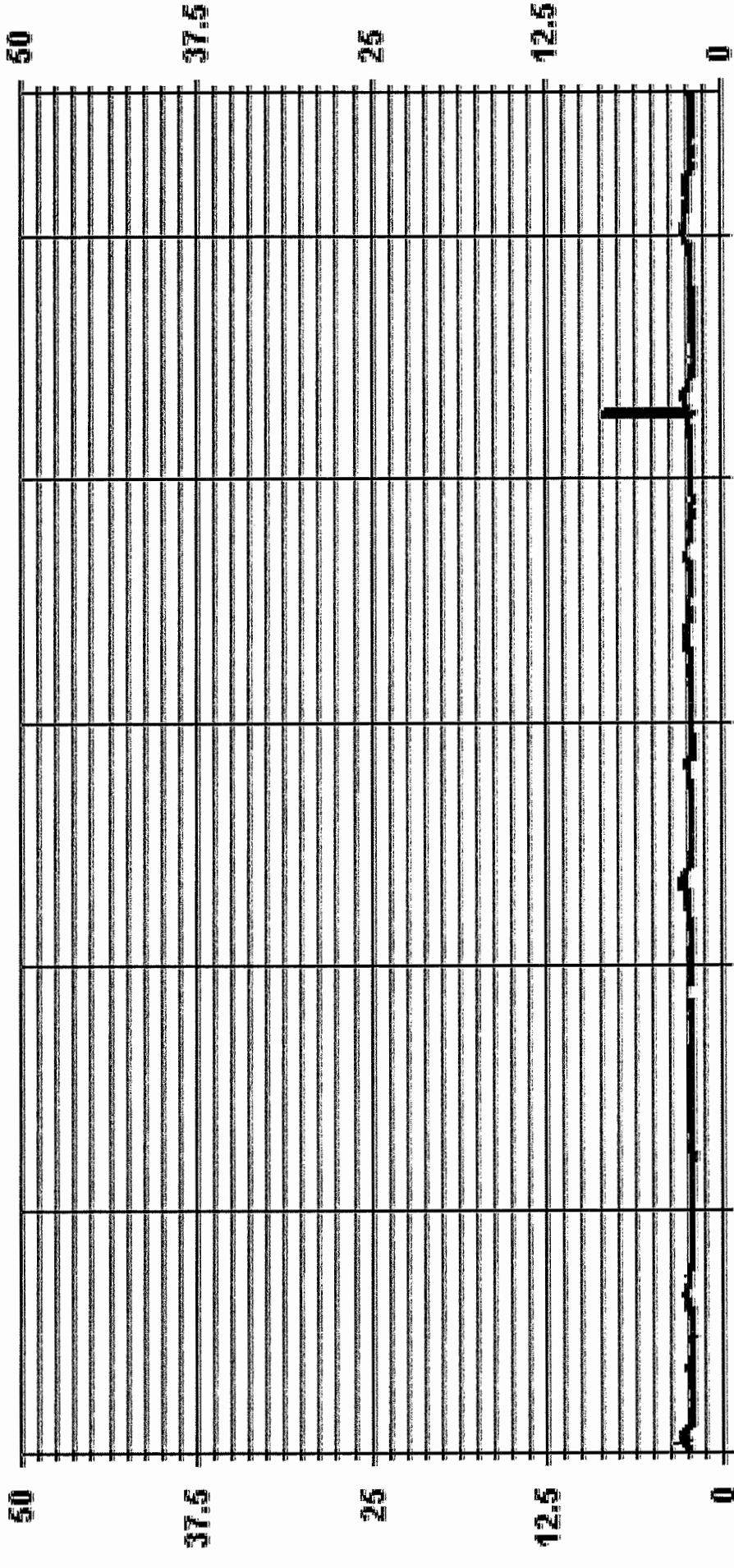


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634				
MAXIMUM 1-HR AVERAGE:	8.5 PPM	@ HOUR(S)	9	ON DAY(S)	22
MAXIMUM 24-HR AVERAGE:	2.7 PPM			ON DAY(S)	22
				VAR-VARIOUS	
IZS CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	670 HRS		
MONTHLY CALIBRATION TIME:	5 HRS	AMD OPERATION UPTIME:	99.7 %		
STANDARD DEVIATION:	0.31	MONTHLY AVERAGE:	2.2 PPM		



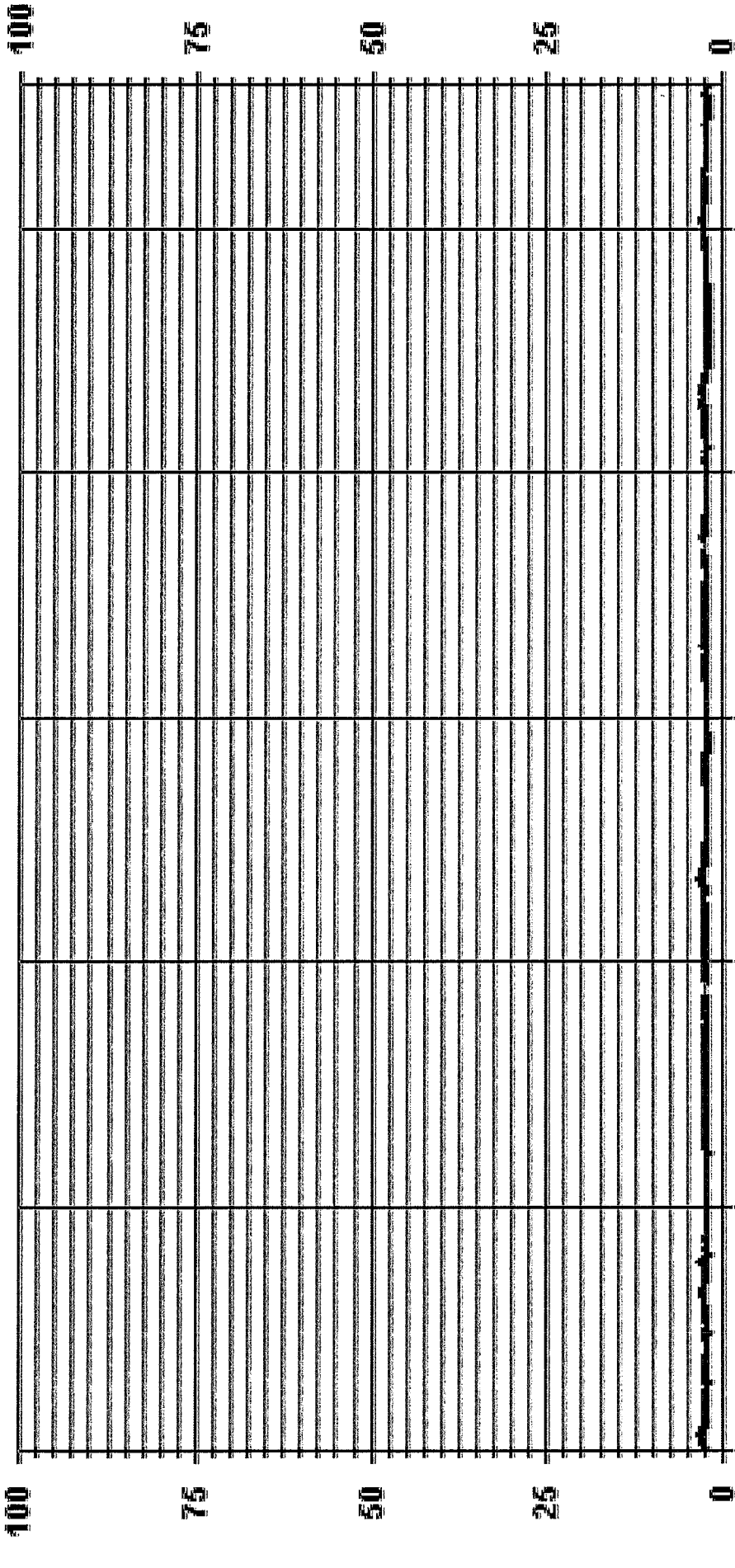
# 01 Hour Averages



— LICA30    - - - THC    . . . PPM



01 Hour Averages



— LICA30 THCMAX PPM

LICA30  
 THC / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

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

Wind Parameter : WDR  
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	12.04	6.65	9.82	7.60	6.18	6.02	3.16	3.01	2.06	9.35	8.71	4.27	4.91	4.91	6.33	4.59	99.68
< 10.0	.00	.00	.00	.00	.00	.00	.15	.00	.00	.15	.00	.00	.00	.00	.00	.00	.31
< 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	12.04	6.65	9.82	7.60	6.18	6.02	3.32	3.01	2.06	9.50	8.71	4.27	4.91	4.91	6.33	4.59	

Calm : .00 %

Total # Operational Hours : 631

Distribution By Samples

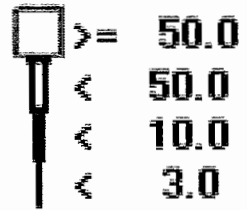
	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	76	42	62	48	39	38	20	19	13	59	55	27	31	31	40	29	629
< 10.0							1			1							2
< 50.0																	
>= 50.0																	
Totals	76	42	62	48	39	38	21	19	13	60	55	27	31	31	40	29	

Calm : .00 %

Total # Operational Hours : 631

Logger : 30 Parameter : THC

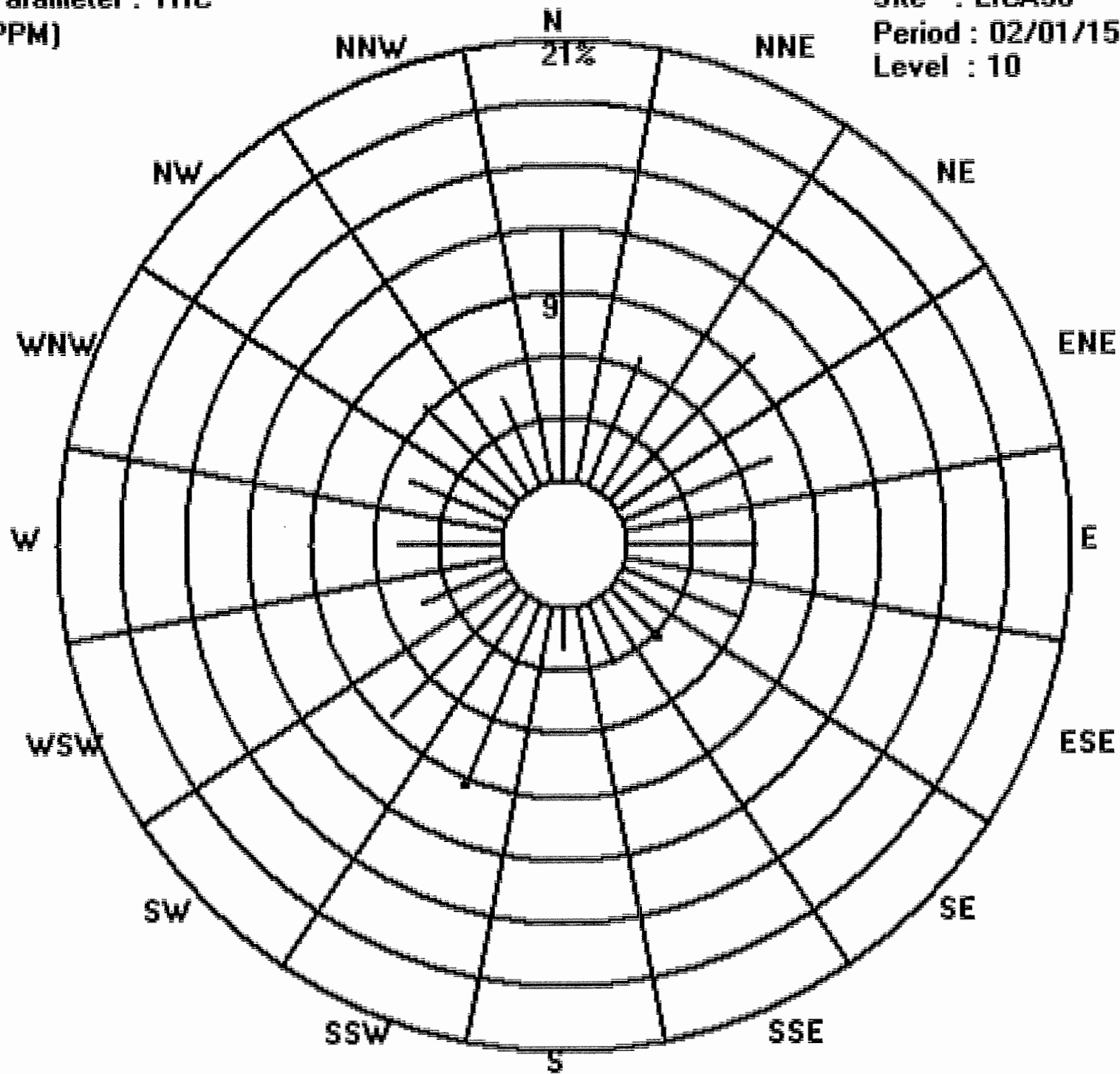
Class Limits (PPM)



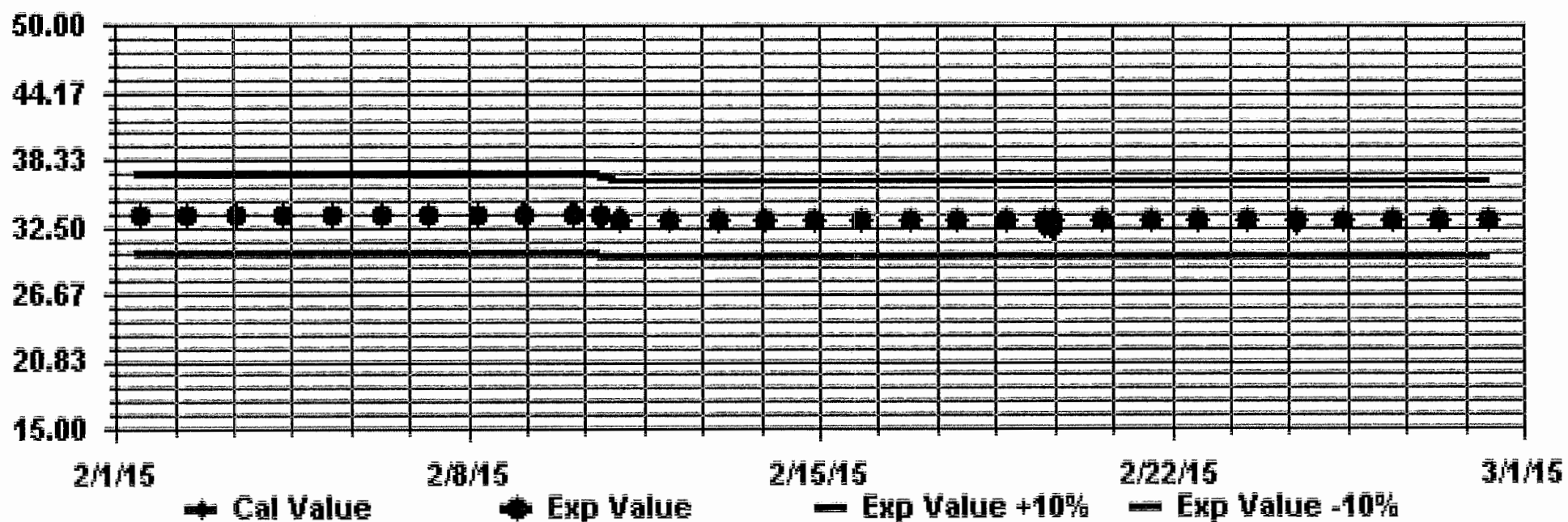
Site : LICA30

Period : 02/01/15-02/28/15

Level : 10



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



## ***OXIDES OF NITROGEN***

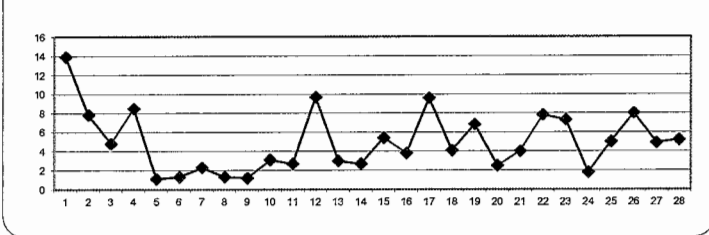
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR START	HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.	AVG.	RDGS.		
DAY																													
1		27.2	21	16.7	15.2	10.9	10.6	9.6	32	11.8	12.5	14.2	S	12.8	11	11.4	8	19.5	14.2	11.1	12.7	5.3	10.2	11.7	10.4	32	13.9	24	
2		10.3	11.8	8.3	4.1	1.6	1.3	2.1	4.4	9.6	7	S	3.2	5.2	3.2	3.2	3.5	5.5	12	11.8	10.8	6.1	20.4	16.8	17.7	20.4	7.8	24	
3		8.9	5.5	1.7	1.5	1.1	1.3	3.2	7.3	11.6	S	1.8	12.3	4.7	4.8	0.5	1.7	1.2	1.5	11.3	9.1	4.6	3.3	S	6.3	12.3	4.8	24	
4		8.7	12.4	9.8	6	5	6.4	8.8	9.6	S	S	S	9.2	10.7	11.2	9.8	14.7	12.9	11.3	7.5	4.6	6	8.3	3.7	2.5	14.7	8.5	24	
5		2.5	1.4	0.9	1.8	1.4	1.1	1.5	S	3.2	3.5	2.8	1.8	1.2	0.9	0.7	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0	3.5	1.1	24	
6		0.1	0.2	0.1	0.2	0.1	0.2	S	0.5	0.1	0.3	0.2	0.2	0.2	0.3	6.1	5.2	5.3	2.8	1	0.9	2.4	3.1	1.1	0.3	6.1	1.3	24	
7		0.3	0.2	0.2	0.1	0.2	S	2.9	10.5	5.7	9	6.9	3.4	3.2	1.1	0.8	0.8	2.7	0.3	0.2	1.5	1.9	0.2	0.6	0.9	10.5	2.3	24	
8		2.1	1.1	1	0.3	S	2.1	2.2	S	3.6	3.4	3.3	2.3	S	0.9	0.8	1.3	0.6	0.7	0.4	0.4	0.4	0.3	0.2	0.2	3.6	1.3	24	
9		0.3	0.3	2.9	S	4	1.1	0.3	S	1.3	1.5	0.6	1.3	2.9	0.4	0.4	1.9	3.1	1.5	0.2	0.3	0.3	0.1	0.3	0.5	4	1.2	24	
10		0.3	0.7	S	2.5	1.6	1.4	2.2	2.8	2.7	4.2	6.7	4.3	6.7	4.2	6.2	5.7	3.7	2.8	2.6	2.8	2	1.6	1.8	1.6	6.7	3.1	24	
11		3.1	S	2.9	2.8	4.2	3	3.5	2.3	C	C	C	C	C	C	C	2.2	2.8	2.9	2.8	2.6	2.5	2.2	1.7	1.8	4.2	2.7	24	
12		S	2.3	2.3	2.5	2.6	3.2	6.2	S	13.7	10.6	8	7.4	7.5	9.4	13.3	17.4	18.5	18.4	14.6	12.3	10.7	10.7	11.5	S	18.5	9.7	24	
13		6.1	2.3	2	1.9	1.9	2	1.9	2	1.6	1	0.9	1	1	1	0.9	0.9	0.8	0.9	9.2	10.7	9.8	S	7.8	5	7.8	10.7	3.0	24
14		8.8	6.9	10.2	4.7	0.8	1.3	0.9	0.7	1	1	0.8	1.3	1.3	1	0.9	1.7	1.6	1.8	2.1	3.7	3.8	S	2.8	2.7	10.2	2.7	24	
15		5	6.9	6.5	6	8.4	10.2	9.4	11.4	7.2	4.4	5.7	18.6	2	3.6	2	0.9	1.9	2	2.2	2.4	S	2.2	1.7	2.7	18.6	5.4	24	
16		3.1	3.2	2.8	2.3	1.6	0.6	0.5	1.3	2.1	1.6	2	2.6	2.4	4.1	3.4	2.6	1.9	2.1	5.8	S	12	14.1	8.8	7.4	14.1	3.8	24	
17		10.8	16.7	10.1	9.3	20.5	8.5	6.9	5.9	5.3	7.9	10.9	10	14.3	11.1	13.7	13.2	7.8	6.6	S	8.8	8.2	6.5	4.4	4.1	20.5	9.6	24	
18		5.3	5.5	4.6	4.3	3.3	3.6	3.7	3.8	4.4	4.8	4.5	5.4	7.3	6.5	6.8	7.7	2.1	S	2.4	1.5	1.3	1.9	1.3	1.2	7.7	4.1	24	
19		1.3	1.3	1.8	2.6	2.2	2.1	2.8	7.4	5.8	8.5	6.3	12.2	Y	10.5	10.5	11.9	S	12.9	5.1	16.7	7.4	11.2	6.1	2.2	16.7	6.8	23	
20		2.8	3.1	2.3	9.5	6.9	2.3	2.1	1.3	1.3	0.9	0.8	1	1.5	2.2	1.6	S	2.2	2.1	1.6	2.2	1.9	2.3	2.3	2.7	9.5	2.5	24	
21		2.4	2.4	3.4	4.9	5.2	3.7	5.8	11.7	4.2	2.6	1.7	3.1	4.8	3.1	S	4.5	2.8	1.9	2.1	2.3	1.9	2.8	7	6.7	11.7	4.0	24	
22		7.7	6.6	5.7	5.6	5.5	4	7.8	14.7	13.8	13.1	8.1	7.3	6.4	S	6.3	6.1	7	7.8	7.2	7.3	7.1	7.5	7.9	8.3	14.7	7.8	24	
23		8.4	8.9	6.1	27.1	12.9	17.2	5.8	3.8	26.4	12.9	3.6	2.7	S	7.1	4.5	5.1	9.5	0.6	1.1	0.8	0.8	1.2	1.5	0.9	27.1	7.3	24	
24		0.4	0.2	0.1	0.1	0.1	0.2	7.1	4.9	6.9	11.1	5	S	0.8	0.6	0.5	0.4	0.4	0.4	0.2	0.3	0.2	0.3	0.6	0.9	11.1	1.8	24	
25		1.2	1	1.8	0.6	0.4	0.4	1	1.5	1.7	1.5	S	3.5	4.4	6.7	5.3	8.2	8.1	8.6	8.3	8.6	10	11.6	11.4	9.2	11.6	5.0	24	
26		10.2	12.3	15.7	12.7	12	12.3	12.8	15.6	17	S	8.1	6.2	5.2	4.4	3.4	3.2	4	4	3.4	4	4.5	5.5	3.9	3.9	17	8.0	24	
27		4.3	3.5	6	13.8	9.1	8.5	9.3	5.5	S	2.7	1.4	2.8	4.9	7.8	5.4	5.3	2.7	3.3	3.8	2.3	3.2	1.6	4.1	2.4	13.8	4.9	24	
28		3	1.5	2.9	6.1	4.5	2.1	6.8	S	6.6	6.4	4.8	3.3	13.3	1.9	2.1	1.2	1.2	1.7	7.7	15.1	13.4	9.3	2.6	1.5	15.1	5.2	24	
HOURLY MAX		27.2	21	16.7	27.1	20.5	17.2	12.8	32	26.4	13.1	14.2	18.6	14.3	11.2	13.7	17.4	19.5	18.4	14.6	16.7	13.4	20.4	16.8	17.7				
HOURLY AVG		5.4	5.2	4.8	5.5	4.7	4.1	4.7	7.0	6.8	5.5	4.6	5.1	5.2	4.6	4.6	5.0	4.8	4.6	4.4	5.3	4.8	5.5	4.5	4.0				

STATUS FLAG CODES

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

24 HOUR AVERAGES FOR FEBRUARY 2015

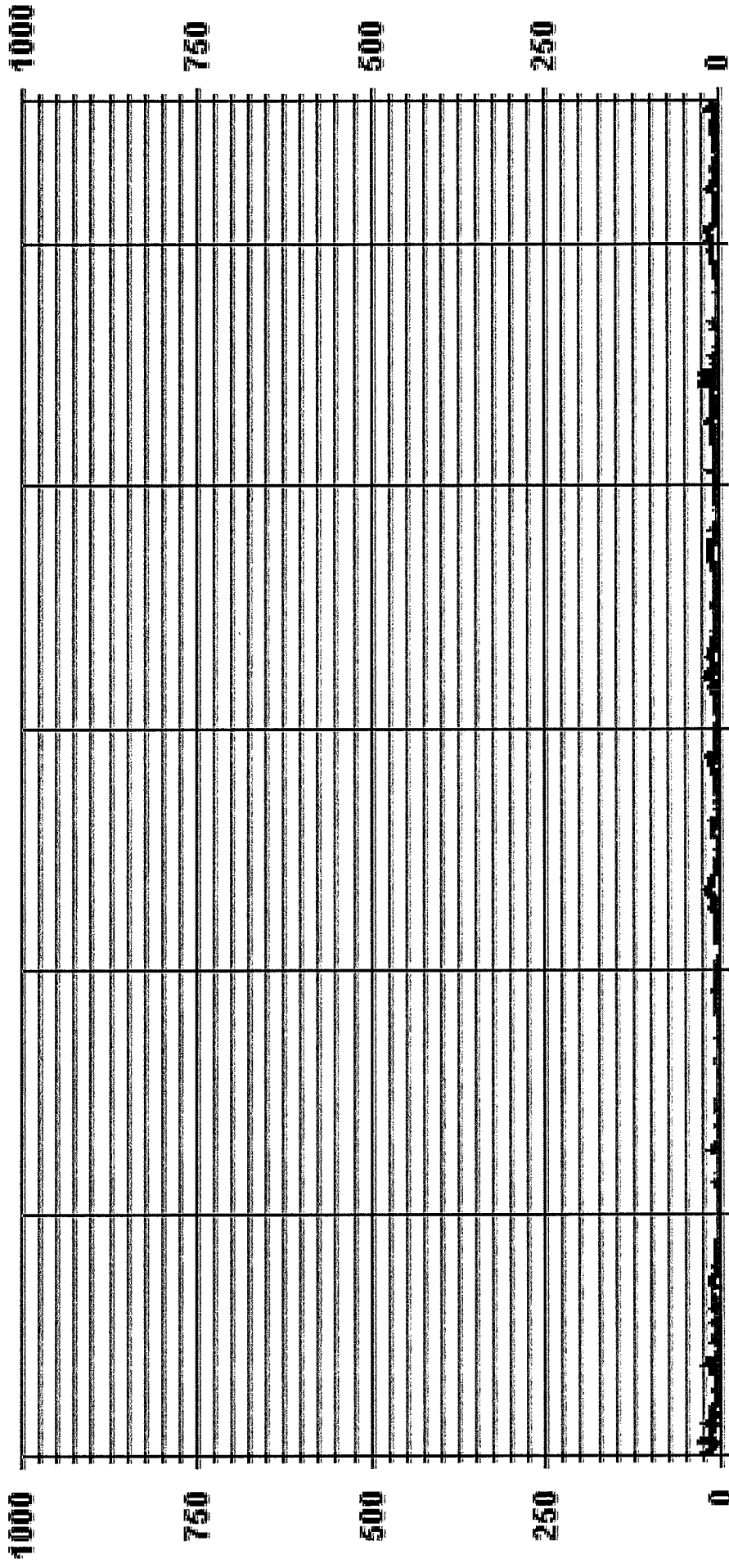


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	627					
MAXIMUM 1-HR AVERAGE:	32.0	PPB	@ HOUR(S)	7	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	13.9	PPB			ON DAY(S)	1
					VAR-VARIOUS	
IZS CALIBRATION TIME:	36	HRS	OPERATIONAL TIME:	671	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.9	%	
STANDARD DEVIATION:	4.75		MONTHLY AVERAGE:	5.0	PPB	



01 Hour Averages

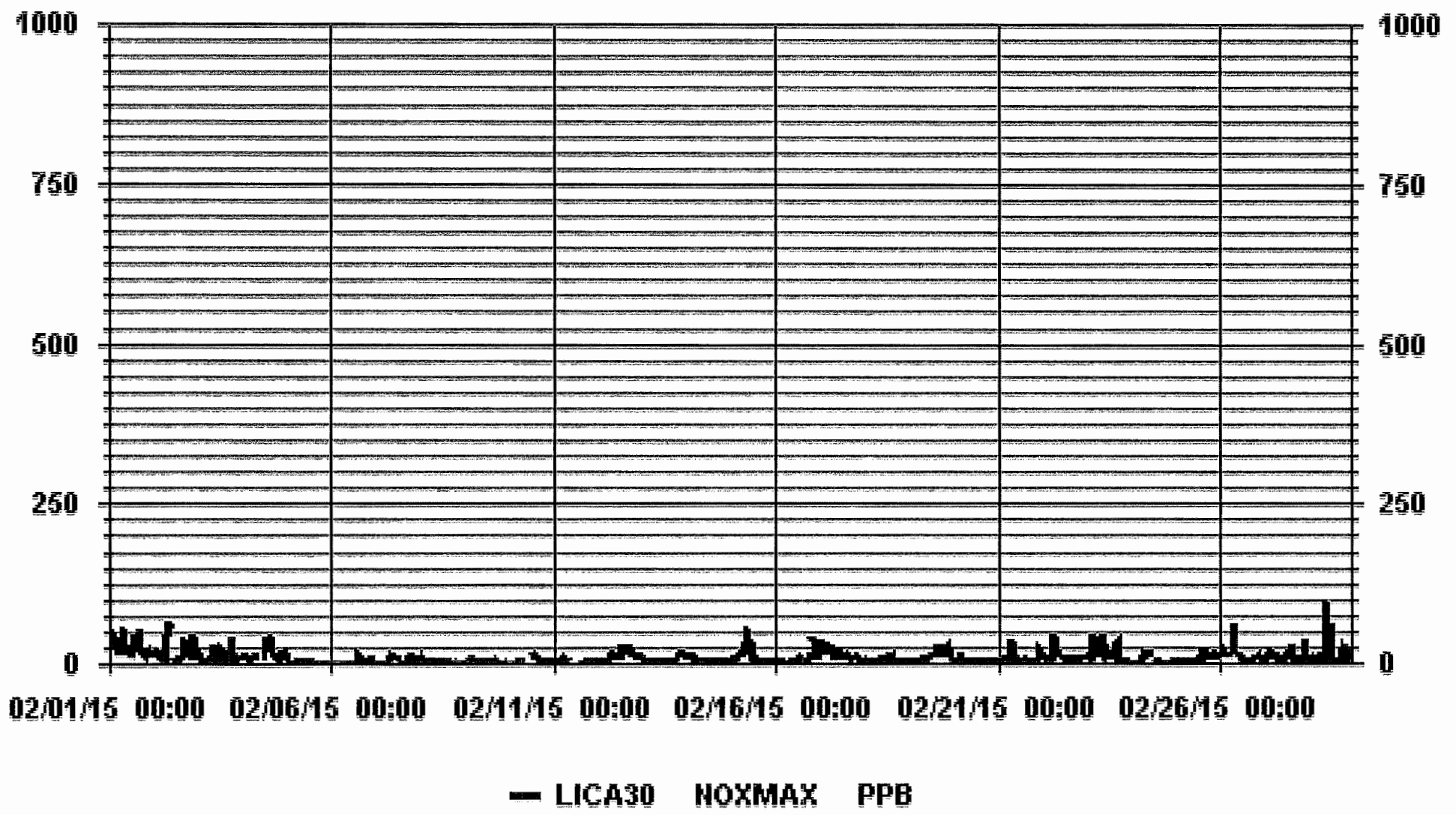


02/01/15 00:00 02/06/15 00:00 02/11/15 00:00 02/16/15 00:00 02/21/15 00:00 02/26/15 00:00

— LICA30 NOX\_ PPB



### 01 Hour Averages



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

February 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LICA30  
 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	12.42	6.68	9.71	7.64	6.05	5.57	3.18	2.70	1.91	9.39	8.59	4.45	4.93	4.93	6.36	5.41	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	12.42	6.68	9.71	7.64	6.05	5.57	3.18	2.70	1.91	9.39	8.59	4.45	4.93	4.93	6.36	5.41	

Calm : .00 %

Total # Operational Hours : 628

Distribution By Samples


Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	78	42	61	48	38	35	20	17	12	59	54	28	31	31	40	34	628
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	78	42	61	48	38	35	20	17	12	59	54	28	31	31	40	34	

Calm : .00 %

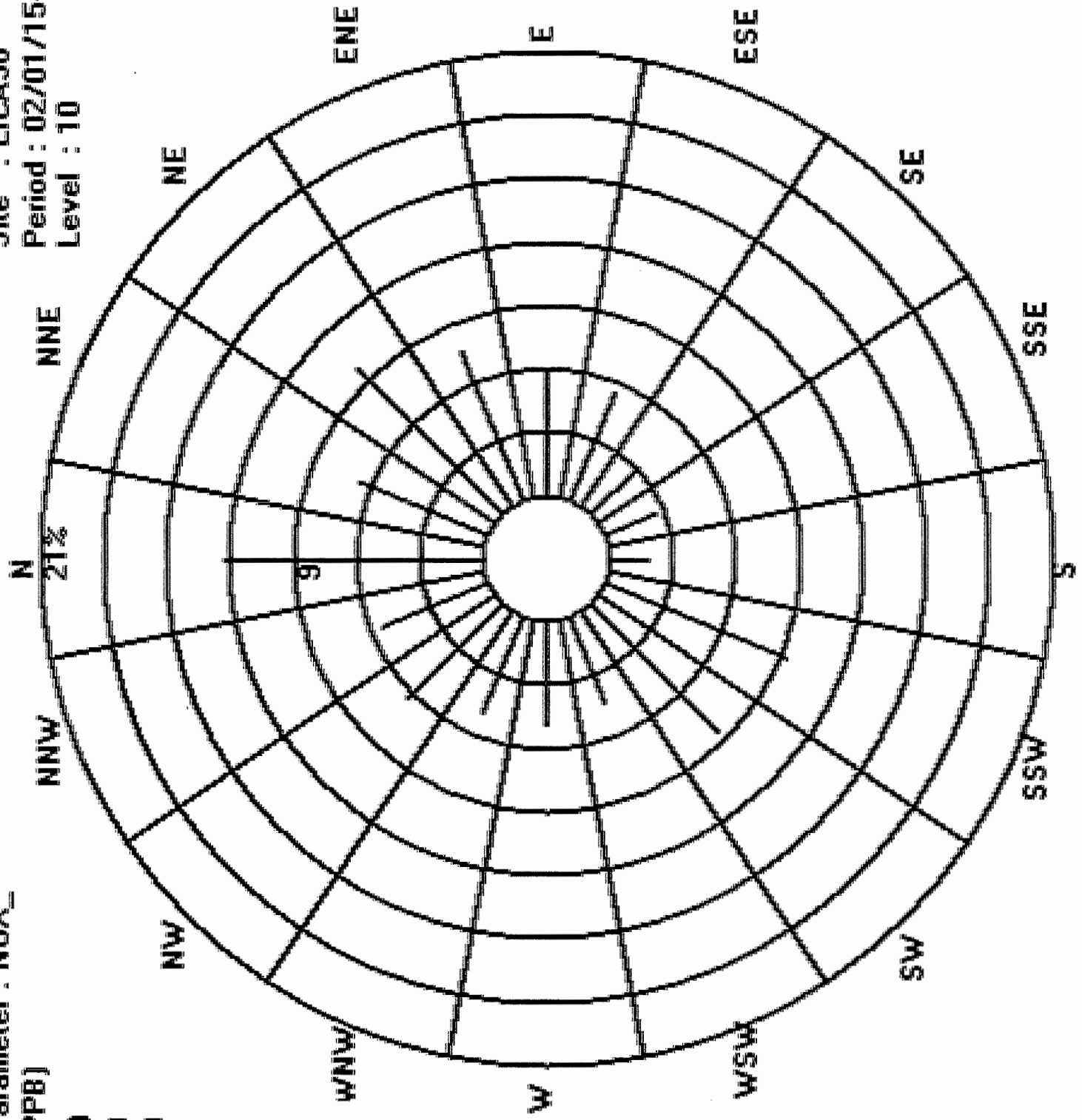
Total # Operational Hours : 628

Logger : 30 Parameter : NOX\_

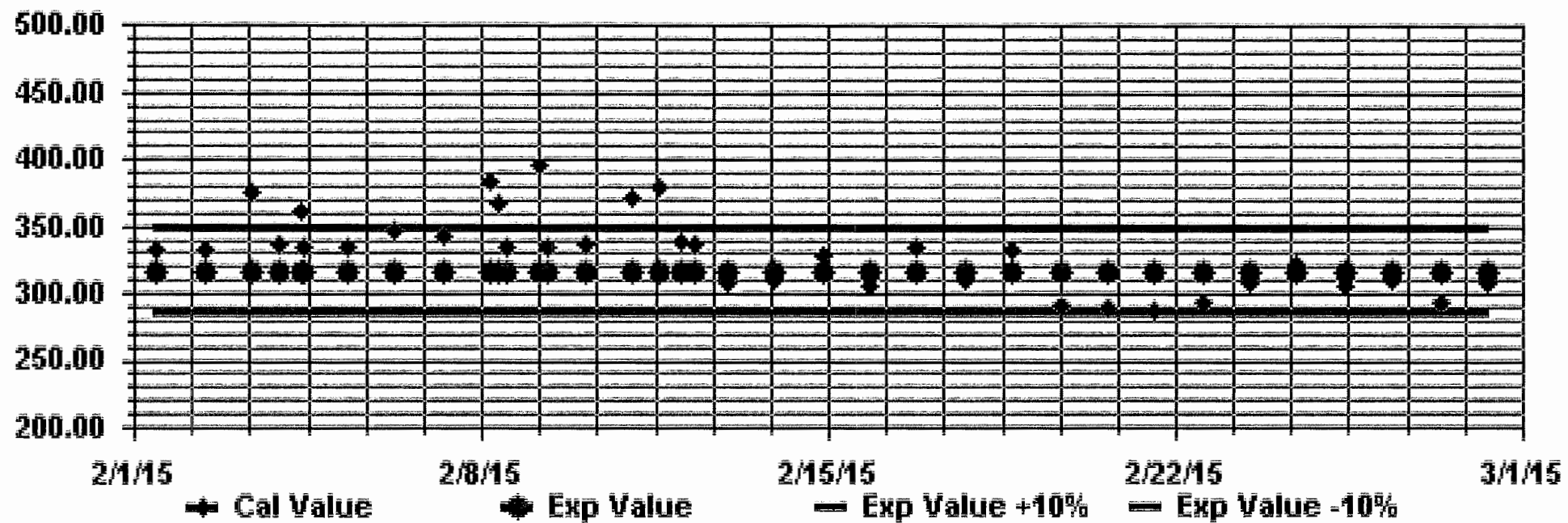
Class Limits (PPB)

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

Site : LICA30  
Period : 02/01/15-02/28/15  
Level : 10



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



***NITRIC OXIDES***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - FEBRUARY 2015

JOB # 2833-2015-02-30- C

NITRIC OXIDE (NO) hourly averages in ppb

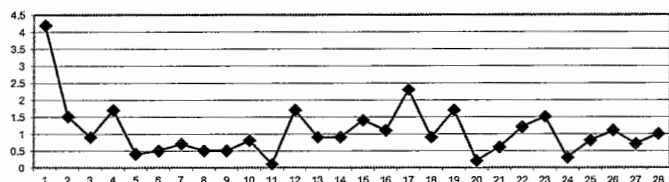
MST

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	24-HOUR	RDGS.
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG.	
DAY 1	7	4.4	4.4	2.4	0.5	0.8	1	13.6	1.1	4	6.2	S	6	4.9	5.1	2.8	8.2	4.1	4.5	3.7	1.1	2.9	3.7	3.2	13.6	4.2	24
DAY 2	2.6	1.8	1	0.2	0.2	0	0.3	1.6	3.5	3.2	S	1.1	1.4	0.9	1	1.1	1.3	0.8	0.3	0.3	0.5	5.4	3.1	2.4	5.4	1.5	24
DAY 3	0.3	0	0	0	0	0	0	0	1.7	S	0.8	5.1	2.1	2.3	0.3	0.8	0.2	0.1	2.4	1	0.7	0.8	S	0.9	5.1	0.9	24
DAY 4	0.7	0.7	0.6	0.6	0.5	0.6	0.9	1.1	S	S	S	3.6	5.1	5.1	3.7	5.4	2.3	0.8	0.6	0.8	0.7	1	1	0.6	5.4	1.7	24
DAY 5	0.6	0.5	0.4	0.5	0.4	0.5	0.6	S	0.8	1.1	1.1	0.8	0.6	0.5	0.3	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0	1.1	0.4	24
DAY 6	0.1	0.2	0.1	0.2	0.1	0.2	S	0.4	0.1	0.3	0.2	0.2	0.2	0.3	2.3	1.6	1.3	0.7	0.5	0.4	0.7	0.8	0.4	0.3	2.3	0.5	24
DAY 7	0.3	0.2	0.2	0.1	0.2	S	0.6	1.6	1.2	2.8	2.5	1.5	1.6	0.7	0.4	0.2	0.5	0.1	0.1	0.3	0.3	0.1	0.3	0.3	2.8	0.7	24
DAY 8	0.5	0.1	0.3	0.1	S	0.4	0.3	S	0.8	1	1.3	1	S	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	1.3	0.5	24
DAY 9	0.3	0.3	0.5	S	0.7	0.5	0.3	S	0.4	0.7	0.6	1	1.4	0.4	0.4	0.6	0.7	0.3	0.2	0.3	0.3	0.1	0.2	0.3	1.4	0.5	24
DAY 10	0.3	0.1	S	0.4	0.3	0.2	0.2	0.1	0.4	1.4	3	1.9	3.3	1.8	2.9	2.1	0.7	0.1	0	0	0	0	0	0	3.3	0.8	24
DAY 11	0	S	0	0	0.1	0	0.3	0	C	C	C	C	C	C	C	0.4	0.2	0	0	0	0	0	0	0	0.4	0.1	24
DAY 12	S	0	0	0	0	0	0.3	S	2.6	3.2	3.2	3	3.2	4.1	4.7	5.3	3.6	1.5	0.4	0.3	0.2	0.3	0.2	S	5.3	1.7	24
DAY 13	0.6	0.5	0.8	0.4	0.6	0.7	0.6	0.6	0.8	0.9	0.7	0.8	0.7	0.7	0.6	0.6	0.7	0.7	0.7	2	2.3	2.1	S	1.9	2.3	0.9	24
DAY 14	2	1.4	1.8	1	0.8	0.8	0.9	0.7	0.9	0.8	0.8	0.9	1	0.9	0.9	1.1	0.7	0.7	0.6	0.6	0.6	S	0.8	0.8	2	0.9	24
DAY 15	0.7	0.7	0.7	0.6	0.7	0.7	2.1	2.3	2.7	1.8	2.1	8.9	1.2	1.6	0.9	0.6	0.8	0.8	0.4	0.5	S	0.6	0.5	0.5	8.9	1.4	24
DAY 16	0.6	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.6	0.8	1.2	1.7	1.6	2.2	1.7	1.4	0.8	0.7	1	S	3.5	2.3	0.8	0.9	3.5	1.1	24
DAY 17	1.5	3.2	1.3	1.5	1.6	1.3	1.3	0.9	1.2	2.9	4.7	4	5.5	5.1	6.2	4.7	1.8	0.6	S	0.7	0.6	0.7	0.6	0.6	6.2	2.3	24
DAY 18	0.7	0.6	0.5	0.5	0.4	0.5	0.7	0.6	0.6	1	1.1	1.4	2.1	1.8	1.6	1.5	0.5	S	0.6	0.6	0.6	0.6	0.6	0.6	2.1	0.9	24
DAY 19	0.6	0.6	0.8	0.8	0.7	0.7	0.8	0.9	1.3	2.5	2.2	4.5	Y	3.3	3.1	2.7	S	1.3	0.4	4.1	1	3.2	1	0.1	4.5	1.7	23
DAY 20	0.2	0.2	0	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.8	0.5	S	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0	0.8	0.2	24
DAY 21	0	0	0	0	0.1	0	0.4	2.6	0.9	0.8	0.6	1.4	2.2	1.3	S	1.3	0.4	0.1	0	0	0	0	0.6	0.1	2.6	0.6	24
DAY 22	0	0.1	0	0	0.1	0	1.3	2.8	4.1	5.9	3.2	2.9	2.4	S	2	1.4	0.9	0.3	0	0	0	0	0	0.1	5.9	1.2	24
DAY 23	0	0	0	7	2.8	3.8	0	0	8.5	3.9	1	0.9	S	2.4	1.4	1.1	2.4	0	0	0	0	0	0	0	8.5	1.5	24
DAY 24	0	0	0	0	0	0	0.8	0.4	0.8	2.1	1.1	S	0.3	0.2	0.1	0.2	0.1	0.2	0	0.1	0.1	0.2	0.3	0.3	2.1	0.3	24
DAY 25	0.2	0.3	0.4	0.1	0.1	0.2	0.1	0.2	0.4	0.6	S	1.5	2	3	2.2	3.1	1.9	1.2	0	0	0.1	0.2	0.1	0.1	3.1	0.8	24
DAY 26	0.1	0.8	0.9	0.2	0.1	0.2	0.2	1.8	7	S	3.2	2.6	2.1	1.8	1.2	0.9	0.8	0.3	0	0.1	0.4	0.5	0.1	0.1	7	1.1	24
DAY 27	0	0	0.4	1.2	0.2	0.2	0.3	0.4	S	0.6	0.4	1	2	3.4	2.4	2.1	0.7	0.2	0	0	0.3	0	0.7	0.1	3.4	0.7	24
DAY 28	0.1	0.1	0.5	0.2	0.2	0.2	0.4	S	1.3	3.6	1.6	1.3	5.8	0.8	0.8	0.4	0.3	0.4	1.2	1.7	2.2	0.4	0.3	0.2	5.8	1.0	24
HOURLY MAX	7	4.4	4.4	7	2.8	3.8	2.1	13.6	8.5	5.9	6.2	8.9	6	5.1	6.2	5.4	8.2	4.1	4.5	4.1	3.5	5.4	3.7	3.2			
HOURLY AVG	0.7	0.6	0.6	0.7	0.4	0.5	0.6	1.4	1.8	1.9	1.8	2.1	2.3	2.0	1.8	1.6	1.2	0.6	0.5	0.7	0.6	0.8	0.6	0.5			

STATUS FLAG CODES

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

24 HOUR AVERAGES FOR FEBRUARY 2015

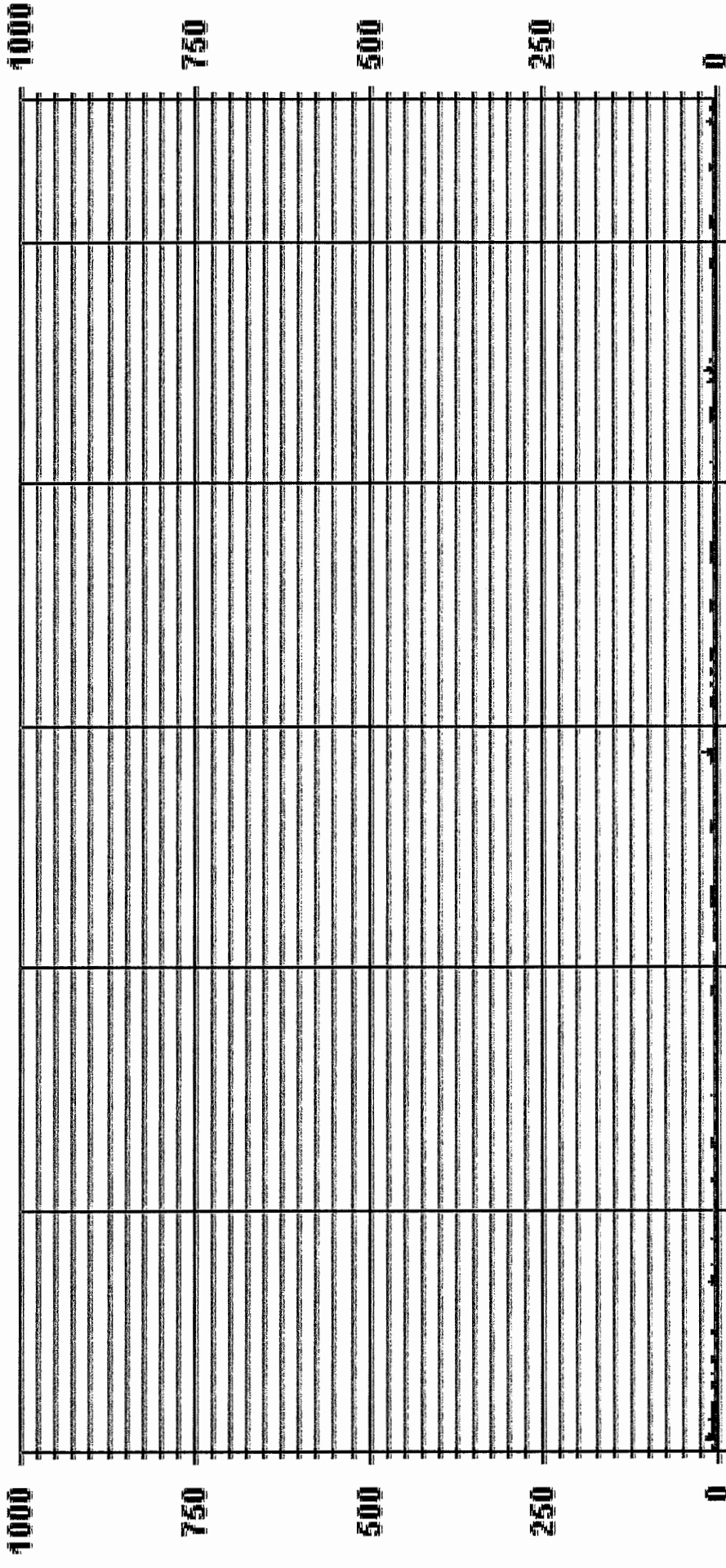


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	549			
MAXIMUM 1-HR AVERAGE:	13.6	PPB @ HOUR(S)	7	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	4.2	PPB		ON DAY(S)
				VAR-VARIOUS
IZS CALIBRATION TIME:	36	HRS	OPERATIONAL TIME:	671
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.9
STANDARD DEVIATION:	1.47		MONTHLY AVERAGE:	1.1
				PPB



01 Hour Averages



02/01/15 00:00 02/06/15 00:00 02/11/15 00:00 02/16/15 00:00 02/21/15 00:00 02/26/15 00:00

— LICA30 NO\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - FEBRUARY 2015

JOB # 2833-2015-02-30-C

NITRIC OXIDE 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	24-HOUR	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.
1	21.1	21.4	23.6	11.2	3.5	3.1	16.8	35.3	3	7.8	16.2	S	7.5	10.7	30.6	9.2	30.3	7.5	7	8.5	5.6	8.8	5.8	5.4	35.3	13.0	24
2	5.4	4.2	4.6	1.2	1	1	1.4	26.1	45.6	45.2	S	2.6	2.6	2.3	2.6	4	22.3	3.5	1.2	2.1	2.8	14.8	12.8	7.5	45.6	9.4	24
3	1.8	0.8	0.9	1	0.5	0.4	0.4	0.8	7.6	S	2.2	11.3	10.4	9.3	1.3	3.9	1	1	13.6	3.7	1.3	1.2	S	S	13.6	3.5	24
4	1.3	1.1	1.1	1.2	0.9	1.1	2	1.9	S	S	5	4.5	31.1	17.3	8.2	35.4	4.3	1.5	1	1.3	1.2	4.5	4.4	1.6	35.4	6.0	24
5	1.7	1	1	1.6	0.9	1	1	S	1.3	1.8	1.8	1.4	1.1	1	0.9	0.6	0.6	0.8	0.6	0.6	0.7	0.7	0.6	1.8	1.0	24	
6	0.7	0.7	0.7	0.7	0.7	0.7	S	1.1	0.7	0.7	0.7	0.8	0.8	0.8	5.9	3.7	3.9	2.1	1	1	2.2	2.2	1.2	0.9	5.9	1.5	24
7	0.8	0.6	0.6	0.5	1	S	1.4	2.8	3.2	5.3	4.5	4.4	3.4	2.4	1	1	1.5	0.6	0.6	1.5	1.5	0.7	0.9	0.8	5.3	1.8	24
8	2.8	0.7	0.7	0.8	S	1	0.8	S	S	1.8	2.2	S	S	1.2	1	1.2	0.9	0.9	1	1	0.8	0.8	0.8	0.8	2.8	1.1	24
9	0.8	0.8	1.5	S	1.4	1.3	0.6	S	1	1.4	1.2	2.7	2.9	1.5	1	1.6	2	1	0.8	0.8	0.8	0.8	0.8	1	2.9	1.3	24
10	1	0.8	S	1	2.4	0.8	0.9	0.8	1.2	3.1	4.1	3	8.2	3.4	7	5.2	1.6	0.8	0.6	0.6	0.4	0.5	0.4	0.4	8.2	2.1	24
11	0.4	S	0.6	0.4	1.4	0.4	2	0.5	C	C	C	C	C	C	C	1.2	1.2	0.6	0.4	0.5	0.4	0.5	0.3	0.4	2	0.7	24
12	S	0.8	0.5	0.6	0.4	0.8	1.8	S	5.2	4.3	4.6	4.1	4.8	14.9	7	7.8	6.3	4.8	1.6	1.2	0.9	1.2	1	S	14.9	3.6	24
13	1	1.1	1.2	1.1	1.1	1.1	1.2	1.2	1.4	1.4	1.2	1.2	1.1	1.1	1.3	1.2	1.2	1.1	1.2	3.6	4.5	4	S	2.8	4.5	1.6	24
14	3.3	3	3	3.1	1.2	1.3	1.5	1.2	1.5	1.2	1.4	1.5	1.7	1.6	2.1	3	1.4	1.1	1.1	1.2	1.2	5	1.4	1.2	3.3	1.7	24
15	1.2	1.2	1.2	1.2	1.2	1.2	9.7	7.9	37.9	4.8	11.5	18.8	2.4	4.2	2.4	1.1	1.8	3.1	1	1	5	1.1	1	1.1	37.9	5.1	24
16	1.3	1.2	1	1.2	1	1	1	1.1	1.4	1.4	1.9	2.2	2.2	4.8	3	3	1.8	1.6	2.7	S	15.5	9	1.4	1.7	15.5	2.7	24
17	4	8.6	2.8	3	3.1	5.3	5.8	2.2	3.8	4.3	18.1	7.5	7	6.6	7.1	6.3	3.9	1.1	S	1.2	1.2	1.2	1.2	1.2	18.1	4.6	24
18	1.2	1.2	1	1.1	1.1	1.2	1.1	1.1	1.3	1.6	1.6	2	3.3	3.1	2.6	3.1	1.1	S	1.2	1	1.2	1.1	1.2	1.2	3.3	1.5	24
19	1.2	1.2	1.5	1.2	1.2	1.2	1.3	1.6	2.5	3.6	3.2	Y	Y	5.2	5	7.2	S	4	1.2	11.5	6.4	9.9	3.9	1	11.5	3.6	22
20	1	1	0.6	0.8	1	0.8	0.8	0.9	1	1	1	1.3	1.4	2.1	1.3	S	1.3	0.8	0.8	1	0.8	1	1	0.7	2.1	1.0	24
21	0.6	0.7	0.8	0.6	0.8	0.6	3	11.9	2	1.8	1.5	3.4	3.8	2.6	S	2.9	1.1	0.9	0.7	0.8	0.6	1	3.8	1.4	11.9	2.1	24
22	0.9	1.3	0.7	0.8	1.6	0.7	24.3	13.2	5.2	7.9	4.1	3.8	3.2	S	3	2.2	1.8	1.4	0.6	0.7	0.4	0.7	0.8	1.2	24.3	3.5	24
23	1.5	1	0.6	14.9	10.6	12.3	0.9	1.1	20	14.6	2.7	4.3	S	5.1	7.6	8.8	10.8	0.6	0.5	0.8	0.7	0.8	0.6	0.6	20	5.3	24
24	0.6	0.6	0.6	0.8	0.6	0.7	2.6	1.5	2.2	4	4.3	S	1.3	0.9	0.7	0.9	0.9	0.9	0.8	0.8	1	0.8	1.2	1.1	4.3	1.3	24
25	0.9	1.2	2.1	0.8	0.8	0.9	1	1.2	1.2	1.3	S	2.5	5.1	4.8	3.2	18.5	6.6	3.9	0.8	0.7	0.8	0.9	1	1.1	18.5	2.7	24
26	0.9	6.2	3.3	1	0.8	1.2	0.9	4	34.7	S	6.2	3.5	2.9	2.8	2.4	1.7	1.7	1	0.6	1.4	2.9	3.5	0.7	0.9	34.7	3.7	24
27	0.8	0.8	3.9	4.4	1.1	0.9	1.8	2.6	S	1.9	1	3.2	7.1	8.2	14.5	17.7	2.2	1	0.8	0.7	2.8	0.4	18.3	0.8	18.3	4.2	24
28	0.8	0.9	3.2	0.8	1.1	1	1.6	S	2.6	88.2	3	3.9	44.3	2.4	3.1	1.5	1.1	1.2	5.8	4.1	4.9	1.4	1.1	1	88.2	7.8	24
HOURLY MAX	21.1	21.4	23.6	14.9	10.6	12.3	24.3	35.3	45.6	88.2	18.1	18.8	44.3	17.3	30.6	35.4	30.3	7.5	13.6	11.5	15.5	14.8	18.3	7.5			
HOURLY AVG	2.2	2.4	2.3	2.1	1.6	1.6	3.2	5.3	7.8	8.8	4.2	4.1	6.7	4.6	4.8	5.7	4.2	1.8	1.8	2.0	2.4	2.7	2.6	1.5			

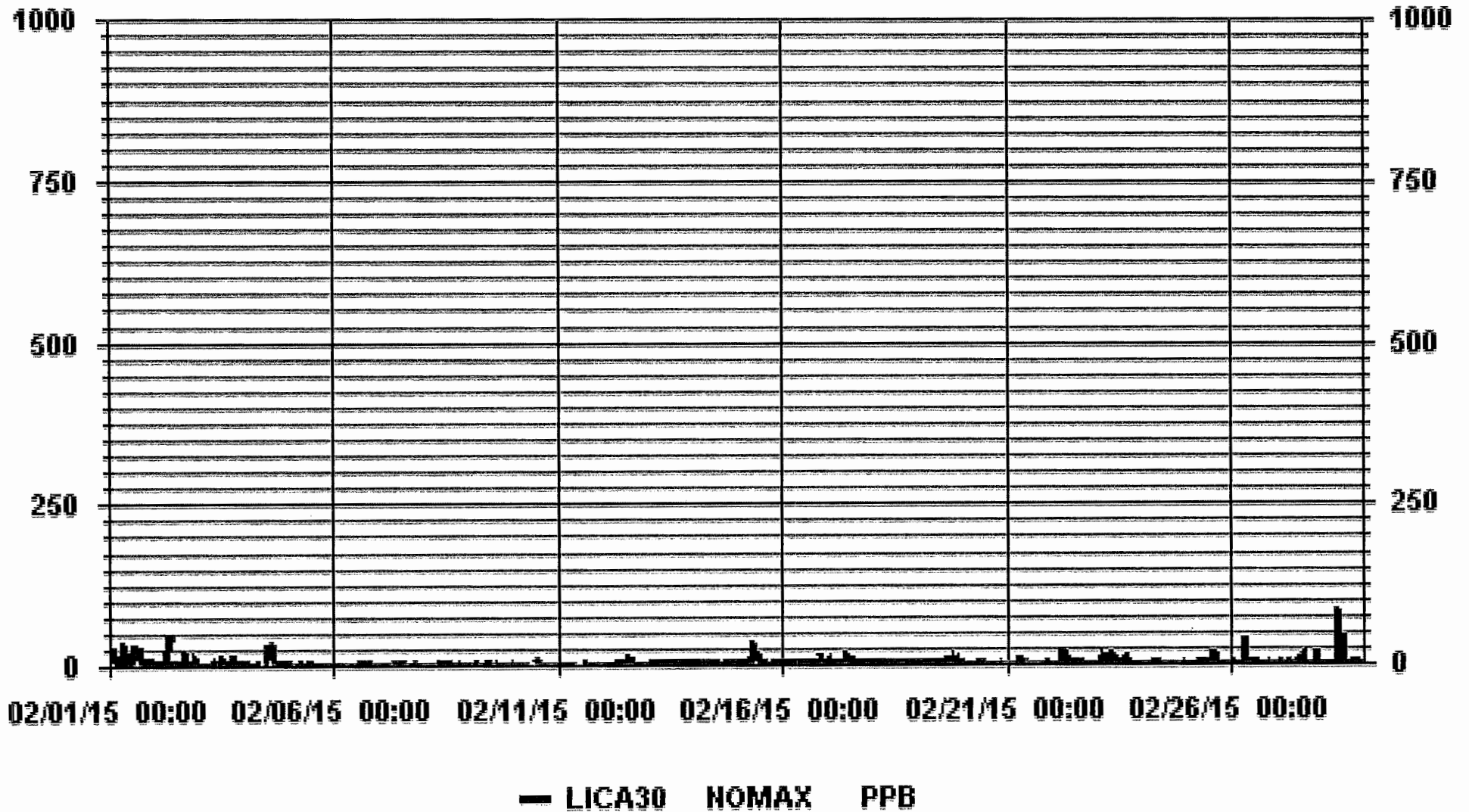
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	624
MAXIMUM INSTANTANEOUS VALUE:	88.2 PPB @ HOUR(S) 9 ON DAY(S) 28
	VAR-VARIOUS
IZS CALIBRATION TIME:	39 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	670 HRS
STANDARD DEVIATION:	6.69

### 01 Hour Averages



LICA30  
 NO\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LICA30  
 Parameter : NO\_  
 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	12.42	6.68	9.71	7.64	6.05	5.57	3.18	2.70	1.91	9.39	8.59	4.45	4.93	4.93	6.36	5.41	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	12.42	6.68	9.71	7.64	6.05	5.57	3.18	2.70	1.91	9.39	8.59	4.45	4.93	4.93	6.36	5.41	

Calm : .00 %

Total # Operational Hours : 628

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	78	42	61	48	38	35	20	17	12	59	54	28	31	31	40	34	628
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	78	42	61	48	38	35	20	17	12	59	54	28	31	31	40	34	

Calm : .00 %





Total # Operational Hours : 628

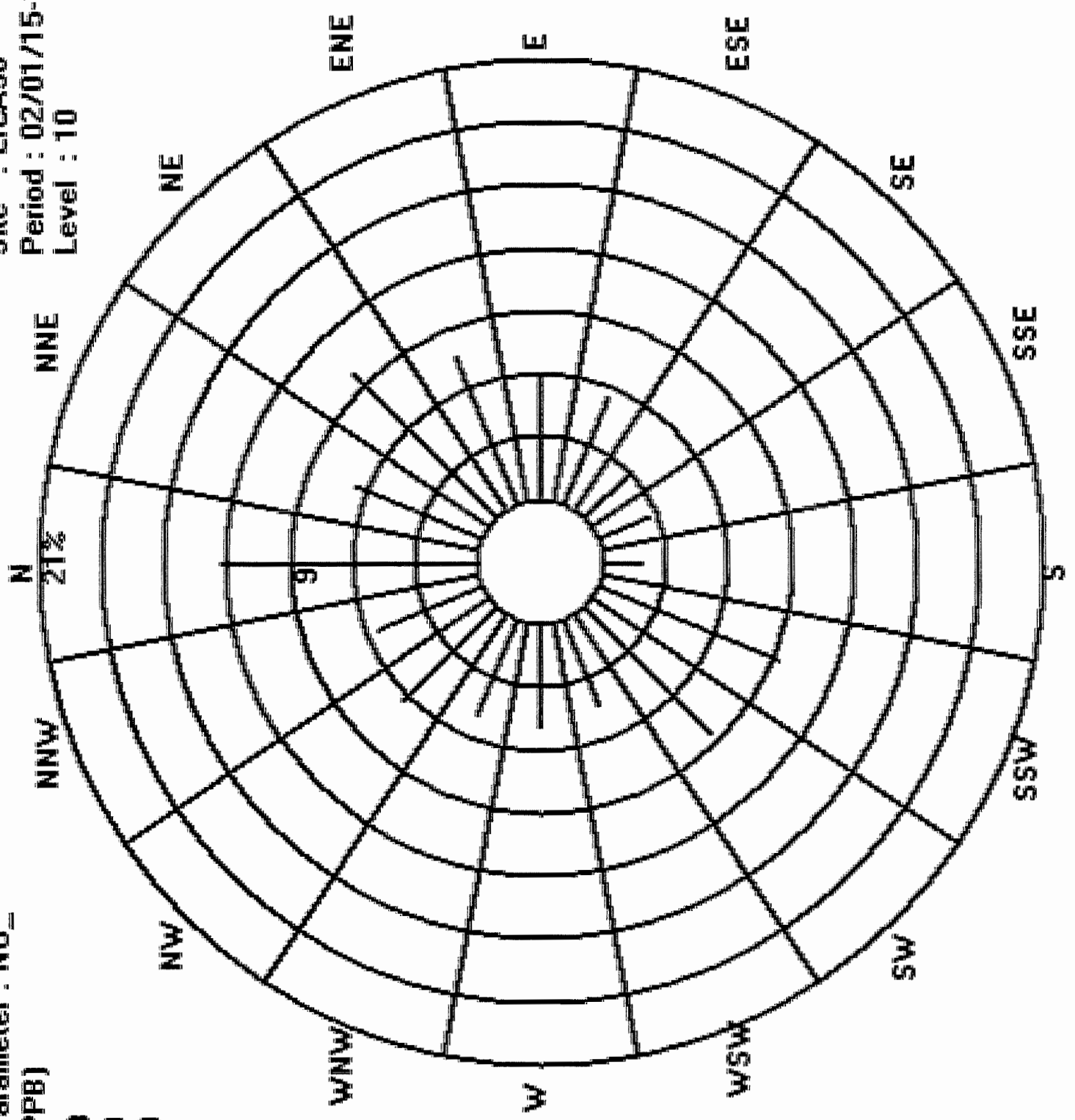
Logger : 30 Parameter : NO\_

Site : LICA30

Class Limits (PPB)

Period : 02/01/15-02/28/15  
Level : 10

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



***NITROGEN DIOXIDE***

**NITROGEN DIOXIDE (NO2) hourly averages 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	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY																												
1	20.2	16.6	12.3	12.8	10.4	9.8	8.6	18.4	10.7	8.5	8.0	S	6.8	6.1	6.3	5.2	11.3	10.1	6.6	9.0	4.2	7.3	8.0	7.2	20.2	9.8	24	
2	7.7	10.0	7.3	3.9	1.4	1.3	1.8	2.8	6.1	3.8	S	2.1	3.8	2.3	2.2	2.4	4.2	11.2	11.5	10.5	5.6	15.0	13.7	15.3	15.3	6.3	24	
3	8.6	5.5	1.7	1.5	1.1	1.3	3.2	7.3	9.9	S	1.0	7.2	2.6	2.5	0.2	0.9	1.0	1.4	8.9	8.1	3.9	2.5	S	5.4	9.9	3.9	24	
4	8.0	11.7	9.2	5.4	4.5	5.8	7.9	8.5	S	S	S	5.6	5.6	6.1	6.1	9.3	10.6	10.5	6.9	3.8	5.3	7.3	2.7	1.9	11.7	6.8	24	
5	1.9	0.9	0.5	1.3	1.0	0.6	0.9	S	2.4	2.4	1.7	1.0	0.6	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.7	24	
6	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.6	4.0	2.1	0.5	0.5	1.7	2.3	0.7	0.0	4.0	0.8	24	
7	0.0	0.0	0.0	0.0	0.0	S	2.3	8.9	4.5	6.2	4.4	1.9	1.6	0.4	0.4	0.6	2.2	0.2	0.1	1.2	1.6	0.1	0.3	0.6	8.9	1.6	24	
8	1.6	1.0	0.7	0.2	S	1.7	1.9	S	2.8	2.4	2.0	1.3	S	0.4	0.3	0.8	0.3	0.3	0.0	0.0	0.0	0.1	0.1	0.0	2.8	0.8	24	
9	0.0	0.0	2.4	S	3.3	0.6	0.0	S	0.9	0.8	0.0	0.3	1.5	0.0	0.0	1.3	2.4	1.2	0.0	0.0	0.0	0.0	0.1	0.2	3.3	0.7	24	
10	0.0	0.6	S	2.1	1.3	1.2	2.0	2.7	2.3	2.8	3.7	2.4	3.4	2.4	3.3	3.6	3.0	2.7	2.6	2.8	2.0	1.6	1.8	1.6	3.7	2.3	24	
11	3.1	S	2.9	2.8	4.1	3.0	3.2	2.3	C	C	C	C	C	C	C	1.8	2.6	2.9	2.8	2.6	2.5	2.2	1.7	1.8	4.1	2.6	24	
12	S	2.3	2.3	2.5	2.6	3.2	5.9	S	11.1	7.4	4.8	4.4	4.3	5.3	8.6	12.1	14.9	16.9	14.2	12.0	10.5	10.4	11.3	S	16.9	8.0	24	
13	5.5	1.8	1.2	1.5	1.3	1.2	1.4	1.3	1.2	0.7	0.3	0.1	0.3	0.3	0.4	0.3	0.2	0.1	0.2	7.2	8.4	7.7	S	5.9	8.4	2.1	24	
14	6.8	5.5	8.4	3.7	0.0	0.5	0.0	0.1	0.2	0.0	0.4	0.3	0.1	0.0	0.6	0.9	1.1	1.5	3.1	3.2	S	2.0	1.9	8.4	1.8	24		
15	4.3	6.2	5.8	5.4	7.7	9.5	7.3	9.1	4.5	2.6	3.6	9.7	0.8	2.0	1.1	0.3	1.1	1.2	1.8	1.9	S	1.6	1.2	2.2	9.7	4.0	24	
16	2.5	2.6	2.3	1.7	1.1	0.0	0.0	0.8	1.5	0.8	0.8	0.9	0.8	1.9	1.7	1.2	1.1	1.4	4.8	S	8.5	11.8	8.0	6.5	11.8	2.7	24	
17	9.3	13.5	8.8	7.8	18.9	7.2	5.6	5.0	4.1	5.0	6.2	6.0	8.8	6.0	7.5	8.5	6.0	6.0	S	8.1	7.6	5.8	3.8	3.5	18.9	7.3	24	
18	4.6	4.9	4.1	3.8	2.9	3.1	3.0	3.2	3.8	3.8	3.4	4.0	5.2	4.7	5.2	6.2	1.6	S	1.8	0.9	0.7	1.3	0.7	0.6	6.2	3.2	24	
19	0.7	0.7	1.0	1.8	1.5	1.4	2.0	6.5	4.5	6.0	4.1	7.7	Y	7.2	7.4	9.2	S	11.6	4.7	12.6	6.4	8.0	5.1	2.1	12.6	5.1	23	
20	2.6	2.9	2.3	9.3	6.7	2.2	2.0	1.2	1.1	0.7	0.5	0.6	1.0	1.4	1.1	S	1.9	1.9	1.5	2.0	1.8	2.2	2.2	2.7	9.3	2.3	24	
21	2.4	2.4	3.4	4.9	5.1	3.7	5.4	9.1	3.3	1.8	1.1	1.7	2.6	1.8	S	3.2	2.4	1.8	2.1	2.3	1.9	2.8	6.4	6.6	9.1	3.4	24	
22	7.7	6.5	5.7	5.6	5.4	4.0	6.5	11.9	9.7	7.2	4.9	4.4	4.0	S	4.3	4.7	6.1	7.5	7.2	7.3	7.1	7.5	7.9	8.2	11.9	6.6	24	
23	8.4	8.9	6.1	20.1	10.1	13.4	5.8	3.8	17.9	9.0	2.6	1.8	S	4.7	3.1	4.0	7.1	0.6	1.1	0.8	0.8	1.2	1.5	0.9	20.1	5.8	24	
24	0.4	0.2	0.1	0.1	0.1	0.2	6.3	4.5	6.1	9.0	3.9	S	0.5	0.4	0.4	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.3	0.6	9.0	1.5	24	
25	1.0	0.7	1.4	0.5	0.3	0.2	0.9	1.3	1.3	0.9	S	2.0	2.4	3.7	3.1	5.1	6.2	7.4	8.3	8.6	9.9	11.4	11.3	9.1	11.4	4.2	24	
26	10.1	11.5	14.8	12.5	11.9	12.1	12.6	13.8	10.0	S	4.9	3.6	3.1	2.6	2.2	2.3	3.2	3.7	3.4	3.9	4.1	5.0	3.8	3.8	14.8	6.9	24	
27	4.3	3.5	5.6	12.6	8.9	8.3	9.0	5.1	S	2.1	1.0	1.8	2.9	4.4	3.0	3.2	2.0	3.1	3.8	2.3	2.9	1.6	3.4	2.3	12.6	4.2	24	
28	2.9	1.4	2.4	5.9	4.3	1.9	6.4	S	5.3	2.8	3.2	2.0	7.5	1.1	1.3	0.8	0.9	1.3	6.5	13.4	11.2	8.9	2.3	1.3	13.4	4.1	24	
HOURLY MAX	20.2	16.6	14.8	20.1	18.9	13.4	12.6	18.4	17.9	9.0	8.0	9.7	8.8	7.2	8.6	12.1	14.9	16.9	14.2	13.4	11.2	15.0	13.7	15.3				
HOURLY AVG	5	5	4	5	4	4	4	6	5	4	3	3	3	3	3	3	4	4	4	5	4	5	4	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

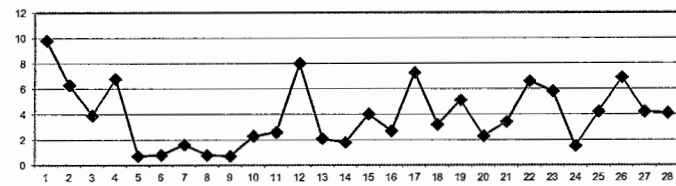
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 25 PPB

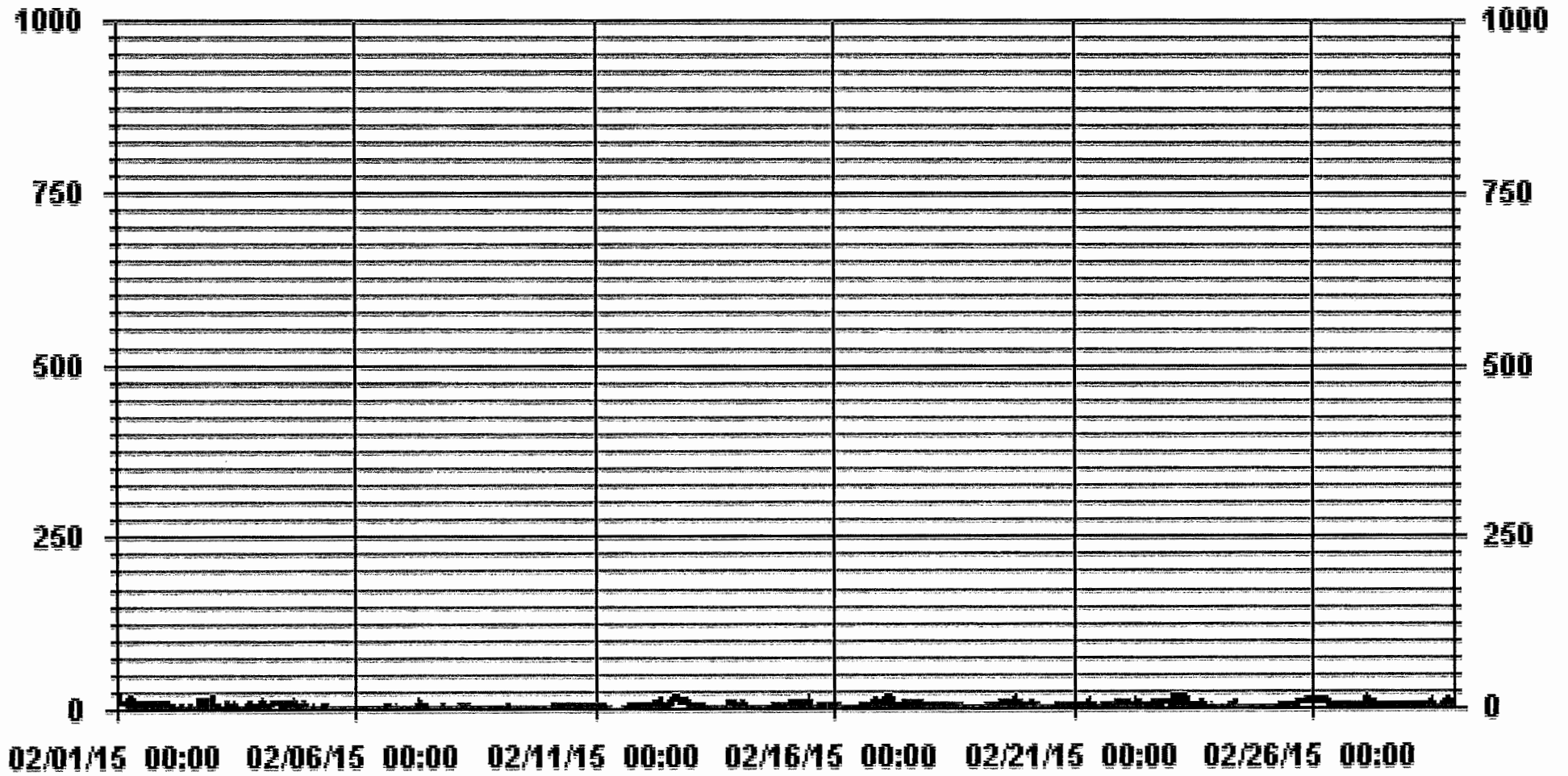
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	579
MAXIMUM 1-HR AVERAGE:	20.2 PPB @ HOUR(S) 0 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	9.8 PPB ON DAY(S) 1
	VAR-VARIOUS
IZS CALIBRATION TIME:	36 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	671 HRS
AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	3.80
MONTHLY AVERAGE:	3.9 PPB

24 HOUR AVERAGES FOR FEBRUARY 2015



### 01 Hour Averages



— LICA30 NO2\_ PPB





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - FEBRUARY 2015

JOB # 2833-2015-02-30- C

NITROGEN 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	24-HOUR	RDGS.
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	
DAY 1	26.3	24.9	21	20.2	14.8	14.4	24.9	26.4	12.5	12.5	11.5	S	7.7	9.1	20.2	9.8	26.6	16.2	9.9	16.6	10.9	14.9	11	10.8	26.6	16.2	24
2	11.5	16.5	16.6	8.3	3.8	3.6	4.5	18.1	28.6	16.6	S	4	5.8	5.1	4.5	6.5	19.9	13.9	13.9	13.8	11.2	30.4	23.7	20.7	30.4	13.1	24
3	17.9	10.3	3.6	3.6	1.8	2.6	5.6	10.1	16.3	S	3.3	14.7	13.1	11.5	1.2	3.7	2.3	3.1	27.2	17.3	6.5	5.1	S	S	27.2	8.6	24
4	11.2	13.3	11.8	9.4	6	7.6	10.4	10.2	S	S	S	7.2	18.2	15	11.1	19.7	13.7	13.9	11.5	6.2	11.4	14.7	16.1	9.4	19.7	11.8	24
5	10.2	2	2	2.8	2.2	2.1	2.8	S	3.8	3.7	3.5	2	1.2	0.9	0.9	0.8	0.2	0.1	0.2	0.2	0	0	0	0.2	10.2	1.8	24
6	0.1	0.1	0	0	0	0	S	0.5	0.4	0.2	0.1	0.4	0.3	0.3	11	9.9	9.6	6.3	2	3.4	5.3	7.3	2.1	0.7	11	2.6	24
7	0.4	0.3	0.2	0.2	0.3	S	7.6	12.5	7.8	10.2	9.1	6.5	4	1.8	0.8	1.9	6.8	0.5	0.4	8.4	8.2	0.6	0.6	1	12.5	3.9	24
8	7	1.8	1.2	0.5	S	2.1	2.7	S	S	3.4	3.4	S	S	1.4	1.3	1.7	1.2	1.4	1.2	1.7	1.5	0.8	0.7	0.5	7	1.9	24
9	1.1	1	7.7	S	6.6	4.3	0.7	S	3.6	3.6	1	4	5.2	2.7	1.8	4.8	7.5	4.1	0.4	0.6	0.5	1	1.2	1	7.7	2.9	24
10	0.9	1.8	S	3.9	4.5	2.4	3	4	3.7	4.2	5.2	3.2	6.5	3.4	8.1	6.3	4	4.3	3.8	4.4	4.3	2.7	3.3	3.1	8.1	4.0	24
11	4.8	S	3.6	3.9	8.7	3.9	8.7	8.1	C	C	C	C	C	C	C	2.7	4.2	3.7	4.5	3.5	3.8	3.4	2.6	2.6	8.7	4.5	24
12	S	2.9	3	3.4	3.4	4.2	9	S	13.4	9.6	5.8	5.4	5.2	16.9	12.6	13.1	18.9	18.8	16.7	13	12.1	11.6	12.6	S	18.9	10.1	24
13	7.4	3.2	2.3	2.3	2.3	2	2.4	2.2	2.2	1.9	1.1	1.1	1.1	1.1	1.3	1.3	1.2	1.1	2	12.1	15	14.4	S	10.1	15	4.0	24
14	11.8	10.9	12.9	11.7	3.6	2.9	1.5	2	1.9	2	1.7	2.1	2	1.6	2.2	3	2.7	3	3.5	5.2	5	S	3.1	3.2	12.9	4.3	24
15	6.4	7.4	8	7	10.7	12.9	15.1	13.7	27	9.8	12.2	16.6	2.6	6.4	4.3	1.4	4	3.6	2.7	2.9	S	2.8	2.4	3.4	27	8.0	24
16	3.9	4.2	3.5	3.1	2.8	1	0.8	3.1	2.8	2.2	2	2	1.8	6	3.6	4.6	2.5	3.5	12	S	29.8	26.3	12.1	11.6	29.8	6.3	24
17	19.2	28.3	12.3	19.2	25.6	16.8	18.3	10.8	11.9	8.8	11.5	11.9	12	8.5	9.3	10.5	10.8	9.8	S	9.3	11.2	7.5	5.4	4.1	28.3	12.7	24
18	5.7	5.7	4.4	4.1	3.3	4.1	3.9	5.5	4.6	4.2	4.2	4.5	7.8	8.1	7.9	10.6	1.9	S	3	2.2	2.3	2.4	1.7	1.6	10.6	4.5	24
19	1.4	1.5	2.4	2.7	2.4	2.2	6.2	9.2	6.4	7.4	5.5	Y	Y	8.5	9.1	19.7	S	19.9	8	19.1	16.6	17.6	10.4	2.7	19.9	8.5	22
20	3.5	3.5	5.3	10.9	10.3	3.6	3.4	1.8	2	1.4	1.3	1.1	1.6	3.1	2.2	S	2.9	3.3	2.3	3.5	2.6	3.7	4.1	3.2	10.9	3.5	24
21	3.5	3.5	4.7	6.2	6	5.6	9.8	25.4	5	3.3	1.6	4.1	4.9	2.9	S	4.6	3.3	2.5	3	3.5	2.8	3.8	17.3	14.9	25.4	6.2	24
22	11.4	9.2	6.8	7	7.1	5.2	18.7	21.7	15.7	8.7	6	5	4.7	S	5	5.3	7.4	8.2	7.9	8.1	8.2	8.6	8.6	9.2	21.7	8.9	24
23	10.7	10.6	8.6	29	23.8	29.3	20.6	9.2	27.9	18.5	4.8	6.4	S	8.1	11.6	20.1	22.3	1	2.8	2.3	1.8	2.6	2.2	1.9	29.3	12.0	24
24	0.8	0.8	0.6	0.4	0.4	0.8	14	10.3	11.5	12.7	12.4	S	1.3	0.8	0.7	0.6	0.7	0.7	0.6	0.7	0.5	0.7	1	2.1	14	3.3	24
25	2.8	2.2	4.1	1.2	0.7	0.7	3.3	1.9	2.2	2	S	3.2	5.6	5.4	4.2	12.5	9.8	10.1	10.2	11.3	11.2	13.8	13.6	10.9	13.8	6.2	24
26	12	16.2	20.5	14.4	13	12.8	14.8	16.9	22.2	S	7	4.1	3.4	2.7	2.5	2.6	3.3	3.5	3.6	5.9	7.3	10.3	4.3	4.1	22.2	9.0	24
27	4.7	3.6	9	19.1	11.4	9.2	12.5	9.7	S	4.2	2	4.5	7.5	9.1	9.2	11.5	4.6	6.1	5.8	3.2	10.4	2.7	20.2	4.2	20.2	8.0	24
28	4.1	2.4	8	7.8	7.6	3	12.3	S	10.1	16.6	5.4	5.8	19.9	4.8	4.8	2.1	1.4	3.5	22.1	19.3	19.3	13.2	7.1	5.7	22.1	9.0	24
HOURLY MAX	26	28	21	29	26	29	25	26	29	19	12	17	20	17	20	20	27	20	27	19	30	30	24	21			
HOURLY AVG	7.4	7.0	6.8	7.5	6.8	5.9	8.8	10.1	10.1	7.0	5.1	5.2	6.0	5.6	5.8	7.1	7.2	6.2	6.7	7.3	8.1	8.3	7.2	5.5			

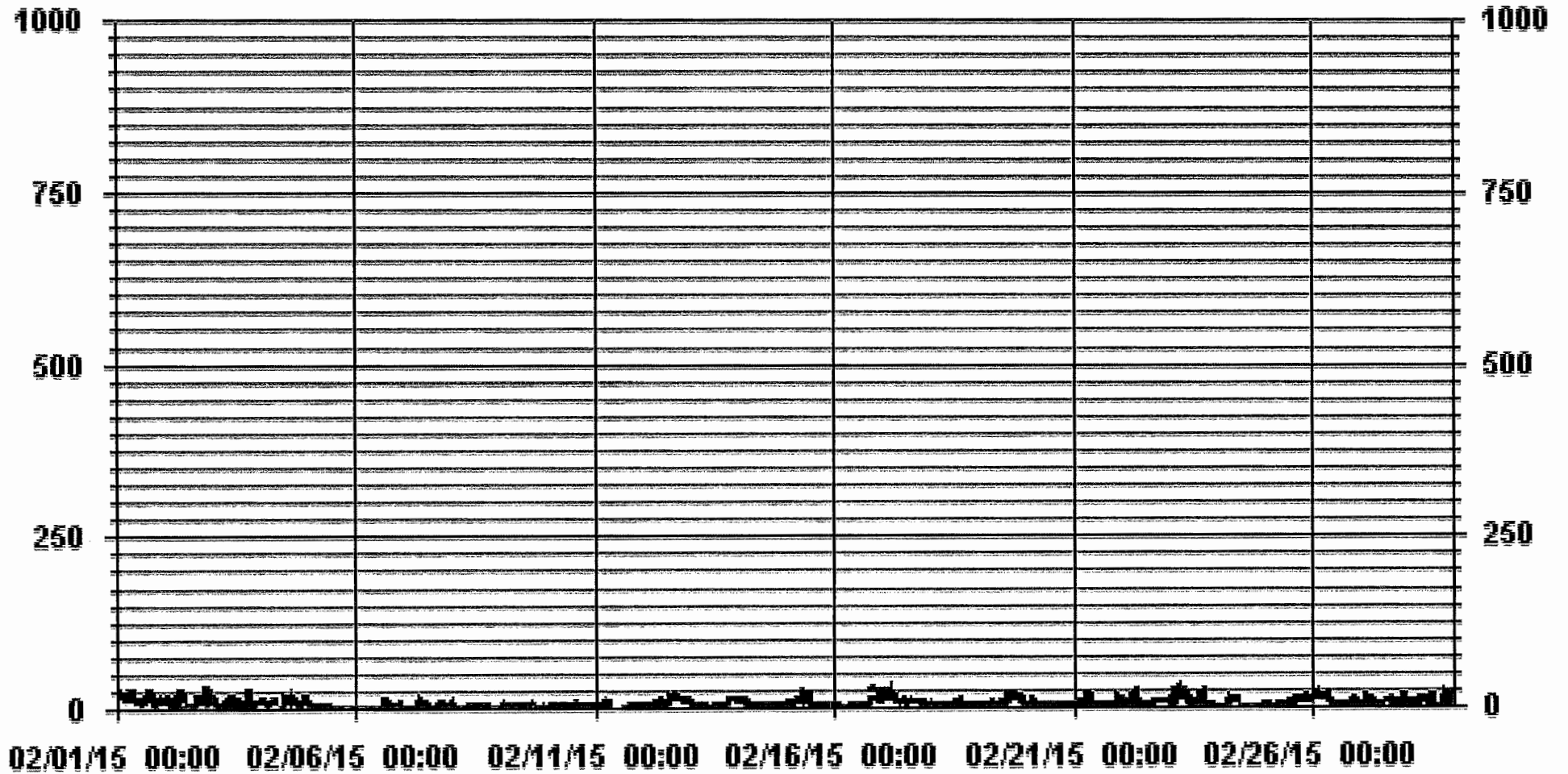
STATUS FLAG CODES

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:	617
MAXIMUM INSTANTANEOUS VALUE:	30.4 PPB @ HOUR(S) 21 ON DAY(S) 2
	VAR-VARIOUS
IZS CALIBRATION TIME:	39 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	6.35
OPERATIONAL TIME:	670 HRS

### 01 Hour Averages



— LICA30 NO2MAX PPB

LICA30  
 NO2\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LICA30  
 Parameter : NO2\_  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 50.0	12.42	6.68	9.71	7.64	6.05	5.57	3.18	2.70	1.91	9.39	8.59	4.45	4.93	4.93	6.36	5.41	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	12.42	6.68	9.71	7.64	6.05	5.57	3.18	2.70	1.91	9.39	8.59	4.45	4.93	4.93	6.36	5.41		

Calm : .00 %

Total # Operational Hours : 628

Distribution By Samples




		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 50.0	78	42	61	48	38	35	20	17	12	59	54	28	31	31	40	34	628	
< 110.0																		
< 210.0																		
>= 210.0																		
Totals	78	42	61	48	38	35	20	17	12	59	54	28	31	31	40	34		

Calm : .00 %

Total # Operational Hours : 628

Logger : 30 Parameter : ND2\_

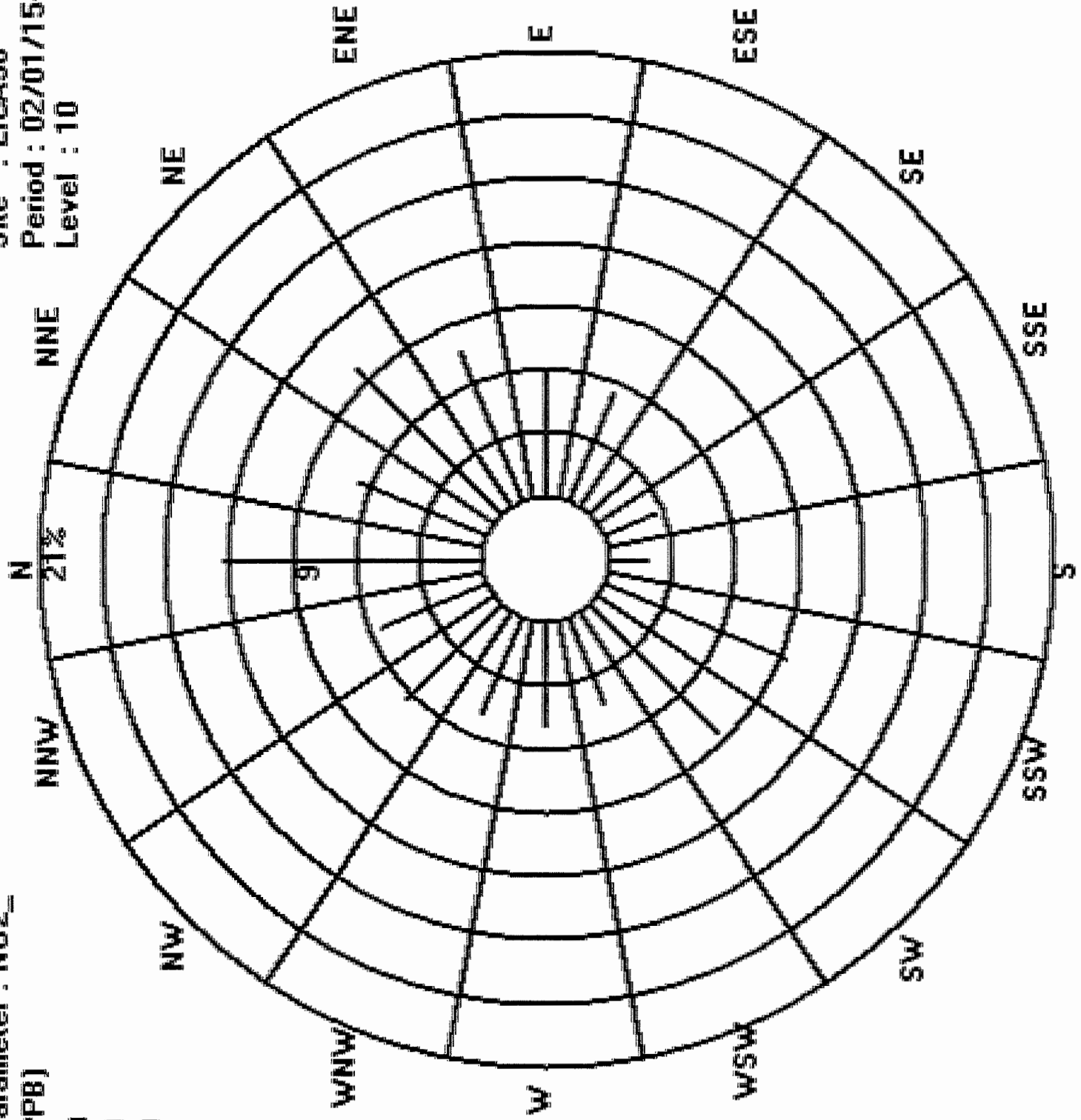
Class Limits (PPB)

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

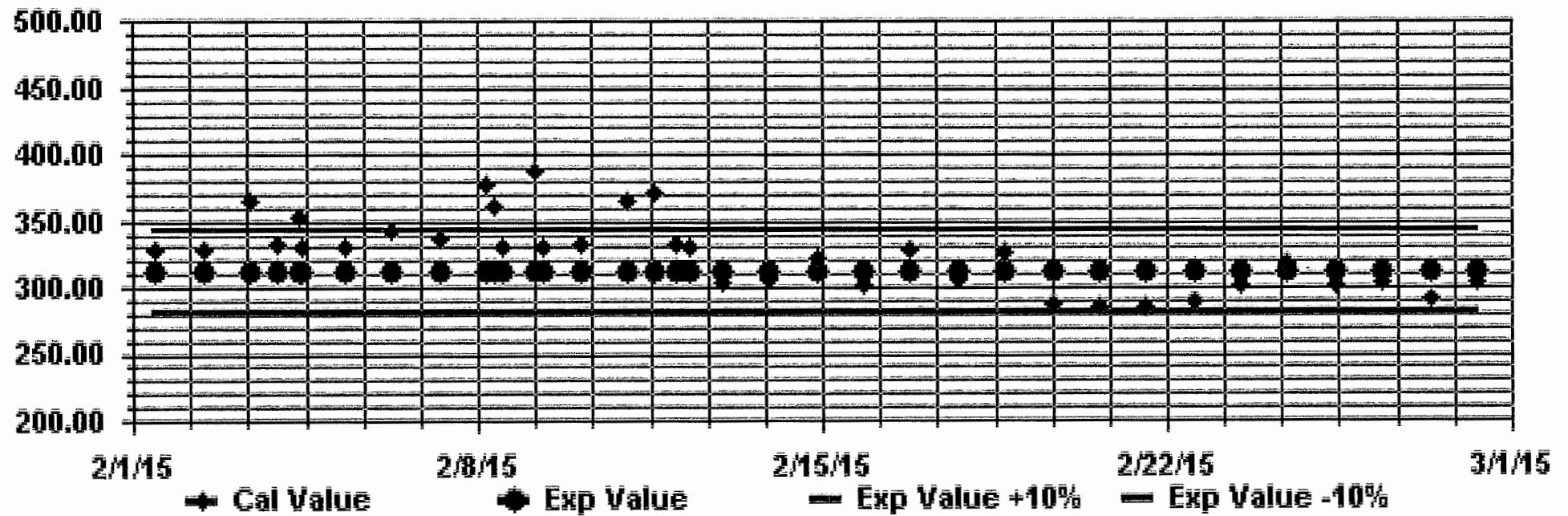
Site : LICA30

Period : 02/01/15-02/28/15

Level : 10



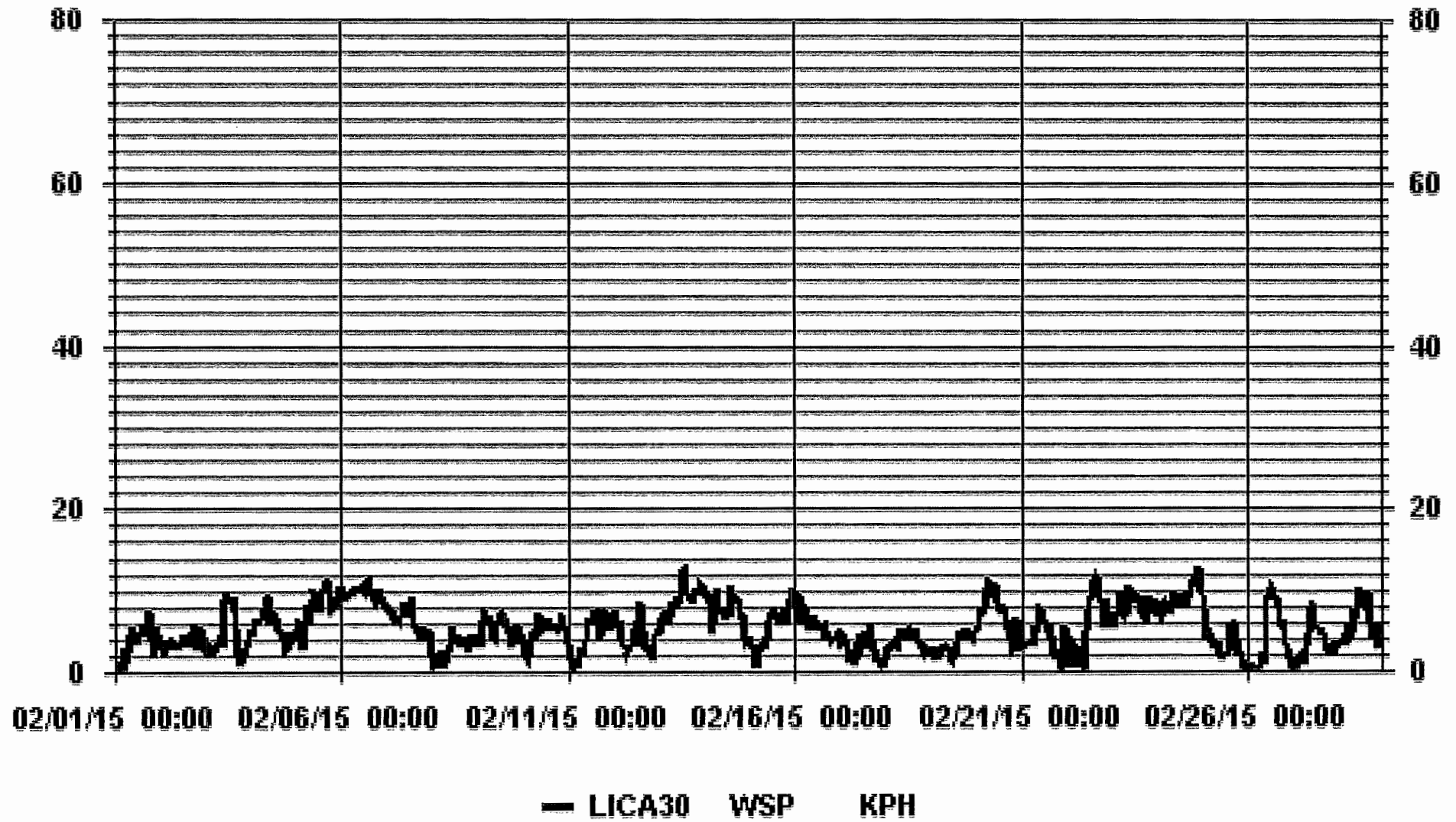
Calibration Graph for Site: LICA30 Parameter: NO2\_ Sequence: NO2 Phase: SPAN



***WIND SPEED***



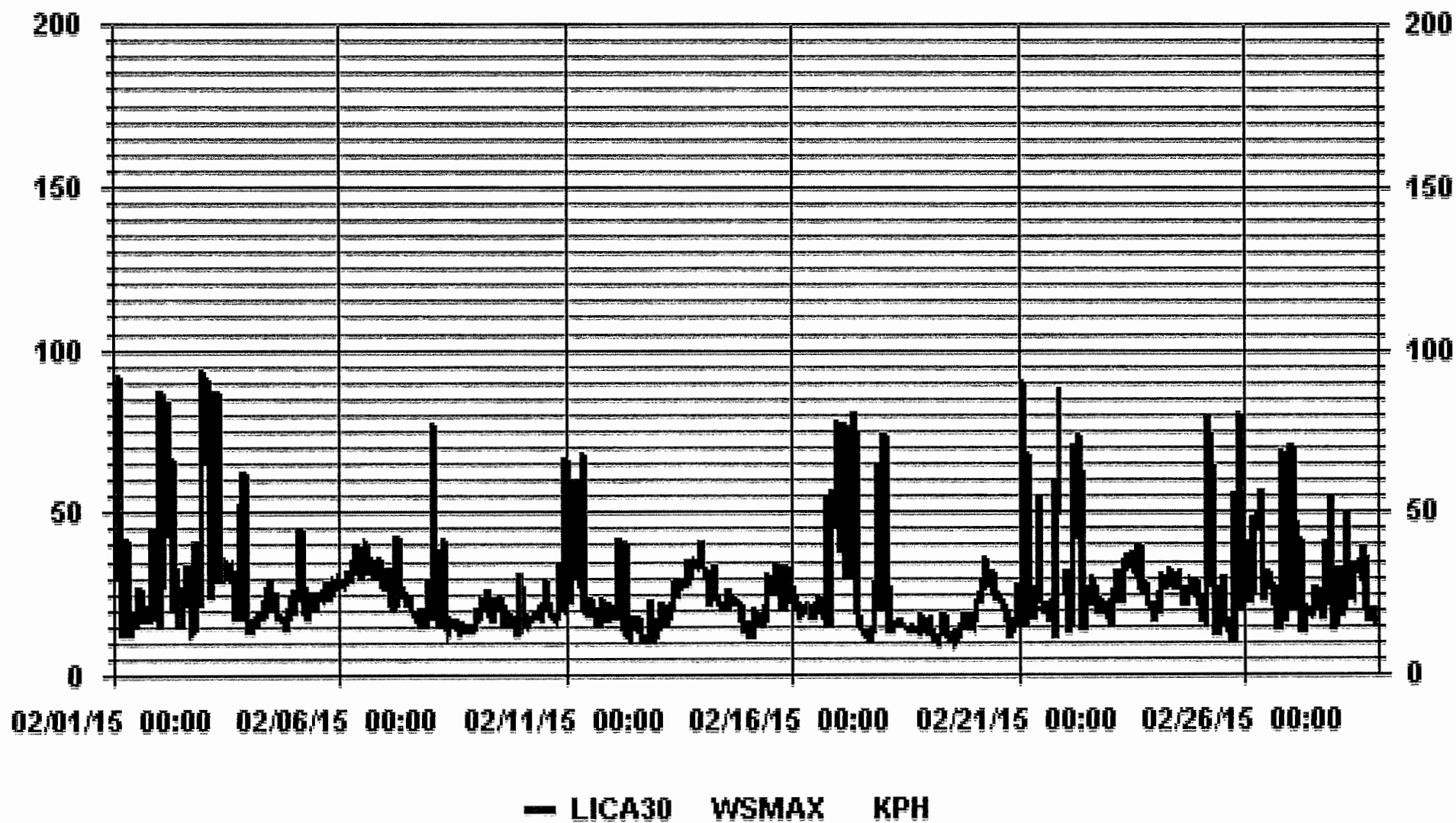
### 01 Hour Averages







### 01 Hour Averages



LICA30  
WSP / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 30  
Site Name : LICA30  
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	6.84	2.82	3.72	3.42	2.82	2.82	2.08	1.19	1.48	4.46	6.99	4.46	4.46	3.42	4.01	3.27	58.33
< 12.0	5.50	3.42	5.20	4.16	3.27	3.12	1.04	1.63	.59	5.20	1.63	.00	.29	1.48	2.52	1.93	41.07
< 20.0	.00	.14	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.44
< 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	12.35	6.39	9.22	7.58	6.10	5.95	3.12	2.82	2.08	9.67	8.63	4.46	4.76	4.91	6.54	5.20	

Calm : .14 %

Total # Operational Hours : 672

Distribution By Samples

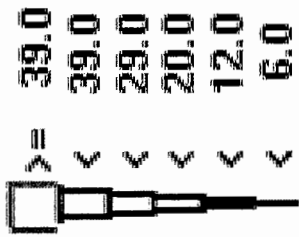
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	46	19	25	23	19	19	14	8	10	30	47	30	30	23	27	22	392
< 12.0	37	23	35	28	22	21	7	11	4	35	11		2	10	17	13	276
< 20.0		1	2														3
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	83	43	62	51	41	40	21	19	14	65	58	30	32	33	44	35	

Calm : .14 %

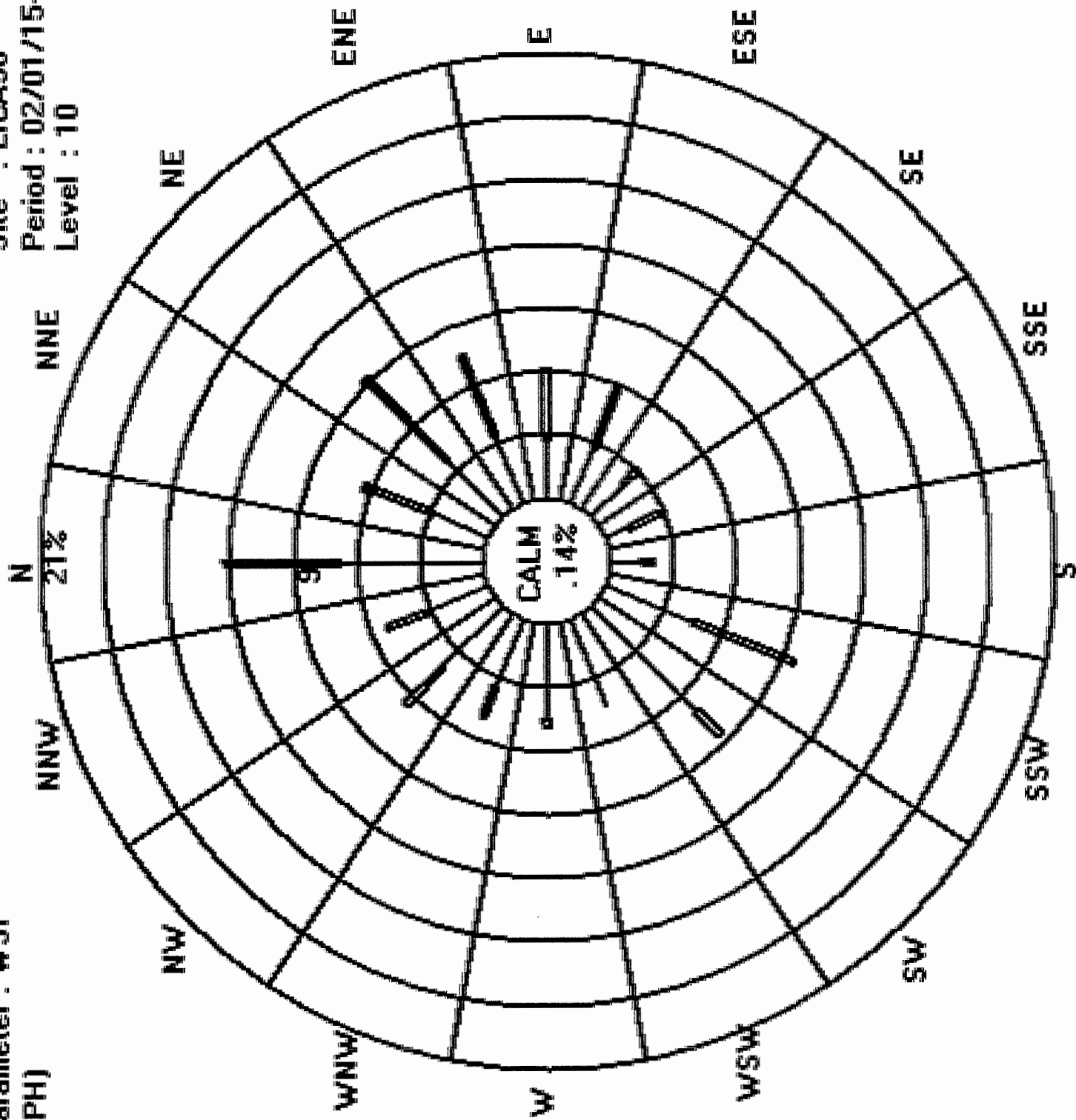
Total # Operational Hours : 672

Logger : 30 Parameter : WSP

Class Limits (KPH)



Site : LICA30  
Period : 02/01/15-02/28/15  
Level : 10



***WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - FEBRUARY 2015

JOB # 2833-2015-02-30-C

WIND DIRECTION (WD) hourly averages

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

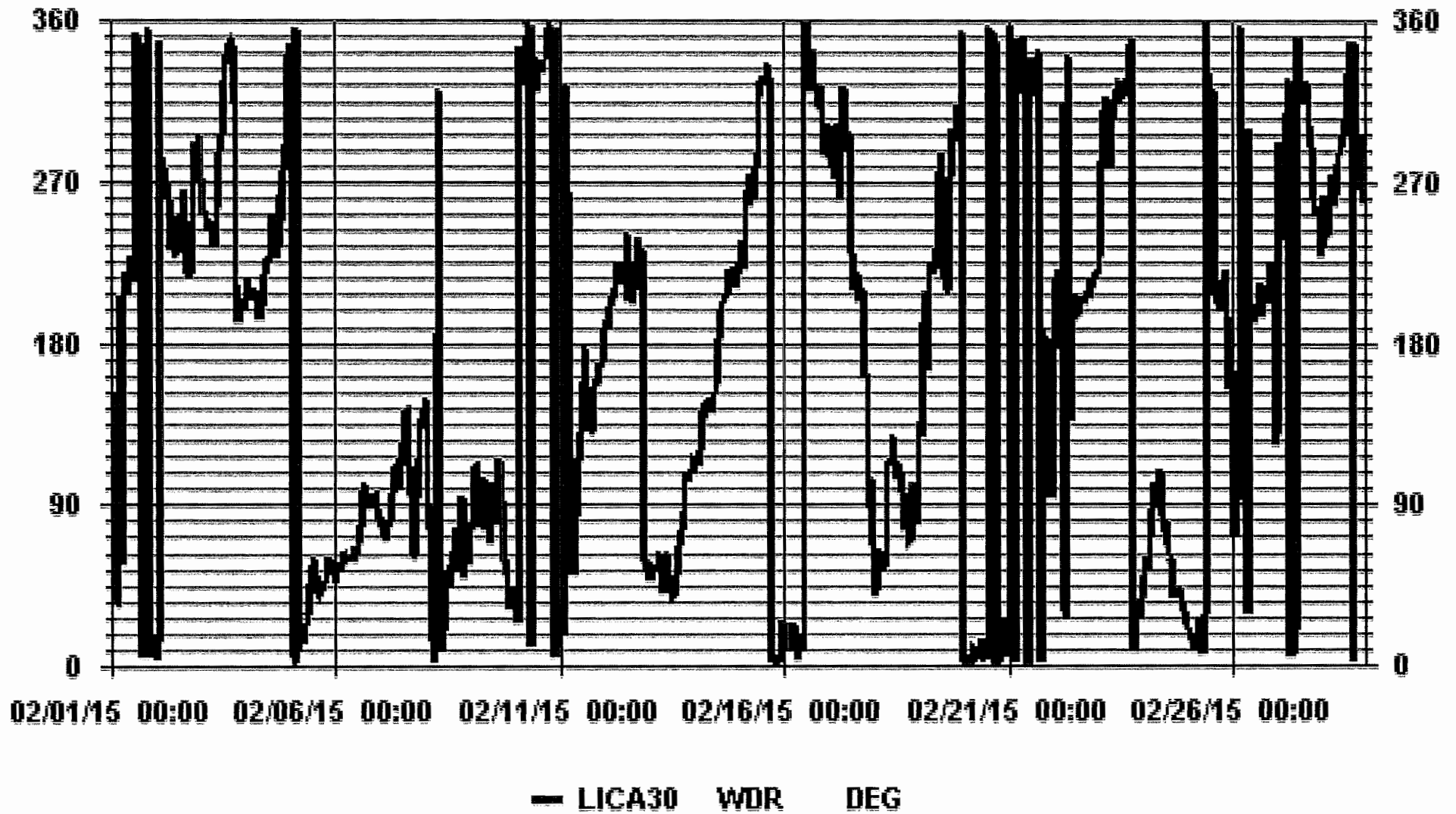
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	112.90	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	NNE

# 01 Hour Averages



***STANDARD DEVIATION WIND DIRECTION***





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - FEBRUARY 2015

JOB # 2833-2015-02-30- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00
DAY																								
1	54	53	45	38	56	29	45	43	20	17	32	29	29	41	35	32	23	19	23	20	70	25	20	22
2	21	18	31	38	30	28	32	31	24	38	33	29	29	38	44	34	27	15	16	30	29	27	29	34
3	34	34	30	29	30	34	26	24	20	33	31	26	32	33	35	33	36	41	59	35	20	15	15	14
4	15	20	19	18	19	17	17	20	18	19	27	29	29	27	38	30	23	26	30	24	30	29	40	32
5	30	21	24	40	28	20	21	20	17	15	22	29	27	24	20	18	19	20	21	22	23	24	23	22
6	21	23	24	23	23	23	24	23	24	24	27	24	25	28	27	28	27	27	28	28	26	26	27	28
7	24	25	25	25	23	26	26	25	28	30	32	28	33	28	32	28	25	22	23	23	27	24	30	36
8	72	45	34	58	29	40	43	49	30	28	21	33	38	30	41	34	27	25	26	39	23	23	23	23
9	25	30	27	24	26	23	24	34	29	34	27	36	32	29	29	29	31	28	20	20	19	13	18	21
10	24	30	32	42	39	36	33	29	22	29	34	33	37	35	34	35	35	32	28	33	30	24	27	21
11	18	29	72	34	46	39	42	39	38	34	28	28	33	25	29	28	25	20	24	24	25	29	24	26
12	25	22	23	20	23	50	26	32	28	32	24	27	40	19	16	19	17	26	40	34	39	45	19	19
13	18	20	22	23	22	27	22	19	21	26	24	21	20	19	22	23	24	25	26	27	25	27	27	25
14	29	27	24	28	28	28	24	22	25	28	26	30	29	29	19	19	20	20	20	27	23	25	25	27
15	25	34	20	58	59	29	26	28	29	27	25	36	39	35	35	35	38	29	25	28	26	24	26	18
16	16	17	19	23	21	14	22	27	23	24	23	33	35	31	36	36	36	36	31	38	31	27	24	26
17	29	34	33	37	47	55	52	68	48	31	34	27	28	27	45	36	19	17	20	27	34	35	44	54
18	41	20	19	19	17	21	24	25	28	24	25	31	31	31	30	32	24	26	24	27	28	29	25	33
19	37	28	33	32	29	48	35	23	29	35	56	68	66	42	23	17	14	28	27	31	24	33	30	31
20	22	23	22	25	25	21	22	26	22	23	20	24	29	31	32	32	32	29	32	25	20	10	17	15
21	25	25	23	37	36	36	31	28	32	23	28	31	35	36	39	37	36	33	32	16	49	49	66	72
22	73	48	18	21	23	59	47	39	42	50	24	22	20	21	18	18	17	17	15	17	27	19	29	21
23	19	19	24	29	30	27	24	22	28	33	36	35	35	41	36	36	37	34	30	25	20	14	16	16
24	24	23	24	22	25	28	26	30	26	25	26	25	26	24	26	24	17	19	19	18	19	16	13	13
25	16	17	21	18	17	19	20	18	29	40	45	65	67	52	45	26	19	13	16	23	18	61	36	49
26	57	61	42	34	42	53	49	72	48	44	18	21	19	23	22	24	19	20	15	16	23	32	41	55
27	62	57	52	33	33	38	34	20	27	18	22	35	41	43	41	37	41	40	31	29	32	28	26	17
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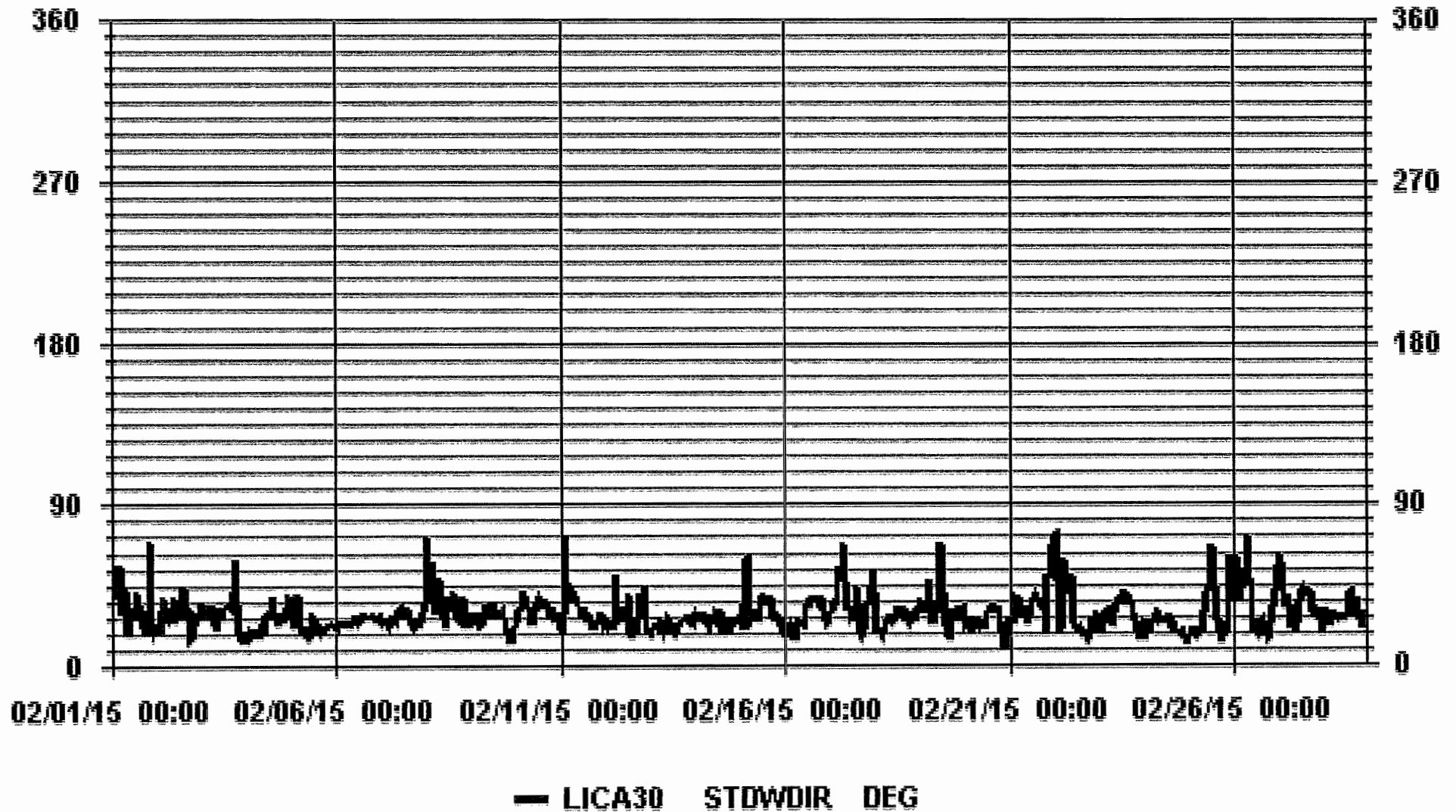
STATUS FLAG CODES

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

LAST CALIBRATION: March 04, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 672 HRS

### 01 Hour Averages



***RELATIVE HUMIDITY***





## ***BAROMETRIC PRESSURE***

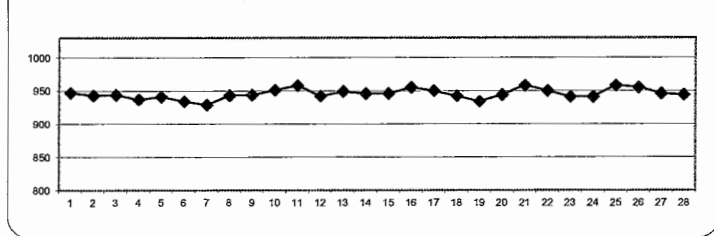
**BAROMETRIC PRESSURE (BP) hourly averages in millibar**

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
DAY	HOURLY MAX	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.	AVG.	RDGS.		
1		955	954	953	951	950	949	948	948	947	946	945	945	944	944	943	943	944	944	944	944	944	944	945	945	955	947	24	
2		945	945	945	945	946	945	945	945	945	944	944	944	943	942	942	941	941	940	940	940	940	940	940	941	946	943	24	
3		941	941	942	942	942	942	942	942	942	942	942	943	943	944	945	947	947	948	949	949	949	949	949	948	949	944	24	
4		948	947	946	945	943	942	941	939	937	936	935	934	933	932	932	933	932	932	932	933	933	934	935	936	948	937	24	
5		937	938	939	940	941	942	942	942	943	943	942	942	942	941	941	940	940	940	941	941	941	941	941	941	941	943	24	
6		941	941	940	939	939	938	935	935	935	935	935	935	933	931	931	931	931	930	930	929	928	928	928	927	941	934	24	
7		928	927	927	927	927	927	927	927	926	927	928	927	928	927	928	929	929	930	931	932	932	933	933	933	935	935	929	24
8		936	937	937	938	939	940	940	940	942	943	944	944	945	945	946	946	946	947	947	947	947	947	946	947	947	943	24	
9		947	947	946	946	946	945	945	945	944	944	944	943	943	942	941	941	941	942	942	942	942	942	943	943	947	944	24	
10		941	943	944	944	945	946	947	948	949	950	951	952	952	952	953	953	954	954	955	956	957	958	959	959	959	951	24	
11		961	961	960	963	963	964	964	964	965	964	962	961	960	960	958	957	956	954	953	952	950	948	948	946	965	958	24	
12		945	944	943	942	941	940	940	940	940	940	941	941	942	942	942	942	942	942	942	942	942	941	942	943	943	945	942	24
13		944	945	946	946	946	947	947	948	948	949	950	950	951	951	952	952	952	952	952	952	952	952	952	951	952	949	24	
14		951	950	948	948	949	949	947	947	946	947	946	946	945	943	944	944	944	944	944	944	943	943	943	943	951	946	24	
15		943	943	943	943	944	944	944	944	945	945	945	945	946	946	946	947	947	948	949	949	950	950	951	952	952	946	24	
16		952	953	954	954	955	955	956	956	957	957	957	957	957	957	957	956	956	956	955	955	955	955	955	954	954	957	955	24
17		954	954	954	954	953	953	953	952	952	952	951	951	950	949	949	948	948	948	948	947	947	947	947	946	954	950	24	
18		946	945	944	945	945	944	944	943	943	943	943	942	942	941	941	941	939	939	939	939	938	938	938	937	946	942	24	
19		937	936	936	936	935	935	934	934	933	933	933	934	934	933	934	934	934	934	934	934	934	934	934	934	935	937	934	24
20		935	936	937	937	938	939	940	941	941	943	944	945	946	946	947	947	948	948	949	949	950	950	951	951	944	24		
21		952	953	954	955	956	956	957	958	958	958	959	960	960	960	960	960	960	960	960	960	960	960	960	960	959	960	958	24
22		959	958	957	956	956	956	955	955	955	953	953	952	952	951	950	948	947	946	945	943	943	941	939	938	959	950	24	
23		937	935	937	938	939	939	940	940	941	942	942	943	943	942	942	942	942	942	942	942	942	942	942	942	943	941	24	
24		941	942	941	940	940	939	938	938	938	937	937	937	937	938	939	939	940	941	942	943	944	946	948	949	949	941	24	
25		950	952	953	954	956	956	957	958	959	959	960	961	961	961	960	959	960	960	961	961	961	961	961	961	961	961	958	24
26		961	961	961	961	961	960	960	960	959	957	957	956	955	954	953	951	951	950	949	948	948	948	947	947	961	955	24	
27		946	946	945	945	945	945	946	946	946	947	947	947	947	947	947	946	946	946	946	946	946	946	945	945	945	947	946	24
28		945	944	944	944	943	943	943	941	942	943	943	943	943	943	943	944	944	945	945	945	945	946	946	946	946	946	944	24
HOURLY MAX		961	961	961	963	963	964	964	964	965	964	962	961	961	961	960	960	960	960	961	961	961	961	961	961	961	961		
HOURLY AVG		946	946	946	946	946	946	946	946	946	946	946	946	946	945	945	945	945	945	945	945	945	945	945	945	945	945		

**STATUS FLAG CODES**

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

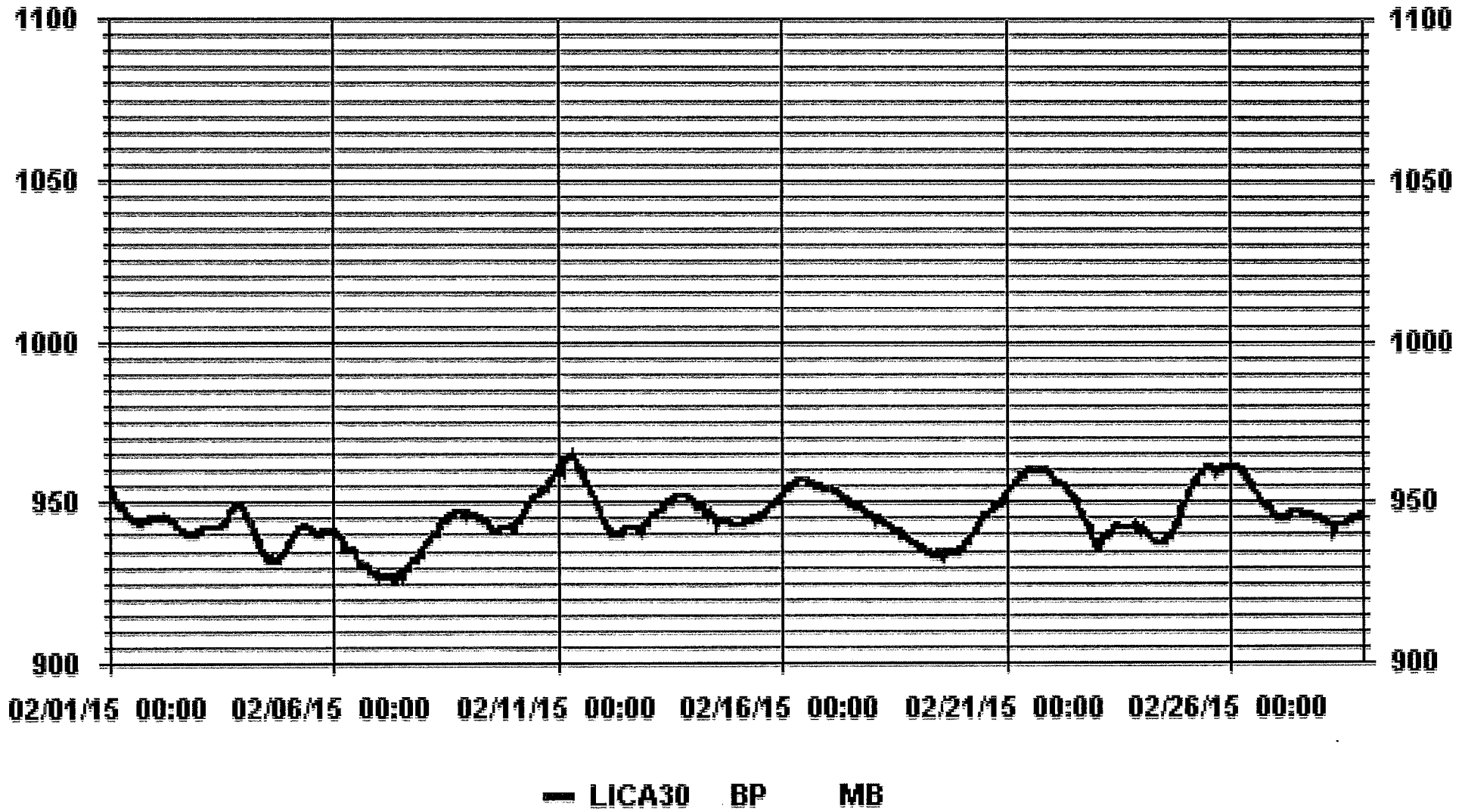
**24 HOUR AVERAGES FOR FEBRUARY 2015**



**MONTHLY SUMMARY**

MAXIMUM 1-HR AVERAGE:	965	MB	@ HOUR(S)	8	ON DAY(S)	11
MAXIMUM 24-HR AVERAGE:	958	MB			ON DAY(S)	VAR
					VAR-VARIOUS	
					OPERATIONAL TIME:	672 HRS
					AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	8.04				MONTHLY AVERAGE:	945 MB

### 01 Hour Averages

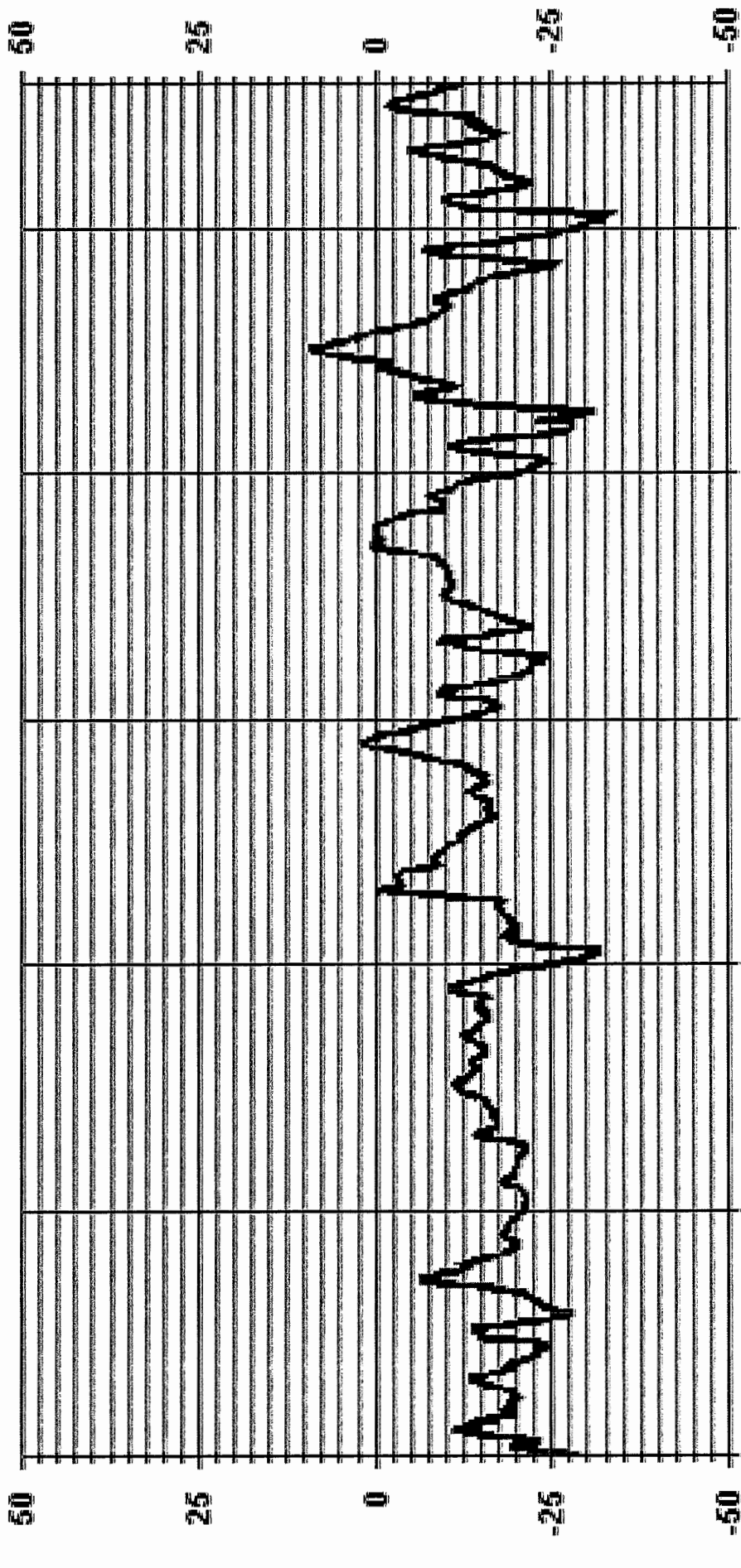




***AMBIENT TEMPERATURE***



# 01 Hour Averages



— LICA30 TPX DGC

***PRECIPITATION***



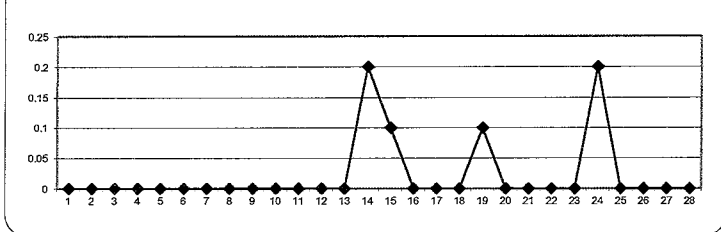
PRECIPITATION hourly averages (mm)

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.		
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MAX.	AVG.			
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	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	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.3	0.0	24	
6	0.2	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	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	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	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	24	
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
14	0.2	0.4	0.5	0.4	0.3	1.0	0.9	0.3	0.7	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2	24	
15	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.5	0.1	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	24	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.1	0.0	0.3	0.3	0.0	0.0	0.3	0.1	0.0	0.1	0.3	0.1	24	
20	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
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	0.1	0.2	0.0	0.5	0.6	0.5	0.3	0.0	0.0	0.1	0.0	0.7	0.8	0.2	0.2	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.8	0.2	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	0.1	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	0.1	0.0	24	
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
HOURLY MAX	0.2	0.4	0.5	0.5	0.6	1.0	0.9	0.5	0.7	1.0	0.8	0.7	0.8	0.2	0.2	0.1	0.3	0.3	0.2	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

STATUS FLAG CODES

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

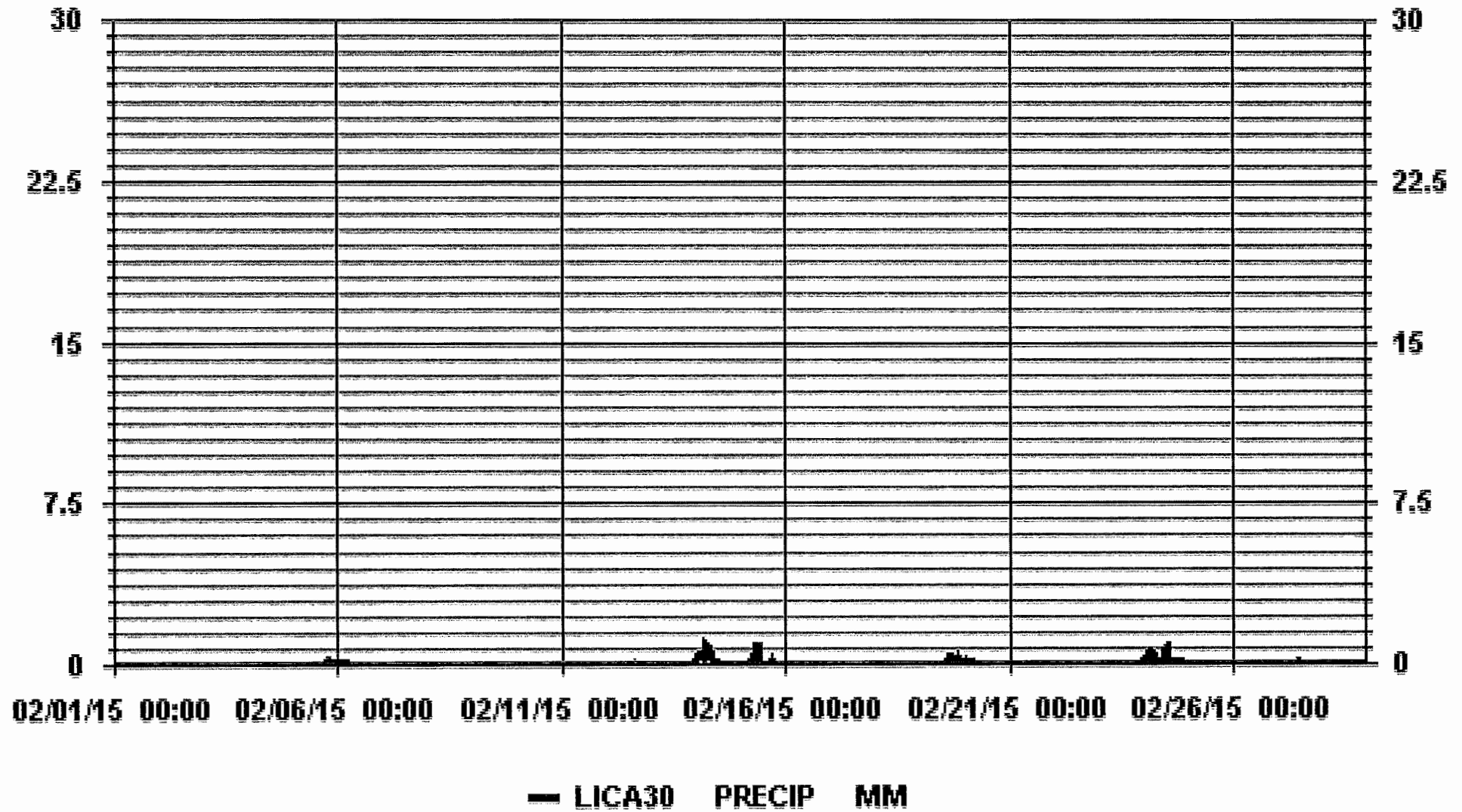
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	1.0	MM	@ HOUR(S)	5 , 9	ON DAY(S)	14 , 15
MAXIMUM 24-HR AVERAGE:	0.2	MM			ON DAY(S)	14 , 24
MONTHLY TOTAL	15.8	MM			VAR-VARIOUS	
OPERATIONAL TIME:					672	HRS
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	0.11				MONTHLY AVERAGE:	0.0
						MM

### 01 Hour Averages



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

***SULPHUR DIOXIDE***



## API 100E SO2 Analyzer Calibration

---

**Date:** 11-Feb-15

**Company:** LICA

**Station Name/Location:** Maskwa

**Performed by:** Chris W / Alex Y

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

**Start/End Time (mst):** 8:07 / 12:08

**Calibration Purpose:** Monthly Calibration

**Converter Make & Model:** NA

**Converter Serial #:** NA

**Cal Gas Expiry Date:** 12-Aug-17

---

**Analyzer:**

**Serial Number:** 508

**Last Calibration Date:** 16-Jan-15

**Previous Cal High Point C.F.:** 0.999

**Range ppb:** 1000

**As Found C.F.:** 0.998

**New C.F.:** 1.001

---

**As found:**

SLOPE: 1.017

OFFSET: 120.4

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 30.5

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.2

PRES: 25.2

SAMP FL: 596

PMT: 106.0

NORM PMT: 121.2

UV LAMP: 3073.4

LAMP RATIO: 95.9

STR. LGT: 61.3

DRK PMT: 12.1

DRK LMP: -1.8

Internal Span: 271.2

**As left:**

SLOPE: 1.007

OFFSET: 115.6

HVPS: 495

RCELL TEMP: 50.0

BOX TEMP: 31.7

PMT TEMP: 7.7

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 25.2

SAMP FL: 596

PMT: 106.6

NORM PMT: 116.9

UV LAMP: 3061.6

LAMP RATIO: 95.6

STR. LGT: 58.2

DRK PMT: 12.4

DRK LMP: -1.7

Internal Span: 249.5

---

**Calibrator:**

**Flow Meter ID's:** NA

**Make & Model:** EnviroNics 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	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	4914	80.20	4994	807.7	809.0	0.998
adjusted high	4914	80.20	4994	807.7	808.0	1.000
mid	4955	39.05	4994	393.3	391.0	1.006
low	4976	19.53	4996	196.6	197.0	0.998
calibrator zero	4995	0.00	4995	0	0.0	NA
<b>Average C.F. =</b>						<b>1.001</b>

---

**Linear Regression/Calibration Results:**

	<b>LIMITS</b>	<b>Pass/Fail ?</b>
Correlation Coefficient = 1.000	> or = 0.995	PASS
Slope = 1.000	0.85-1.15	PASS
b (Intercept as % of full scale) = 0.04%	± 3% F.S.	PASS
% change in C.F. from last cal = 0.06%	± 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

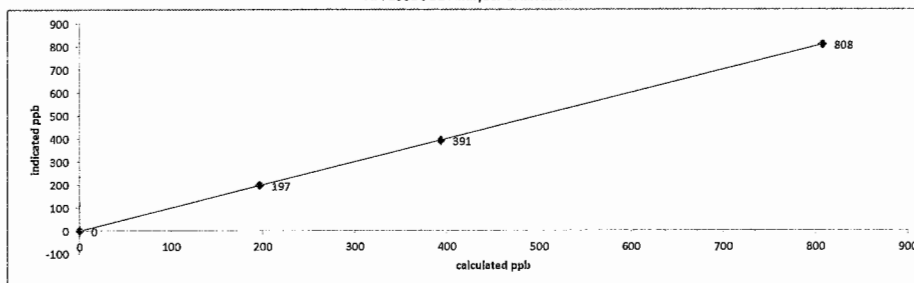
Zero corrected analyzer response: NA

---

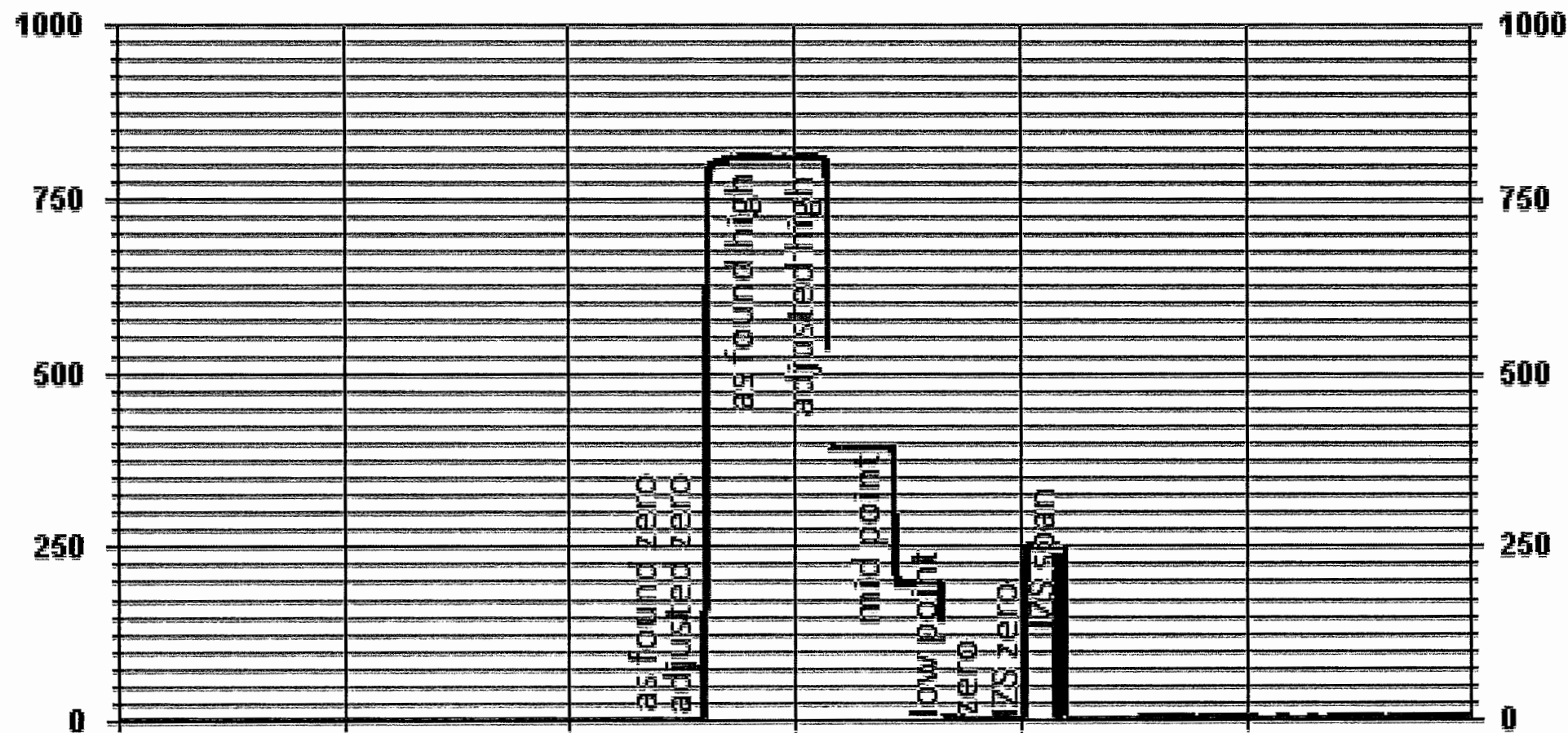
**Comments:**

Sample filter changed. Some 1-minute data were missing.

API 100E SO2 Analyzer Calibration



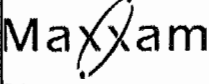
### 01 Minute Averages



02/11/15 03:40 02/11/15 05:40 02/11/15 07:40 02/11/15 09:40 02/11/15 11:40 02/11/15 13:40

— LICA30 SO2\_ PPB

***HYDROGEN SULPHIDE***



## API 100E H2S Analyzer Calibration

---

Date: 2-Feb-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): 10:45/17:04

Calibration Purpose: As Found

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 25-Dec-15

---

Analyzer:

Serial Number: 511

Last Calibration Date: 15-Jan-15

Previous Cal High Point C.F.: 0.999

Range ppb: 100

As Found C.F.: 1.086

New C.F.: 0.985

---

**As found:**

SLOPE: 0.850

OFFSET: 46

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 31.7

PMT TEMP: 7.9

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 29.1

SAMP FL: 654

PMT: 76.1

NORM PMT: 46.3

UV LAMP: 2993

LAMP RATIO: 96.2

STR. LGT: 19.5

DRK PMT: 32.4

DRK LMP: 5.8

Internal Span: 41.9

**As left:**

SLOPE: 0.931

OFFSET: 46.0

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 31.9

PMT TEMP: 7.9

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 29.2

SAMP FL: 654

PMT: 79.7

NORM PMT: 46.1

UV LAMP: 2991.8

LAMP RATIO: 96.1

STR. LGT: 21.4

DRK PMT: 33.6

DRK LMP: 5.6

Internal Span: 48.16

---

Calibrator:

Flow Meter ID's: NA

Make & Model: API 700

Serial #: 831

Cal Gas Cylinder I.D. #: BLM005049

Cal Gas Conc. (ppm): 10.1

**Calibrator Flow Targets:**

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	5000	38	5038
mid	5000	18	5018
low	5000	9	5009

---

Calibration:

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	5000	0.0	5000	0	0.0	NA
adjusted zero	NA	0.0	NA	0		NA
as found high	4995	38.00	5033	76.3	70.2	1.086
adjusted high	4995	38.00	5033	76.3	77.8	0.980
mid	4995	18.00	5013	36.3	37.0	0.980
low	4995	8.00	5003	16.2	16.2	0.995
calibrator zero	5000	0.00	5000	0	-0.1	NA
Average C.F.=						0.985

---

**Linear Regression/Calibration Results:**

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>0.979</u>	> or = 0.995	PASS
b (Intercept as % of full scale)=	<u>0.13%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-8.74%</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

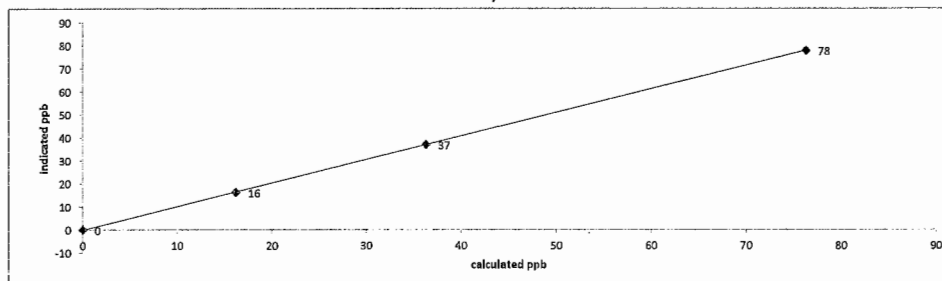
Zero corrected analyzer response: NA

---

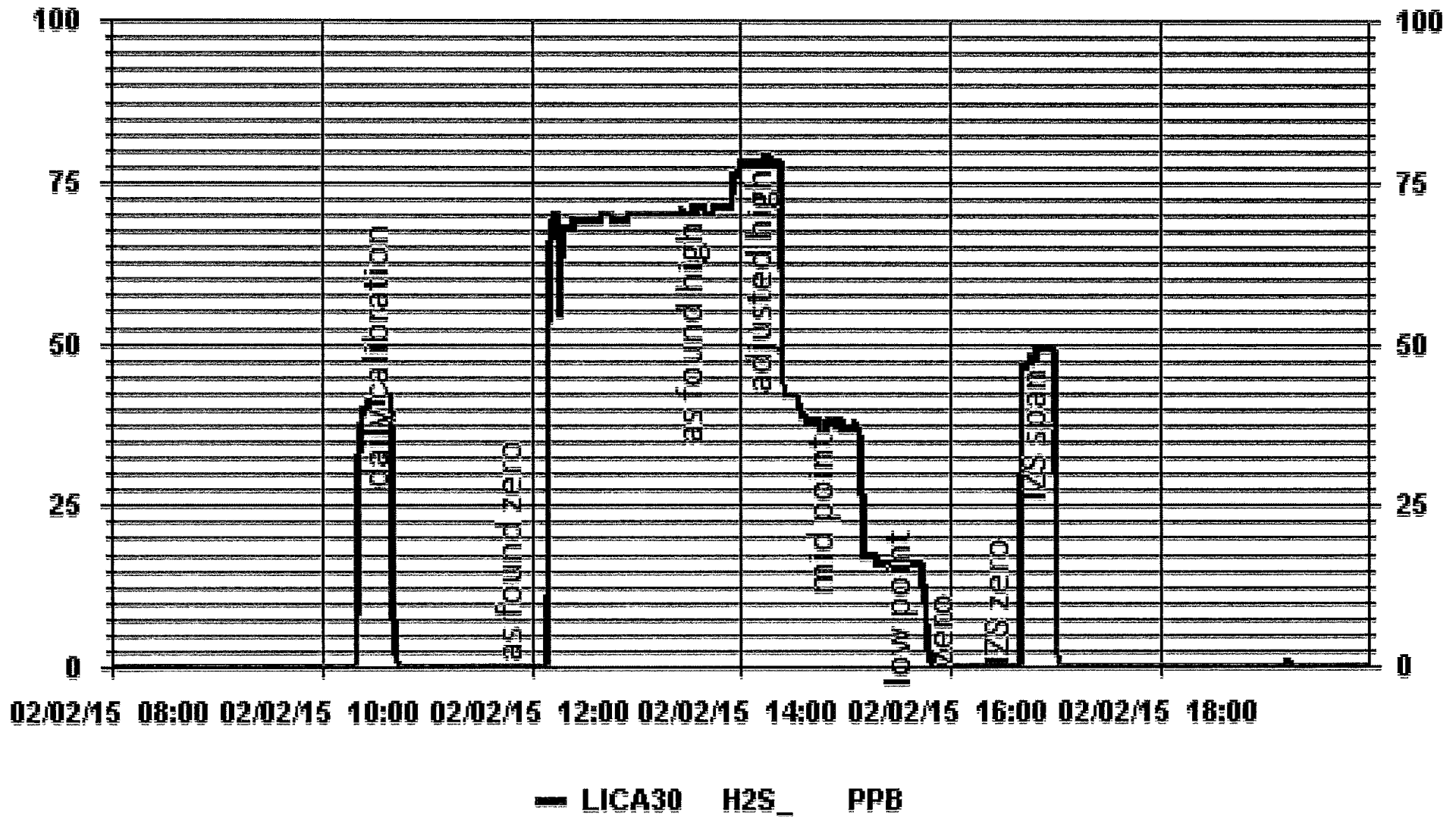
Comments:

As Found Calibration followed by Three Point Full Calibration. Expected Value was not adjusted. Converter efficiency test was not performed. The filter has been changed.

API 100E H2S Analyzer Calibration

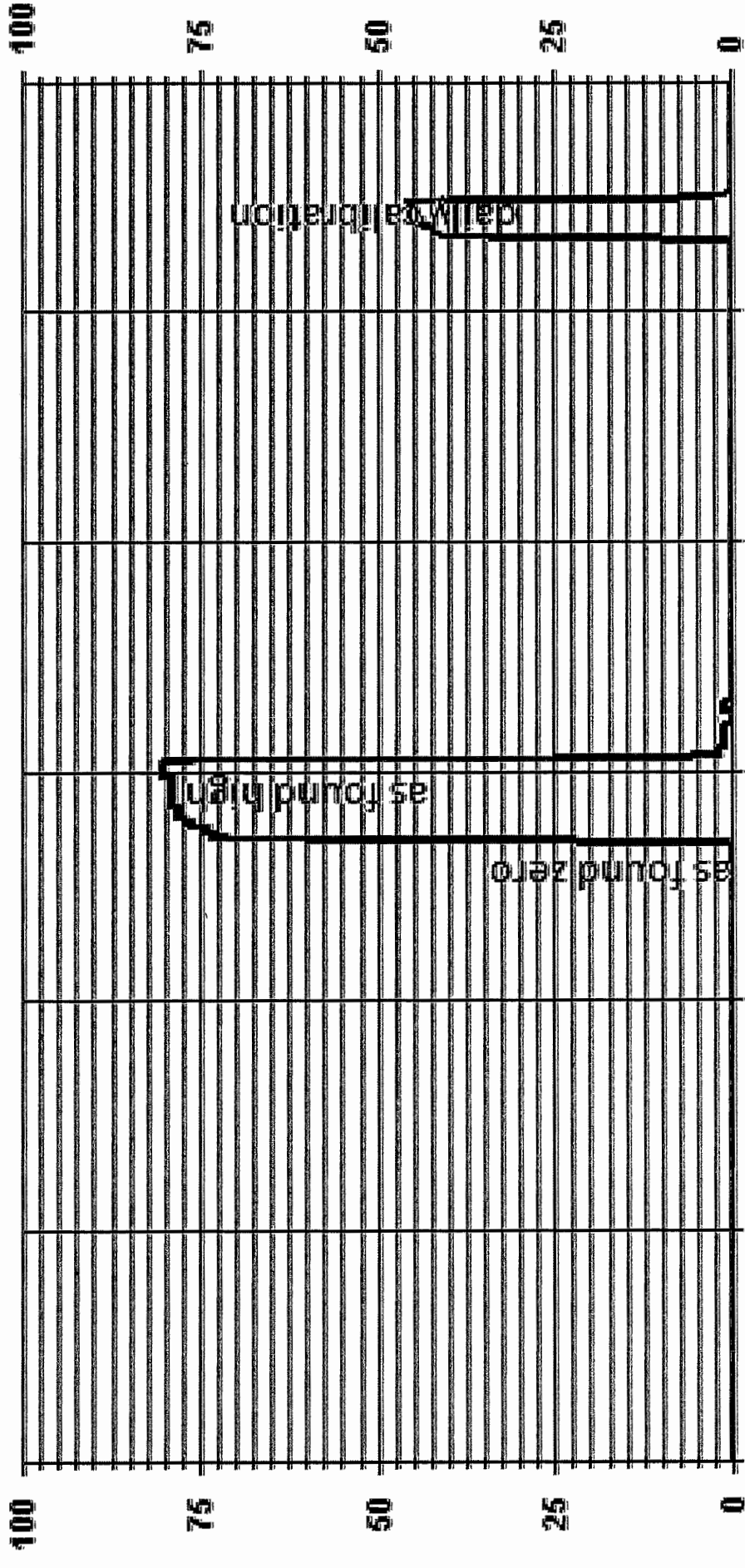


# 01 Minute Averages





# 01 Minute Averages



02/03/15 12:00 02/03/15 14:00 02/03/15 16:00 02/03/15 18:00 02/03/15 20:00 02/03/15 22:00

— LICA30 H2S\_ PPB

## API 101E H2S Analyzer Calibration

---

**Date:** 10-Feb-15

**Company:** LICA

**Station Name/Location:** Maskwa

**Performed by:** Chris W / Alex Y

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

**Start/End Time (mst):** 11:43 - 15:39

**Calibration Purpose:** Shut-Down

**Converter Make & Model:** Internal

**Converter Serial #:** NA

**Cal Gas Expiry Date:** 25-Dec-15

---

**Analyzer:**

**Serial Number:** 511

**Last Calibration Date:** 2-Feb-15

**Previous Cal High Point C.F.:** 0.980

**Range ppb:** 100

**As Found C.F.:** 1.061

**New C.F.:** 1.022

**As found:**

SLOPE: 0.931

OFFSET: 46.0

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 31.6

PMT TEMP: 7.9

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 29.4

SAMP FL: 660

PMT: 76.8

NORM PMT: 44.7

UV LAMP: 2988.4

LAMP RATIO: 96.1

STR. LGT: 21.4

DRK PMT: 2.8

DRK LMP: 5.6

Internal Span: 45.09

**As left:**

SLOPE: NA

OFFSET: NA

HVPS: NA

RCELL TEMP: NA

BOX TEMP: NA

PMT TEMP: NA

IZS TEMP: NA

TEST: NA

STABIL: NA

PRES: NA

SAMP FL: NA

PMT: NA

NORM PMT: NA

UV LAMP: NA

LAMP RATIO: NA

STR. LGT: NA

DRK PMT: NA

DRK LMP: NA

Internal Span: NA

---

**Calibrator:**

Flow Meter ID's: NA

Make & Model: EnviroNics 6100

Serial #: 4760

Cal Gas Cylinder I.D. #: BLM005049

Cal Gas Conc. (ppm): 10.1

**Calibrator Flow Targets:**

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	4959	39	4998
mid	4979	19	4998
low	4990	11	5001

---

**Calibration:**

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	4993	0.0	4993	0	-0.3	NA
adjusted zero	4993	0.0	4993	0	0.1	NA
as found high	4954	38.49	4992	77.9	73.5	1.061
adjusted high	4954	38.49	4992	77.9	78.0	1.000
mid	4975	18.76	4994	37.9	37.3	1.020
low	4982	10.86	4993	22.0	21.1	1.046
calibrator zero	NA	0.00	0	0	0.0	NA
Average C.F. =						1.022

---

**Linear Regression/Calibration Results:**

Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>0.996</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>0.44%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>-8.26%</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.

As-found high. Response too slow. Calibration set-up checked and point restarted at 13:09

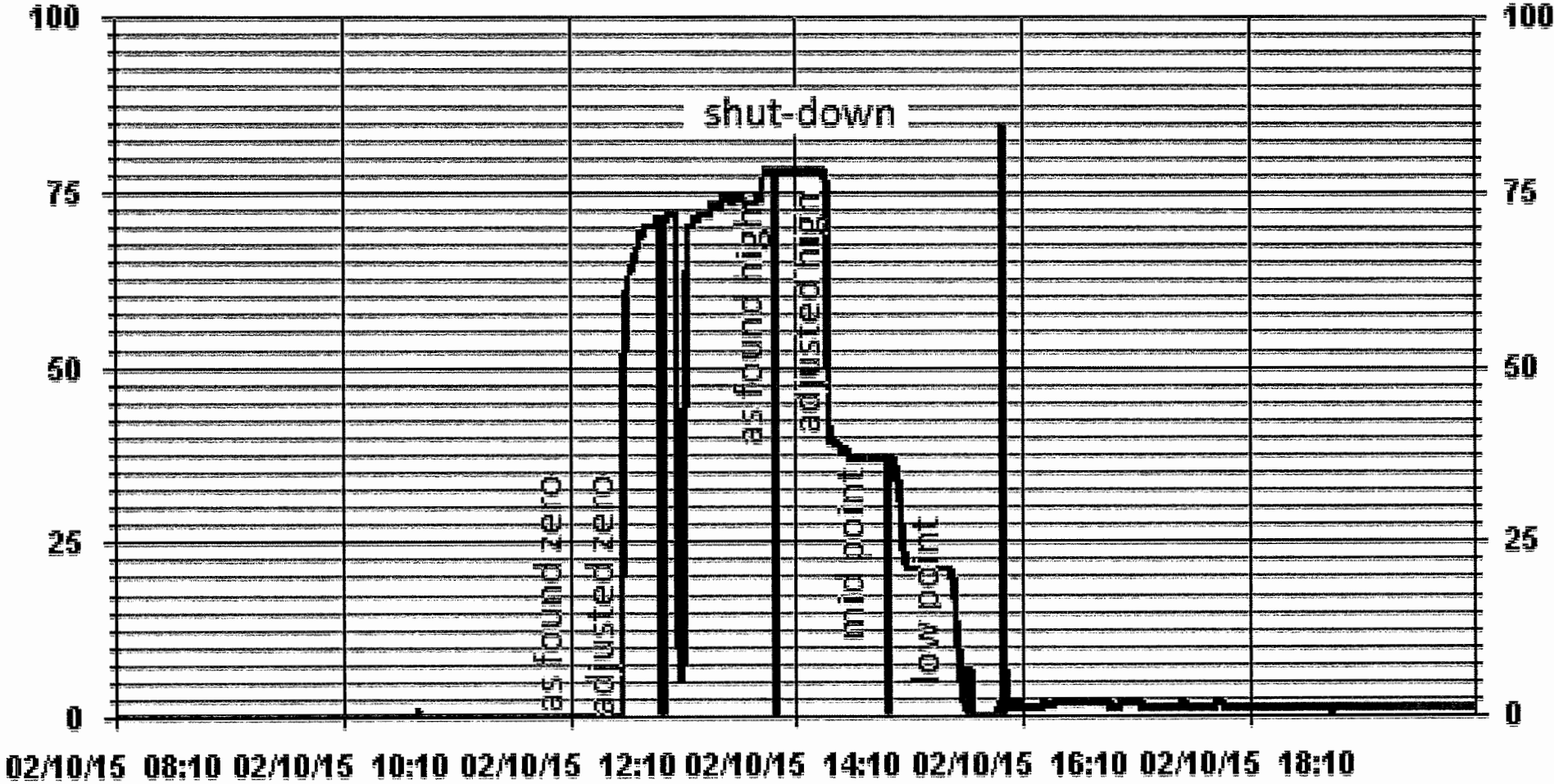
Purpose changed to shut-down due to slow response (scrubber material to be changed) - Calibrator zero not required.

API 101E H2S Analyzer Calibration

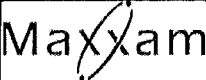
Calculated Concentration (ppb)	Indicated Concentration (ppb)
0	0.1
21.1	21.1
37.3	37.3
78.0	78.0



# 01 Minute Averages



— LICA30 H2S\_ PPB



## API 101E H2S Analyzer Calibration

---

Date: 11-Feb-15

Company: LICA

Station Name/Location: Maskwa

Performed by: Chris W / Alex Y

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

Start/End Time (mst): 8:04 - 11:44

Calibration Purpose: Post-Repair

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 25-Dec-15

---

Analyzer:

Serial Number: 511

Last Calibration Date: NA

Previous Cal High Point C.F.: NA

Range ppb: 100

As Found C.F.: 0.000

New C.F.: 0.990

---

As found:

SLOPE: 0.972

OFFSET: 45.1

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 31.2

PMT TEMP: 7.9

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 30.0

SAMP FL: 677

PMT: 74.5

NORM PMT: 47.8

UV LAMP: 2814.9

LAMP RATIO: 90.5

STR. LGT: 21.9

DRK PMT: 31.9

DRK LMP: 5.6

Internal Span: 45.09

As left:

SLOPE: 0.853

OFFSET: 46.3

HVPS: 616

RCELL TEMP: 50.0

BOX TEMP: 32.2

PMT TEMP: 7.9

IZS TEMP: 45.0

TEST: NA

STABIL: 0.1

PRES: 29.6

SAMP FL: 662

PMT: 75.9

NORM PMT: 46.1

UV LAMP: 2811.1

LAMP RATIO: 90.4

STR. LGT: 19.8

DRK PMT: 33.5

DRK LMP: 5.9

Internal Span: 47.17

---

Calibrator:

Flow Meter ID's: NA

Make & Model: API

Serial #: 831

Cal Gas Cylinder I.D. #: BLM005049

Cal Gas Conc. (ppm): 10.1

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	NA					NA
adjusted zero	4995	0.0	4995	0	0.1	NA
as found high	NA					
adjusted high	4958	38.60	4997	78.0	78.0	1.002
mid	4980	18.80	4999	38.0	38.3	0.994
low	4984	10.90	4995	22.0	22.7	0.975
calibrator zero	4995	0.00	4995	0	0.1	NA
Average C.F. =						0.990

---

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>-0.39%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>NA</u>	± 3% F.S.	PASS
		± 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

---

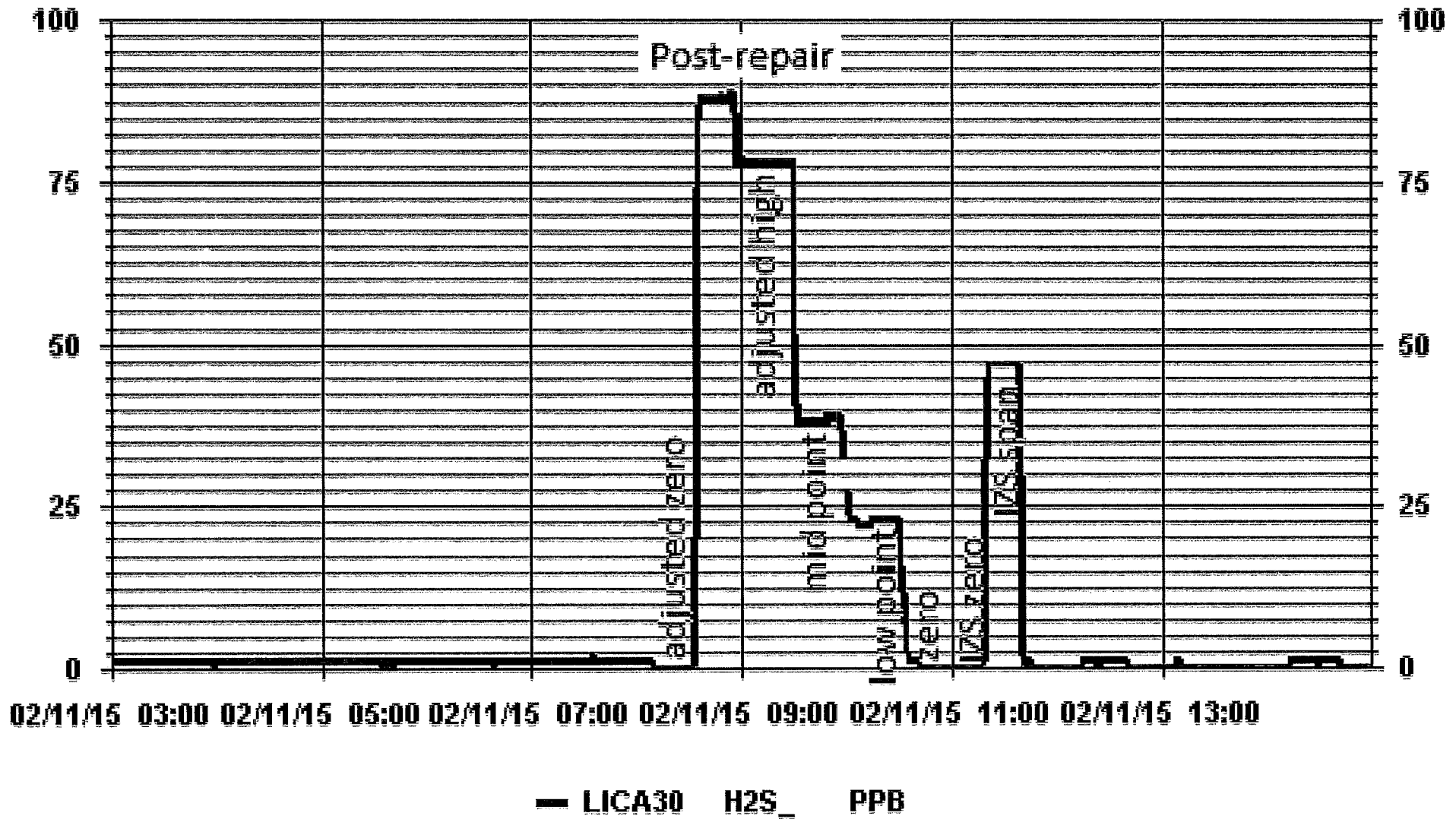
Comments:

Post-Repair calibration following the analyzer's scrubber replacement. Some 1-minute data were missing.

API 101E H2S Analyzer Calibration

Calculated Concentration (ppb)	Indicated Concentration (ppb)
0	0.1
22.7	22.7
38.3	38.3
78.0	78.0

### 01 Minute Averages



***TOTAL HYDROCARBON***

# Maxxam Thermo 51C THC Analyzer Calibration

Date: 10-Feb-15  
 Company: LICA  
 Station Name/Location: Maskwa  
 Performed by: Chris W / Alex Y

Start Time (mst): 11:43  
 End Time (mst): 15:34  
 Calibration Purpose: Monthly Calibration  
 Cal Gas Expiry Date: 12-Aug-17

Analyzer: \_\_\_\_\_  
 Serial Number: 436609738 Range ppm: 50  
 Last Calibration Date: 16-Jan-15 As Found C.F.: 0.969  
 Previous Cal High Point C.F.: 1.000 New C.F.: 1.004

	As found:	As left:
H <sub>2</sub> cylinder (psi):	<u>920</u>	<u>920</u>
H <sub>2</sub> cylinder reg set (psi):	<u>20</u>	<u>20</u>
Span Cylinder (psi):	<u>1500</u>	<u>1500</u>
Span Cylinder Reg Set (psi):	<u>25</u>	<u>25</u>
Zero Air Gen Pressure:	<u>31</u>	<u>31</u>
measurement alarms:	<u>None</u>	<u>None</u>
service alarms:	<u>None</u>	<u>None</u>
FID status:	cnt: <u>2579</u>	cnt: <u>921</u>
	rng: <u>1</u>	rng: <u>1</u>
	try: <u>2</u>	try: <u>2</u>
	flm: <u>180.8</u>	flm: <u>180.8</u>
	det: <u>125.7</u>	det: <u>125.7</u>
Oven Readings:	Flame: <u>180</u>	Flame: <u>180.0</u>
	Filter: <u>125</u>	Filter: <u>125</u>
	Base: <u>125</u>	Base: <u>125</u>
	Pump: <u>7.52</u>	Pump: <u>7.52</u>
Voltages:	+5: <u>4.9</u>	+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>33.6</u>	Internal Span: <u>33.22</u>

Calibrator: \_\_\_\_\_  
 Flow Meter ID's: NA  
 Make & Model: API 700  
 Serial #: 831  
 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> equilivants (ppm): 555.5 | 1156.9

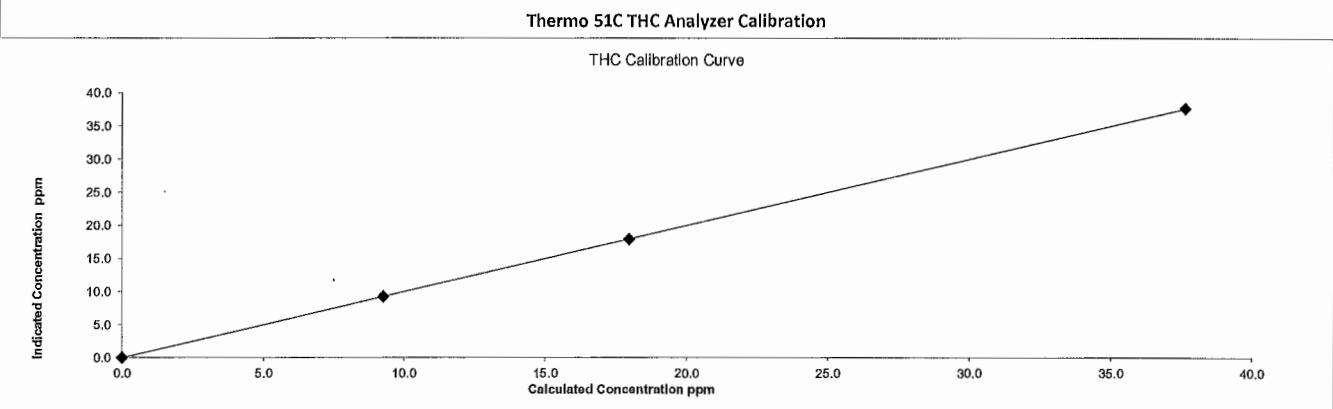
Calibrator Flow Targets:			
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	2000	0	2000
high	1935	65	2000
mid	1969	31	2000
low	1984	16	2000

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	1995	0.00	1995	0	0.12	NA
adjusted zero	1995	0.00	1995	0	0.01	NA
as found high	1933	65.00	1998	37.64	38.85	0.969
adjusted high	1933	65.00	1998	37.64	37.64	1.000
mid	1965	31.00	1996	17.97	17.89	1.005
low	1980	16.00	1996	9.27	9.21	1.008
calibrator zero	1998	0.00	1998	0	0.01	NA
Average C.F.=						1.004

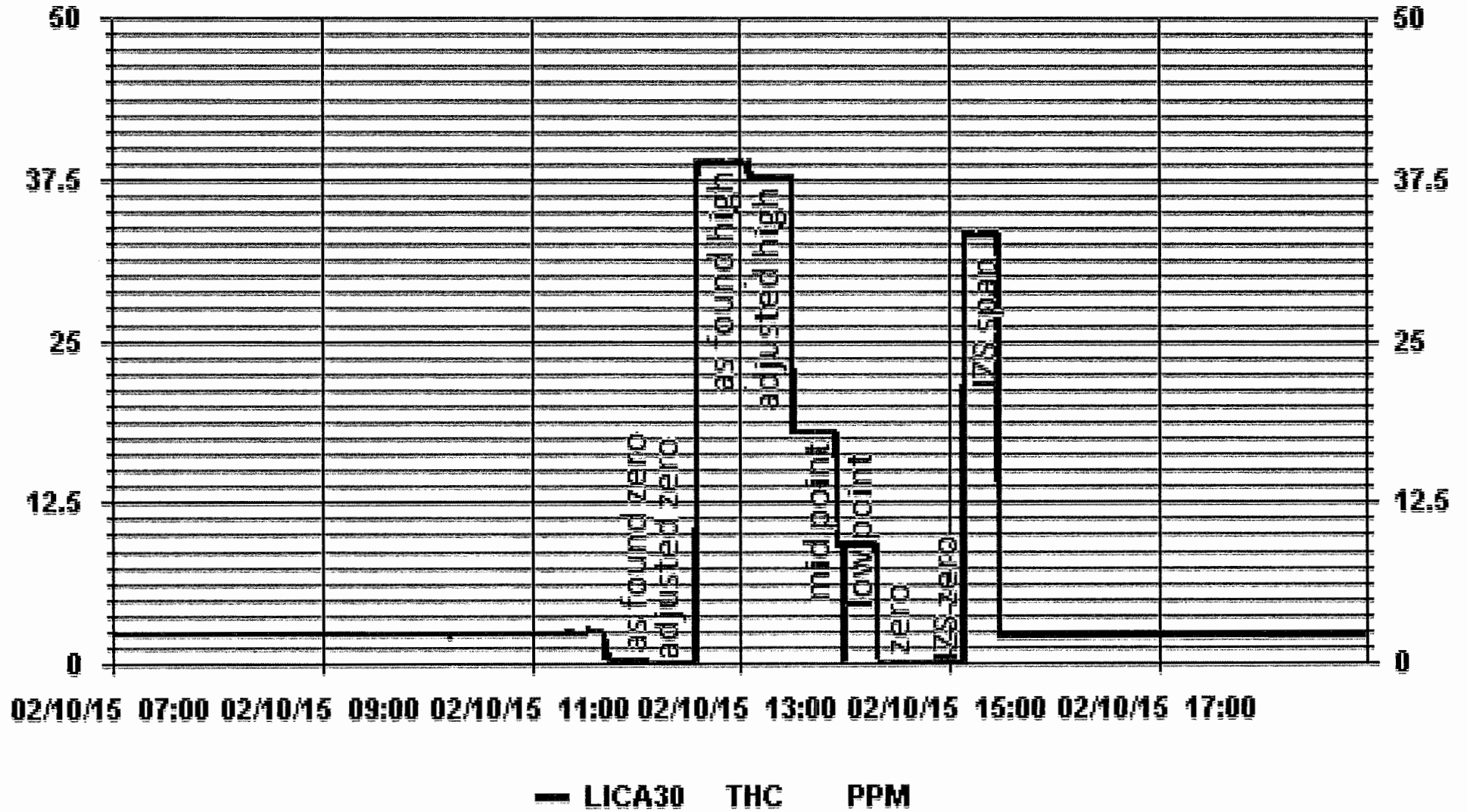
Linear Regression/Calibration Results:

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>-0.070%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>3.10%</u>	± 3% F.S.	PASS
		± 15%	PASS

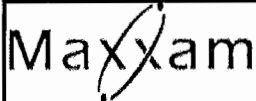
Comments:  
 Sample filter changed.



# 01 Minute Averages



***NITROGEN DIOXIDE***



API 200E NOx Analyzer Calibration

Date: 11-Feb-15  
 Company: LICA  
 Station Name/Location: Maskwa  
 Performed by: Chris W/ Alex Y

Start Time (mst): 8:07  
 End Time (mst): 14:16  
 Calibration Purpose: Monthly Calibration  
 Cal Gas Expiry Date: 12-Aug-17

Analyzer Serial Number: 593  
 Last Calibration Date: 16-Jan-15  
 Range ppb: 1000

Correction Factors:  
 As found C.F. Previous Cal High Point C.F.:  
 NO= 0.939 NO= 0.988  
 NOx= 0.939 NOx= 0.990  
 NO<sub>2</sub>= 1.009 NO<sub>2</sub>= 1.000

As found:  
 NOx SLOPE: 0.953  
 NOx OFFS: 0.8  
 NO SLOPE: 0.951  
 NO OFFS: -0.5  
 TEST: 126.7  
 SAMP FLW: 488  
 OZONE FL: 79  
 PMT: 9.0  
 NORM PMT: 14.6  
 AZERO: 9.9  
 HVPS: 633  
 RCELL TEMP: 50.0  
 BOX TEMP: 37.4  
 PMT TEMP: 6.8  
 IZS TEMP: 50.3  
 MOLY TEMP: 315.6  
 RCEL: 7.3  
 SAMP: 27.4  
 Internal Span: 316/4/312

As left:  
 NOx SLOPE: 0.889  
 NOx OFFS: -1.4  
 NO SLOPE: 0.887  
 NO OFFS: -1.7  
 TEST: 126.7  
 SAMP FLW: 486  
 OZONE FL: 78  
 PMT: 7.4  
 NORM PMT: 1.9  
 AZERO: 9.8  
 HVPS: 633  
 RCELL TEMP: 50.0  
 BOX TEMP: 38.7  
 PMT TEMP: 6.8  
 IZS TEMP: 50.0  
 MOLY TEMP: 315.6  
 RCEL: 7.0  
 SAMP: 27.4  
 Internal Span: 316/4/312

Calibrator Flow Targets:

Make & Model: Envirionics 6100  
 Serial #: 4760  
 Cal Gas Cylinder I.D. #: LL42475  
 NO Cylinder Conc. (ppm): 48.5  
 NOx Cylinder Conc. (ppm): 48.5

point	diluent (cc/min)	cal gas (cc/min)	O <sub>2</sub> setting (v or ppb)	total (cc/min)
zero	4995	0	0	4995
high	4916	78	480.00	4994
mid	4957	38	260.00	4995
low	4975	19	100.00	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	0.0	0.0	NA	NA
as found high	4914	80.20	4994	778.8	778.8	829	829	0.939	0.939
adjusted high	4914	80.20	4994	778.8	778.8	779	781	1.000	0.997
mid	4955	39.05	4994	379.2	379.2	378	377	1.003	1.006
low	4976	19.53	4996	189.6	189.6	190	191	0.998	0.993
calibrator zero	4995	0.00	4995	0	0	0.0	0.0	NA	NA
Average C.F.=								1.000	0.999

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	4914	80.20	4994	0.0	771.0	771.0	0.0	0.0	0.0	
as found NO <sub>2</sub>	4914	80.20	4994	480.0	229.0	766.0	537.0	542.0	537.0	1.009
adjusted NO <sub>2</sub>	4914	80.20	4994	480.0	229.0	766.0	537.0	542.0	537.0	1.009
gpt mid	4914	80.20	4994	260.0	475.0	767.0	293.0	296.0	293.0	1.010
gpt low	4914	80.20	4994	100.0	656.0	766.0	110.0	115.0	110.0	1.045
Average NO <sub>2</sub> C.F.=										1.022

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	1.002	0.994	0.85-1.15
b (Intercept as % of full scale)=	-0.01%	-0.03%	-0.17%	± 3% F.S.
% change in C.F. from last cal=	4.91%	5.11%	-0.93%	+/-15%
NO <sub>2</sub> converter efficiency			97.9%	>85%

Comments:

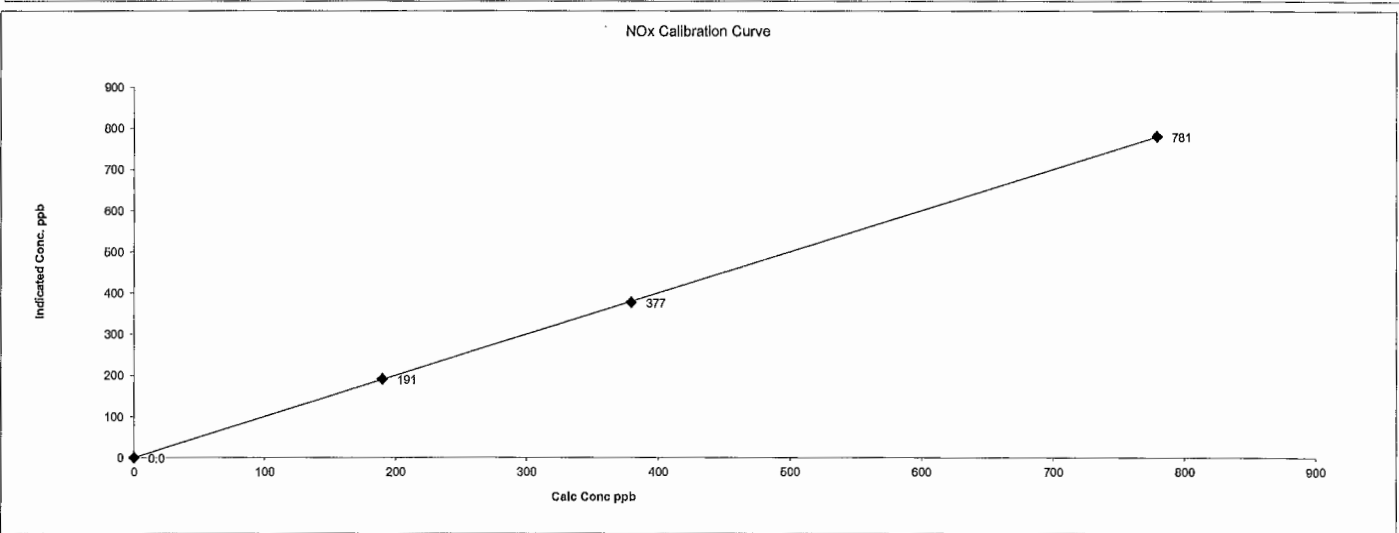
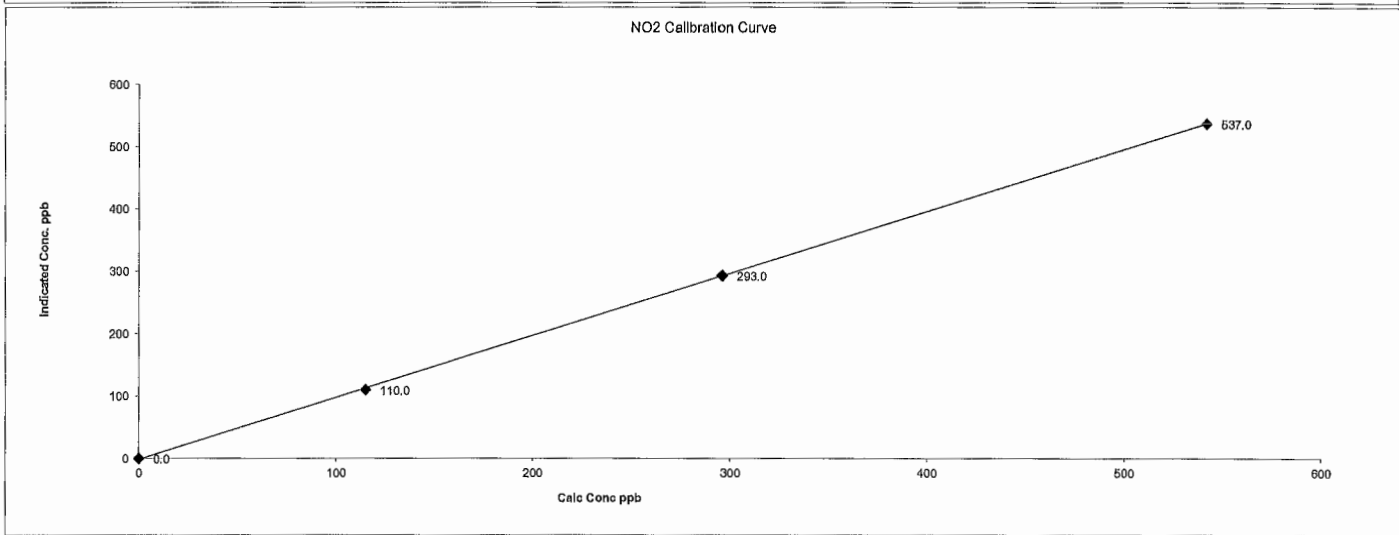
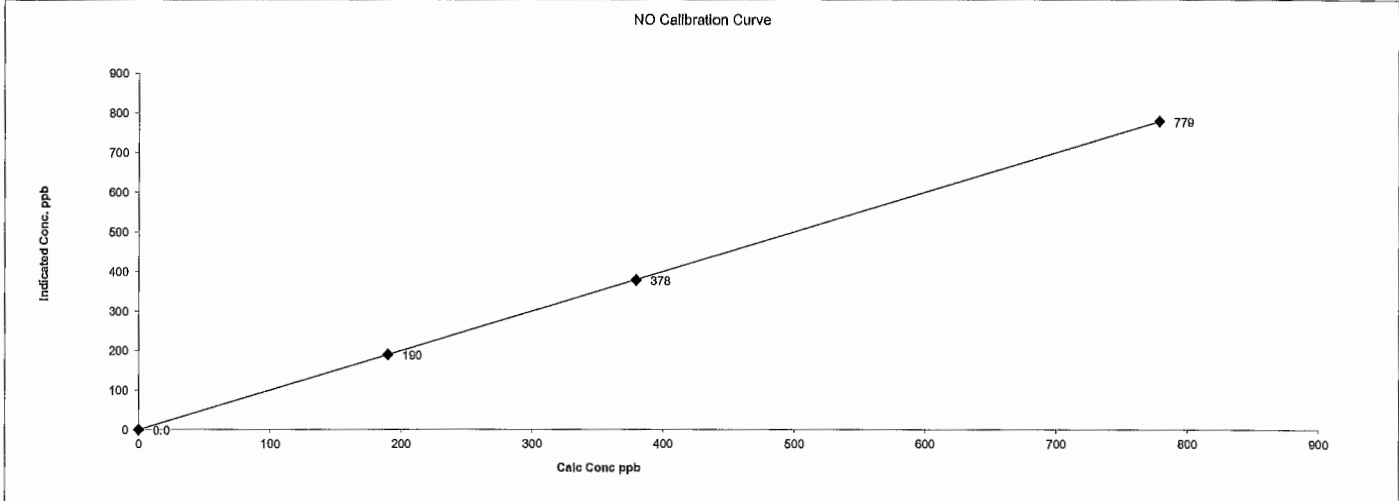
Sample filter changed. Some 1-minute data were missing.  
 No NO<sub>2</sub> adjustment made. Values copied from as found NO<sub>2</sub> for calculation only.



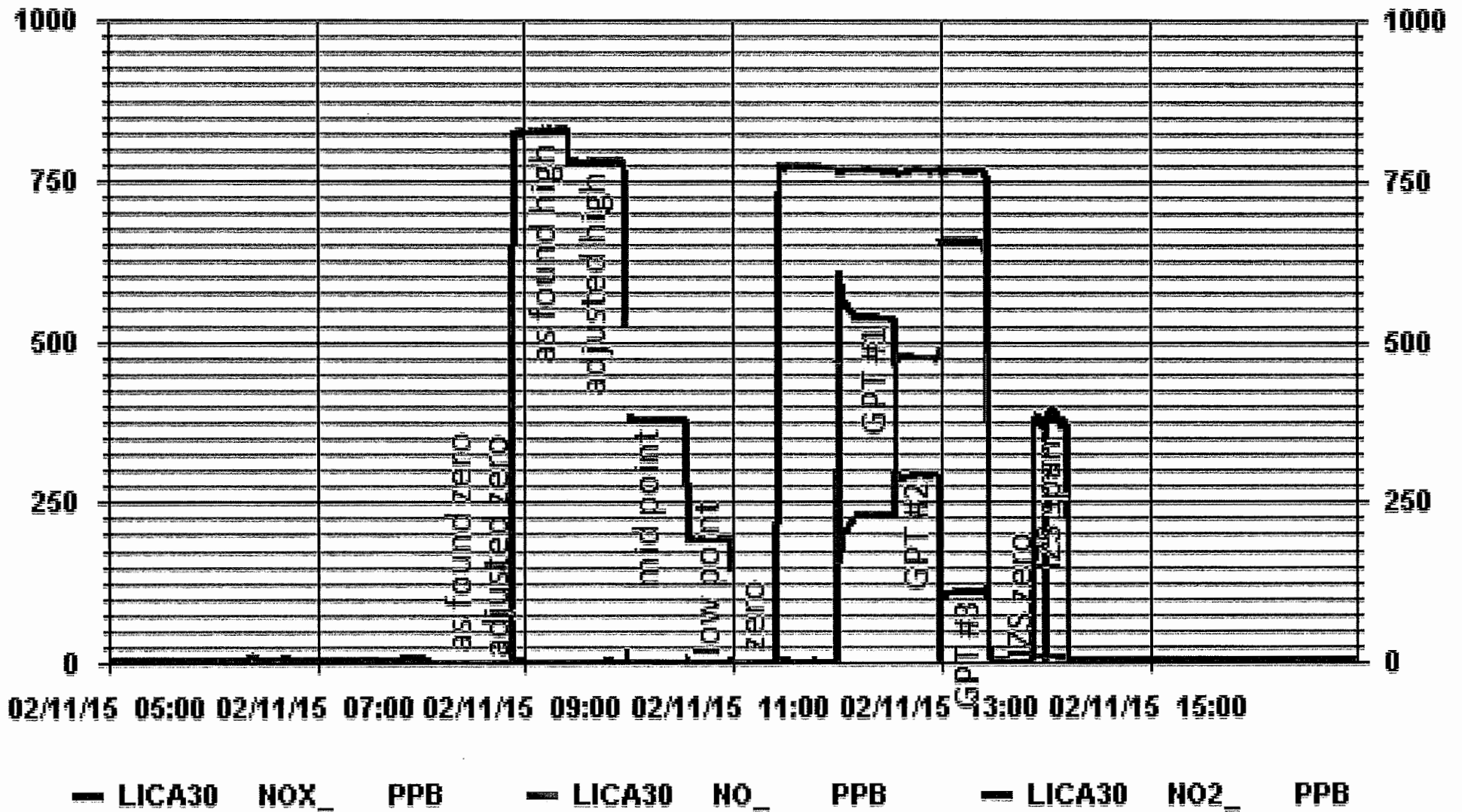
Date: 11-Feb-15  
Company: LICA  
Station Name/Location: Maskwa  
Performed by: Chris W/ Alex Y

Start Time (mst): 8:07  
End Time (mst): 14:16  
Calibration Purpose: Monthly Calibration  
Cal Gas Expiry Date: 12-Aug-17

API 200E NOx Analyzer Calibration



### 01 Minute Averages



***WIND SYSTEM***

**Met One Instruments Inc.  
Certificate of Calibration**

Instrument: **Sonic Wind Sensor** Model No.: **50.5H**  
 Manufacturer: **Met One Instruments Inc.** Serial No.: **H10703**

Sales Order No.: 101530

Customer: **Maxxam Analytics**

Tested per P.O. No.: 35-54786

Instrument Condition Within Tolerance: As Found ( ) As Left (X)  
 Corrective Action: No Adjustment ( ) Adjust (X) Repair ( )  
 Preventative Maintenance ( )

Quality Control Manual Revision: September 16, 2013 MP42201Rev. G

All Work Performed per Customers Purchase Order Requirements

Calibration Document No. 50.5-6100

Date (As Found): n/a Date (As Left Test): **3/4/2014**

Calibrated by: Dan Paul Date: 3/4/14

**Test Equipment Used for Calibration of Instruments**

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Accuracy
Digital Multimeter	keithley	197A	490833	3/8/2013	3/8/2014	+/- .02% of input
Counter	Hewlett Packard	5245L	71616181	3/8/2013	3/8/2014	+/- 0.0001%
Standard Cup Assembly	Met One Instruments	170.41	3309	4/24/2012	4/24/2017	< 15mph or 1% ws

Environmental Data: Temperature 65 to 80 DegF Vibration none  
 Humidity 20 to 70 % Radiation none

The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated hereon, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instruments accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with ISO 9001:2008 requirements.

QC Inspection by: Bryan Pearson Date: 3/10/14

## ***CALIBRATORS***



# Calibrator Performance Audit

## Hydrogen Sulphide (by Cylinder Dilution)

File No. 2012-301A

Company: Maxxam

Operator: Ting Xu

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>891</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>Dec 21/11</u>	Temperature (°C)	<u>N/A</u>
H <sub>2</sub> S Cylinder Conc.	<u>LL42548</u>	Barometric Pressure	<u>N/A</u>
H <sub>2</sub> S Cylinder S/N	<u>10.0</u>		

**Flow Measurements**

Pt. No. 1 40 Pt. No. 2 20 Pt. No. 3 11.5

Calibrator Flow (scfm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.0000	0.0000		
4960	0.0800	0.0809	1%	± 10%
4977	0.0400	0.0404	1%	± 10%
4987	0.0230	0.0234	2%	± 10%
Absolute Average Percent Difference:			1%	± 10%

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

<u>H<sub>2</sub>S</u>	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0107	0.90-1.10
b (Intercept % of FS)= 0.0439	± 3% F.S.

AENV Standards		H <sub>2</sub> S Analyzer	
<b>Audit Calibrator</b>		Make/Model	<u>Teco 45C</u>
Make/Model	<u>R&amp;R MFC 201</u>	Serial/AMU Number	<u>AMU 1624</u>
Serial/AMU Number	<u>AMU 1690</u>	Last Calibration Date	<u>Dec 13/12</u>
		Full Scale (ppm)	<u>0.1</u>

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

Auditor: Al Clark  
 Operator Signature: *Al Clark*

Date: December 13, 2012  
 Location: McIntyre Center Edmonton



## Calibrator Performance Audit

### Sulphur Dioxide (by Cylinder Dilution)

File No. 2013-337A

Company: Maxxam Operator: Chris Wesson

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>829</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>June 2011</u>	Temperature (°C)	<u>N/A</u>
SO <sub>2</sub> Cylinder Conc.	<u>49.6</u>	Barometric Pressure	<u>N/A</u>
SO <sub>2</sub> Cylinder S/N	<u>BAL3038</u>		

**Flow Measurements**

Pt. No. 1 80.6 Pt. No. 2 40.3 Pt. No. 3 20.1

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
5000	0.800	0.788	-2%	± 10%
5000	0.400	0.385	-4%	± 10%
5000	0.200	0.192	-4%	± 10%
Absolute Average Percent Difference			3%	± 10%

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

<u>SO<sub>2</sub></u>	<u>LIMITS</u>
Correlation= 0.9999	≥ 0.995
m (Slope)= 0.9859	0.90-1.10
b (Intercept % of FS)= -0.3800	± 3% F.S.

AENV Standards		SO <sub>2</sub> Analyzer	
Audit Calibrator		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>February 21, 2013</u>
		Full Scale (ppm)	<u>1.0</u>

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

Auditor: Al Clark Date: February 21, 2013  
 Operator Signature:  Location: McIntyre Center Edmonton



## Calibrator Performance Audit Oxides Of Nitrogen

File No. 2014-260A

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.	

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				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	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				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<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.					

AENV Standards		NO <sub>x</sub> Analyzer	
<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: [Signature]

Date: December 17, 2014  
Location: McIntyre Center Edmonton



## ***CALIBRATION GASES***



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2014-257CGA

Company: Maxxam Operator's Name: Limln 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 (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000			
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	485.413	48.9
Average Cylinder Concentration:					<b>49.0</b>

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. 2013-324CGA

Company: Maxxam Operator's Name: Chris Wesson  
Cylinder #: BLM005049 Concentration PPM: 10.1 Tolerance(%): 2 Certified By: Air Liquide

**Reference Calibrator and Gas:**

Make/Model: R&R MFC 201  
Serial Number: AMU 1690  
Last Verification Date: February 21, 2013  
Gas Type: H2S Conc. 20.02  
Cylinder Number: D249556

**Flow Measurement Device:**

Make/Model: Bios DC2  
Serial Number: AMU 1659  
Temp, °C: 21.0 C  
B.P.: 696 mmhg

**Reference Analyzer:**

Make/Model: Teco 45C Serial/AMU Number: 1624  
Instrument Settings: Zero: 7.5 Span: 1.023 Range: 0.1  
Last Calibration: Date: Feb 21/13 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>0.00749</del>	<del>133.586</del>	<del>10.3</del>
5103	38.2	0.0768	0.00749	133.586	10.3
5087	17.9	0.0355	0.00352	284.190	10.1
5064	9.2	0.0182	0.00182	550.435	10.0
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.1

Percent variance from Stated: 0.2

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

Auditor: Al Clark  
Operator Signature: *Al Clark*

Date: February 21, 2013  
Location: McIntyre Center Edmonton



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2013-314CGA

Company: Maxxam Operator's Name: Limin Li  
 Cylinder #: BLM001434 Concentration PPM: 10.32 Tolerance(%): 2 Certified By: Air Liquide

**Reference Calibrator and Gas:**  
 Make/Model: R&R MFC 201  
 Serial Number: AMU 1890  
 Last Verification Date: December 4, 2013  
 Gas Type: H2S Conc. 20.43  
 Cylinder Number: CAL016106

**Flow Measurement Device:**  
 Make/Model: Blae DG2  
 Serial Number: AMU 1859  
 Temp, °C: 22.5 C  
 B.P. 711 mmhg

**Reference Analyzer:**  
 Make/Model: Teco 45C Serial/AMU Number: 1824  
 Instrument Settings: Zero: 7.8 Span: 1.041 Range: 0.1  
 Last Calibration: Date: Dec 4/13 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			
5083	38.4	0.0803	0.00765	132.370	10.63
5076	17.9	0.0359	0.00353	283.575	10.18
5050	9.2	0.0177	0.00182	548.913	9.72
Average Cylinder Concentration:					<b>10.18</b>

Previous Stated Concentration PPM: 10.32

Percent variance from Stated: 1.4

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

Auditor: Al Clark  
 Operator Signature: *Al Clark*

Date: December 4, 2013  
 Location: McIntyre Center Edmonton



Praxair Canada, Inc.  
 9501 54th Street  
 Edmonton, AB T5B 2X5  
 Tel: 780-443-0775  
 Fax: 780-443-5302

03/27/2014

MAXXAM ANALYTICS INC "NA"  
 3372 49TH ST  
 EDMONTON, AB T6B 2L7

Work Order No. 20248656  
 Customer Reference No.

Product Lot/Batch No Z552 4 085 02  
 Product Part No NI ME600P2P-AQ

### CERTIFICATE OF ANALYSIS

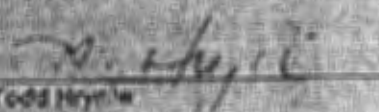
Primary Standard

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

Analytical Instruments: Mettler-Toledo Analytical Balance-ID2x/USA--  
 Hewlett-Packard (Agilent)-8890--GC-FID

Cylinder Style: AQ  
 Cylinder Pressure @ TCF: 2200 psig  
 Cylinder Volume: 82.0 ltr  
 Valve Outlet Connection: CGA-350  
 Cylinder NO(s): LL35874

Filling Method: Gravimetric  
 Date of Fill: 03/24/2014  
 Expiration Date: 03/26/2017

  
 Analyst: Todd Hoyt

This certificate of analysis was prepared in Praxair Canada, Inc. in accordance with procedures outlined in the following standards, regulations, or special procedure techniques. The customer standard (where a certified supplier Praxair Canada, Inc. tolerance is listed) shall be given precedence to weights measured in the National Institute of Standards and Technology (NIST), Measurement Canada, or Canada's NIST - Canada Reference Standard when specified.

NIST Reference Standards for Accuracy: U.S. & Canada are for gas analysis results in U.S. units unless otherwise noted.			
1. Total Accuracy: All Analytes	1. Gas Chromatography with External Standard	2. Gas Chromatography with External Standard	3. Gas Chromatography with Flame Ionization Detector
2. Gas Chromatography with Photo Ionization Detector	2. Gas Chromatography with Internal Standard	3. Gas Chromatography with Refractive Index Detector	4. Gas Chromatography with Photoacoustic Detector
3. Gas Chromatography with Resonance Ion Capture	3. Gas Chromatography with Thermal Conductivity Detector	4. Weight Loss Method with Thermal Conductivity Detector	5. Infrared FTIR Analysis
4. Mass Spectrometry with or without Synchrotron Source	4. Reference Analytical Methods	5. Gravimetric	6. Gas Density Method
5. Gas Chromatography with Mass Spectrometry	5. Gas Chromatography with Thermal Conductivity Detector	6. Gravimetric	7. Gas Density Method
	6. Reference Analytical Methods	7. Gravimetric	8. Gas Density Method
	7. Gas Chromatography with Thermal Conductivity Detector	8. Gravimetric	9. Gas Density Method

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

**JOB #:2833-2015-02-31- C**

**FEBRUARY 2015**

Prepared for:

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

**Attention: MIKE BISAGA**

DATE: **March 16, 2015**

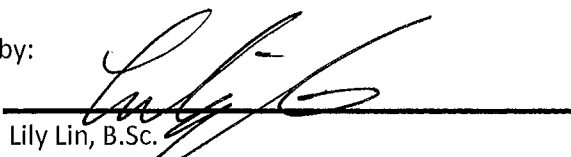
Prepared by:



Wunmi Adekanmbi, M.Sc.

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:



Lily Lin, B.Sc.

Customer Service Supervisor, Air Services, Maxxam Analytics

## SUMMARY

In FEBRUARY 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 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 summary of results is presented on the following pages.

The PM2.5 did not meet the 90% operational time requirement due to instrument failure. AENV Reference number: 296041.

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 (%)	
						OBJECTIVES			EXCEEDENCES		MONTHLY AVERAGE		1-HOUR
PARAMETER	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	3	21	8	8.2	NNW	0.6	4	100.0
H2S (PPB)	10	3	0	0	0	1	VAR	VAR	VAR	VAR	0.2	4	100.0
THC (PPM)	-	-	-	-	2.2	3.1	13	3	11.6	NE	2.7	18	100.0
NO2 (PPB)	159	-	0	-	2.1	17.4	13	3	11.6	NE	7.4	12	100.0
NO (PPB)	-	-	-	-	0.6	6.6	4	13	18.5	SW	1.6	4	100.0
NOX (PPB)	-	-	-	-	2.6	17.7	13	3	11.6	NE	7.9	12	100.0
O3 (PPB)	82	-	0	-	34	45	23	VAR	VAR	VAR	40.7	23	100.0
PM2.5 (UG/M3)	-	30	-	0	8.7	36.0	6	11	24.3	ENE	20.2	12	82.6
RELATIVE HUMIDITY (%)	-	-	-	-	67.5	89	19	VAR	VAR	VAR	77.6	24	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	931	946	VAR	VAR	VAR	VAR	943	21	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	-12.5	8.9	23, 23	14, 15	13.4 13.7	WNW WNW	3.3	23	100.0
PRECIPITATION (MM)	-	-	-	-	0.0	1.2	14	4	10	ESE	0.2	14	100.0
VECTOR WS (KPH)	-	-	-	-	11.3	26.6	6	5	-	ENE	20.2	6	100.0
VECTOR WD (DEG)	-	-	-	-	NNE	-	-	-	-	-	-	-	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**

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	Hydrogen Sulphide
	Total Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
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	Wind Speed
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	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Nitrogen Dioxide
	Ozone
	Particulate Matter
	Wind System
	Calibrators
	Calibration Gases

## 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>, PM<sub>2.5</sub>, WS, WD, RH, BP, Precipitation, Temperature and O<sub>3</sub>.

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 is to be operational 90% of the time (minimum), on a monthly basis.

All data was within Provincial objectives for the month.

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

The analyzer zeroed low on January 31 as the analyzer required a calibration. A full calibration was performed on February 2. The as found parameters could not be read as the analyzer's screen was dark. The front screen was changed prior to the calibration. The calibration result met AMD requirements. The analog output calibration was performed on the same day. The 3-point calibration was repeated on February 12 to ensure analyzer's functionality.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 12.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 12.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 12.

**OZONE (O3)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 12.

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

Two Teom audits were performed this month: one was completed on February 5, and the other audit was performed on February 17. Both the inlet filter and the FDMS filter were replaced before the audits were started. The unit failed a leak check on February 5. Troubleshooting was performed. The check was repeated and it passed. As we could not determine when the issue that caused the leak check failure started, data was invalidated back to the January 25 audit. 110 hours of data were discarded due to this event this month. 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. 7 hours of data were invalidated as the data were below  $-3 \text{ ug/m}^3$  this month. Operational uptime was 82.6%. Reference Number: 296041.

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

The wind system was working well throughout the month.

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.

**RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month.

**BAROMETRIC PRESSURE (BP)**

The pressure sensor was working well throughout the month.

**PRECIPITATION**

Both the rain gauge system and heating system were working well throughout the month.

**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 team consisted of Limin Li, Alexander Yakupov, Christopher Wesson, and Raja Ashraf.

## **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 was above the 90% requirement, except PM2.5 which was 82.6%. AENV Reference number: 296041.

## **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: Team Operation
- Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM<sub>2.5</sub>) - R&P 1405F Team 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

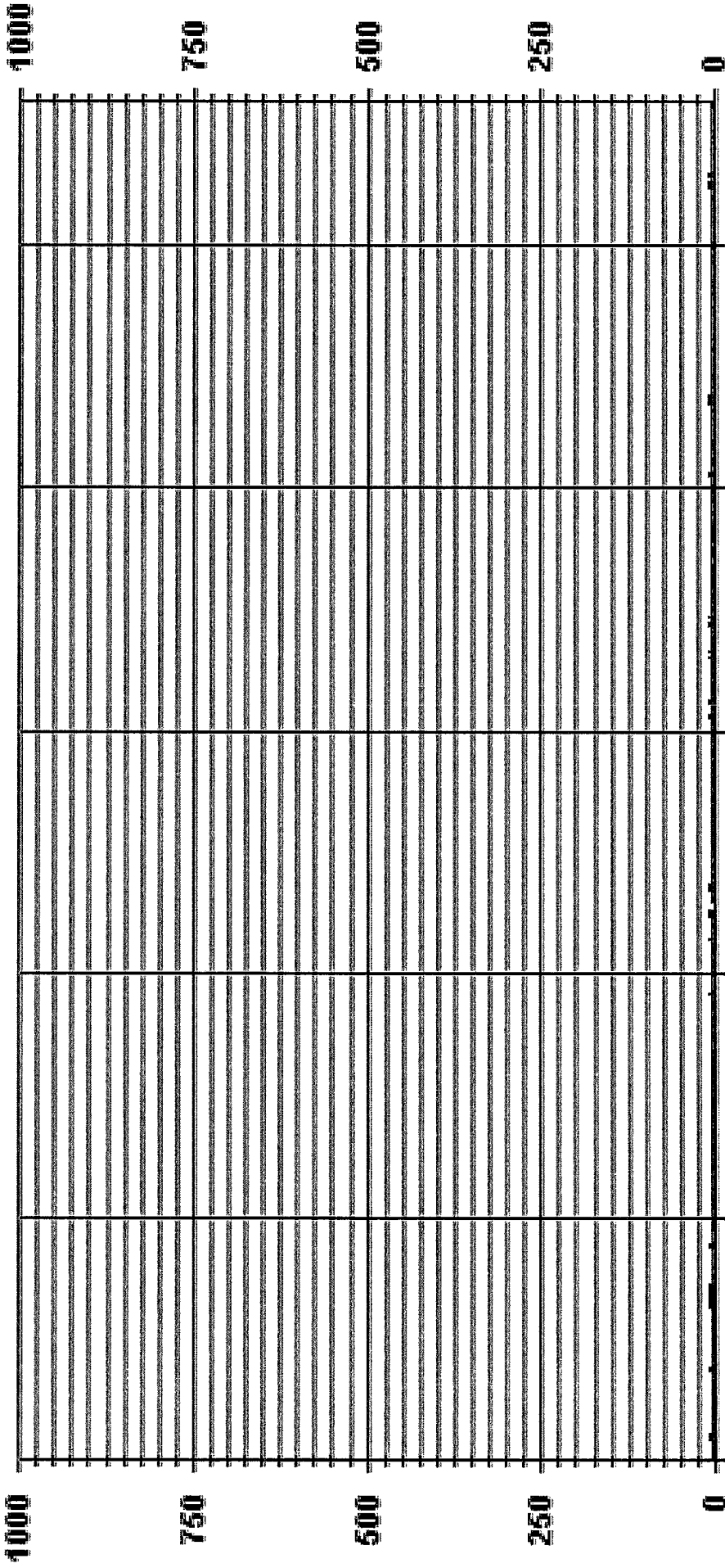
***APPENDIX I***  
***CONTINUOUS MONITORING DATA RESULTS***

***SULPHUR DIOXIDE***





01 Hour Averages



LICA31 S02\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31-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	24-HOUR	RDGS.	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.		
DAY 1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	S	0	0	0	0	0	0	0	0	0	2	0.7	24	
2	0	0	0	0	0	0	0	0	0	1	0	1	1	S	0	C	C	C	C	C	C	1	1	1	1	0.4	24	
3	1	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	1	0.5	24	
4	0	1	1	1	2	2	2	2	2	2	2	S	3	3	2	2	2	1	1	1	1	1	1	1	3	1.6	24	
5	1	1	0	1	1	0	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	1	1	2	1.0	24	
6	1	1	1	1	1	1	1	1	1	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24	
8	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
9	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
10	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1.0	24	
11	0	0	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	2	1.0	24	
12	1	1	1	S	1	1	2	2	C	C	C	C	C	C	1	1	1	1	S	2	2	2	1	1	2	1.3	24	
13	1	1	S	S	1	1	0	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.4	24	
14	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0.1	24	
15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0.0	24	
16	1	1	1	1	1	1	1	3	2	2	2	1	1	1	2	2	2	1	1	1	1	1	S	1	3	1.3	24	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	S	1	1	2	1.0	24	
18	2	1	2	2	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	3	1.3	24	
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1.0	24	
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	0	0	0	1	0.9	24	
21	1	1	1	1	1	0	1	4	4	3	2	2	1	0	0	0	0	S	0	0	0	0	0	0	4	1.0	24	
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	S	1	1	1	2	2	1	2	2	1.2	24	
23	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	3	1.2	24	
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	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	S	1	1	0	0	1	1	1	1	1	1	0.9	24	
26	1	1	1	1	1	1	1	1	1	1	1	2	S	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24	
27	1	1	1	1	2	2	2	2	2	1	2	S	2	2	1	1	1	1	1	1	1	1	1	1	2	1.3	24	
28	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4	24	
HOURLY MAX	3	3	2	2	2	3	2	4	4	3	2	2	3	3	2	2	2	2	2	2	2	2	2	1	2			
HOURLY AVG	0.9	0.9	0.9	0.9	1.0	0.9	1.0	1.2	1.1	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.7	0.7	0.7				

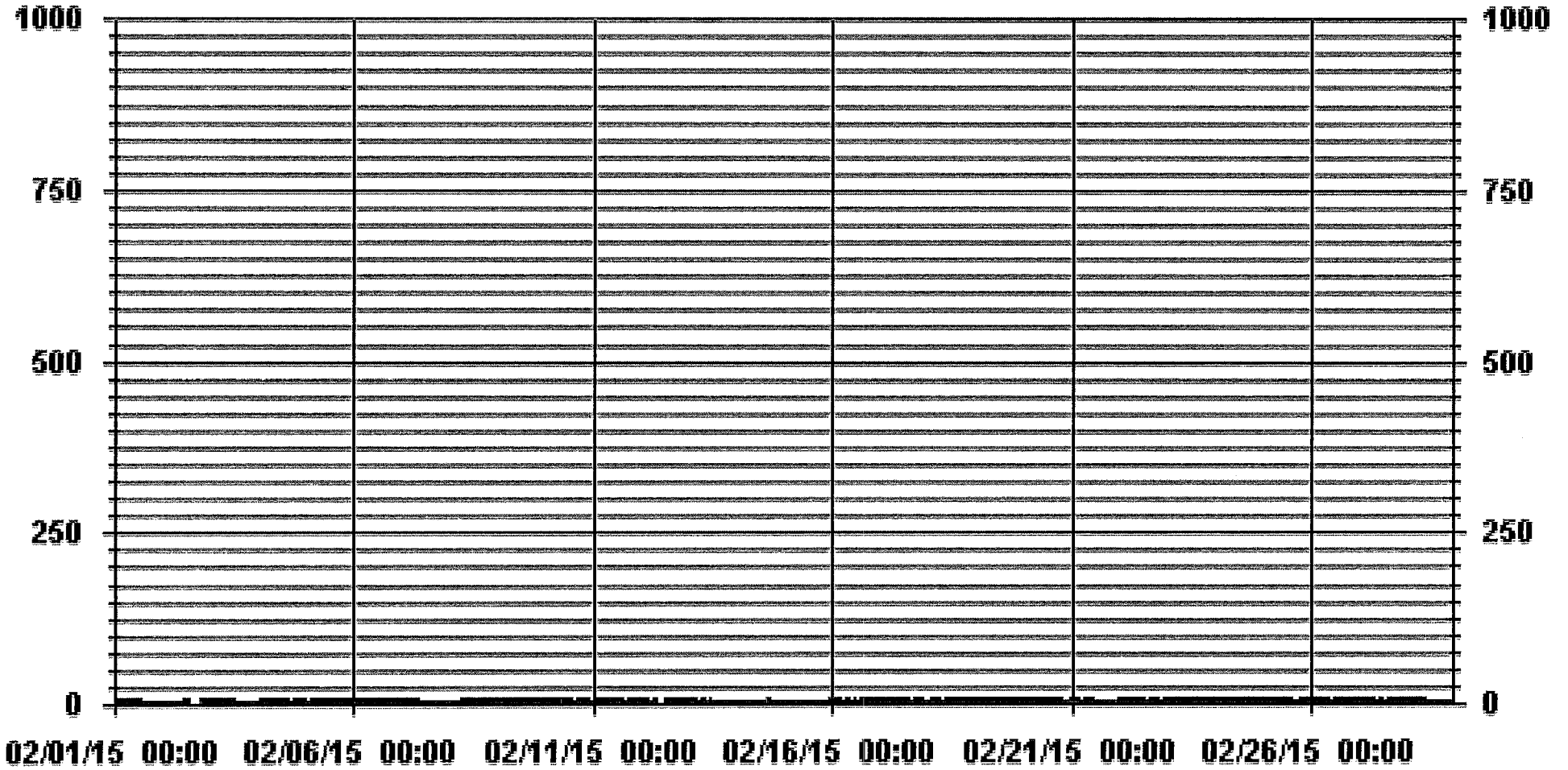
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	486
MAXIMUM INSTANTANEOUS VALUE:	4 PPB @ HOUR(S) 7, 8 ON DAY(S) 21, 21
VAR-VARIOUS	
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	12 HRS
STANDARD DEVIATION:	0.61
OPERATIONAL TIME:	672 HRS

### 01 Hour Averages



— LICA31 SO2MAX PPB

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

February 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : SO2\_  
 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	
< 20	5.69	3.00	5.69	10.12	5.69	4.58	5.37	1.89	10.60	5.69	4.90	3.63	4.90	8.06	8.38	11.70	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	5.69	3.00	5.69	10.12	5.69	4.58	5.37	1.89	10.60	5.69	4.90	3.63	4.90	8.06	8.38	11.70	

Calm : .00 %

Total # Operational Hours : 632

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	36	19	36	64	36	29	34	12	67	36	31	23	31	51	53	74	632
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	36	19	36	64	36	29	34	12	67	36	31	23	31	51	53	74	

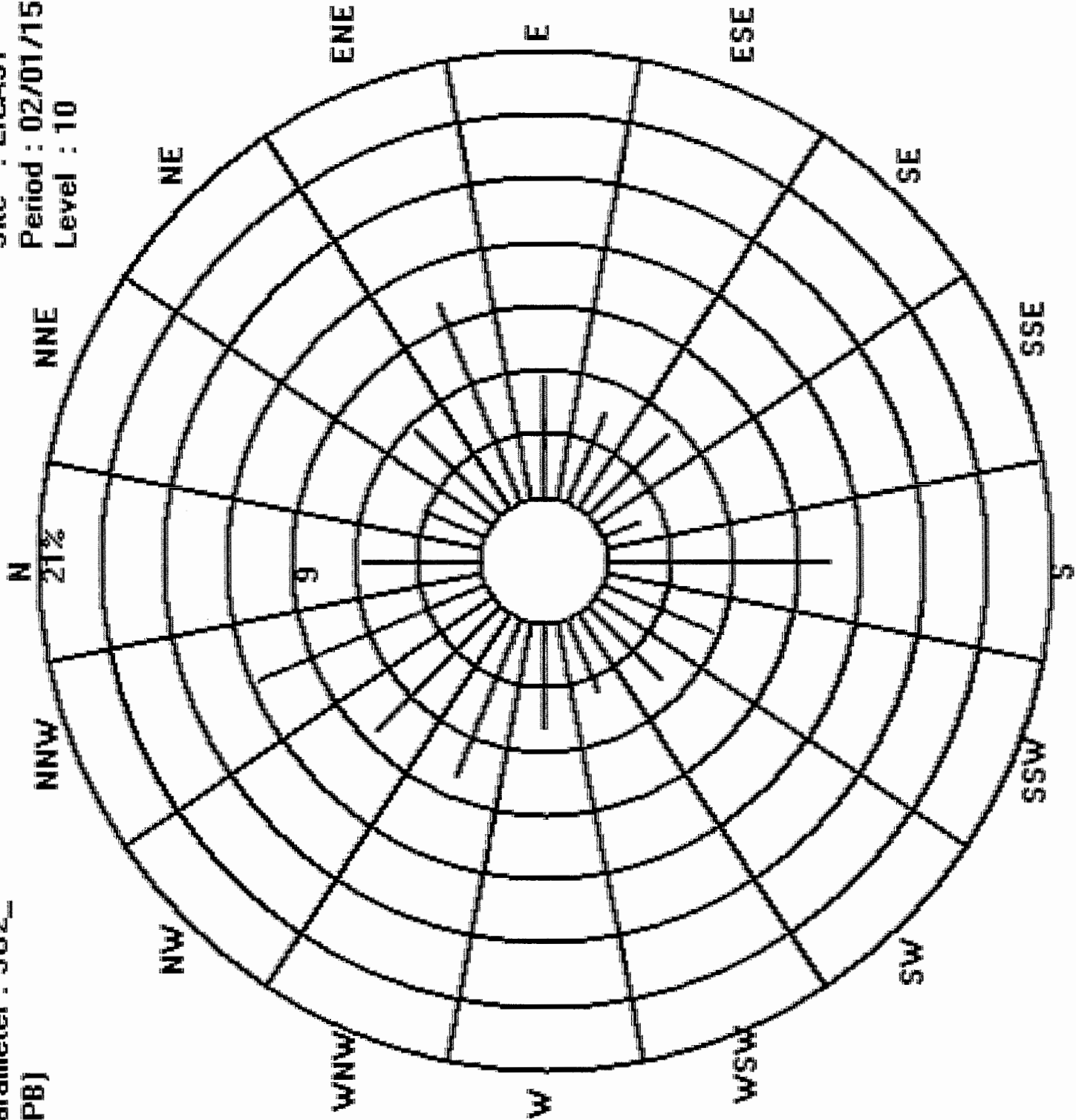
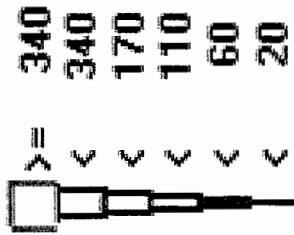
Calm : .00 %

Total # Operational Hours : 632

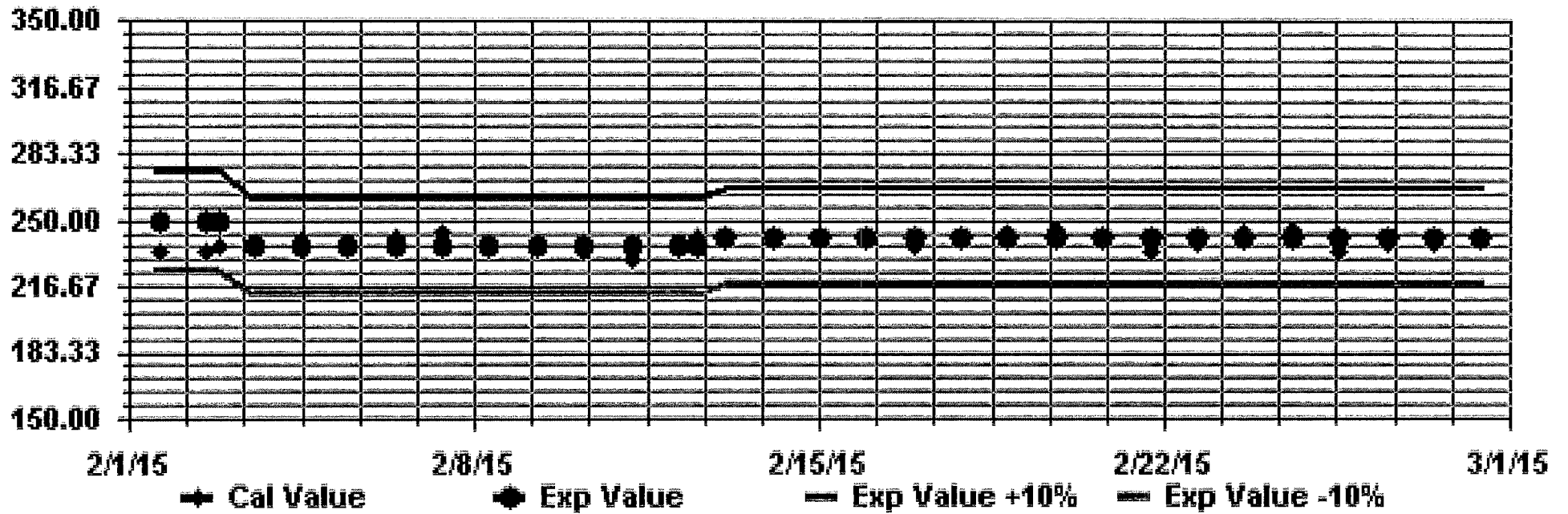
Site : LICA31  
 Period : 02/01/15-02/28/15  
 Level : 10

Logger : 31 Parameter : SO2\_

Class Limits (PPB)



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



***HYDROGEN SULPHIDE***





HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR				
		1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX	AVG.	RDGS.				
DAY																															
1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
2		0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
3		0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
4		0	0	0	0	0	0	0	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
5		0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
6		0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
7		0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
8		0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
9		0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
10		0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
11		0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0	24		
12		0	0	1	S	0	0	0	0	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
13		0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
14		0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
15		S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0	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	S	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	S	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	S	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	S	1	0	1	1	1	1	0.1	24	
20		1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0.2	24	
21		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0	24	
22		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.0	24	
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
25		0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
26		0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
27		0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
28		0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
HOURLY MAX		1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	1			
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	0.1			

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

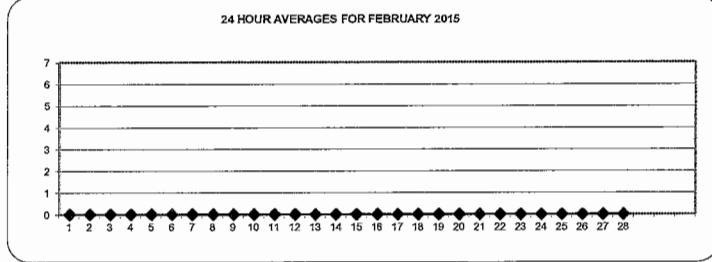
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 10 PPB 24-HR 3 PPB

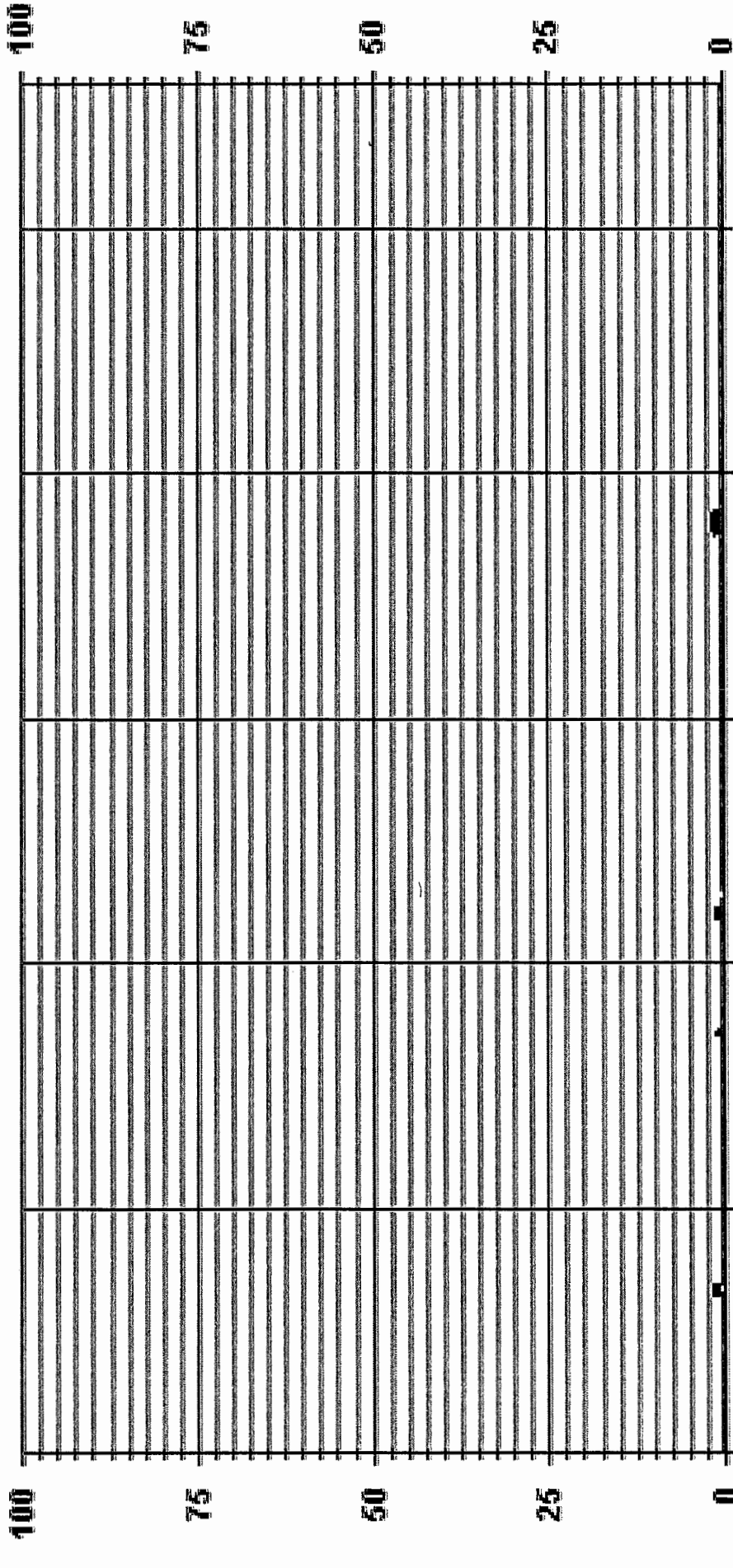
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF 24-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	16				
MAXIMUM 1-HR AVERAGE:	1	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	0.2	PPB			4, 20
					VAR-VARIOUS
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	672	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.16		MONTHLY AVERAGE:	0	PPB

24 HOUR AVERAGES FOR FEBRUARY 2015



01 Hour Averages



— LICA31 H2S\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31-C

HYDROGEN SULPHIDE 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	24-HOUR	RDGS.
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	
DAY																											
1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	S	0	0	0	0	0	0	0	0	0	1	0.2	24
2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	0.4	24
3	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	0	0	0	0	0	0	1	1	0.7	24
4	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	24
5	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
6	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
7	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
8	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24
9	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
10	1	1	1	1	1	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
11	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0.2	24
12	1	1	1	S	0	0	0	0	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	1	0.2	24
13	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0.1	24
14	0	S	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	2	0.2	24
15	S	0	2	0	1	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	S	2	0.3	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0.0	24
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0	24
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	0.2	24
20	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	S	1	0	0	0	0	0	1	0.7	24
21	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	3	0.1	24
22	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	S	0	0	0	0	0	0	0	1	0.1	24
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	S	0	0	2	0	0	0	0	0	2	0.2	24
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	3	3	0.1	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0.0	24
26	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	1	1	1	1	1	1	0.3	24
27	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	24
28	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
HOURLY MAX	3	1	2	2	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1	1	1	1	3			
HOURLY AVG	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.1	0.2	0.2	0.2	0.3	0.2	0.4			

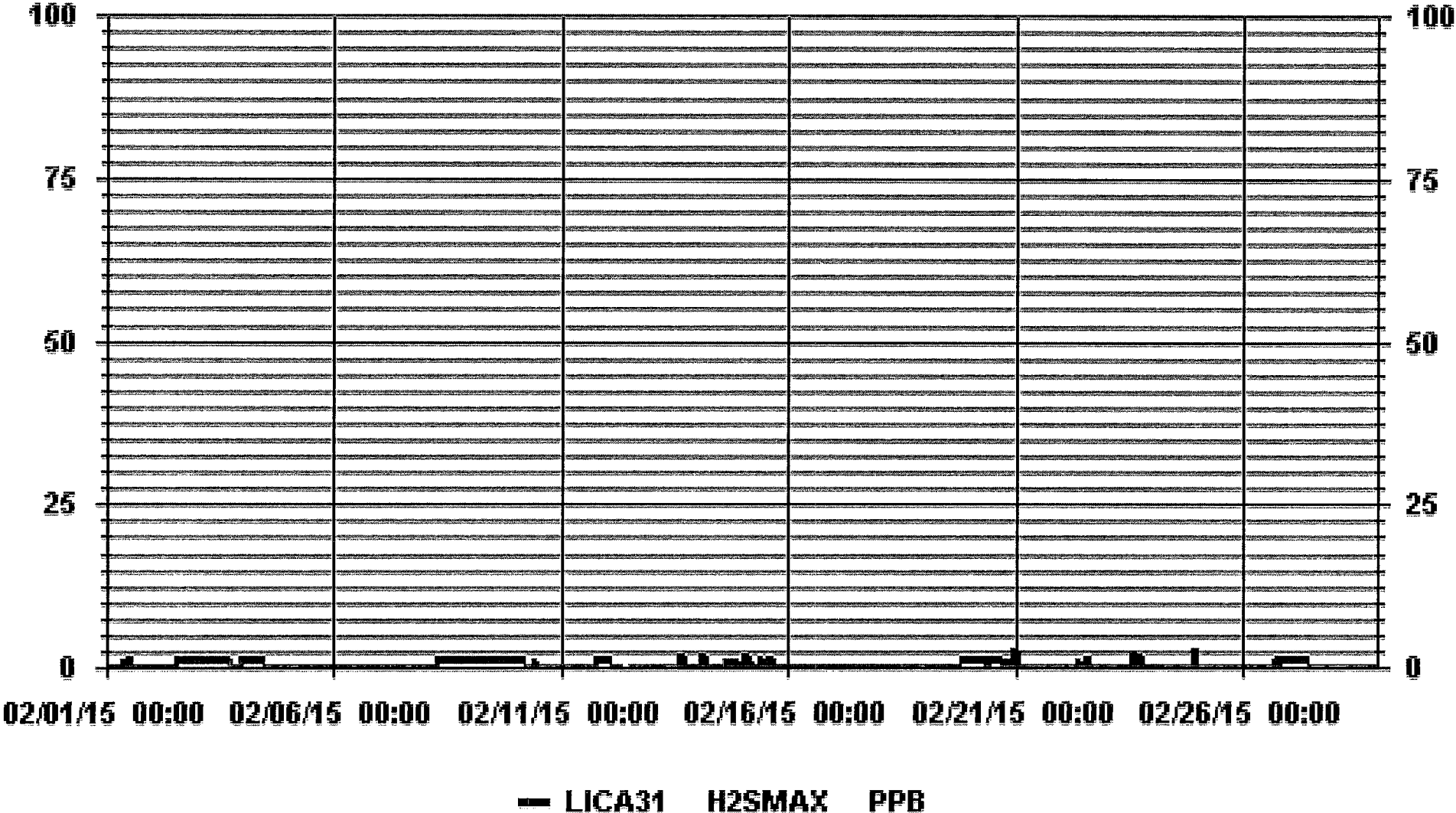
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	151
MAXIMUM INSTANTANEOUS VALUE:	3 PPB @ HOUR(S) 0, 23 ON DAY(S) 21, 24
VAR-VARIOUS	
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	6 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	0.47

# 01 Hour Averages



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

February 2015

Distribution By % Of Samples

Logger Id : 31  
Site Name : LICA31  
Parameter : H2S\_  
Units : PPB

Wind Parameter : WDR  
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	5.65	2.98	5.65	10.04	5.65	4.55	5.33	1.88	10.51	5.65	5.33	3.76	5.02	8.00	8.32	11.61	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	5.65	2.98	5.65	10.04	5.65	4.55	5.33	1.88	10.51	5.65	5.33	3.76	5.02	8.00	8.32	11.61	

Calm : .00 %

Total # Operational Hours : 637

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3	36	19	36	64	36	29	34	12	67	36	34	24	32	51	53	74	637
< 10																	
< 50																	
>= 50																	
Totals	36	19	36	64	36	29	34	12	67	36	34	24	32	51	53	74	

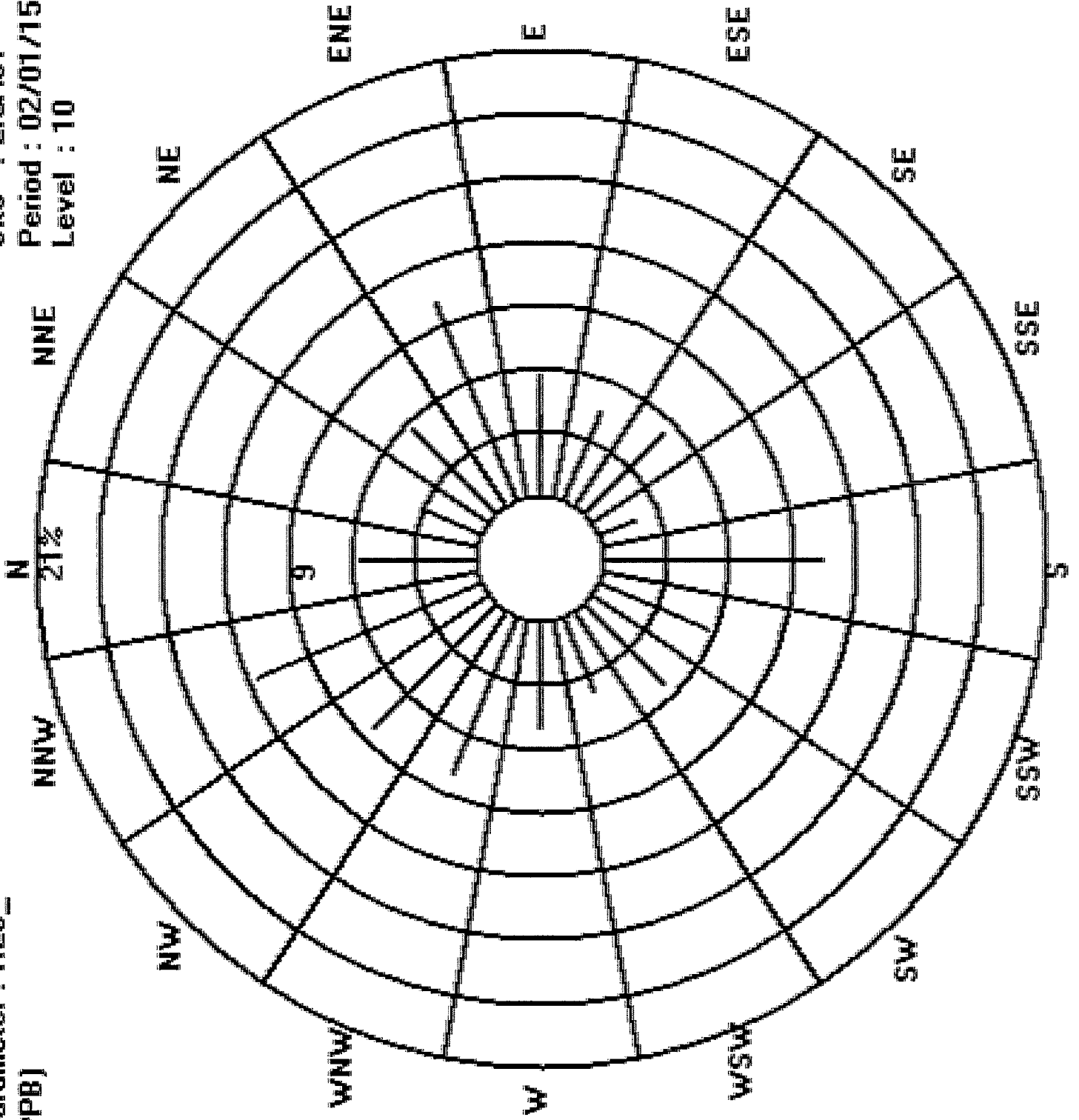
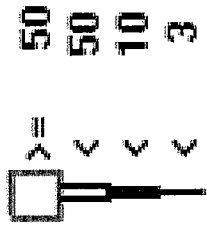
Calm : .00 %

Total # Operational Hours : 637

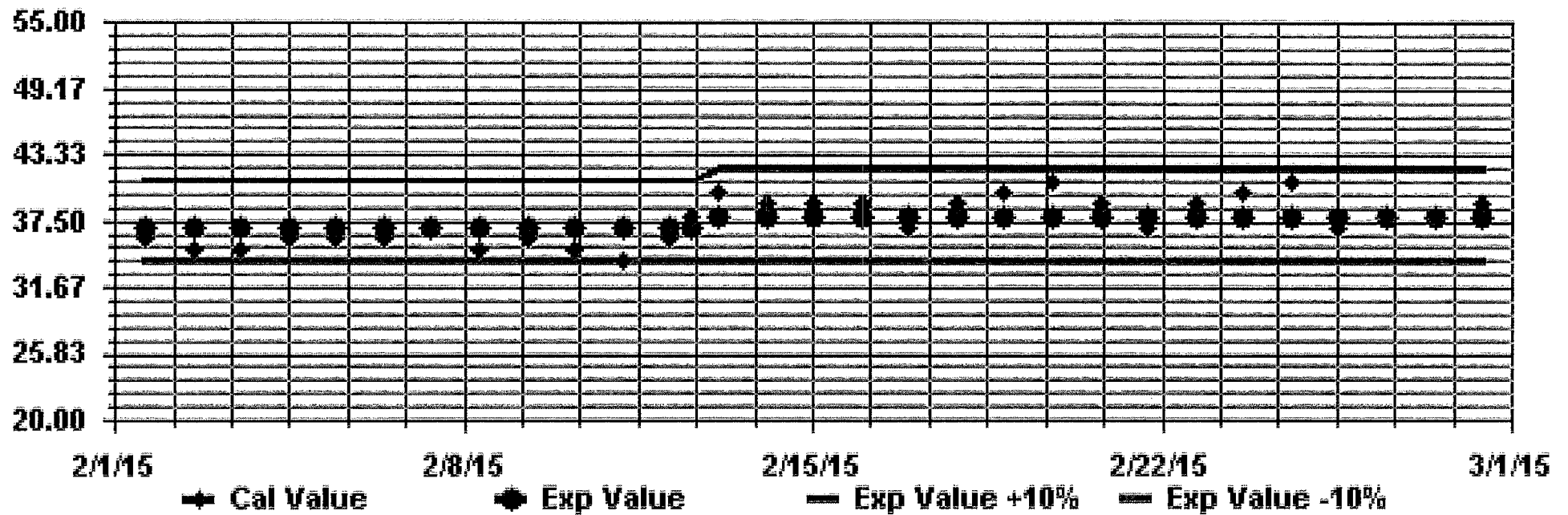
Site : LICA31  
Period : 02/01/15-02/28/15  
Level : 10

Logger : 31 Parameter : H25\_

Class Limits (PPB)



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



***TOTAL HYDROCARBON***





TOTAL HYDROCARBONS (THC) hourly averages in ppm

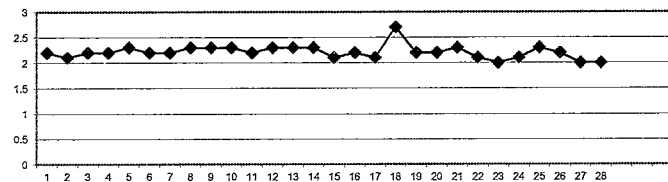
MST

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	24-HOUR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
DAY																												1	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.2	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	24	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	S	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	24	3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	S	2.1	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	24	4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	S	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.3	2.2	24	5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	S	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.5	2.3	24	6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	S	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	2.2	24	7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	S	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.2	24	8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	S	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	24	9	2.4	2.6	2.5	2.6	2.5	2.3	S	2.3	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.6	2.3	24	10	2.3	2.3	2.3	2.3	2.3	S	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.3	24	11	2.4	2.4	2.4	2.5	S	2.2	2.3	2.3	2.2	2.2	2.1	2.2	2.4	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.4	2.5	2.2	24	12	2.0	2.0	1.9	S	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.4	2.4	C	C	C	C	2.4	2.4	2.4	2.4	2.5	2.4	2.3	2.5	2.3	24	13	2.4	3.0	S	3.1	2.8	2.5	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	3.1	2.3	24	14	2.3	S	2.2	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	24	15	S	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	S	2.2	2.1	24	16	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	S	2.1	2.4	2.2	24	17	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	S	2.3	2.5	2.5	2.1	24	18	2.6	2.7	2.7	2.7	2.6	2.7	2.7	2.7	2.6	2.7	2.6	2.5	2.7	2.8	2.7	2.8	2.8	2.8	2.8	2.8	S	2.6	2.6	2.6	2.8	2.7	24	19	2.5	2.5	2.5	2.5	2.6	2.7	2.7	2.7	2.6	2.4	2.2	2.1	2.0	1.8	1.8	1.9	1.8	1.8	1.8	S	2.0	2.0	2.0	2.0	2.7	2.2	24	20	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	S	2.1	2.1	2.1	2.2	2.2	2.3	2.2	24	21	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	S	2.0	2.1	2.1	2.1	2.1	2.1	2.4	2.3	24	22	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	S	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.1	24	23	2.2	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	24	24	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	S	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.1	24	25	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.3	24	26	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.1	S	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.2	2.2	2.3	2.2	24	27	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	S	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.0	24	28	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	S	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.0	24	HOURLY MAX	2.6	3.0	2.7	3.1	2.8	2.7	2.7	2.7	2.6	2.7	2.6	2.5	2.7	2.8	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.5	2.6	2.6	2.6		HOURLY AVG	2.2	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
1	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.2	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	S	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	S	2.1	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	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	S	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.3	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	S	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.5	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	S	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	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	S	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	S	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
9	2.4	2.6	2.5	2.6	2.5	2.3	S	2.3	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.6	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
10	2.3	2.3	2.3	2.3	2.3	S	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
11	2.4	2.4	2.4	2.5	S	2.2	2.3	2.3	2.2	2.2	2.1	2.2	2.4	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.4	2.5	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
12	2.0	2.0	1.9	S	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.4	2.4	C	C	C	C	2.4	2.4	2.4	2.4	2.5	2.4	2.3	2.5	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
13	2.4	3.0	S	3.1	2.8	2.5	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	3.1	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
14	2.3	S	2.2	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
15	S	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	S	2.2	2.1	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
16	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	S	2.1	2.4	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
17	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	S	2.3	2.5	2.5	2.1	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
18	2.6	2.7	2.7	2.7	2.6	2.7	2.7	2.7	2.6	2.7	2.6	2.5	2.7	2.8	2.7	2.8	2.8	2.8	2.8	2.8	S	2.6	2.6	2.6	2.8	2.7	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
19	2.5	2.5	2.5	2.5	2.6	2.7	2.7	2.7	2.6	2.4	2.2	2.1	2.0	1.8	1.8	1.9	1.8	1.8	1.8	S	2.0	2.0	2.0	2.0	2.7	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
20	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	S	2.1	2.1	2.1	2.2	2.2	2.3	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
21	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	S	2.0	2.1	2.1	2.1	2.1	2.1	2.4	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
22	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	S	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.1	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
23	2.2	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
24	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	S	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.1	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
25	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.3	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
26	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.1	S	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.2	2.2	2.3	2.2	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
27	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	S	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.0	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
28	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	S	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.0	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
HOURLY MAX	2.6	3.0	2.7	3.1	2.8	2.7	2.7	2.7	2.6	2.7	2.6	2.5	2.7	2.8	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.5	2.6	2.6	2.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
HOURLY AVG	2.2	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

STATUS FLAG CODES

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

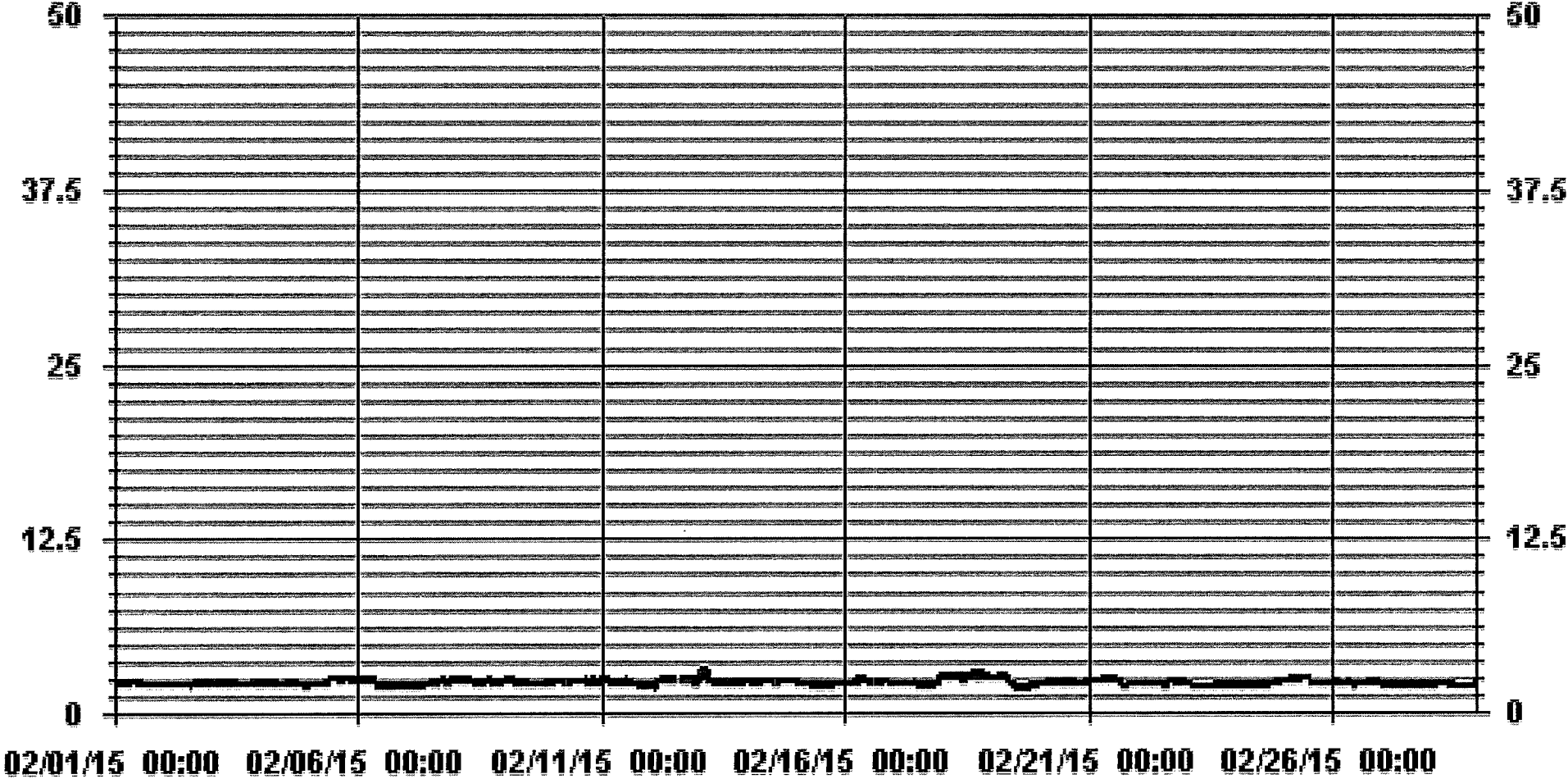
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	639			
MAXIMUM 1-HR AVERAGE:	3.1	PPM @ HOUR(S)	3	ON DAY(S) 13
MAXIMUM 24-HR AVERAGE:	2.7	PPM		ON DAY(S) 18
				VAR-VARIOUS
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	672
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0
STANDARD DEVIATION:	0.19		MONTHLY AVERAGE:	2.2
				PPM

### 01 Hour Averages



— LICA31 THC PPM



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31- C

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

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.	RDGS.		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00					
DAY 1	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	2.2	S	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	24	
2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	S	2.2	2.3	2.2	2.2	2.2	2.4	2.2	2.2	2.2	2.2	2.2	2.4	2.2	24	
3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	S	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	24	
4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	S	2.3	2.4	2.3	2.2	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.4	2.2	24	
5	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	S	2.7	2.6	2.6	2.6	2.5	2.5	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	2.4	24	
6	2.5	2.5	2.5	2.6	2.5	2.5	2.5	2.4	2.4	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.6	2.3	24	
7	2.2	2.4	2.2	2.2	2.1	2.2	2.2	2.3	S	2.3	2.2	2.3	2.2	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.9	2.7	2.8	2.8	2.9	2.4	24	
8	2.7	2.4	2.5	2.5	2.5	2.5	S	2.3	2.3	2.3	2.4	2.3	2.4	2.4	2.5	2.6	2.7	2.4	2.3	2.4	2.4	2.3	2.3	2.3	2.7	2.4	24		
9	2.5	2.7	2.7	2.7	2.4	S	2.4	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.3	2.7	2.4	24	
10	2.3	2.3	2.3	2.3	2.3	S	2.2	2.3	2.3	2.3	2.3	2.3	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	2.3	24	
11	2.4	2.4	2.5	2.6	S	2.8	2.7	2.5	2.5	2.3	2.2	2.2	2.4	2.4	2.2	2.3	2.3	2.2	2.1	2.3	2.1	2.1	2.1	2.1	2.1	2.8	2.3	24	
12	2.0	2.0	2.0	S	2.4	2.4	2.4	2.5	2.5	2.5	2.5	C	C	C	C	C	C	2.5	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.4	2.5	24	
13	2.5	4.4	S	3.2	3.2	2.6	2.4	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.4	2.3	2.3	4.4	2.5	24		
14	2.3	S	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.4	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.5	2.3	24	
15	S	2.2	2.2	2.2	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	2.1	2.1	2.1	2.1	2.1	S	2.2	2.1	24
16	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.5	2.5	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.4	S	2.1	2.5	2.3	24	
17	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.1	2.2	2.3	2.3	2.2	2.2	2.1	2.0	2.2	2.2	2.1	2.2	2.2	2.1	S	2.4	2.6	2.6	2.2	2.4	24	
18	2.7	2.7	2.8	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.7	2.6	2.9	2.9	2.7	3.0	3.0	2.9	2.9	3.0	S	2.9	2.8	2.8	3.0	2.8	2.4	24	
19	2.6	2.7	2.7	2.6	2.7	2.8	2.8	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.9	1.9	1.9	1.9	1.9	S	2.0	2.0	2.1	2.1	2.8	2.3	24		
20	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	S	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	24	
21	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.3	24	
22	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	S	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.2	2.2	24	
23	2.2	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	S	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.1	24	
24	2.3	2.2	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	S	2.1	2.1	2.1	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.1	24	
25	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	S	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.6	2.3	24	
26	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	S	2.1	2.1	2.1	2.1	2.1	2.3	2.4	2.4	2.3	2.2	2.2	2.4	2.2	2.4	24	
27	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	S	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24	
28	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	24	
HOURLY MAX	2.7	4.4	2.8	3.2	3.2	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.9	2.9	2.7	3.0	3.0	2.9	2.9	3.0	2.9	2.9	2.9	2.8	2.8				
HOURLY AVG	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.3	2.3	2.3					

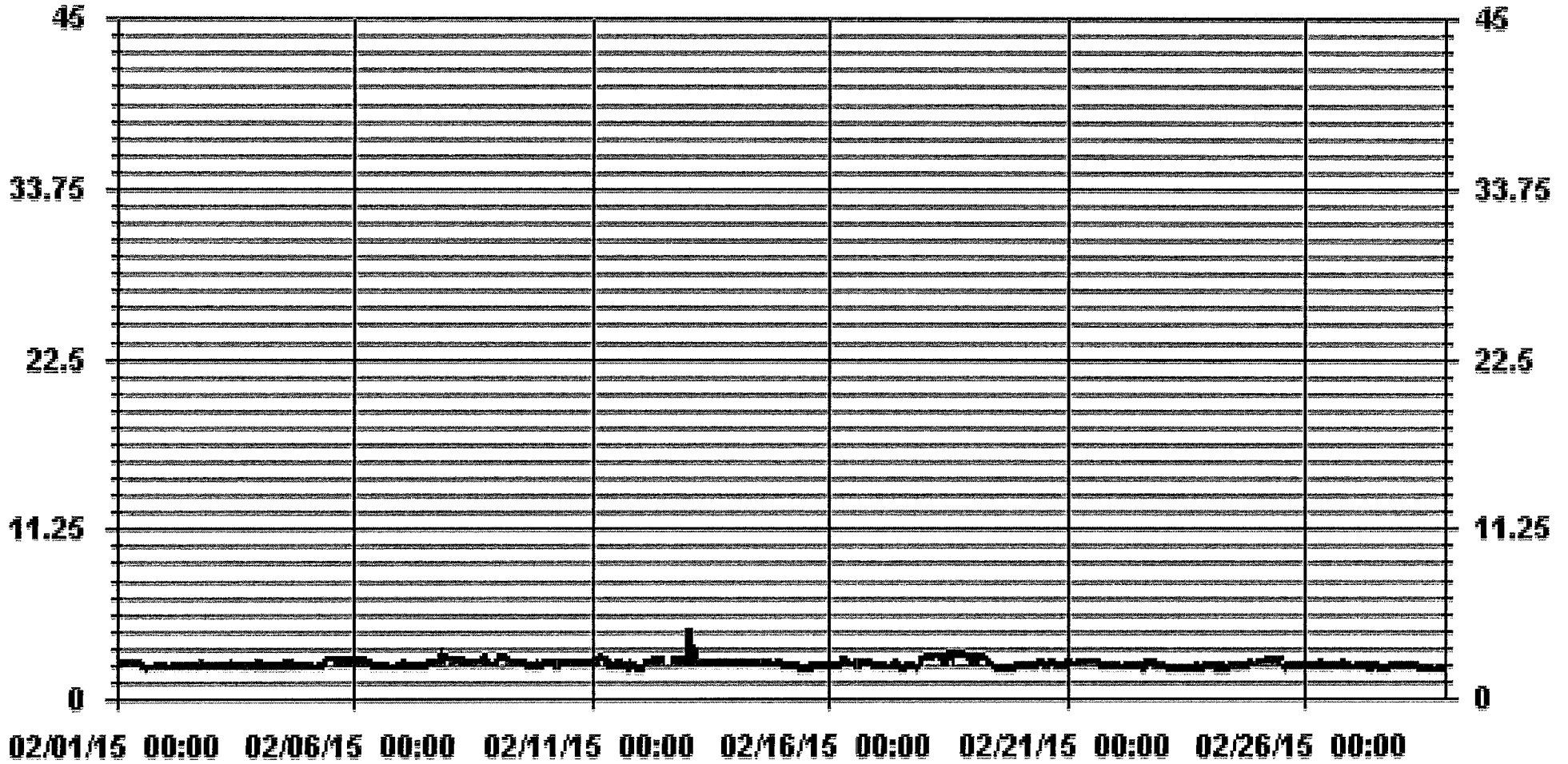
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	637
MAXIMUM INSTANTANEOUS VALUE:	4.4 PPM @ HOUR(S) 1 ON DAY(S) 13
	VAR-VARIOUS
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	6 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	0.22

### 01 Hour Averages



— LICA31 THCMAX PPM

LICA31  
 THC / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 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	5.63	2.81	5.47	10.01	5.63	4.53	5.32	1.87	10.48	5.32	5.94	3.75	5.00	7.98	8.29	11.58	99.68
< 10.0	.00	.15	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.31
< 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	5.63	2.97	5.63	10.01	5.63	4.53	5.32	1.87	10.48	5.32	5.94	3.75	5.00	7.98	8.29	11.58	

Calm : .00 %

Total # Operational Hours : 639

Distribution By Samples




Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	36	18	35	64	36	29	34	12	67	34	38	24	32	51	53	74	637
< 10.0		1	1														2
< 50.0																	
>= 50.0																	
Totals	36	19	36	64	36	29	34	12	67	34	38	24	32	51	53	74	

Calm : .00 %

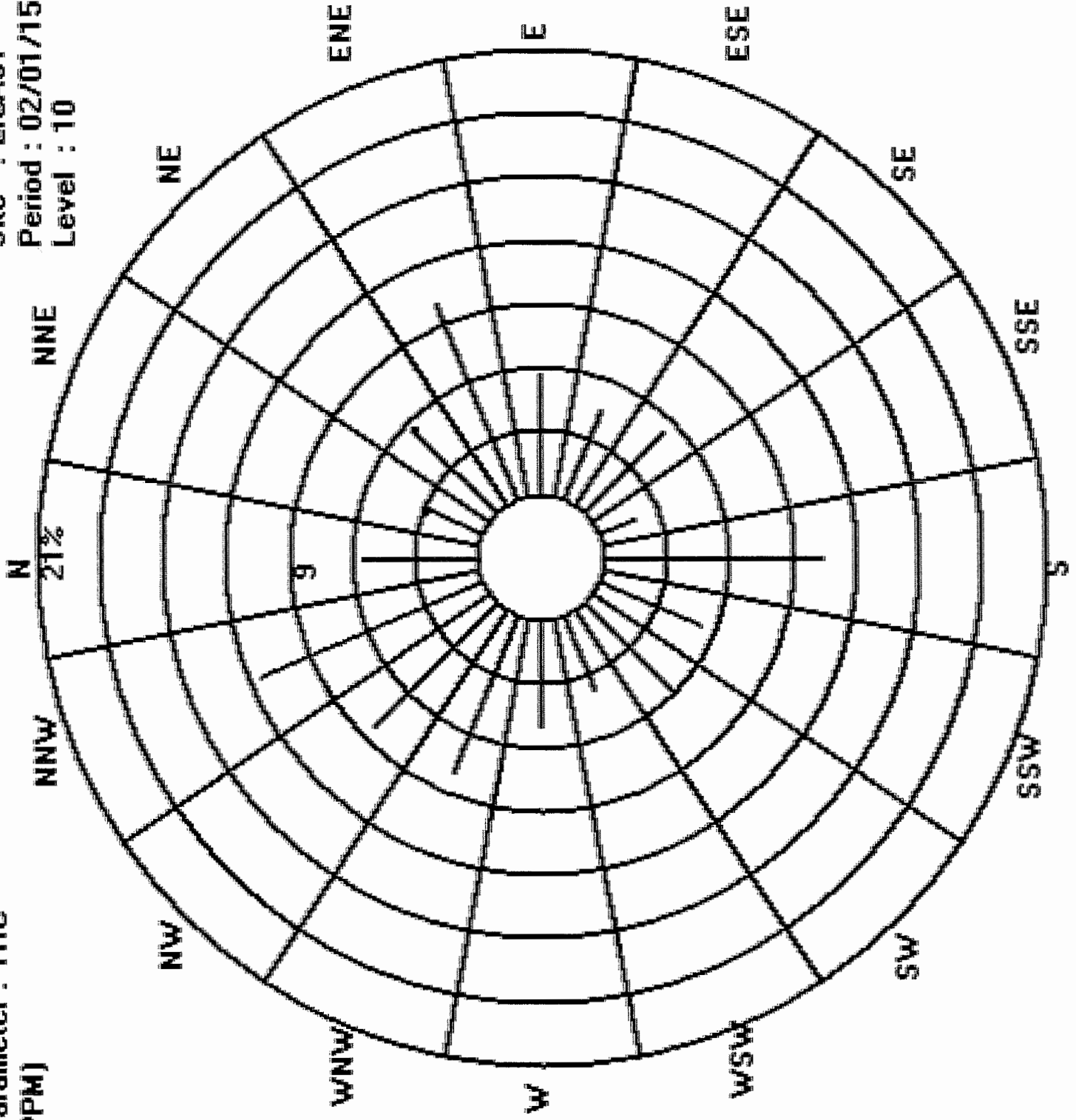
Total # Operational Hours : 639

Logger : 31 Parameter : THC

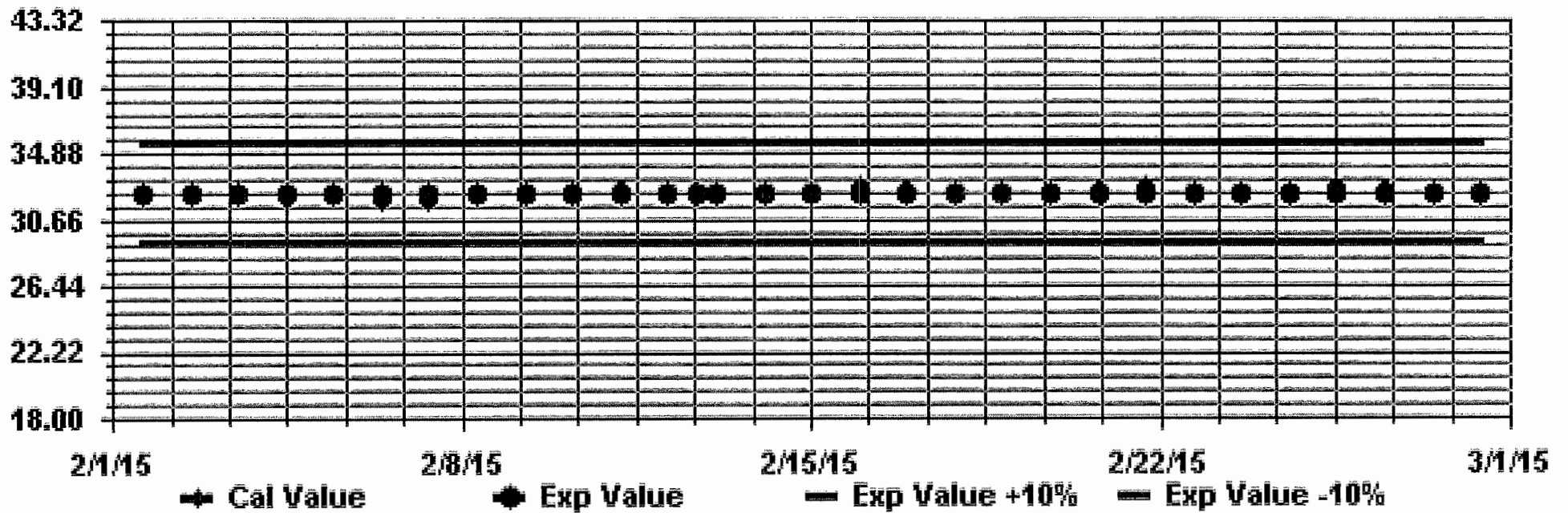
Class Limits (PPM)

-  >= 50.0
-  < 50.0
-  < 10.0
-  < 3.0

Site : LICA31  
Period : 02/01/15-02/28/15  
Level : 10



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

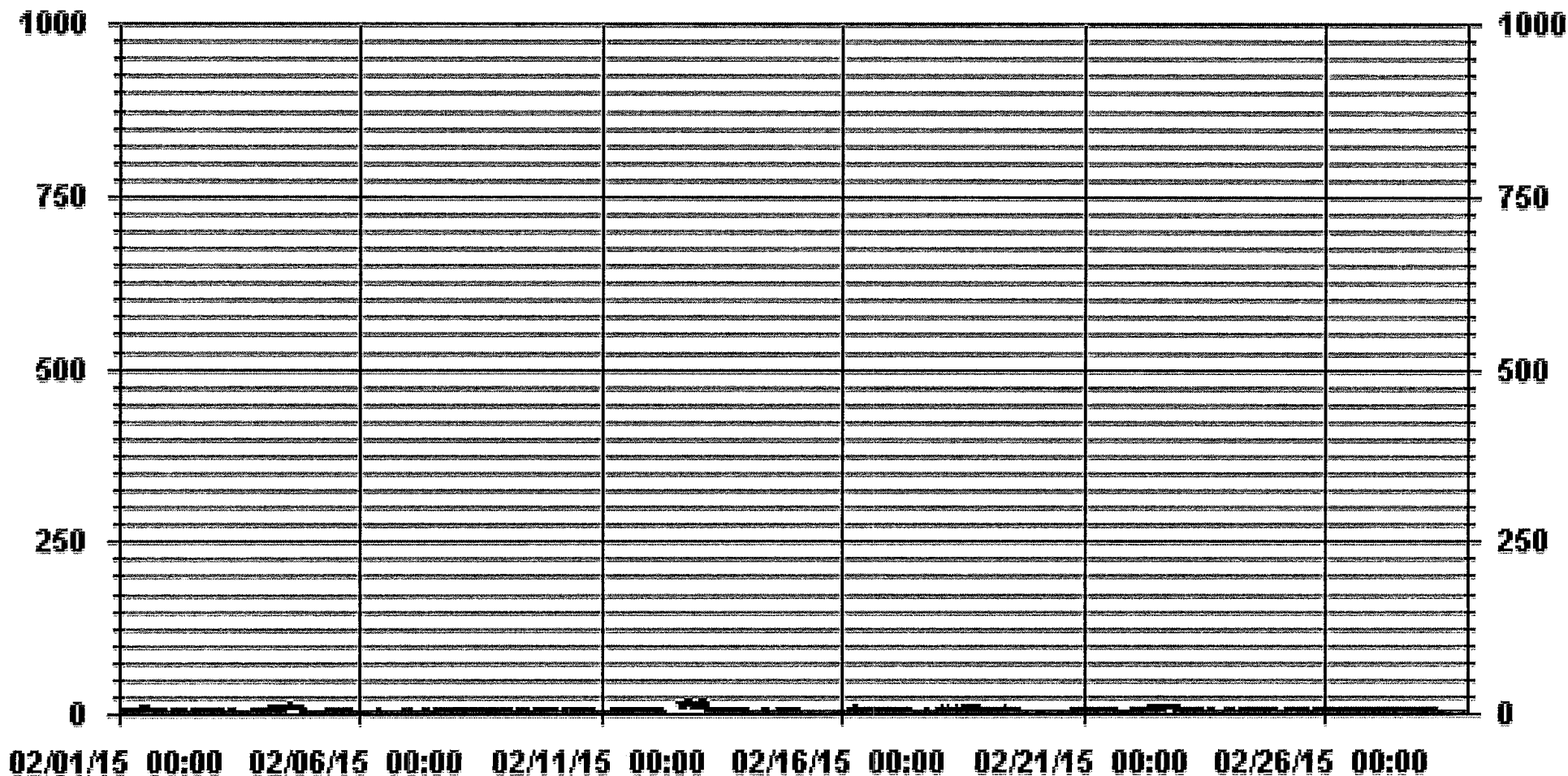


***OXIDES OF NITROGEN***





### 01 Hour Averages



— LICA31 NOX\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31- C

OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY	24-HOUR	RDGS.
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.		
DAY 1	3.3	3.4	3.5	3.4	3.6	3.9	4.2	4.5	4.7	5.9	8.4	10.7	10.0	8.9	S	4.4	4.9	5.8	6.3	3.2	1.9	2.0	1.9	2.2	10.7	4.8	24	
2	1.8	1.5	1.8	1.8	3.2	1.9	2.8	2.7	2.7	2.0	1.9	1.6	3.3	S	3.0	2.7	2.6	37.0	3.8	3.5	2.2	2.4	5.6	2.5	37.0	4.1	24	
3	2.1	2.7	1.9	1.7	1.4	1.5	1.7	1.4	3.3	4.1	3.0	2.6	S	1.9	2.2	1.9	1.2	19.9	2.2	3.7	1.6	6.5	3.5	2.2	19.9	3.2	24	
4	3.0	4.4	5.4	7.0	7.0	6.9	6.5	6.8	6.6	7.3	8.5	S	13.2	24.1	15.0	12.6	9.8	44.4	10.1	8.3	5.8	2.9	2.0	1.3	44.4	9.5	24	
5	1.2	1.1	1.0	1.0	0.9	0.9	1.4	2.7	3.0	3.2	S	5.0	5.2	4.0	2.5	2.1	2.1	1.9	2.7	2.8	2.1	1.7	1.2	1.3	5.2	2.2	24	
6	1.4	1.3	1.2	1.5	1.3	1.5	1.4	1.5	1.6	S	1.9	1.5	1.4	1.1	1.0	1.0	1.5	1.5	1.0	1.0	1.3	1.6	1.8	2.1	2.1	1.4	24	
7	1.8	1.6	1.7	1.9	1.6	1.4	1.7	1.7	S	1.6	1.5	1.7	3.1	3.3	2.3	2.7	3.0	3.3	3.8	3.0	2.5	2.5	2.5	2.2	3.8	2.3	24	
8	2.7	2.8	2.5	2.7	2.3	2.0	2.6	S	3.0	3.1	3.3	3.1	2.6	2.8	4.1	3.7	4.6	5.0	4.8	3.9	4.4	2.9	2.9	3.2	5.0	3.3	24	
9	5.6	6.5	6.1	5.7	5.6	3.0	S	2.2	2.0	2.0	2.0	1.7	1.9	1.3	1.6	1.7	1.7	1.5	2.0	2.1	3.1	3.4	4.2	2.8	6.5	3.0	24	
10	3.1	2.6	3.2	3.3	2.6	S	2.1	2.7	2.7	3.7	4.2	3.9	3.8	4.0	4.8	3.4	3.7	3.4	3.1	2.7	2.3	2.0	1.3	1.3	4.8	3.0	24	
11	1.3	1.0	2.4	3.5	S	5.6	4.8	5.5	5.4	5.1	4.8	4.7	6.6	5.3	4.5	4.7	3.5	3.4	3.3	3.3	3.0	2.7	3.0	3.0	6.6	3.9	24	
12	2.4	2.4	2.4	S	2.7	2.7	3.4	4.3	C	C	C	C	C	C	C	C	11.6	11.9	17.2	17.4	17.7	19.1	14.7	12.6	19.1	9.5	24	
13	14.6	39.0	S	19.3	19.1	10.0	6.7	5.2	4.1	4.1	4.1	4.2	4.2	3.9	2.8	2.8	2.5	2.6	2.4	2.1	2.1	1.8	1.9	2.2	39.0	7.0	24	
14	2.1	S	1.6	1.4	1.1	1.4	1.4	2.1	2.1	2.6	2.9	2.3	1.5	2.0	1.6	1.5	2.1	3.0	2.8	2.5	2.7	2.7	2.9	3.0	3.0	2.1	24	
15	S	3.2	2.1	1.9	1.3	1.5	1.5	1.2	1.5	1.7	1.4	2.3	1.3	8.6	1.0	1.3	1.4	1.5	1.5	1.3	1.0	1.0	1.0	S	8.6	1.8	24	
16	1.5	1.4	1.3	1.6	1.9	1.7	1.8	9.5	7.7	6.0	3.9	2.1	1.8	3.3	3.5	3.1	3.5	5.0	2.9	39.3	2.5	2.6	S	2.0	39.3	4.8	24	
17	1.8	3.9	3.7	3.2	2.7	2.4	4.0	4.0	48.9	5.0	3.5	4.6	2.0	3.1	1.0	1.2	2.9	3.5	3.7	4.1	2.8	S	3.8	5.7	48.9	5.3	24	
18	5.9	6.8	6.2	6.2	6.0	6.9	6.8	5.2	6.0	5.9	5.8	5.6	7.9	8.1	7.3	10.0	10.1	7.8	7.5	7.3	S	6.3	5.3	4.9	10.1	6.8	24	
19	4.4	4.5	4.3	4.0	5.5	5.7	5.6	4.9	5.4	6.7	6.4	6.2	4.3	2.5	2.7	1.7	1.8	1.9	1.9	S	1.7	1.6	1.6	1.3	6.7	3.8	24	
20	1.3	1.3	0.9	0.7	1.6	1.6	1.3	0.7	1.3	1.1	1.3	1.6	1.4	1.3	1.0	0.9	1.4	1.1	S	3.1	2.6	2.4	2.4	2.3	3.1	1.5	24	
21	3.0	3.2	2.6	2.6	2.8	2.8	3.0	6.2	5.6	5.7	5.1	5.1	3.5	2.8	3.2	2.5	2.5	S	6.8	3.6	2.9	2.1	1.6	2.1	6.8	3.5	24	
22	2.8	12.7	4.0	5.0	5.2	5.4	4.2	5.4	8.4	6.1	6.0	6.4	7.0	6.9	8.5	7.6	S	8.4	9.0	8.7	8.8	8.4	17.1	7.9	17.1	7.4	24	
23	8.2	8.2	7.8	4.3	2.8	2.6	2.4	2.4	1.9	1.8	1.8	1.7	1.6	1.6	1.7	S	2.1	2.1	1.8	1.5	1.7	1.5	1.5	3.3	8.2	2.9	24	
24	3.9	2.8	2.2	2.0	1.6	2.3	2.2	1.7	1.9	1.9	2.6	2.6	2.7	1.8	S	2.8	2.7	3.0	2.1	1.9	4.6	4.1	3.8	3.8	4.6	2.7	24	
25	3.4	1.7	1.3	1.5	1.8	2.2	2.3	1.8	3.1	3.9	2.9	2.9	3.4	S	3.7	3.5	2.6	2.0	8.0	3.1	3.2	3.7	4.8	3.4	8.0	3.1	24	
26	4.4	6.3	4.8	3.5	2.7	2.7	2.4	3.1	3.3	3.5	3.6	4.9	S	2.1	1.8	2.1	1.9	2.4	3.1	4.5	5.8	4.4	3.2	2.8	6.3	3.4	24	
27	2.6	2.6	3.0	3.1	2.7	3.0	3.2	5.0	3.4	3.4	2.0	S	20.7	4.6	2.5	2.6	2.0	1.9	3.1	2.0	2.3	2.6	2.3	2.1	20.7	3.6	24	
28	2.0	1.7	1.9	2.3	3.4	2.8	2.7	2.4	2.4	1.8	S	1.4	1.1	1.4	6.6	1.4	2.9	3.3	3.4	7.1	1.1	2.2	1.4	1.4	7.1	2.5	24	
HOURLY MAX	14.6	39	7.8	19.3	19.1	10	6.8	9.5	48.9	7.3	8.5	10.7	20.7	24.1	15	12.6	11.6	44.4	17.2	39.3	17.7	19.1	17.1	12.6				
HOURLY AVG	3.4	4.8	3.0	3.6	3.5	3.2	3.1	3.6	5.5	3.8	3.7	3.6	4.6	4.4	3.6	3.3	3.4	7.0	4.5	5.4	3.5	3.6	3.7	3.1				

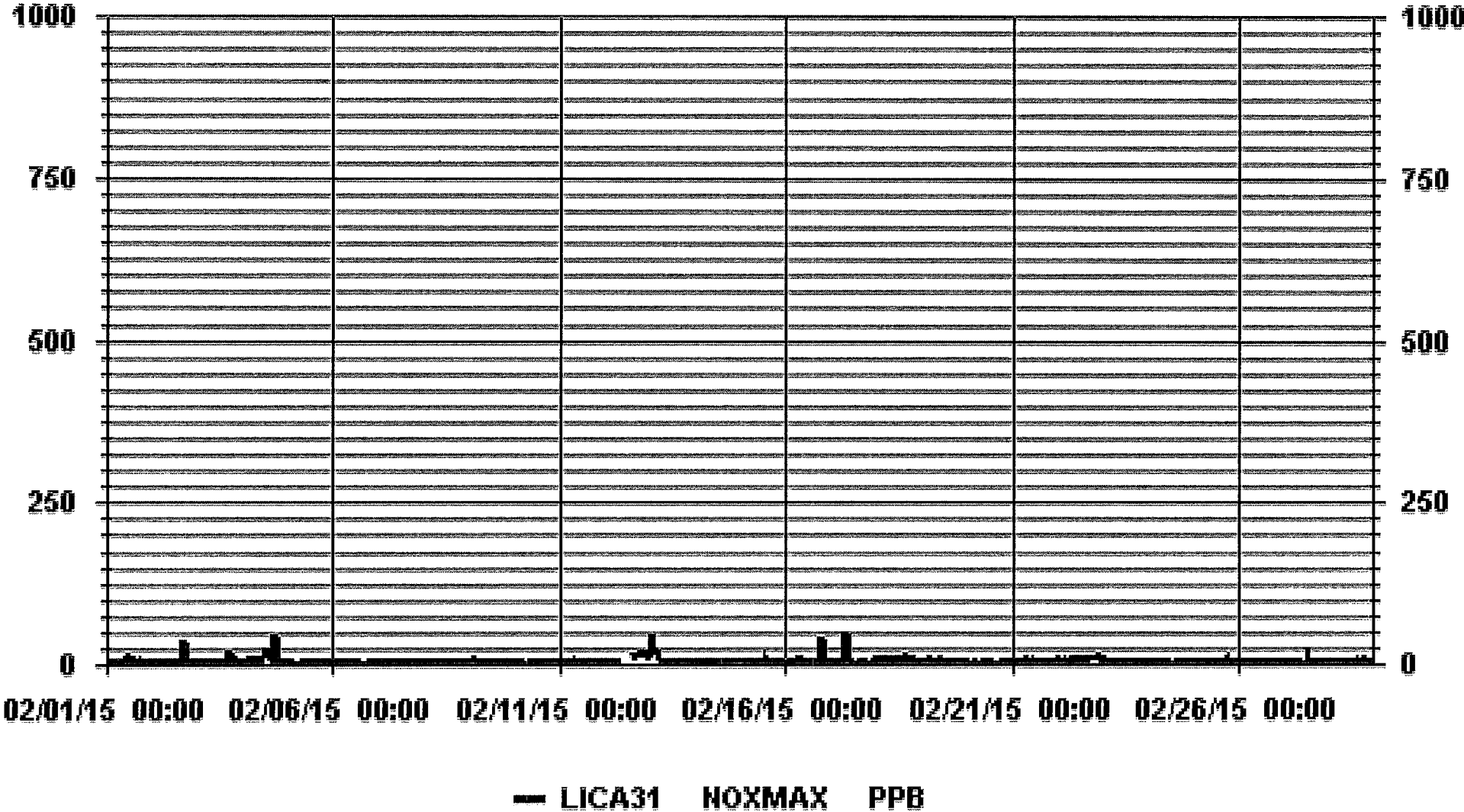
STATUS FLAG CODES

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:	635
MAXIMUM INSTANTANEOUS VALUE:	48.9 PPB @ HOUR(S) 8 ON DAY(S) 17
	VAR-VARIOUS
IJS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	8 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	4.52

### 01 Hour Averages



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

February 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 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	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.35	3.77	5.03	8.03	8.34	11.65	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	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.35	3.77	5.03	8.03	8.34	11.65	

Calm : .00 %

Total # Operational Hours : 635

Distribution By Samples





Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	36	19	36	64	36	29	34	12	67	34	34	24	32	51	53	74	635
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	36	19	36	64	36	29	34	12	67	34	34	24	32	51	53	74	

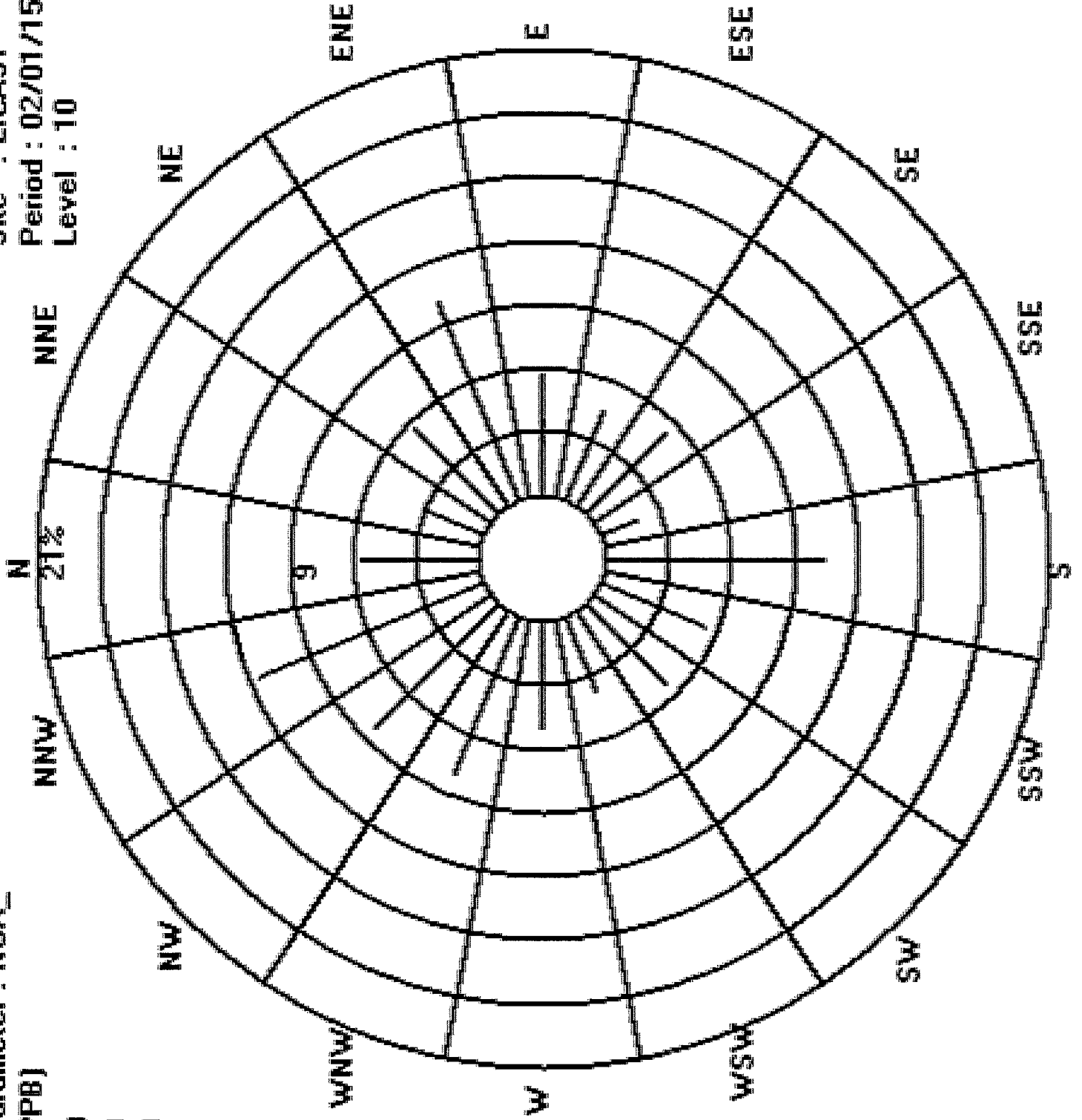
Calm : .00 %

Total # Operational Hours : 635

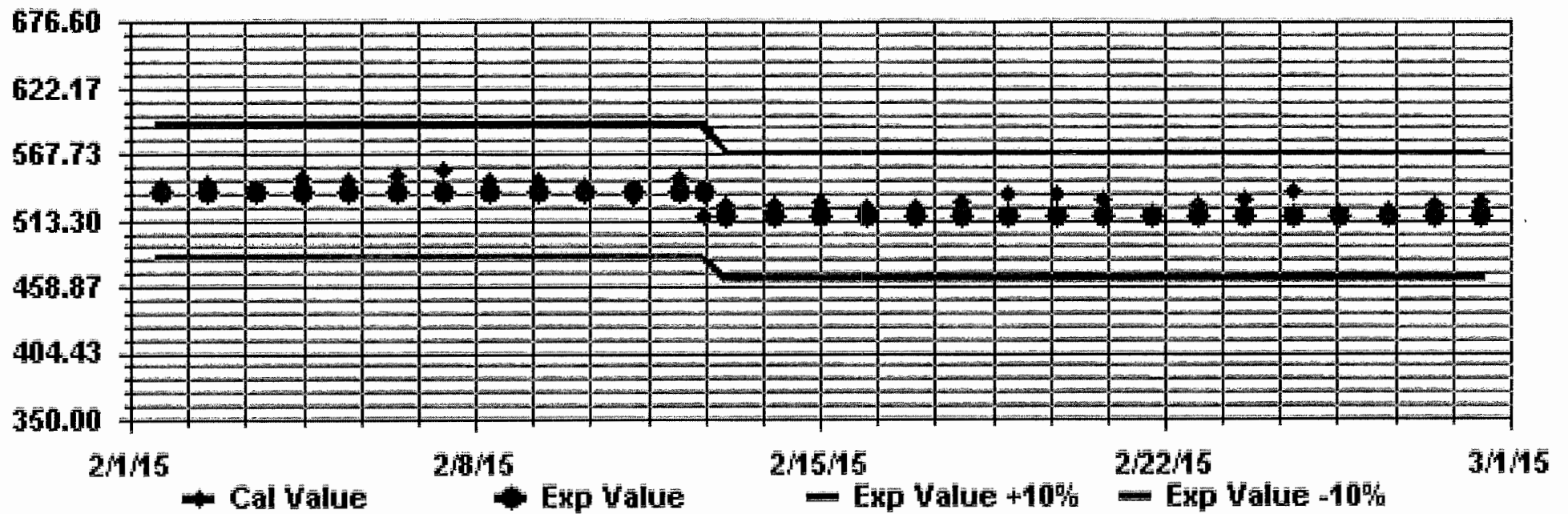
Site : LICA31  
Period : 02/01/15-02/28/15  
Level : 10

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

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



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



***NITRIC OXIDES***





NITRIC OXIDE (NO) hourly averages in ppb

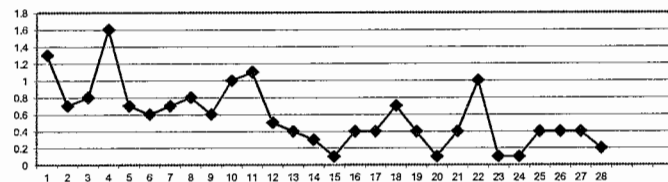
MST

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	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG.	RDGS.	
DAY																												
1	0.6	0.7	0.5	0.6	0.6	0.6	0.5	0.7	0.7	1.5	2.8	4.9	4.5	3.9	S	1.3	1	0.7	0.8	0.6	0.6	0.6	0.6	0.6	4.9	1.3	24	
2	0.6	0.5	0.6	0.7	0.7	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.1	S	1.1	0.9	0.7	0.9	0.6	0.6	0.4	0.5	0.8	0.6	1.1	0.7	24	
3	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.6	0.8	1.3	1.3	1.2	S	1	1	0.9	0.7	0.8	0.8	0.8	0.6	0.7	0.6	0.5	1.3	0.8	24	
4	0.6	0.5	0.5	0.4	0.4	0.4	0.7	0.6	0.7	1.5	2.4	S	5.2	6.6	5.7	3.5	1.6	1.4	0.8	1	0.8	0.6	0.6	0.5	6.6	1.6	24	
5	0.5	0.5	0.4	0.6	0.5	0.5	0.5	0.5	0.5	0.8	S	1.7	1.8	1.2	0.8	0.7	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.5	1.8	0.7	24	
6	0.6	0.5	0.5	0.7	0.6	0.6	0.6	0.6	0.5	S	0.8	0.8	0.8	0.6	0.6	0.7	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.8	0.6	24	
7	0.4	0.5	0.5	0.6	0.6	0.5	0.5	0.5	S	0.9	0.9	1	1.4	1.2	1	0.9	0.9	0.5	0.6	0.5	0.5	0.5	0.3	1.4	0.7	24		
8	0.6	0.6	0.5	0.4	0.5	0.4	0.6	S	0.8	1.1	1.3	1.6	1.4	1.2	1.4	1.1	1	0.6	0.6	0.7	0.6	0.6	0.6	0.6	1.6	0.8	24	
9	0.7	0.6	0.6	0.6	0.4	0.4	S	0.7	0.6	0.7	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.6	0.4	0.6	0.6	0.7	0.5	0.8	0.6	24	
10	0.6	0.5	0.6	0.6	0.6	S	0.6	0.7	1	1.2	1.8	2.2	1.8	2.1	2.1	1.3	0.9	0.6	0.6	0.5	0.6	0.5	0.6	0.6	2.2	1.0	24	
11	0.5	0.5	0.6	0.7	S	0.9	0.7	0.6	1.2	2	1.9	2.1	3.3	1.9	1.6	1.5	0.9	0.7	0.8	0.7	0.6	0.5	0.6	0.5	3.3	1.1	24	
12	0.4	0.5	0.5	S	0.8	0.5	0.5	0.5	C	C	C	C	C	C	C	1.9	0.7	0.5	0.4	0.4	0.3	0.2	0.1	1.9	0.5	24		
13	0	2.2	S	0.3	0.3	0.2	0.1	0	0.3	0.3	0.5	0.7	1	0.7	0.3	0.3	0.2	0	0.2	0.1	0.1	0.1	0.2	0.1	2.2	0.4	24	
14	0.1	S	0.3	0	0.1	0.2	0.1	0.2	0.1	0.3	0.6	0.7	0.5	0.5	0.4	0.5	0.5	0.2	0.2	0.2	0.2	0.1	0	0.1	0.7	0.3	24	
15	S	0.3	0.2	0.3	0.2	0	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.1	0.1	0	0	0	0	0.1	0	0.1	0.1	S	0.3	0.1	24	
16	0.4	0.1	0.1	0	0.1	0.1	0.1	0	0.6	1.2	0.9	0.5	0.5	0.4	0.5	0.3	0.3	0.2	0.8	0.2	0.1	S	0.4	1.2	0.4	24		
17	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.3	1.2	0.5	1.1	1.1	0.6	0.8	0.3	0.2	0.5	0.3	0.1	0.2	0.1	S	0.3	0.2	1.2	0.4	24	
18	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.2	0.5	0.7	1	1.1	1.8	2.3	1.9	1.6	1.1	0.3	0	0.1	S	0.3	0.2	0.2	2.3	0.7	24	
19	0.2	0.2	0.2	0	0.2	0.1	0	0.2	0.8	1.6	1.6	1.6	0.7	0.3	0.3	0.2	0.1	0.2	0	S	0.2	0.1	0	0	1.6	0.4	24	
20	0	0	0	0	0	0	0	0.1	0.1	0.1	0.3	0.3	0.5	0.3	0.3	0.1	0.2	0.1	S	0.2	0.1	0.1	0.1	0	0.5	0.1	24	
21	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.6	1	1.5	1.1	0.7	0.5	0.5	0.2	0.2	S	0.5	0.4	0.4	0.2	0.2	0.2	1.5	0.4	24	
22	0.3	0.4	0.2	0.2	0.2	0.1	0.1	0.4	1.3	1.9	2.3	2.6	2.7	2.6	2.5	2	S	0.5	0.5	0.3	0.4	0.3	0.2	0.3	2.7	1.0	24	
23	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0	0.1	0.1	0	0	0.1	S	0.3	0.2	0	0.1	0.1	0.1	0.1	0.1	0.3	0.1	24	
24	0.1	0.1	0.1	0.2	0	0	0	0.1	0.1	0	0.2	0.1	0.3	0.1	S	0.4	0.2	0.1	0.1	0.1	0	0.2	0.2	0.2	0.4	0.1	24	
25	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.3	0.5	1	1	1.1	1.1	S	1.1	0.9	0.5	0.1	0.2	0.1	0.2	0.2	0.3	0.2	1.1	0.4	24	
26	0.1	0.2	0.4	0.3	0.2	0.3	0.1	0.4	0.6	0.9	1	1.1	S	0.8	0.7	0.5	0.3	0.4	0.2	0.2	0.2	0.3	0	0	1.1	0.4	24	
27	0.2	0.1	0.2	0.3	0.1	0.3	0	0.3	0.5	0.7	0.4	S	1.3	1.5	0.7	0.5	0.3	0.2	0.2	0.2	0.2	0.4	0.3	0.2	1.5	0.4	24	
28	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.1	S	0.4	0.3	0.4	0.4	0.3	0.2	0.2	0.1	0.4	0.2	0.2	0.2	0	0.4	0.2	24	
HOURLY MAX	0.7	2.2	0.6	0.7	0.8	0.9	0.7	0.7	1.3	2	2.8	4.9	5.2	6.6	5.7	3.5	1.9	1.4	0.8	1	0.8	0.7	0.8	0.6				
HOURLY AVG	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.6	0.9	1.1	1.2	1.4	1.3	1.0	0.8	0.6	0.4	0.4	0.4	0.3	0.3	0.3	0.3				

STATUS FLAG CODES

C	CALIBRATION	@	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

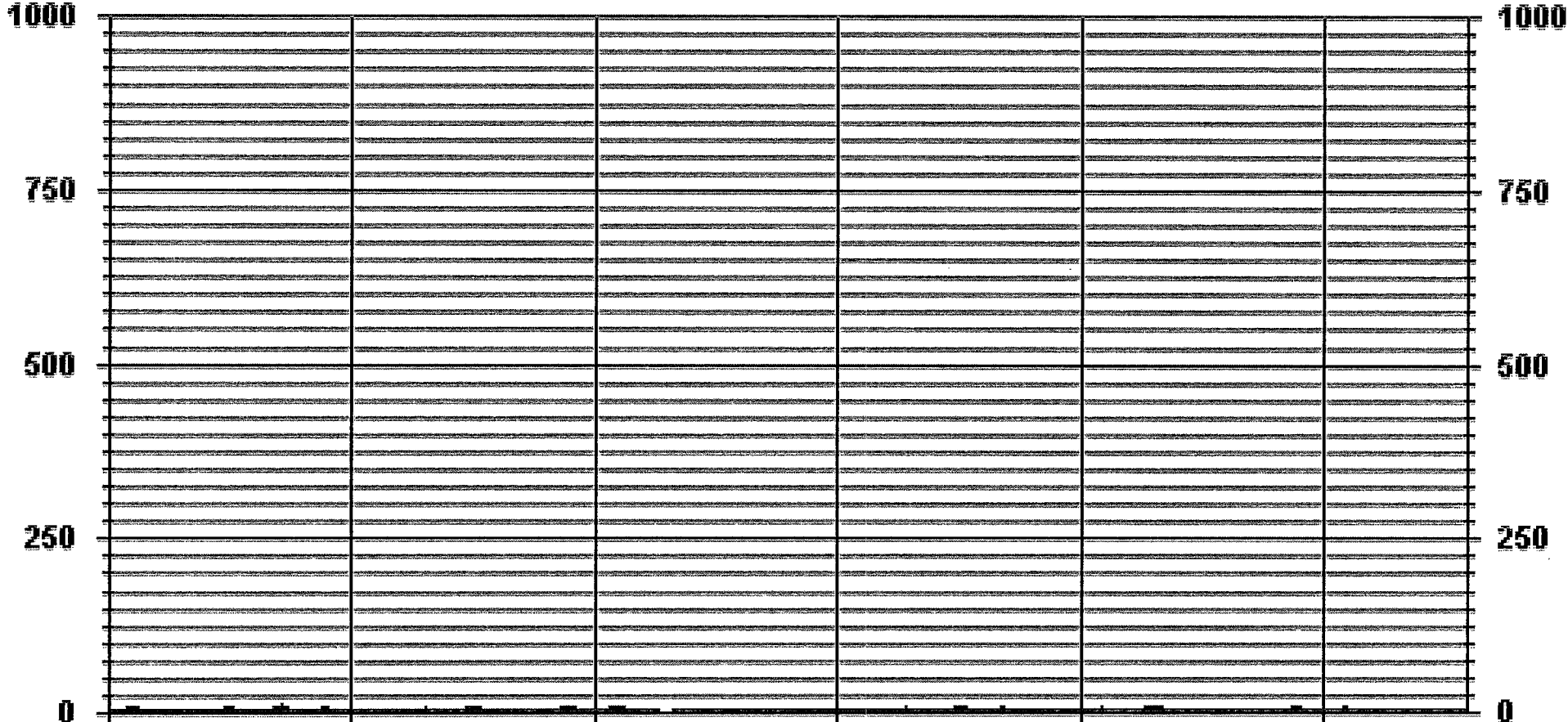
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	595					
MAXIMUM 1-HR AVERAGE:	6.6	PPB	@ HOUR(S)	13	ON DAY(S)	4
MAXIMUM 24-HR AVERAGE:	1.6	PPB			ON DAY(S)	4
					VAR-VARIOUS	
I2S CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	672	HRS	
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.68		MONTHLY AVERAGE:	0.6	PPB	

**01 Hour Averages**



— LICA31 NO\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31- C

NITRIC OXIDE MAX instantaneous maximum in ppb

MST

DAY	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	1.1	1.2	1.1	1.1	1.1	1.1	1.0	1.3	1.3	2.3	4.5	5.8	5.3	4.6	S	1.9	1.6	2.0	2.3	1.3	1.1	1.1	1.1	1.1	5.8	2.0	24	
2	1.1	1.1	1.2	1.3	1.4	1.1	1.1	1.3	1.3	1.3	1.4	1.7	2.2	S	2.1	1.6	1.0	21.2	1.3	2.1	1.0	1.0	2.9	1.0	21.2	2.3	24	
3	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	2.0	3.0	1.8	1.9	S	1.6	1.6	1.6	1.1	11.2	1.5	1.5	1.3	1.3	1.1	1.2	11.2	1.8	24	
4	1.1	1.1	1.1	1.0	1.1	0.9	1.3	1.3	1.5	2.3	3.4	S	6.3	12.0	7.2	5.1	2.4	28.4	2.1	1.9	2.1	1.1	1.3	1.1	28.4	3.8	24	
5	0.9	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.1	1.4	S	2.4	2.4	2.1	1.5	1.2	1.1	1.0	1.0	1.3	1.2	1.1	1.1	1.1	2.4	1.3	24	
6	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	S	1.4	1.3	1.5	1.0	1.3	1.0	1.3	1.0	0.8	0.9	1.0	1.0	1.0	1.0	1.5	1.1	24	
7	0.9	1.0	1.0	1.3	1.1	1.1	1.1	1.1	S	1.4	1.5	1.4	2.1	2.2	1.6	1.4	1.5	1.0	1.1	1.0	1.0	1.3	1.0	0.8	2.2	1.3	24	
8	1.2	1.1	1.0	1.0	1.0	1.0	1.2	S	1.5	1.8	1.9	2.3	2.1	1.9	2.0	1.7	1.7	1.4	1.1	1.3	1.4	1.1	1.1	1.1	2.3	1.4	24	
9	1.3	1.1	1.4	1.1	0.8	1.0	S	1.3	1.2	1.3	1.3	1.3	1.6	1.3	1.3	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.4	1.1	1.6	1.2	24
10	1.1	1.1	1.1	1.1	1.2	S	1.4	1.7	1.4	1.9	2.9	2.7	2.4	2.7	3.2	2.1	1.6	1.1	1.2	1.0	1.1	1.1	1.1	1.1	3.2	1.6	24	
11	1.1	0.9	1.1	1.3	S	1.5	1.2	1.1	1.7	2.7	2.8	2.7	4.1	3.0	2.2	2.2	1.6	1.3	1.2	1.1	1.1	1.0	1.2	1.0	4.1	1.7	24	
12	1.1	1.0	1.1	S	1.2	1.0	1.0	1.2	C	C	C	C	C	C	C	C	3.2	1.5	1.9	1.5	1.6	0.8	0.9	0.8	3.2	1.3	24	
13	0.4	12.5	S	1.0	0.8	0.9	0.7	0.6	0.8	0.9	1.1	1.3	1.5	1.5	0.8	0.8	0.5	0.8	0.5	0.8	0.6	0.6	0.8	0.8	0.6	12.5	1.4	24
14	0.5	S	0.8	0.6	0.5	0.8	0.8	1.0	0.8	0.8	1.0	1.2	1.0	1.0	1.0	1.1	1.1	0.8	0.7	0.8	1.0	0.8	0.7	0.6	1.2	0.8	24	
15	S	1.0	0.9	0.9	0.8	0.8	0.7	0.8	0.8	0.8	0.6	1.2	0.6	2.0	0.7	0.7	0.5	0.5	0.5	0.6	0.6	0.7	0.6	S	2.0	0.8	24	
16	1.1	0.8	0.6	0.5	0.8	0.6	0.8	0.6	1.3	2.0	1.5	1.1	1.1	1.9	1.1	1.0	1.2	2.1	1.0	22.3	0.8	0.7	S	1.0	22.3	2.0	24	
17	0.9	0.8	0.8	0.9	0.6	0.7	0.8	1.1	20.9	1.6	1.8	3.2	1.3	1.6	0.8	0.8	2.3	0.8	0.6	0.6	0.6	S	0.8	0.8	20.9	2.0	24	
18	0.9	0.8	0.8	0.9	0.8	0.8	0.9	0.8	1.1	1.4	1.7	1.7	3.0	3.0	2.5	2.2	2.1	0.8	0.7	0.5	S	0.8	0.8	0.8	3.0	1.3	24	
19	0.8	0.8	0.8	0.6	0.8	0.8	0.7	1.0	1.3	2.4	2.4	2.4	1.3	0.8	1.0	0.8	0.8	0.8	0.5	S	0.8	0.7	0.7	0.5	2.4	1.0	24	
20	0.5	0.4	0.6	0.4	0.5	0.4	0.4	0.6	0.7	0.8	1.0	1.1	0.8	0.8	0.8	0.8	S	0.8	0.8	0.6	0.6	0.5	1.1	0.7	24			
21	0.7	0.7	0.6	0.7	0.7	0.7	0.5	0.8	1.3	1.8	2.4	2.0	1.3	1.1	1.1	0.6	0.8	S	1.9	1.6	1.3	0.8	0.8	0.7	2.4	1.1	24	
22	0.9	6.1	0.9	0.7	0.8	0.7	0.5	1.2	3.0	2.7	3.0	3.2	3.2	3.4	3.1	S	1.2	1.3	0.9	1.1	0.8	6.8	0.8	6.8	2.2	24		
23	0.8	0.9	0.8	0.8	0.6	0.6	0.6	0.7	0.5	0.7	0.7	0.5	0.5	0.8	S	0.8	0.6	0.8	0.8	0.8	0.6	0.8	0.6	0.8	0.9	0.7	24	
24	0.8	0.6	0.8	0.8	0.5	0.5	0.8	0.6	0.7	0.5	0.7	0.7	0.9	0.7	S	0.9	0.7	0.9	0.7	0.7	0.7	0.6	0.8	0.8	0.9	0.7	24	
25	0.6	0.8	0.8	0.6	0.7	0.6	0.7	0.7	1.0	1.7	1.5	1.9	S	1.8	1.9	1.0	0.8	1.6	0.6	0.6	0.8	1.0	0.8	1.9	1.0	24		
26	0.7	0.8	0.8	0.9	0.8	0.9	0.7	0.9	1.1	1.7	1.7	2.4	S	1.4	1.2	1.2	0.9	0.9	0.9	0.8	1.0	0.8	0.6	0.6	2.4	1.0	24	
27	0.7	0.6	0.8	0.8	0.7	0.8	0.5	1.1	1.0	1.3	1.1	S	12.1	2.2	1.1	1.6	0.8	0.9	1.1	0.6	0.6	0.9	0.9	0.9	12.1	1.4	24	
28	0.9	0.8	0.8	0.6	0.8	0.7	0.8	0.8	1.0	0.8	S	1.0	0.8	1.1	2.5	1.0	1.3	1.5	0.9	2.1	0.8	0.8	0.7	0.5	2.5	1.0	24	
HOURLY MAX	1.3	12.5	1.4	1.3	1.4	1.5	1.4	1.7	20.9	3	4.5	5.8	12.1	12	7.2	5.1	3.2	28.4	2.3	22.3	2.1	1.3	6.8	1.2				
HOURLY AVG	0.9	1.5	0.9	0.9	0.9	0.9	0.9	1.0	2.0	1.6	1.8	1.9	2.5	2.2	1.8	1.5	1.3	3.2	1.1	1.9	1.0	0.9	1.2	0.8				

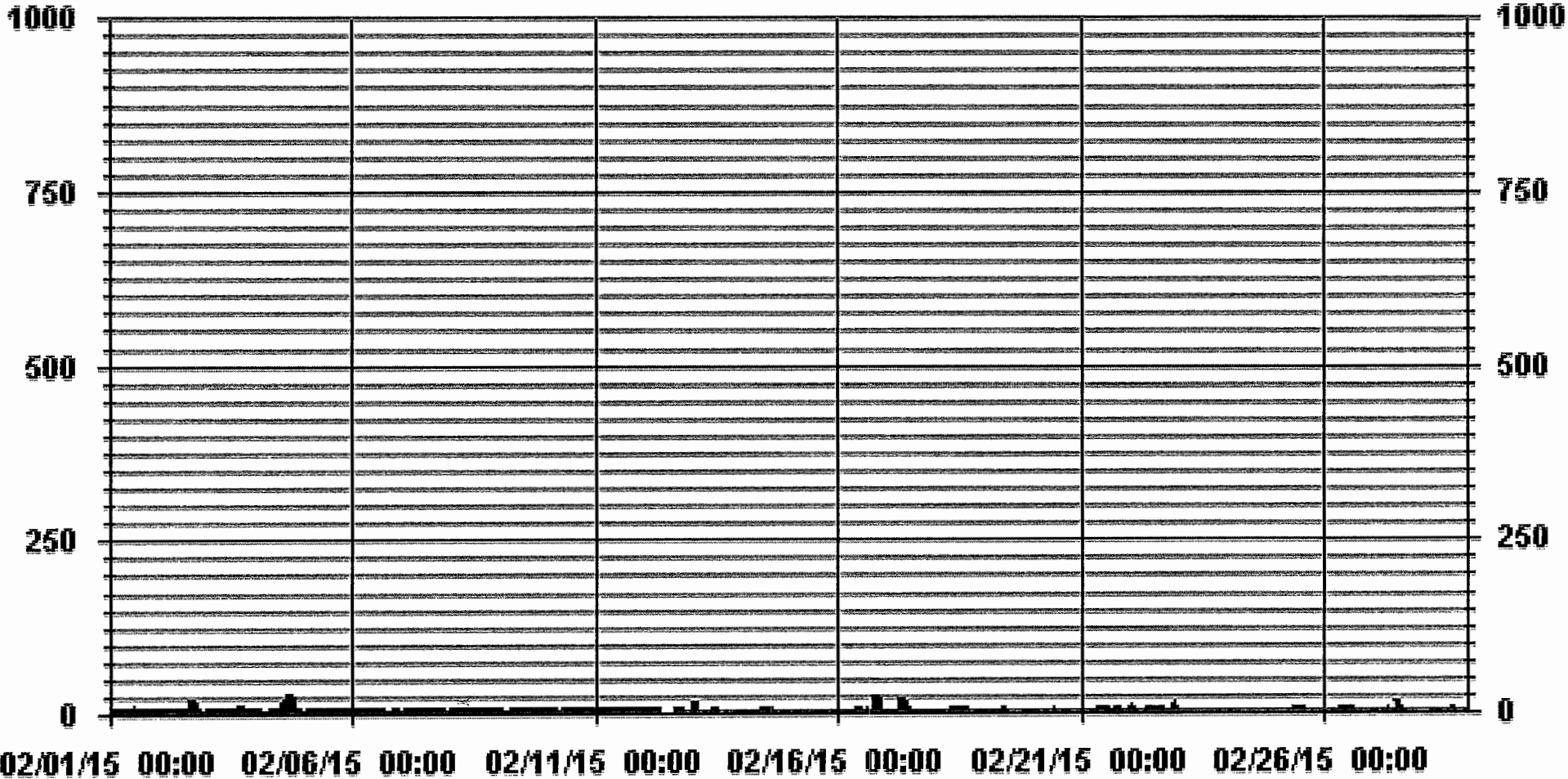
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	635
MAXIMUM INSTANTANEOUS VALUE:	28.4 PPB @ HOUR(S) 17 ON DAY(S) 4
VAR-VARIOUS	
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	2.10
OPERATIONAL TIME:	672 HRS

**01 Hour Averages**



— LICA31 NOMAX PPB

LICA31  
 NO\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : NO\_  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.35	3.77	5.03	8.03	8.34	11.65	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	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.35	3.77	5.03	8.03	8.34	11.65	

Calm : .00 %

Total # Operational Hours : 635

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	36	19	36	64	36	29	34	12	67	34	34	24	32	51	53	74	635
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	36	19	36	64	36	29	34	12	67	34	34	24	32	51	53	74	





Calm : .00 %

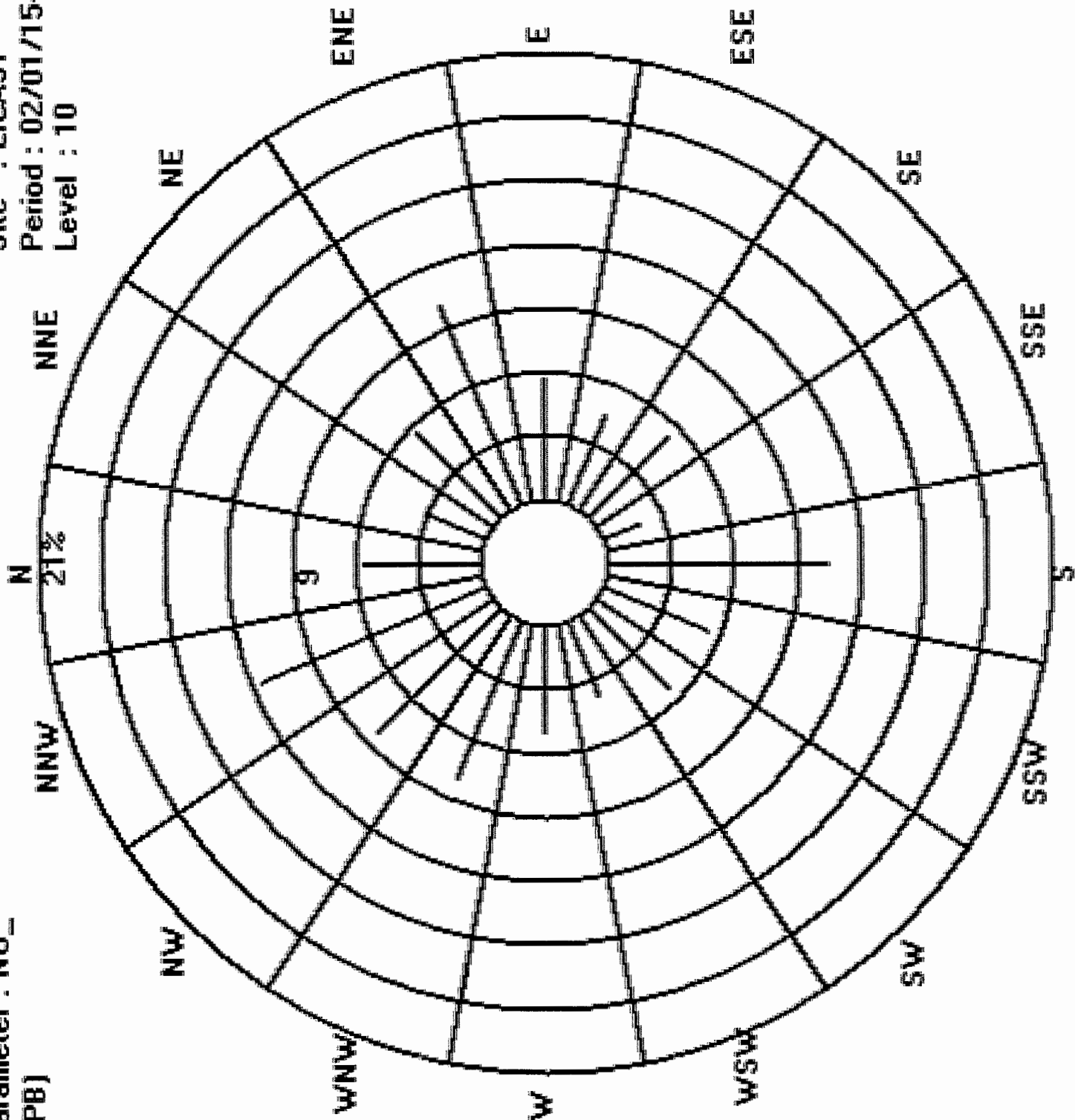
Total # Operational Hours : 635

Site : LICA31  
Period : 02/01/15-02/28/15  
Level : 10

Logger : 31 Parameter : NO\_

Class Limits (PPB)

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



***NITROGEN DIOXIDE***



NITROGEN DIOXIDE (NO2) hourly averages 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	24-HOUR	RDGS.	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.		
DAY																												
1	2.2	2.3	2.3	2.2	2.4	2.3	2.9	3.3	3.4	3.3	3.5	4.6	4.2	4.0	S	2.3	3.0	3.3	2.8	1.4	0.7	0.7	0.6	0.8	4.6	2.5	24	
2	0.7	0.4	0.6	0.5	0.6	0.6	0.8	0.9	0.8	0.6	0.2	0.0	0.8	S	0.6	0.8	1.2	2.0	2.1	1.8	1.1	1.4	1.5	1.2	2.1	0.9	24	
3	0.9	1.4	0.8	0.6	0.4	0.2	0.4	0.4	0.7	1.1	0.8	0.5	S	0.2	0.4	0.2	0.0	0.3	0.3	0.4	0.4	2.5	1.8	1.3	2.5	0.7	24	
4	1.4	3.0	4.0	5.1	6.0	5.6	5.1	5.6	5.3	5.2	4.9	S	6.6	7.8	7.4	6.8	7.0	7.6	7.0	5.7	2.6	1.4	0.5	0.2	7.8	4.9	24	
5	0.0	0.1	0.1	0.0	0.0	0.0	0.1	1.1	1.5	1.5	S	2.1	2.2	1.3	0.9	1.0	0.9	0.7	0.9	1.6	0.8	0.3	0.1	0.1	2.2	0.8	24	
6	0.0	0.2	0.1	0.1	0.1	0.2	0.4	0.3	0.3	S	0.4	0.2	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.1	0.3	0.6	0.6	1.0	1.0	0.2	24	
7	0.7	0.6	0.6	0.8	0.3	0.4	0.5	0.4	S	0.1	0.1	0.0	0.7	0.7	0.8	0.9	1.4	2.2	2.5	1.9	1.4	1.5	1.5	1.5	2.5	0.9	24	
8	1.5	1.4	1.5	1.5	1.2	0.9	1.1	S	1.3	1.3	1.1	0.9	0.7	1.0	1.8	1.9	3.0	3.8	2.7	2.5	2.2	1.8	1.8	2.0	3.8	1.7	24	
9	3.6	5.1	3.3	3.2	3.3	1.6	S	0.8	0.7	0.7	0.7	0.4	0.2	0.0	0.3	0.4	0.6	0.5	0.5	1.0	1.6	2.1	1.7	1.7	5.1	1.5	24	
10	2.0	1.5	1.9	2.2	1.5	S	0.8	0.9	1.2	1.6	1.3	1.1	1.2	1.2	1.4	1.4	1.9	2.1	1.9	1.6	0.9	0.7	0.0	0.2	2.2	1.3	24	
11	0.1	0.0	0.6	1.9	S	4.1	3.1	4.1	3.2	2.5	1.5	1.3	2.4	1.5	1.6	2.2	2.0	2.1	2.0	2.0	1.6	1.7	1.8	1.7	4.1	2.0	24	
12	1.5	1.2	1.4	S	1.3	1.6	1.9	2.8	C	C	C	C	C	C	C	C	8.8	10.4	12.4	14.9	16.4	16.3	10.5	9.4	16.4	7.4	24	
13	12.1	13.4	S	17.4	12.8	8.1	4.9	4.0	3.1	3.0	3.0	2.9	2.6	2.3	2.0	1.9	1.6	2.0	1.6	1.6	1.3	1.2	1.2	1.4	17.4	4.6	24	
14	1.5	S	0.8	0.7	0.6	0.6	0.6	0.8	1.5	1.5	1.6	0.6	0.2	0.5	0.5	0.3	1.0	2.0	1.9	1.7	1.5	2.0	2.2	2.2	2.2	1.2	24	
15	S	2.0	1.4	0.8	0.6	0.8	0.6	0.6	0.7	0.6	0.6	0.4	0.3	0.4	0.2	0.3	0.5	0.8	0.8	0.6	0.3	0.4	0.4	S	2.0	0.6	24	
16	0.4	0.5	0.7	1.1	1.0	1.1	1.2	5.9	4.9	3.4	2.1	0.6	0.6	0.8	1.0	1.3	1.5	1.6	1.4	2.2	1.4	1.6	S	0.9	5.9	1.6	24	
17	0.8	1.8	2.6	2.2	1.6	1.4	2.4	1.8	3.0	1.0	1.1	1.0	0.5	1.1	0.1	0.5	0.7	2.6	2.3	3.1	1.7	S	2.8	4.1	4.1	1.7	24	
18	5.0	5.7	5.5	5.4	4.9	5.2	5.5	4.5	4.3	4.4	4.1	3.3	4.3	5.0	5.0	6.3	7.6	6.8	6.8	6.5	S	5.2	4.4	3.9	7.6	5.2	24	
19	3.6	3.7	3.5	3.6	4.1	5.1	4.8	4.2	3.9	4.3	4.3	3.7	2.5	1.1	1.0	1.0	0.9	0.9	1.0	S	1.0	0.8	0.8	0.6	5.1	2.6	24	
20	0.6	0.6	0.2	0.0	0.8	0.9	0.6	0.2	0.5	0.2	0.3	0.5	0.2	0.3	0.1	0.3	0.6	0.3	S	2.2	1.8	1.5	1.8	1.4	2.2	0.7	24	
21	1.8	2.3	2.0	1.9	2.1	2.1	2.3	3.7	4.2	3.5	3.0	2.5	2.0	1.6	1.6	1.8	S	0.8	0.4	0.9	1.1	0.7	0.9	4.2	1.9	24		
22	1.7	2.9	3.2	3.9	3.9	3.9	3.3	3.4	4.0	3.4	3.2	2.9	3.3	3.5	4.3	4.6	S	7.1	7.6	7.6	7.5	7.5	6.9	7.6	4.7	24		
23	6.7	7.2	5.4	2.7	2.1	1.8	1.7	1.7	1.2	1.1	1.0	0.9	1.0	0.9	0.9	S	1.0	1.0	1.1	0.8	0.9	0.8	0.9	1.9	7.2	1.9	24	
24	2.7	1.5	1.4	1.1	1.0	1.4	1.6	1.1	1.2	1.4	1.8	1.8	1.7	1.2	S	1.6	1.8	2.2	1.6	1.2	3.2	3.1	2.2	2.4	3.2	1.7	24	
25	2.4	0.7	0.5	0.7	1.0	1.2	1.3	1.0	1.8	1.8	1.4	1.3	1.5	S	1.7	1.4	1.1	1.1	2.7	2.2	2.3	2.5	2.2	2.3	2.7	1.6	24	
26	3.6	4.3	3.4	2.4	1.9	1.7	1.7	2.0	2.0	1.7	1.4	1.4	S	0.7	0.6	1.0	0.9	1.1	2.2	3.5	3.5	2.7	2.5	2.2	4.3	2.1	24	
27	1.9	1.9	2.0	2.1	2.1	2.1	2.6	2.5	2.3	1.9	1.0	S	2.1	1.9	1.1	1.2	1.1	1.1	1.5	1.2	1.4	1.6	1.4	1.2	2.6	1.7	24	
28	1.1	1.0	1.1	1.5	1.8	2.0	1.9	1.5	1.2	1.1	S	0.4	0.2	0.3	0.6	0.4	0.6	0.8	0.6	1.1	0.4	0.6	0.7	0.8	2.0	0.9	24	
HOURLY MAX	12	13	6	17	13	8	6	6	5	5	5	5	7	8	7	7	9	10	12	15	16	16	11	9				
HOURLY AVG	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	3	3	2	2	2	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

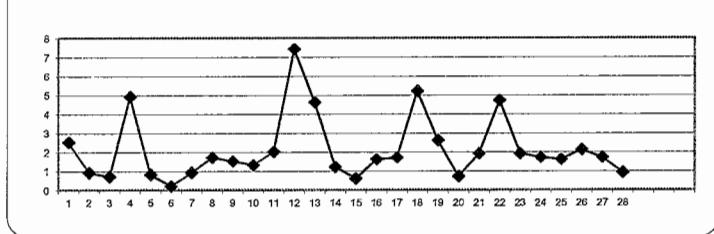
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

MONTHLY SUMMARY

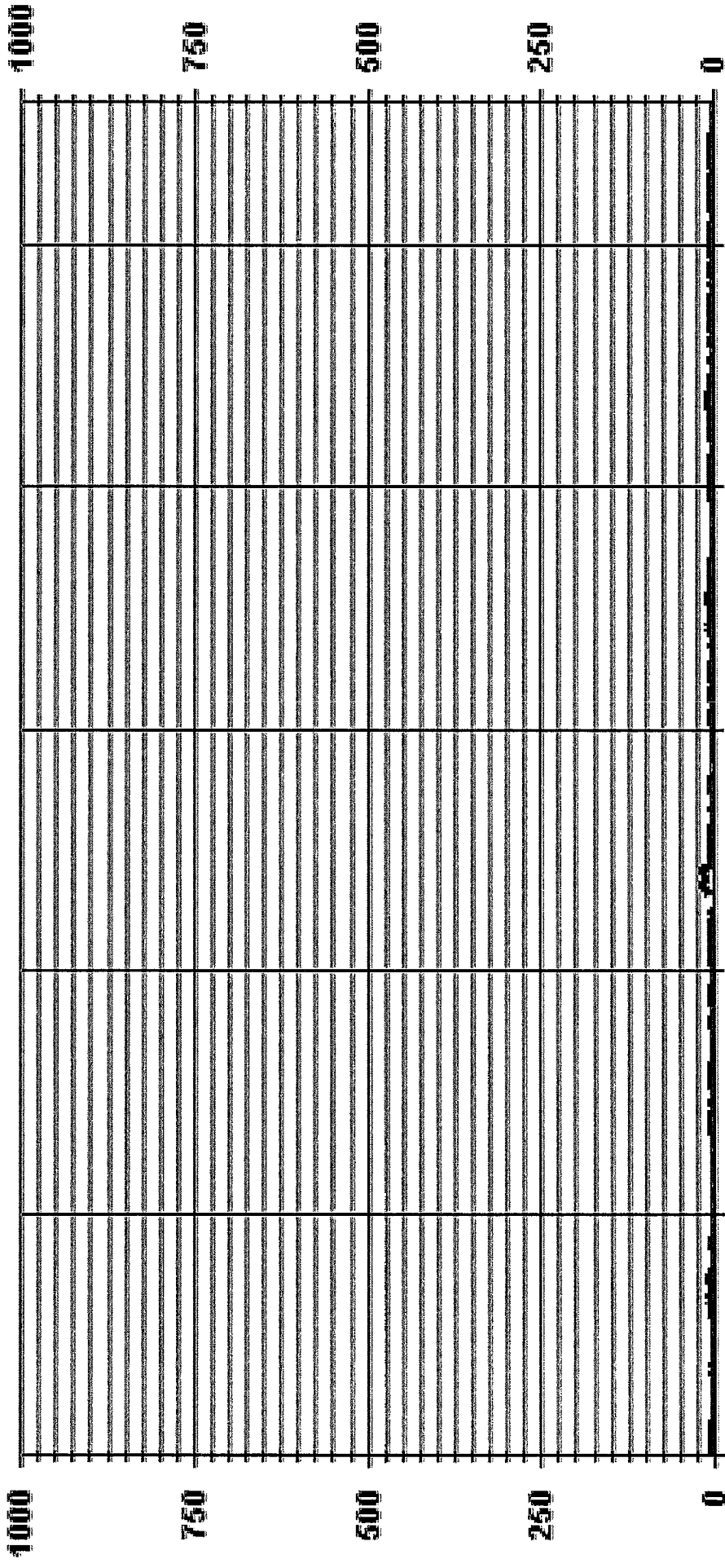
NUMBER OF 1-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	618		
MAXIMUM 1-HR AVERAGE:	17.4 PPB	@ HOUR(S)	3 ON DAY(S) 13
MAXIMUM 24-HR AVERAGE:	7.4 PPB		ON DAY(S) 12
			VAR-VARIOUS
IQS CALIBRATION TIME:	29 HRS	OPERATIONAL TIME:	672 HRS
MONTHLY CALIBRATION TIME:	8 HRS	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2.24	MONTHLY AVERAGE:	2.1 PPB

24 HOUR AVERAGES FOR FEBRUARY 2015





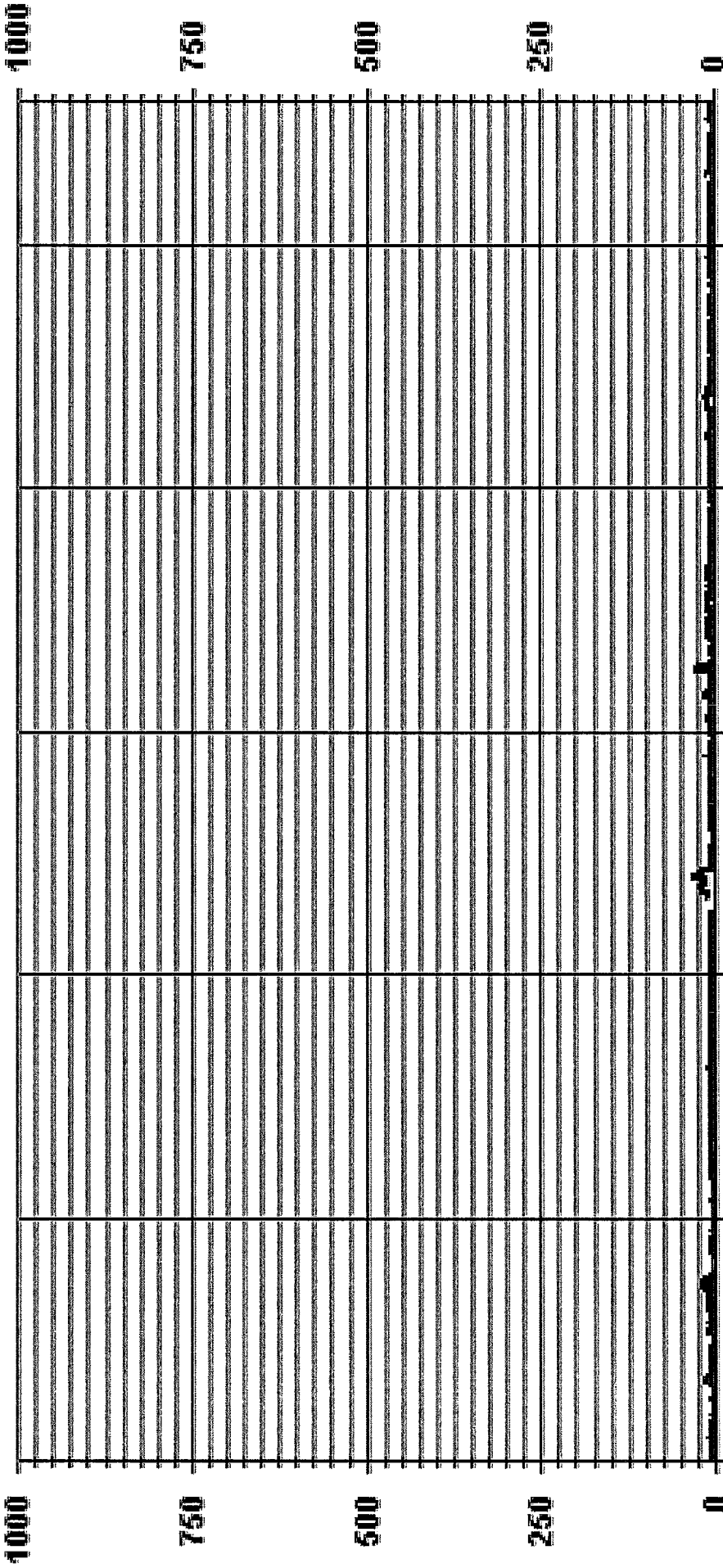
01 Hour Averages



— LICA31 NO2\_ PPB



01 Hour Averages



02/01/15 00:00 02/06/15 00:00 02/11/15 00:00 02/16/15 00:00 02/21/15 00:00 02/26/15 00:00

— LICA31 NO2MAX PPB

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

February 2015

Distribution By % Of Samples

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

Wind Parameter : WDR  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.35	3.77	5.03	8.03	8.34	11.65	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	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.35	3.77	5.03	8.03	8.34	11.65	

Calm : .00 %

Total # Operational Hours : 635

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	36	19	36	64	36	29	34	12	67	34	34	24	32	51	53	74	635
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	36	19	36	64	36	29	34	12	67	34	34	24	32	51	53	74	

Calm : .00 %

Total # Operational Hours : 635


Logger : 31 Parameter : ND2\_

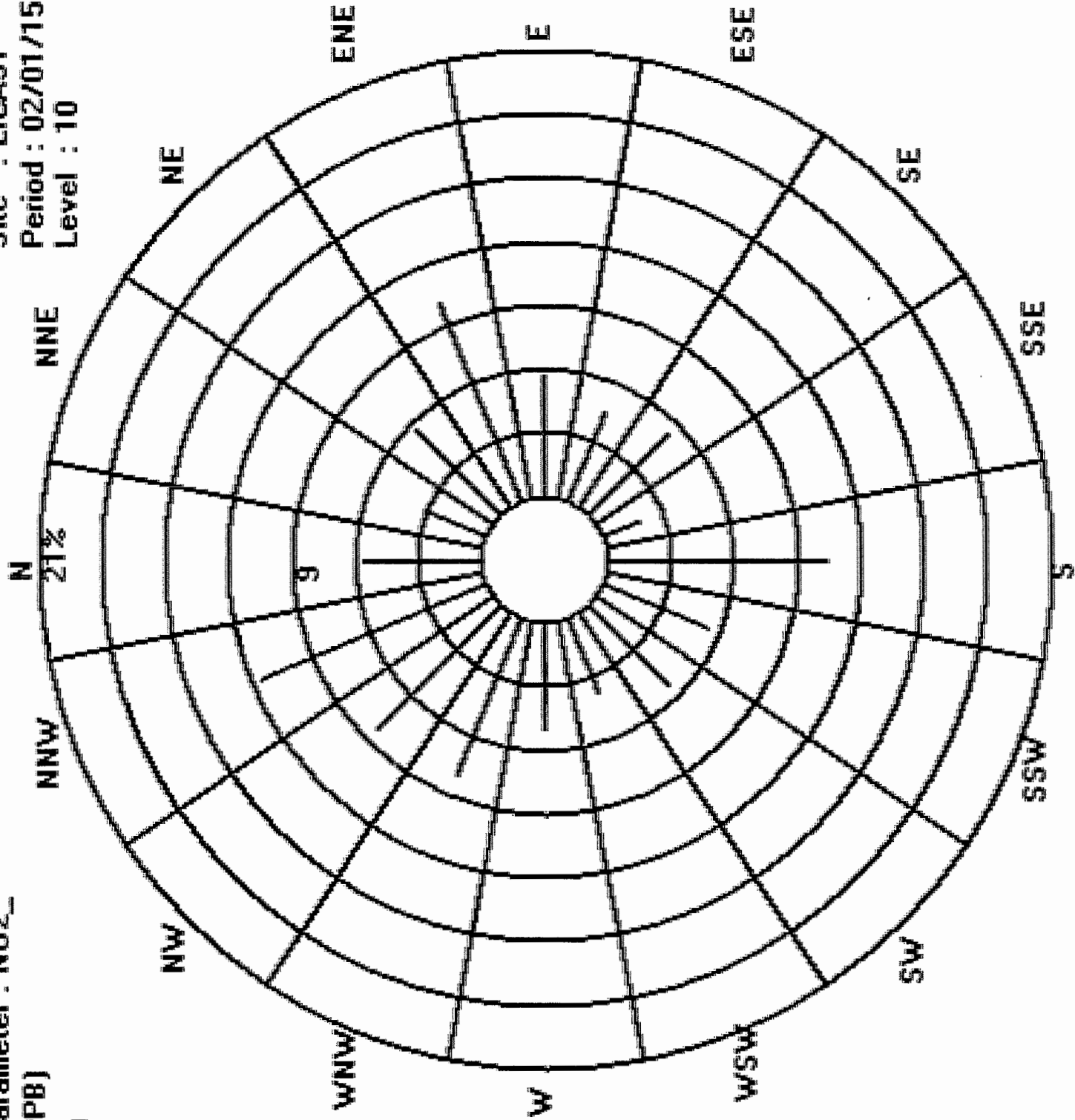
Site : LICA31

Period : 02/01/15-02/28/15

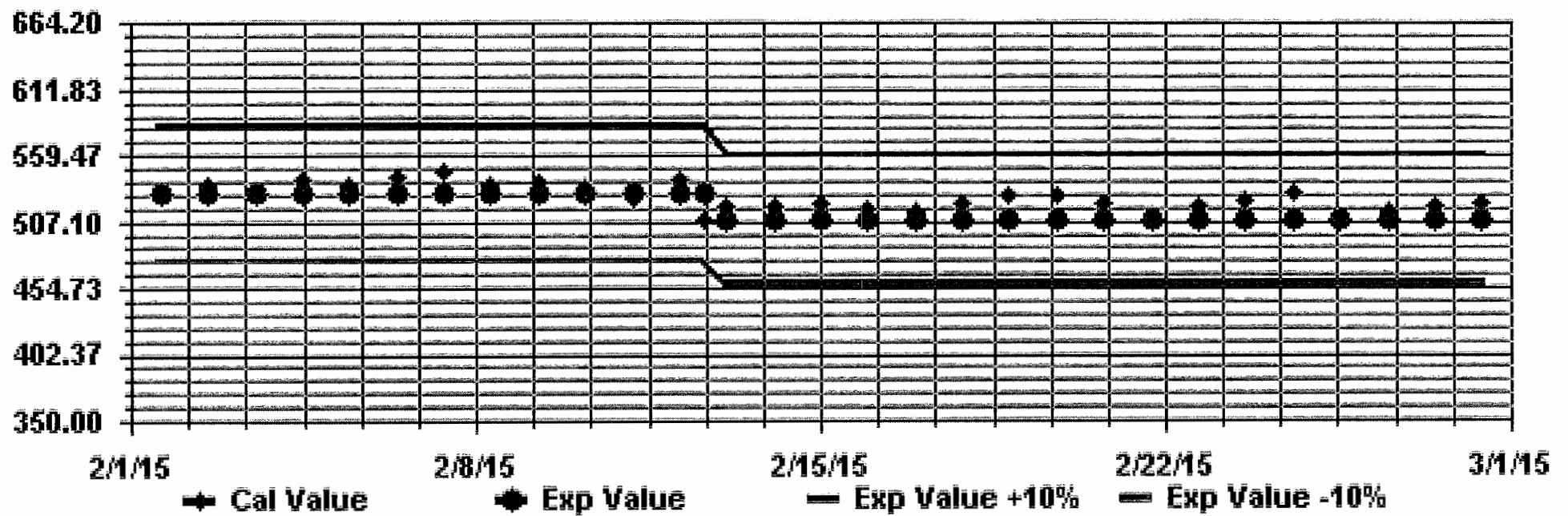
Level : 10

Class Limits (PPB)

-   $\geq$  210.0
-   $<$  210.0
-   $<$  110.0
-   $<$  50.0



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

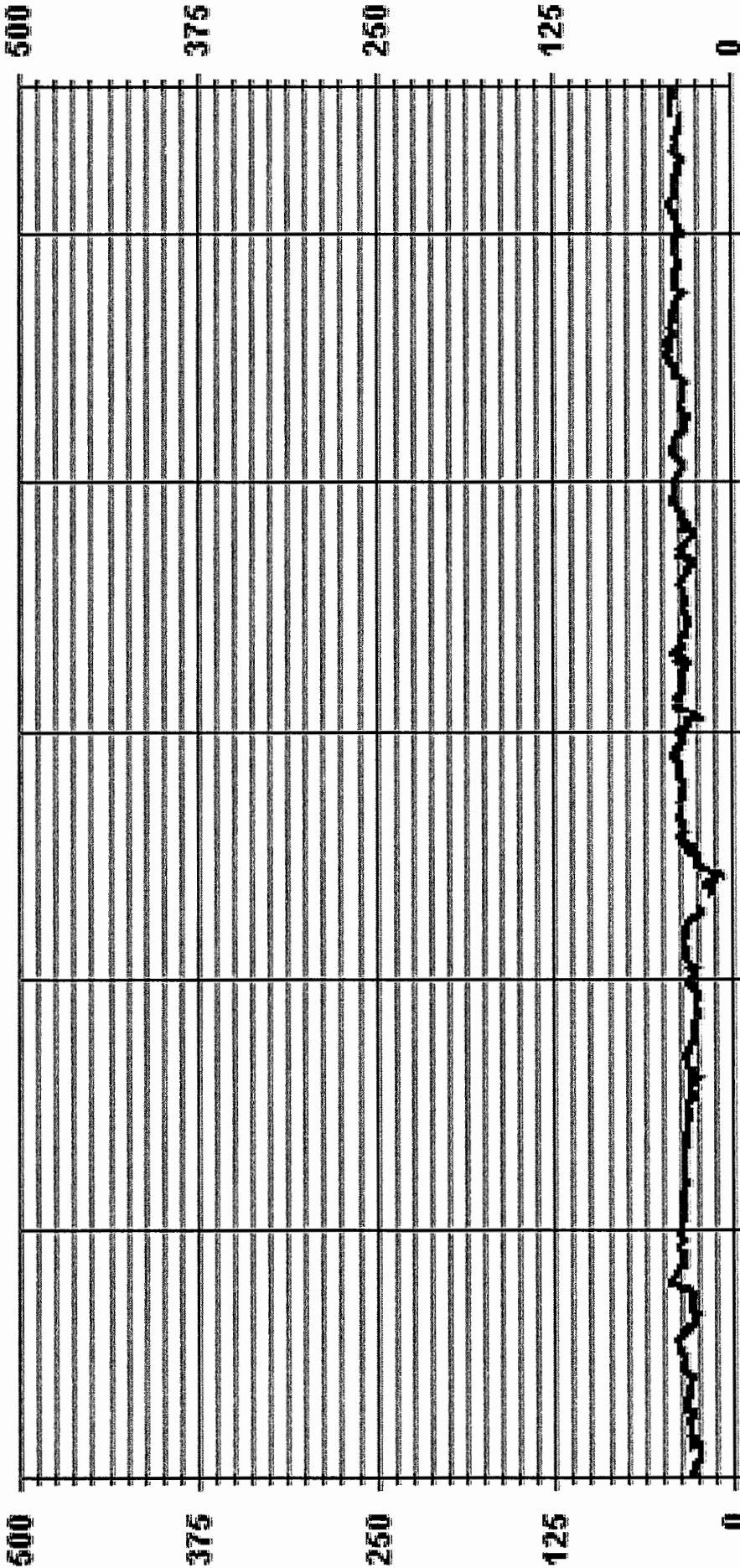


**OZONE**





01 Hour Averages



— LICA31 03\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31- C

OZONE 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	24-HOUR				
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.			
DAY																														
1	29	29	28	28	28	28	27	26	25	25	24	23	24	24	S	30	27	26	27	30	30	30	30	30	30	30	30	27.3	24	
2	30	29	30	31	31	31	29	29	31	33	33	32	33	S	34	33	32	31	30	S	S	30	29	30	34	34	31.0	24		
3	31	30	33	34	35	36	36	36	35	34	33	34	S	37	37	39	39	39	38	38	38	37	36	35	39	39	35.7	24		
4	33	32	29	28	26	27	27	27	28	29	29	S	30	29	30	31	30	28	30	34	39	42	44	44	44	44	31.6	24		
5	43	42	41	40	39	39	38	37	35	35	S	34	35	37	38	38	37	37	37	35	36	36	36	36	36	43	37.4	24		
6	36	36	36	35	35	35	35	35	S	35	35	35	35	35	35	35	34	34	34	34	34	33	33	33	33	36	34.7	24		
7	33	34	34	34	34	34	33	33	S	34	34	34	34	34	34	34	33	33	32	33	33	33	33	33	33	34	33.5	24		
8	32	32	32	32	32	32	S	31	31	31	32	32	32	32	31	31	30	28	30	29	30	30	30	29	32	32	30.9	24		
9	28	25	30	30	29	31	S	32	32	32	32	33	32	32	31	30	30	29	29	28	27	28	27	27	33	33	30.0	24		
10	27	27	26	27	27	S	27	26	25	24	25	25	26	26	26	26	26	25	24	24	26	27	29	32	31	32	26.4	24		
11	32	31	30	28	S	29	31	28	30	31	33	34	33	34	33	34	33	34	33	33	34	34	33	32	32	34	32.0	24		
12	34	32	32	S	31	31	29	28	25	24	23	24	C	C	C	C	C	C	C	18	15	17	22	25	34	34	25.6	24		
13	21	20	S	9	15	19	22	24	25	26	26	25	25	28	32	32	32	32	35	34	37	38	38	36	38	38	27.4	24		
14	37	S	34	34	34	36	38	38	37	36	35	36	36	36	36	36	35	35	35	35	34	34	34	34	38	38	35.5	24		
15	S	36	36	38	39	38	38	38	38	37	37	40	41	41	41	41	40	39	36	36	35	35	36	S	41	41	38.0	24		
16	37	37	35	32	32	31	32	33	25	29	34	36	39	39	39	38	39	39	37	37	36	36	S	36	39	39	35.1	24		
17	36	37	35	35	36	35	35	35	38	39	33	34	41	41	42	41	40	35	35	36	36	S	35	35	42	42	36.7	24		
18	32	32	32	31	32	31	31	31	33	32	34	34	34	33	33	33	34	34	S	35	36	36	36	36	36	36	33.0	24		
19	36	36	35	36	34	31	31	31	31	28	28	32	35	37	36	36	36	37	36	S	33	32	31	30	37	37	33.4	24		
20	27	27	36	35	33	33	35	36	35	36	35	36	38	40	41	41	41	40	S	39	39	40	40	39	41	41	36.6	24		
21	39	39	39	40	38	38	37	36	33	34	34	37	38	40	40	40	41	S	42	42	40	40	40	40	42	42	38.6	24		
22	38	36	34	34	34	34	34	34	33	32	33	34	35	35	36	37	S	35	34	34	34	34	33	34	38	38	34.4	24		
23	34	34	36	39	39	39	39	39	40	40	42	43	44	45	46	S	44	44	45	46	45	48	45	43	48	48	41.7	24		
24	41	41	43	44	44	44	41	41	40	41	41	40	41	40	S	39	38	38	38	38	37	37	39	40	44	44	40.3	24		
25	39	40	40	40	39	38	40	38	37	35	36	37	38	S	41	41	41	41	40	39	39	39	39	39	41	41	39.0	24		
26	37	36	36	37	38	39	39	39	38	40	41	42	S	44	44	44	44	43	41	40	39	39	39	39	44	44	39.9	24		
27	39	39	39	39	39	38	37	37	36	37	37	S	36	38	39	40	40	40	40	41	40	39	38	38	38	41	38.4	24		
28	38	38	38	37	36	35	35	35	36	37	S	42	42	41	42	42	42	42	42	43	42	42	41	41	43	43	39.5	24		
HOURLY MAX	43	42	43	44	44	44	41	41	40	41	42	43	44	45	46	44	44	44	45	46	45	48	45	44	44					
HOURLY AVG	34.0	33.6	34.4	33.6	33.7	33.8	33.6	33.4	32.9	33.0	33.0	34.2	35.1	35.9	36.7	36.2	36.1	35.3	35.2	35.1	35.0	35.0	35.1	35.0	35.0					

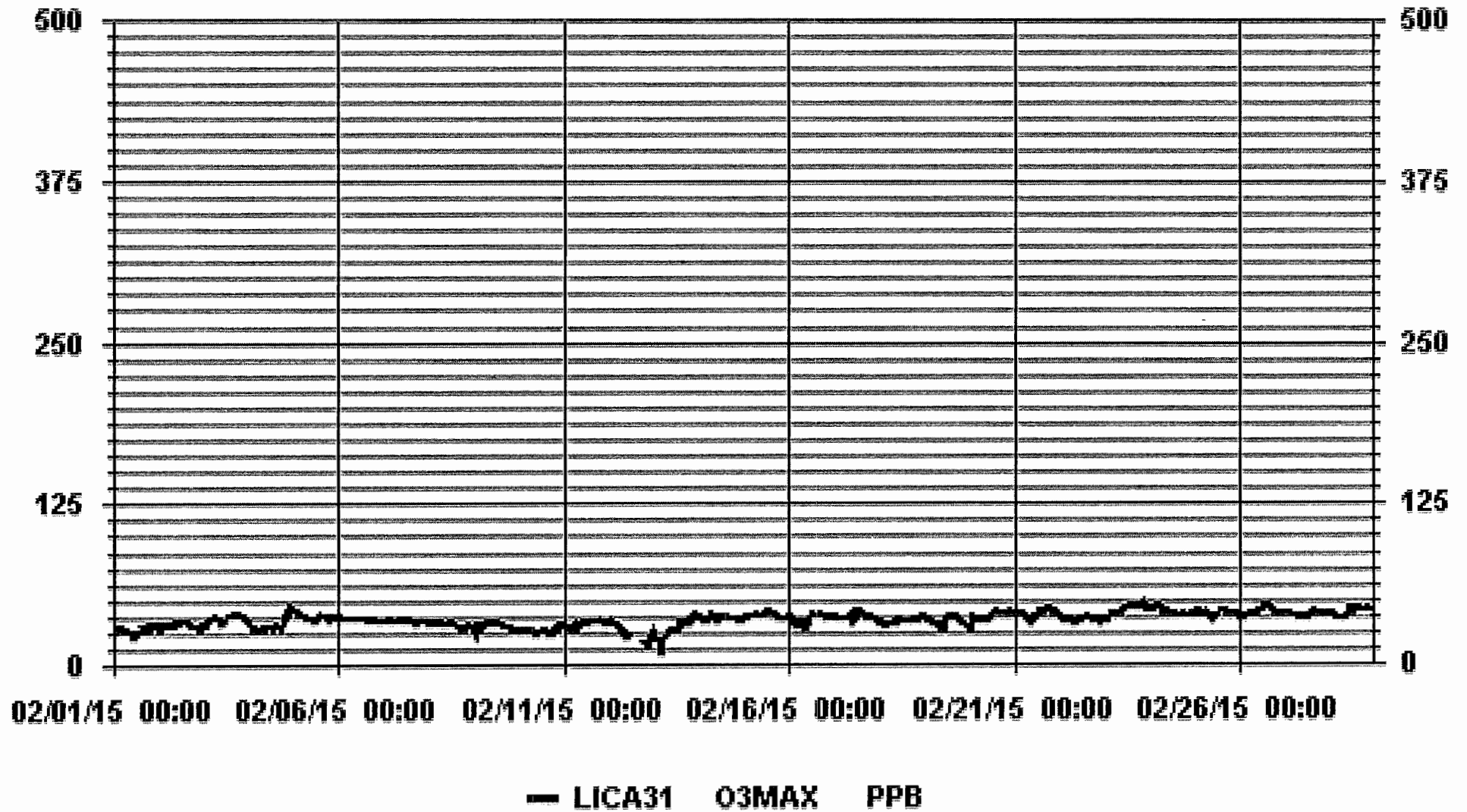
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634
MAXIMUM INSTANTANEOUS VALUE:	48 PPB @ HOUR(S) 21 ON DAY(S) 23
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	5.19

### 01 Hour Averages



LICA31  
 O3\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : O3  
 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	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.51	3.77	4.88	8.03	8.34	11.65	100.00
< 110	.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
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	5.66	2.99	5.66	10.07	5.66	4.56	5.35	1.88	10.55	5.35	5.51	3.77	4.88	8.03	8.34	11.65	

Calm : .00 %

Total # Operational Hours : 635

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	36	19	36	64	36	29	34	12	67	34	35	24	31	51	53	74	635
< 110																	
< 210																	
>= 210																	
Totals	36	19	36	64	36	29	34	12	67	34	35	24	31	51	53	74	

Calm : .00 %

Total # Operational Hours : 635

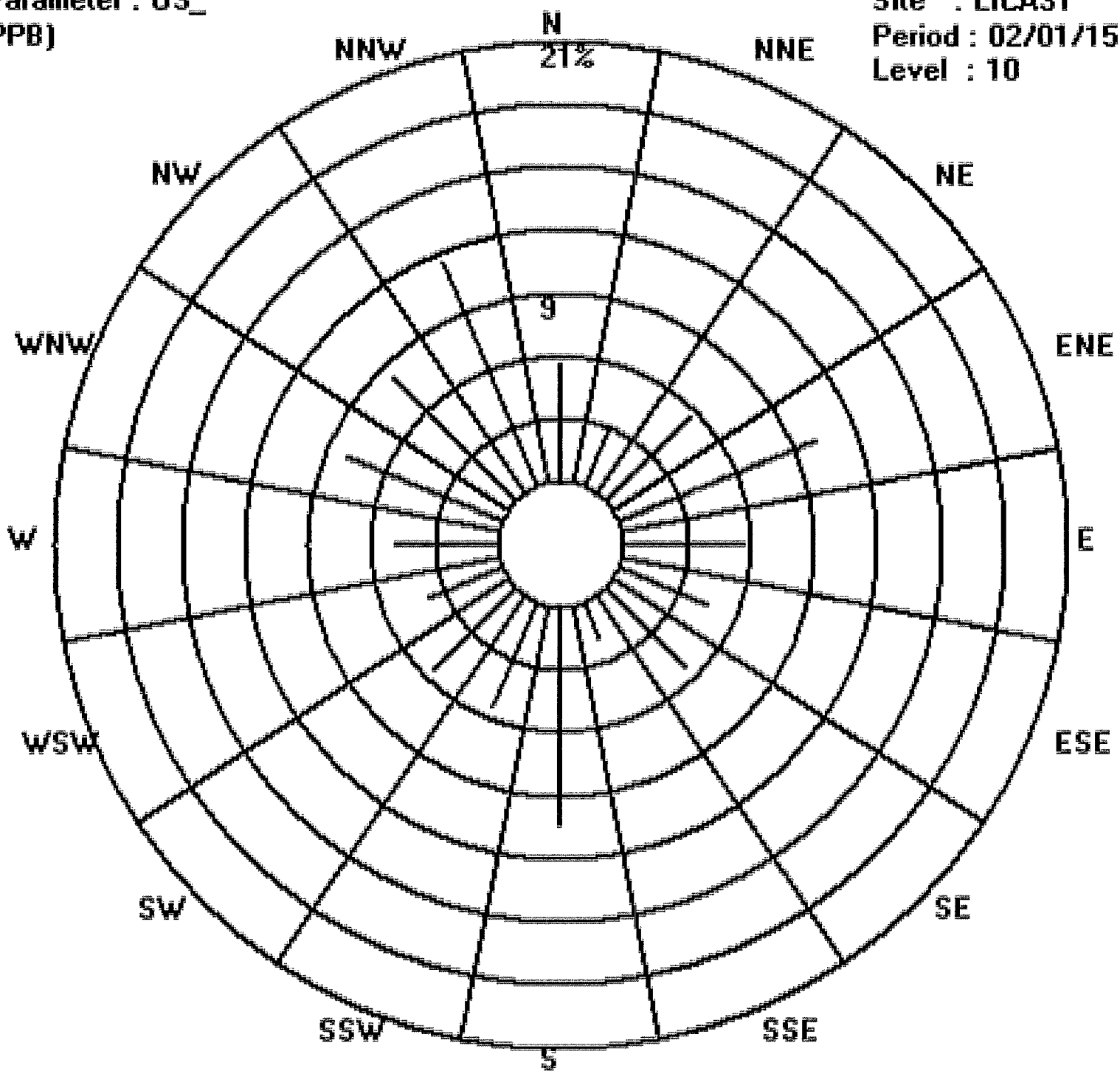
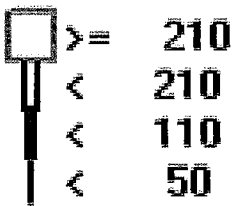
Logger : 31 Parameter : 03\_

Site : LICA31

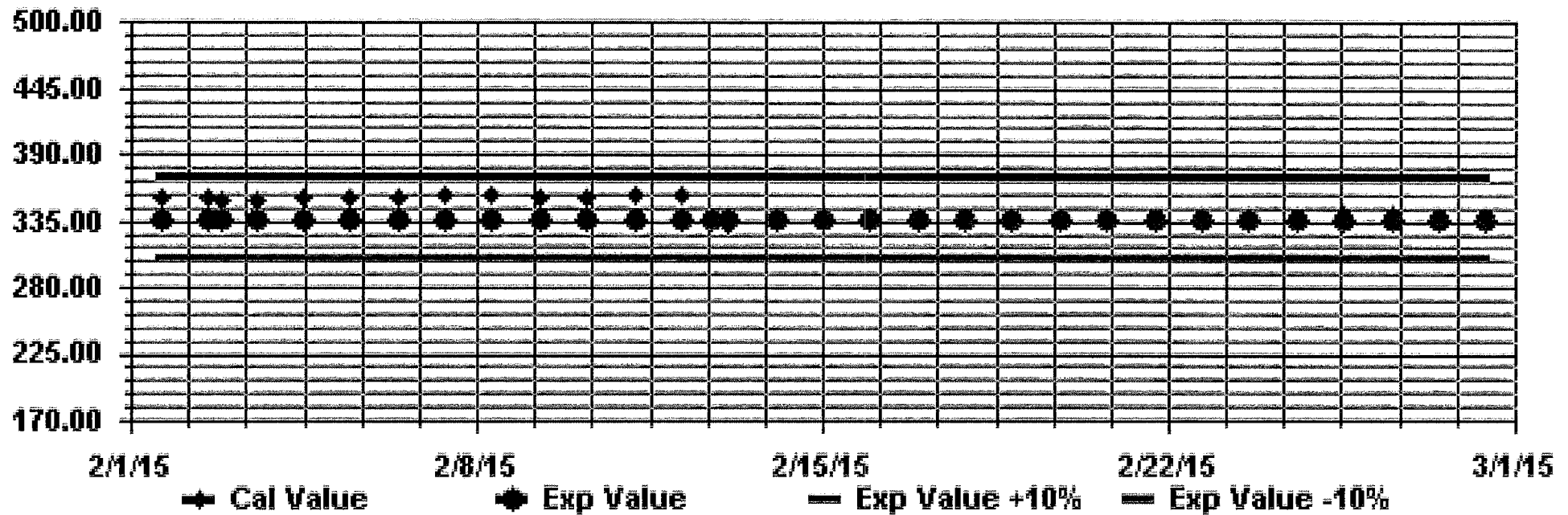
Class Limits (PPB)

Period : 02/01/15-02/28/15

Level : 10



Calibration Graph for Site: LICA31 Parameter: 03\_ Sequence: 03 Phase: SPAN



***PARTICULATE MATTER 2.5***



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

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.		
DAY																												
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			
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3	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			
4	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			
5	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			
6	5.0	16.0	7.0	0.0	2.0	7.0	5.0	X	5.0	8.0	0.0	36.0	7.0	10.0	25.0	5.0	24.0	12.0	11.0	X	0.0	16.0	28.0	24.0	36.0	8.0	5.3	10
7	27.0	30.0	10.0	8.0	16.0	24.0	3.0	6.0	14.0	17.0	12.0	29.0	30.0	19.0	22.0	22.0	16.0	0.0	22.0	10.0	X	12.0	23.0	17.0	30.0	16.9	23	
8	26.0	6.0	13.0	12.0	14.0	19.0	12.0	12.0	19.0	11.0	15.0	9.0	12.0	16.0	3.0	14.0	14.0	7.0	7.0	10.0	14.0	7.0	16.0	8.0	26.0	12.3	24	
9	13.0	7.0	8.0	7.0	16.0	8.0	16.0	4.0	5.0	9.0	13.0	8.0	12.0	4.0	13.0	16.0	10.0	4.0	9.0	6.0	7.0	11.0	X	9.0	16.0	9.3	23	
10	9.0	14.0	9.0	6.0	12.0	10.0	9.0	8.0	15.0	5.0	12.0	2.0	7.0	14.0	8.0	7.0	9.0	10.0	9.0	10.0	5.0	8.0	14.0	15.0	15.0	9.5	24	
11	7.0	26.0	5.0	11.0	2.0	9.0	3.0	8.0	9.0	17.0	11.0	9.0	6.0	12.0	10.0	13.0	7.0	13.0	8.0	12.0	6.0	10.0	16.0	8.0	26.0	9.9	24	
12	10.0	12.0	20.0	22.0	13.0	17.0	17.0	15.0	22.0	26.0	21.0	28.0	15.0	18.0	20.0	21.0	20.0	27.0	22.0	23.0	27.0	31.0	20.0	31.0	20.2	9.9	24	
13	23.0	24.0	10.0	14.0	17.0	11.0	4.0	8.0	12.0	7.0	9.0	16.0	7.0	6.0	5.0	0.0	5.0	0.0	5.0	4.0	3.0	2.0	8.0	5.0	24.0	8.5	24	
14	19.0	2.0	13.0	12.0	8.0	7.0	10.0	7.0	8.0	8.0	11.0	8.0	10.0	10.0	8.0	11.0	6.0	6.0	14.0	2.0	0.0	15.0	27.0	16.0	27.0	9.9	24	
15	9.0	10.0	12.0	5.0	0.0	8.0	3.0	5.0	1.0	1.0	12.0	7.0	11.0	0.0	5.0	0.0	2.0	7.0	0.0	1.0	X	5.0	0.0	0.0	12.0	4.5	23	
16	5.0	4.0	7.0	4.0	4.0	5.0	4.0	3.0	6.0	4.0	0.0	5.0	0.0	5.0	5.0	9.0	6.0	5.0	11.0	6.0	6.0	2.0	5.0	19.0	19.0	5.4	24	
17	0.0	2.0	12.0	13.0	8.0	4.0	6.0	10.0	5.0	11.0	0.0	11.0	14.0	9.0	C	0.0	0.0	6.0	10.0	10.0	8.0	8.0	11.0	9.0	14.0	7.3	24	
18	8.0	11.0	9.0	10.0	10.0	13.0	11.0	9.0	12.0	13.0	12.0	12.0	14.0	14.0	19.0	13.0	11.0	13.0	12.0	14.0	9.0	9.0	8.0	11.0	19.0	11.5	24	
19	10.0	9.0	9.0	12.0	7.0	10.0	10.0	12.0	12.0	17.0	15.0	12.0	11.0	1.0	4.0	10.0	9.0	4.0	7.0	5.0	0.0	6.0	2.0	2.0	17.0	8.2	24	
20	7.0	8.0	6.0	0.0	3.0	0.0	3.0	4.0	1.0	4.0	2.0	4.0	4.0	2.0	4.0	4.0	3.0	4.0	5.0	7.0	2.0	6.0	5.0	8.0	8.0	4.0	24	
21	6.0	6.0	11.0	9.0	0.0	0.0	9.0	5.0	9.0	16.0	6.0	7.0	8.0	9.0	7.0	10.0	7.0	6.0	5.0	9.0	0.0	X	11.0	10.0	16.0	7.2	23	
22	9.0	8.0	15.0	14.0	14.0	12.0	12.0	12.0	13.0	17.0	8.0	15.0	14.0	11.0	14.0	18.0	10.0	12.0	16.0	12.0	11.0	14.0	12.0	8.0	18.0	12.5	24	
23	5.0	12.0	6.0	5.0	0.0	1.0	6.0	7.0	2.0	12.0	2.0	5.0	3.0	0.0	0.0	2.0	0.0	1.0	1.0	1.0	2.0	6.0	6.0	0.0	12.0	3.5	24	
24	4.0	6.0	1.0	1.0	4.0	1.0	7.0	5.0	7.0	0.0	0.0	4.0	1.0	2.0	7.0	5.0	6.0	5.0	4.0	3.0	5.0	5.0	1.0	3.0	7.0	3.6	24	
25	5.0	5.0	7.0	1.0	9.0	15.0	14.0	7.0	2.0	4.0	2.0	7.0	2.0	7.0	4.0	3.0	4.0	4.0	2.0	6.0	6.0	12.0	12.0	7.0	15.0	6.1	24	
26	13.0	7.0	8.0	8.0	6.0	5.0	9.0	7.0	11.0	12.0	11.0	10.0	7.0	3.0	2.0	12.0	X	8.0	2.0	11.0	7.0	11.0	0.0	0.0	13.0	7.4	23	
27	2.0	0.0	13.0	8.0	6.0	3.0	10.0	6.0	5.0	13.0	4.0	7.0	9.0	5.0	4.0	0.0	5.0	10.0	9.0	2.0	7.0	7.0	8.0	4.0	13.0	6.1	24	
28	9.0	5.0	11.0	9.0	8.0	16.0	6.0	0.0	10.0	8.0	9.0	7.0	4.0	11.0	3.0	5.0	5.0	6.0	2.0	2.0	0.0	5.0	6.0	8.0	16.0	6.5	24	
HOURLY MAX	27.0	30.0	20.0	22.0	17.0	24.0	17.0	17.0	19.0	22.0	26.0	36.0	30.0	19.0	25.0	22.0	24.0	20.0	27.0	22.0	23.0	27.0	31.0	24.0				
HOURLY AVG	10.0	10.0	9.7	8.3	7.8	8.9	8.2	7.4	8.6	10.3	8.3	10.9	9.6	8.0	8.6	8.7	8.2	6.8	8.6	7.4	5.7	9.1	11.2	9.0				

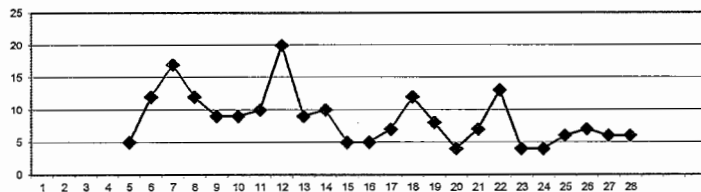
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR 30 ug/m3

24 HOUR AVERAGES FOR FEBRUARY 2015

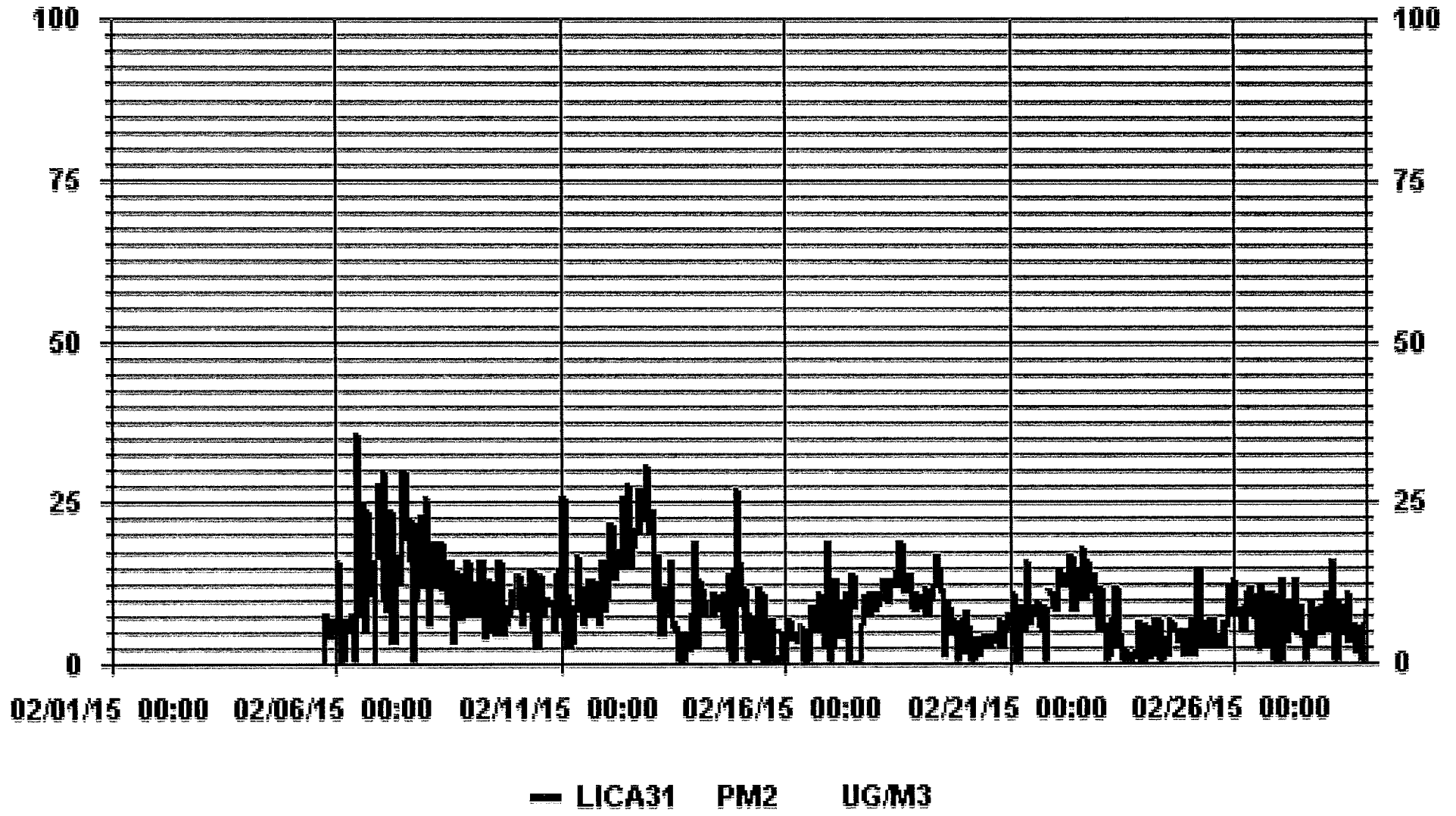


MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	512		
MAXIMUM 1-HR AVERAGE:	36.0 ug/m3 @ HOUR(5)	11	ON DAY(5) 6
MAXIMUM 24-HR AVERAGE:	20.2 ug/m3		ON DAY(5) 12
			VAR-VARIOUS
MONTHLY CALIBRATION TIME:	4 HRS	OPERATIONAL TIME:	555 HRS
		AMD OPERATION UPTIME:	82.6 %
STANDARD DEVIATION:	6.15	MONTHLY AVERAGE:	8.7 ug/m3



### 01 Hour Averages



LICA31  
 PM2 / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : PM2  
 Units : UG/M3

Wind Parameter : WDR  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	5.62	2.72	6.35	10.70	6.71	5.26	6.35	1.99	9.07	4.90	4.35	2.90	4.35	7.98	8.16	11.79	99.27
< 60	.00	.00	.00	.36	.00	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.18	.72
< 80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 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	5.62	2.72	6.35	11.07	6.71	5.44	6.35	1.99	9.07	4.90	4.35	2.90	4.35	7.98	8.16	11.97	

Calm : .00 %

Total # Operational Hours : 551

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	31	15	35	59	37	29	35	11	50	27	24	16	24	44	45	65	547
< 60				2		1										1	4
< 80																	
< 120																	
< 240																	
>= 240																	
Totals	31	15	35	61	37	30	35	11	50	27	24	16	24	44	45	66	

Calm : .00 %

Total # Operational Hours : 551

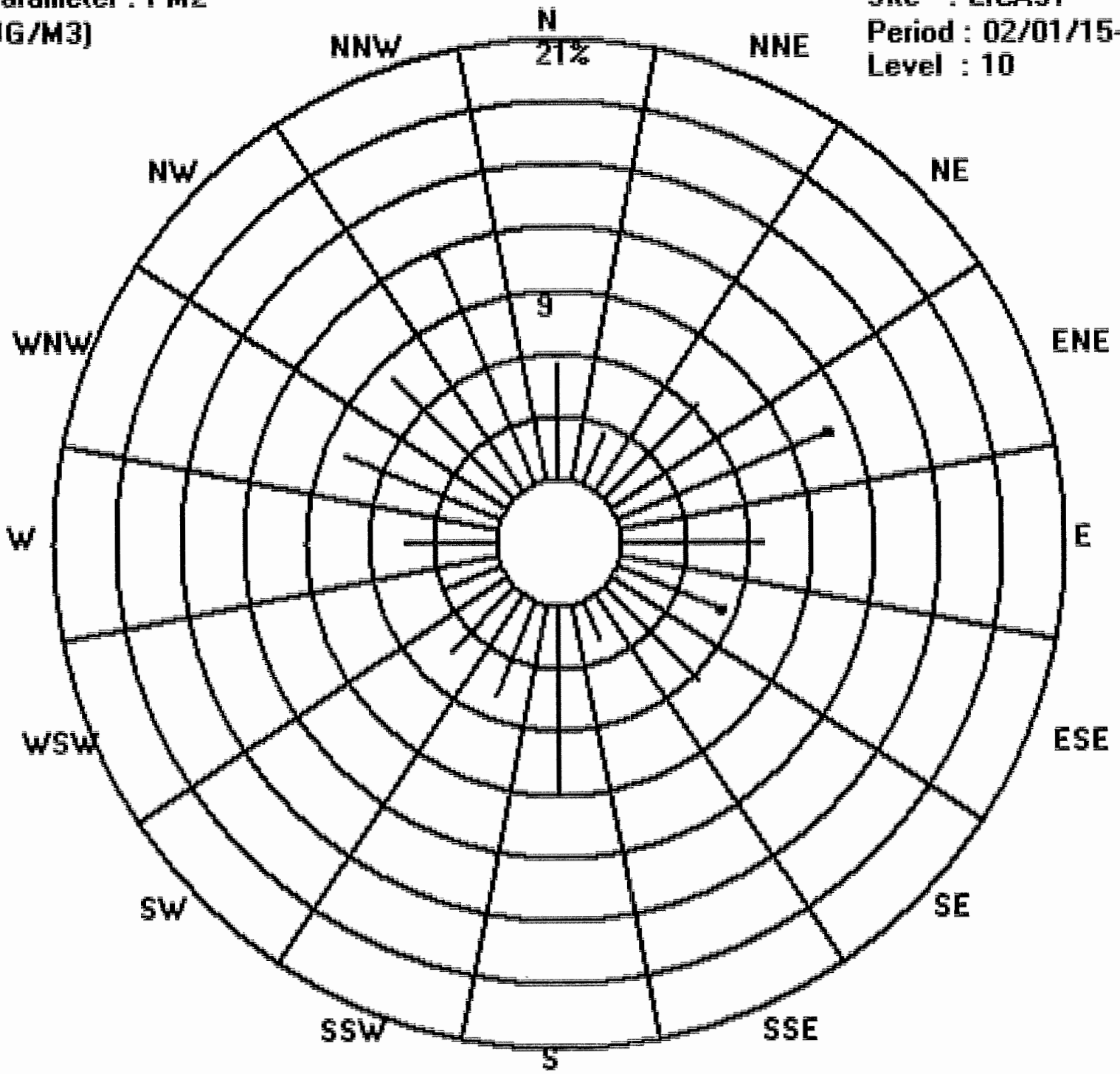
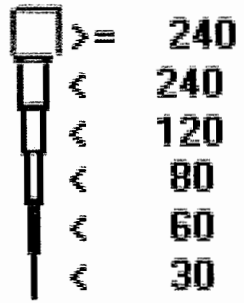
Logger : 31 Parameter : PM2

Site : LICA31

Class Limits (UG/M3)

Period : 02/01/15-02/28/15

Level : 10



***WIND SPEED***



WIND SPEED (WS) hourly averages in km/hr

MST

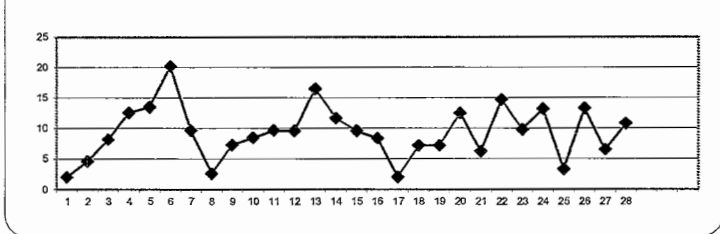
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59			
DAY 1	7.4	8.9	9.6	8.6	8.4	8.1	8.0	7.8	7.5	8.1	6.6	6.4	7.9	7.6	11.4	12.6	10.2	8.1	7.8	8.6	10.5	9.2	8.6	8.1	12.6	8.6	24
DAY 2	7.3	5.9	3.9	1.8	2.2	2.4	2.1	2.5	2.4	2.3	6.7	9.7	8.7	6.8	6.7	7.0	5.8	5.3	5.9	7.5	9.7	9.4	9.4	7.1	9.7	5.8	24
DAY 3	8.4	9.1	9.4	8.9	8.8	9.3	9.5	11.8	12.9	15.0	13.0	13.6	15.0	17.1	15.3	13.9	12.8	8.1	5.1	4.1	5.8	6.7	9.2	9.4	17.1	10.5	24
DAY 4	11.7	13.6	14.2	15.6	16.8	18.5	20.9	21.2	19.4	19.3	19.0	20.1	17.7	18.5	19.3	16.6	12.6	10.9	10.3	10.0	10.7	10.5	16.6	13.7	21.2	15.7	24
DAY 5	13.9	11.8	13.0	15.1	14.8	10.8	11.1	10.7	10.7	12.6	11.0	14.5	18.2	16.2	18.3	20.0	17.9	17.6	16.1	16.2	17.3	19.9	19.9	20.3	20.3	15.2	24
DAY 6	24.3	23.0	21.6	19.5	22.5	26.6	25.0	24.0	23.7	23.2	22.7	24.3	25.4	25.0	18.8	17.1	19.9	17.7	16.9	15.8	15.4	11.8	11.5	10.1	26.6	20.2	24
DAY 7	9.8	9.9	11.8	12.0	13.9	13.7	13.7	12.4	12.0	11.1	11.6	12.0	14.2	12.2	11.0	11.9	10.3	8.8	8.3	7.1	6.7	7.5	4.9	3.8	14.2	10.4	24
DAY 8	3.1	2.1	2.4	1.6	5.5	7.1	4.6	6.1	6.0	5.3	6.2	6.5	5.1	5.0	4.2	2.8	3.8	4.9	6.5	4.1	2.3	4.7	6.1	7.0	7.1	4.7	24
DAY 9	7.0	6.8	9.6	10.5	8.8	12.4	12.4	11.4	12.9	12.1	12.4	13.9	12.5	9.8	9.1	8.0	8.8	7.4	6.5	4.8	4.1	3.1	5.1	3.8	13.9	8.9	24
DAY 10	2.3	5.0	5.0	6.3	8.1	11.3	11.6	7.7	9.7	9.8	10.1	11.9	10.3	10.5	9.3	8.8	9.6	9.9	7.5	10.0	9.5	10.7	14.4	12.6	14.4	9.2	24
DAY 11	12.9	9.8	9.2	10.3	10.0	8.6	10.6	11.4	12.3	13.0	12.3	12.1	13.4	13.8	17.5	15.5	16.0	14.3	15.6	18.3	17.2	14.4	13.3	15.6	18.3	13.2	24
DAY 12	15.7	14.0	12.7	14.4	18.1	13.5	16.1	13.3	11.8	11.2	11.2	10.9	8.4	6.5	6.2	8.1	12.1	13.0	7.6	4.2	7.0	3.6	4.1	4.3	18.1	10.3	24
DAY 13	5.6	8.3	10.6	11.6	11.2	13.1	13.3	17.4	18.9	18.8	19.4	18.4	18.4	22.8	19.7	19.8	22.9	21.6	26.1	24.0	19.6	18.4	20.5	21.7	26.1	17.6	24
DAY 14	24.3	24.2	23.2	18.0	10.0	18.8	17.5	14.2	12.7	11.7	10.3	11.4	13.2	11.4	13.5	12.3	13.5	12.2	15.4	18.1	19.4	19.4	16.3	13.7	24.3	15.6	24
DAY 15	12.4	12.0	11.7	11.8	10.5	8.6	9.1	10.5	9.9	9.6	10.2	14.1	16.4	14.8	12.7	14.3	11.4	9.3	10.3	10.1	10.5	11.5	12.0	10.4	16.4	11.4	24
DAY 16	8.7	8.8	11.6	12.8	10.9	13.2	11.5	10.7	7.2	7.6	5.9	9.5	9.8	8.0	6.8	9.1	9.4	9.6	8.6	9.4	9.9	9.9	10.1	8.9	13.2	9.5	24
DAY 17	8.5	10.2	11.2	9.1	8.0	8.2	10.0	9.3	4.6	3.1	4.5	4.6	3.1	5.3	7.1	5.3	7.4	6.1	5.5	6.9	7.2	7.6	7.3	8.3	11.2	7.0	24
DAY 18	8.4	8.4	8.6	7.2	9.7	9.0	9.0	6.2	7.5	8.3	7.2	8.2	8.2	7.0	5.9	7.4	10.2	8.6	6.8	6.3	7.9	8.9	8.3	8.1	10.2	8.0	24
DAY 19	7.5	5.6	3.7	4.2	6.2	9.9	10.2	9.7	5.5	8.1	9.8	9.2	12.3	18.9	13.5	13.5	11.4	11.1	12.3	13.3	14.2	12.9	10.3	12.6	18.9	10.2	24
DAY 20	11.0	13.6	14.0	15.3	16.7	16.1	18.1	16.6	16.1	16.6	13.8	13.1	15.3	15.2	13.7	13.4	10.9	11.8	7.8	6.4	9.0	8.7	5.9	7.2	18.1	12.8	24
DAY 21	13.0	10.1	13.3	15.5	15.0	13.9	13.0	11.4	8.2	8.8	8.6	8.7	8.3	10.4	8.1	9.2	7.1	4.6	1.7	6.3	9.0	9.9	9.0	9.0	15.5	9.7	24
DAY 22	10.2	11.4	12.7	13.2	14.3	13.7	14.6	14.0	14.2	15.9	14.8	13.4	11.9	12.5	14.5	17.6	16.5	17.1	17.3	17.5	19.0	16.9	18.0	15.4	19.0	14.9	24
DAY 23	13.3	13.6	12.1	14.6	14.5	12.6	12.9	14.6	15.5	15.9	14.7	18.0	14.8	14.8	13.4	13.7	12.1	7.6	7.6	6.3	5.2	5.8	8.4	18.0	12.1	24	
DAY 24	11.4	17.5	17.2	18.4	17.7	18.0	14.0	15.5	16.0	14.4	14.6	13.4	12.0	14.2	13.1	12.5	10.8	12.0	12.2	12.5	14.6	14.8	12.7	14.5	18.4	14.3	24
DAY 25	11.2	13.8	12.8	10.0	10.9	8.1	9.3	7.2	8.2	9.4	7.5	4.3	4.0	4.2	3.3	3.2	4.9	2.8	5.1	6.2	7.6	7.5	8.5	8.7	13.8	7.4	24
DAY 26	10.0	10.9	11.2	13.7	14.0	15.9	16.5	15.9	15.9	15.7	16.7	16.8	17.0	15.2	14.6	14.4	14.7	10.0	12.1	13.3	12.5	10.5	7.8	8.2	17.0	13.5	24
DAY 27	7.6	5.6	5.3	8.0	9.3	10.1	8.5	8.5	6.8	8.4	9.9	10.4	9.4	11.1	9.0	9.9	8.1	7.1	5.8	6.3	8.6	8.7	9.8	10.6	11.1	8.5	24
DAY 28	11.1	10.5	11.3	11.1	12.0	12.8	12.2	12.1	11.3	12.0	13.0	15.4	17.0	19.0	16.9	15.3	15.2	14.1	11.8	7.3	8.0	8.1	9.9	9.1	19.0	12.4	24
HOURLY MAX	24.3	24.2	23.2	19.5	22.5	26.6	25.0	24.0	23.7	23.2	22.7	24.3	25.4	25.0	19.7	20.0	22.9	21.6	26.1	24.0	19.6	19.4	20.5	21.7			
HOURLY AVG	10.6	10.9	11.2	11.4	11.7	12.3	12.3	11.9	11.4	11.7	11.6	12.3	12.4	12.6	11.9	11.9	11.7	10.4	10.0	10.1	10.7	10.3	10.5	10.4			

STATUS FLAG CODES

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

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

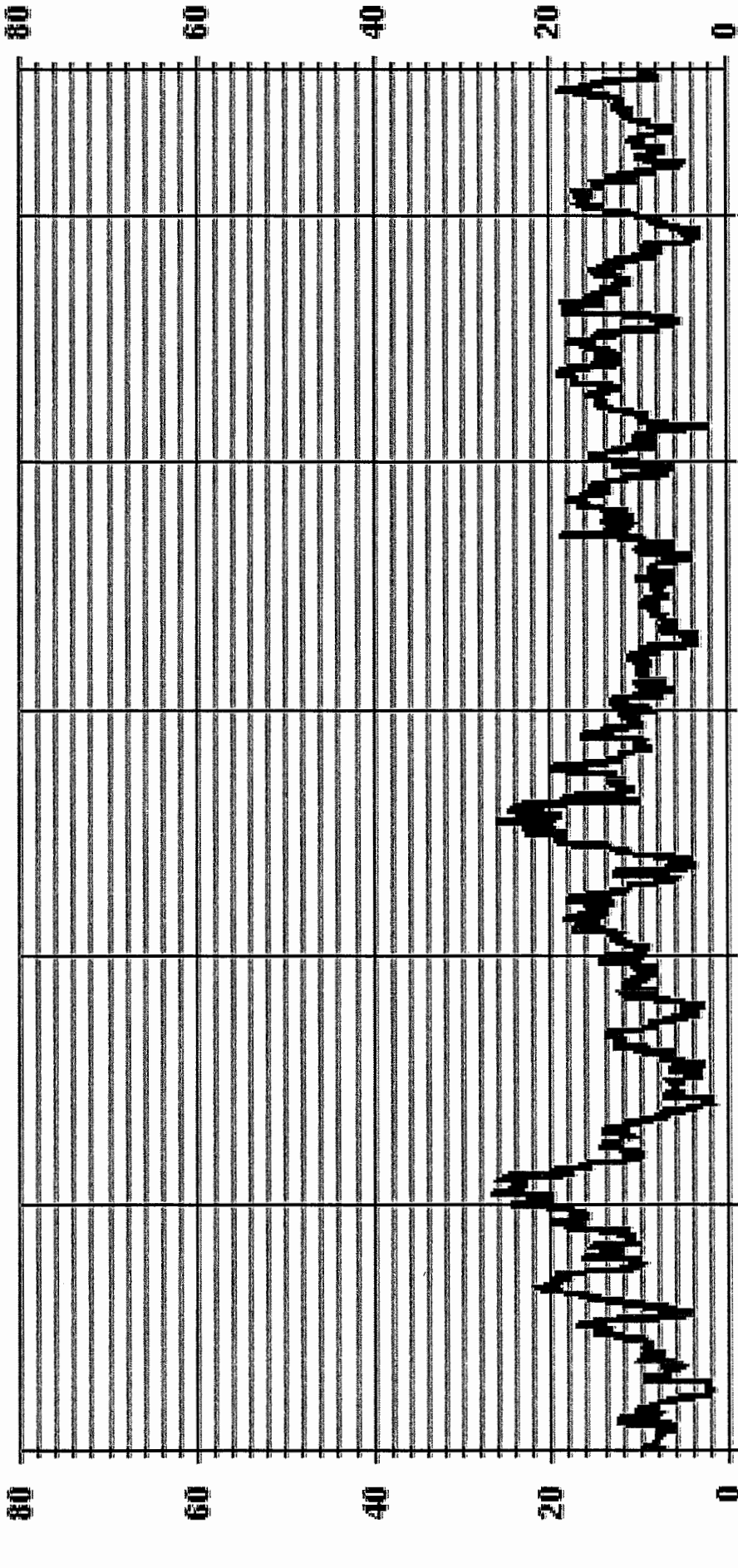
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	672
MAXIMUM 1-HR AVERAGE:	26.6 KPH @ HOUR(S) 5 ON DAY(S) 6
MAXIMUM 24-HR AVERAGE:	20.2 KPH ON DAY(S) 6
	VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
OPERATIONAL TIME:	672 HRS
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	4.70
MONTHLY AVERAGE:	11.3 KPH

01 Hour Averages



— LICA31 WSP KPH



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31- C

VECTOR WIND SPEED MAX instantaneous maximum in km/hr

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	DAILY MAX.	24-HOUR AVG.	RDGS.
1	17.4	20.6	19.3	19.1	18.4	19.1	17.6	16.9	12.5	13.8	11.2	12.1	24.8	17.4	29.4	31.8	23.9	24.3	20.1	21.9	26.7	23.2	23.5	19.1	31.8	20.2	24	31.8	20.2	24	
2	29.4	27.9	15.4	73.7	64.9	36.1	76.2	76.4	80.9	65.7	15.2	15.4	15.6	14.6	14.3	13.4	13.8	9.2	14.9	18.2	19.5	18.2	18.4	14.5	80.9	31.7	24	80.9	31.7	24	
3	19.1	18.4	19.1	20.2	19.1	15.3	16.6	18.4	21.5	22.7	30.7	31.2	39.9	37.0	37.2	37.5	36.1	23.8	14.7	59.5	7.9	10.1	20.4	20.6	59.5	24.9	24	59.5	24.9	24	
4	26.5	27.1	28.7	32.4	35.5	40.7	40.7	45.3	45.8	35.7	32.7	34.2	28.6	28.8	29.4	24.6	19.3	16.2	15.4	14.7	26.1	32.7	35.1	34.2	45.8	30.4	24	45.8	30.4	24	
5	38.8	27.0	30.9	37.3	35.9	28.1	22.6	23.2	24.1	29.1	26.7	33.2	40.8	36.8	37.4	37.5	36.3	33.5	31.4	32.4	35.7	34.6	40.1	46.2	46.2	33.3	24	46.2	33.3	24	
6	54.6	45.4	50.2	43.6	53.7	69.8	63.0	66.3	57.8	57.6	66.5	55.2	74.5	66.1	41.8	38.1	46.6	42.6	40.8	35.9	37.9	30.2	25.4	24.6	74.5	49.5	24	74.5	49.5	24	
7	22.0	26.1	25.2	31.4	27.6	32.2	28.7	26.4	26.5	25.8	26.9	29.4	27.7	27.8	24.4	24.6	22.4	20.3	18.0	22.2	20.6	20.2	41.0	35.5	41.0	26.4	24	41.0	26.4	24	
8	47.6	81.0	51.1	75.6	71.6	21.7	88.3	17.9	16.9	41.9	20.9	24.4	17.4	19.8	20.0	83.3	24.6	16.9	18.4	16.7	19.2	18.2	12.8	17.2	88.3	35.1	24	88.3	35.1	24	
9	15.0	15.5	21.8	24.0	17.8	30.5	25.3	29.0	27.0	25.4	30.1	30.2	29.8	25.5	25.7	20.4	18.0	15.2	14.1	16.2	58.2	81.1	35.7	26.9	81.1	27.4	24	81.1	27.4	24	
10	24.3	13.6	12.7	15.4	19.5	25.6	28.3	17.9	23.9	22.3	21.8	23.5	22.2	19.1	22.2	16.9	21.7	25.6	23.7	25.8	24.9	27.9	34.1	30.4	34.1	22.6	24	34.1	22.6	24	
11	28.1	23.0	16.0	17.1	18.2	21.4	22.3	22.8	28.5	31.3	27.6	27.2	26.7	26.5	31.6	34.2	35.5	35.0	32.6	42.7	33.5	35.5	28.5	36.3	42.7	28.4	24	42.7	28.4	24	
12	42.5	33.1	28.9	28.8	29.0	19.7	24.5	20.2	20.0	17.2	19.5	18.3	19.5	17.6	12.6	15.7	19.4	19.8	13.3	9.8	9.5	12.6	15.1	8.7	42.5	19.8	24	42.5	19.8	24	
13	12.9	16.8	19.1	24.7	21.9	26.2	25.8	30.3	50.1	42.8	43.3	34.7	37.8	47.2	41.9	50.2	55.7	59.8	65.1	58.5	47.8	43.4	52.4	47.1	65.1	39.8	24	65.1	39.8	24	
14	51.1	50.5	47.8	44.3	26.6	44.3	39.9	27.4	25.8	23.2	21.3	27.4	31.8	27.2	28.1	28.0	29.6	28.7	30.3	28.5	29.8	26.1	22.6	18.7	51.1	31.6	24	51.1	31.6	24	
15	15.9	17.4	16.3	18.3	22.2	17.8	16.8	20.0	19.6	23.4	21.2	37.6	36.5	31.3	33.5	33.4	28.6	23.1	29.7	26.2	29.9	41.7	31.9	28.9	41.7	25.9	24	41.7	25.9	24	
16	28.8	23.8	30.8	31.2	26.5	31.9	29.3	32.5	19.8	21.8	28.7	23.9	25.1	24.2	20.4	18.3	17.8	18.2	16.0	17.1	20.0	19.7	19.8	17.2	32.5	23.5	24	32.5	23.5	24	
17	16.7	18.9	21.7	22.5	16.0	17.5	16.8	17.9	13.0	13.2	6.9	8.8	16.5	17.4	18.5	15.0	20.6	18.4	11.6	14.8	18.7	16.5	17.4	16.5	22.5	16.3	24	22.5	16.3	24	
18	19.0	20.7	19.1	15.9	19.8	23.7	22.6	15.2	18.7	16.7	16.8	15.0	15.6	13.5	13.7	16.3	25.9	20.6	16.3	16.9	17.0	21.3	19.2	21.2	25.9	18.4	24	25.9	18.4	24	
19	17.9	16.5	19.8	15.0	16.7	14.3	17.0	13.5	12.8	17.9	18.1	22.8	36.8	43.1	29.7	29.4	26.8	26.1	27.2	28.8	32.1	28.2	23.3	33.0	43.1	23.6	24	43.1	23.6	24	
20	26.7	33.5	36.3	33.4	41.5	36.5	38.9	42.1	40.8	41.4	34.4	34.3	37.7	33.8	32.1	32.1	27.5	29.0	24.4	21.3	21.7	22.0	27.0	21.8	42.1	32.1	24	42.1	32.1	24	
21	31.0	29.0	29.4	43.4	32.0	33.8	27.4	27.3	22.7	20.1	16.7	20.2	23.7	19.2	19.6	19.1	20.7	14.3	48.0	13.4	12.1	20.6	19.1	19.2	48.0	24.3	24	48.0	24.3	24	
22	22.0	24.5	23.4	23.0	29.2	26.7	26.9	29.4	31.3	32.2	27.0	29.0	27.9	32.5	33.0	39.6	41.5	37.1	35.3	29.4	31.5	33.1	31.9	26.4	41.5	30.2	24	41.5	30.2	24	
23	18.8	19.5	24.3	39.4	34.3	28.2	27.0	28.4	47.5	35.9	33.1	40.8	37.4	32.6	28.9	30.1	27.4	19.0	20.6	15.7	12.5	12.3	9.6	17.3	47.5	26.7	24	47.5	26.7	24	
24	23.7	50.3	43.5	44.6	40.9	43.7	39.3	40.2	41.7	43.5	36.4	29.7	29.7	27.5	24.4	23.3	24.8	24.4	26.8	32.5	33.2	30.1	33.9	50.3	34.0	24	50.3	34.0	24		
25	29.5	31.2	32.7	26.1	27.0	25.8	21.7	16.7	21.3	25.5	25.9	17.4	14.8	16.8	14.1	66.0	41.0	27.2	12.3	14.5	15.1	14.9	16.1	16.5	66.0	23.8	24	66.0	23.8	24	
26	18.5	20.4	23.5	24.5	23.5	26.3	28.9	27.9	30.9	31.3	32.2	37.3	33.0	31.7	30.1	32.8	34.2	26.5	26.1	27.6	26.5	22.6	18.5	11.0	37.3	26.9	24	37.3	26.9	24	
27	10.6	12.1	13.7	14.7	21.3	25.0	21.2	23.2	16.9	23.9	27.5	26.7	26.8	22.9	19.6	21.1	19.2	29.8	30.3	13.2	12.8	17.8	21.9	22.4	30.3	20.6	24	30.3	20.6	24	
28	22.2	22.8	17.4	14.9	15.2	18.7	26.1	24.6	25.9	27.5	25.1	33.6	51.4	48.7	39.3	36.7	33.7	37.1	27.2	21.1	17.8	17.6	20.7	19.8	51.4	26.9	24	51.4	26.9	24	
HOURLY MAX	54.6	81.0	51.1	75.6	71.6	69.8	88.3	76.4	80.9	65.7	66.5	55.2	74.5	66.1	41.9	83.3	55.7	59.8	65.1	59.5	58.2	81.1	52.4	47.1							
HOURLY AVG	26.1	27.4	26.4	30.5	29.5	28.6	31.4	28.5	29.4	29.6	26.6	27.6	30.4	28.8	27.0	31.1	28.3	25.8	25.1	24.6	24.9	26.3	25.4	24.5							

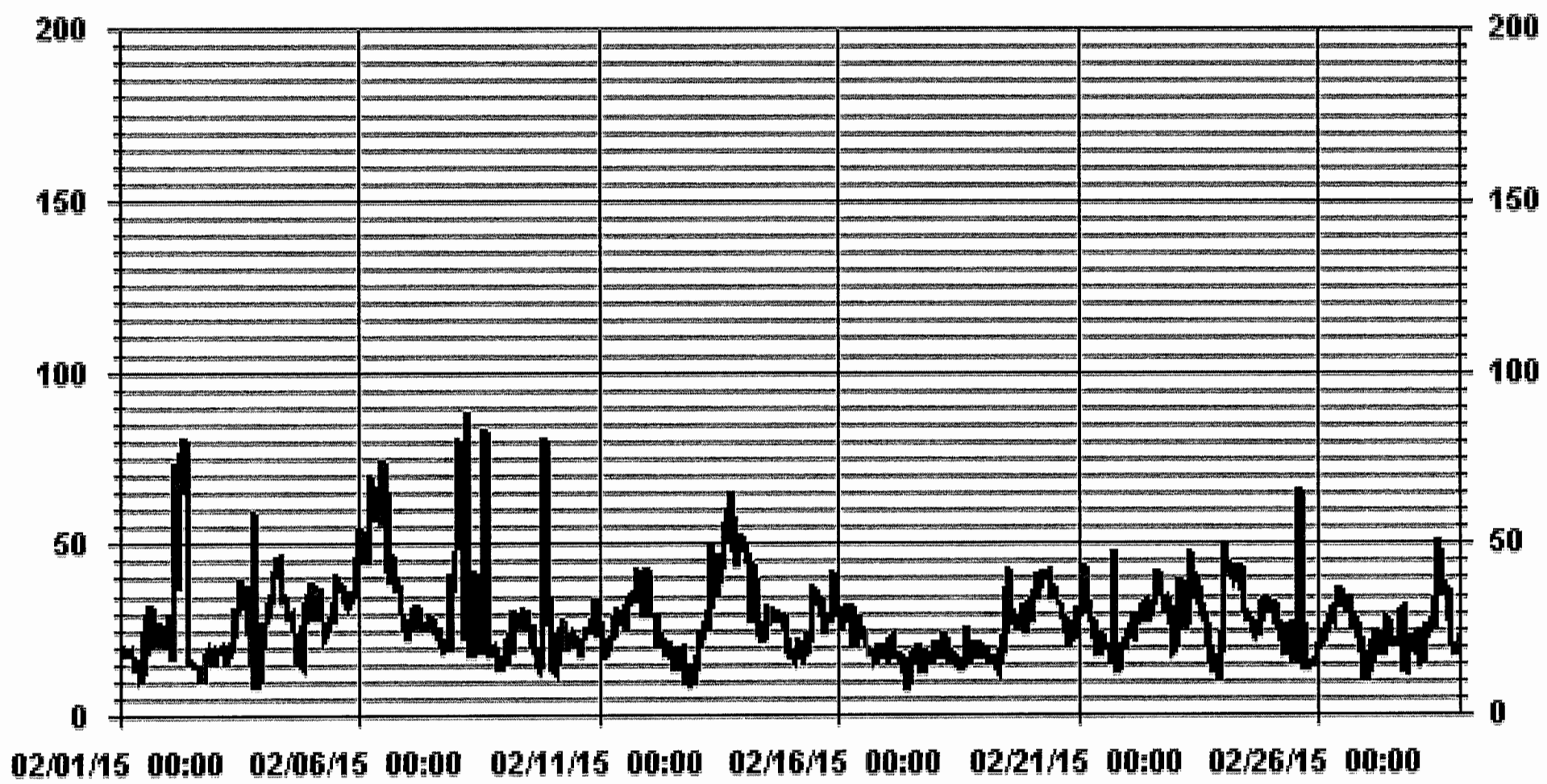
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	88.3	KPH	@ HOUR(S)	6	ON DAY(S)	8
				VAR-VARIOUS		
OPERATIONAL TIME:	672	HR(S)				

### 01 Hour Averages



— LICA31 WSMAX KPH



LICA31  
WSP / WDR Joint Frequency Distribution (Percent)

February 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	.89	.59	.74	.44	1.33	.29	.44	.14	.59	.14	1.33	.59	1.19	.29	.59	1.63	11.30
< 12.0	3.27	1.93	1.78	2.67	1.48	2.38	3.12	.29	4.01	2.67	2.67	1.63	2.52	5.05	5.05	6.10	46.72
< 20.0	1.33	.29	3.12	4.31	2.23	1.48	1.63	1.33	5.35	2.67	2.08	1.48	1.33	2.52	2.82	3.72	37.79
< 29.0	.00	.00	.44	2.38	.44	.44	.00	.00	.29	.00	.14	.00	.00	.00	.00	.00	4.16
< 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	5.50	2.82	6.10	9.82	5.50	4.61	5.20	1.78	10.26	5.50	6.25	3.72	5.05	7.88	8.48	11.45	

Calm : .00 %

Total # Operational Hours : 672

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	4	5	3	9	2	3	1	4	1	9	4	8	2	4	11	76
< 12.0	22	13	12	18	10	16	21	2	27	18	18	11	17	34	34	41	314
< 20.0	9	2	21	29	15	10	11	9	36	18	14	10	9	17	19	25	254
< 29.0			3	16	3	3			2		1						28
< 39.0																	
>= 39.0																	
Totals	37	19	41	66	37	31	35	12	69	37	42	25	34	53	57	77	

Calm : .00 %

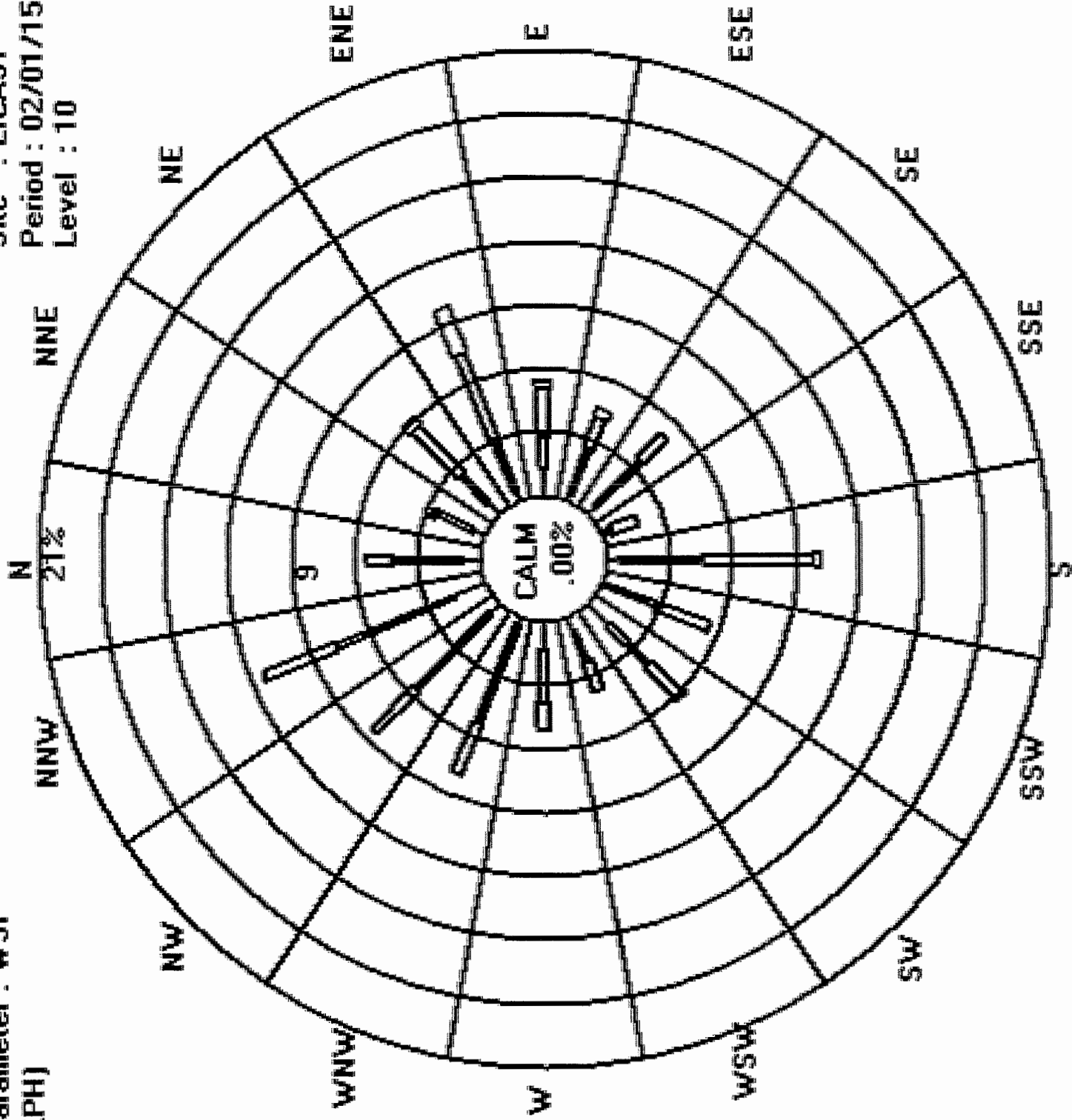
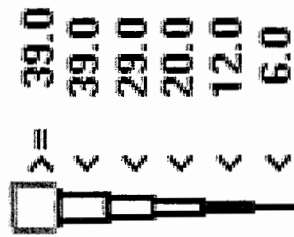
Total # Operational Hours : 672

Logger : 31 Parameter : WSP

Site : LICA31

Class Limits (KPH)

Period : 02/01/15-02/28/15  
Level : 10



***WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31- C

WIND DIRECTION (WD) hourly averages

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

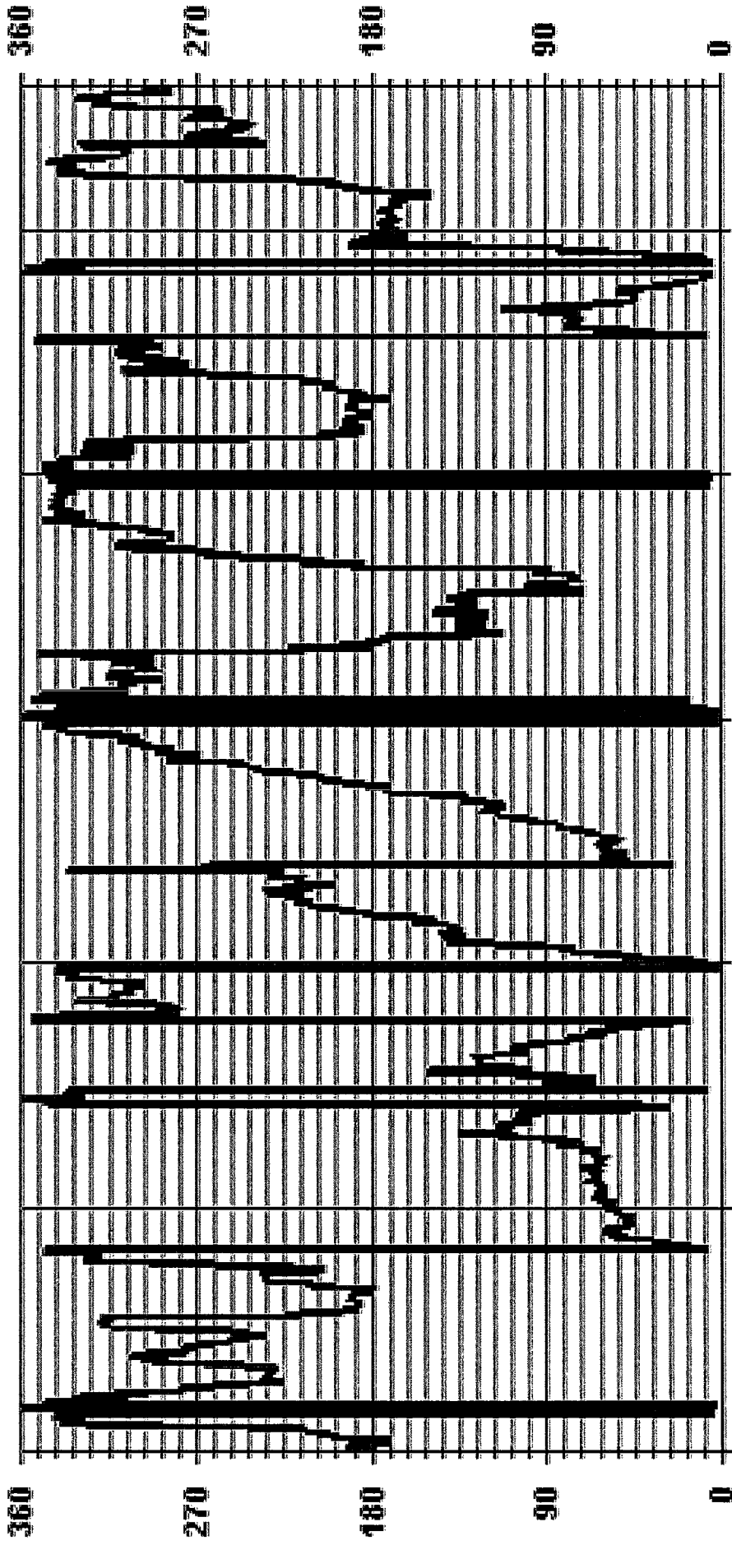
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	107.10	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	NNE

01 Hour Averages



— LICA31 WDR DEG

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - FEBRUARY 2015

JOB # 2833-2015-02-31- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

MST

HOURLY START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
HOURLY END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	
DAY																									
1	8	8	9	9	9	8	7	7	8	7	5	8	14	19	15	15	14	14	16	14	12	14	14	13	
2	16	16	13	31	26	14	25	23	23	17	10	10	9	12	11	10	9	7	6	10	11	12	12	11	
3	12	12	12	12	11	9	6	5	6	7	9	14	17	14	15	14	13	11	8	21	4	5	7	9	
4	9	9	9	10	10	10	10	11	13	11	8	6	8	7	6	6	6	4	5	7	10	13	13	14	
5	14	13	18	16	12	13	12	12	13	13	13	14	13	13	12	11	11	11	11	10	10	11	11	11	
6	10	11	11	12	11	10	11	11	11	11	12	11	12	12	12	12	11	11	12	11	12	11	12	11	
7	11	12	11	11	11	11	10	10	10	13	13	15	16	17	16	14	14	13	12	9	11	11	15	20	
8	19	22	35	35	17	16	22	17	15	20	19	19	28	22	26	34	23	14	17	23	29	16	14	14	
9	15	14	13	13	13	13	13	13	12	11	13	11	13	16	16	14	11	11	12	14	21	29	16	18	
10	42	14	16	15	13	13	14	14	14	14	14	13	16	13	18	14	14	15	15	15	15	15	14	13	
11	11	11	8	7	7	9	6	7	9	11	13	16	15	16	13	13	14	13	14	13	12	13	12	12	
12	14	12	12	9	7	6	5	4	6	6	8	10	15	11	9	6	5	10	41	5	19	23	18		
13	12	14	9	10	10	11	10	10	11	11	11	11	11	11	11	12	11	12	10	10	10	10	11	11	
14	12	13	13	16	14	13	15	12	12	13	14	14	12	15	13	14	12	11	10	7	6	4	4	3	
15	2	3	3	6	11	11	9	12	12	14	14	15	15	14	16	15	13	15	17	15	15	16	15	18	
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17	10	10	11	12	12	11	10	11	10	22	6	7	24	14	15	17	13	11	11	13	14	13	13	12	
18	13	13	12	13	13	14	13	14	14	14	16	14	16	17	19	19	14	12	13	12	9	9	9	9	
19	11	13	32	13	23	6	7	4	18	13	12	14	15	14	14	14	15	16	15	15	15	14	13	13	
20	13	18	15	15	14	14	16	15	15	16	19	15	16	15	20	17	16	15	19	13	10	11	15	12	
21	12	14	14	14	14	17	12	15	14	15	15	18	17	14	18	16	17	18	19	10	5	7	7	6	
22	9	9	8	8	8	8	10	9	10	10	9	11	13	11	13	13	12	11	9	9	7	10	8	5	
23	4	6	10	13	13	14	13	13	14	14	14	14	14	13	14	17	14	12	13	18	9	10	10	10	
24	11	10	11	10	11	10	12	11	10	12	14	13	15	12	13	13	14	12	11	12	12	12	12	12	
25	12	13	12	16	13	16	12	10	14	15	18	28	34	26	41	50	19	18	6	5	4	3	5	4	
26	5	6	6	6	7	7	7	9	10	12	12	12	12	13	13	12	12	9	9	9	9	6	5	12	
27	4	7	13	10	13	13	14	14	14	16	19	21	19	18	17	16	15	13	16	7	3	5	8	12	
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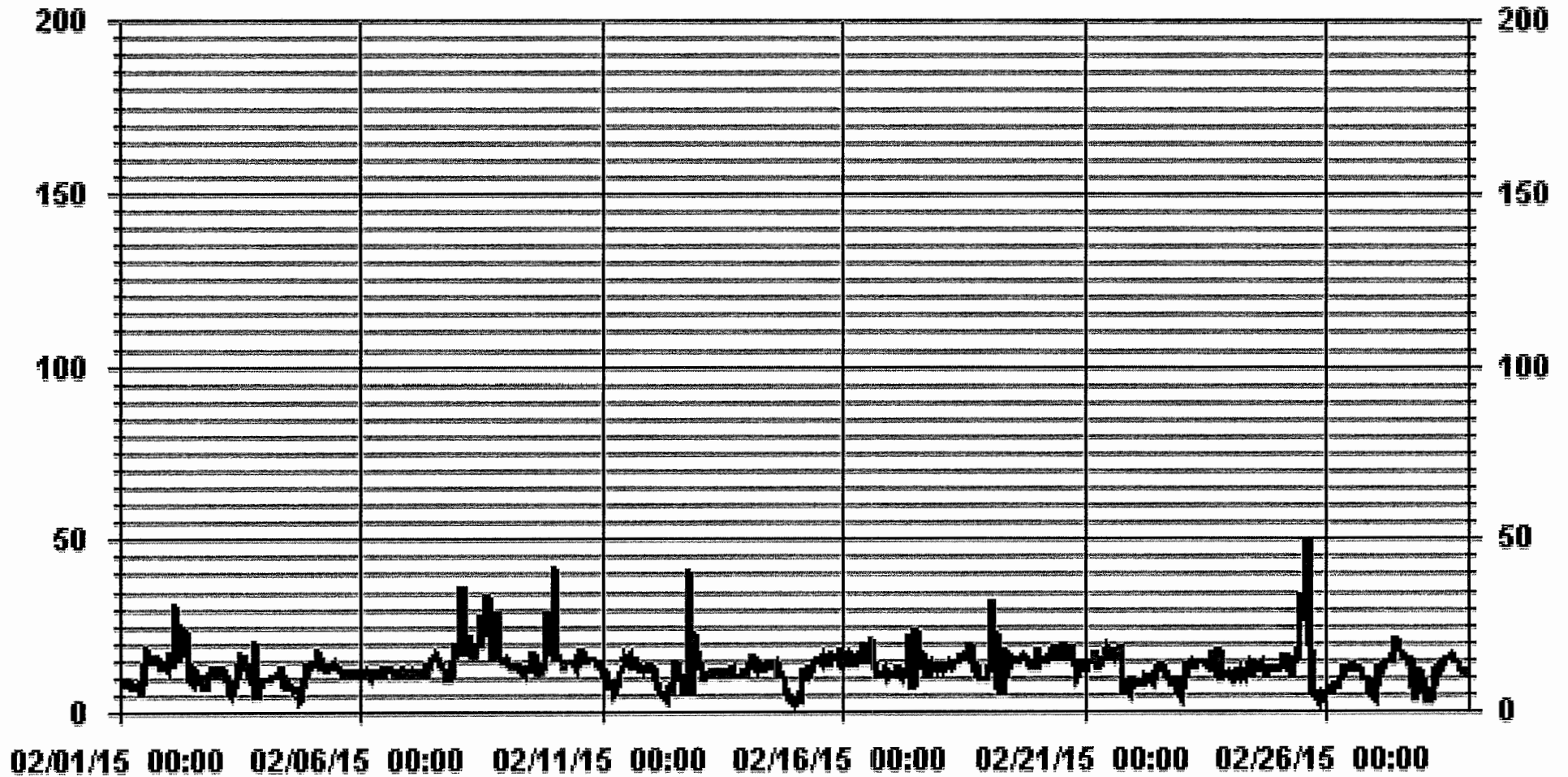
STATUS FLAG CODES

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

LAST CALIBRATION: August 28, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 672 HRS

### 01 Hour Averages



— LICA31 STDWDIR DEG



***RELATIVE HUMIDITY***



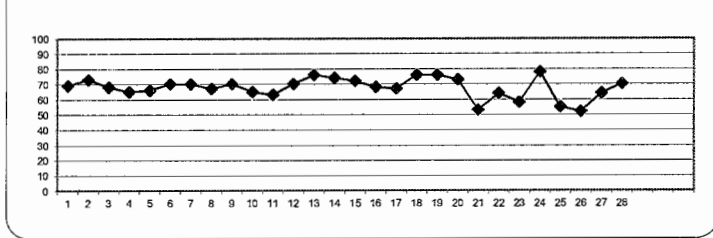
RELATIVE HUMIDITY (RH) hourly averages in %

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
		1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.	AVG.	RDGS.		
DAY	1	73	73	73	73	73	73	72	71	71	69	67	64	61	58	56	62	67	71	72	73	72	72	73	74	74	69.3	24	
2	74	74	74	74	74	74	73	73	73	73	72	71	69	67	65	66	70	73	76	76	76	76	75	75	74	74	76	72.6	24
3	74	74	73	72	72	72	72	71	71	70	68	67	65	65	63	60	54	56	60	64	66	69	72	73	72	74	74	67.6	24
4	72	72	72	72	72	72	72	72	71	71	69	65	62	59	57	57	58	60	66	68	68	65	60	52	55	72	65.3	24	
5	58	62	63	64	67	66	66	67	67	65	62	59	59	58	60	66	69	71	72	72	72	72	72	72	72	72	65.9	24	
6	71	71	71	71	71	71	70	70	70	70	69	68	67	68	69	70	70	71	71	71	71	71	72	72	72	72	72	70.3	24
7	72	72	72	71	71	71	71	71	70	70	69	68	67	67	66	66	67	69	70	71	70	71	70	71	71	71	72	69.7	24
8	71	71	72	72	72	71	71	71	72	71	62	59	54	52	56	61	66	69	72	72	70	69	69	71	71	71	72	67.3	24
9	72	71	67	68	69	69	68	70	72	71	69	67	65	63	64	67	70	71	72	73	73	73	73	73	73	73	69.6	24	
10	73	73	73	74	75	74	71	71	71	67	60	54	52	56	61	64	66	66	66	66	66	67	63	62	75	65.4	24		
11	60	63	67	68	69	68	67	69	65	60	56	52	50	52	55	58	61	63	64	65	68	71	74	74	74	74	63.3	24	
12	75	75	76	76	77	77	78	78	78	73	62	57	53	58	59	62	67	69	70	71	70	73	74	76	78	78	70.2	24	
13	74	76	74	74	74	74	75	76	78	78	78	80	79	76	75	74	75	71	72	74	74	78	78	78	80	75.5	24		
14	77	76	76	76	76	76	75	74	73	73	72	71	70	70	69	69	70	73	72	74	75	75	76	77	77	77	73.5	24	
15	77	77	78	77	74	75	77	74	73	65	66	65	64	63	63	67	71	76	76	77	79	76	73	75	79	72.4	24		
16	77	77	77	75	76	75	78	78	76	75	73	66	55	48	46	47	50	57	64	68	69	71	72	76	78	67.8	24		
17	75	76	76	75	76	75	75	74	72	69	65	65	54	47	38	44	61	70	69	62	68	71	72	71	76	66.7	24		
18	72	72	73	74	74	74	75	77	79	80	78	77	74	71	71	73	76	78	78	79	81	80	80	80	81	81	76.1	24	
19	79	79	79	78	79	80	81	82	79	69	67	61	56	55	57	61	71	79	84	87	88	89	89	89	89	89	75.8	24	
20	88	87	86	85	82	81	78	76	74	70	69	67	64	62	60	61	63	65	68	71	74	76	78	78	88	88	73.5	24	
21	70	63	57	54	62	65	68	70	66	63	54	47	40	36	34	35	37	41	47	48	52	53	57	60	70	53.3	24		
22	64	71	71	71	70	70	71	72	69	66	61	58	55	53	55	56	56	59	63	66	65	63	62	63	72	63.8	24		
23	63	62	61	64	66	69	71	72	65	61	53	49	45	43	42	43	46	53	57	55	57	58	61	64	72	57.5	24		
24	67	73	79	82	83	85	86	82	79	77	78	79	77	73	73	72	73	75	78	79	79	78	78	77	86	77.6	24		
25	77	75	74	72	71	73	73	73	69	63	56	47	42	38	37	33	30	33	41	45	49	48	49	54	77	55.1	24		
26	60	64	69	70	68	63	57	56	54	46	40	39	36	33	31	32	35	41	49	55	58	61	63	65	70	51.9	24		
27	66	67	66	66	67	72	73	73	71	69	65	59	58	52	49	47	54	62	65	66	71	71	69	73	63.5	24			
28	69	68	68	69	71	73	73	76	76	74	70	64	57	59	56	56	56	69	74	79	82	82	82	80	82	82	70.1	24	
HOURLY MAX		88	87	86	85	83	85	86	82	79	80	78	80	79	76	75	75	76	79	84	87	88	89	89	89	89			
HOURLY AVG		71.4	71.9	72.0	72.0	72.5	72.8	72.7	72.8	71.5	68.4	65.0	61.9	58.9	57.1	56.5	58.1	60.9	65.0	67.5	68.7	69.9	70.4	70.9	71.5				

STATUS FLAG CODES

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

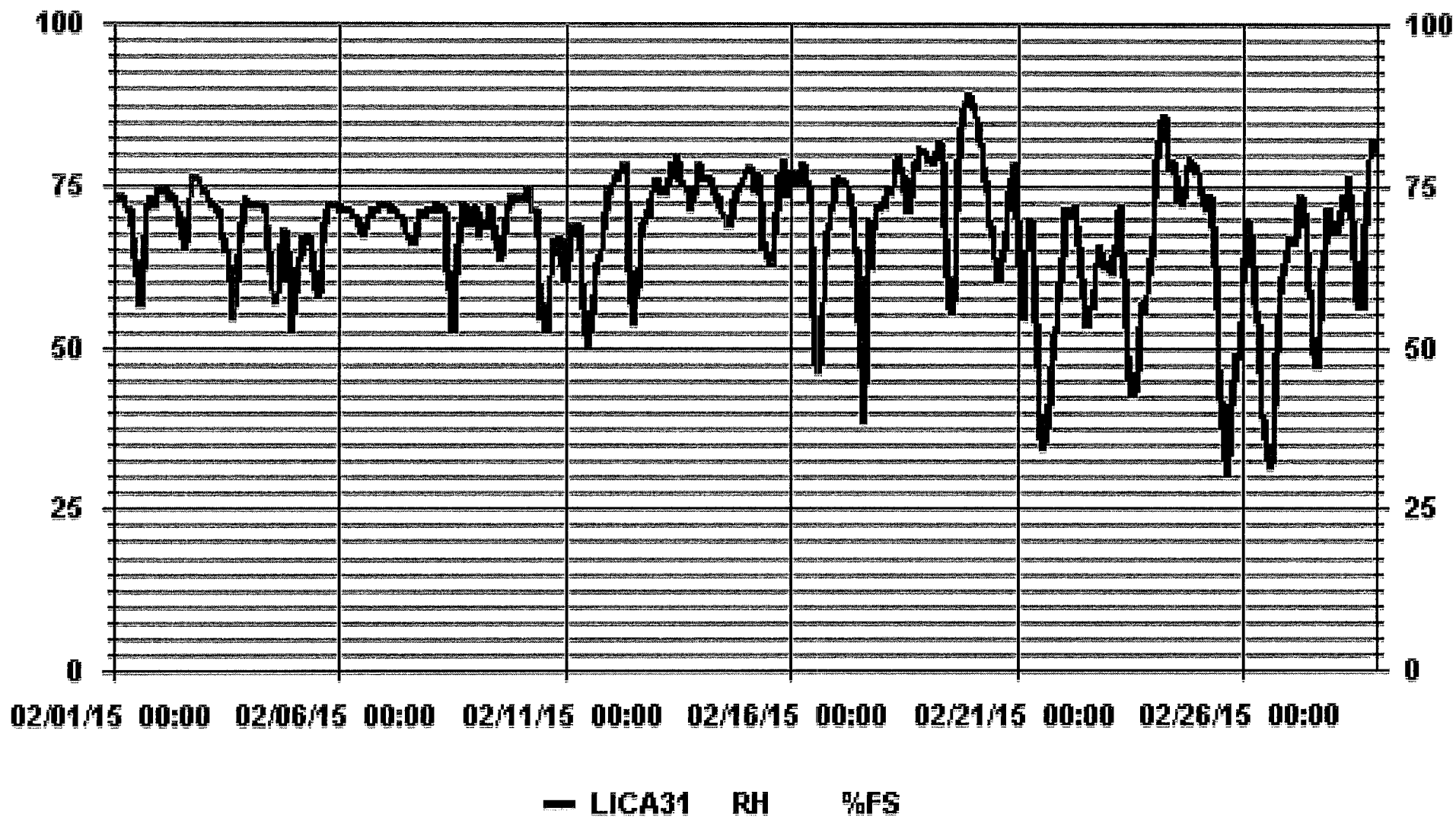
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	89	%	@ HOUR(S)	VAR	ON DAY(S)	19
MAXIMUM 24-HR AVERAGE:	77.6	%			ON DAY(S)	24
					VAR-VARIOUS	
					OPERATIONAL TIME:	672 HRS
					AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	10.05				MONTHLY AVERAGE:	68 %

### 01 Hour Averages



***BAROMETRIC PRESSURE***



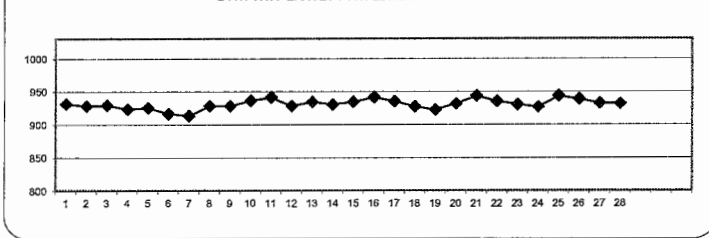
BAROMETRIC PRESSURE (BP) hourly averages in millibar

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	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	MAX	AVG.				
DAY	1	937	937	936	935	934	933	933	932	931	931	930	930	930	929	929	929	928	928	929	929	929	929	929	929	929	937	931	24	
	2	930	930	931	930	930	930	930	930	929	929	929	929	928	928	927	927	926	926	926	925	925	925	925	926	926	931	928	24	
	3	926	926	927	927	927	927	927	927	927	928	928	928	929	930	930	931	932	932	933	933	933	933	933	932	932	933	929	24	
	4	931	930	929	928	927	926	924	923	921	920	920	920	920	920	920	920	920	920	920	919	920	921	922	923	931	923	24		
	5	923	924	925	925	926	926	926	926	926	926	926	926	925	924	924	923	923	924	924	924	924	924	924	924	923	926	925	24	
	6	923	923	922	922	920	919	918	918	918	917	917	916	916	914	915	914	913	913	912	912	911	911	911	911	910	923	916	24	
	7	911	910	910	910	909	910	910	910	910	910	911	911	911	912	912	913	914	915	916	916	917	917	918	919	919	919	913	24	
	8	920	921	922	923	924	925	925	926	927	928	929	930	931	931	931	931	931	932	931	932	932	932	931	931	931	931	932	928	24
	9	931	931	930	930	929	929	929	929	928	928	928	927	927	926	926	926	926	926	926	927	927	927	928	928	931	928	24		
	10	928	929	929	930	931	932	932	934	935	935	936	938	938	938	939	939	940	940	941	942	942	943	943	943	943	943	936	24	
	11	944	944	945	945	945	945	946	946	946	945	945	944	943	943	941	940	938	937	936	934	932	932	931	929	946	941	24		
	12	929	928	927	927	926	926	925	926	926	926	927	929	930	930	930	930	930	930	930	930	930	930	930	930	931	931	928	24	
	13	931	932	932	932	932	932	933	933	933	934	934	935	935	935	936	936	936	936	936	935	935	935	934	934	934	936	934	24	
	14	933	932	931	932	933	931	930	930	930	930	930	930	930	930	929	929	929	930	930	929	929	929	929	929	929	933	930	24	
	15	930	930	931	931	932	932	932	933	933	933	934	935	935	935	935	935	935	936	936	937	937	938	938	939	939	939	934	24	
	16	939	939	939	940	940	940	941	941	942	942	943	943	943	943	942	941	940	940	940	939	939	939	939	939	939	943	941	24	
	17	939	939	939	939	938	938	937	937	936	936	936	936	935	935	934	934	933	933	932	932	931	931	931	930	939	935	24		
	18	930	930	930	930	929	929	928	928	928	927	927	927	927	927	926	926	926	925	925	924	923	923	923	922	930	927	24		
	19	922	922	922	922	921	921	920	920	920	921	921	922	922	922	923	923	923	923	922	922	922	923	923	923	923	923	922	24	
	20	923	924	924	925	926	926	927	928	929	930	930	931	932	933	933	933	934	934	934	935	935	935	936	937	937	931	24		
	21	938	938	939	940	940	941	942	942	943	943	944	945	945	945	945	946	945	945	945	944	944	943	943	942	946	943	24		
	22	942	941	941	940	939	938	938	937	937	937	936	936	937	937	936	935	934	932	931	930	929	928	927	926	942	935	24		
	23	926	926	926	927	928	929	929	930	930	931	931	932	932	932	932	932	932	931	931	931	931	930	930	930	929	932	930	24	
	24	929	928	927	926	925	924	923	923	923	922	921	922	923	923	924	925	926	926	927	928	929	931	932	934	934	926	24		
	25	935	937	938	939	940	941	941	942	943	944	944	945	946	946	946	946	946	946	945	945	945	945	945	945	946	943	24		
	26	944	944	944	943	942	942	942	941	940	940	940	940	939	938	938	937	936	935	934	933	932	932	931	931	944	938	24		
	27	931	930	930	930	930	931	931	931	932	932	933	933	933	933	933	933	933	932	932	932	931	931	931	931	933	932	24		
	28	931	930	930	930	929	929	929	930	930	930	931	931	931	931	931	932	932	933	933	933	933	933	933	933	933	933	931	24	
HOURLY MAX		944	944	945	945	945	945	946	946	946	945	945	945	946	946	946	946	946	946	945	945	945	945	945	945	945				
HOURLY AVG		931	931	931	931	930	930	930	930	930	931	931	931	931	931	931	931	931	931	931	930	930	930	930	930	930				

STATUS FLAG CODES

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

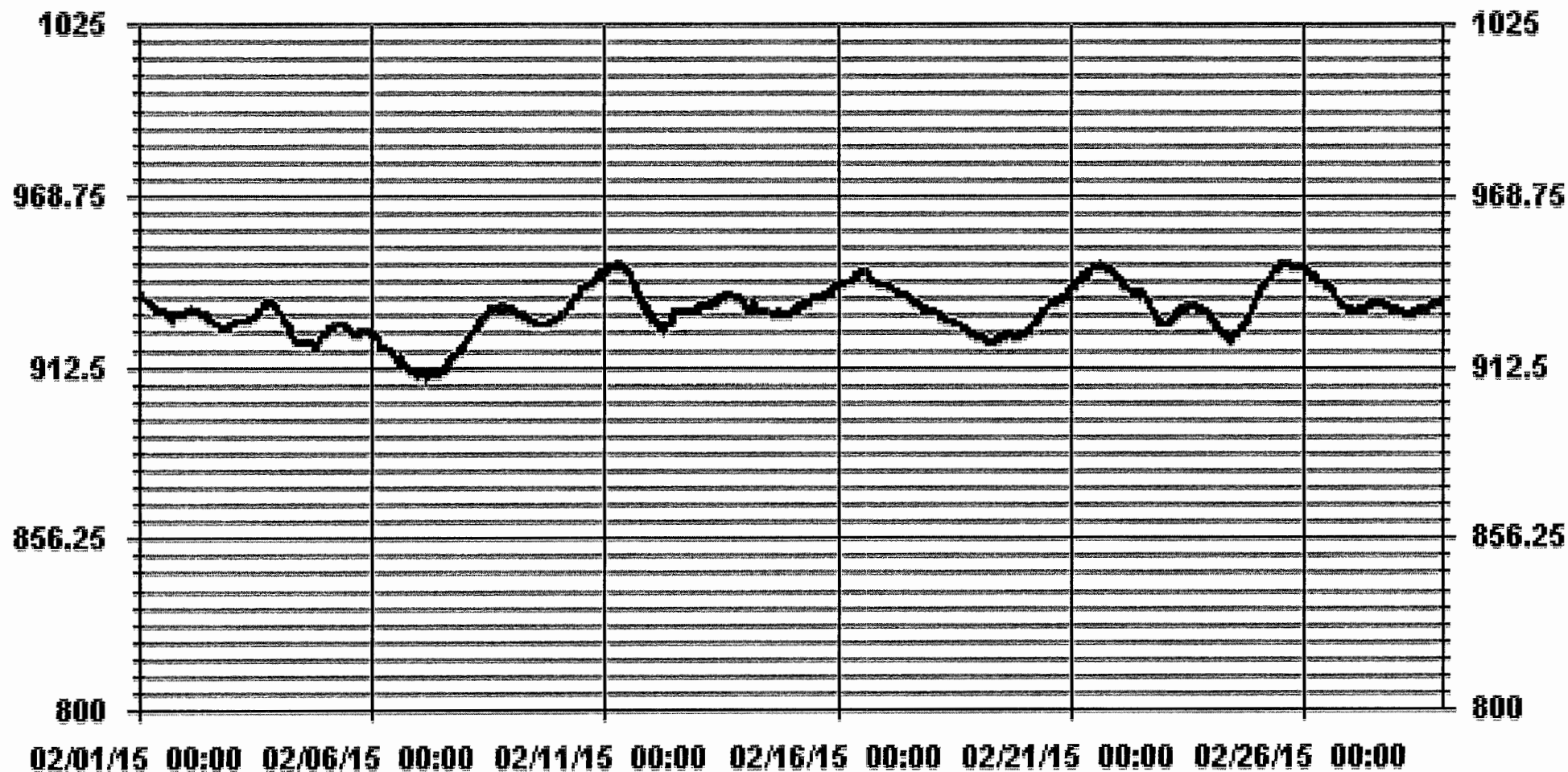
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	946	MB	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	943	MB			ON DAY(S)	21 , 25
					VAR-VARIOUS	
				OPERATIONAL TIME:		672 HRS
				AMD OPERATION UPTIME:		100.0 %
STANDARD DEVIATION:	7.77			MONTHLY AVERAGE:		931 MB

### 01 Hour Averages



— LICA31 BP MB

***AMBIENT TEMPERATURE***



AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

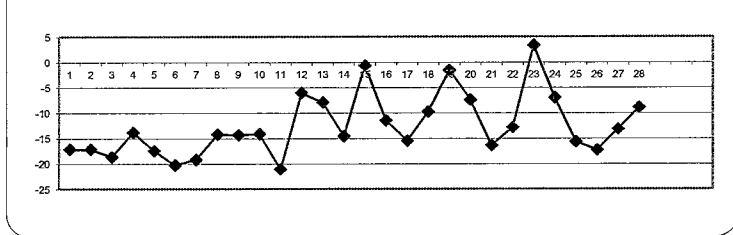
MST

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	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY																												
1	-20.3	-20.0	-20.8	-20.9	-21.1	-21.2	-21.3	-21.6	-21.6	-19.8	-17.5	-14.3	-11.4	-10.5	-10.7	-13.4	-15.1	-15.8	-15.8	-15.6	-15.9	-16.0	-16.3	-16.7	-10.5	-17.2	24	
2	-17.0	-17.8	-17.9	-18.2	-18.5	-18.4	-18.8	-19.0	-18.8	-17.8	-17.1	-16.2	-15.4	-14.1	-14.0	-14.5	-14.9	-16.1	-17.2	-17.6	-17.3	-17.6	-18.3	-19.2	-14.0	-17.2	24	
3	-19.3	-19.5	-20.0	-20.3	-20.6	-20.7	-21.2	-21.6	-21.3	-19.3	-16.6	-14.0	-13.7	-14.6	-14.9	-14.5	-15.9	-17.9	-19.0	-19.5	-19.9	-20.5	-21.2	-22.1	-13.7	-18.7	24	
4	-22.4	-22.7	-22.0	-21.6	-20.8	-20.5	-20.1	-19.4	-18.5	-16.8	-15.1	-13.4	-10.4	-8.4	-6.8	-6.4	-7.1	-9.1	-9.6	-9.7	-8.4	-7.3	-7.9	-9.8	-6.4	-13.9	24	
5	-11.6	-12.9	-14.3	-15.4	-16.6	-17.1	-17.5	-18.0	-18.2	-17.9	-17.2	-16.9	-17.5	-17.5	-18.2	-18.6	-19.0	-19.2	-19.1	-19.2	-19.1	-19.2	-19.3	-19.4	-11.6	-17.5	24	
6	-19.7	-20.0	-20.4	-20.7	-20.7	-20.9	-21.2	-21.4	-21.5	-21.3	-20.9	-20.3	-19.7	-20.0	-19.6	-19.6	-19.8	-20.0	-20.0	-20.0	-20.1	-20.1	-20.2	-20.2	-19.6	-20.3	24	
7	-20.1	-19.8	-19.9	-20.2	-20.8	-21.3	-21.5	-21.7	-21.0	-20.0	-18.5	-17.0	-16.6	-17.1	-16.9	-17.4	-17.8	-18.2	-18.5	-19.0	-19.3	-19.5	-19.2	-18.9	-16.6	-19.2	24	
8	-18.5	-18.2	-17.7	-17.7	-17.3	-16.8	-16.4	-16.3	-16.3	-13.2	-12.2	-10.6	-10.1	-11.6	-12.1	-12.4	-12.8	-13.3	-13.4	-13.3	-13.1	-13.0	-13.1	-12.9	-10.1	-14.3	24	
9	-12.9	-13.2	-13.6	-14.0	-14.2	-14.3	-14.7	-15.4	-15.7	-15.6	-14.9	-14.3	-13.7	-13.0	-13.3	-13.8	-14.4	-14.8	-14.9	-15.0	-15.0	-15.0	-15.0	-14.9	-12.9	-14.4	24	
10	-14.9	-14.8	-14.5	-14.3	-14.0	-13.7	-14.1	-14.1	-14.1	-14.0	-12.4	-11.2	-12.2	-11.5	-11.2	-12.7	-13.5	-14.4	-14.9	-15.5	-16.1	-16.5	-17.3	-18.3	-11.2	-14.2	24	
11	-19.6	-21.2	-22.6	-23.6	-24.5	-25.3	-25.9	-26.4	-25.2	-23.4	-22.1	-20.9	-19.5	-19.2	-19.2	-19.5	-19.6	-19.4	-18.9	-17.9	-17.3	-17.3	-17.3	-17.3	-17.3	-21.1	24	
12	-16.7	-16.1	-15.6	-15.0	-14.5	-13.8	-13.1	-12.5	-11.3	-10.0	-5.3	-1.7	1.2	0.3	1.0	0.2	0.0	-0.3	-0.5	-0.5	-0.2	-0.8	-0.2	0.0	1.2	-6.1	24	
13	-0.1	-0.7	-2.3	-3.3	-4.7	-5.8	-6.5	-7.1	-7.8	-8.0	-7.9	-7.6	-7.4	-7.6	-8.9	-9.6	-10.5	-11.1	-11.4	-11.9	-12.3	-12.6	-12.7	-12.5	-0.1	-7.9	24	
14	-12.4	-13.0	-13.4	-13.8	-14.3	-15.2	-16.1	-16.9	-17.4	-17.3	-17.0	-16.1	-15.5	-15.0	-14.7	-14.9	-14.8	-14.7	-14.5	-14.1	-13.1	-12.1	-10.2	-10.2	-10.2	-14.6	24	
15	-7.7	-6.4	-5.0	-3.4	-1.8	-2.1	-2.4	-1.2	-0.7	1.5	1.6	2.9	3.6	4.2	4.1	3.1	2.2	1.2	0.1	-0.5	-1.3	-1.9	-3.1	-4.5	4.2	-0.7	24	
16	-5.3	-5.8	-6.5	-7.5	-8.6	-9.6	-10.7	-12.5	-13.8	-13.4	-12.2	-10.7	-9.7	-9.2	-8.8	-9.6	-11.2	-13.6	-15.0	-15.5	-15.7	-16.3	-16.6	-17.0	-5.3	-11.5	24	
17	-17.4	-17.7	-17.8	-18.4	-18.7	-19.3	-19.7	-19.7	-19.2	-16.5	-16.4	-14.9	-12.7	-11.8	-11.6	-12.1	-13.4	-14.1	-14.3	-14.0	-13.7	-13.4	-13.1	-12.8	-11.6	-15.5	24	
18	-12.8	-12.6	-12.4	-12.1	-11.9	-11.8	-11.8	-11.5	-10.9	-10.5	-9.6	-8.2	-7.5	-6.6	-6.1	-6.6	-7.9	-8.1	-8.5	-9.3	-10.1	-10.0	-9.7	-9.6	-6.1	-9.8	24	
19	-9.3	-9.1	-8.7	-8.4	-8.3	-7.9	-7.5	-7.0	-5.1	-0.5	1.2	3.4	4.9	5.5	5.2	4.2	3.1	2.1	1.4	0.6	0.4	0.4	0.4	0.4	5.5	-1.6	24	
20	0.2	-0.3	-1.5	-2.0	-3.0	-4.6	-6.3	-7.7	-8.7	-8.9	-8.5	-7.7	-7.6	-7.6	-8.1	-8.6	-9.1	-9.9	-10.1	-10.5	-10.9	-11.3	-11.8	-12.3	0.2	-7.4	24	
21	-13.9	-16.0	-17.1	-18.4	-19.2	-19.9	-20.4	-21.0	-19.7	-17.8	-15.0	-13.5	-12.5	-11.9	-11.3	-11.6	-12.3	-14.1	-16.3	-16.8	-17.8	-18.1	-19.1	-19.0	-11.3	-16.4	24	
22	-20.0	-21.0	-21.0	-21.2	-20.8	-20.9	-21.1	-20.8	-19.0	-16.9	-14.1	-11.7	-9.1	-7.3	-6.6	-5.9	-6.0	-7.1	-7.9	-8.0	-7.2	-6.3	-5.3	-4.2	-4.2	-12.9	24	
23	-2.9	-1.9	-0.5	0.8	0.9	0.2	-0.3	-0.6	1.4	3.1	6.1	7.4	8.5	8.8	8.9	8.9	8.4	6.5	4.7	3.3	2.3	2.3	1.8	1.3	8.9	3.3	24	
24	0.8	-0.5	-2.1	-3.5	-4.2	-4.4	-4.9	-5.9	-6.2	-6.1	-5.7	-6.0	-6.0	-7.0	-7.7	-8.2	-8.9	-9.7	-10.5	-10.8	-11.3	-12.3	-12.8	-13.2	0.8	-7.0	24	
25	-14.1	-15.3	-16.2	-16.8	-17.5	-19.0	-20.2	-20.4	-17.9	-16.5	-14.8	-12.5	-11.0	-10.7	-10.4	-10.9	-12.3	-14.5	-16.9	-17.4	-17.7	-17.5	-18.0	-19.0	-10.4	-15.7	24	
26	-19.6	-20.2	-20.7	-21.3	-22.0	-22.0	-21.8	-21.8	-20.5	-18.2	-16.1	-14.7	-13.4	-12.0	-11.2	-11.4	-12.6	-14.2	-15.9	-16.7	-17.2	-17.2	-17.5	-17.7	-11.2	-17.3	24	
27	-17.3	-17.1	-16.2	-16.0	-15.9	-15.1	-15.4	-15.8	-15.3	-13.7	-12.5	-11.0	-10.0	-8.3	-7.4	-7.3	-7.9	-10.3	-12.4	-13.4	-13.8	-14.5	-14.6	-14.7	-7.3	-13.2	24	
28	-14.9	-14.1	-14.3	-14.6	-15.4	-15.7	-14.9	-14.0	-12.2	-9.8	-6.5	-4.0	-2.2	-2.5	-2.7	-2.8	-3.3	-4.5	-5.8	-7.0	-7.5	-8.3	-8.6	-9.1	-2.2	-8.9	24	
HOURLY MAX	0.8	-0.3	-0.5	0.8	0.9	0.2	-0.3	-0.6	1.4	3.1	6.1	7.4	8.5	8.8	8.9	8.9	8.4	6.5	4.7	3.3	2.3	2.3	1.8	1.3	8.9	3.3	24	
HOURLY AVG	-13.6	-13.9	-14.1	-14.4	-14.6	-14.9	-15.2	-15.4	-14.9	-13.5	-12.0	-10.6	-9.5	-9.2	-9.1	-9.5	-10.2	-11.2	-12.0	-12.4	-12.5	-12.6	-12.8	-13.0				

STATUS FLAG CODES

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

24 HOUR AVERAGES FOR FEBRUARY 2015

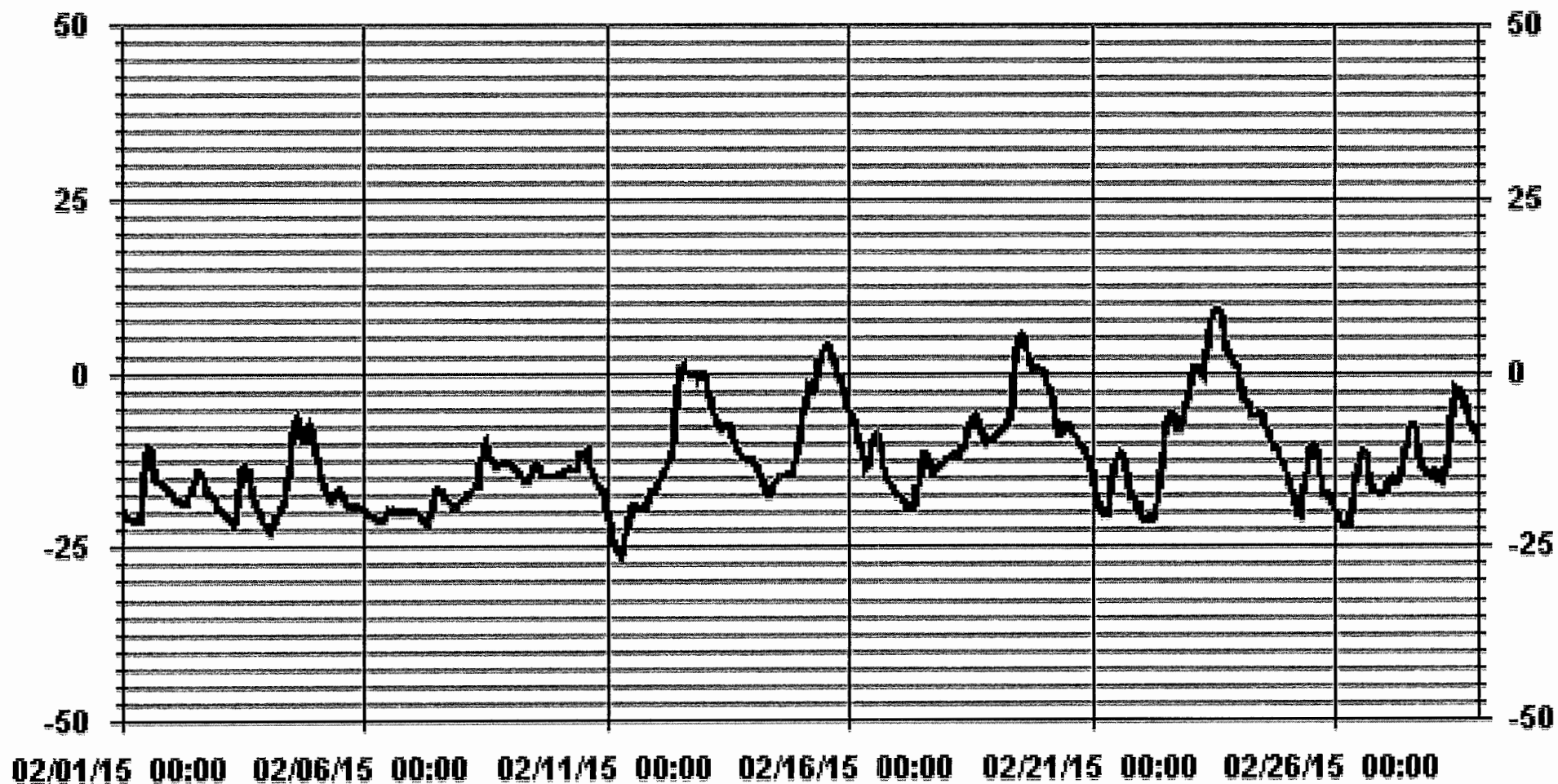


MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-26.4 °C	@ HOUR(S)	7	ON DAY(S)	11
MAXIMUM 1-HR AVERAGE:	8.9 °C	@ HOUR(S)	14, 15	ON DAY(S)	23, 23
MAXIMUM 24-HR AVERAGE:	3.3 °C			ON DAY(S)	23
				VAR-VARIOUS	
OPERATIONAL TIME:					672 HRS
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	6.97	MONTHLY AVERAGE:			-12.5 °C



### 01 Hour Averages



— LICA31 TPX DGC

***PRECIPITATION***



PRECIPITATION hourly averages (mm)

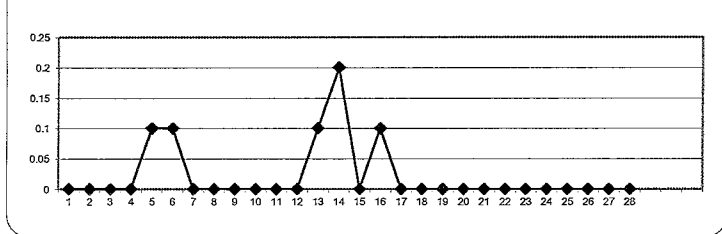
MST

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	24-HOUR	RDGS.	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MAX.	AVG.		
DAY																												
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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
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	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	0.1	0.4	0.4	0.4	0.2	0.1	0.0	0.0	0.2	0.4	0.1	0.1	24
6	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.0	0.2	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	24
7	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	0.1	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	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	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	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	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	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	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.5	0.5	0.1	24
14	0.3	0.2	0.2	0.5	1.2	0.7	0.5	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.5	1.2	0.2	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	24
16	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.1	0.0	0.1	0.1	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	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	24
18	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.1	0.1	0.0	0.2	0.0	0.2	0.2	0.0	24
20	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	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	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	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.0	24
25	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	0.0	0.3	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	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	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	24
HOURLY MAX	0.3	0.2	0.2	0.5	1.2	0.7	0.5	0.3	0.3	0.2	0.4	0.2	0.2	0.1	0.3	0.1	0.4	0.4	0.4	0.2	0.1	0.1	0.5	0.5				
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

STATUS FLAG CODES

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

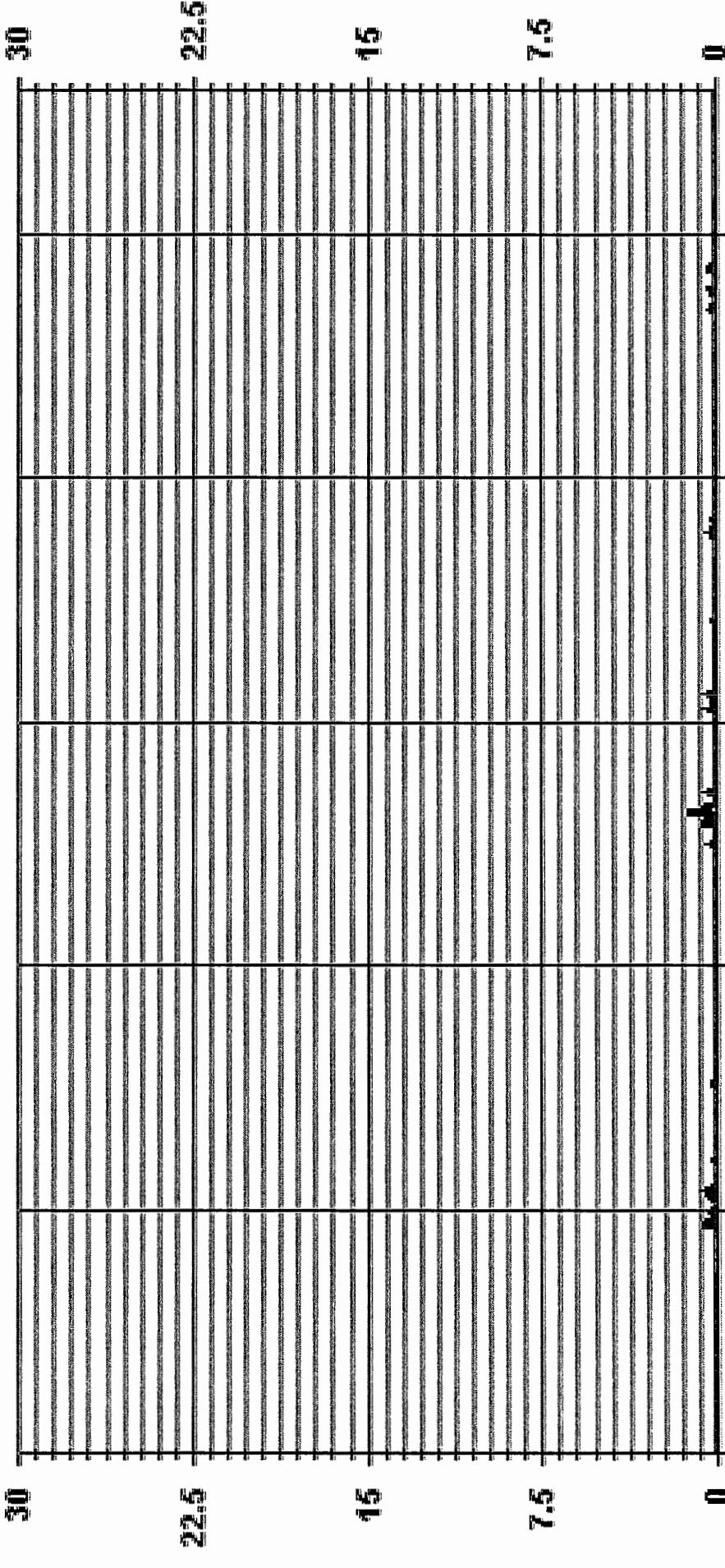
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	1.2	MM	@ HOUR(S)	4	ON DAY(S)	14
MAXIMUM 24-HR AVERAGE:	0.2	MM			ON DAY(S)	14
MONTHLY TOTAL	12.4	MM			VAR-VARIOUS	
OPERATIONAL TIME:					672	HRS
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	0.08		MONTHLY AVERAGE:		0.0	MM

01 Hour Averages

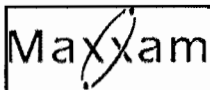


02/01/15 00:00 02/06/15 00:00 02/11/15 00:00 02/16/15 00:00 02/21/15 00:00 02/26/15 00:00

— LICA31 PRECIP MM

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

***SULPHUR DIOXIDE***



## API 100E SO2 Analyzer Calibration

Date:	2-Feb-15	Start/End Time (mst):	16:00/20:00
Company:	LICA	Calibration Purpose:	Monthly calibration
Station Name/Location:	St Lina	Converter Make & Model:	NA
Performed by:	Limin Li/Raja Abid	Converter Serial #:	NA
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :	SO <sub>2</sub>	Cal Gas Expiry Date:	15-Oct-17

Analyzer:		Range ppb:	100
Serial Number:	468	As Found C.F.:	0.988
Last Calibration Date:	14-Jan-15	New C.F.:	1.006
Previous Cal High Point C.F.:	0.992		

As found:	As left:
SLOPE: <u>NA</u>	SLOPE: <u>0.922</u>
OFFSET: <u>NA</u>	OFFSET: <u>52.2</u>
HVPS: <u>NA</u>	HVPS: <u>533</u>
RCELL TEMP: <u>NA</u>	RCELL TEMP: <u>50</u>
BOX TEMP: <u>NA</u>	BOX TEMP: <u>28.4</u>
PMT TEMP: <u>NA</u>	PMT TEMP: <u>7.8</u>
IZS TEMP: <u>NA</u>	IZS TEMP: <u>40.0</u>
STABIL: <u>NA</u>	STABIL: <u>0.1</u>
PRES: <u>NA</u>	PRES: <u>24.1</u>
SAMP FL: <u>NA</u>	SAMP FL: <u>579</u>
PMT: <u>NA</u>	PMT: <u>71.5</u>
NORM PMT: <u>NA</u>	NORM PMT: <u>1753</u>
UV LAMP: <u>NA</u>	UV LAMP: <u>2425</u>
LAMP RATIO: <u>NA</u>	LAMP RATIO: <u>98.1</u>
STR. LGT: <u>NA</u>	STR. LGT: <u>24.2</u>
DRK PMT: <u>NA</u>	DRK PMT: <u>16.3</u>
DRK LMP: <u>NA</u>	DRK LMP: <u>3.8</u>
Internal Span: <u>NA</u>	Internal Span: <u>256.8</u>

Calibrator:	Calibrator Flow Targets:																				
Flow Meter ID's: <u>na</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>point</th> <th>diluent (cc/min)</th> <th>cal gas (cc/min)</th> <th>total (cc/min)</th> </tr> </thead> <tbody> <tr> <td>zero</td> <td>5000</td> <td>0</td> <td>5000</td> </tr> <tr> <td>high</td> <td>5000</td> <td>79</td> <td>5079</td> </tr> <tr> <td>mid</td> <td>5000</td> <td>38</td> <td>5038</td> </tr> <tr> <td>low</td> <td>5000</td> <td>19</td> <td>5019</td> </tr> </tbody> </table>	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)	zero	5000	0	5000	high	5000	79	5079	mid	5000	38	5038	low	5000	19	5019
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)																		
zero	5000	0	5000																		
high	5000	79	5079																		
mid	5000	38	5038																		
low	5000	19	5019																		
Make & Model: <u>API700</u>																					
Serial #: <u>879</u>																					
Cal Gas Cylinder I.D. #: <u>BALL1263</u>																					
Cal Gas Conc. (ppm): <u>49.5</u>																					

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	-7.0	NA
adjusted zero	NA					
as found high	4915	78.70	4994	780.1	790.0	0.988
adjusted high	4915	78.70	4994	780.1	780.0	1.000
mid	4962	38.40	5000	380.1	376.0	1.011
low	4983	19.20	5002	190.0	189.0	1.005
calibrator zero	5000	0.00	5000	0	0.0	NA
Average C.F. =						1.006

**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>1.24%</u>	0.85-1.15	PASS
% change in C.F. from last cal = <u>0.45%</u>	± 3% F.S.	PASS
	± 15%	PASS

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

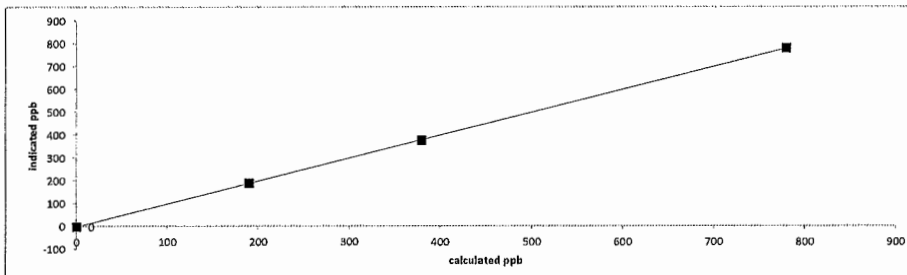
\*\*run converter efficiency test immediately following zero adjust\*\*

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

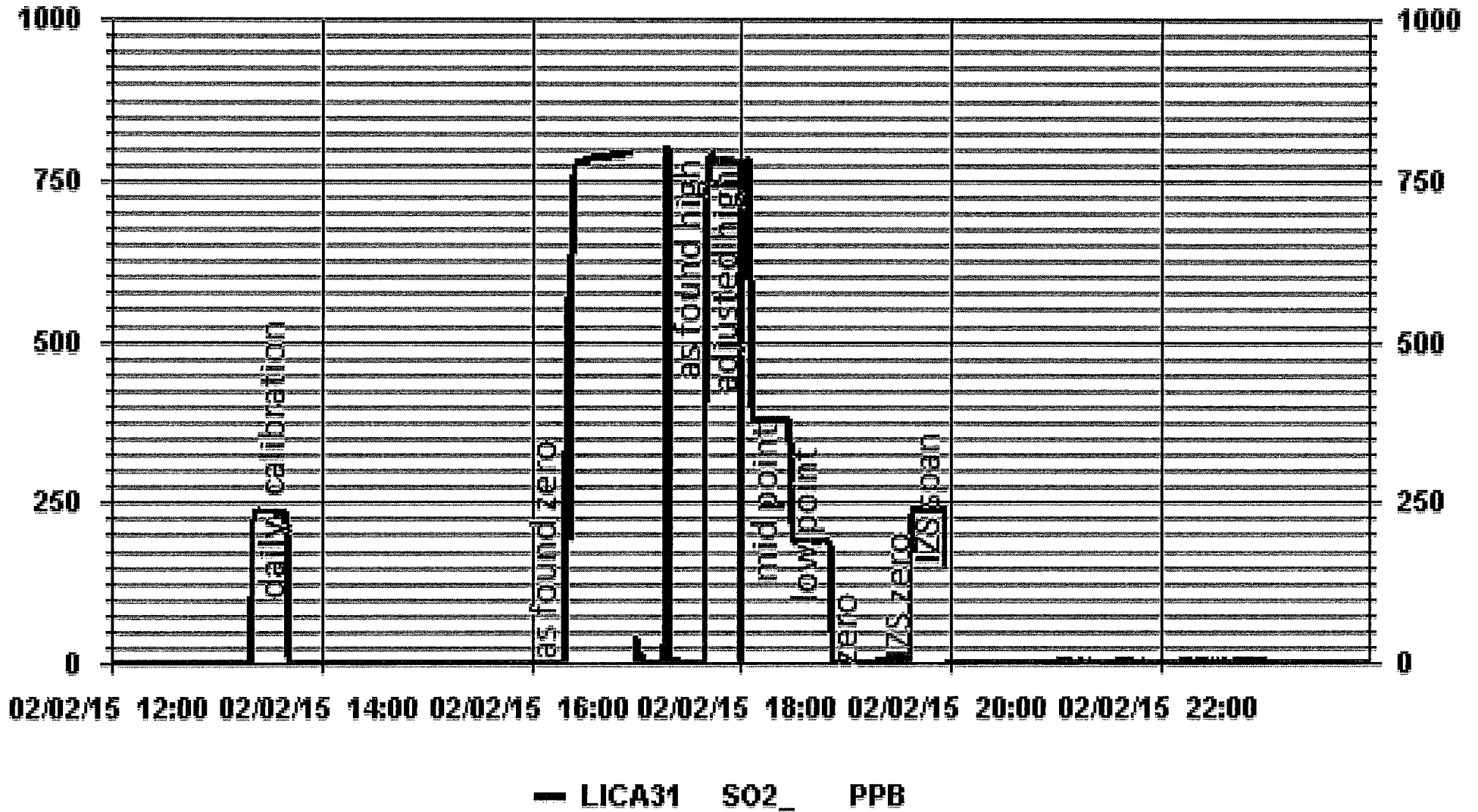
Comments:

When be station, found screen is dark. So can not find as found parameters. After as found point, change front screen. Ok. Analogue output calibrated. Then do post repair calibration.

API 100E SO2 Analyzer Calibration



### 01 Minute Averages





## API 100E SO2 Analyzer Calibration

---

**Date:** 12-Feb-15

**Company:** LICA

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

**Performed by:** Chris W / Alex Y

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

**Start/End Time (mst):** 9:02 - 13:21

**Calibration Purpose:** Monthly Calibration

**Converter Make & Model:** NA

**Converter Serial #:** NA

**Cal Gas Expiry Date:** 12-Aug-17

---

**Analyzer:**

**Serial Number:** 468

**Last Calibration Date:** 14-Jan-15

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

**Range ppb:** 1000

**As Found C.F.:** 1.019

**New C.F.:** 0.998

---

**As found:**

SLOPE: 0.992

OFFSET: 52.2

HVPS: 533

RCELL TEMP: 50.0

BOX TEMP: 28.3

PMT TEMP: 7.8

IZS TEMP: 40.0

TEST: NA

STABIL: 0.1

PRES: 24.0

SAMP FL: 577

PMT: 58.9

NORM PMT: 54.6

UV LAMP: 2374.2

LAMP RATIO: 96.0

STR. LGT: 24.0

DRK PMT: 16.2

DRK LMP: 3.7

Internal Span: 237

**As left:**

SLOPE: 0.938

OFFSET: 53.3

HVPS: 532

RCELL TEMP: 50.0

BOX TEMP: 32.5

PMT TEMP: 7.8

IZS TEMP: 40.0

TEST: NA

STABIL: 0.1

PRES: 24.0

SAMP FL: 573

PMT: 58.1

NORM PMT: 54.7

UV LAMP: 2376.9

LAMP RATIO: 96.1

STR. LGT: 25.5

DRK PMT: 17.4

DRK LMP: 3.9

Internal Span: 241.7

---

**Calibrator:**

**Flow Meter ID's:** NA

**Make & Model:** EnviroNics 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	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	1.0	NA
adjusted zero	4994	0.0	4994	0	0.0	NA
as found high	4934	61.71	4996	621.3	610.0	1.019
adjusted high	4934	61.71	4996	621.3	622.0	0.999
mid	4963	30.84	4993	310.7	311.0	0.999
low	4979	15.43	4995	155.4	156.0	0.996
calibrator zero	4995	0.00	4995	0	0.0	NA
<b>Average C.F. =</b>						0.998

---

**Linear Regression/Calibration Results:**

Correlation Coefficient =	1.000	LIMITS	Pass/Fail ?
Slope =	0.999	> or = 0.995	PASS
b (Intercept as % of full scale) =	-0.02%	0.85-1.15	PASS
% change in C.F. from last cal	-1.76%	± 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

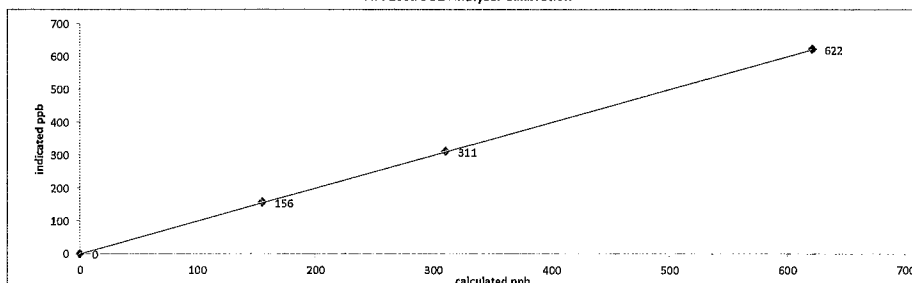
Zero corrected analyzer response: NA

---

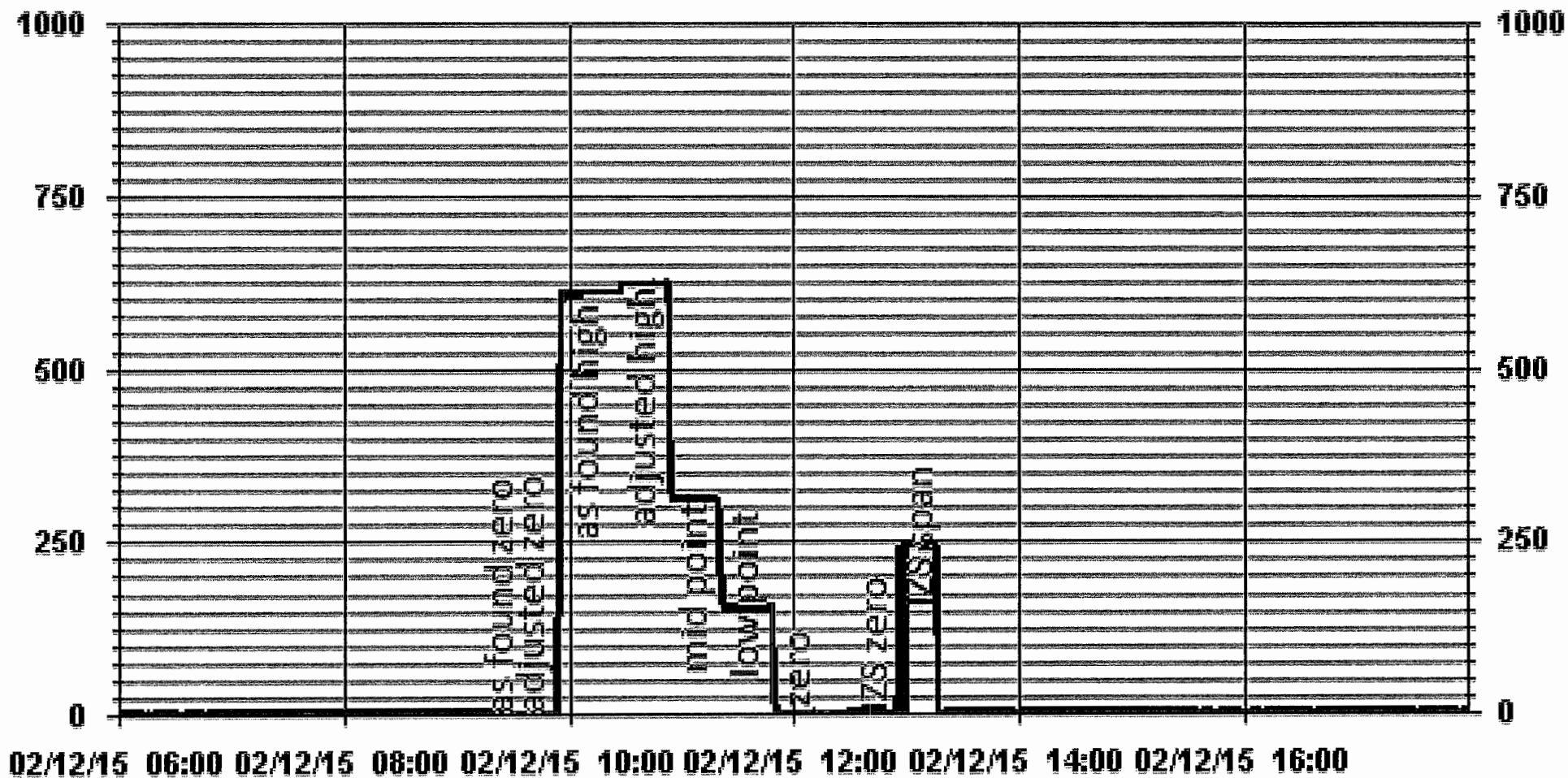
**Comments:**

Sample filter changed.

API 100E SO2 Analyzer Calibration



# 01 Minute Averages



— LICA31 SO2\_ PPB

***HYDROGEN SULPHIDE***

# Maxxam API 101E H2S Analyzer Calibration

**Date:** 12-Feb-15 **Start/End Time (mst):** 9:02 - 13:41  
**Company:** LICA **Calibration Purpose:** Monthly Calibration  
**Station Name/Location:** St.Lina **Converter Make & Model:** Internal  
**Performed by:** Chris W / Alex Y **Converter Serial #:** NA  
**Application H<sub>2</sub>S/TRS/SO<sub>2</sub>:** H2S **Cal Gas Expiry Date:** 25-Dec-15

---

**Analyzer:**  
**Serial Number:** 722 **Range ppb:** 100  
**Last Calibration Date:** 14-Jan-15 **As Found C.F.:** 1.090  
**Previous Cal High Point C.F.:** 1.000 **New C.F.:** 0.989

<p><b>As found:</b></p> <p>SLOPE: 0.940  OFFSET: 57.1  HVPS: 607  RCELL TEMP: 50.0  BOX TEMP: 28.7  PMT TEMP: 8.2  IZS TEMP: 45.0  TEST: 3148.7  STABIL: 0.1  PRES: 24.9  SAMP FL: 600  PMT: 75.6  NORM PMT: 57.7  UV LAMP: 2480.0  LAMP RATIO: 98.9  STR. LGT: 26.8  DRK PMT: 24.5  DRK LMP: 3.4  Internal Span: 37.29</p>	<p><b>As left:</b></p> <p>SLOPE: 1.025  OFFSET: 58.0  HVPS: 607  RCELL TEMP: 50.0  BOX TEMP: 34.3  PMT TEMP: 8.2  IZS TEMP: 45.0  TEST: 3147.4  STABIL: 0.1  PRES: 25.0  SAMP FL: 589  PMT: 73.2  NORM PMT: 59.1  UV LAMP: 2483.1  LAMP RATIO: 99.1  STR. LGT: 29.7  DRK PMT: 26.3  DRK LMP: 3.7  Internal Span: 38.27</p>
---	--

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**Calibrator:**  
Flow Meter ID's: NA  
Make & Model: API  
Serial #: 831  
Cal Gas Cylinder I.D. #: BLM005049  
Cal Gas Conc. (ppm): 10.1

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	4997	0.0	4997	0	0.3	NA
adjusted zero	4997	0.0	4997	0	0.1	NA
as found high	4959	38.60	4998	78.0	71.7	1.090
adjusted high	4959	38.60	4998	78.0	78.1	1.000
mid	4981	18.80	5000	38.0	38.6	0.986
low	4986	10.90	4997	22.0	22.6	0.979
calibrator zero	4994	0.00	4994	0	0.3	NA
<b>Average C.F. =</b>						0.989

---

**Linear Regression/Calibration Results:**

Correlation Coefficient = 1.000	<b>LIMITS</b>	Pass/Fail ?
Slope = 1.001	> or = 0.995	PASS
b (Intercept as % of full scale) = -0.39%	0.85-1.15	PASS
% change in C.F. from last cal = -8.95%	± 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

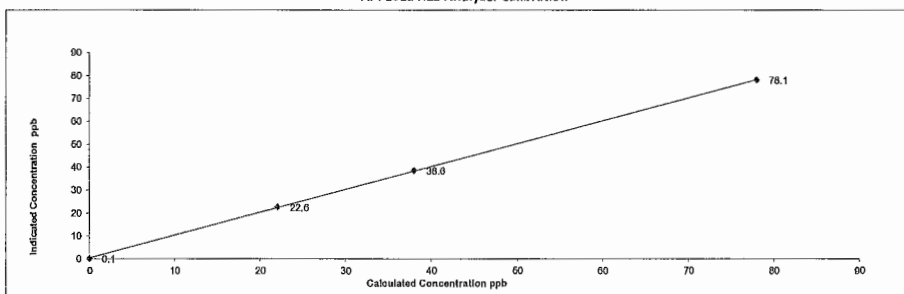
Zero corrected analyzer response: NA

---

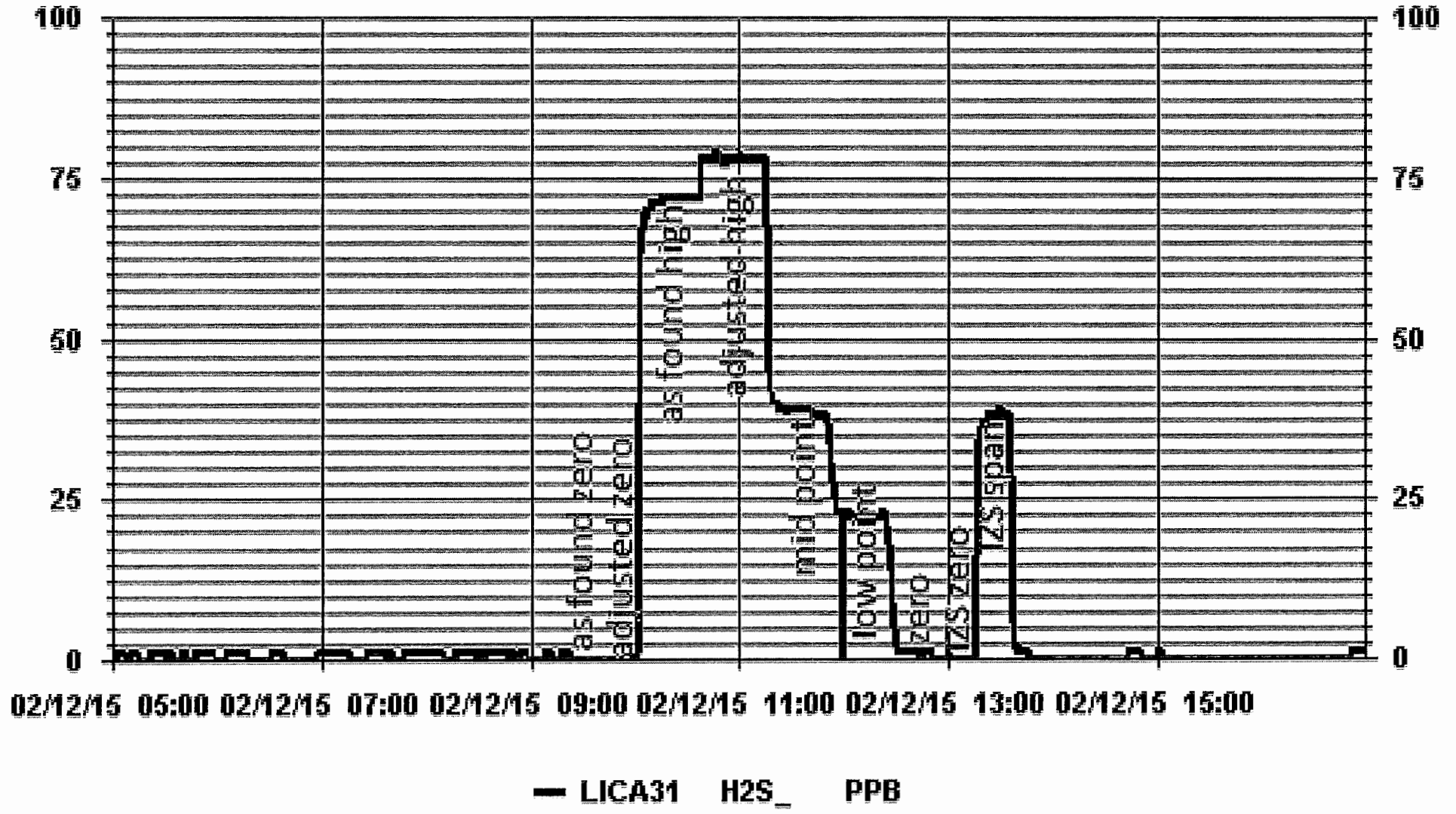
**Comments:**

Sample filter changed.

API 101E H2S Analyzer Calibration



### 01 Minute Averages



***TOTAL HYDROCARBON***

# Maxxam Thermo 51C THC Analyzer Calibration

Date: 12-Feb-15 Start Time (mst): 13:28  
 Company: LICA End Time (mst): 17:11  
 Station Name/Location: St. Lina Calibration Purpose: Monthly Calibration  
 Performed by: Chris W / Alex Y Cal Gas Expiry Date: 12-Aug-17

Analyzer: \_\_\_\_\_  
 Serial Number: 436609739 Range ppm: 50  
 Last Calibration Date: 15-Jan-15 As Found C.F.: 0.999  
 Previous Cal High Point C.F.: 1.001 New C.F.: 1.006

	As found:	As left:
H <sub>2</sub> cylinder (psi):	<u>1200</u>	<u>1200</u>
H <sub>2</sub> cylinder reg set (psi):	<u>32</u>	<u>32</u>
Span Cylinder (psi):	<u>400</u>	<u>400</u>
Span Cylinder Reg Set (psi):	<u>45</u>	<u>45</u>
Zero Air Gen Pressure:	<u>44</u>	<u>44</u>
measurement alarms:	<u>None</u>	<u>None</u>
service alarms:	<u>None</u>	<u>None</u>
FID status:	cnt: <u>2525</u>	cnt: <u>2193</u>
	rng: <u>1</u>	rng: <u>1</u>
	try: <u>4</u>	try: <u>4</u>
	flm: <u>207.7</u>	flm: <u>206.8</u>
	det: <u>125.4</u>	det: <u>125.5</u>
Oven Readings:	Flame: <u>207</u>	Flame: <u>206</u>
	Filter: <u>125</u>	Filter: <u>125</u>
	Base: <u>125</u>	Base: <u>125</u>
	Pump: <u>6.81</u>	Pump: <u>6.80</u>
Voltages:	+5 <u>4.9</u>	+5 <u>4.9</u>
	+15 <u>14.9</u>	+15 <u>14.9</u>
	-15 <u>-15.0</u>	-15 <u>-15.0</u>
	Internal Span: <u>32.3</u>	Internal Span: <u>32.3</u>

Calibrator: Flow Meter ID's: <u>NA</u> Make & Model: <u>API 700</u> Serial #: <u>831</u> Cal Gas Cylinder I.D. #: <u>LL33674</u> CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> Cylinder Conc. (ppm): <u>601.4</u> <u>202.0</u> CH <sub>4</sub> as propane/total CH <sub>4</sub> equivalents (ppm): <u>555.5</u> <u>1156.9</u>	<b>Calibrator Flow Targets:</b>			
	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
	zero	<u>2000</u>	<u>0</u>	<u>2000</u>
	high	<u>1935</u>	<u>65</u>	<u>2000</u>
	mid	<u>1969</u>	<u>31</u>	<u>2000</u>
	low	<u>1984</u>	<u>16</u>	<u>2000</u>

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	1997	0.00	1997	0	0.20	NA
adjusted zero	1997	0.00	1997	0	0.00	NA
as found high	1997	65.00	2062	36.47	36.50	0.999
adjusted high	1997	65.00	2062	36.47	36.40	1.002
mid	1997	31.00	2028	17.68	17.60	1.005
low	1997	16.00	2013	9.20	9.10	1.011
calibrator zero	1997	0.00	1997	0	0.00	NA
Average C.F.=						1.006

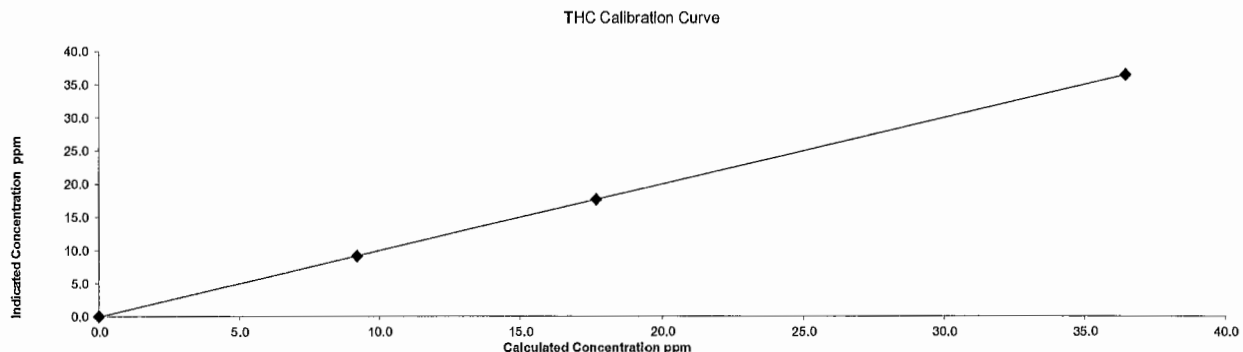
**Linear Regression/Calibration Results:**

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>-0.084%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0.19%</u>	± 3% F.S.	PASS
		± 15%	PASS

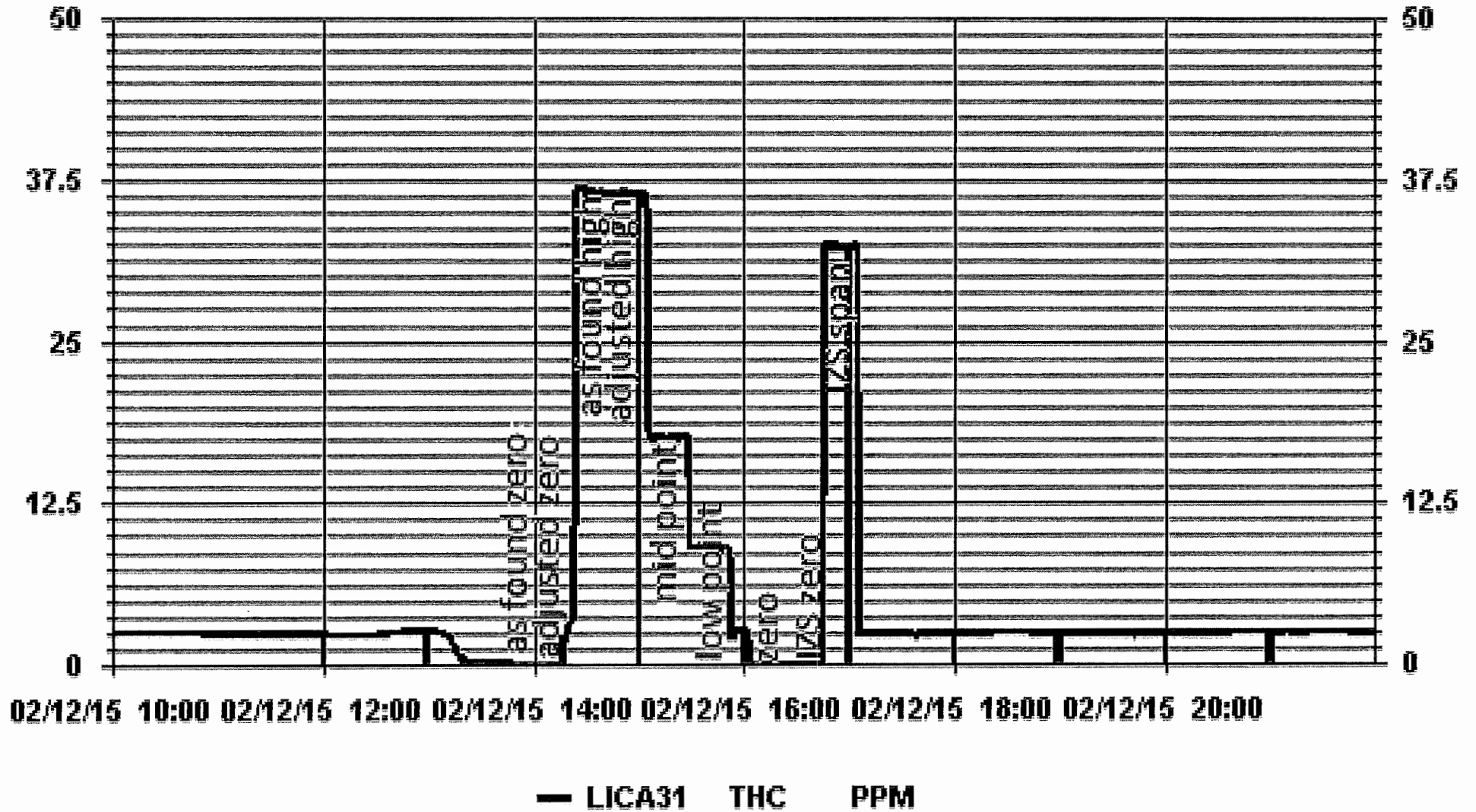
**Comments:**

Sample filter changed.  
 15:52-16:02 (LOW TO ZERO). Pressure error with calibrator. Calibrator zero starts at 16:03

Thermo 51C THC Analyzer Calibration

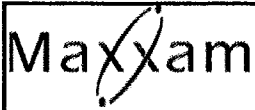


# 01 Minute Averages





***NITROGEN DIOXIDE***



API 200E NOx Analyzer Calibration

Date: 12-Feb-15  
 Company: LICA  
 Station Name/Location: St.Lina  
 Performed by: Chris W / Alex Y

Start Time (mst): 9:02  
 End Time (mst): 15:42  
 Calibration Purpose: Monthly Calibration  
 Cal Gas Expiry Date: 12-Aug-17

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

Correction Factors:  
 As found C.F. Previous Cal High Point C.F.:  
 NO= 0.960 NO= 1.000  
 NOx= 0.965 NOx= 1.000  
 NO<sub>2</sub>= 1.002 NO<sub>2</sub>= 0.997

As found:  
 NOx SLOPE: 0.953  
 NOx OFFS: 1.4  
 NO SLOPE: 0.955  
 NO OFFS: -1.4  
 TEST: NA  
 SAMP FLW: 452  
 OZONE FL: 78  
 PMT: 17.7  
 NORM PMT: 1.0  
 AZERO: 16.5  
 HVPS: 771  
 RCELL TEMP: 50.0  
 BOX TEMP: 28.7  
 PMT TEMP: 6.6  
 IZS TEMP: 45.0  
 MOLY TEMP: 313.6  
 RCEL: 5.3  
 SAMP: 26.6  
 Internal Span: 537.3/7.6/529.6

As left:  
 NOx SLOPE: 0.917  
 NOx OFFS: 0.2  
 NO SLOPE: 0.914  
 NO OFFS: -0.5  
 TEST: NA  
 SAMP FLW: 452  
 OZONE FL: 78  
 PMT: 17.9  
 NORM PMT: 1.1  
 AZERO: 15.8  
 HVPS: 771  
 RCELL TEMP: 50.0  
 BOX TEMP: 28.8  
 PMT TEMP: 6.6  
 IZS TEMP: 45.1  
 MOLY TEMP: 313.7  
 RCEL: 5.2  
 SAMP: 26.1  
 Internal Span: 516.6/7.48/509.1

Calibrator Flow Targets:

Make & Model: Envirotronics 6100  
 Serial #: 4760  
 Cal Gas Cylinder I.D. #: LL42475  
 NO Cylinder Conc. (ppm): 48.5  
 NOx Cylinder Conc. (ppm): 48.5

point	diluent (cc/min)	cal gas (cc/min)	O <sub>2</sub> setting (v or ppb)	total (cc/min)
zero	4995	0	0	4995
high	4916	78	340.00	4994
mid	4957	38	170.00	4995
low	4975	19	80.00	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	4994	0.0	4994	0	0	0.0	0.0	NA	NA
adjusted zero	4994	0.0	4994	0	0	0.0	0.0	NA	NA
as found high	4934	61.71	4996	599.1	599.1	624	621	0.960	0.965
adjusted high	4934	61.71	4996	599.1	599.1	600	601	0.999	0.997
mid	4963	30.84	4993	299.5	299.5	300	301	0.998	0.995
low	4979	15.43	4995	149.8	149.8	152	153	0.986	0.979
calibrator zero	4995	0.00	4995	0	0	0.0	0.0	NA	NA
Average C.F.=								0.994	0.990

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	4934	61.67	4996	0.0	597.0	596.0	-1.0	0.0	0.0	
as found NO <sub>2</sub>	4934	61.67	4996	340.0	186.0	595.0	409.0	411.0	410.0	1.002
adjusted NO <sub>2</sub>	4934	61.67	4996	340.0	186.0	595.0	409.0	411.0	410.0	1.002
gpt mid	4934	61.67	4996	170.0	388.0	596.0	208.0	209.0	209.0	1.000
gpt low	4934	61.67	4996	80.0	504.0	597.0	92.0	93.0	93.0	1.000
Average NO <sub>2</sub> C.F.=										1.001

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>
Correlation Coefficient =	1.000	1.000	1.000
Slope =	1.000	1.002	0.998
b (Intercept as % of full scale)=	0.08%	0.12%	0.02%
% change in C.F. from last cal=	3.99%	3.53%	-0.55%
NO <sub>2</sub> converter efficiency			99.9%

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

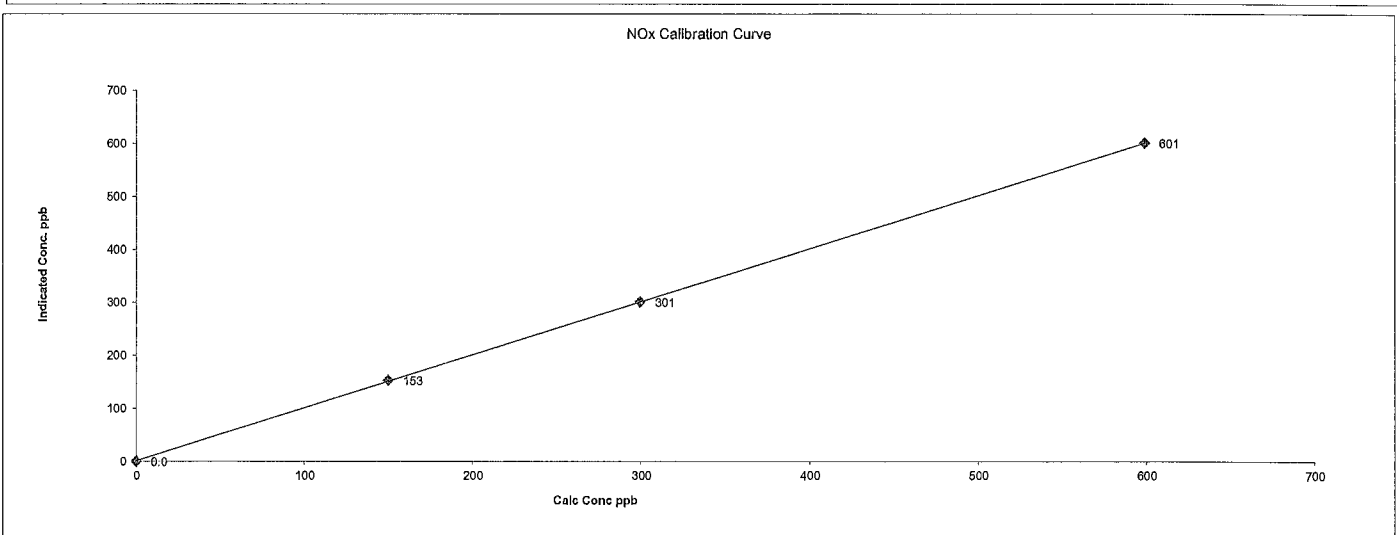
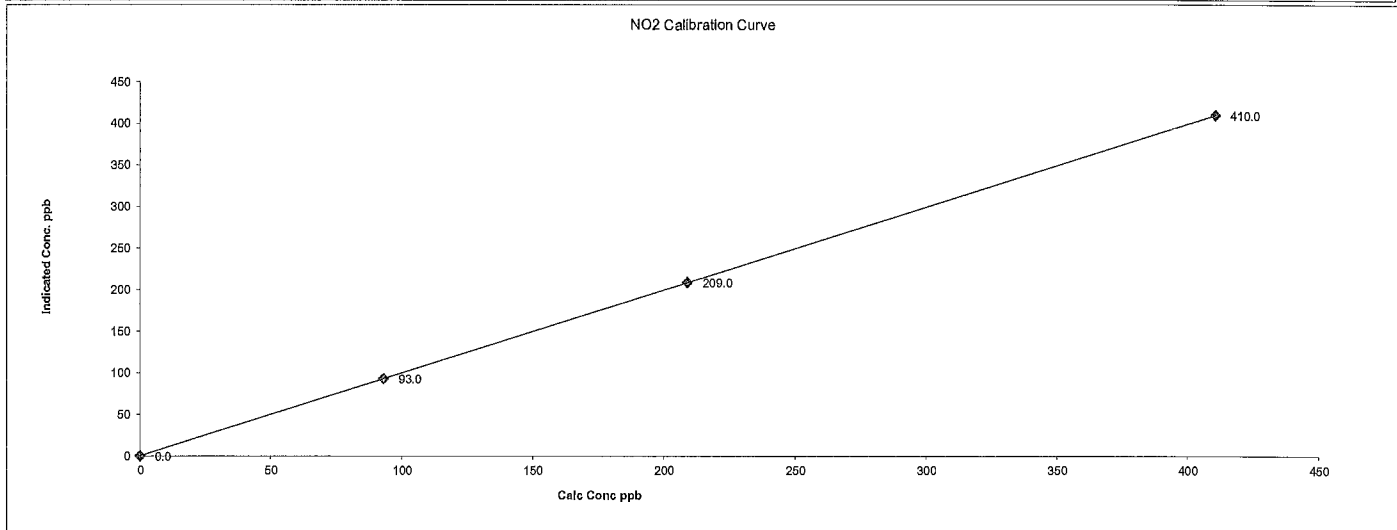
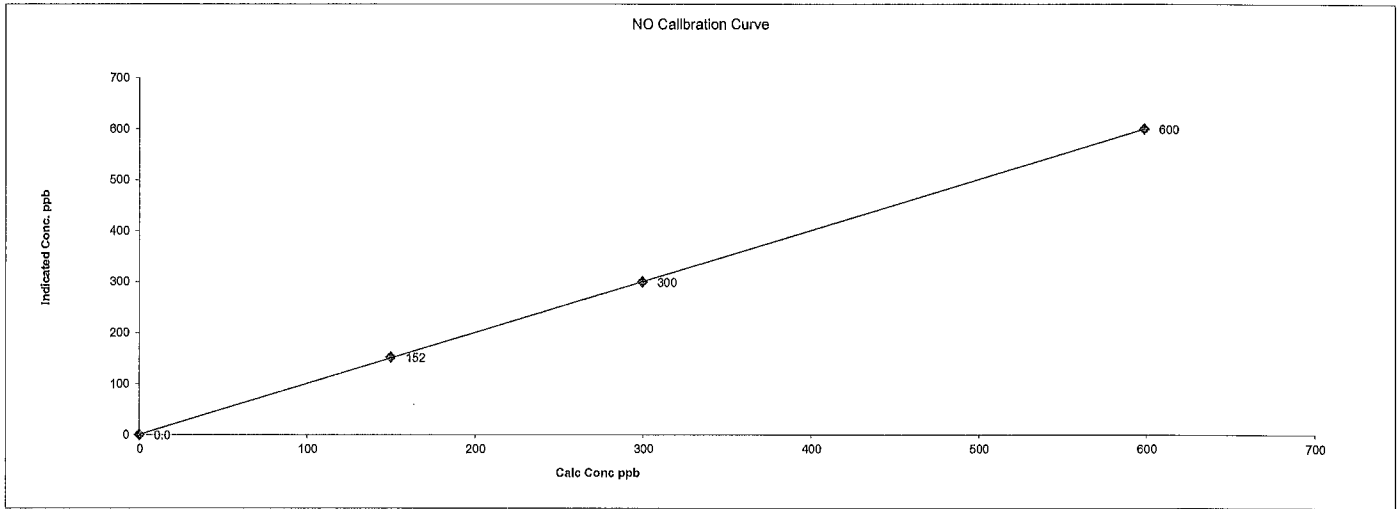
Comments:

Sample filter changed. No adjustments made for NO2. Data copied for calculation purposes only.

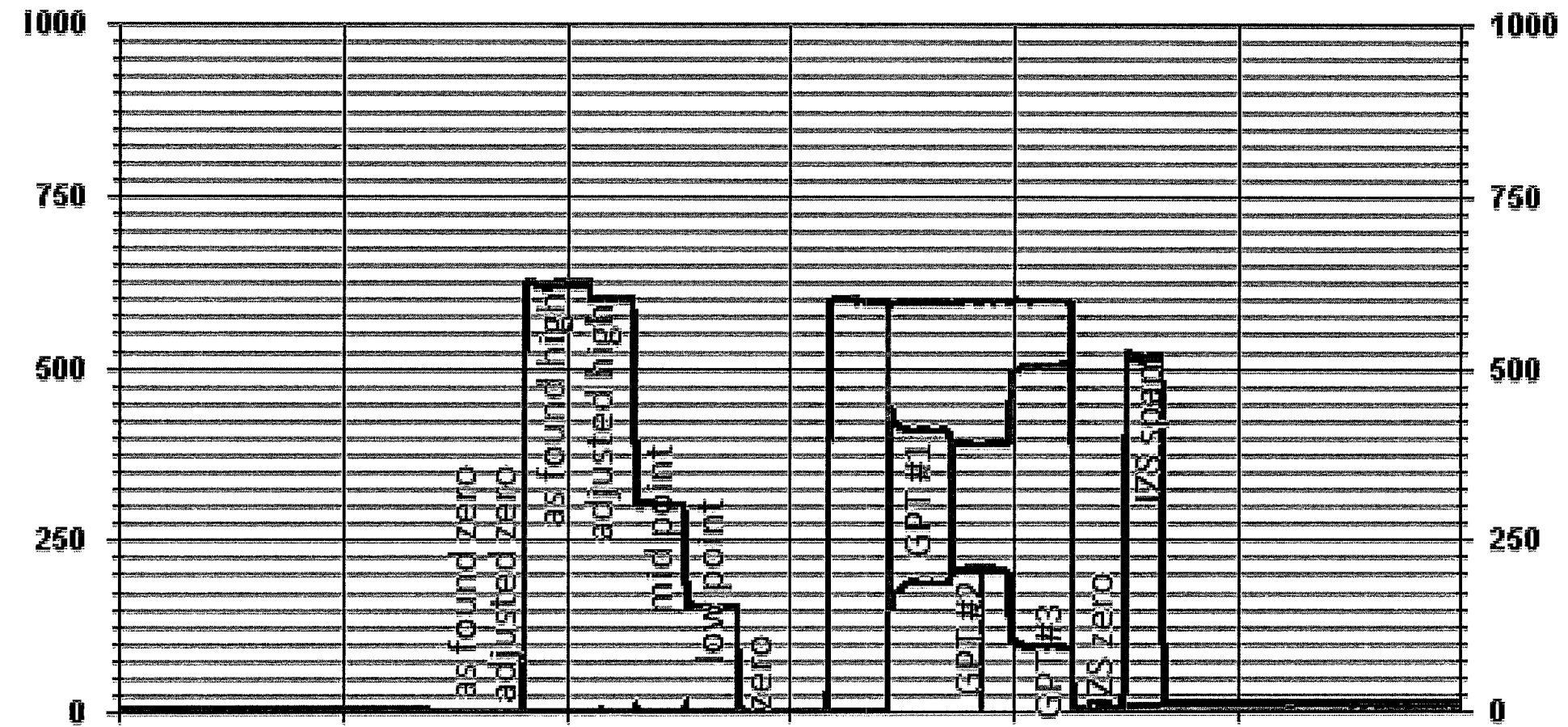
Date: 12-Feb-15  
Company: LICA  
Station Name/Location: St.Lina  
Performed by: Chris W / Alex Y

Start Time (mst): 9:02  
End Time (mst): 15:42  
Calibration Purpose: Monthly Calibration  
Cal Gas Expiry Date: 12-Aug-17

API 200E NOx Analyzer Calibration



### 01 Minute Averages



02/12/15 06:17 02/12/15 08:17 02/12/15 10:17 02/12/15 12:17 02/12/15 14:17 02/12/15 16:17

— LICA31 NOX\_ PPB      — LICA31 NO\_ PPB      — LICA31 NO2\_ PPB

**OZONE**

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

Date: 12-Feb-15	Start Time (mst): 14:52	End Time (mst): 18:52
Company: LICA	Calibration Purpose: Monthly Calibration	
Station Name/Location: St.Lina	G.P.T. Date: 12-Feb-15	
Performed by: Chrls W / Alex Y		

<b>Analyzer:</b> Serial Number: 1002240371 Last Calibration Date: 11-Jul-14 Previous Cal High Point C.F.: 1.000	Range ppm: 500 As Found C.F.: 0.958 New C.F.: 0.996
--	---

	As found:	As left:
Motherboard:	O <sub>3</sub> Bkg: -1.8	O <sub>3</sub> Bkg: -0.2
	O <sub>3</sub> Coef: 1.026	O <sub>3</sub> Coef: 0.981
	3.3 3.3	3.3 3.3
	15.0 14.8	15.0 14.8
	24.0 23.7	24.0 23.7
Interface Board:	-3.3 -3.2	-3.3 -3.2
	3.3 3.2	3.3 3.2
	5.0 4.9	5.0 4.9
	15.0 14.7	15.0 14.7
	-15.0 -15.0	-15.0 -15.0
Photo Lamp	9.4	9.4
24.0	23.4	24.0
O <sub>3</sub> Lamp	8.3	O <sub>3</sub> Lamp
Bench:	27.6	Bench:
Bench Lamp:	53.6	Bench Lamp:
O <sub>3</sub> Lamp:	67.8	O <sub>3</sub> Lamp:
Pressure:	677.9	Pressure:
Cell A lpm:	0.726	Cell A lpm:
Cell B lpm:	0.721	Cell B lpm:
O <sub>3</sub> ppb:	47.1	O <sub>3</sub> ppb:
Cell A ppb:	16.7	Cell A ppb:
Cell B ppb:	37.1	Cell B ppb:
Cell A Int:	63580	Cell A Int:
Cell B Int:	74467	Cell B Int:
Internal Span:	337.4	Internal Span:

<b>Calibrator:</b> Make & Model: Envirotronics 6100 Serial #: 4760 NOx Gas Cylinder I.D. #: LL42475 NOx Cylinder Conc. (ppm): 50.2	<b>Calibrator Flow Targets:</b> <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>340</td> </tr> <tr> <td>mid</td> <td>4995</td> <td>170</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	340	mid	4995	170	low	4995	80
point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)														
zero	4995	0														
high	4995	340														
mid	4995	170														
low	4995	80														

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	1.4	NA
adjusted zero	4995	0.0	4995	0.0	0.0	NA
as found high	4995	0.00	4995	411.0	429.0	0.958
adjusted high	4995	0.00	4995	411.0	411.0	1.000
mid	4995	0.00	4995	209.0	209.0	1.000
low	4995	0.00	4995	93.0	94.0	0.989
calibrator zero	4995	0.00	4995	0.0	0.0	NA

\*\* copy and paste flows and NO decrease from NOx cal in to calculated concentration\*\*

Average C.F.= 0.996

**Linear Regression/Calibration Results:**

Correlation Coefficient =	1.000	LIMITS	Pass/Fail ?
Slope =	0.999	> or = 0.995	PASS
b (Intercept as % of full scale)=	0.082%	0.85-1.15	PASS
% change in C.F. from last cal	4%	± 3% F.S.	PASS
		± 15%	PASS

**Comments:**

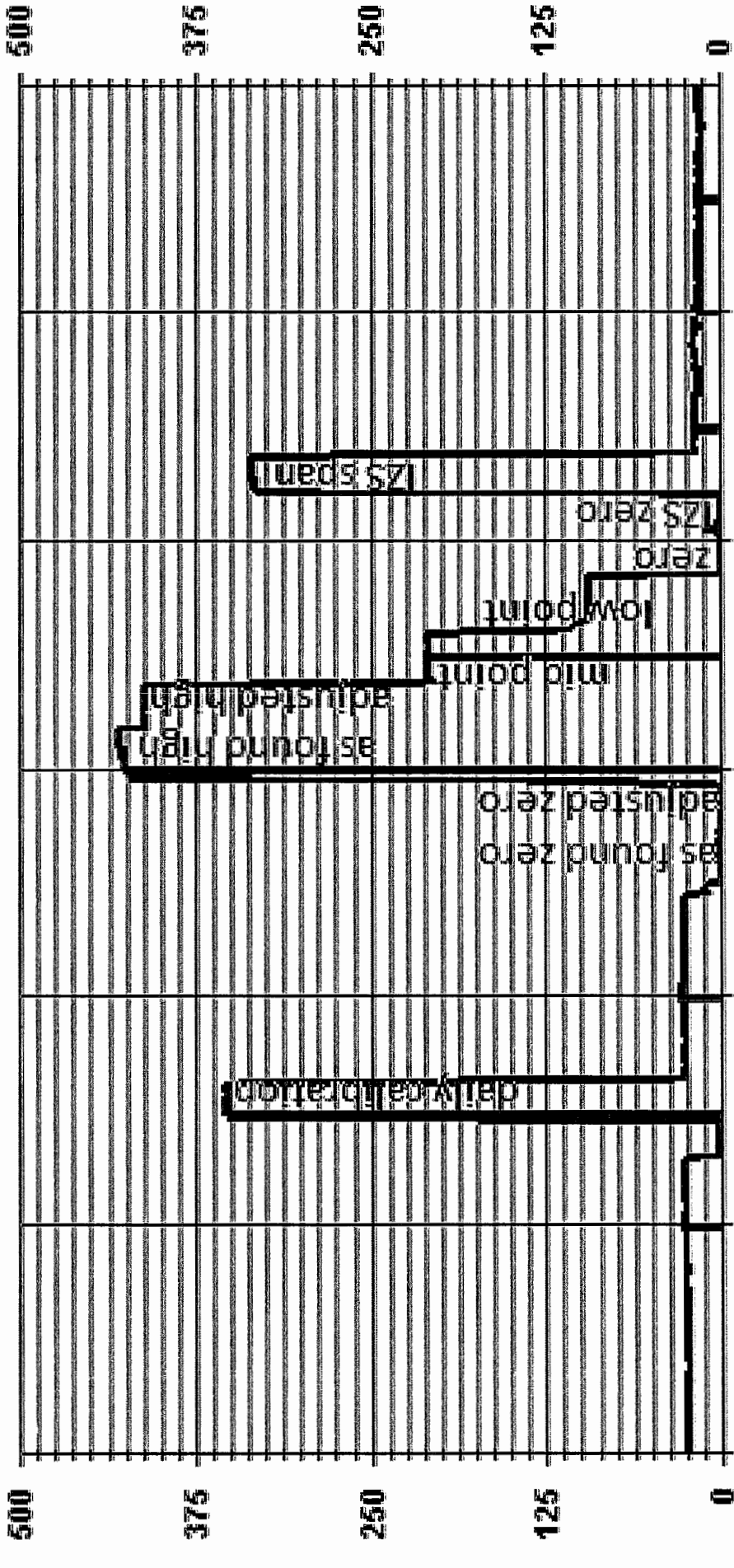
  

**Thermo 49i O<sub>3</sub> Analyzer Calibration**

O<sub>3</sub> Calibration Curve

Calc Conc (ppb)	Indicated Conc (ppb)
0.0	0.0
64.0	64.0
200.0	200.0
411.0	411.0

01 Minute Averages



— LICA31 03\_ PPB

***PARTICULATE MATTER***





## R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 5-Feb-15  
 Company: LICA  
 Station Name/Location: St Lina  
 Previous Audit Date: 26-Jan-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 14:53 - 17:10  
 Calibration Purpose: 1st Audit

**1400A Information and Status:**

Serial Number: 1405A208301003 As Found Filter Loading %: 28.39  
 Ko Factor: 13125.0 As Left Filter Loading %: 19.20  
 Ambient Temperature °C: -17.64 As Found Noise: 0.010  
 Ambient Pressure atm: 0.916 As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.30  
 Aux Flow Reading lpm: 13.67 Warnings: None

**Reference Standards:**

	Flow:	Pressure:	Temperature:
Make:	Dwyer	Fisher	MetOne
Model:	475 Mark III	FB61291	Station
Serial Number:	NA	130168457	NA
Calibration Date:	NA	11-Apr-14	NA

**As found leak check:**

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.03	-0.15	0.08	-0.14
	limit	0.15	<del>X</del>	0.15	<del>X</del>
Bypass Flow	actual	0.84	-0.64	0.62	-0.64
	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	0.03	-0.15	0.08	-0.14
	limit	0.15	<del>X</del>	0.15	<del>X</del>
Bypass Flow	actual	0.47	-0.64	0.51	-0.64
	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>-17.7</u>	1405F pressure atm: <u>0.916</u>
reference temperature °C: <u>-17.4</u>	reference pressure: <u>0.923</u>
difference °C: <u>0.3</u>	difference: <u>-0.007</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>-17.7</u>	1405F pressure atm: <u>0.916</u>
reference temperature °C: <u>-17.4</u>	reference pressure: <u>0.923</u>
difference °C: <u>0.3</u>	difference: <u>0.007</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>13.67</u>
reference main flow lpm: <u>2.93</u>	reference total/aux flow lpm: <u>13.62</u>
difference lpm: <u>-0.07</u>	difference lpm: <u>-0.05</u>

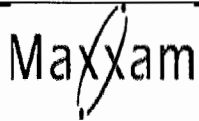
**As left flows (same as above if as found adequate):**

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>13.67</u>
reference main flow lpm: <u>2.93</u>	reference total/aux flow lpm: <u>13.62</u>
difference lpm: <u>-0.07</u>	difference lpm: <u>-0.05</u>

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

Last K<sub>o</sub> audit date: 1-May-14  
 1405F K<sub>o</sub> factor: 13125.0  
 Measured K<sub>o</sub> factor: NA  
 % difference: NA

**Comments:**



## R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 17-Feb-15  
 Company: LICA  
 Station Name/Location: St Lina  
 Previous Audit Date: 5-Feb-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 14:44 - 15:41  
 Calibration Purpose: 2nd Audit

**1400A Information and Status:**

Serial Number: 1405A208301003 As Found Filter Loading %: 26.75  
 Ko Factor: 13125.0 As Left Filter Loading %: 19.22  
 Ambient Temperature °C: -11.54 As Found Noise: 0.090  
 Ambient Pressure atm: 0.926 As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.31  
 Aux Flow Reading lpm: 13.67 Warnings: None

**Reference Standards:**

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>MetOne</u>
Model:	<u>475 Mark III</u>	<u>FB61291</u>	<u>Station</u>
Serial Number:	<u>NA</u>	<u>130168457</u>	<u>NA</u>
Calibration Date:	<u>NA</u>	<u>11-Apr-14</u>	<u>NA</u>

**As found leak check:**

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.05	-0.15	0.08	-0.14
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.53	-0.64	0.57	-0.64
	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	0.05	-0.15	0.08	-0.14
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.53	-0.64	0.57	-0.64
	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>-11.5</u>	1405F pressure atm: <u>0.926</u>
reference temperature °C: <u>-11.2</u>	reference pressure: <u>0.921</u>
difference °C: <u>0.3</u>	difference: <u>0.005</u>

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

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>-11.5</u>	1405F pressure atm: <u>0.926</u>
reference temperature °C: <u>-11.2</u>	reference pressure: <u>0.921</u>
difference °C: <u>0.3</u>	difference: <u>-0.005</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>13.67</u>
reference main flow lpm: <u>2.96</u>	reference total/aux flow lpm: <u>13.52</u>
difference lpm: <u>-0.04</u>	difference lpm: <u>-0.15</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>13.67</u>
reference main flow lpm: <u>2.96</u>	reference total/aux flow lpm: <u>13.52</u>
difference lpm: <u>-0.04</u>	difference lpm: <u>-0.15</u>

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

Last K<sub>o</sub> audit date: 1-May-14  
 1405F K<sub>o</sub> factor: 13125.0  
 Measured K<sub>o</sub> factor: NA  
 % difference: NA

**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 +/- 0.2 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	11.08	0.221	11.66	-0.02
150.0	0.420	151.3	1.3	11.29	0.222	11.11	-0.18
210.0	0.582	209.4	-0.6	11.25	0.223	11.16	-0.09
240.0	0.645	239.4	-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 +/- 0.2 Deg	WS Standard mps	WS Output Volts	WS Reading mps	WS Error +/- 0.20 MPS
30.0	0.081	29.3	-0.7	2.18	0.042	2.08	-0.10
60.0	0.163	58.5	-1.5	2.20	0.043	2.11	-0.09
120.0	0.332	119.6	-0.4	2.21	0.042	2.08	-0.13
150.0	0.417	150.3	0.3	2.22	0.042	2.07	-0.15
210.0	0.584	210.1	0.1	2.20	0.042	2.12	0.08
240.0	0.646	238.8	-0.2	2.23	0.042	2.10	-0.13
300.0	0.835	300.8	0.8	2.22	0.043	2.18	0.04
330.0	0.917	330.0	0.0	2.21	0.043	2.17	0.04

Instrument Test Condition: As Found  As Left

Sensor Model No.: 50.5H

Sensor Serial No.: H12635

Sensor Output Swing: 0V - 1.0V

Sensor Output Range: 0 - 50 MPS

Customer: Maxxim Analytics

Sales Order No.: 104702

Tested on (PO): 3556587

Calibration Date: 08/28/2014

Calibrated by: David F. [Signature]

QC Inspection: [Signature]

***CALIBRATORS***



# Calibrator Performance Audit

## Sulphur Dioxide (by Cylinder Dilution)

File No. 2013-337A

**Company:** Maxxam **Operator:** Chris Wesson

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>829</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>June 2011</u>	Temperature (°C)	<u>N/A</u>
SO <sub>2</sub> Cylinder Conc.	<u>49.8</u>	Barometric Pressure	<u>N/A</u>
SO <sub>2</sub> Cylinder S/N	<u>BAL3038</u>		

### Flow Measurements

Pt. No. 1 80.6 Pt. No. 2 40.3 Pt. No. 3 20.1

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
5000	0.800	0.788	-2%	± 10%
5000	0.400	0.385	-4%	± 10%
5000	0.200	0.192	-4%	± 10%
Absolute Average Percent Difference			3%	± 10%

### LINEAR REGRESSION ANALYSIS

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

SO <sub>2</sub>	LIMITS
Correlation= 0.9999	≥ 0.995
m (Slope)= 0.9859	0.90-1.10
b (Intercept % of FS)= -0.3800	± 3% F.S.

#### AENV Standards

**Audit Calibrator**  
 Make/Model R&R MFC 201  
 Serial/AMU Number AMU 1690

#### SO<sub>2</sub> Analyzer

Make/Model Teco 43C  
 Serial/AMU Number AMU 1623  
 Last Calibration Date February 21, 2013  
 Full Scale (ppm) 1.0

COMMENTS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Auditor: Al Clark  
 Operator Signature:

Date: February 21, 2013  
 Location: McIntyre Center Edmonton



# Calibrator Performance Audit

## Oxides Of Nitrogen

File No. 2014-260A

Company <u>Maxxam</u>		Operator: <u>Limin Li</u>	
<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>
		Pt. #3	<u>5000</u>
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
		Pt. #3	<u>20</u> Gas flows not available from display.

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <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				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<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>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				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<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.				

<p style="text-align: center;"><b>AENV Standards</b></p> <p style="text-align: center;"><b>Audit Calibrator</b></p> <p>Make/Model <u>Teco 146i</u></p> <p>Serial/AMU Number <u>AMU 1809</u></p>	<p style="text-align: center;"><b>NO<sub>x</sub> Analyzer</b></p> <p>Make/Model <u>Teco 42i</u></p> <p>Serial/AMU Number <u>AMU 1868</u></p> <p>Last Calibration Date <u>December 15, 2014</u></p> <p>Full Scale (ppm) <u>1.0</u></p>
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COMMENTS: \_\_\_\_\_

Auditor: Al Clark

Operator Signature:

Date: December 17, 2014

Location: McIntyre Center Edmonton



## Calibrator Performance Audit

### Hydrogen Sulphide (by Cylinder Dilution)

File No. 2012-301A

Company: <u>Maxxam</u>		Operator: <u>Ting Xu</u>	
<b>Calibrator:</b> Make/Model: <u>API 700</u> Serial Number: <u>831</u> Last Verification Date: <u>Dec 21/11</u> H <sub>2</sub> S Cylinder Conc.: <u>LL42648</u> H <sub>2</sub> S Cylinder S/N: <u>10.0</u>		<b>Flow Measurement Device:</b> Make/Model: <u>N/A</u> Serial Number: <u>N/A</u> Temperature (°C): <u>N/A</u> Barometric Pressure: <u>N/A</u>	

**Flow Measurements**

Pt. No. 1 40 Pt. No. 2 20 Pt. No. 3 11.5

Calibrator Flow (scfm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.0000	0.0000		
4960	0.0800	0.0809	1%	± 10%
4977	0.0400	0.0404	1%	± 10%
4987	0.0230	0.0234	2%	± 10%
Absolute Average Percent Difference			1%	± 10%

**LINEAR REGRESSION ANALYSIS**

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

<u>H<sub>2</sub>S</u>	<u>LIMITS</u>
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0107	0.90-1.10
b (Intercept % of FS)= 0.0439	± 3% F.S.

AENV Standards	H <sub>2</sub> S Analyzer
Audit Calibrator	Make/Model: <u>Teco 45C</u>
Make/Model: <u>R&amp;R MFC 201</u>	Serial/AMU Number: <u>AMU 1624</u>
Serial/AMU Number: <u>AMU 1690</u>	Last Calibration Date: <u>Dec13/12</u>
	Full Scale (ppm): <u>0.1</u>

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

\_\_\_\_\_

\_\_\_\_\_

Auditor: Al Clark Date: December 13, 2012

Operator Signature: *[Signature]* Location: McIntyre Center Edmonton



***CALIBRATION GASES***



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2013-317C6A

Company: Maxxam Operator's Name: Limin Li  
Cylinder #: BAL1283 Concentration PPM: 49.5 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 4, 2013</u>	Temp. °C: <u>21.5 C</u>
Gas Type: <u>SO2</u> Cono. <u>98.57</u>	B.P. <u>711 mmHg</u>
Cylinder Number: <u>CAL018720</u>	

Reference Analyzer:  
Make/Model: Teco 43C Serial/AMU Number: 1023  
Instrument Settings: Zero: 7.4 Span: 1.006 Range: 1.0  
Last Calibration: Date: Dec 4/13 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.0000</del>	<del>0.0000</del>	<del>0.000</del>
4994	82.7	0.807	0.01656	60.387	48.7
4993	40.8	0.401	0.00817	122.377	49.1
4970	16.1	0.167	0.00324	308.696	48.5
Average Cylinder Concentration:					<b>48.8</b>

Previous Stated Concentration PPM: 49.5  
Percent variance from Stated: 1.5

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 4, 2013  
Operator Signature: *Limin Li* Location: Molntyre 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: 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 (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.01019</del>	<del>228.386</del>	<del>48.9</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:					<b>49.0</b>

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. 2013-324CGA

Company: Maxxam Operator's Name: Chris Wesson  
Cylinder #: BLM005049 Concentration PPM: 10.1 Tolerance(%) 2 Certified By: Air Liquide

**Reference Calibrator and Gas:**

Make/Model: R&R MFC 201  
Serial Number: AMU 1690  
Last Verification Date: February 21, 2013  
Gas Type: H2S Cono. 20.02  
Cylinder Number: D249556

**Flow Measurement Device:**

Make/Model: Bios DC2  
Serial Number: AMU 1659  
Temp. °C: 21.0 C  
B.P. 696 mmhg

**Reference Analyzer:**

Make/Model: Teco 45C Serial/AMU Number: 1624  
Instrument Settings: Zero: 7.5 Span: 1.023 Range: 0.1  
Last Calibration: Date: Feb 21/13 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>0.0000</del>	<del>0.0000</del>
5103	38.2	0.0768	0.00749	133.586	10.3
5087	17.9	0.0355	0.00352	284.190	10.1
5064	9.2	0.0182	0.00182	550.435	10.0
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.1

Percent variance from Stated: 0.2

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

Auditor: Al Clark  
Operator Signature: *Al Clark*

Date: February 21, 2013  
Location: McIntyre Center Edmonton



Provan Carbons, Inc.  
 2521 36th Street  
 Edmonton, AB T5B 2R3  
 Tel: 780-445-0778  
 Fax: 780-445-5322

03/27/2014

MAXXAM ANALYTICS INC "NA"  
 9372 49TH ST  
 EDMONTON, AB T8B 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 Precision	Analytical Accuracy
Methane	500.0ppm	501.4ppm	U	±1% rel
Propane	200.0ppm	202ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler-Toledo Analytical Balance-RO2s xUSA--  
 Hewlett-Packard (Agilent)-8890--GC-FID

Cylinder Style: AQ  
 Filling Method: Gravimetric

Cylinder Pressure @TOP: 2200 psig  
 Date of Fill: 03/26/2014

Cylinder Volume: 82.8 m3  
 Expiration Date: 03/26/2017

Valve Outlet Connection: CGA-310

Cylinder No(s): LL33874

Analyst: Todd Hryniak

This gas cylinder's volume measurements by Provan Carbons, Inc. are based on a certified volume determined by gravimetry, volume of gas at pressure technique. The certified weight used is certified against Provan Carbons, Inc. reference standards which are either prepared by weight relative to the National Institute of Standards and Technology (NIST) Measurement Canada or by gravimetry of secondary gas, or by relative to gas flow by volume at a certified reference state.

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

The information contained herein has been prepared in accordance with the requirements of the International Organization of Standardization (ISO) 9001:2008. The information is provided for informational purposes only and is not intended to be used for any specific purpose. The information is provided for informational purposes only and is not intended to be used for any specific purpose. The information is provided for informational purposes only and is not intended to be used for any specific purpose.

**AMBIENT AIR MONITORING MONTHLY DATA REPORT  
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
ELK POINT AIRPORT SITE**

**JOB #:2833-2015-02-35- C**

**FEBRUARY 2015**

Prepared for:

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

**Attention: MIKE BISAGA**

DATE: **April 8, 2015**


Prepared by:

  
\_\_\_\_\_

Wunmi Adekanmbi, M.Sc.

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:

  
\_\_\_\_\_

Lily Lin, B.Sc.

Customer Service Supervisor, Air Services, Maxxam Analytics

## SUMMARY

In FEBRUARY 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.

O3: 52 hours of data were invalidated due to a zero/span valve issue.

PM 2.5: 44 hours of data were invalidated as the data were below  $-3 \text{ ug/m}^3$  this month.

VOC results are not included in this report as the sampler is out for repair.

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				WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY		
SO2 (PPB)	172	48	0	0	0	4	1	14	6.5	WSW	1.4	1	99.4
H2S (PPB)	10	3	0	0	0	1	VAR	VAR	VAR	VAR	0.8	1	99.3
THC (PPM)	-	-	-	-	2.4	7.1	26	1	0.5	SSE	4.1	26	99.7
CH4 (PPM)	-	-	-	-	2.4	6.9	26	1	0.5	SSE	4.1	26	99.7
NMHC (PPM)	-	-	-	-	0.00	0.20	26	1	0.5	SSE	0.02	12	99.7
NO2 (PPB)	159	-	0	-	7.9	41.4	21	21	3.3	NW	19.1	26	99.0
NO (PPB)	-	-	-	-	2.8	58.9	26	3	5.4	E	15.6	26	99.0
NOX (PPB)	-	-	-	-	10.7	96.3	26	3	5.4	E	34.7	26	99.0
O3 (PPB)	82	-	0	-	23	41	28	18	13.7	NNW	36.4	5	91.7
PM2.5 (UG/M3)	-	30	-	0	4.9	27.0	4	17	18.3	W	12.8	12	93.5
VECTOR WS (KPH)	-	-	-	-	11.5	36.0	14	2	-	ESE	19.8	6	100.0
VECTOR WD (DEG)	-	-	-	-	NNE	-	-	-	-	-	-	-	100.0

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**

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

**No Exceedences Recorded During the Month**

### Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
FEBRUARY 5, 2015	0.22	1-METHYLNAPHTHALENE
FEBRUARY 11, 2016	0.65	NAPHTHALENE
FEBRUARY 17, 2017	0.66	2-METHYLNAPHTHALENE
FEBRUARY 23, 2018	0.15	PHENANTHRENE

Note:

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Appendix IV

Analytical Results

VOCs Samples

PAHs Samples

Appendix V

Chain of Custody

## 1.0 Discussion

This monthly report consists of data for continuous 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> and WS/WD. It also consists of results for non-continuous parameter 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 is to be operational 90% of the time (minimum), on a monthly basis.

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

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor (greater than 15%).

Hourly data is corrected using daily zero information.

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

A shut-down calibration was performed on February 3 for annual maintenance. The reaction cell was cleaned and the charcoal was renewed. An as found points check was performed after the maintenance. The full post-repair calibration was performed on February 4. The analyzer started drifting low on February 20. An as found points check was performed on the same day to check the analyzer's functionality. The result was within acceptance limits. It was discovered that the low drift was due to the depletion of the perm tube. The perm tube was changed on February 24. The analyzer was allowed time to stabilize with the new perm tube and expected value was changed on March 5. Data quality was not affected.

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

The analyzer was working well throughout the month. A shut-down calibration was performed on February 3 for annual maintenance. The reaction cell was cleaned and the charcoal was renewed. An as found points check was performed after the maintenance. The full post-repair calibration was performed on February 4.

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

The analyzer was working well throughout the month. An as found points check was performed on February 3 before the sample pump was changed. A post-repair calibration was performed on the same day after the maintenance. On February 24, the analyzer was moved to a different spot in the trailer to avoid interference with the Teom unit. A zero/span check was initiated after the move to confirm analyzer's functionality. Hourly maximum data collected at hour 17 of January 24 was discarded due to the moving of the analyzer.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on February 3. The analyzer was put into Maintenance mode for a few minutes on February 20 for monitoring purposes. This did not affect hourly data quality. However, hourly maximum data collected at hour 11 of February 20 was discarded as a result of this monitoring. The analyzer was put into Maintenance mode for Ozone calibration on February 23 and repeated February 24.

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

The routine monthly calibration was performed on February 3. The analyzer did not function properly after the calibration on February 3 due to the zero/span valve getting stuck. This was reset remotely on February 4. This issue repeated itself after the daily calibrations on February 5 and February 9. Troubleshooting was performed by resetting the span valve. It was discovered on February 11 that there was a small sliver of metal in the sample solenoid valve, which caused the zero/span valve malfunction. A leak test was performed and a zero/span check was initiated after removing the metal. All results were within acceptance limits. The zero/span valve got stuck again after the daily calibration on February 20. It was reset on the same day. The valve was changed on February 24 following a shut-down calibration. A post-repair calibration was performed after the maintenance. 52 hours of data collected on February 3 hour 20 to February 4 hour 6, February 5 hour 16 to February 6 hour 7, February 9 hour 12 to February 10 hour 6 and February 20 hour 1 to hour 6 were invalidated this month due to the zero/span valve issue. The analyzer was put into Maintenance mode for a few minutes on February 21 for monitoring purposes.

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

Two audits were performed on this month: one was completed on February 3, and the other audit was performed on February 17. Both the inlet filter and the FDMS filter were replaced on February 17. 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. 44 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 are reported as ppb in 2 decimal places.

No VOC samples were collected in this month as the sampler was out for repair. The VOC sampler data sheets included in this report were made for AITF lab for tracking purposes.

### **PAH SAMPLES**

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs are reported as  $\mu\text{g}$  in 2 decimal places.

Samples were collected on February 5, 11, 17, and 23. They were sent to the lab for analysis. Results are included in this report.

### **NMHC CANISTER SAMPLES**

Samples were programmed to be collected whenever the NMHC canister is triggered by a 5-minute average concentration of  $\geq 0.3 \text{ ppb}$ .

No samples were collected this month as the 5-minute average concentration was below  $0.3 \text{ ppb}$  throughout the month.

## **2.0 Project Personnel**

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

## **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

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100A UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 55i FID Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM<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***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

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	DAILY MAX	24-HOUR AVG.	RDGS.	
1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	4	3	2	2	2	S	0	0	0	0	4	1.4	24	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.0	24	
3	0	0	0	0	0	0	0	0	C	C	C	C	C	Y	Y	Y	Y	C	C	C	C	0	0	0	0	0	0.0	20
4	0	0	0	0	0	0	0	1	1	1	2	C	C	C	C	C	C	0	0	0	0	0	0	0	2	0.3	24	
5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.0	24	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	S	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	S	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	S	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	S	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	S	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	S	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	2	0.2	24	
12	0	0	0	0	0	0	1	S	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0.3	24	
13	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
14	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0.0	24	
15	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
16	0	0	0	0	S	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	24	
17	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
18	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
19	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
20	S	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	1	S	1	0.1	24	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0	24	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	S	0	0	1	0.2	24		
23	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.1	24	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	S	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	S	0	0	0	0	0	0	0	0.0	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.0	24	
27	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	S	0	0	0	0	0	0	0	0	1	0.1	24	
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.0	24	
HOURLY MAX	1	1	1	1	1	1	2	1	1	2	2	2	2	4	3	2	2	2	2	0	1	0	1	0				
HOURLY AVG	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0				

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 FOR REPAIR	K	- COLLECTION ERROR

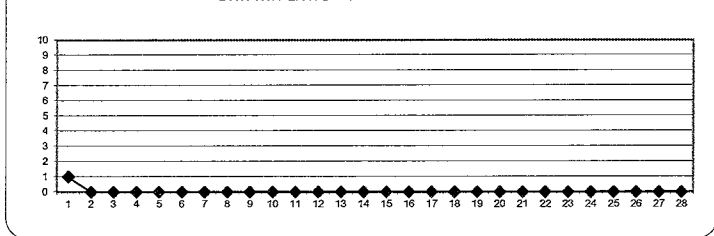
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR: 172 PPB, 24-HR: 48 PPB

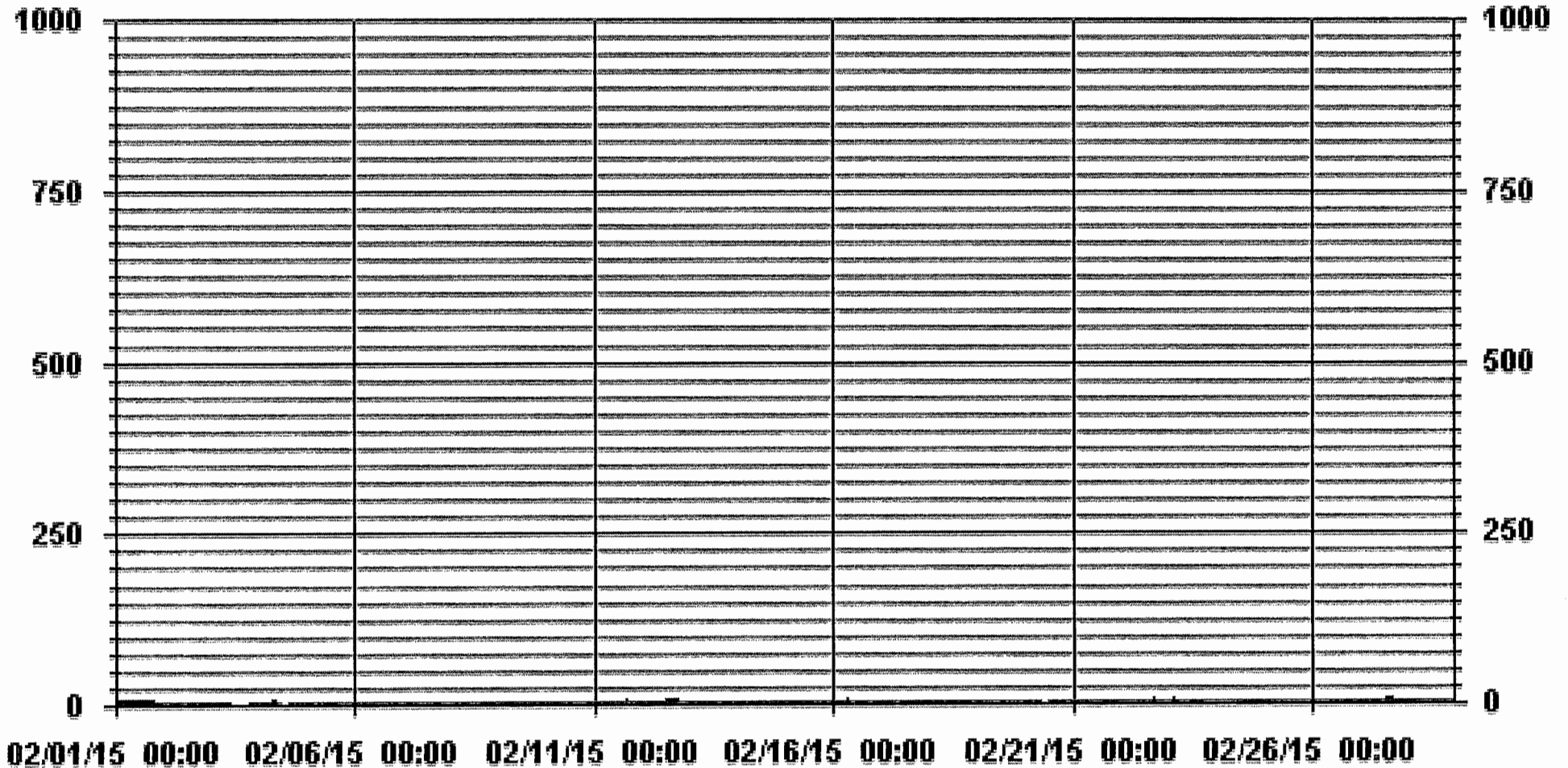
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	51
MAXIMUM 1-HR AVERAGE:	4 PPB @ HOUR(S) 14 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	1.4 PPB ON DAY(S) 7 VAR-VARIOUS
IZS CALIBRATION TIME:	28 HRS
MONTHLY CALIBRATION TIME:	19 HRS
OPERATIONAL TIME:	668 HRS
AMD OPERATION UPTIME:	99.4 %
STANDARD DEVIATION:	0.40
MONTHLY AVERAGE:	0 PPB

24 HOUR AVERAGES FOR FEBRUARY 2015



### 01 Hour Averages



— LICA35 SO2\_ PPB



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35-C

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	DAILY MAX	24-HOUR AVG.	RDGS.
1	2	2	2	2	2	2	2	3	2	3	3	3	3	4	5	5	3	3	2	S	1	1	1	1	5	2.5	24
2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	1	S	1	1	1	0	0	1	0.7	24
3	1	0	0	1	0	0	0	0	1	C	C	C	C	C	Y	Y	Y	Y	C	C	C	1	0	1	1	0.4	20
4	1	1	0	0	1	1	1	2	2	2	3	C	C	C	C	C	C	C	1	1	1	1	1	1	3	1.2	24
5	0	0	0	0	0	2	2	1	1	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	2	0.4	24
6	0	0	0	0	0	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	0.8	24
7	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1.0	24
8	1	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	0	1	0.5	24	
9	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	24
10	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0.1	24
11	0	0	0	0	1	1	1	0	0	S	1	1	2	2	2	3	2	2	2	2	1	1	1	1	3	1.0	24
12	1	1	1	1	1	1	1	2	S	0	1	1	2	2	2	2	2	2	2	1	1	1	1	1	2	1.3	24
13	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
14	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	1	2	1	1	0	0	1	1	0	2	0.3	24
15	0	1	1	1	0	S	0	0	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0.4	24
16	0	0	0	1	S	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.1	24
17	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0.4	24
18	1	1	S	0	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	S	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	2	1.1	24
20	S	0	0	0	1	1	0	0	C	C	C	C	C	1	1	1	1	1	1	1	1	1	1	2	S	0.8	24
21	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	S	1	1	0.2	24
22	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	1	2	S	1	1	2	1.0	24
23	1	1	2	2	1	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	S	0	0	1	0.6	24
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	S	S	0	S	0	0	0	1	0.7	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0.0	24
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	0.3	24
27	1	1	1	1	1	1	1	2	1	2	2	1	1	2	2	2	S	1	1	1	1	1	1	1	2	1.3	24
28	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	S	0	0	0	0	0	0	0	0	2	0.7	24
HOURLY MAX	2	2	2	2	2	2	3	3	2	3	3	3	3	4	5	5	3	3	2	1	2	1	2	1	2	1	
HOURLY AVG	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.7	0.8	0.9	0.8	0.7	0.8	0.8	1.0	0.8	0.9	0.8	0.6	0.7	0.6	0.6	0.6	0.6		

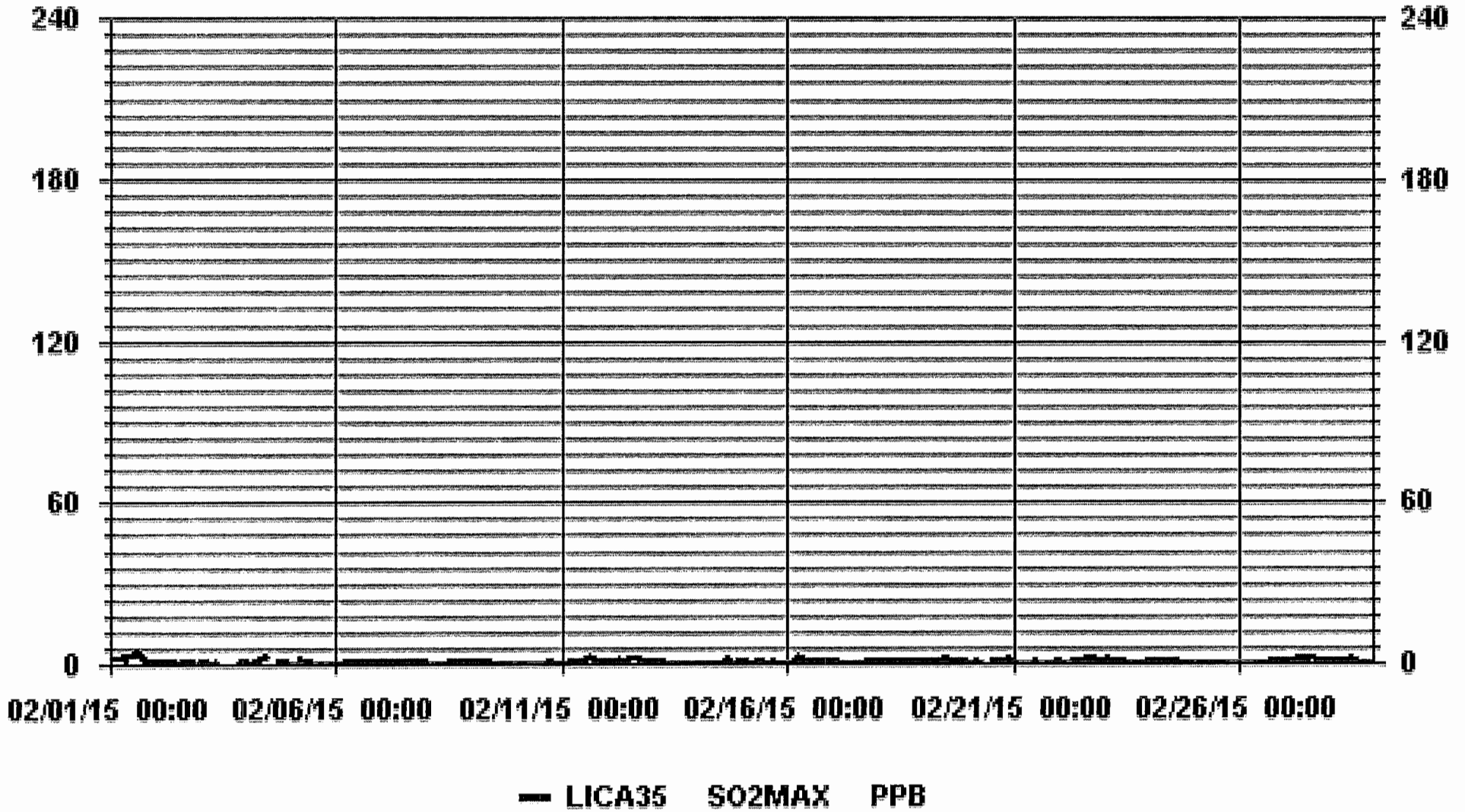
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	372
MAXIMUM INSTANTANEOUS VALUE:	5 PPB @ HOUR(S) 14, 15 ON DAY(S) 1, 1
	VAR-VARIOUS
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	20 HRS
STANDARD DEVIATION:	0.73
OPERATIONAL TIME:	668 HRS

### 01 Hour Averages



LICA-ELK  
 SO2\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-ELK  
 Parameter : SO2\_  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	6.60	1.28	2.09	7.72	12.07	17.06	5.47	1.44	.80	1.61	2.25	6.28	10.62	8.85	9.17	6.60	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	6.60	1.28	2.09	7.72	12.07	17.06	5.47	1.44	.80	1.61	2.25	6.28	10.62	8.85	9.17	6.60	

Calm : .00 %

Total # Operational Hours : 621

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	41	8	13	48	75	106	34	9	5	10	14	39	66	55	57	41	621
< 60																	
< 110																	
< 170																	
< 340																	
= 340																	
Totals	41	8	13	48	75	106	34	9	5	10	14	39	66	55	57	41	

Calm : .00 %

Total # Operational Hours : 621

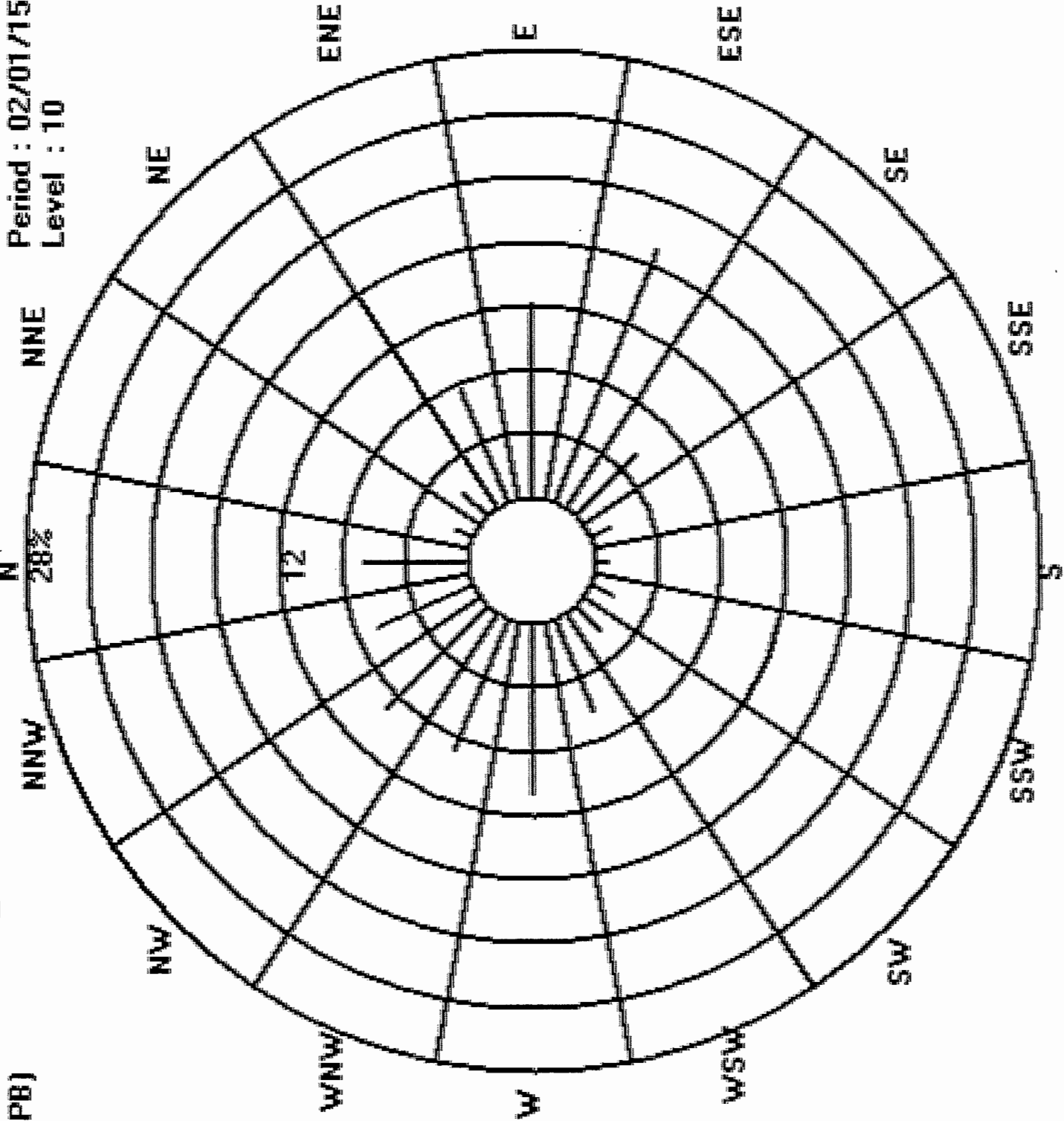


Logger : 35 Parameter : SO2\_

Site : LICA-ELK

Period : 02/01/15-02/28/15

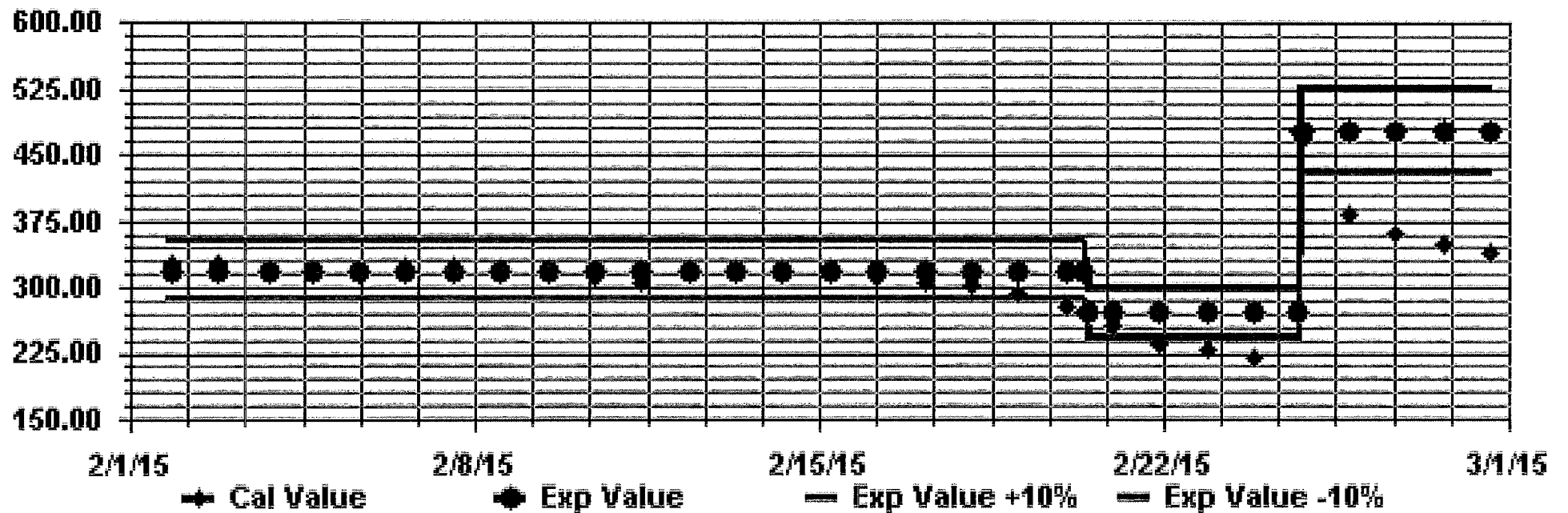
Level : 10



Class Limits (PPB)

>=	340
<	340
<	170
<	110
<	60
<	20

Calibration Graph for Site: LICA35 Parameter: SO2\_ Sequence: SO2 Phase: SPAN



***HYDROGEN SULPHIDE***



HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
DAY	HOURLY MAX	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.	AVG.	RDGS.		
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	S	0	0	0	0	1	0.8	24	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.0	24	
3	0	0	0	0	0	0	0	0	0	0	C	C	C	C	Y	Y	Y	Y	Y	C	C	0	0	0	0	0	0.0	19	
4	0	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	C	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	S	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	S	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	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
9	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
10	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
11	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6	24	
12	1	1	1	1	1	1	1	1	1	S	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	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
15	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
16	0	0	0	0	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
18	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
19	0	S	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0.0	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	1	S	1	1	0.1	24
22	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	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	S	0	0	0	0	0.0	24	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0.0	24	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	1	0.0	24
26	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.2	24
27	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0.1	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0.0	24
HOURLY 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			
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1				

STATUS FLAG CODES

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

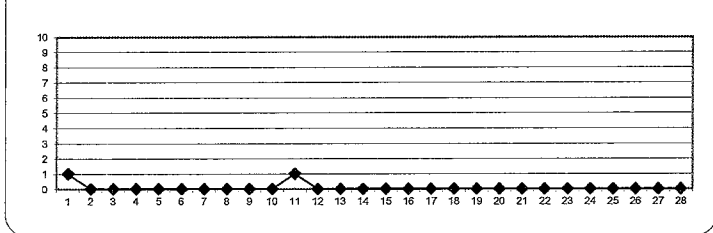
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR: 10 PPB; 24-HR: 3 PPB

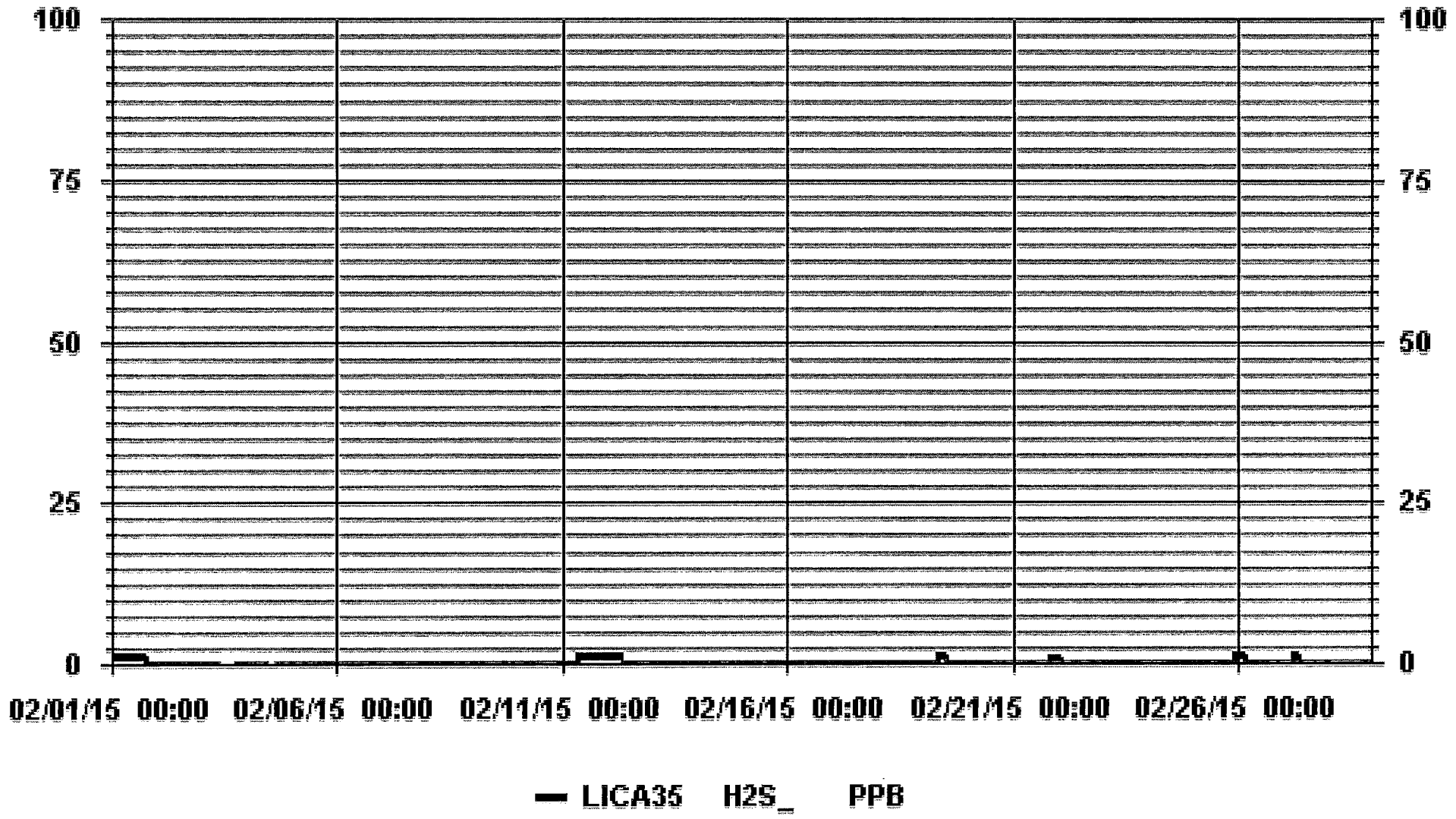
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	54
MAXIMUM 1-HR AVERAGE:	1 PPB @ HOUR(S) VAR ON DAY(S) VAR
MAXIMUM 24-HR AVERAGE:	0.8 PPB ON DAY(S) VAR-VARIOUS 1
IZS CALIBRATION TIME:	27 HRS OPERATIONAL TIME: 667 HRS
MONTHLY CALIBRATION TIME:	12 HRS AMD OPERATION UPTIME: 99.3 %
STANDARD DEVIATION:	0.28 MONTHLY AVERAGE: 0 PPB

24 HOUR AVERAGES FOR FEBRUARY 2015



### 01 Hour Averages





**HYDROGEN SULPHIDE MAX** instantaneous maximum in ppb

**MST**

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	DAILY MAX	24-HOUR AVG.	RDGS.
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	1	0.8	24					
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0.0	24						
3	0	0	0	0	0	0	0	0	1	C	C	C	C	Y	Y	Y	Y	C	C	C	1	1	1	0.3	19						
4	1	1	0	0	0	0	1	1	0	0	0	C	C	C	C	C	C	1	1	1	1	1	0	0.5	24						
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.0	24						
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	1	1	0	1	0	0.3	24						
7	1	1	1	0	1	1	1	1	0	1	1	1	1	S	0	0	0	0	0	0	0	0	0	1	0.5	24					
8	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	0	0	1	0.1	24						
9	0	1	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	1	2	0	0.2	24						
10	0	0	0	0	0	0	0	0	0	S	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.0	24					
11	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6	24						
12	1	1	1	1	1	1	1	2	S	1	1	1	1	1	0	1	1	1	0	0	0	0	0	2	0.8	24					
13	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24					
14	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.2	24						
15	0	0	0	0	0	S	0	0	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	1	0.3	24					
16	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24					
17	0	0	0	S	0	0	0	1	0	1	1	0	0	0	0	1	1	0	1	0	1	0	0	1	0.3	24					
18	0	0	S	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0.3	24					
19	0	S	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	1	0.5	24					
20	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0.0	24					
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	S	1	0.2	24					
22	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.2	24				
23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.0	24				
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0.0	24					
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	1	2	2	0.2	24					
26	1	1	2	2	1	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	2	0.4	24					
27	1	0	1	1	0	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	0.3	24					
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0	24					
HOURLY MAX	1	1	2	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2						
HOURLY AVG	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.3							

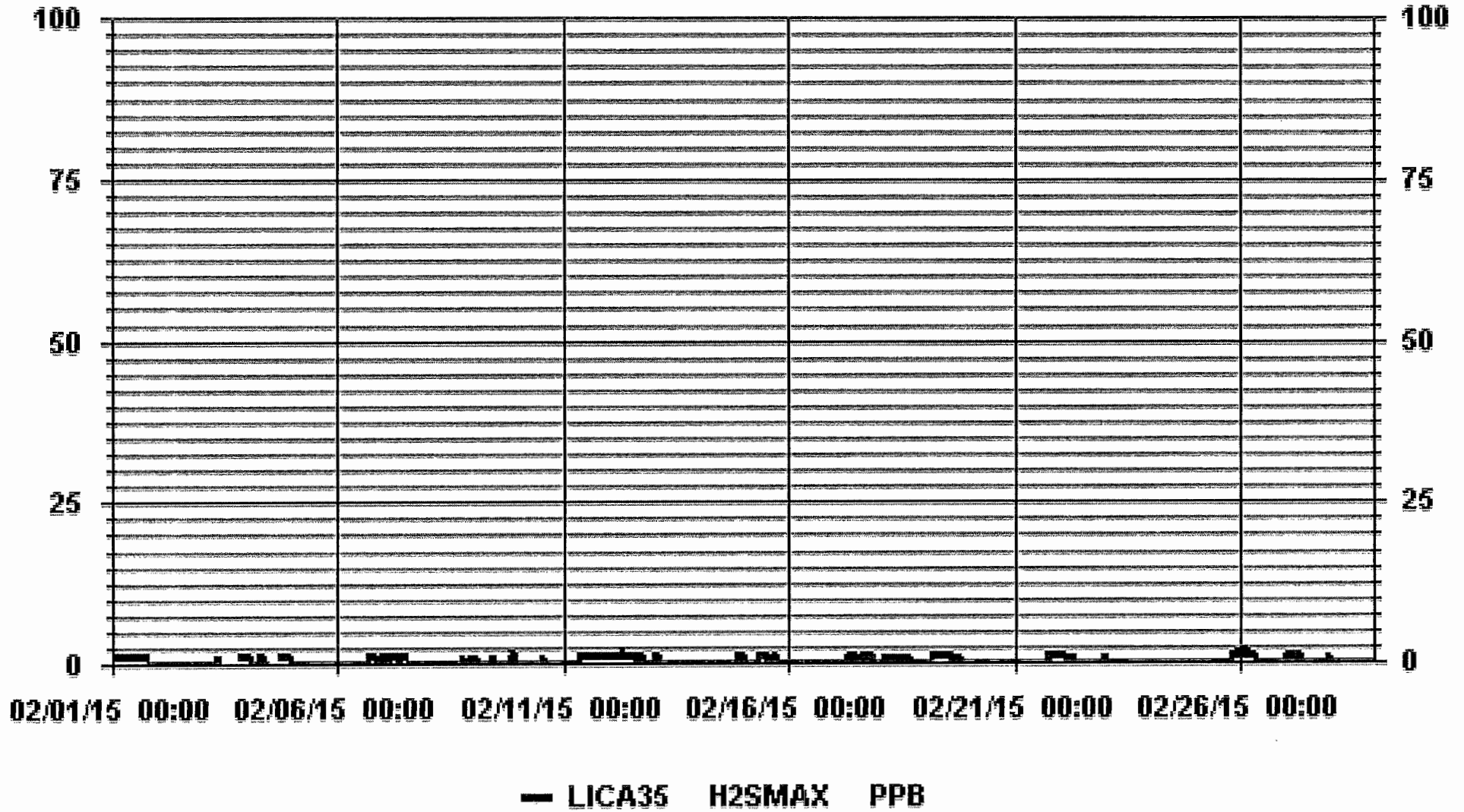
**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	156
MAXIMUM INSTANTANEOUS VALUE:	2 PPB @ HOUR(S) VAR ON DAY(S) VAR
VAR-VARIOUS	
IZS CALIBRATION TIME:	27 HRS
MONTHLY CALIBRATION TIME:	14 HRS
STANDARD DEVIATION:	0.45
OPERATIONAL TIME:	667 HRS

### 01 Hour Averages



LICA-ELK  
H2S\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
Site Name : LICA-ELK  
Parameter : H2S\_  
Units : PPB

Wind Parameter : WDR  
Instrument Height : 10 Meters

		Direction															
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	6.68	1.27	2.07	7.80	11.94	16.87	5.41	1.43	.79	1.59	2.22	6.21	10.66	8.75	9.07	7.16	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	6.68	1.27	2.07	7.80	11.94	16.87	5.41	1.43	.79	1.59	2.22	6.21	10.66	8.75	9.07	7.16	

Calm : .00 %

Total # Operational Hours : 628

Distribution By Samples

		Direction															
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	42	8	13	49	75	106	34	9	5	10	14	39	67	55	57	45	628
< 10																	
< 50																	
>= 50																	
Totals	42	8	13	49	75	106	34	9	5	10	14	39	67	55	57	45	

Calm : .00 %

Total # Operational Hours : 628

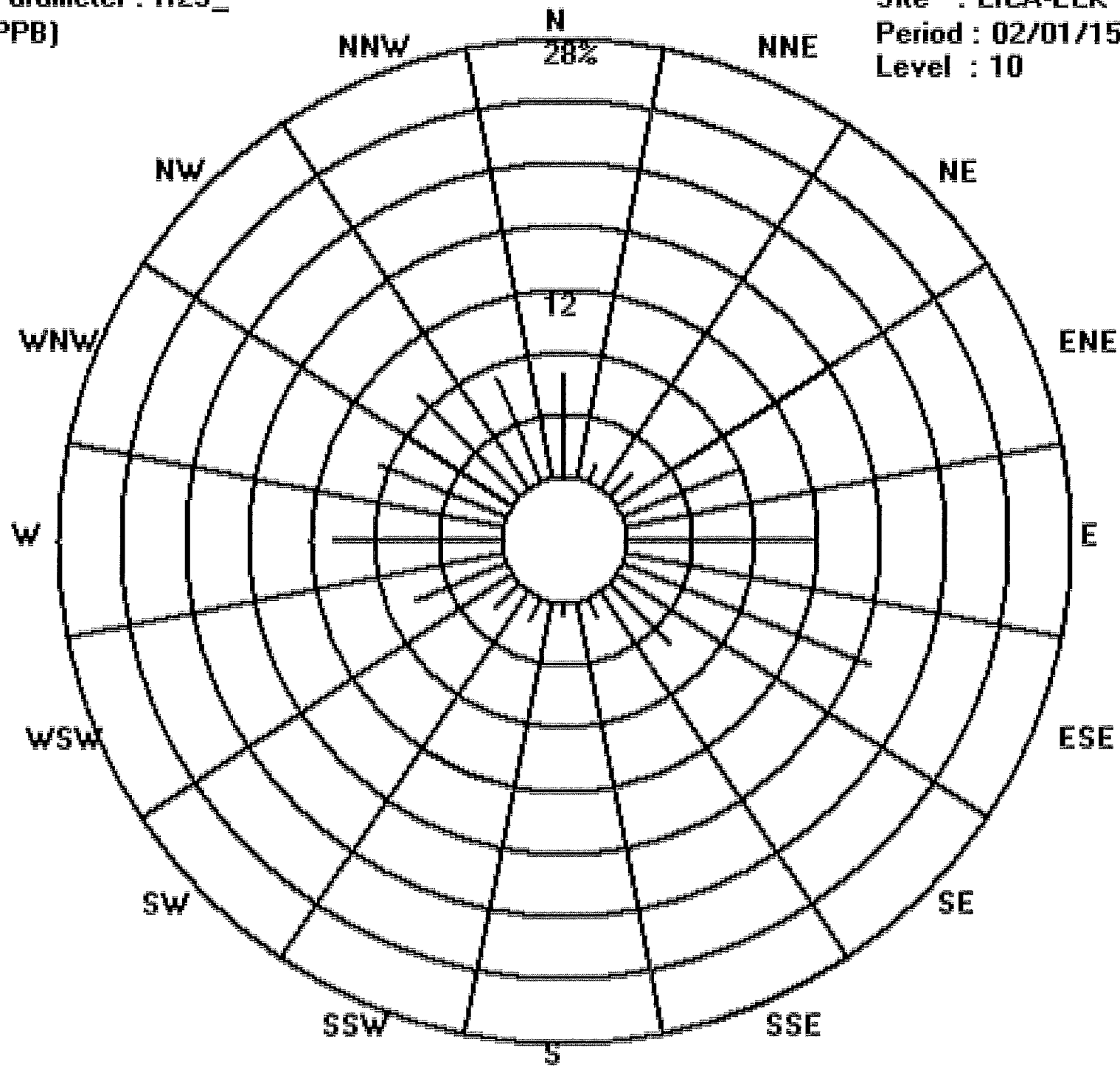
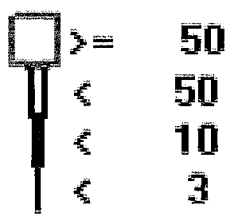


Logger : 35 Parameter : H2S\_

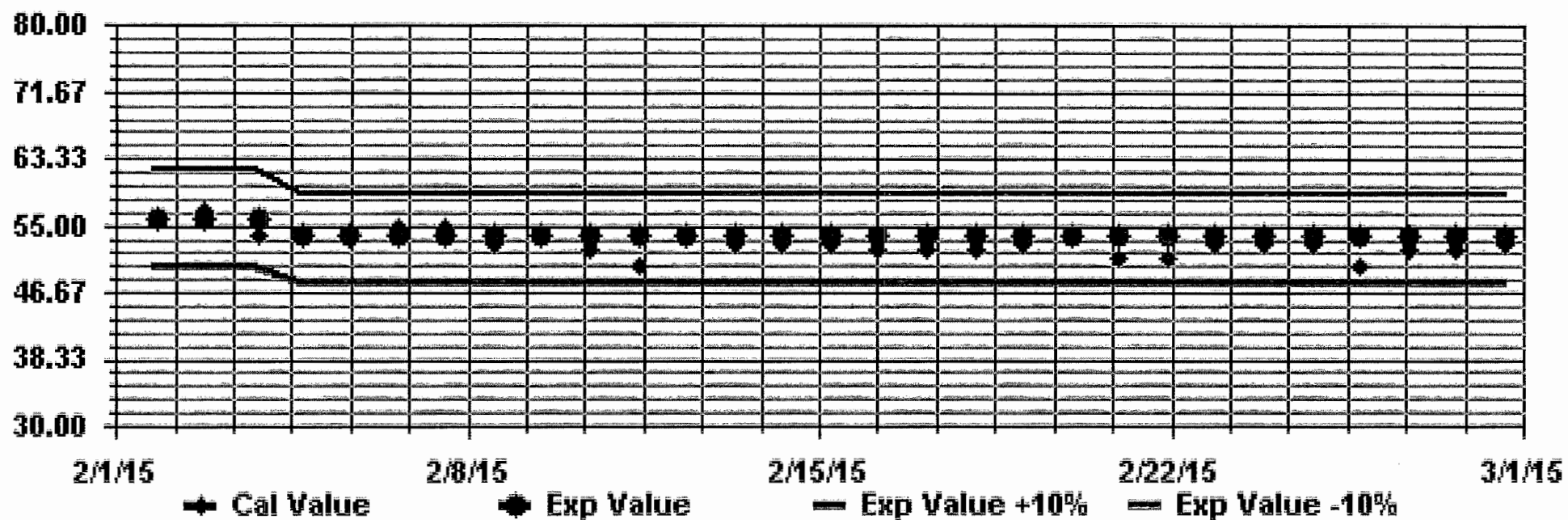
Site : LICA-ELK

Class Limits (PPB)

Period : 02/01/15-02/28/15



Calibration Graph for Site: LICA35 Parameter: H2S\_ Sequence: H2S Phase: SPAN



***TOTAL HYDROCARBON***



TOTAL HYDROCARBONS (THC) hourly averages in ppm

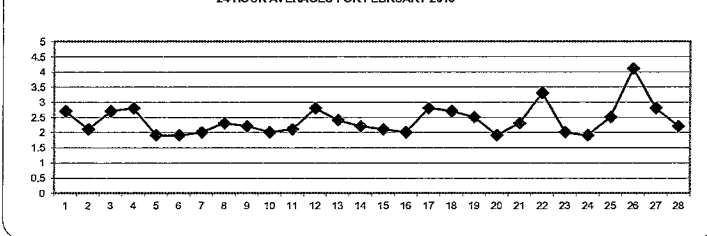
MST

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	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	3.1	3.5	3.3	3.5	3.5	3.6	3.5	3.5	4.0	3.7	3.6	3.3	2.4	2.2	2.1	2.0	1.8	2.0	1.9	S	1.8	1.8	1.8	1.8	4.0	2.8	24	
2	1.7	1.7	1.7	2.1	2.4	2.4	2.7	2.7	2.4	2.1	1.9	1.9	1.8	1.8	1.8	1.9	1.8	1.8	S	2.9	2.6	2.3	2.4	2.4	2.9	2.1	24	
3	2.2	2.4	2.6	3.0	2.4	2.4	2.0	2.3	3.0	2.0	1.9	1.8	C	C	Y	Y	C	C	C	C	C	4.2	4.6	4.8	4.8	2.8	22	
4	4.6	4.6	4.1	3.9	4.0	3.7	3.3	2.8	2.4	2.4	2.5	2.2	2.1	2.1	2.2	2.5	S	2.4	2.3	2.5	2.6	2.2	2.2	1.9	4.6	2.8	24	
5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	S	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	24	
6	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	S	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	24	
7	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.0	1.9	2.0	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.0	24
8	2.2	2.1	2.1	2.2	2.2	2.4	2.4	2.2	2.6	3.1	2.4	2.2	S	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.4	2.2	2.3	2.6	2.5	3.1	2.3	24
9	2.7	2.6	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.2	2.1	S	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.6	2.3	2.1	2.0	2.7	2.2	24
10	2.0	2.0	2.0	2.1	2.3	2.3	2.1	2.0	2.0	2.0	S	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	2.0	24
11	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.2	2.4	S	2.4	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.1	2.2	2.2	2.2	2.1	2.3	2.4	2.2	2.4	24
12	2.2	2.2	2.3	2.4	2.5	2.8	2.6	3.0	S	3.2	3.1	3.4	2.6	2.5	2.3	2.3	2.5	2.7	3.0	3.1	3.7	3.9	3.5	3.9	3.9	2.9	24	
13	4.8	4.3	3.8	2.9	2.7	2.4	2.3	S	2.2	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.8	2.4	24	
14	2.0	2.0	2.0	2.0	2.0	S	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.5	2.6	2.7	3.0	2.7	3.0	2.2	24	
15	2.9	2.7	2.4	2.2	2.4	S	2.2	2.1	2.6	2.8	2.6	2.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.9	2.2	24	
16	1.9	1.9	1.9	1.9	S	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.2	2.6	2.7	2.6	2.6	2.7	2.7	2.1	24	
17	2.3	2.3	2.7	S	2.7	3.2	2.5	2.9	2.5	3.3	3.6	2.9	2.4	2.3	2.3	2.2	2.4	2.9	3.2	3.9	4.1	3.3	3.2	3.1	4.1	2.9	24	
18	3.1	3.3	S	3.2	3.4	3.3	3.3	3.3	3.0	2.8	2.8	2.7	2.7	2.7	2.6	2.5	2.4	2.3	2.4	2.3	2.3	2.3	2.3	2.4	2.4	3.4	2.8	24
19	2.4	S	2.4	2.4	2.6	2.7	3.2	2.9	2.7	3.0	3.5	3.5	3.1	2.8	2.2	2.0	2.0	2.0	2.2	2.3	2.1	2.0	2.0	1.9	3.5	2.5	24	
20	S	1.9	1.9	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	5	2.0	1.9	24
21	2.0	1.9	2.1	2.0	2.2	2.0	2.0	2.2	2.2	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.2	2.6	2.6	3.5	4.0	S	4.5	4.5	2.3	24	
22	4.8	5.0	4.7	4.6	4.0	3.8	3.7	3.7	3.8	3.8	3.5	3.1	2.9	2.8	2.7	2.5	2.8	2.9	3.0	2.7	2.6	S	2.2	2.1	5.0	3.4	24	
23	2.2	2.3	2.2	2.0	1.9	1.9	2.0	2.0	1.9	1.9	1.8	1.9	1.8	1.9	1.9	2.0	2.1	2.4	2.9	2.2	S	2.4	2.0	2.1	2.9	2.1	24	
24	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.0	2.0	S	5	1.9	1.9	1.9	1.9	2.0	2.0	24	
25	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.1	2.0	2.0	2.2	2.3	S	3.2	4.4	4.2	5.4	5.2	5.4	2.5	24	
26	5.5	7.1	5.6	5.8	6.0	5.7	5.1	5.8	5.2	5.1	4.8	3.7	2.8	2.4	2.3	2.3	2.4	S	2.5	2.8	2.9	2.8	2.9	3.1	7.1	4.1	24	
27	3.7	3.8	3.5	3.7	3.6	3.7	4.4	4.5	2.3	2.2	2.1	2.0	2.0	1.9	1.9	1.9	S	2.3	2.5	2.2	2.9	2.7	2.5	2.7	4.5	2.8	24	
28	2.7	2.4	2.7	2.7	2.6	2.5	2.4	2.3	2.1	2.1	2.1	2.0	2.0	1.9	S	1.9	1.9	1.9	1.9	2.0	2.2	2.2	2.2	2.2	2.7	2.2	24	
HOURLY MAX	5.5	7.1	5.6	5.8	6.0	5.7	5.1	5.8	5.2	5.1	4.8	3.7	3.1	2.8	2.7	2.5	2.8	2.9	3.2	3.9	4.4	4.2	5.4	5.2				
HOURLY AVG	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.3	2.4	2.5	2.5	2.5	2.6				

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

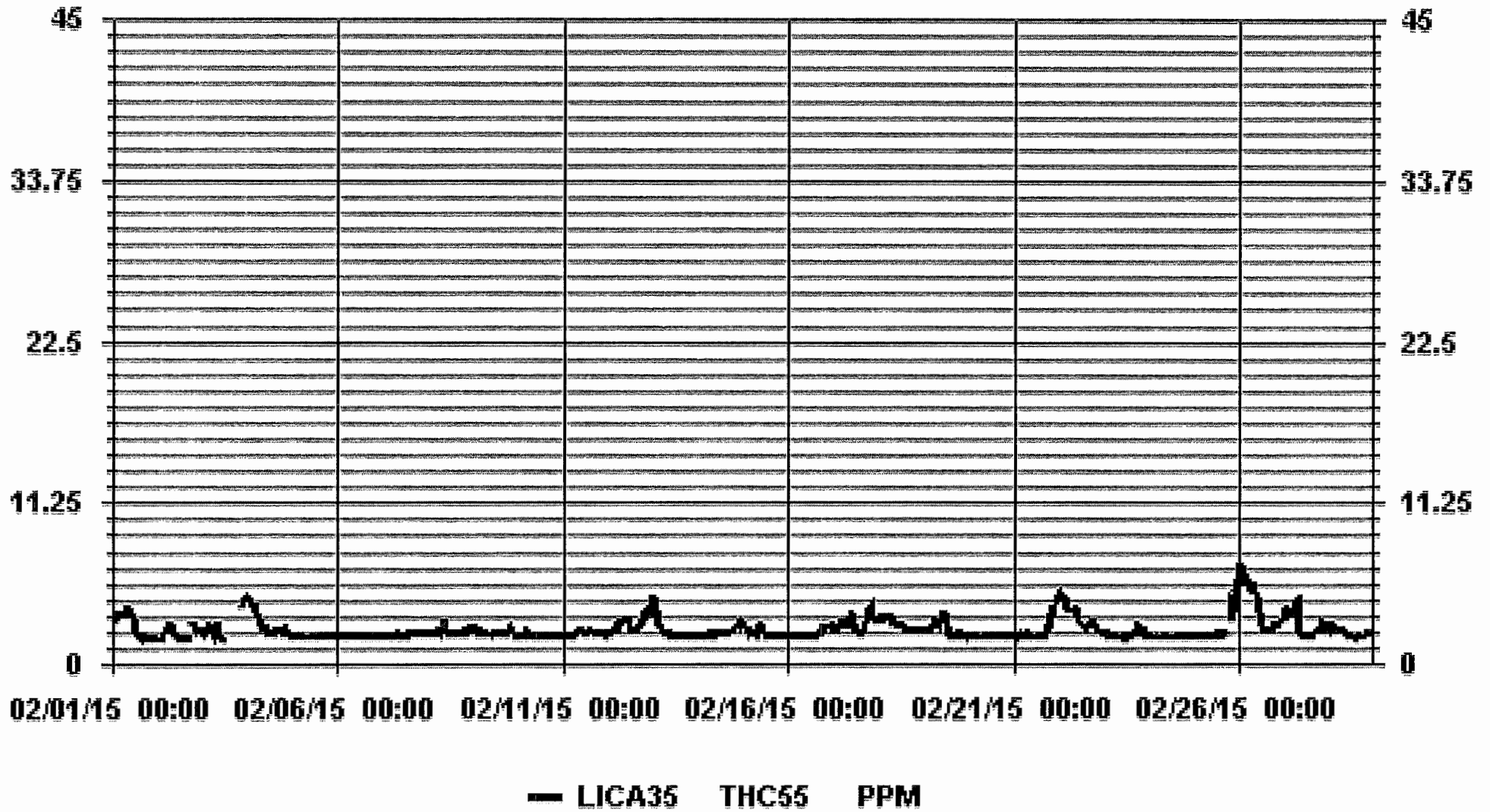
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634
MAXIMUM 1-HR AVERAGE:	7.1 PPM @ HOUR(S) 1 ON DAY(S) 26
MAXIMUM 24-HR AVERAGE:	4.1 PPM ON DAY(S) 26 VAR-VARIOUS
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	670 HRS
AMD OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	0.77
MONTHLY AVERAGE:	2.4 PPM

### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- 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	DAILY MAX	24-HOUR AVG.	RDGS.
1	3.6	3.6	3.6	3.8	3.9	3.9	3.7	4.3	4.3	4.0	4.1	3.8	2.8	2.4	2.3	2.4	2.0	2.1	2.0	S	1.9	1.9	1.9	1.9	4.3	3.0	24	
2	1.8	1.8	1.8	2.8	2.9	2.8	3.1	3.3	3.1	2.6	2.1	2.0	2.0	1.9	1.9	2.1	1.9	2.5	S	3.7	3.2	2.8	3.3	3.0	3.7	2.5	24	
3	2.5	3.1	2.8	4.0	4.0	2.8	2.3	3.5	4.5	2.3	2.0	1.9	C	C	Y	Y	C	C	C	C	8.6	6.7	5.4	8.6	3.8	22		
4	5.9	5.2	4.5	4.1	4.5	4.5	4.5	3.0	2.6	2.6	2.8	2.6	2.4	2.4	2.6	2.8	S	3.3	2.7	3.2	3.2	2.5	2.7	2.0	5.9	3.3	24	
5	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	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24	
6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	S	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.0	24	
7	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.1	S	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.7	2.7	2.2	24	
8	2.5	2.2	2.3	2.3	2.4	2.5	2.6	2.3	2.9	4.0	2.8	2.3	S	2.2	2.2	2.2	2.3	2.4	2.3	2.9	2.6	2.6	2.8	2.8	4.0	2.5	24	
9	3.2	2.9	2.4	2.5	2.5	2.2	2.2	2.2	2.3	2.3	2.2	S	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.6	2.9	2.5	2.3	2.1	3.2	2.4	24	
10	2.1	2.2	2.3	2.3	3.0	2.7	2.3	2.0	2.0	2.1	S	2.1	2.1	2.1	2.1	2.4	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.0	3.0	2.2	24	
11	2.1	2.0	2.1	2.1	2.1	2.1	2.3	2.4	2.8	S	2.5	2.5	2.4	2.3	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.4	2.3	2.6	2.8	2.3	24	
12	2.4	2.3	2.5	2.7	2.7	3.6	2.8	3.7	S	3.6	3.5	3.7	3.2	2.6	2.8	2.5	2.7	3.2	4.4	3.5	4.6	7.7	4.0	5.0	7.7	3.5	24	
13	5.7	5.2	4.3	3.4	3.0	2.7	2.5	S	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.2	2.1	2.1	5.7	2.6	24	
14	2.1	2.1	2.1	2.1	2.2	2.2	S	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.5	2.7	2.8	3.1	3.3	3.0	3.3	2.4	24	
15	4.6	4.8	2.6	2.6	2.5	S	2.4	2.7	3.9	3.6	3.8	3.8	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.8	2.7	24	
16	2.0	2.0	2.0	2.0	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.9	3.0	3.2	3.7	3.1	3.3	3.4	3.7	3.4	3.7	2.4	24	
17	2.5	2.8	3.0	S	3.4	4.0	2.9	3.8	2.9	4.1	4.1	4.0	2.6	2.9	2.5	2.4	3.4	3.3	4.0	4.8	5.1	3.6	3.5	3.3	5.1	3.4	24	
18	3.4	3.4	S	3.5	3.5	3.4	3.5	3.4	3.2	3.0	3.0	2.9	2.9	3.0	3.0	2.7	2.5	2.5	2.4	2.5	2.6	2.5	2.5	3.5	2.9	24		
19	2.5	S	2.5	2.6	3.2	3.4	3.9	3.3	2.9	3.8	3.9	3.7	3.4	4.2	3.0	2.1	2.1	2.3	2.7	2.8	2.4	2.3	2.1	2.1	4.2	2.9	24	
20	S	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	S	2.1	2.0	24		
21	2.1	2.0	3.1	3.2	3.7	2.1	2.1	2.9	2.6	2.3	2.0	2.0	2.0	2.3	2.2	2.3	2.6	3.0	4.2	3.8	4.8	5.4	S	5.6	5.6	3.0	24	
22	5.7	5.3	5.3	5.3	4.6	4.1	4.0	4.1	4.3	4.3	3.8	3.4	3.1	2.9	2.9	2.7	3.3	3.6	3.6	3.1	3.0	S	2.6	2.3	5.7	3.8	24	
23	2.3	2.8	2.5	2.7	2.2	2.2	2.4	2.4	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.8	2.2	3.0	3.9	3.2	S	3.5	2.2	2.2	3.9	2.5	24	
24	2.2	2.0	2.0	2.0	2.1	2.2	2.0	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	Y	S	2.0	1.9	2.0	2.0	2.2	2.0	23	
25	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.1	2.2	2.8	3.0	S	4.9	11.5	7.4	14.8	6.9	14.8	3.7	24		
26	7.1	24.0	6.5	6.5	7.0	6.3	5.4	6.4	5.6	5.4	5.3	4.5	3.5	2.7	2.4	2.6	2.8	S	3.0	3.1	3.3	3.3	3.3	3.4	24.0	5.4	24	
27	4.3	4.4	3.8	4.0	3.8	4.1	6.0	6.0	2.6	2.4	2.2	2.1	2.1	2.0	2.0	2.0	S	3.5	3.1	2.5	3.8	4.2	2.7	3.2	6.0	3.3	24	
28	3.2	2.7	3.2	3.2	2.7	3.9	3.4	2.7	2.4	2.3	2.2	2.1	2.1	2.1	2.1	S	2.0	1.9	1.9	2.2	2.6	2.7	2.4	2.3	3.9	2.5	24	
HOURLY MAX	7.1	24.0	6.5	6.5	7.0	6.3	6.0	6.4	5.6	5.4	5.3	4.5	3.5	4.2	3.0	2.8	3.4	3.6	4.4	4.9	11.5	8.6	14.8	6.9				
HOURLY AVG	3.1	3.7	2.8	2.9	3.0	3.0	2.9	3.0	2.8	2.8	2.7	2.6	2.4	2.3	2.3	2.3	2.4	2.5	2.7	2.9	3.2	3.3	3.1	3.0				

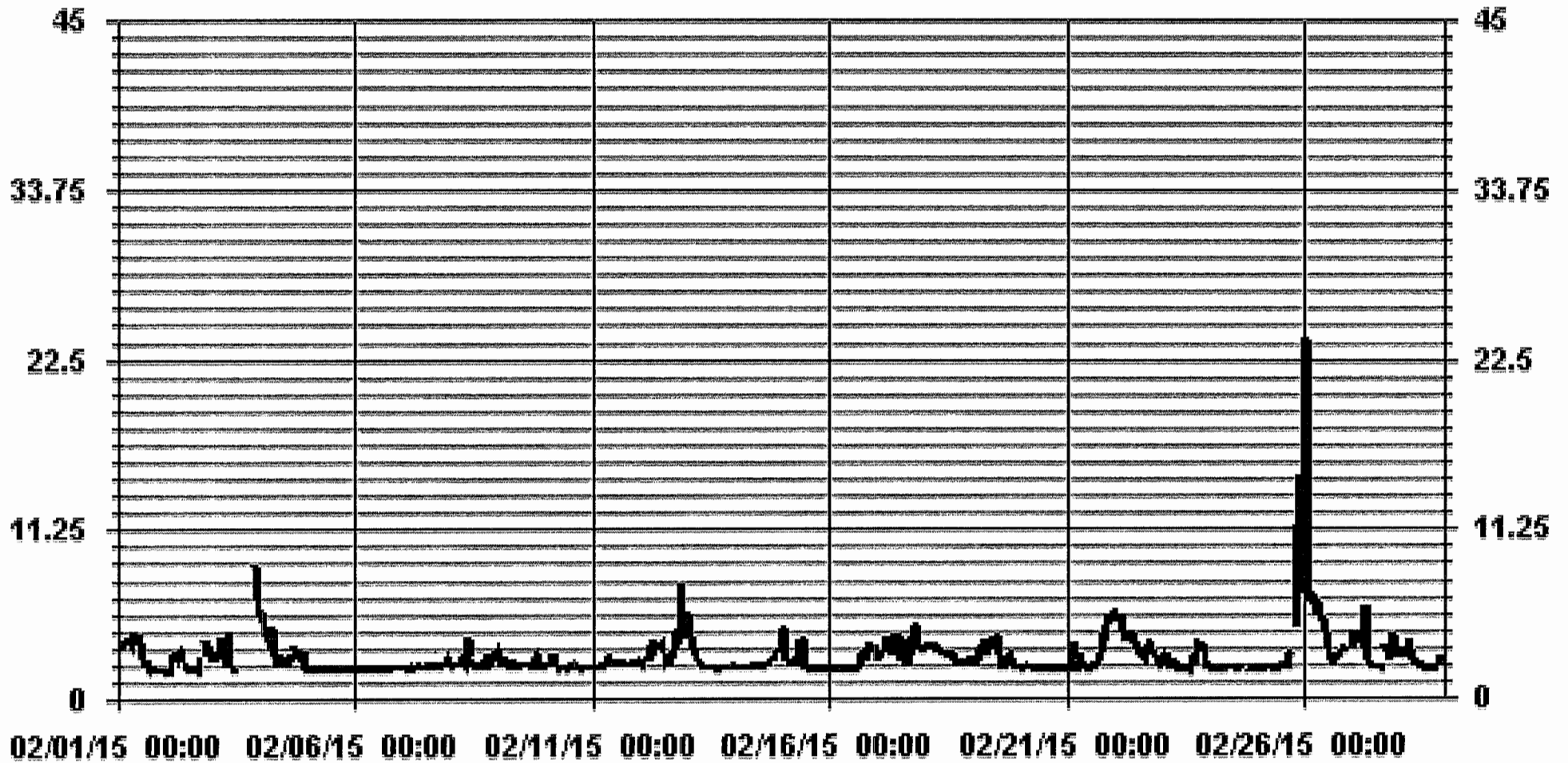
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	633
MAXIMUM INSTANTANEOUS VALUE:	24.0 PPM @ HOUR(S) 1 ON DAY(S) 26
	VAR-VARIOUS
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	669 HRS
STANDARD DEVIATION:	1.44

### 01 Hour Averages



— LICA35 THC55MAX PPM

LICA35  
 THC55 / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA35  
 Parameter : THC55  
 Units : PPM

Wind Parameter : WDR  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	5.99	1.10	1.41	6.94	6.78	12.77	5.04	1.26	.47	1.26	2.20	6.30	9.46	7.09	8.83	6.78	83.75
< 10.0	.63	.15	.47	.78	5.04	3.94	.31	.15	.31	.47	.15	.31	1.26	1.57	.31	.31	16.24
< 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	6.62	1.26	1.89	7.72	11.82	16.71	5.36	1.41	.78	1.73	2.36	6.62	10.72	8.67	9.14	7.09	

Calm : .00 %

Total # Operational Hours : 634

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	38	7	9	44	43	81	32	8	3	8	14	40	60	45	56	43	531
< 10.0	4	1	3	5	32	25	2	1	2	3	1	2	8	10	2	2	103
< 50.0																	
>= 50.0																	
Totals	42	8	12	49	75	106	34	9	5	11	15	42	68	55	58	45	

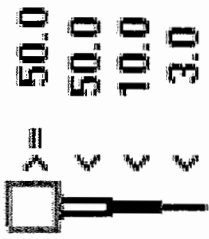
Calm : .00 %

Total # Operational Hours : 634

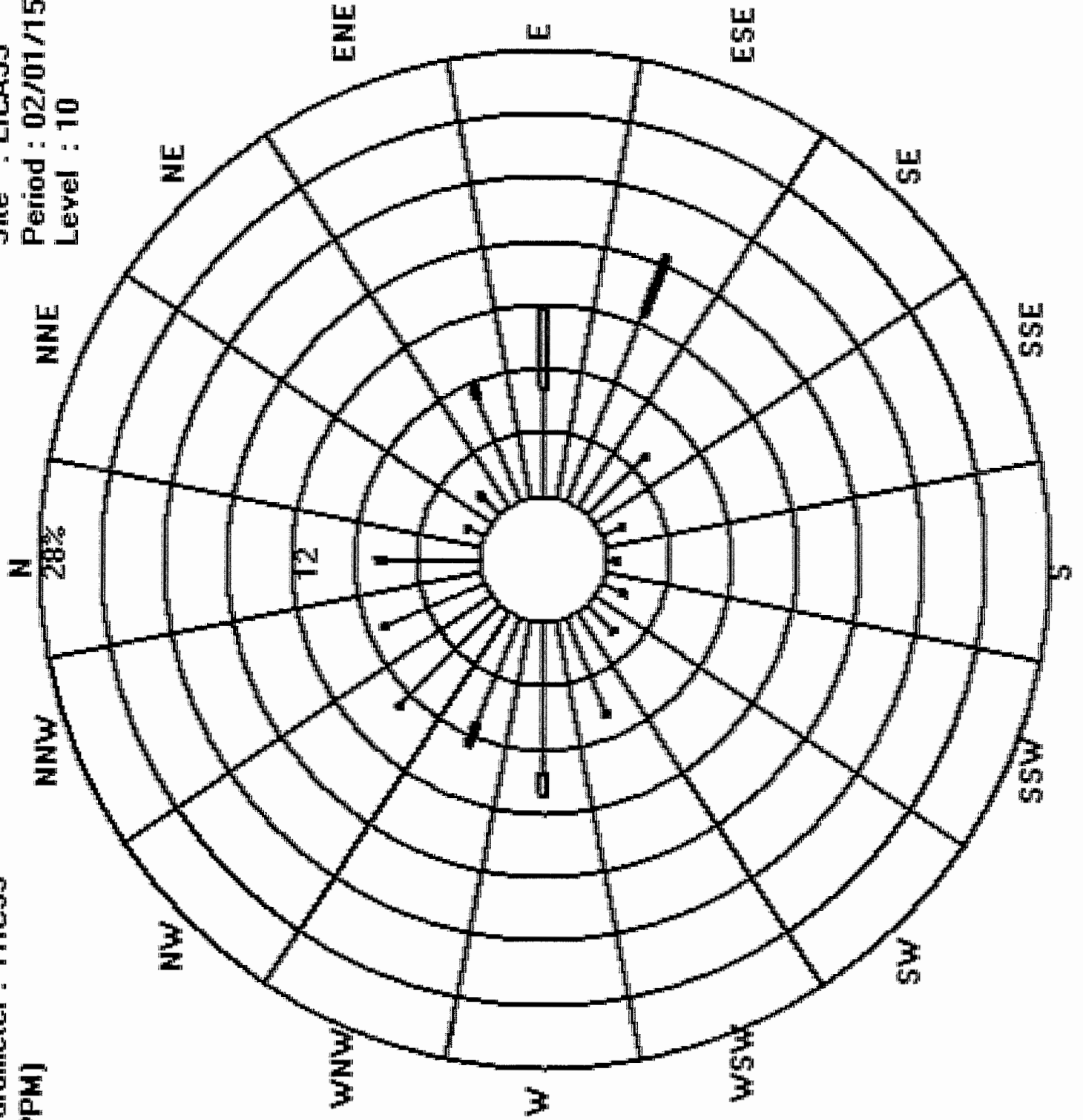


Logger : 35 Parameter : THC55

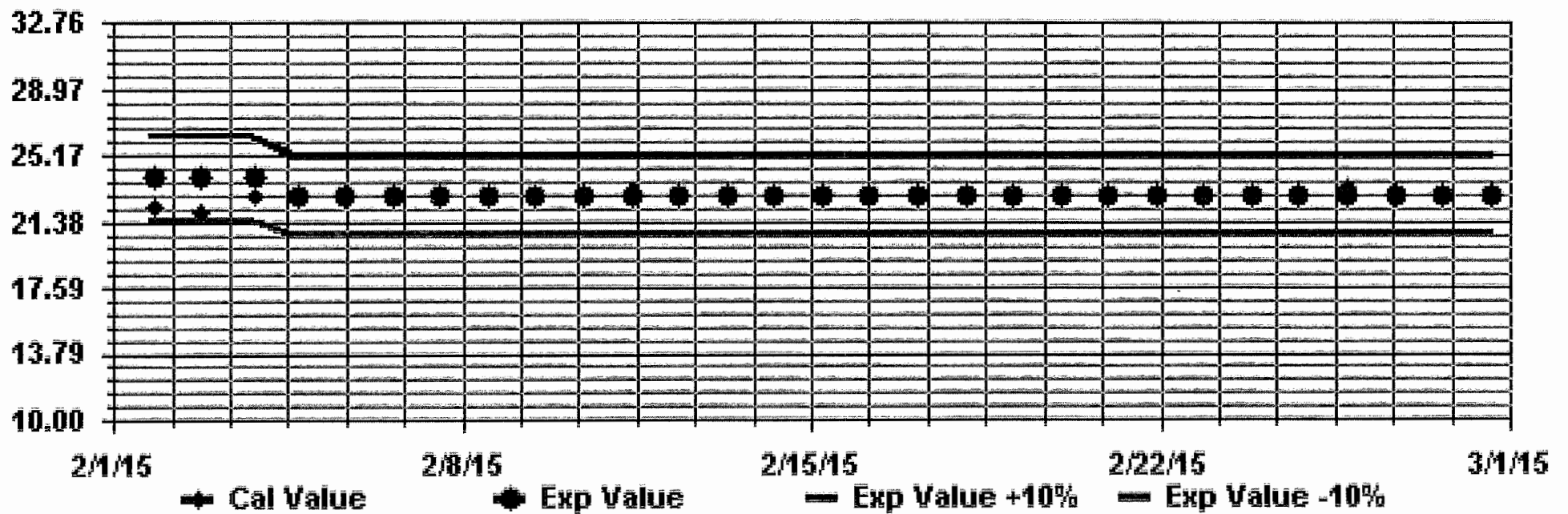
Class Limits (PPM)



Site : LICA35  
Period : 02/01/15-02/28/15  
Level : 10



Calibration Graph for Site: LICA35 Parameter: THC55 Sequence: THC55 Phase: SPAN



***METHANE***

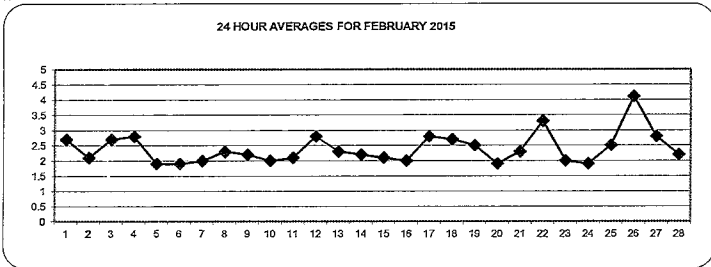


METHANE (CH4) hourly averages in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOURLY MAX.	HOURLY AVG.																									MAX.	AVG.	RDGS.
DAY	1	3.1	3.5	3.3	3.5	3.5	3.6	3.5	3.5	4.0	3.7	3.6	3.3	2.4	2.2	2.1	2.0	1.8	2.0	1.9	S	1.8	1.8	1.8	1.8	4.0	2.8	24
2	1.7	1.7	1.7	2.1	2.4	2.4	2.7	2.7	2.4	2.1	1.9	1.9	1.8	1.8	1.8	1.9	1.8	1.8	S	2.9	2.6	2.3	2.4	2.4	2.9	2.1	24	
3	2.2	2.4	2.6	3.0	2.4	2.4	2.0	2.3	3.0	2.0	1.9	1.8	C	C	Y	Y	C	C	C	C	C	C	4.2	4.6	4.8	4.8	2.8	22
4	4.6	4.6	4.1	3.9	4.0	3.7	3.3	2.8	2.4	2.4	2.4	2.2	2.1	2.1	2.2	2.5	S	2.4	2.3	2.4	2.6	2.2	2.2	1.9	4.6	2.8	24	
5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	S	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	24
6	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	S	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	24
7	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.0	1.9	2.0	S	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.0	24
8	2.2	2.1	2.1	2.2	2.2	2.4	2.4	2.2	2.6	3.1	2.4	2.2	S	2.1	2.1	2.1	2.1	2.3	2.2	2.4	2.2	2.3	2.6	2.5	3.1	2.3	24	
9	2.7	2.6	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.2	2.1	S	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.6	2.3	2.1	2.0	2.7	2.2	24
10	2.0	2.0	2.0	2.1	2.3	2.3	2.1	2.0	2.0	S	2.0	S	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	2.0	24
11	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.2	2.4	S	2.4	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.1	2.2	2.2	2.2	2.1	2.3	2.4	2.2	24
12	2.2	2.2	2.3	2.4	2.5	2.8	2.6	3.0	S	3.2	3.1	3.4	2.6	2.5	2.3	2.3	2.5	2.7	2.9	3.0	3.7	3.8	3.5	3.8	3.8	2.8	24	
13	4.7	4.2	3.7	2.8	2.7	2.4	2.3	S	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	4.7	2.4	24	
14	2.0	2.0	2.0	2.0	2.0	2.0	S	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.5	2.6	2.7	3.0	2.7	3.0	2.2	24
15	2.9	2.7	2.4	2.2	2.4	S	2.2	2.1	2.6	2.8	2.6	2.3	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	2.9	2.2	24
16	1.9	1.9	1.9	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	2.0	2.1	2.1	2.2	2.6	2.7	2.6	2.7	2.7	2.1	24	
17	2.3	2.3	2.7	S	2.7	3.2	2.5	2.9	2.5	3.3	3.6	2.9	2.4	2.3	2.3	2.2	2.4	2.9	3.2	3.9	4.1	3.3	3.2	3.1	4.1	2.9	24	
18	3.1	3.3	S	3.2	3.4	3.3	3.3	3.3	3.0	2.8	2.8	2.7	2.7	2.7	2.6	2.4	2.4	2.3	2.4	2.3	2.3	2.3	2.4	2.4	3.4	2.8	24	
19	2.4	S	2.4	2.4	2.6	2.7	3.2	2.9	2.7	3.0	3.5	3.5	3.1	2.8	2.2	2.0	2.0	2.0	2.2	2.3	2.1	2.0	2.0	1.9	3.5	2.5	24	
20	S	1.9	1.9	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	S	2.0	1.9	24	
21	2.0	1.9	2.1	2.0	2.2	2.0	2.0	2.2	2.2	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.6	2.6	3.5	4.0	S	4.4	2.3	24	
22	4.7	5.0	4.7	4.6	3.9	3.8	3.7	3.7	3.8	3.8	3.5	3.1	2.9	2.8	2.7	2.5	2.8	2.9	3.0	2.7	2.6	S	2.2	2.1	5.0	3.4	24	
23	2.2	2.3	2.2	2.0	1.9	1.9	2.0	2.0	1.9	1.9	1.8	1.9	1.9	1.9	1.9	2.0	2.1	2.4	2.9	2.2	S	2.4	2.0	2.1	2.9	2.1	24	
24	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.0	2.0	2.0	S	S	1.9	1.9	1.9	1.9	2.0	2.0	24	
25	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	1.9	2.0	2.1	2.1	2.0	2.0	2.2	2.3	S	3.2	4.4	4.2	5.4	5.1	5.4	5.1	2.5	24	
26	5.5	6.9	5.6	5.7	6.0	5.7	5.1	5.8	5.2	5.1	4.8	3.7	2.8	2.4	2.3	2.4	S	2.5	2.8	2.9	2.8	2.9	3.1	6.9	4.1	24		
27	3.7	3.8	3.5	3.7	3.6	3.7	4.4	4.5	2.3	2.2	2.1	2.0	2.0	1.9	1.9	1.9	S	2.3	2.5	2.2	2.9	2.7	2.5	2.7	4.5	2.8	24	
28	2.7	2.4	2.7	2.7	2.6	2.5	2.4	2.3	2.3	2.1	2.0	2.0	2.0	1.9	1.9	S	1.9	1.9	1.9	2.0	2.2	2.2	2.2	2.2	2.7	2.2	24	
HOURLY MAX		5.5	6.9	5.6	5.7	6.0	5.7	5.1	5.8	5.2	5.1	4.8	3.7	3.1	2.8	2.7	2.5	2.8	2.9	3.2	3.9	4.4	4.2	5.4	5.1			
HOURLY AVG		2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.4	2.5	2.5	2.5	2.6		

STATUS FLAG CODES

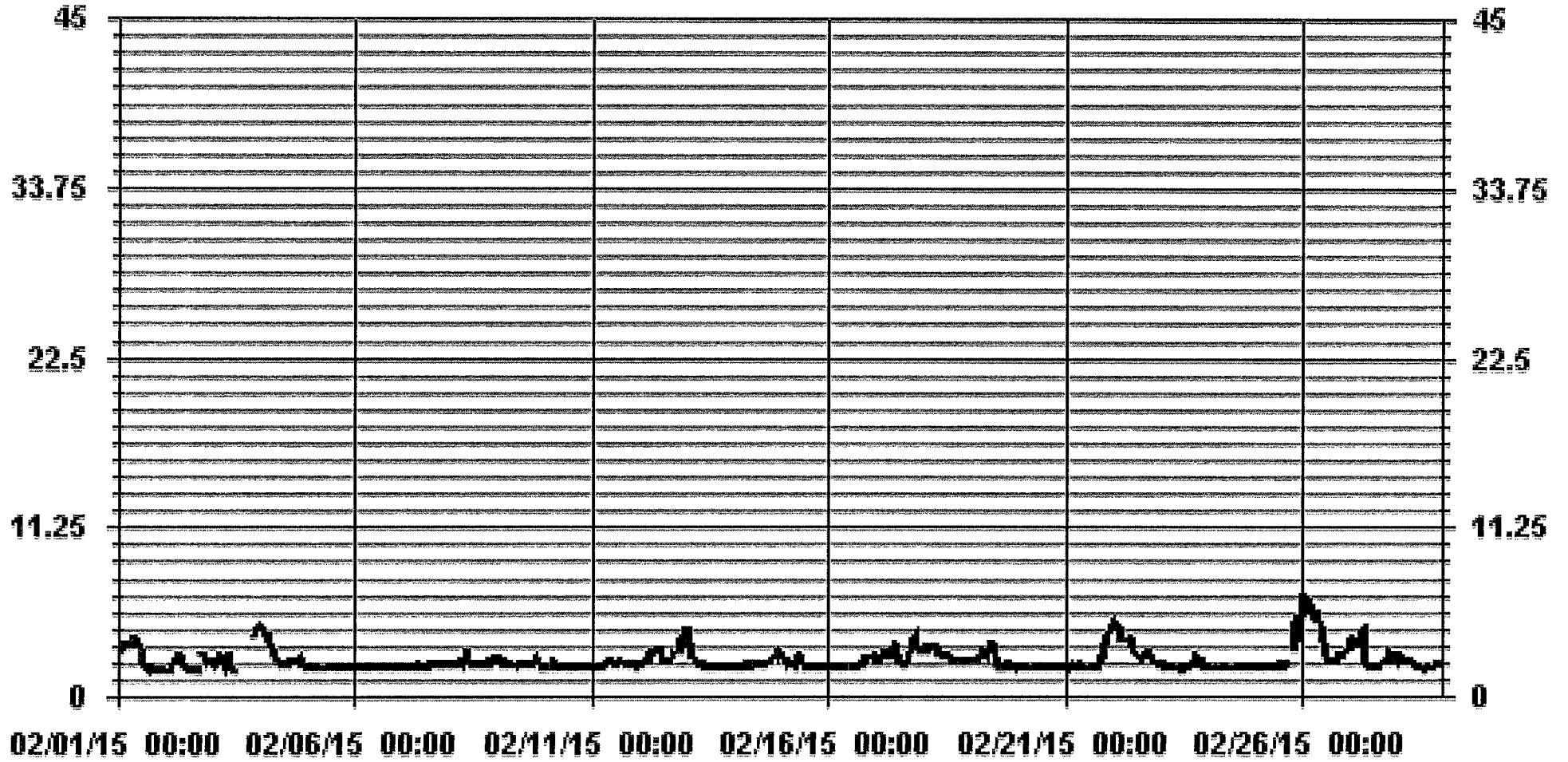
C	CALIBRATION	Q	QUALITY ASSURANCE
Y	MAINTENANCE	R	RECOVERY
S	DAILY ZERO/SPAN CHECK	X	MACHINE MALFUNCTION
P	POWER FAILURE	O	OPERATOR ERROR
G	OUT FOR REPAIR	K	COLLECTION ERROR



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634			
MAXIMUM 1-HR AVERAGE:	6.9 PPM	@ HOUR(5)	1	ON DAY(S) 26
MAXIMUM 24-HR AVERAGE:	4.1 PPM			ON DAY(S) 26
				VAR-VARIOUS
IZS CALIBRATION TIME:	29 HRS	OPERATIONAL TIME:	670 HRS	
MONTHLY CALIBRATION TIME:	7 HRS	AMD OPERATION UPTIME:	99.7 %	
STANDARD DEVIATION:	0.76	MONTHLY AVERAGE:	2.4 PPM	

### 01 Hour Averages



— LICA35 METHANE PPM



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

METHANE MAX instantaneous maximum in ppm

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	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY																												
1	3.6	3.6	3.6	3.8	3.9	3.9	3.7	4.3	4.3	4.0	4.1	3.8	2.8	2.4	2.3	2.4	2.0	2.1	2.0	S	1.9	1.9	1.9	1.9	4.3	3.0	24	
2	1.8	1.8	1.8	2.8	2.9	2.8	3.1	3.3	3.1	2.6	2.1	2.0	2.0	1.9	1.9	2.1	2.0	2.5	S	3.7	3.2	2.8	3.3	3.0	3.7	2.5	24	
3	2.5	3.1	2.8	4.0	3.9	2.8	2.3	3.5	4.5	2.4	2.0	1.9	C	C	Y	Y	C	C	C	C	C	C	8.7	6.7	5.4	8.7	3.8	22
4	5.7	5.2	4.5	4.1	4.5	4.4	4.4	3.0	2.6	2.6	2.8	2.6	2.4	2.4	2.6	2.8	S	2.8	2.6	3.1	3.1	2.5	2.7	2.0	5.7	3.3	24	
5	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	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24
6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	S	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	24
7	2.1	2.0	2.1	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	S	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.8	2.8	2.2	24
8	2.5	2.2	2.3	2.3	2.4	2.5	2.6	2.4	2.9	4.0	2.8	2.3	S	2.2	2.2	2.2	2.2	2.4	2.3	2.3	2.9	2.6	2.6	2.8	2.8	4.0	2.5	24
9	3.2	2.9	2.4	2.5	2.5	2.2	2.2	2.2	2.3	2.3	2.2	S	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.7	2.9	2.5	2.3	2.1	3.2	2.4	24	
10	2.1	2.2	2.3	2.3	3.0	2.7	2.3	2.0	2.0	2.1	S	2.1	2.1	2.1	2.1	2.4	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.0	3.0	2.2	24	
11	2.0	2.0	2.1	2.1	2.1	2.1	2.3	2.4	2.8	S	2.5	2.5	2.4	2.3	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.6	2.8	2.3	24	
12	2.4	2.3	2.5	2.7	2.7	3.6	2.8	3.6	S	3.5	3.5	3.7	3.2	2.6	2.8	2.6	2.7	3.0	4.2	3.4	4.4	7.7	3.9	4.7	7.7	3.4	24	
13	5.5	5.1	4.1	3.3	2.9	2.6	2.4	S	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	5.5	2.6	24	
14	2.1	2.1	2.1	2.1	2.2	2.2	S	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.5	2.7	2.8	3.1	3.3	3.0	3.3	2.4	24	
15	4.6	4.8	2.6	2.6	2.5	S	2.4	2.7	3.9	3.6	3.8	3.8	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.8	2.7	24	
16	2.0	2.0	2.0	2.0	S	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.9	3.0	2.4	3.3	3.6	3.1	3.3	3.4	3.6	2.4	24	
17	2.5	2.8	3.0	S	3.4	4.0	3.0	3.8	2.9	4.0	4.1	4.0	2.6	2.9	2.5	2.4	3.4	3.3	4.0	4.8	5.1	3.6	3.5	3.3	5.1	3.4	24	
18	3.4	3.4	S	3.5	3.6	3.4	3.4	3.4	3.2	3.0	3.0	2.9	2.8	3.0	2.9	2.6	2.5	2.4	2.5	2.4	2.5	2.6	2.5	2.5	3.6	2.9	24	
19	2.5	S	2.5	2.6	3.2	3.4	3.8	3.3	2.9	3.8	3.9	3.6	3.4	4.2	3.0	2.1	2.1	2.3	2.7	2.8	2.4	2.3	2.1	2.1	4.2	2.9	24	
20	S	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	S	2.1	2.0	24	
21	2.1	2.0	3.1	3.2	3.7	2.1	2.1	2.9	2.6	2.3	2.0	2.0	2.0	2.3	2.2	2.3	2.6	3.0	4.2	3.8	4.8	5.3	S	5.5	5.5	2.9	24	
22	5.7	5.3	5.2	5.3	4.5	4.1	4.0	4.1	4.3	4.3	3.8	3.4	3.1	2.9	2.9	2.7	3.3	3.6	3.6	3.1	3.0	S	2.6	2.3	5.7	3.8	24	
23	2.4	2.8	2.5	2.7	2.2	2.2	2.4	2.4	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.8	2.2	3.0	3.9	3.2	S	3.5	2.2	2.2	3.9	2.5	24	
24	2.2	2.0	2.0	2.0	2.1	2.2	2.0	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	Y	S	S	2.0	1.9	2.0	2.0	2.2	2.0	23	
25	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.2	2.2	2.8	3.0	S	4.9	11.4	7.4	14.7	7.0	14.7	3.7	24		
26	7.1	20.3	6.3	6.2	6.9	6.3	5.5	6.3	5.6	5.4	5.3	4.5	3.5	2.7	2.4	2.6	2.8	S	3.0	3.1	3.3	3.3	3.3	3.4	20.3	5.2	24	
27	4.3	4.4	3.8	4.0	3.8	4.0	5.9	5.9	2.7	2.4	2.2	2.1	2.1	2.0	2.0	S	3.4	3.1	2.5	3.8	4.2	2.7	3.2	5.9	3.3	24		
28	3.1	2.7	3.2	3.2	2.7	3.9	3.4	2.7	2.4	2.3	2.2	2.1	2.2	2.2	2.1	S	2.0	1.9	1.9	2.2	2.7	2.7	2.4	2.3	3.9	2.5	24	
HOURLY MAX	7.1	20.3	6.3	6.2	6.9	6.3	5.9	6.3	5.6	5.4	5.3	4.5	3.5	4.2	3.0	2.8	3.4	3.6	4.2	4.9	11.4	8.7	14.7	7.0				
HOURLY AVG	3.1	3.5	2.8	2.9	3.0	2.9	2.9	3.0	2.8	2.8	2.7	2.6	2.4	2.3	2.3	2.3	2.4	2.5	2.7	2.8	3.2	3.3	3.1	2.9				

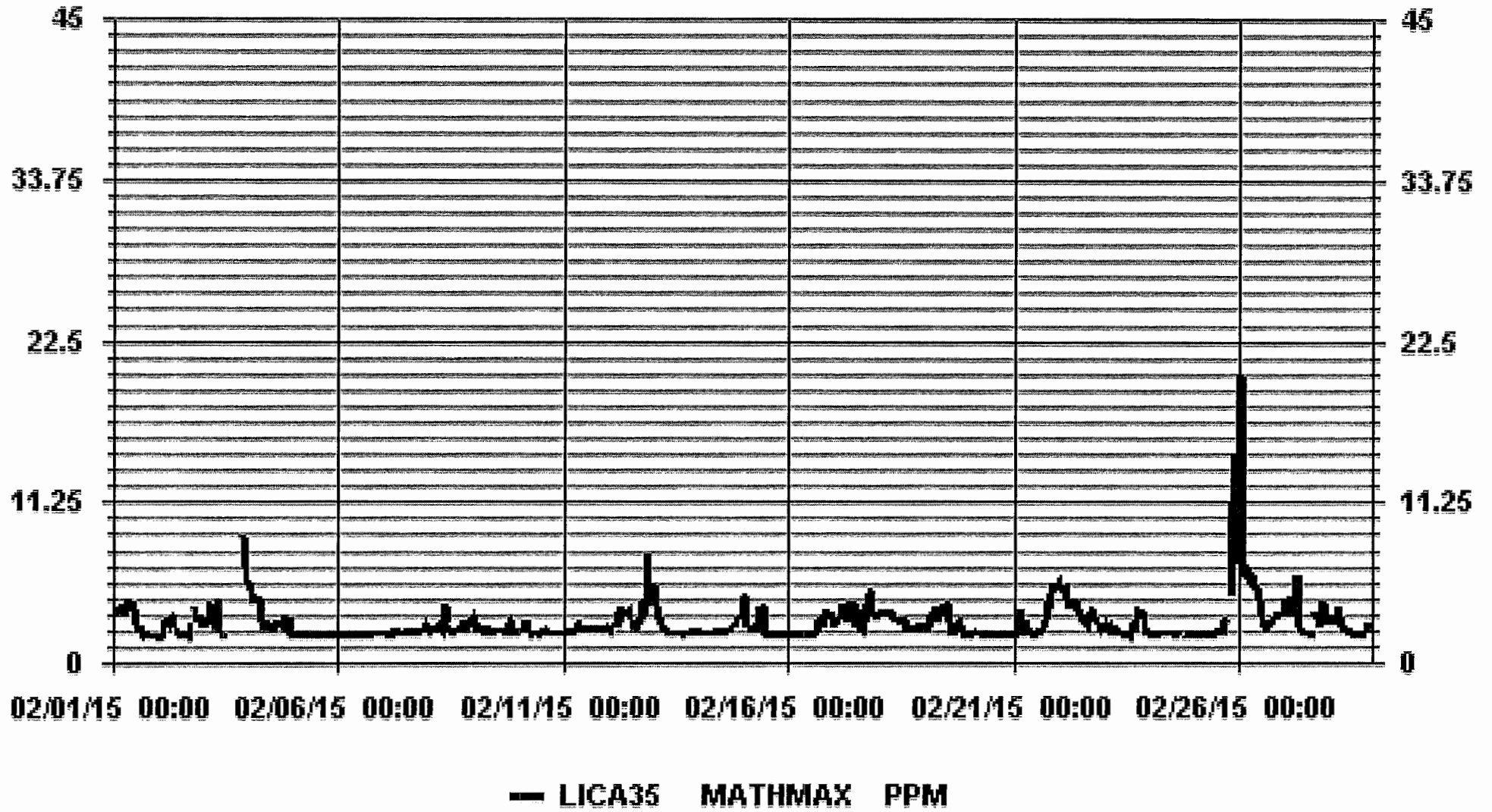
STATUS FLAG CODES

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:	633				
MAXIMUM INSTANTANEOUS VALUE:	20.3	PPM	@ HOUR(S)	1	ON DAY(S) 26
				VAR-VARIOUS	
IZS CALIBRATION TIME:	29	HR5	OPERATIONAL TIME:	669	HRS
MONTHLY CALIBRATION TIME:	7	HRS			
STANDARD DEVIATION:	1.35				

### 01 Hour Averages



LICA35  
 METHANE / WDR Joint Frequency Distribution (Percent)

February 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	5.99	1.10	1.41	6.94	6.94	12.77	5.04	1.26	.47	1.26	2.20	6.30	9.46	7.09	8.83	6.78	83.91
< 10.0	.63	.15	.47	.78	4.88	3.94	.31	.15	.31	.47	.15	.31	1.26	1.57	.31	.31	16.08
< 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	6.62	1.26	1.89	7.72	11.82	16.71	5.36	1.41	.78	1.73	2.36	6.62	10.72	8.67	9.14	7.09	

Calm : .00 %

Total # Operational Hours : 634

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	38	7	9	44	44	81	32	8	3	8	14	40	60	45	56	43	532
< 10.0	4	1	3	5	31	25	2	1	2	3	1	2	8	10	2	2	102
< 50.0																	
>= 50.0																	
Totals	42	8	12	49	75	106	34	9	5	11	15	42	68	55	58	45	

Calm : .00 %

Total # Operational Hours : 634

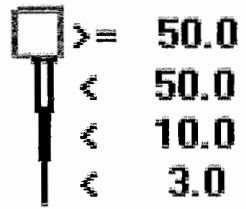


Logger : 35 Parameter : METHANE

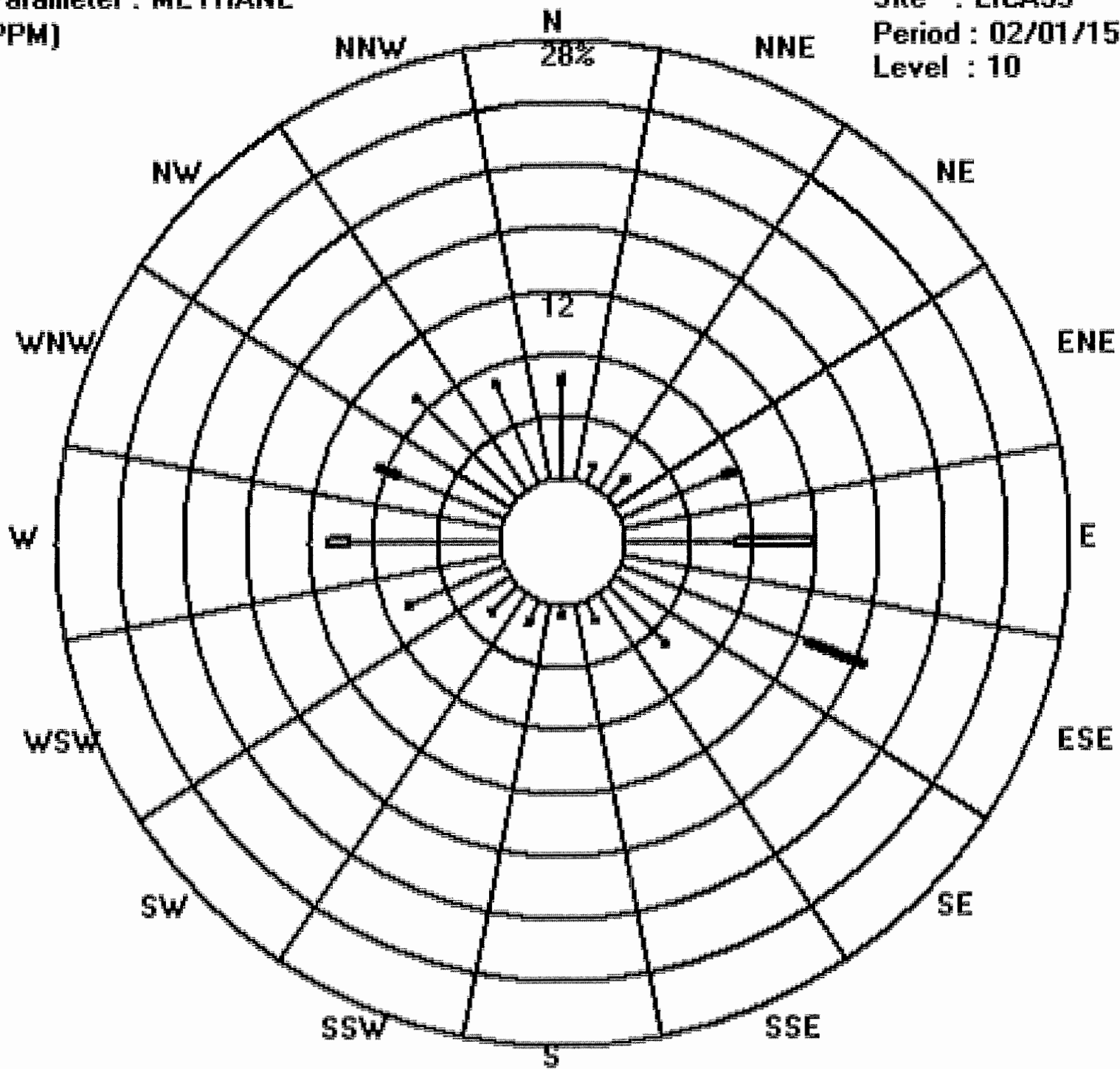
Site : LICA35

Class Limits (PPM)

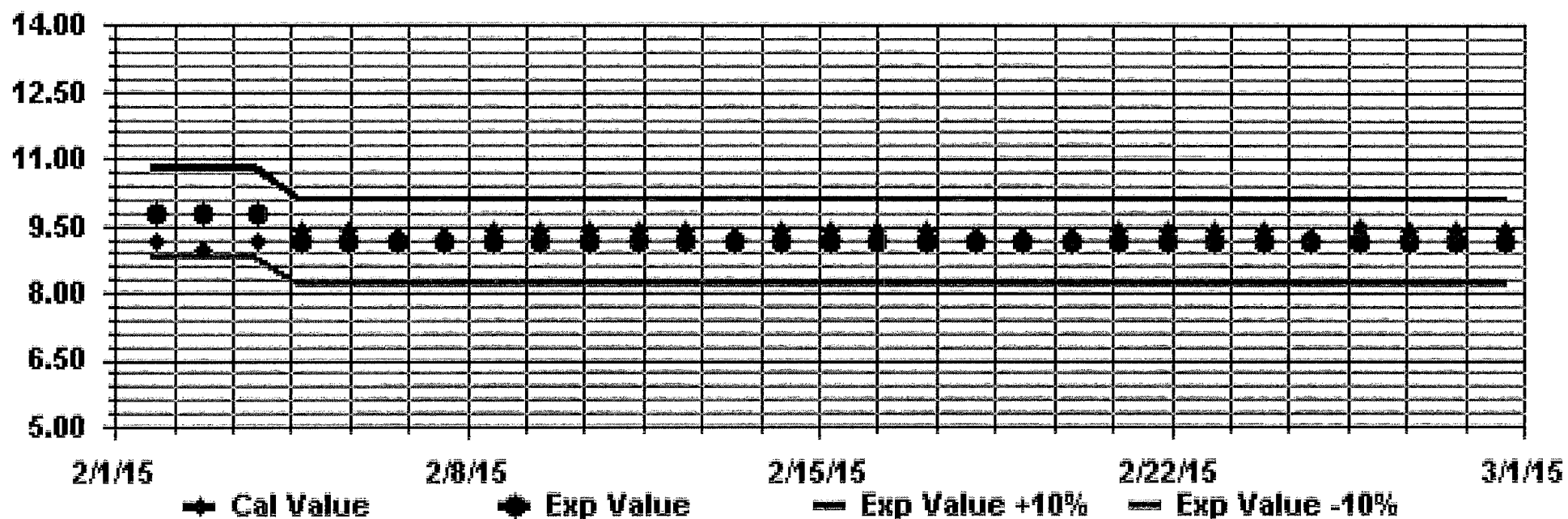
Period : 02/01/15-02/28/15



Level : 10



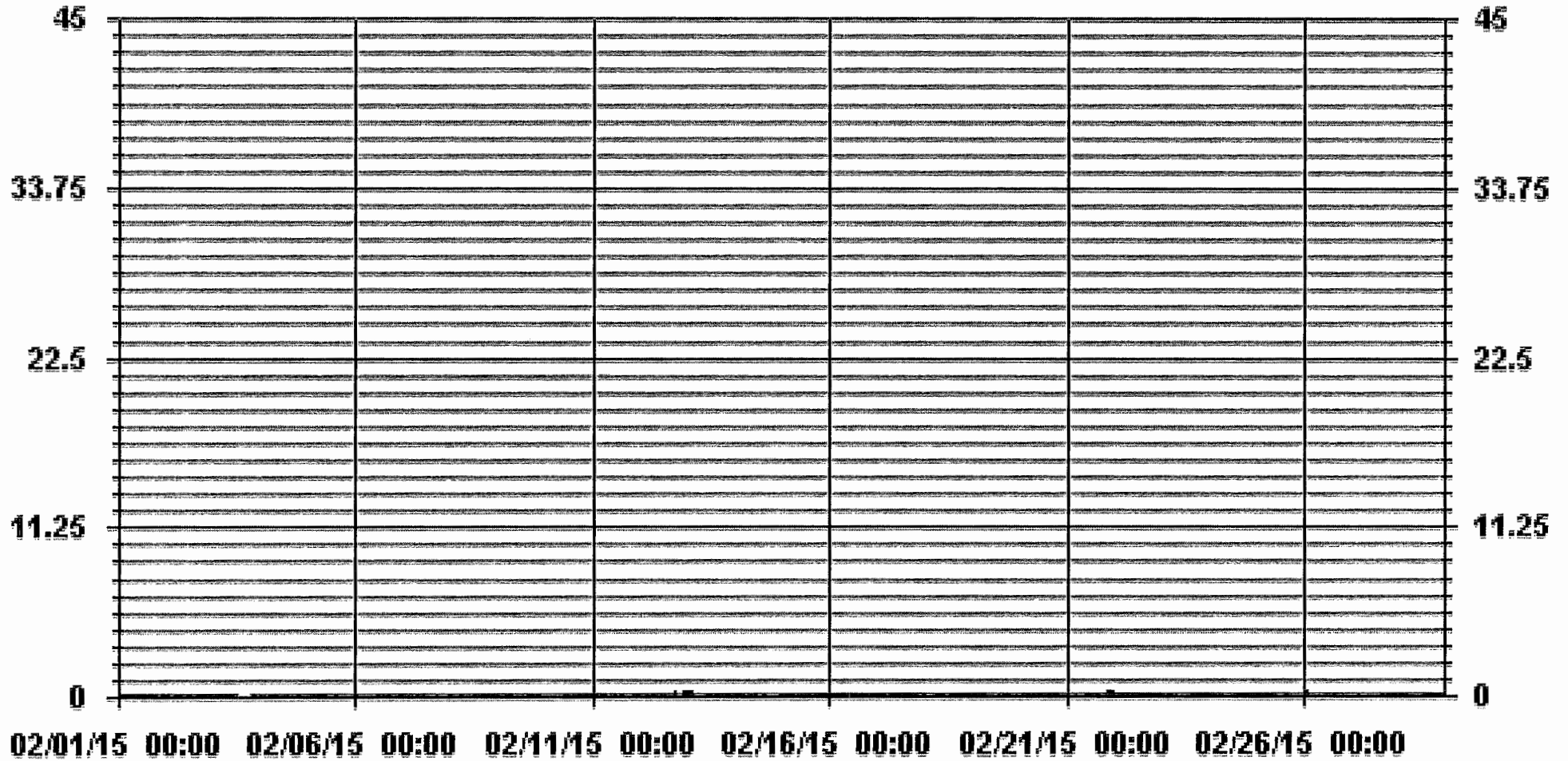
Calibration Graph for Site: LICA35 Parameter: METHANE Sequence: THC55 Phase: SPAN



***NON-METHANE HYDROCARBON***



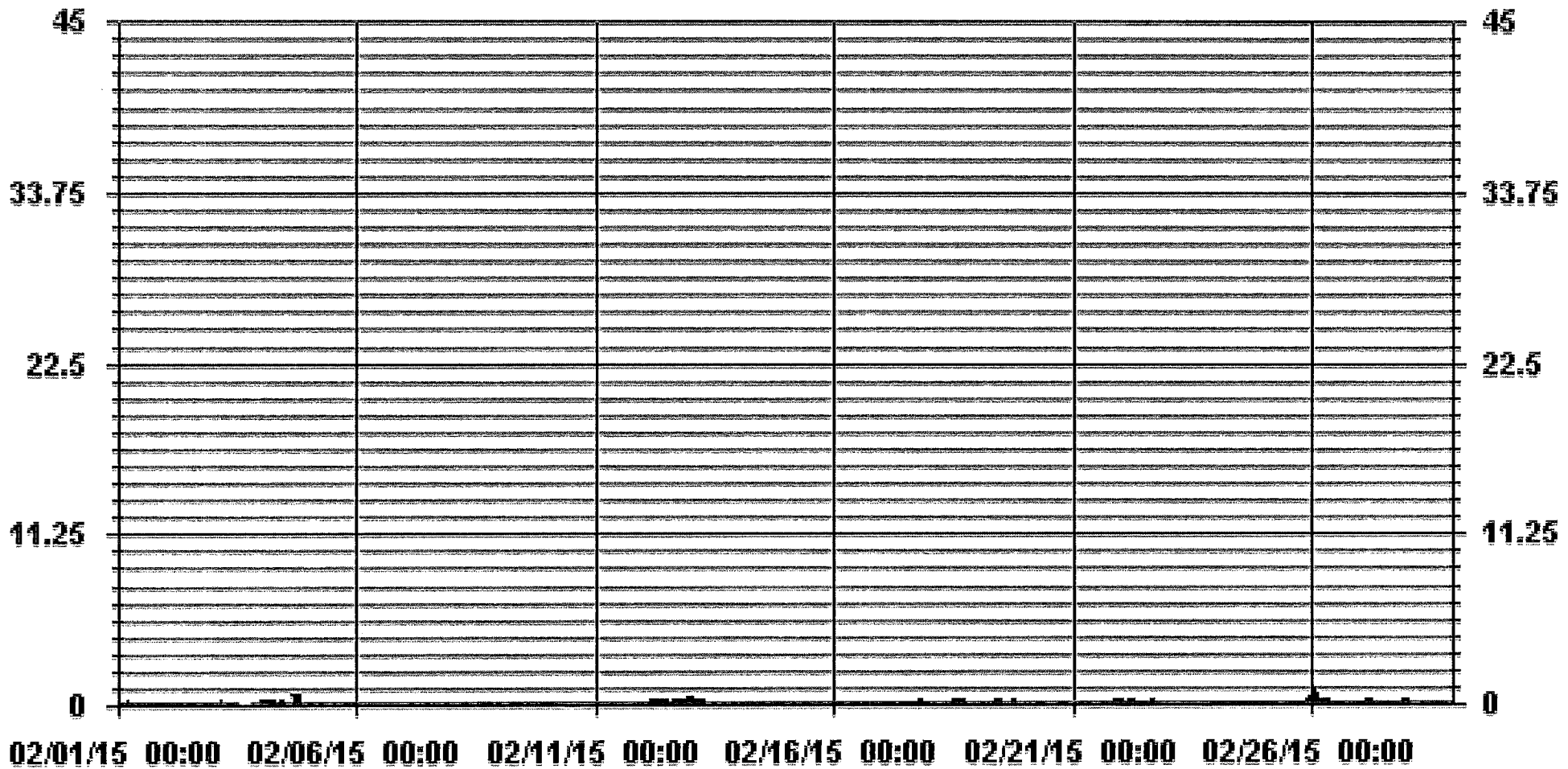
### 01 Hour Averages



— LICA35 NMHC PPM



### 01 Hour Averages



— LICA35 NMHC MAX PPM

LICA35  
 NMHC / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA35  
 Parameter : NMHC  
 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	
< .2	6.62	1.26	1.89	7.72	11.82	16.71	5.36	1.41	.78	1.73	2.36	6.62	10.72	8.67	9.14	7.09	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	6.62	1.26	1.89	7.72	11.82	16.71	5.36	1.41	.78	1.73	2.36	6.62	10.72	8.67	9.14	7.09	

Calm : .00 %

Total # Operational Hours : 634

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< .2	42	8	12	49	75	106	34	9	5	11	15	42	68	55	58	45	634
< .5																	
< 1.0																	
< 2.0																	
< 4.0																	
>= 4.0																	
Totals	42	8	12	49	75	106	34	9	5	11	15	42	68	55	58	45	

Calm : .00 %

Total # Operational Hours : 634

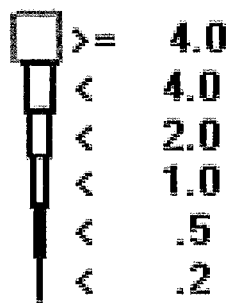


Logger : 35 Parameter : NMHC

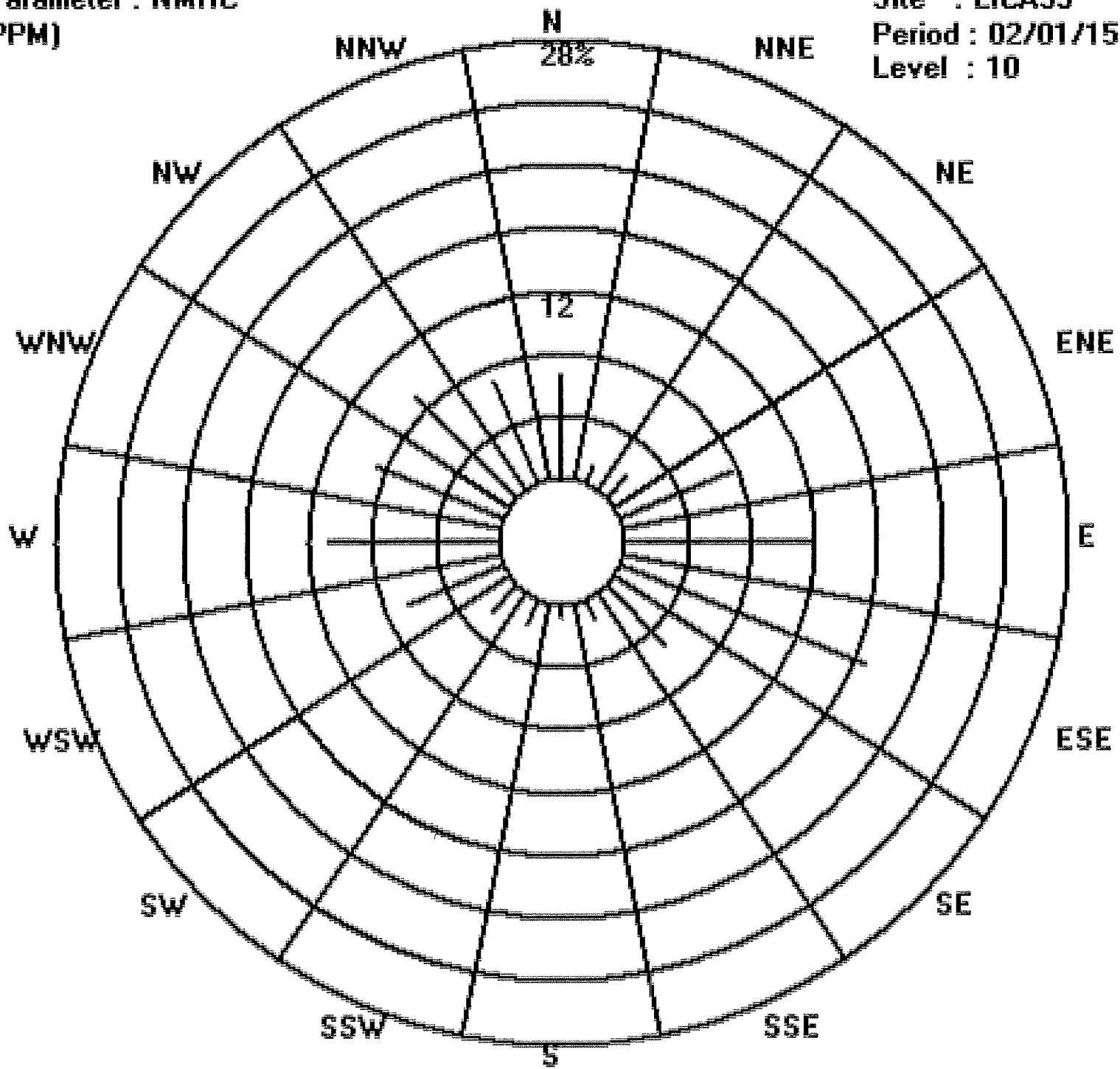
Site : LICA35

Class Limits (PPM)

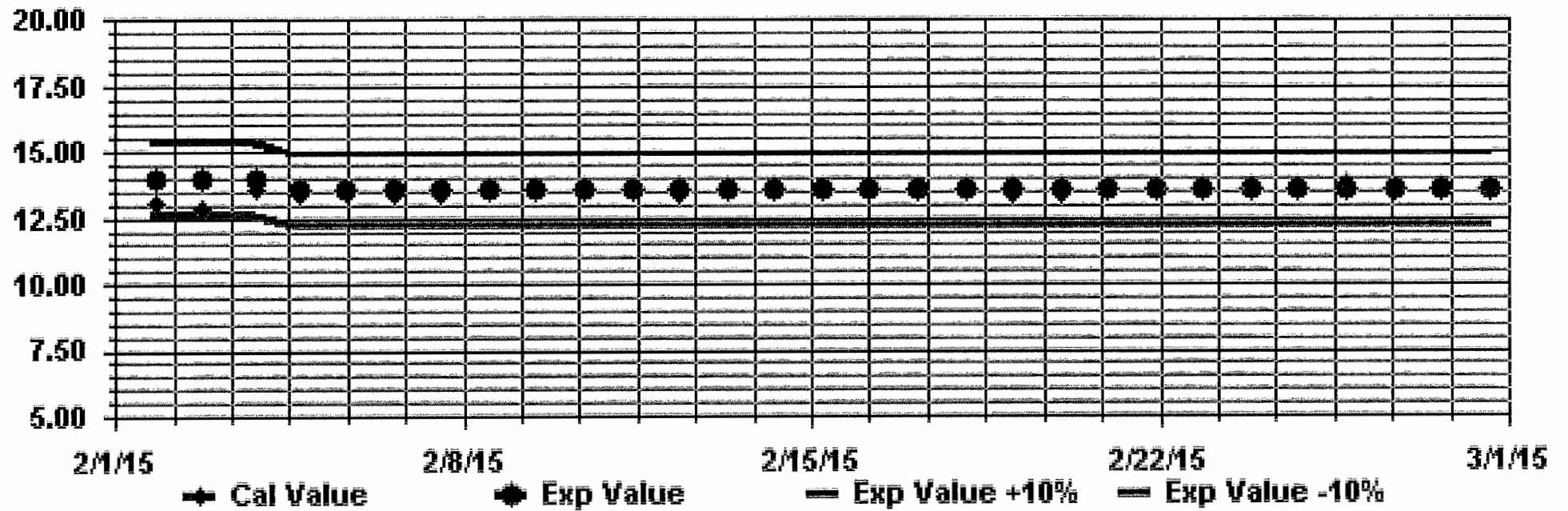
Period : 02/01/15-02/28/15



Level : 10



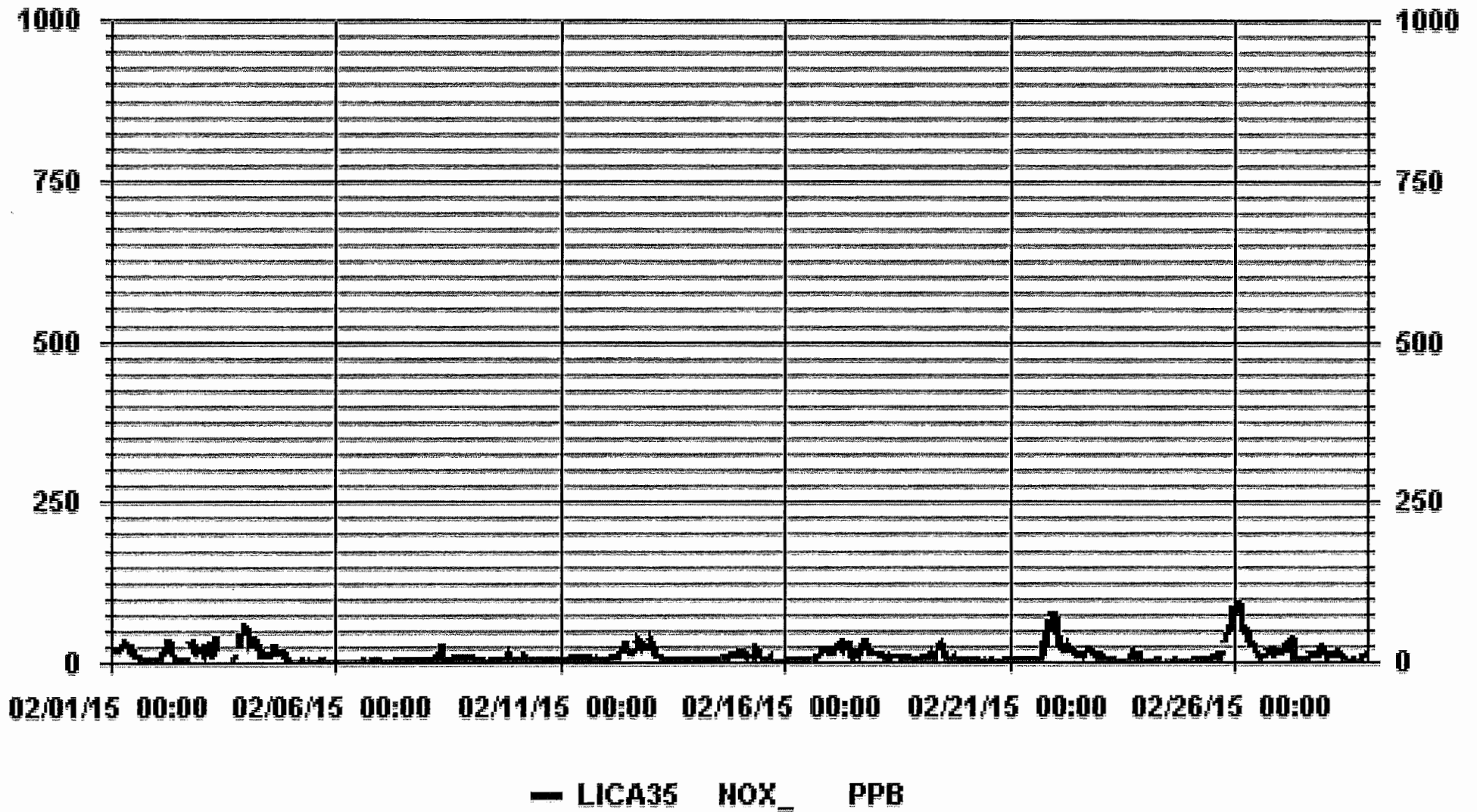
Calibration Graph for Site: LICA35 Parameter: NMHC Sequence: THC55 Phase: SPAN



***OXIDES OF NITROGEN***



### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- 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	DAILY MAX	24-HOUR AVG.	RDGS.
1	27.1	24.1	20.6	20.6	24.7	30.6	66.4	54.1	40.6	41.1	26.5	28.3	20	13.6	14.8	18.8	7.1	8.9	6.5	S	5.5	2.6	2	2.6	66.4	22.0	24
2	2.6	2.6	5.5	22.5	24.9	33.1	43.7	54.8	36.7	20.8	9.6	7.3	6.7	2.6	6.7	7.3	5.5	12	S	46.5	45.9	23	46.4	30.6	54.8	21.6	24
3	74.6	18.2	54.6	43.5	27.7	18.8	19.4	51.7	64	C	C	C	C	C	C	C	C	9.5	17.1	S	S	123.9	58.2	67.5	123.9	46.3	24
4	71.7	64.6	39.4	35.3	36.4	34.7	74	69.3	15.3	13.6	16.5	14.8	13	13	27.7	30	S	31.7	22.3	25.9	23.5	14.2	17	2.4	74	30.7	24
5	1.8	1.3	1.3	1.3	0.7	1.3	2.4	2.4	3	1.8	1.3	1.3	0.7	0.7	0.7	S	2.4	1.3	1.3	1.8	1.3	0.7	1.3	0.7	3	1.4	24
6	1.3	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.3	1.3	1.3	1.2	0.7	0.7	S	2.4	1.3	1.3	1.3	2.4	21.8	2.4	2.4	3.6	21.8	2.2	24
7	2.4	1.3	1.3	1.3	1.3	1.3	1.3	3	3.6	3.6	4.8	3.6	4.8	S	6	6	5.4	7.7	7.1	5.4	6	4.8	15.4	10.1	15.4	4.7	24
8	7.6	3	2.4	6.5	6	10.7	10.1	6.5	34.7	45.3	15.3	6.5	S	8.3	6	8.3	9.5	9.5	8.9	11.3	10.1	7.1	10.1	10	45.3	11.0	24
9	12.4	12.4	4.2	4.2	5.4	3.6	6.5	4.2	6	6.5	6	S	18.6	7.5	6.3	6.9	29.2	5.2	4	12.2	17.4	10.5	4.6	2.2	29.2	8.5	24
10	2.2	5.8	7.5	9.9	19.2	16.9	8.1	2.2	2.2	2.2	S	4.2	6	30.6	22.9	9.5	11.3	4.2	3	2.4	2.4	4.2	4.2	2.4	30.6	8.0	24
11	2.4	1.9	3.6	4.2	4.8	4.8	31.1	23.6	12.4	S	10.7	8.4	7.2	13.7	10.2	20.7	17.7	7.8	7.2	7.8	23.6	6	4.3	7.2	31.1	10.5	24
12	6	6	6.6	9	9.6	12.5	9.6	20.1	S	25.3	30.5	37.6	31.7	17	15.9	24.7	25.9	63.4	38.8	31.7	34.7	29.4	27.6	37.6	63.4	24.0	24
13	45.3	43.5	40	21.2	14.2	11.2	8.9	S	7.7	3.6	3	2.4	2.4	2.4	2.4	1.9	1.3	1.3	1.9	1.3	1.9	3	2.4	2.4	45.3	9.8	24
14	2.4	2.4	1.9	2.4	3.6	4.2	S	5.9	4.2	3	3	4.2	4.2	5.3	4.8	45.9	37.1	30	15.3	18.8	22.4	27.6	17.6	17.6	45.9	12.3	24
15	26.5	25.9	12.4	10.7	14.2	S	14.2	28.8	49.9	37.7	38.7	40	7.1	1.8	7.1	1.8	88.7	7.6	1.3	1.3	0.7	1.8	1.8	1.3	88.7	18.3	24
16	0.7	1.8	3	4.2	S	7.1	5.9	4.8	5.4	3.6	25.3	9.4	2.4	3	3.6	4.2	18.8	37.7	15.9	27.7	35.3	18.9	25.3	37.7	12.9	24	
17	18.2	22.4	27.7	S	45.4	39.6	40.7	61.9	33.7	38.4	36.7	37.8	23.1	17.2	23.7	15	59	82.4	25.5	57.8	38.4	22.5	16.7	15.5	82.4	34.8	24
18	14.9	15.5	S	13.6	14.2	10.6	14.2	11.3	12.4	10.1	13.6	10.1	10.1	13	28.3	9.5	9.5	13	10.1	10.1	7.1	6	6.5	6.5	28.3	11.7	24
19	5.4	S	8.9	7.7	13.6	13.6	21.2	20	8.9	34.7	34.7	65.8	30	40	27.1	4.8	4.2	6.5	7.7	22.4	5.4	3.7	3	3	65.8	17.1	24
20	S	2.5	1.4	1.9	3.1	4.9	5.5	4.3	1.9	13.1	11.3	Y	1.4	13.7	31.8	1.4	0.8	0.8	0.8	1.4	1.4	1.9	1.9	S	31.8	5.1	23
21	4.3	3.7	6.1	5.5	5.5	3.1	2.5	7.7	7.8	4.9	1.9	2.5	3.7	3.7	3.1	6.6	4.9	34.2	91.1	72.3	81.7	100.5	S	116.3	116.3	24.9	24
22	77.5	93.4	56.4	45.9	32.4	24.2	22.4	86.4	30	30	17.1	15.9	17.1	13.6	15.4	11.3	37.6	49.4	36.4	46.5	24.2	S	21.7	9.5	93.4	35.4	24
23	15.3	15.3	13	7.7	3.6	1.2	8.9	8.9	4.2	3	1.2	0.1	Y	Y	Y	Y	Y	15.8	22.4	13	S	32.3	3.6	3	32.3	9.6	19
24	3	1.3	1.8	0.7	1.8	2.4	2.4	4.2	4.2	Y	Y	Y	4.2	1.8	0.7	3.6	4.2	5.4	0.7	S	3.6	1.3	1.3	1.3	5.4	2.5	21
25	1.3	0.7	1.9	1.9	1.9	2.4	2.4	2.4	1.9	2.4	3	9.4	8.9	7.7	7.7	7.1	23.6	28.9	S	96.9	62.9	82.2	122.1	130.3	130.3	26.5	24
26	97.4	103.3	126.8	123.9	68.1	67	61.7	72.2	38.2	34.1	30	24.7	14.8	44.7	14.2	10.7	17.1	S	47.7	51.3	58.9	16.6	17.7	19.5	126.8	50.5	24
27	20.1	17.2	42.4	38.3	20.7	22.4	61.8	65.3	8.4	6.6	6.1	6	3.1	3.1	3.1	3.7	S	48.8	24.1	17.6	23.5	51.2	25.3	31.7	65.3	23.9	24
28	35.8	11.8	32.9	14.2	13.6	15.9	20.6	39.4	15.9	11.2	12.4	4.8	5.9	4.8	3.6	S	4.2	1.9	1.3	4.8	19.4	25.3	13	13.6	39.4	14.2	24
HOURLY MAX	97.4	103.3	126.8	123.9	68.1	67	74	86.4	64	45.3	38.7	65.8	31.7	44.7	31.8	45.9	88.7	82.4	91.1	96.9	81.7	123.9	122.1	130.3			
HOURLY AVG	21.5	18.6	19.4	17.0	15.5	14.8	21.0	26.5	16.8	15.9	14.4	14.4	9.9	11.3	11.8	10.9	17.8	19.5	16.1	23.6	22.3	23.1	17.5	21.5			

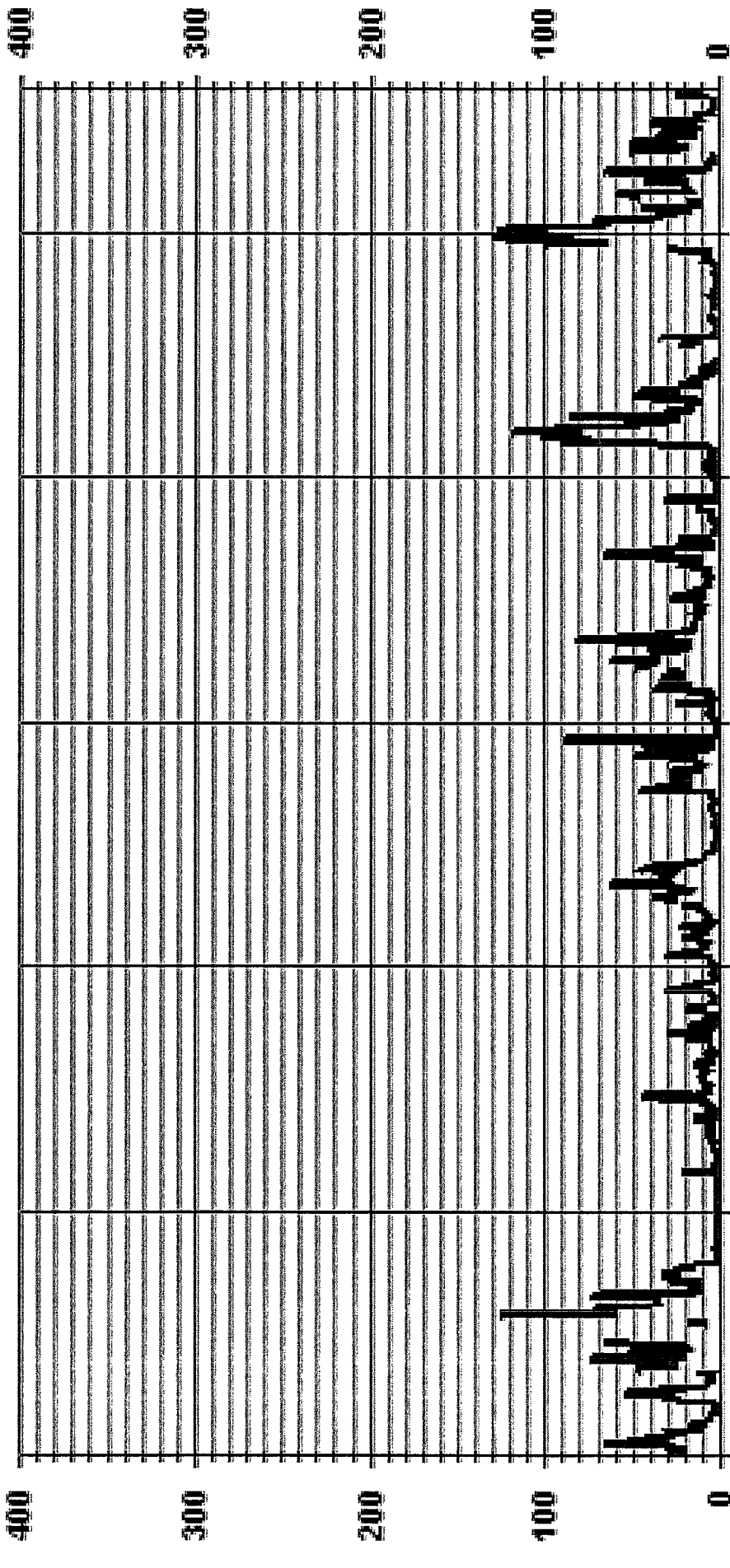
STATUS FLAG CODES

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:	625
MAXIMUM INSTANTANEOUS VALUE:	130.3 PPB @ HOUR(S) 23 ON DAY(S) 25
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	21.72
OPERATIONAL TIME:	663 HRS

01 Hour Averages



02/01/15 00:00 02/06/15 00:00 02/11/15 00:00 02/16/15 00:00 02/21/15 00:00 02/26/15 00:00

— LICA35 NOXMAX PPB

LICA-ELK  
 NOX\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-ELK  
 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	6.68	1.11	2.07	7.64	11.14	16.08	5.41	1.27	.79	1.59	2.38	6.36	10.66	8.28	8.75	7.00	97.29
< 110.0	.00	.15	.00	.15	.79	.31	.00	.15	.00	.15	.00	.00	.00	.47	.31	.15	2.70
< 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	6.68	1.27	2.07	7.80	11.94	16.40	5.41	1.43	.79	1.75	2.38	6.36	10.66	8.75	9.07	7.16	

Calm : .00 %

Total # Operational Hours : 628

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	42	7	13	48	70	101	34	8	5	10	15	40	67	52	55	44	611
< 110.0		1		1	5	2		1		1				3	2	1	17
< 210.0																	
>= 210.0																	
Totals	42	8	13	49	75	103	34	9	5	11	15	40	67	55	57	45	





Calm : .00 %

Total # Operational Hours : 628



Logger : 35 Parameter : NOX\_

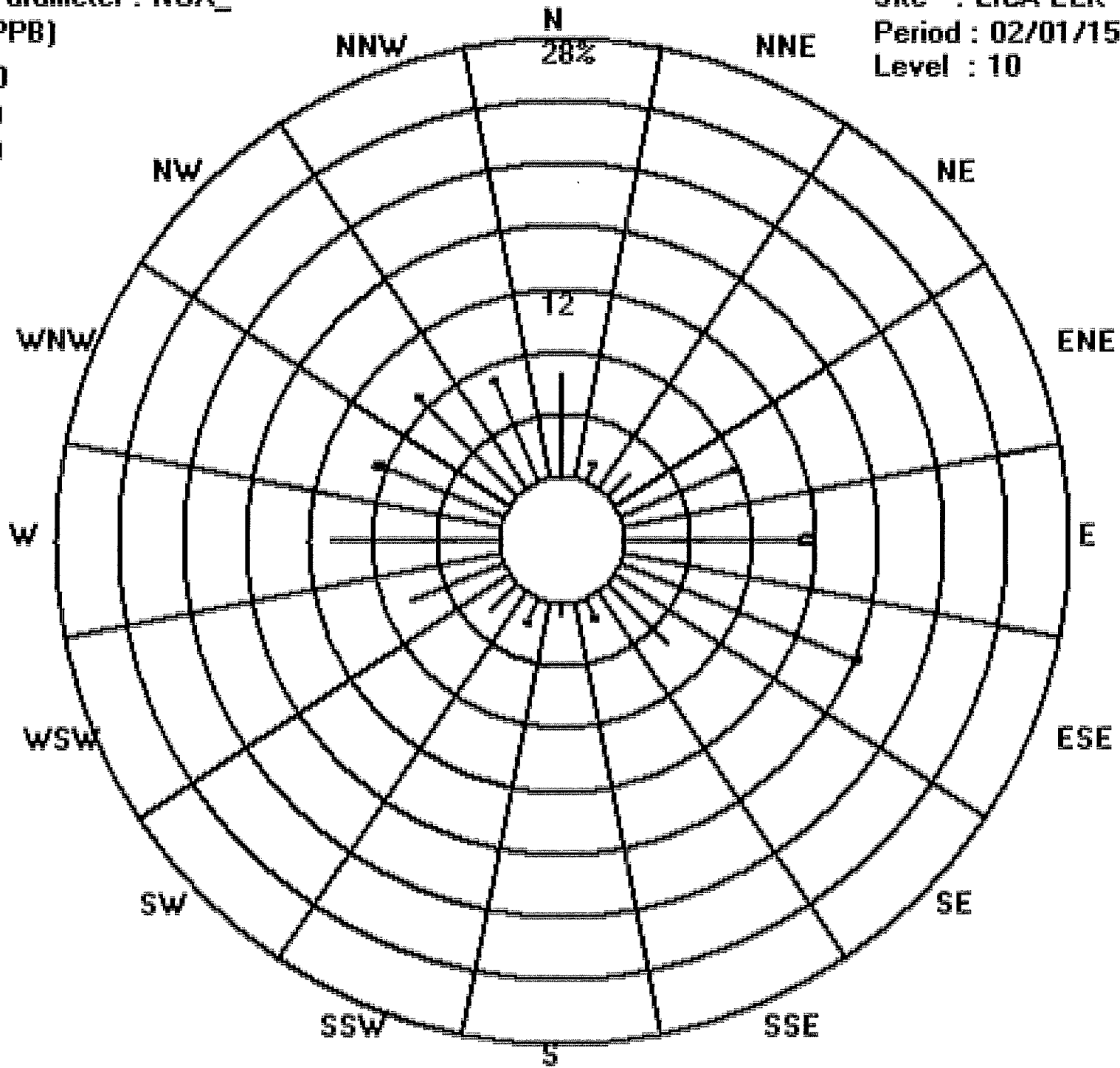
Class Limits (PPB)

-   $\geq 210.0$
-   $< 210.0$
-   $< 110.0$
-   $< 50.0$

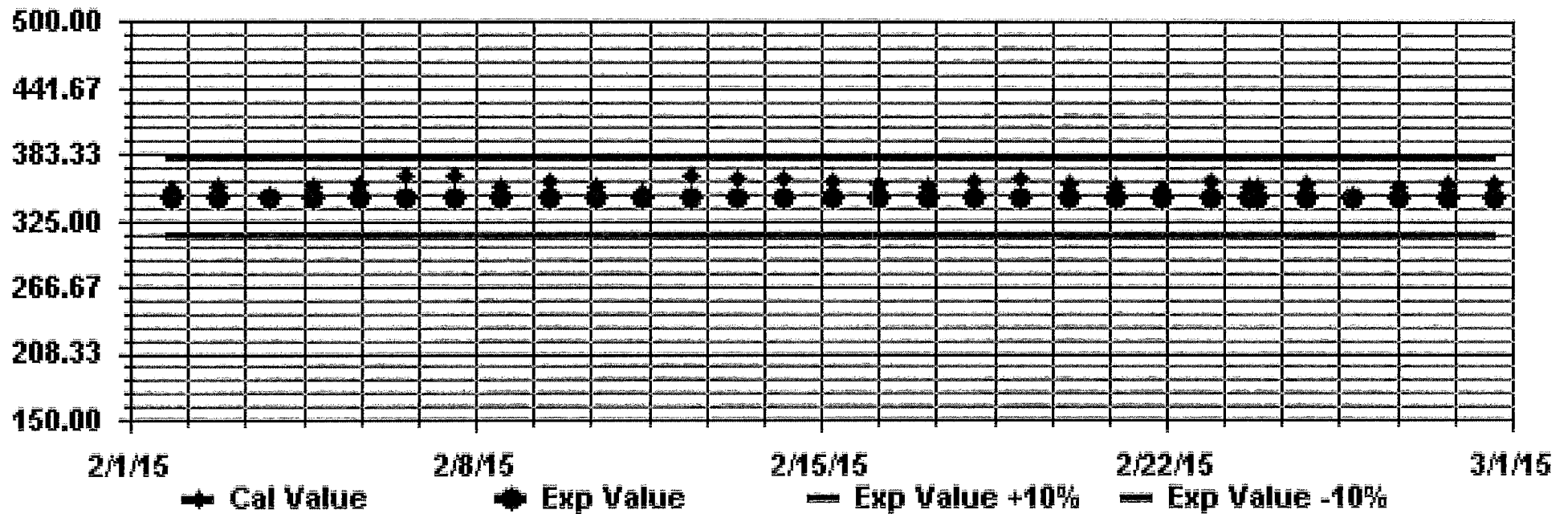
Site : LICA-ELK

Period : 02/01/15-02/28/15

Level : 10



Calibration Graph for Site: LICA35 Parameter: NOX\_ Sequence: NO2 Phase: SPAN



***NITRIC OXIDES***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

NITRIC OXIDE (NO) hourly averages in ppb

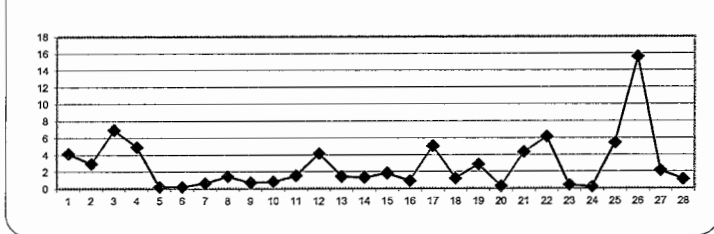
MST

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	24-HOUR																							
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG.	RDGS.																						
DAY																																																	
1	1.5	1.1	0.5	0.7	1.4	1.6	4.5	8.5	9.8	14.9	11.6	13.5	8	5.7	5.5	3.4	1	0.2	0.2	S	0.2	0.2	0.3	0.2	14.9	4.1	24																						
2	0.1	0.1	0.4	2	1.5	2.8	8.6	8.5	5.1	4	2.6	2.3	1.7	1.4	1.6	1.6	1	1.5	S	7.7	6	1.8	2.2	2.8	8.6	2.9	24																						
3	3.4	1.3	4.8	6.4	2.4	1.8	1.1	4.1	19.2	C	C	C	C	C	C	C	1.1	0.7	S	4.2	17.5	12.7	23.5	23.5	6.9	24																							
4	22.8	18.2	3.1	4.4	7.3	3.3	8.3	5.6	1.8	3	4.5	4.2	4.6	3.8	5.5	8.8	S	1.1	0.5	0.7	0.5	0.2	0.2	0.2	22.8	4.9	24																						
5	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.4	0.3	0.7	0.3	0.2	0.3	S	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.7	0.2	24																						
6	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	S	0.3	0.2	0.2	0.1	0.2	0.5	0.2	0.2	0.3	0.5	0.2	24																						
7	0.2	0	0.2	0.2	0.2	0.2	0.3	0.2	0.8	1.1	1	1.4	S	1.5	1.1	0.7	0.8	0.8	0.5	0.5	0.3	0.4	0.7	1.5	0.6	24																							
8	0.2	0.2	0.2	0.4	0.3	0.2	0.3	0.2	3.4	12	4.4	2.2	S	2.2	1.6	1.8	1.2	0.1	0.2	0.4	0.2	0.2	0.2	0.3	1.2	1.4	24																						
9	0.6	0.9	0.3	0.2	0.4	0.4	0.7	0.5	0.8	1.3	0.8	S	2.1	1.8	1.4	1.4	1.6	0.3	0.2	0.2	0.5	0.2	0.2	0.1	2.1	0.7	24																						
10	0.2	0.3	0.2	0.5	1.3	1.3	0.6	0.1	0.2	0.7	S	1.3	2.1	2.8	2.1	2.1	1.3	0.2	0.2	0.2	0.2	0.2	0.1	2.8	0.8	24																							
11	0.2	0.2	0.2	0.2	0.2	0.2	1.7	1.1	2.2	S	4.4	3.3	3.5	3.3	3.8	3.3	1.9	0.8	0.8	0.8	0.7	0.3	0.3	4.4	1.5	24																							
12	0.2	0.4	0.3	0.3	0.4	0.4	0.2	0.8	S	7.7	9.3	19.7	10.6	6.8	5.3	6.1	4.9	8.9	3.1	1.6	2.5	1.3	0.8	3.5	19.7	4.1	24																						
13	13.2	9.1	4.3	0.4	0.2	0.2	S	0.3	0.3	0.4	0.3	0.5	0.8	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	13.2	1.4	24																							
14	0.2	0.3	0.3	0.4	0.3	0.3	S	0.4	0.6	0.6	0.9	1.3	1.7	2	1.7	3.7	2.1	1.4	2.8	1.9	1.6	0.3	0.3	3.7	1.3	24																							
15	0.6	1	0.2	0.4	0.5	S	0.8	0.8	9	8.8	8	4.6	0.9	0.3	0.5	0.2	2.8	0.1	0.2	0.2	0	0	0.2	0.2	9	1.8	24																						
16	0.2	0.2	0.1	0.2	S	0.2	0.1	0.2	0.5	0.7	1.3	0.9	1	0.8	0.8	1.2	2	1	0.5	1.2	1.8	1.1	0.9	2.7	0.9	24																							
17	0.9	1.1	1.4	S	3.3	4.4	3	7.8	7.7	13.5	17.1	13	6.2	4	6.5	3.5	5.1	5.8	0.9	6.5	1.2	0.6	0.2	0.2	17.1	5.0	24																						
18	0.2	0.2	S	0.4	0.5	0.6	0.8	0.8	1.7	2	2.8	2.8	2.7	3.1	2.7	1.9	1.1	0.9	0.5	0.4	0.3	0.2	0.2	0.1	3.1	1.2	24																						
19	0.3	S	0.6	0.2	0.1	0.2	0.7	0.3	1.1	6.6	13.6	16.6	10.6	7.7	3.3	0.4	0.4	0.3	0.1	0.6	0.1	0.2	0.2	0.2	16.6	2.8	24																						
20	S	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.4	0.6	0.6	0.5	0.8	1.9	0.2	0.3	0.2	0.1	0.2	0	0.1	0.2	S	1.9	0.3	24																						
21	0.2	0.3	0.2	0.2	0.2	0.1	0	0.6	1.7	1	0.8	1.2	1.8	1.9	1.4	1.8	1.1	1.8	8.6	5.1	13.1	21.5	S	34.3	34.3	4.3	24																						
22	22	26	12	3.7	1.5	0.7	0.7	6.7	8.4	9.7	8.1	7.4	6.5	5.4	5.3	3.6	4.5	3.6	1.7	0.9	0.9	S	1.3	0.3	26	6.1	24																						
23	0.4	0.4	0.4	0.2	0.1	0.2	0.2	0.3	0.7	0.7	0.5	0.2	Y	Y	Y	Y	0.8	0.6	0.4	0	S	0.7	0.2	0.1	0.8	0.4	20																						
24	0.2	0.2	0	0.1	0.1	0.2	0.3	0.5	0.5	Y	Y	Y	0.5	0.5	0.2	0.4	0.3	0.3	0.1	S	0.2	0.1	0	0.2	0.5	0.2	21																						
25	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.8	1.4	2.4	3	3.2	2.5	2.4	4.4	2.6	S	7.2	8.2	14.3	22.3	47.3	47.3	5.4	24																						
26	37.2	44.7	46	58.9	23.2	21	13.1	22.3	16.5	17.2	17.3	11.4	5.9	6.2	2.4	2.9	3.4	S	2.9	2.1	2.2	0.3	0.5	0.6	58.9	15.6	24																						
27	0.7	0.2	1.6	1.3	0.5	0.3	7.6	14.6	1.2	2	1.9	1.7	1.4	0.9	1.4	0.9	S	2.7	0.6	0.5	0.8	2.8	0.5	1.8	14.6	2.1	24																						
28	1.9	0.3	0.7	0.3	0.3	0.3	1.6	3	3.2	3.3	3.5	1.2	1.3	1.5	0.5	S	0.4	0.2	0.2	0.3	0.3	0.4	0.3	0.4	3.5	1.1	24																						
HOURLY MAX	37.2	44.7	46	58.9	23.2	21	13.1	22.3	19.2	17.2	17.3	19.7	10.6	7.7	6.5	8.8	5.1	8.9	8.6	7.7	13.1	21.5	22.3	47.3																									
HOURLY AVG	4.0	4.0	2.9	3.1	1.7	1.5	2.1	3.3	3.6	4.5	4.7	4.6	3.2	2.7	2.4	2.2	1.8	1.4	1.0	1.6	1.8	2.5	1.7	4.5																									

STATUS FLAG CODES

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

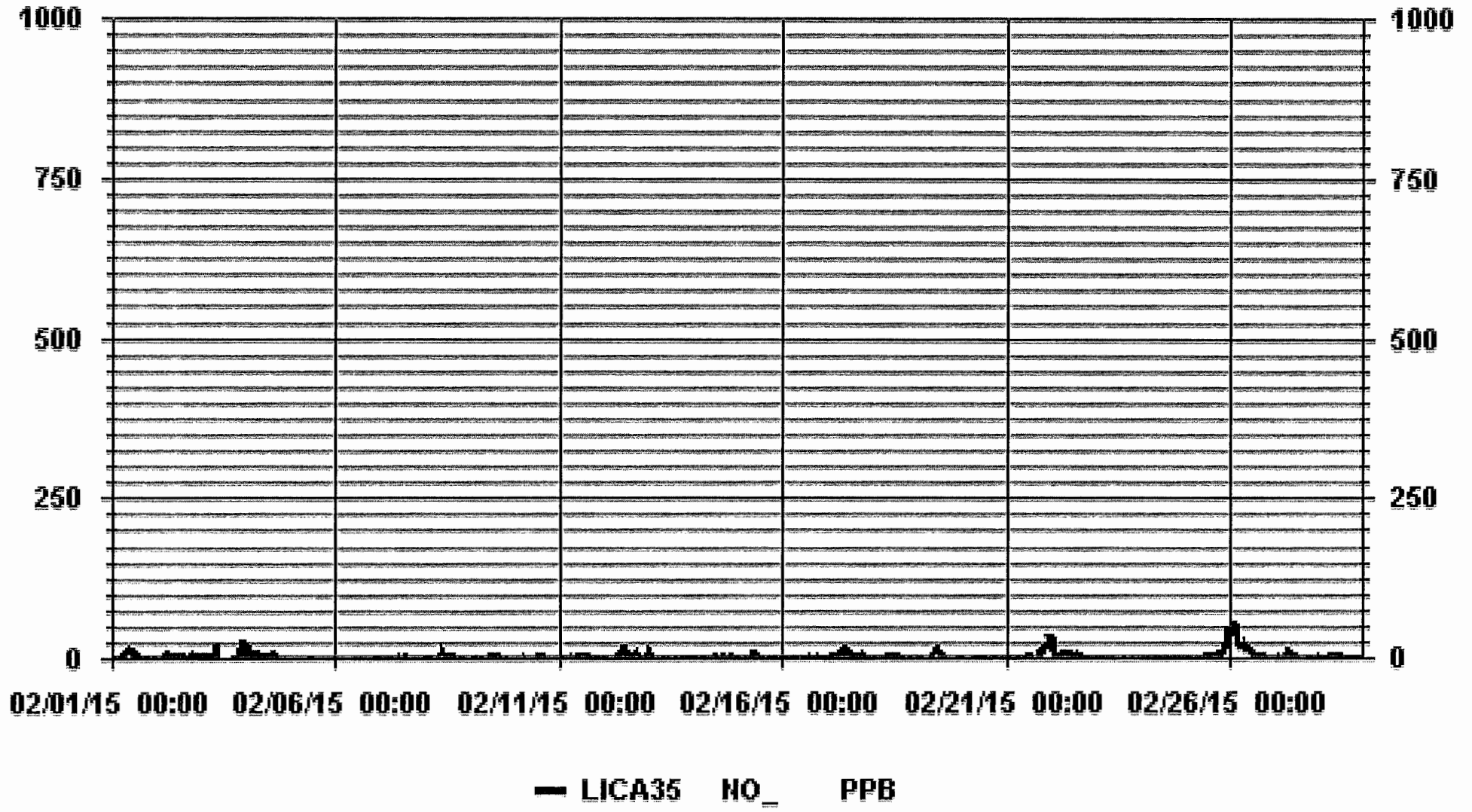
24 HOUR AVERAGES FOR FEBRUARY 2015



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	620					
MAXIMUM 1-HR AVERAGE:	58.9	PPB	@ HOUR(S)	3	ON DAY(S)	26
MAXIMUM 24-HR AVERAGE:	15.6	PPB			ON DAY(S)	26
					VAR-VARIOUS	
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	665	HRS	
MONTHLY CAUBRATION TIME:	8	HRS	AMD OPERATION UPTIME:	99.0	%	
STANDARD DEVIATION:	5.89		MONTHLY AVERAGE:	2.8	PPB	

### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

NITRIC OXIDE 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	DAILY MAX.	24-HOUR AVG.	RDGS.
1	3.2	2.6	0.8	2	4.3	6.1	32.4	29.5	15.5	20.7	15.5	16.1	10.8	7.2	7.2	7.8	1.4	0.8	0.2	S	0.8	0.2	0.8	0.8	32.4	8.1	24
2	0.2	0.2	2.6	6.6	5.5	7.2	15.5	20.2	12	6.6	3.8	3.7	3.2	2	3.2	2	2	6.1	S	18.4	17.8	3.8	26.6	7.8	26.6	7.7	24
3	46.5	2.6	27.8	16.1	5.5	3.2	2	27.8	39.6	C	C	C	C	C	C	C	C	2.6	2.6	S	S	91.1	28.4	33.1	91.1	23.5	24
4	34.2	27.2	10.8	6.6	9.6	7.2	50.1	36	3.2	4.3	6.2	6.1	5.5	5.5	13.1	13.2	S	6.1	0.8	2.6	1.4	0.2	0.2	0.2	50.1	10.9	24
5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.8	0.8	0.8	0.8	S	0.2	0.2	0.8	0.2	0.2	0.8	0.2	0.2	0.8	0.4	24
6	0.2	0.2	0.8	0.2	0.8	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.2	0.2	S	0.8	0.2	0.8	0.2	0.2	9.6	0.8	0.8	0.8	9.6	0.9	24
7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.8	0.8	2	2	2	2.6	S	2	2.6	2	2.6	2	1.4	1.4	0.8	8.4	2	8.4	1.6	24
8	0.8	0.8	0.2	0.8	0.8	0.8	0.8	0.8	14.9	22.5	7.8	2.6	S	3.2	2	3.2	2	0.2	0.8	0.8	0.8	0.8	0.8	0.8	22.5	3.0	24
9	1.4	3.2	0.8	0.8	1.4	1.4	2.6	1.4	2.6	2.6	2.6	S	9.6	3.2	2.6	2.6	16.7	0.8	0.2	0.2	1.4	0.8	0.8	0.2	16.7	2.6	24
10	0.2	0.8	0.2	2	3.2	2.6	1.4	0.2	0.8	0.8	S	2	3.2	17.3	12.6	4.3	4.3	0.8	0.2	0.2	0.8	0.2	0.8	0.2	17.3	2.6	24
11	0.2	0.2	0.2	0.2	0.8	0.8	8.4	5.5	3.8	S	5.5	4.3	7.8	5.5	10.8	9.6	1.4	1.4	1.4	8.4	0.8	0.8	0.8	0.8	10.8	3.6	24
12	0.2	0.8	0.8	0.8	0.8	1.4	0.8	1.4	S	10.8	17.8	23.7	19.6	7.8	6.6	9.6	9.6	32.5	9	6.1	6.1	3.8	1.5	10.2	32.5	7.9	24
13	17.8	16	12.6	0.8	0.2	0.2	0.3	S	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.2	0.2	0.2	0.2	0.2	0.8	0.2	0.8	17.8	2.5	24
14	0.3	0.8	0.8	0.8	0.8	0.8	S	0.8	1.4	1.4	1.4	2.6	2.6	3.2	2.6	24.3	22.5	19	11.4	5.5	4.9	6.6	0.8	0.8	24.3	5.0	24
15	2.6	3.2	0.8	1.4	1.4	S	2	7.2	23.1	19	21.3	21.9	2.6	0.8	5.5	0.8	35.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	35.4	6.5	24
16	0.2	0.2	0.2	0.8	S	0.8	0.2	0.2	0.8	0.8	16.7	6	1.4	1.4	1.4	2	6	9.6	2	3.2	5.5	3.2	2	6	16.7	3.1	24
17	2	2.6	3.2	S	14.9	8.4	22.5	29.5	12.5	19	22.6	23.1	11.4	7.8	11.4	5	27.2	47.8	2.6	21.9	5.5	0.8	0.8	0.2	47.8	13.2	24
18	0.2	0.2	S	0.8	0.8	0.8	2	2	3.2	3.2	5.5	4.3	3.8	4.9	12.5	3.2	2.6	2	1.4	0.8	0.8	0.2	0.8	0.2	12.5	2.4	24
19	0.8	S	1.4	0.2	0.2	0.8	2	1.4	2	16.7	18.4	43	14.3	20.7	12.6	0.8	0.8	0.8	0.8	2	0.2	0.2	0.2	0.8	43	6.1	24
20	S	0.8	0.2	0.2	0.2	0.2	0.2	0.2	0.8	4.9	3.2	Y	0.8	11.3	20.7	0.8	0.8	0.2	0.2	0.2	0.2	0.2	0.2	S	20.7	2.2	23
21	0.2	0.8	0.8	0.8	0.2	0.2	2	2.6	2.6	1.4	1.4	2	2.6	2	3.2	2	5.5	53	37.2	40.1	51.9	S	65.3	65.3	12.1	24	
22	39.5	57.1	23.1	13.2	7.2	0.8	0.8	45.9	14.3	14.3	9	9	9	6.1	7.2	4.3	17.8	21.9	6.6	15.5	2.6	S	3.8	0.8	57.1	14.3	24
23	0.8	1.4	0.8	0.2	0.2	0.2	0.8	0.8	1.4	1.4	0.8	0.8	Y	Y	Y	Y	Y	1.4	2	0.8	S	4.3	0.2	0.2	4.3	1.0	19
24	0.2	0.2	0.2	0.2	0.2	0.8	0.8	1.4	1.4	Y	Y	Y	1.4	0.8	0.8	0.8	1.4	1.4	0.2	S	0.2	0.2	0.2	0.2	1.4	0.7	21
25	0.8	0.2	0.2	0.2	0.2	0.2	0.8	0.2	0.8	1.4	1.4	5.5	4.9	4.3	3.2	3.7	10.2	7.8	S	42.4	23.7	34.2	80	85.8	85.8	13.6	24
26	57.7	65.3	88.2	84.7	33.1	33.6	29	39.6	19	19	14.9	7.8	31.3	9	4.9	6.6	S	18.4	21.3	19.6	0.8	1.4	0.8	88.2	27.2	24	
27	1.4	0.8	13.7	10.8	0.8	0.8	26.6	30.1	2	2.6	2.6	2.6	2	1.4	1.4	1.4	S	21.9	2	1.4	2	17.3	0.8	5.5	30.1	6.6	24
28	7.8	0.8	9.6	0.8	0.8	1.4	3.7	21.4	5	4.3	5.6	2	2.6	2.6	1.4	S	0.8	0.2	0.2	0.8	0.8	1.4	0.8	0.8	21.4	3.3	24
HOURLY MAX	57.7	65.3	88.2	84.7	33.1	33.6	50.1	45.9	39.6	22.5	22.6	43	19.6	31.3	20.7	24.3	35.4	47.8	53	42.4	40.1	91.1	80	85.8			
HOURLY AVG	8.1	7.0	7.5	5.6	3.5	3.0	7.6	11.4	6.9	7.3	7.7	8.3	5.1	6.2	5.9	4.7	7.6	7.2	4.6	7.4	6.0	8.4	6.0	8.4			

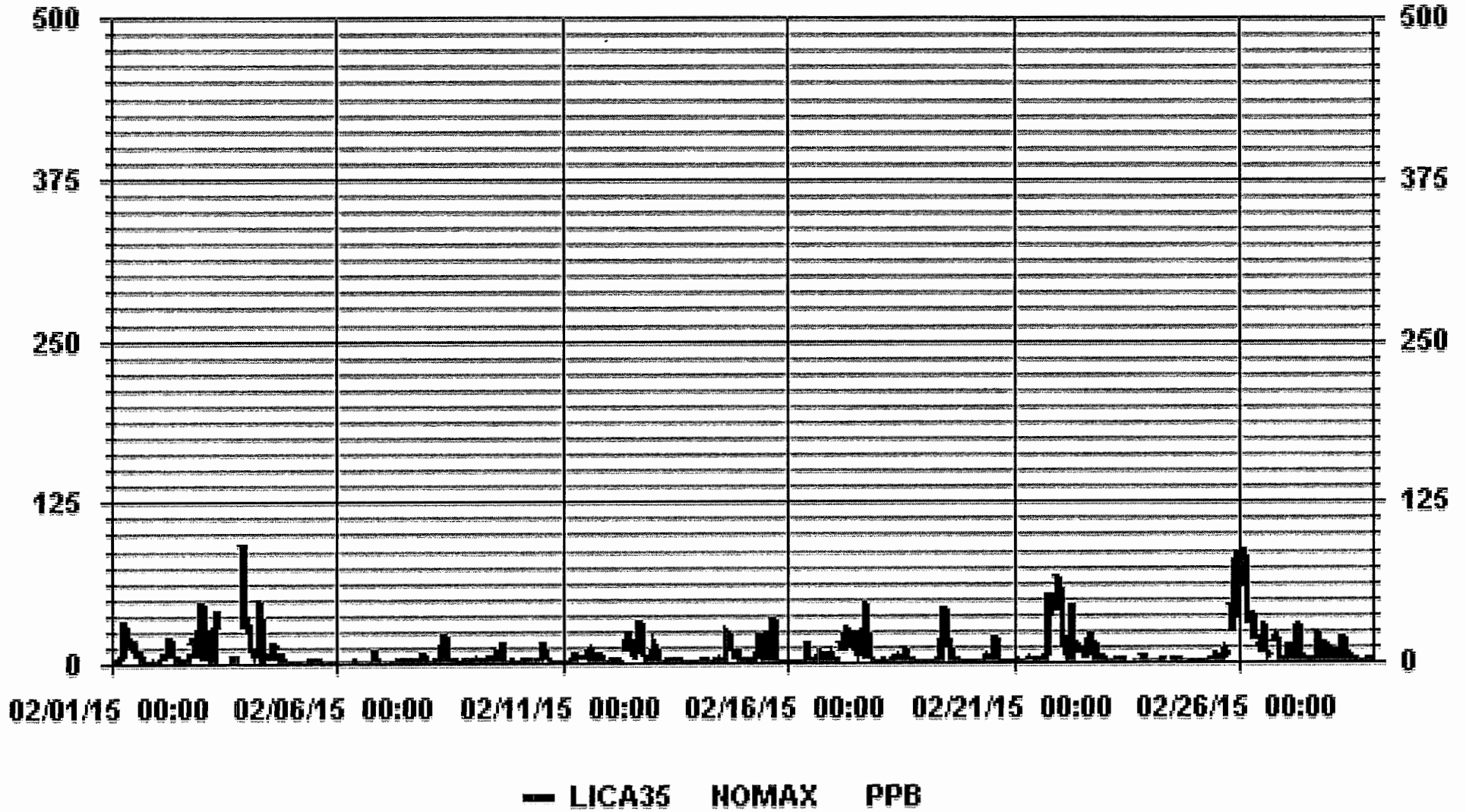
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	625
MAXIMUM INSTANTANEOUS VALUE:	91.1 PPB @ HOUR(S) 21 ON DAY(S) 3
VAR-VARIOUS	
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	12.49
OPERATIONAL TIME:	663 HRS

### 01 Hour Averages



LICA-ELK  
 NO\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-ELK  
 Parameter : NO\_  
 Units : PPB

Wind Parameter : WDR  
 Instrument Height : 10 Meters

		Direction															
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	6.68	1.27	2.07	7.80	11.78	16.40	5.41	1.43	.79	1.75	2.38	6.36	10.66	8.75	9.07	7.16	99.84
< 110.0	.00	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15
< 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	6.68	1.27	2.07	7.80	11.94	16.40	5.41	1.43	.79	1.75	2.38	6.36	10.66	8.75	9.07	7.16	

Calm : .00 %

Total # Operational Hours : 628

Distribution By Samples


		Direction															
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	42	8	13	49	74	103	34	9	5	11	15	40	67	55	57	45	627
< 110.0					1												1
< 210.0																	
>= 210.0																	
Totals	42	8	13	49	75	103	34	9	5	11	15	40	67	55	57	45	

Calm : .00 %

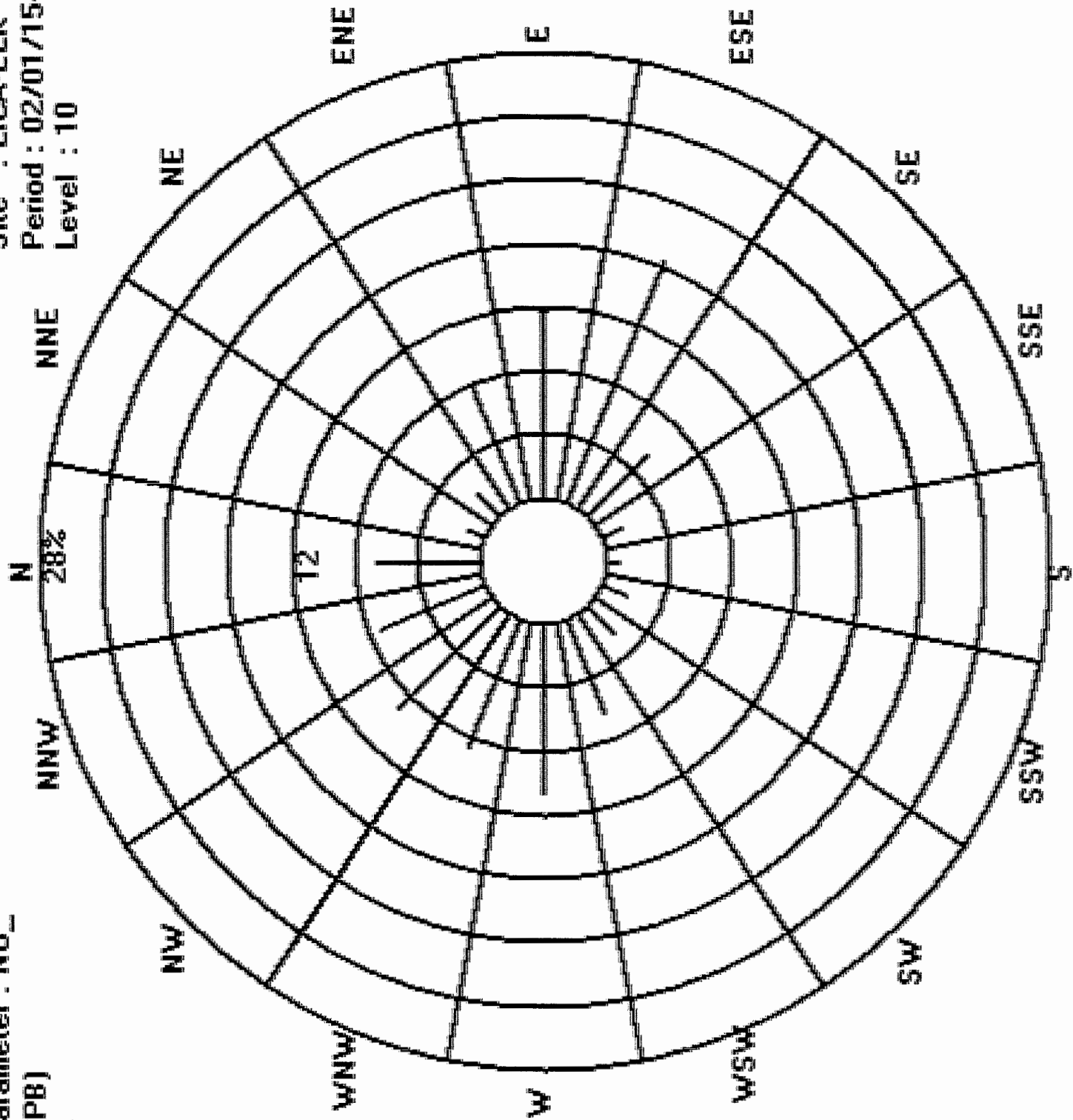
Total # Operational Hours : 628



Logger : 35 Parameter : NO<sub>x</sub>  
Class Limits (PPB)

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

Site : LICA-ELK  
Period : 02/01/15-02/28/15  
Level : 10



***NITROGEN DIOXIDE***



NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	1	21.5	20.6	18.0	17.6	19.4	21.0	21.2	23.3	21.9	15.4	10.1	10.2	7.3	6.0	6.9	6.8	5.6	7.4	5.8	S	3.3	2.0	1.4	1.9	23.3	11.9	24
DAY	2	2.0	1.7	1.5	8.1	14.1	19.6	26.0	25.0	17.6	8.9	3.4	2.2	1.0	0.6	1.1	2.7	2.2	2.1	S	25.7	23.4	17.6	13.7	17.3	26.0	10.3	24
DAY	3	16.1	12.7	22.6	22.5	12.9	13.4	11.3	14.2	16.6	C	C	C	C	C	C	C	C	3.7	10.7	S	22.3	23.5	30.4	32.8	32.8	17.7	24
DAY	4	33.0	32.5	25.4	27.6	27.4	23.4	21.7	18.5	8.6	7.7	8.7	6.0	6.3	6.2	8.4	15.1	S	16.5	15.2	15.7	15.3	9.5	7.0	1.6	33.0	15.5	24
DAY	5	0.9	0.5	0.7	0.4	0.1	0.4	1.4	1.7	2.2	0.8	0.7	0.1	0.1	0.0	0.0	S	1.4	0.9	0.9	0.9	0.6	0.4	0.5	0.5	2.2	0.7	24
DAY	6	0.4	0.2	0.4	0.4	0.4	0.4	0.2	0.4	0.4	0.5	0.5	0.4	0.1	0.3	S	1.3	1.0	0.6	0.7	1.3	1.8	1.5	1.5	2.1	2.1	0.7	24
DAY	7	1.5	0.7	0.6	0.6	0.6	0.5	0.6	1.4	1.7	1.3	1.6	1.0	1.4	S	2.8	2.5	2.5	3.6	3.3	3.7	3.4	2.9	2.4	5.1	5.1	2.0	24
DAY	8	3.2	2.0	1.6	4.2	4.2	8.1	5.5	3.9	12.3	14.4	5.6	3.5	S	3.8	3.1	4.4	6.5	7.3	6.4	8.7	5.2	4.9	8.0	6.4	14.4	5.8	24
DAY	9	7.3	6.7	2.8	2.5	3.2	2.0	2.3	2.1	2.4	2.9	1.8	S	2.9	2.6	2.5	3.3	4.6	3.4	3.4	5.0	13.0	6.1	2.6	1.6	13.0	3.8	24
DAY	10	1.3	3.9	2.8	4.0	8.6	8.7	4.4	1.6	1.6	1.5	S	2.1	2.0	2.7	2.5	2.9	3.4	3.1	2.4	1.9	1.9	2.4	2.5	1.6	8.7	3.0	24
DAY	11	1.5	1.0	2.7	3.0	3.9	4.2	8.2	10.1	7.5	S	4.3	3.2	2.8	2.7	3.8	5.0	5.5	5.2	4.1	5.8	5.0	4.3	3.1	4.7	10.1	4.4	24
DAY	12	4.2	4.2	4.3	5.8	6.7	8.3	7.9	12.9	S	11.3	9.0	12.5	8.8	8.4	8.3	11.3	15.7	25.5	26.0	21.9	25.0	25.0	24.3	25.8	26.0	13.6	24
DAY	13	26.9	26.1	24.0	15.4	12.8	8.5	8.4	S	5.2	2.6	1.8	1.6	1.6	1.4	1.5	1.0	0.8	1.0	1.1	0.9	1.2	1.8	1.7	1.5	26.9	6.5	24
DAY	14	1.2	1.2	1.2	1.0	1.5	1.4	S	2.9	2.4	0.9	1.3	1.2	1.5	1.7	2.0	4.1	4.6	3.8	6.7	10.3	10.6	13.2	12.2	10.9	13.2	4.3	24
DAY	15	14.6	15.7	10.2	6.7	10.8	S	10.2	8.8	18.5	12.7	8.7	5.8	1.4	0.8	0.7	0.8	4.9	1.0	0.8	0.5	0.1	0.2	1.3	0.8	18.5	5.9	24
DAY	16	0.2	0.7	2.3	3.3	S	5.0	4.8	3.4	3.5	2.1	2.2	1.6	1.3	1.3	1.3	1.9	4.5	6.3	10.5	17.1	16.1	15.2	15.3	22.4	22.4	6.2	24
DAY	17	12.8	11.9	17.6	S	22.4	26.1	21.3	26.1	17.6	15.5	13.0	11.5	6.8	5.3	8.6	7.1	12.7	21.1	17.1	28.5	28.5	17.0	15.2	14.1	28.5	16.4	24
DAY	18	12.4	13.0	S	11.9	12.5	8.6	10.2	8.8	8.3	6.0	6.2	5.4	5.4	5.7	5.0	5.4	5.1	6.1	6.3	5.6	4.7	4.7	4.7	5.1	13.0	7.3	24
DAY	19	4.1	S	5.7	5.4	9.5	8.0	15.2	10.7	7.2	10.7	14.2	15.1	13.3	10.6	6.2	2.4	3.0	3.7	5.4	9.6	3.4	2.8	2.6	1.6	15.2	7.4	24
DAY	20	S	1.5	1.1	1.4	2.2	4.0	4.7	2.2	0.7	0.5	0.7	0.6	0.4	0.7	2.0	0.5	0.1	0.5	0.6	0.7	1.2	1.2	1.7	S	4.7	1.3	24
DAY	21	3.2	2.7	3.5	3.1	3.6	2.3	1.6	3.0	3.9	1.1	0.4	0.6	1.1	1.3	1.0	1.9	1.7	7.8	24.1	19.4	33.9	41.4	S	40.6	41.4	8.8	24
DAY	22	35.3	35.4	33.7	28.1	21.5	19.2	18.8	21.3	14.4	10.3	7.3	7.0	6.3	6.3	7.1	6.6	10.4	15.8	19.0	16.0	16.5	S	10.2	8.2	35.4	16.3	24
DAY	23	10.9	11.7	8.1	4.1	1.6	0.6	4.2	3.4	1.8	0.8	0.0	0.0	Y	Y	Y	Y	3.4	8.3	13.3	4.2	S	12.9	2.7	2.3	13.3	5.0	20
DAY	24	0.9	0.4	0.4	0.1	0.6	1.3	1.2	1.9	1.7	Y	Y	Y	1.2	0.5	0.0	1.2	1.2	0.9	0.0	S	1.7	0.6	0.7	0.9	1.9	0.9	21
DAY	25	0.7	0.5	0.9	1.2	1.1	1.6	1.8	1.9	1.1	1.2	1.4	1.9	2.6	3.1	3.1	3.3	8.1	10.6	S	29.7	34.9	37.0	36.6	39.2	39.2	9.7	24
DAY	26	37.1	38.0	36.5	37.4	34.0	32.2	30.4	29.0	17.9	12.5	10.8	8.1	5.3	5.2	3.1	4.2	6.3	S	14.9	17.1	19.2	12.6	14.1	14.4	38.0	19.1	24
DAY	27	16.0	14.9	16.7	22.6	16.8	17.7	28.4	26.8	4.0	3.9	2.8	2.1	1.2	1.2	0.9	1.2	S	10.1	12.6	11.8	14.9	19.6	16.5	20.9	28.4	12.3	24
DAY	28	16.7	7.5	11.4	10.7	9.9	10.9	12.8	13.7	9.0	5.7	4.6	1.4	1.7	2.0	1.1	S	2.1	1.4	0.7	1.9	8.7	8.3	9.2	10.0	16.7	7.0	24
HOURLY MAX		37	38	37	37	34	32	30	29	22	16	14	15	13	11	9	15	16	26	26	30	35	41	37	41			
HOURLY AVG		11	10	10	9	10	10	11	10	8	6	5	4	3	3	3	4	5	7	8	11	12	11	9	11			

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

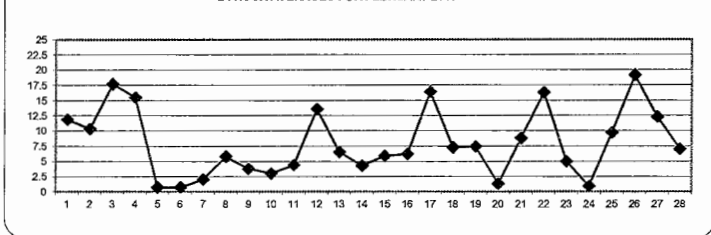
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

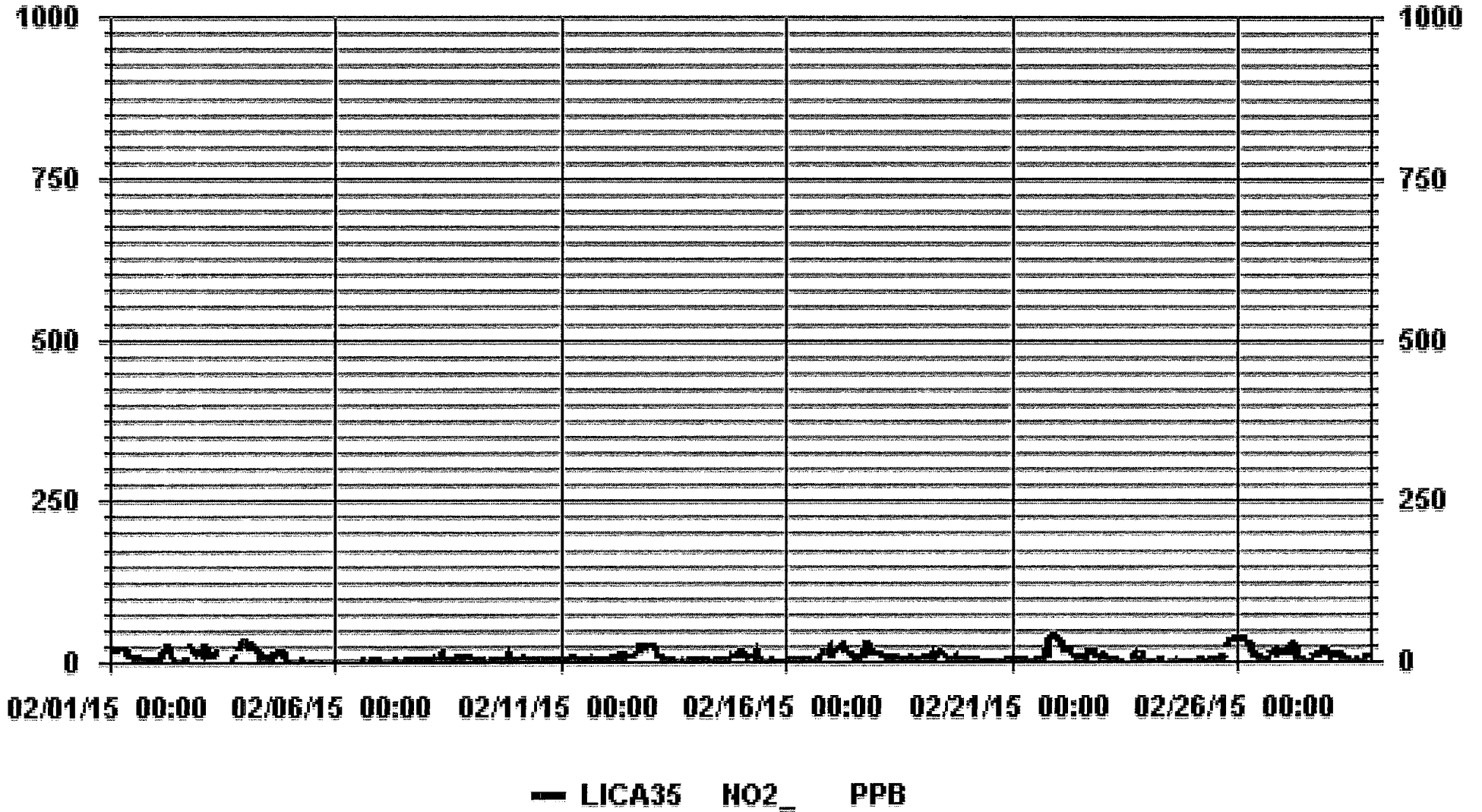
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	622			
MAXIMUM 1-HR AVERAGE:	41.4	PPB	@ HOUR(S)	21
MAXIMUM 24-HR AVERAGE:	19.1	PPB	ON DAY(S)	21
			ON DAY(S)	26
			VAR-VARIOUS	
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	665
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:	99.0
				%
STANDARD DEVIATION:	8.67		MONTHLY AVERAGE:	7.9
				PPB

24 HOUR AVERAGES FOR FEBRUARY 2015



### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

NITROGEN 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	24-HOUR	RDGS.	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX	AVG.		
DAY																												
1	24.2	23	20.6	19.5	22.4	24.2	34.1	26.5	27.1	20.6	11.3	12.5	9.5	6.6	8.3	11.3	6.6	8.3	6.6	S	5.8	3	2.4	3	34.1	14.7	24	
2	2.9	2.4	3.6	16.9	19.9	26.4	29.3	37	25.2	15.8	5.9	4.7	3.6	1.2	6.4	5.3	4.1	11.2	S	27.8	28.4	20.7	22.4	23.1	37	15.0	24	
3	34.2	16.1	33	27.8	22.5	16.1	18.4	23.7	24.8	C	C	C	C	C	C	C	C	7.8	16.7	S	S	46.9	34	36.9	46.9	25.6	24	
4	39.9	39.3	29.4	29.9	29.4	28.2	36.9	36.9	12.4	10	11.2	9.4	8.2	8.2	15.3	18.2	S	25.9	22.4	24.2	23	14.8	17.7	3.1	39.9	21.5	24	
5	1.9	1.9	1.9	1.9	1.3	1.9	2.5	3.1	3.1	1.9	1.3	1.3	0.7	0.7	0.7	S	2.5	1.3	1.3	1.3	1.3	1.3	0.7	1.3	0.7	3.1	1.6	24
6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	S	2.4	1.2	0.6	1.2	2.4	12.9	1.8	2.4	3	12.9	1.6	24	
7	2.4	1.2	0.6	1.2	1.2	1.2	0.6	3	3.6	1.8	2.4	1.8	2.4	S	4.2	3.6	3.6	5.3	5.3	4.8	4.8	4.2	7.1	9.4	9.4	3.3	24	
8	7	2.4	1.8	5.9	5.9	10.6	8.8	5.9	19.9	24.6	8.2	4.2	S	5.3	3.6	6.5	7.6	9.4	7.6	11.2	9.4	7.1	10	8.8	24.6	8.3	24	
9	10.6	9.4	4.1	3.6	4.1	3.6	4.1	3	4.1	4.1	3.6	S	10.6	4.8	4.2	4.8	13.5	4.2	4.2	11.8	17.1	10	4.8	2.4	17.1	6.4	24	
10	2.4	5.3	7.1	7.6	16.5	15.3	7.1	2.4	1.8	1.8	S	3	3	20	15.8	5.3	7.1	3.6	3	2.4	2.4	4.1	3.6	2.4	20	6.2	24	
11	2.4	1.8	3.6	3.6	4.2	4.8	23.5	18.1	9.4	S	5.9	4.8	3.6	8.2	5.3	11.2	10	6.5	5.9	7.6	15.8	5.9	4.7	7.1	23.5	7.6	24	
12	5.9	5.9	6.4	8.8	9.4	11.8	9.4	19.3	S	15.2	12.9	14.1	12.3	9.4	9.4	15.8	18.1	31.6	29.8	25.8	28.7	26.4	26.9	27.5	31.6	16.6	24	
13	28.1	27.5	27.5	20.5	14.1	10.6	8.8	S	7.2	3.1	2.5	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	2.5	2.5	1.9	28.1	7.5	24	
14	1.9	1.9	1.3	1.9	3.1	3.7	S	5.9	3.6	2.4	3	2.4	2.4	3	3.5	21.7	19.4	16.5	11.8	14.1	18.2	21.7	17.6	17	21.7	8.6	24	
15	24.6	24.7	12.9	10.6	13.5	S	12.4	21.8	27.1	18.8	18.3	18.2	4.2	1.3	3.1	1.3	53.4	7.7	1.3	1.3	0.7	1.9	1.9	1.3	53.4	12.3	24	
16	0.7	1.9	3.1	4.3	S	6.4	5.9	4.2	4.8	3	11.2	3	1.8	1.8	2.4	3	12.9	29.9	14.7	24.7	29.9	17.6	22.8	27.6	29.9	10.3	24	
17	16.5	20	24.7	S	30.5	31.1	30.5	35.7	22.9	20	15.3	15.3	11.8	10	12.9	10.6	31.6	37.5	23.5	37	33.4	22.3	17	15.3	37.5	22.8	24	
18	15.3	15.3	S	13.5	14.1	10.6	13	10.6	10.6	7.6	8.8	7.1	7.1	8.8	17.6	7.1	7.1	11.8	9.4	9.5	7.1	5.9	6.5	6.5	17.6	10.0	24	
19	5.9	S	8.3	7.7	13.6	13.6	20.1	19.5	8.3	18.2	16.6	25.9	16	19.5	14.2	4.2	3.7	6	7.2	20.1	5.4	3.7	3.1	3.1	25.9	11.5	24	
20	S	3	1.8	2.4	3.6	5.3	5.3	4.8	1.8	8.2	8.8	Y	1.2	3	15.9	1.2	1.2	1.2	1.2	1.8	1.8	1.8	2.4	S	15.9	3.7	23	
21	4.8	3.6	5.9	5.3	5.9	3.6	3	5.9	6.5	3	1.2	1.2	2.4	2.4	1.8	4.2	3.6	28.8	42.8	36.9	42.8	51.6	S	54.5	54.5	14.0	24	
22	38.1	38.7	35.2	32.2	25.2	22.9	20.5	40.5	15.9	14.7	7.6	7.1	7.6	7.1	7.6	6.5	22.3	31.6	29.3	30.5	21.1	S	19.4	10.7	40.5	21.4	24	
23	16	16	14.2	8.9	4.3	2.5	9.5	9.5	4.3	3.1	1.3	1.3	Y	Y	Y	Y	Y	15.8	22.3	14.1	S	29.3	4.2	3.6	29.3	10.0	19	
24	3	1.8	1.8	1.2	2.4	3	3	4.1	3.6	Y	Y	Y	3.6	1.8	0.6	3	4.2	4.8	0.6	S	3	1.2	1.2	1.2	4.8	2.5	21	
25	1.2	0.6	1.8	1.8	1.2	2.4	2.4	2.4	1.8	1.2	1.8	4.2	4.1	4.2	4.8	4.2	14.1	21.1	S	55.1	39.3	48.7	73.2	50.5	73.2	14.9	24	
26	41	46.9	43.4	41.6	37	34	33.4	34	22.9	15.3	11.8	10	7	18.1	10	5.9	12.4	S	30.5	31.6	40.5	16.5	17.6	19.4	46.9	25.3	24	
27	20	17	29.3	28.2	20.5	22.9	35.7	36.3	7.6	4.8	4.8	4.2	2.4	1.8	1.8	2.4	S	31.1	22.9	17	22.3	36.3	25.2	27.6	36.3	18.4	24	
28	28.8	11.8	24.1	14.1	13.5	15.3	18.8	21.7	11.8	7.1	7.6	3	4.2	3.6	3	S	3.6	1.8	1.2	4.8	18.8	24.1	12.9	13	28.8	11.7	24	
HOURLY MAX	41	47	43	42	37	34	37	41	27	25	18	26	16	20	18	22	53	38	43	55	43	52	73	55				
HOURLY AVG	14.1	12.6	12.9	11.9	12.6	12.3	14.7	16.2	10.8	9.1	7.4	6.7	5.3	6.1	7.0	6.7	11.0	13.4	12.5	16.8	16.7	16.0	13.5	14.1				

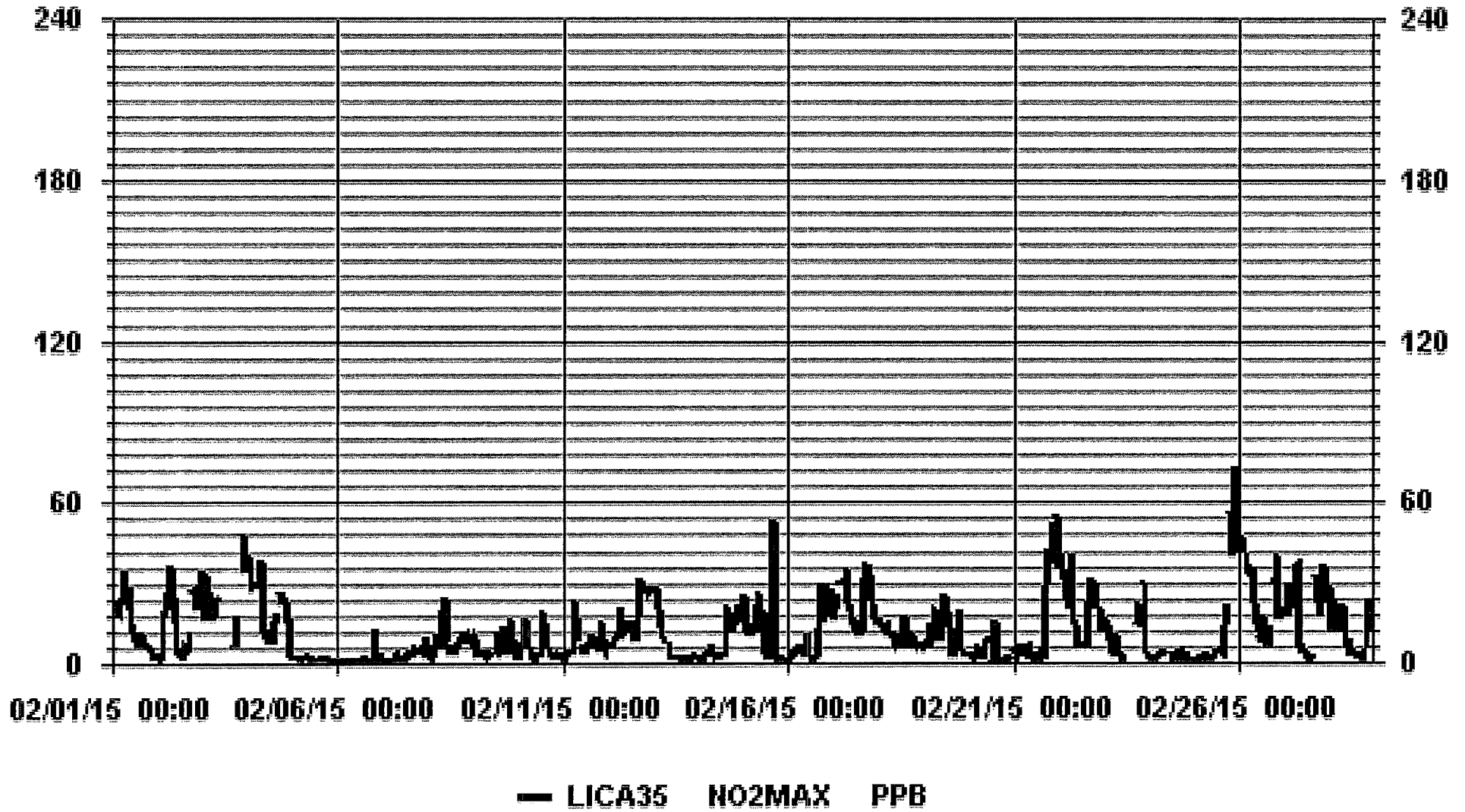
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	625					
MAXIMUM INSTANTANEOUS VALUE:	73.2	PPB	@ HOUR(S)	22	ON DAY(S)	25
				VAR-VARIOUS		
12S CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	663	HRS	
MONTHLY CALIBRATION TIME:	8	HRS				
STANDARD DEVIATION:	11.60					

### 01 Hour Averages



LICA-ELK  
 NO2\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-ELK  
 Parameter : NO2\_  
 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	6.68	1.27	2.07	7.80	11.94	16.40	5.41	1.43	.79	1.75	2.38	6.36	10.66	8.75	9.07	7.16	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	6.68	1.27	2.07	7.80	11.94	16.40	5.41	1.43	.79	1.75	2.38	6.36	10.66	8.75	9.07	7.16	

Calm : .00 %

Total # Operational Hours : 628

Distribution By Samples





Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	42	8	13	49	75	103	34	9	5	11	15	40	67	55	57	45	628
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	42	8	13	49	75	103	34	9	5	11	15	40	67	55	57	45	

Calm : .00 %

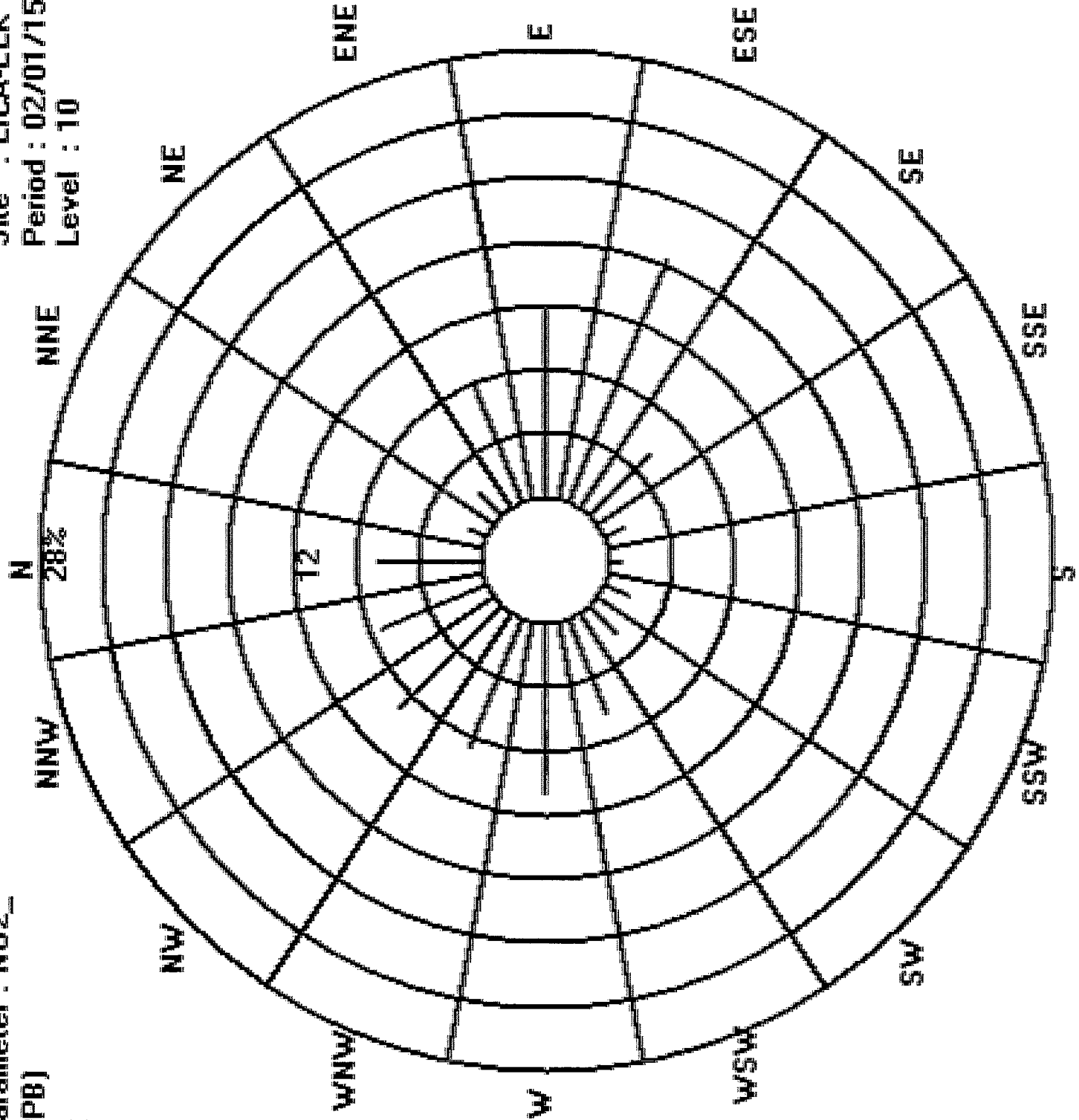
Total # Operational Hours : 628

Logger : 35 Parameter : NO2\_

Class Limits (PPB)

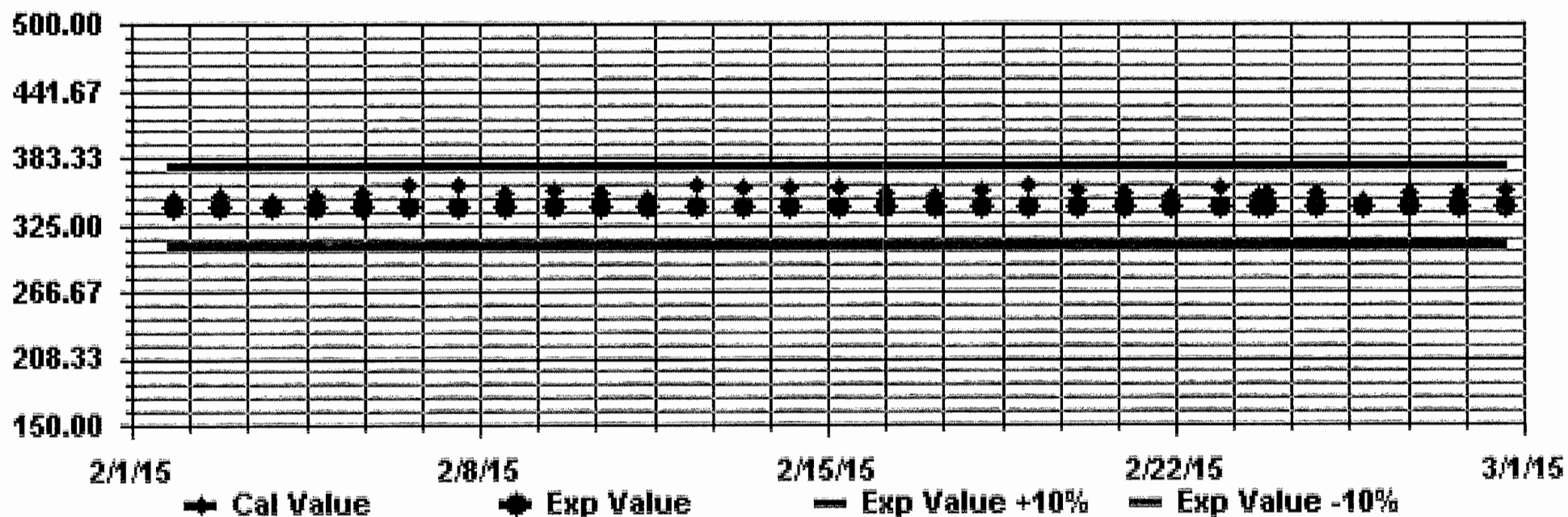
-  >= 210.0
-  < 210.0
-  < 110.0
-  < 50.0

Site : LICA-ELK  
Period : 02/01/15-02/28/15  
Level : 10





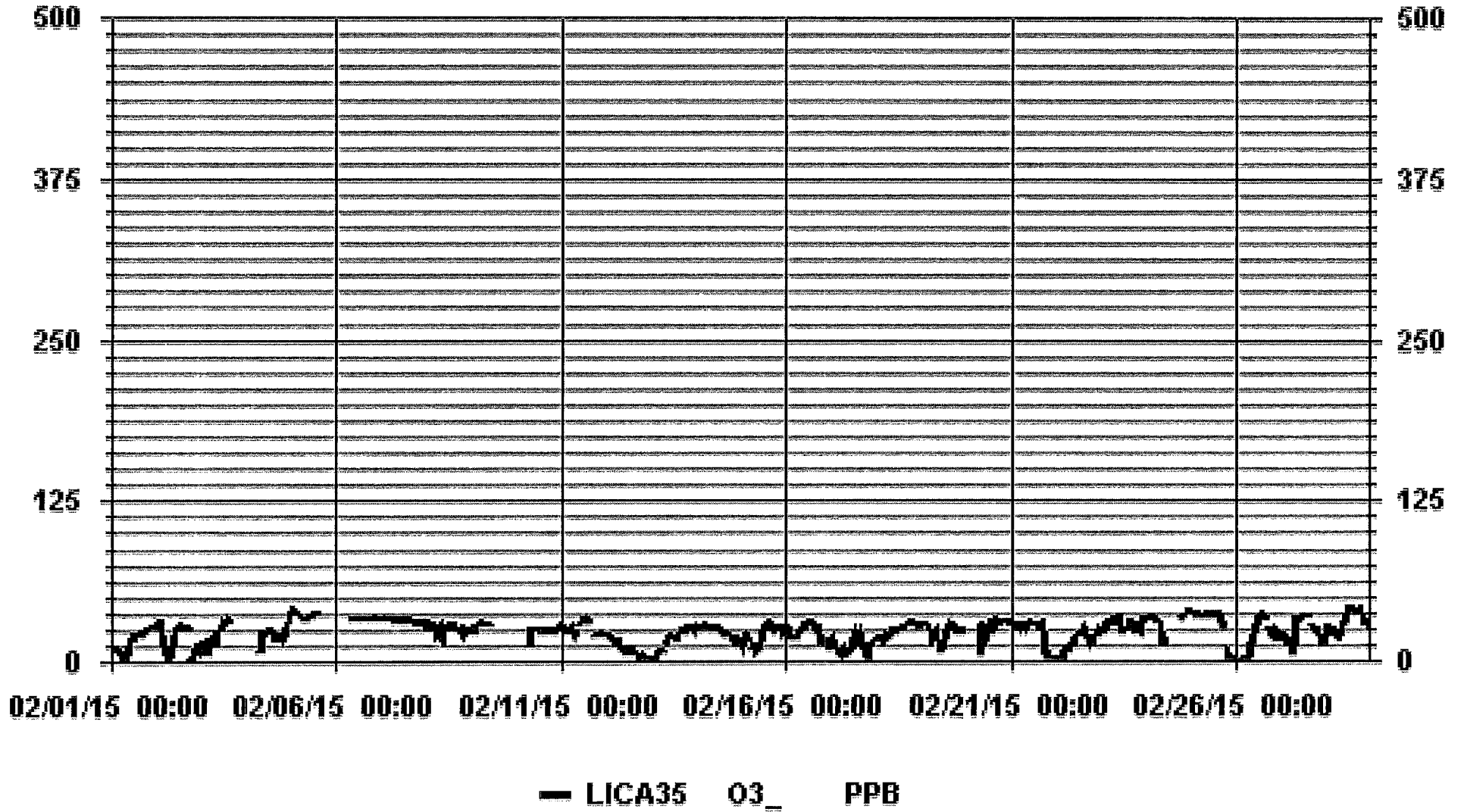
Calibration Graph for Site: LICA35 Parameter: NO2\_ Sequence: NO2 Phase: SPAN



**OZONE**



### 01 Hour Averages





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

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	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	12	11	12	14	10	8	9	6	11	15	17	19	23	23	22	26	25	24	26	5	27	27	28	28	28	18.4	24	
2	30	31	32	31	19	15	7	12	16	26	28	29	30	29	28	27	28	28	S	9	11	14	18	15	32	22.3	24	
3	16	20	12	13	24	23	27	24	25	28	29	32	30	33	37	35	C	C	C	C	X	X	X	X	X	37	25.5	20
4	X	X	X	X	X	X	X	45	25	S	24	26	27	28	27	22	S	24	24	22	26	30	36	40	45	28.4	17	
5	41	41	40	39	38	37	36	34	35	36	36	37	37	38	37	S	X	X	X	X	X	X	X	X	41	37.5	16	
6	X	X	X	X	X	X	X	X	S	34	34	34	34	34	S	34	34	34	34	35	35	35	34	34	35	34.2	16	
7	34	35	35	34	34	34	34	33	32	33	33	33	33	S	34	33	33	33	33	32	32	32	33	32	35	33.2	24	
8	31	32	32	30	29	26	28	29	25	24	29	29	S	30	30	30	27	27	26	24	29	29	25	26	32	28.1	24	
9	27	28	30	30	31	31	31	31	31	30	31	S	X	X	X	X	X	X	X	X	X	X	X	X	31	30.1	12	
10	X	X	X	X	X	X	X	25	26	26	S	27	26	25	26	27	27	25	25	26	26	26	29	31	31	26.4	17	
11	28	29	27	27	26	28	28	24	25	S	32	34	35	35	35	35	Y	Y	S	23	24	24	23	23	35	28.3	22	
12	23	22	22	20	19	18	18	16	5	13	14	9	12	13	13	10	8	6	7	5	4	3	3	3	23	12.7	24	
13	2	2	3	7	8	11	10	5	18	20	21	21	21	20	22	27	27	25	25	29	28	28	27	28	29	18.7	24	
14	29	28	27	29	29	30	S	28	27	27	27	27	28	28	32	26	25	26	26	21	21	19	21	20	32	26.1	24	
15	19	17	19	23	21	5	19	18	12	13	18	24	25	35	34	34	31	29	28	27	27	27	23	26	35	23.9	24	
16	29	29	23	21	5	20	23	24	27	29	30	30	31	31	29	28	29	24	22	21	19	18	14	31	25.3	24		
17	20	22	19	5	13	12	13	6	11	10	12	16	22	24	22	24	22	18	19	14	8	15	16	17	24	16.3	24	
18	19	18	5	19	20	22	21	22	23	25	25	25	26	27	28	29	31	31	31	32	31	31	31	29	32	25.9	24	
19	31	5	31	31	28	27	21	24	24	24	12	14	29	30	31	30	29	28	25	29	26	26	24	31	25.5	24		
20	S	X	X	X	X	X	X	25	31	32	33	26	33	34	29	34	34	33	32	33	32	32	S	34	31.6	18		
21	31	30	29	29	28	30	31	30	28	31	32	32	31	30	31	31	30	14	13	4	2	5	Y	32	26.3	23		
22	2	1	1	5	10	13	15	14	14	16	20	22	23	25	25	27	26	25	19	20	25	5	26	26	27	17.4	24	
23	26	25	29	31	33	34	33	31	32	35	40	37	28	32	32	38	36	35	26	33	S	31	33	33	40	32.3	24	
24	35	35	35	36	35	34	33	33	33	24	19	C	C	C	Y	C	C	C	C	C	36	37	40	39	40	33.6	23	
25	39	39	38	37	37	37	36	36	37	37	38	37	37	38	37	37	36	36	S	18	8	2	7	5	39	30.8	24	
26	1	1	1	1	1	1	2	10	17	21	25	34	37	37	39	39	39	S	33	29	26	28	26	25	39	20.6	24	
27	22	22	21	15	18	19	14	30	33	33	35	35	36	36	36	36	S	34	29	28	27	28	25	21	36	27.5	24	
28	28	32	28	26	28	28	26	24	28	31	35	39	41	41	41	S	40	41	42	41	38	39	34	34	42	34.1	24	
HOURLY MAX	41	41	40	39	38	37	36	45	37	37	40	39	41	41	41	39	40	41	42	41	38	39	40	40				
HOURLY AVG	24.0	23.9	23.7	23.8	23.4	23.4	22.4	24.4	24.8	25.9	27.0	27.9	28.8	30.2	30.3	30.2	29.5	28.4	26.2	24.5	24.0	24.4	25.6	24.9				

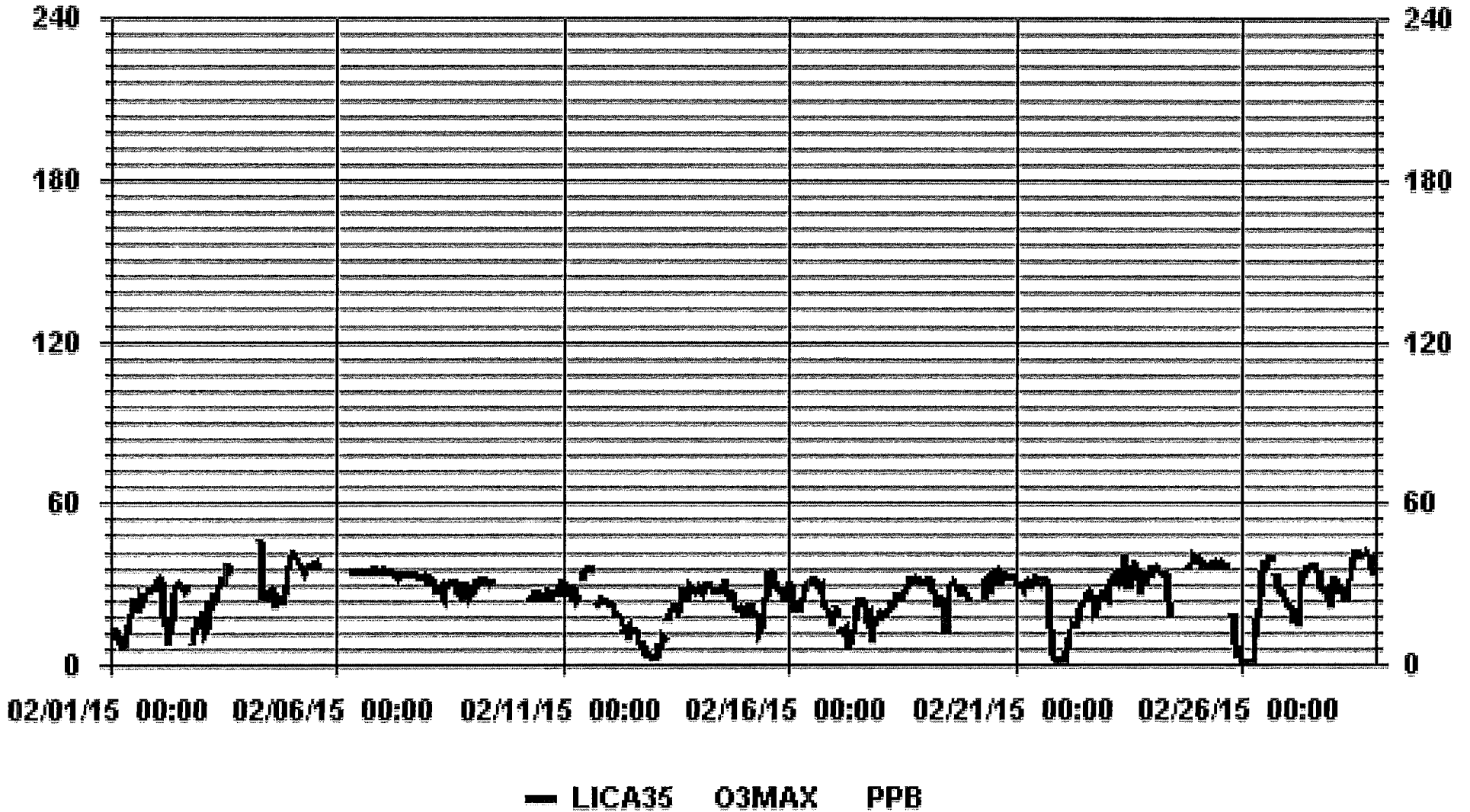
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	574
MAXIMUM INSTANTANEOUS VALUE:	45 PPB @ HOUR(S) 7 ON DAY(S) 4
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	12 HRS
STANDARD DEVIATION:	8.98
OPERATIONAL TIME:	616 HRS

### 01 Hour Averages



LICA-ELK  
 O3\_ / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-ELK  
 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	6.62	1.04	1.74	5.22	11.67	17.24	5.22	1.56	.87	1.74	2.61	7.14	11.49	9.40	9.23	7.14	100.00
< 110	.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
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.62	1.04	1.74	5.22	11.67	17.24	5.22	1.56	.87	1.74	2.61	7.14	11.49	9.40	9.23	7.14	

Calm : .00 %

Total # Operational Hours : 574

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50	38	6	10	30	67	99	30	9	5	10	15	41	66	54	53	41	574
< 110																	
< 210																	
>= 210																	
Totals	38	6	10	30	67	99	30	9	5	10	15	41	66	54	53	41	

Calm : .00 %

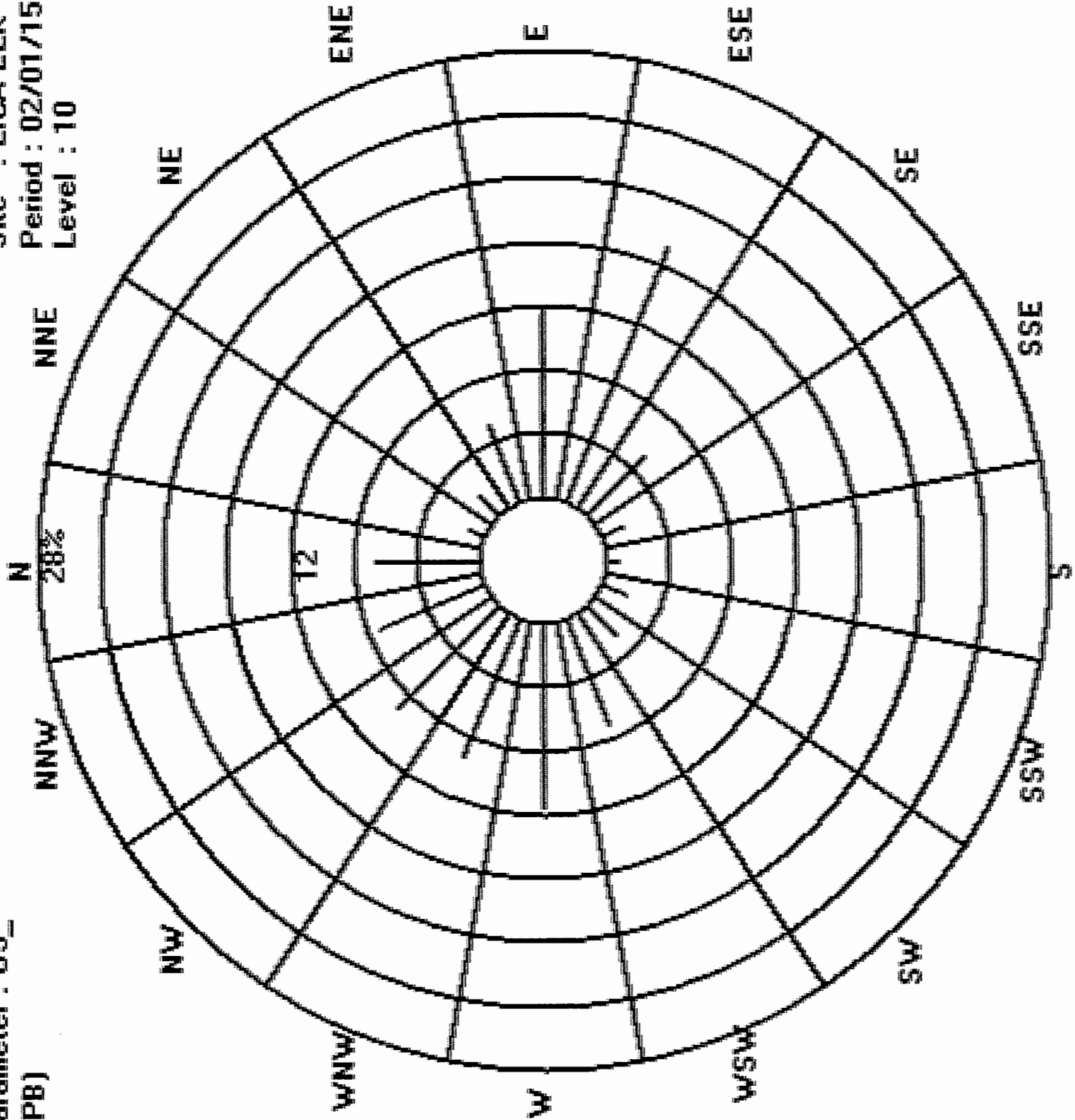
Total # Operational Hours : 574

Logger : 35 Parameter : 03\_

Class Limits (PPB)

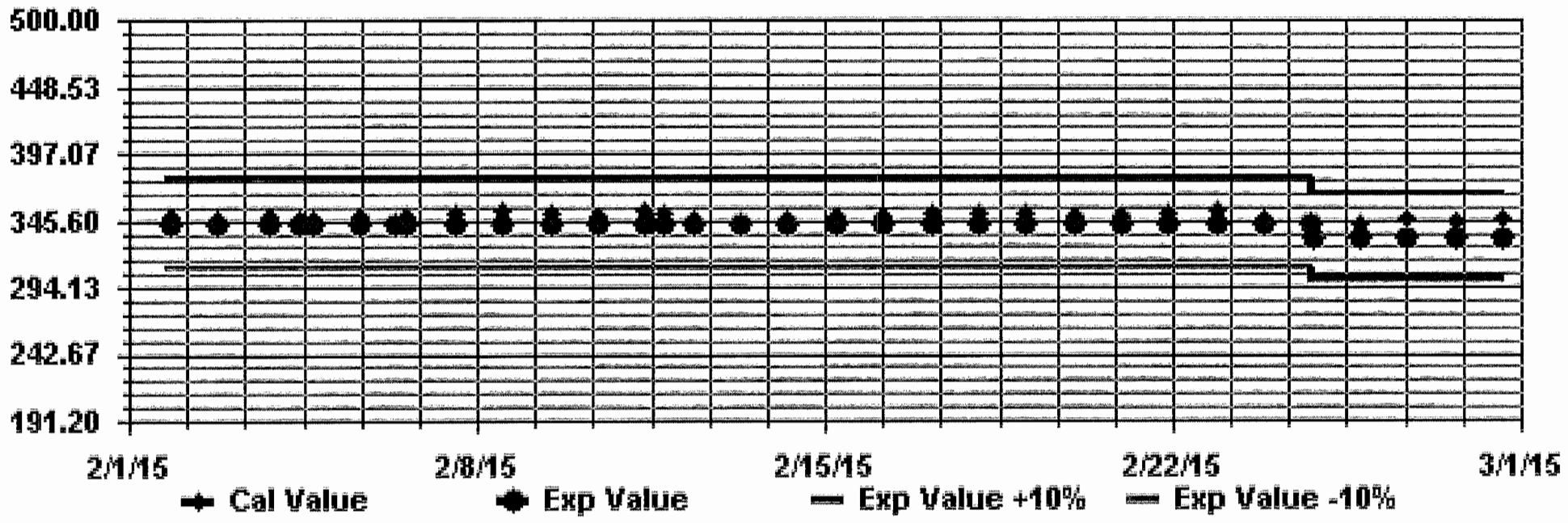


Site : LICA-ELK  
Period : 02/01/15-02/28/15  
Level : 10





Calibration Graph for Site: LICA35 Parameter: O3\_ Sequence: 03 Phase: SPAN



***PARTICULATE MATTER 2.5***

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

**MST**

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.	
HOUR END:	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.		
DAY																												
1	7.0	2.0	1.0	6.0	4.0	8.0	11.0	10.0	12.0	5.0	7.0	9.0	4.0	7.0	16.0	8.0	12.0	12.0	6.0	5.0	5.0	6.0	4.0	1.0	16.0	7.0	24	
2	0.0	4.0	0.0	0.0	5.0	2.0	2.0	3.0	2.0	0.0	6.0	7.0	1.0	X	2.0	6.0	4.0	2.0	2.0	4.0	1.0	2.0	4.0	7.0	7.0	2.9	23	
3	3.0	4.0	9.0	6.0	0.0	3.0	1.0	4.0	2.0	5.0	1.0	7.0	7.0	7.0	0.0	6.0	6.0	C	6.0	0.0	2.0	1.0	2.0	5.0	9.0	3.8	24	
4	X	0.0	1.0	3.0	0.0	5.0	3.0	7.0	4.0	0.0	9.0	11.0	5.0	18.0	11.0	16.0	24.0	27.0	12.0	0.0	20.0	3.0	0.0	8.0	27.0	8.1	23	
5	X	5.0	9.0	0.0	5.0	0.0	2.0	1.0	3.0	0.0	4.0	0.0	X	X	4.0	X	0.0	2.0	6.0	0.0	4.0	0.0	1.0	0.0	9.0	2.3	20	
6	7.0	4.0	8.0	7.0	3.0	3.0	1.0	2.0	4.0	1.0	7.0	3.0	5.0	7.0	6.0	X	2.0	6.0	2.0	0.0	6.0	7.0	5.0	3.0	8.0	4.3	23	
7	12.0	2.0	7.0	8.0	0.0	9.0	6.0	6.0	X	8.0	3.0	1.0	6.0	10.0	2.0	3.0	7.0	X	2.0	3.0	10.0	1.0	4.0	8.0	12.0	5.4	22	
8	3.0	5.0	11.0	17.0	4.0	4.0	10.0	12.0	0.0	15.0	0.0	11.0	5.0	2.0	9.0	0.0	5.0	X	8.0	5.0	0.0	4.0	5.0	9.0	17.0	6.3	23	
9	5.0	4.0	7.0	3.0	5.0	4.0	3.0	7.0	4.0	3.0	8.0	0.0	5.0	8.0	X	0.0	7.0	9.0	1.0	7.0	9.0	2.0	3.0	1.0	9.0	4.6	23	
10	6.0	9.0	3.0	8.0	7.0	6.0	8.0	7.0	0.0	6.0	7.0	7.0	0.0	9.0	6.0	8.0	0.0	6.0	5.0	3.0	5.0	2.0	4.0	10.0	10.0	5.5	24	
11	4.0	0.0	2.0	2.0	2.0	0.0	3.0	3.0	5.0	0.0	5.0	2.0	3.0	1.0	2.0	1.0	0.0	0.0	0.0	4.0	0.0	2.0	3.0	0.0	5.0	1.8	24	
12	5.0	3.0	6.0	5.0	10.0	8.0	9.0	3.0	8.0	5.0	21.0	13.0	20.0	21.0	18.0	20.0	16.0	18.0	20.0	17.0	15.0	19.0	16.0	10.0	21.0	12.8	24	
13	15.0	18.0	15.0	15.0	18.0	13.0	13.0	12.0	12.0	11.0	6.0	0.0	3.0	4.0	5.0	4.0	5.0	8.0	4.0	4.0	2.0	2.0	0.0	3.0	18.0	8.0	24	
14	5.0	2.0	6.0	2.0	6.0	2.0	4.0	0.0	0.0	3.0	8.0	0.0	7.0	10.0	6.0	7.0	6.0	9.0	8.0	7.0	10.0	7.0	5.0	14.0	14.0	5.6	24	
15	10.0	14.0	3.0	4.0	0.0	3.0	X	1.0	4.0	12.0	8.0	5.0	7.0	X	0.0	X	X	0.0	0.0	0.0	0.0	0.0	X	0.0	14.0	3.7	19	
16	0.0	14.0	0.0	1.0	0.0	6.0	3.0	0.0	X	2.0	3.0	0.0	2.0	2.0	3.0	4.0	0.0	1.0	2.0	4.0	0.0	5.0	3.0	6.0	14.0	2.7	23	
17	1.0	1.0	1.0	2.0	5.0	1.0	0.0	3.0	0.0	5.0	11.0	12.0	2.0	3.0	3.0	3.0	3.0	C	0.0	1.0	4.0	4.0	4.0	1.0	12.0	3.0	24	
18	8.0	3.0	X	3.0	1.0	4.0	5.0	1.0	7.0	0.0	5.0	X	X	0.0	0.0	X	X	0.0	X	3.0	10.0	14.0	0.0	X	14.0	3.8	17	
19	X	8.0	3.0	X	0.0	7.0	0.0	10.0	5.0	6.0	0.0	9.0	11.0	10.0	10.0	9.0	8.0	8.0	16.0	5.0	16.0	2.0	3.0	3.0	16.0	6.8	22	
20	1.0	1.0	4.0	5.0	2.0	3.0	5.0	4.0	0.0	X	8.0	0.0	15.0	6.0	X	0.0	0.0	2.0	13.0	5.0	2.0	5.0	0.0	8.0	15.0	4.0	22	
21	1.0	4.0	0.0	0.0	6.0	2.0	3.0	3.0	2.0	4.0	3.0	1.0	10.0	8.0	X	X	8.0	4.0	7.0	1.0	9.0	7.0	1.0	5.0	10.0	4.0	22	
22	2.0	5.0	6.0	6.0	6.0	8.0	7.0	5.0	8.0	5.0	6.0	10.0	18.0	2.0	X	4.0	14.0	8.0	13.0	14.0	2.0	X	8.0	16.0	18.0	7.9	22	
23	6.0	5.0	0.0	2.0	0.0	1.0	0.0	2.0	1.0	0.0	3.0	8.0	X	X	2.0	3.0	2.0	3.0	2.0	7.0	0.0	0.0	5.0	X	8.0	2.5	21	
24	1.0	0.0	X	0.0	X	0.0	2.0	0.0	4.0	2.0	3.0	0.0	X	3.0	1.0	0.0	3.0	0.0	0.0	0.0	1.0	0.0	2.0	0.0	4.0	1.0	21	
25	0.0	3.0	0.0	0.0	0.0	1.0	0.0	3.0	0.0	2.0	X	0.0	3.0	1.0	8.0	8.0	2.0	8.0	11.0	6.0	7.0	2.0	3.0	4.0	11.0	3.1	23	
26	4.0	3.0	6.0	10.0	2.0	0.0	1.0	5.0	8.0	2.0	2.0	3.0	6.0	11.0	13.0	0.0	0.0	0.0	4.0	3.0	4.0	6.0	5.0	4.0	13.0	4.3	24	
27	0.0	7.0	7.0	5.0	9.0	3.0	6.0	6.0	0.0	5.0	X	20.0	X	X	2.0	17.0	11.0	7.0	0.0	3.0	5.0	4.0	4.0	7.0	20.0	6.1	21	
28	1.0	0.0	3.0	6.0	5.0	3.0	6.0	7.0	4.0	X	0.0	X	6.0	4.0	6.0	10.0	7.0	0.0	0.0	6.0	0.0	2.0	0.0	6.0	10.0	3.7	22	
HOURLY MAX	15.0	18.0	15.0	17.0	18.0	13.0	13.0	12.0	12.0	15.0	21.0	20.0	20.0	21.0	18.0	20.0	24.0	27.0	20.0	17.0	20.0	19.0	16.0	16.0				
HOURLY AVG	4.3	4.6	4.5	4.7	3.9	3.9	4.2	4.5	3.8	4.1	5.5	5.3	6.6	6.7	5.6	6.0	5.8	5.8	5.6	4.2	5.3	4.0	3.5	5.3				

**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

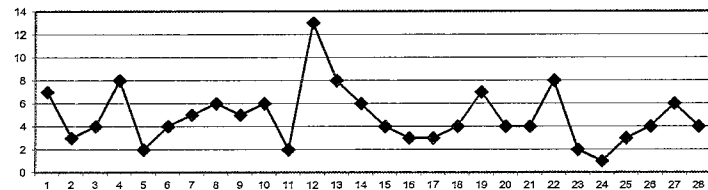
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR 30 ug/m3

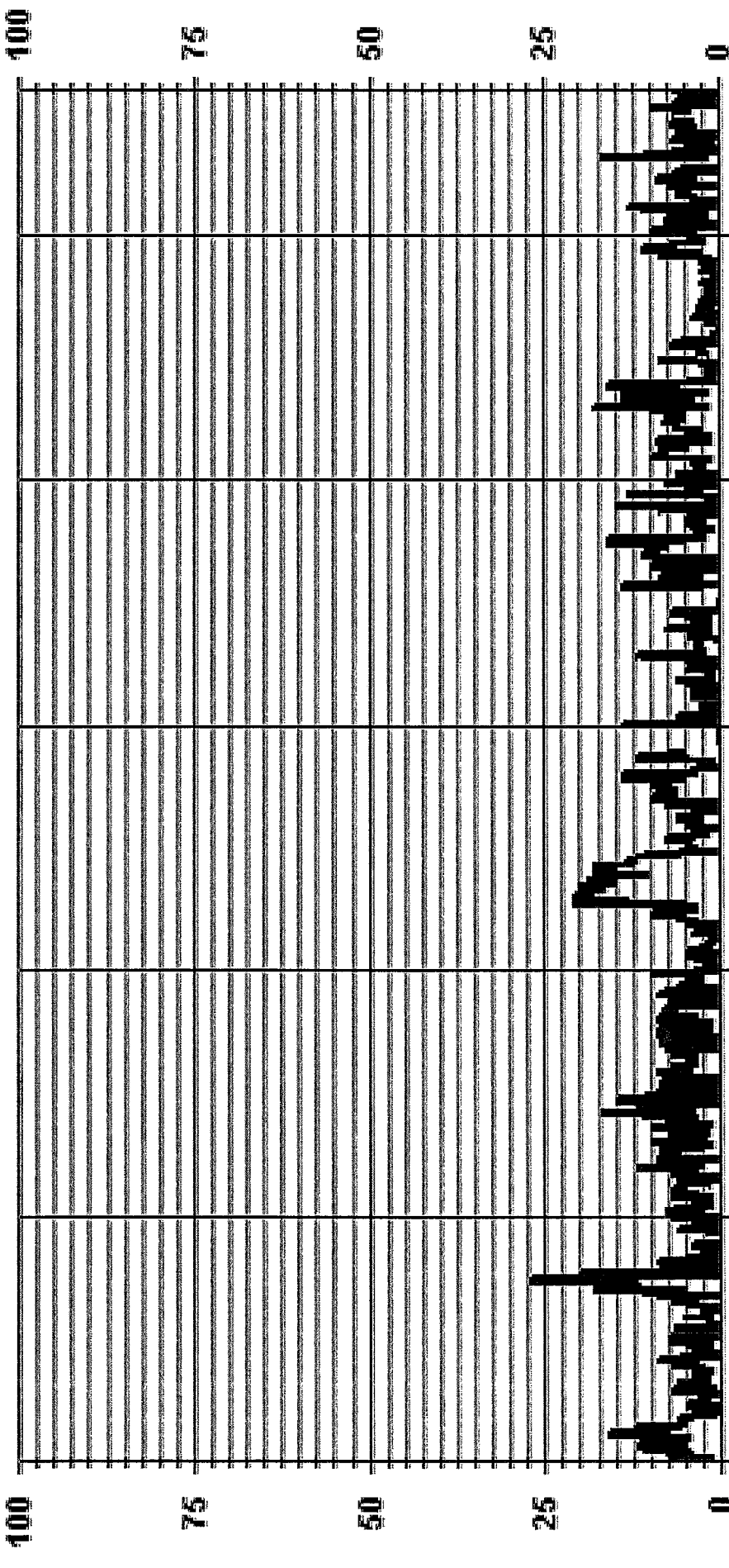
**MONTHLY SUMMARY**

NUMBER OF 24-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	512		
MAXIMUM 1-HR AVERAGE:	27.0 ug/m3 @ HOUR(5)	17	ON DAY(S) 4
MAXIMUM 24-HR AVERAGE:	12.8 ug/m3		ON DAY(S) 12
			VAR-VARIOUS
MONTHLY CALIBRATION TIME:	2 HRS	OPERATIONAL TIME:	628 HRS
STANDARD DEVIATION:	4.56	AMD OPERATION UPTIME:	93.5 %
		MONTHLY AVERAGE:	4.9 ug/m3

24 HOUR AVERAGES FOR FEBRUARY 2015



01 Hour Averages



— LICA35 PM2 UG/M3

LICA-ELK  
 PM2 / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
 Site Name : LICA-ELK  
 Parameter : PM2  
 Units : UG/M3

Wind Parameter : WDR  
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	6.23	.95	2.23	7.66	11.66	15.97	5.43	1.43	.79	1.75	2.39	6.38	11.82	8.62	9.42	7.18	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 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	6.23	.95	2.23	7.66	11.66	15.97	5.43	1.43	.79	1.75	2.39	6.38	11.82	8.62	9.42	7.18	

Calm : .00 %

Total # Operational Hours : 626

Distribution By Samples

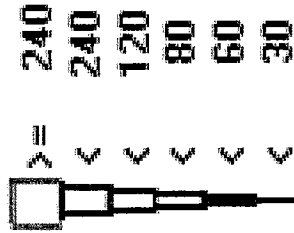
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30	39	6	14	48	73	100	34	9	5	11	15	40	74	54	59	45	626
< 60																	
< 80																	
< 120																	
< 240																	
>= 240																	
Totals	39	6	14	48	73	100	34	9	5	11	15	40	74	54	59	45	

Calm : .00 %

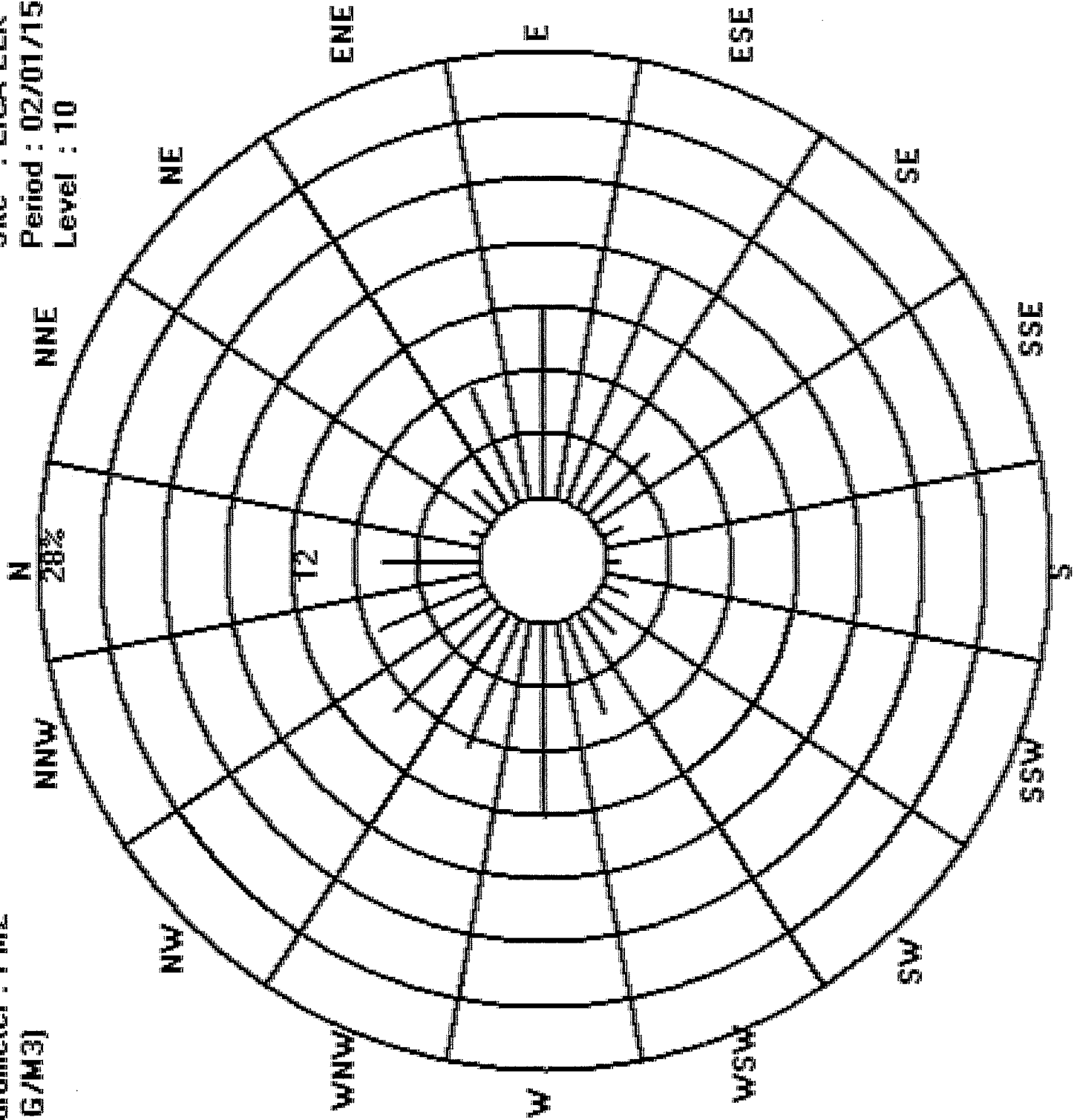
Total # Operational Hours : 626

Logger : 35 Parameter : PM2

Class Limits (UG/M3)



Site : LICA-ELK  
Period : 02/01/15-02/28/15  
Level : 10



***WIND SPEED***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

WIND SPEED (WS) hourly averages in km/hr

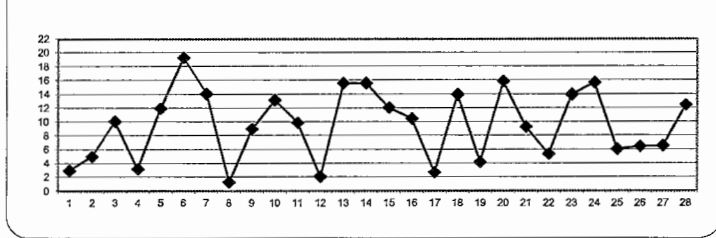
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOURLY START	HOURLY END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MAX.	AVG.	RDGS.
DAY																												
1		3.7	2.8	6.2	5.3	4.9	4.5	5.3	3.1	1.6	2.4	2.0	2.2	3.0	5.6	6.5	10.8	11.1	11.7	7.7	10.2	11.1	9.6	8.8	9.7	11.7	6.2	24
2		13.1	11.8	4.7	6.4	6.6	5.0	3.8	5.0	2.7	3.6	5.2	9.6	9.3	6.2	4.6	6.9	6.1	6.0	5.8	7.6	7.3	8.6	7.3	4.8	13.1	6.6	24
3		5.9	8.1	5.4	4.9	9.6	11.8	11.4	9.4	6.6	7.4	8.0	11.7	20.7	19.2	28.0	24.9	18.7	12.9	13.6	7.2	4.6	5.9	3.0	1.4	28.0	10.8	24
4		1.0	4.2	2.1	3.7	4.4	4.3	7.2	6.6	12.2	10.3	6.9	8.2	8.6	8.6	6.1	4.9	14.3	18.3	13.3	12.7	13.8	12.4	10.3	12.2	18.3	8.6	24
5		14.5	15.1	14.3	17.4	16.2	14.7	14.4	12.3	12.3	15.1	11.5	15.1	14.7	16.3	17.0	17.1	17.1	15.0	12.9	11.9	14.0	14.9	15.6	19.4	19.4	15.0	24
6		19.0	18.5	19.4	16.6	17.2	21.9	20.0	18.6	17.0	18.3	18.9	22.2	23.6	24.8	23.6	19.5	18.4	19.4	14.8	16.8	24.0	24.3	22.9	15.9	24.8	19.8	24
7		14.0	13.1	11.1	11.1	13.5	11.5	12.9	13.8	16.1	18.2	18.0	18.4	15.8	19.1	17.4	16.2	17.6	12.6	15.7	15.1	12.5	13.0	14.1	10.6	19.1	14.6	24
8		5.5	6.9	2.9	2.7	0.9	0.7	2.1	0.5	3.8	5.4	2.6	2.2	1.7	2.7	0.7	3.6	1.8	1.6	0.7	4.8	5.1	5.6	8.0	8.1	3.4	24	
9		8.7	10.6	15.3	17.8	18.0	17.0	18.0	19.6	17.8	14.0	17.7	16.6	16.2	12.2	10.4	5.4	4.5	2.5	1.5	6.1	4.8	2.6	5.4	7.4	19.6	11.3	24
10		9.1	7.8	11.3	12.0	10.5	11.6	13.9	16.0	15.3	15.0	15.4	15.2	17.1	14.3	12.4	13.8	14.3	14.9	14.7	15.8	13.9	13.3	15.1	15.3	17.1	13.7	24
11		13.3	9.0	6.2	5.7	4.1	9.7	2.6	5.8	7.4	8.8	10.9	14.9	16.1	18.1	20.3	19.3	22.6	23.8	17.4	18.2	15.9	16.8	11.5	15.9	23.8	13.1	24
12		12.6	6.2	8.2	6.8	5.7	5.9	3.8	3.0	4.2	2.3	1.4	2.6	4.9	6.3	5.4	5.2	4.2	1.3	4.6	3.7	2.6	0.5	1.4	2.1	12.6	4.4	24
13		0.9	1.5	5.0	5.3	6.2	9.1	7.8	10.1	13.5	14.5	16.5	15.5	16.0	17.3	16.8	23.3	23.3	27.2	23.6	26.9	24.2	27.2	29.5	30.7	30.7	16.3	24
14		31.2	34.3	36.0	34.2	23.4	13.9	17.0	25.1	24.4	18.1	17.0	17.6	17.2	15.7	10.3	11.5	9.9	9.1	8.7	9.0	5.8	2.2	1.3	1.4	36.0	16.4	24
15		4.2	11.3	13.9	12.9	11.9	9.8	9.4	5.0	6.5	3.5	7.2	13.1	16.5	22.0	26.5	26.7	20.3	19.5	18.1	22.1	21.5	21.2	17.8	15.7	26.7	14.9	24
16		14.3	11.7	12.4	11.4	10.5	9.6	15.0	15.6	14.5	12.6	11.5	12.6	9.7	12.8	11.9	13.4	14.5	14.2	14.9	14.2	13.7	9.2	12.0	13.6	15.6	12.7	24
17		12.8	12.1	14.0	15.6	12.1	8.6	9.0	8.0	7.1	3.4	1.5	3.0	6.5	1.5	0.8	1.5	2.7	4.4	4.7	6.7	8.5	7.5	8.0	8.4	15.6	7.0	24
18		9.6	9.7	8.7	14.1	14.2	14.7	15.2	17.2	14.8	13.9	14.4	17.0	15.7	16.4	16.9	15.6	16.8	14.3	15.4	13.9	10.4	10.7	13.3	13.6	17.2	14.0	24
19		13.0	11.5	9.6	4.2	1.9	5.0	1.8	4.1	2.6	2.2	2.3	1.0	2.8	10.8	16.8	17.4	13.5	10.7	10.1	6.7	15.1	17.2	16.9	17.7	17.7	9.0	24
20		16.3	17.6	15.7	16.4	16.2	16.6	16.3	24.9	29.6	24.5	21.6	20.9	22.3	18.7	16.3	17.3	17.0	13.1	8.1	8.8	7.6	6.4	8.0	9.1	29.6	16.2	24
21		10.5	11.6	12.6	12.8	13.2	14.5	13.2	12.4	11.3	7.7	11.8	13.3	14.9	14.2	14.2	12.4	11.2	7.3	7.3	5.7	1.7	3.3	0.7	1.4	14.9	10.0	24
22		4.6	2.1	4.2	5.0	5.9	6.5	7.2	9.1	7.7	8.8	7.8	9.7	9.2	10.1	13.5	12.1	8.8	8.8	6.6	3.1	6.0	11.1	10.1	13.1	13.5	8.0	24
23		11.7	8.4	19.5	29.3	26.6	27.1	21.4	15.7	16.1	21.5	18.2	25.4	19.1	16.6	15.5	13.9	14.2	9.7	6.2	7.6	6.7	6.4	5.9	7.3	29.3	15.4	24
24		12.3	9.4	15.5	17.9	18.4	26.5	29.2	30.2	26.8	30.2	29.9	24.7	20.0	17.7	13.7	10.1	9.7	10.3	12.4	11.4	11.2	11.8	11.9	13.6	30.2	17.7	24
25		15.8	8.6	5.6	11.4	11.1	9.6	11.0	9.8	10.2	10.5	10.0	2.3	3.9	8.2	7.5	9.2	9.9	7.4	5.7	5.2	6.3	3.6	2.3	4.5	15.8	7.9	24
26		2.2	0.5	0.6	5.4	3.8	5.2	2.9	5.5	5.0	7.1	8.2	8.1	9.6	11.1	11.0	11.6	14.6	11.5	9.5	9.7	8.2	6.4	6.5	6.8	14.6	7.1	24
27		7.3	6.4	2.7	0.1	0.6	1.4	3.8	5.6	11.2	10.6	9.9	14.7	13.6	14.8	15.8	14.9	14.5	11.4	10.6	9.5	7.7	10.5	7.7	4.2	15.8	8.7	24
28		10.5	12.2	11.6	15.2	8.6	8.7	8.5	11.2	12.0	9.8	12.5	17.7	21.0	29.0	27.9	23.6	21.8	18.0	13.7	9.8	12.4	11.6	8.4	10.0	29.0	14.4	24
HOURLY MAX		31.2	34.3	36.0	34.2	26.6	27.1	29.2	30.2	29.6	30.2	29.9	25.4	23.6	29.0	28.0	26.7	23.3	27.2	23.6	26.9	24.2	27.2	29.5	30.7			
HOURLY AVG		10.6	10.1	10.5	11.5	10.6	10.9	10.9	11.5	11.8	11.4	11.4	12.7	13.2	13.9	13.9	13.6	13.3	12.0	10.7	10.7	10.6	10.5	10.1	10.5			

STATUS FLAG CODES

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

LAST CALIBRATION:	February 21, 2014
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

24 HOUR AVERAGES FOR FEBRUARY 2015

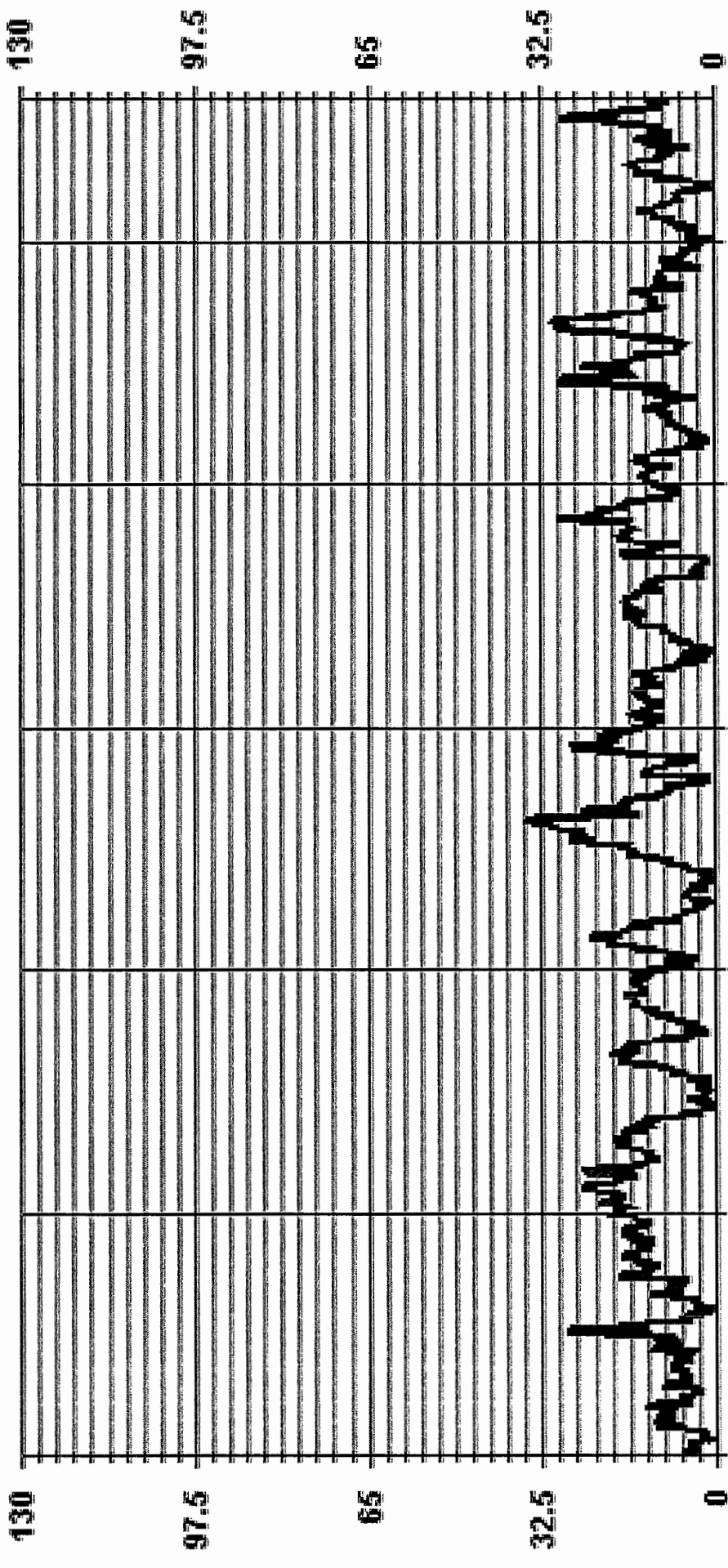


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	672
MAXIMUM 1-HR AVERAGE:	36.0 KPH @ HOUR(S) 2 ON DAY(S) 14
MAXIMUM 24-HR AVERAGE:	19.8 KPH VAR-VARIOUS ON DAY(S) 6
MONTHLY CALIBRATION TIME:	0 HRS
STANDARD DEVIATION:	6.64
OPERATIONAL TIME:	672 HRS
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	11.5 KPH



01 Hour Averages



— LICA35 WSP KPH



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

VECTOR WIND SPEED MAX instantaneous maximum in km/hr

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	24-HOUR	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.
DAY																											
1	5.6	7.0	8.4	8.5	7.3	8.7	8.8	5.9	4.4	5.4	4.7	7.3	8.4	10.9	11.5	22.0	20.6	24.2	12.6	16.5	19.2	15.9	15.0	17.5	24.2	11.5	24
2	26.9	20.5	12.5	9.0	9.0	8.1	7.4	10.1	6.3	8.2	10.2	16.6	16.4	17.2	8.9	12.9	9.6	8.9	10.0	11.2	10.1	12.5	11.6	8.8	26.9	11.8	24
3	9.2	13.0	10.1	11.3	13.7	15.4	18.5	17.3	11.4	14.2	17.5	24.7	30.6	33.5	46.8	44.7	30.1	25.2	17.3	14.0	8.1	8.9	8.4	4.1	46.8	18.7	24
4	4.4	7.5	6.3	7.1	9.4	9.5	11.2	18.0	18.6	18.1	15.5	15.9	16.2	19.6	12.8	9.0	25.5	25.4	24.6	24.1	21.2	23.7	24.6	24.4	25.5	16.4	24
5	22.1	27.1	22.8	31.5	31.7	26.0	28.9	21.5	25.0	25.5	20.4	27.1	26.2	25.2	28.2	28.5	34.1	26.6	23.6	22.6	26.0	27.1	29.3	34.2	34.2	26.7	24
6	32.2	32.6	34.2	28.6	29.5	35.6	36.5	30.9	32.4	30.1	33.4	38.8	37.2	39.7	34.1	33.3	31.2	31.2	24.8	34.0	33.4	40.3	35.1	23.8	40.3	33.0	24
7	23.0	21.9	20.6	19.1	24.5	19.0	22.7	20.9	25.2	28.7	29.2	28.4	27.1	31.8	25.4	23.2	23.4	22.2	22.3	22.7	19.8	18.3	21.3	20.6	31.8	23.4	24
8	11.4	15.2	5.6	6.0	5.8	3.6	6.8	4.6	7.1	9.6	6.4	6.0	14.2	9.5	5.0	7.3	6.6	5.2	5.6	9.3	9.7	10.2	14.0	13.2	15.2	8.2	24
9	14.0	16.6	21.2	27.9	26.9	27.1	28.9	27.5	26.6	20.3	26.3	23.7	23.7	21.2	15.4	12.2	10.3	6.2	3.9	8.0	7.0	9.5	9.3	11.1	28.9	17.7	24
10	13.9	13.3	17.8	17.6	16.5	18.9	22.5	25.3	24.0	22.8	22.4	23.0	27.1	22.3	18.4	21.2	21.9	26.9	27.7	26.5	23.7	28.5	28.2	28.5	22.2	24	
11	23.2	19.3	14.6	10.7	10.9	17.3	8.9	10.7	14.1	15.9	21.2	24.1	23.7	28.0	29.8	30.8	32.6	33.7	28.6	26.3	29.6	31.8	24.0	25.2	33.7	22.3	24
12	25.0	19.3	15.8	13.8	11.6	10.0	6.8	7.7	8.4	7.6	5.1	8.7	10.7	13.7	11.2	12.2	10.2	4.4	9.9	8.4	5.1	6.6	6.0	5.5	25.0	10.2	24
13	11.0	7.6	8.6	10.0	10.6	16.0	12.4	18.6	22.3	23.1	24.5	24.0	24.5	24.2	26.7	34.6	35.4	41.4	35.7	40.8	37.5	45.0	45.4	54.0	54.0	26.4	24
14	52.4	53.2	55.7	54.3	40.5	26.6	30.9	40.0	35.9	29.3	26.4	25.9	29.2	22.9	18.6	19.5	18.4	16.4	15.7	16.0	10.1	7.4	5.5	10.4	55.7	27.6	24
15	11.1	24.7	23.2	21.0	18.3	16.5	13.4	10.0	12.0	9.4	12.6	20.5	27.5	35.0	41.9	40.9	34.8	34.2	29.7	37.0	38.8	31.7	29.3	25.6	41.9	25.0	24
16	24.2	25.0	22.1	24.5	21.4	20.1	29.6	34.4	29.7	22.4	23.3	23.3	19.0	19.8	17.7	18.7	19.1	18.1	18.0	17.9	19.4	15.3	16.1	16.1	34.4	21.5	24
17	15.9	18.4	18.9	20.0	19.1	14.8	13.6	11.4	11.8	6.8	6.5	6.4	12.2	9.0	4.1	4.5	6.0	7.4	7.6	8.8	12.1	11.1	11.8	11.1	20.0	11.2	24
18	14.3	17.0	16.4	20.3	20.7	22.8	21.9	26.1	19.8	21.0	20.0	22.5	22.3	22.8	22.0	21.9	24.9	22.9	21.7	20.9	14.9	16.7	18.6	19.4	26.1	20.5	24
19	17.5	17.5	13.0	9.4	5.5	11.7	7.0	7.9	6.6	4.5	5.9	10.7	10.0	24.7	28.3	30.6	21.6	15.9	15.3	11.9	22.3	27.2	25.0	30.5	30.6	15.9	24
20	26.1	28.2	31.8	33.3	34.3	37.5	35.1	40.7	50.5	40.1	41.0	36.1	35.5	31.1	27.9	29.8	29.7	23.6	16.5	18.7	12.7	12.7	14.1	19.1	50.5	29.4	24
21	18.9	23.0	21.3	22.0	18.3	21.3	20.6	19.6	15.1	22.0	20.5	24.0	24.8	21.6	20.4	17.2	17.9	10.7	9.9	8.1	6.2	5.2	4.6	5.3	24.8	16.6	24
22	6.8	5.1	8.1	8.6	8.1	8.5	10.2	12.0	10.1	12.6	10.9	13.8	13.0	15.7	23.1	21.3	13.4	11.2	10.7	7.6	13.4	27.5	27.4	27.5	27.5	13.4	24
23	19.9	16.9	35.4	48.1	45.1	42.3	36.4	29.5	35.6	37.9	33.5	45.3	40.7	30.9	31.6	23.3	19.4	16.3	12.4	13.1	10.9	12.2	11.1	15.1	48.1	27.6	24
24	22.5	16.1	27.1	26.6	26.9	39.3	44.4	43.8	38.3	44.0	44.8	37.4	29.1	28.9	21.6	19.4	16.8	18.6	21.4	19.4	23.6	24.1	27.5	25.3	44.8	28.6	24
25	32.3	25.0	14.2	17.9	19.9	15.3	18.0	15.5	16.7	16.6	16.4	12.5	8.4	11.4	11.3	12.4	13.0	9.8	9.8	8.9	8.4	7.4	5.7	7.3	32.3	13.9	24
26	4.9	3.6	4.8	9.3	8.4	7.3	7.4	8.0	7.3	10.7	11.1	15.0	18.2	21.8	21.7	18.4	22.3	17.2	12.7	12.6	12.1	9.4	8.5	8.2	22.3	11.7	24
27	9.4	9.4	5.8	2.9	4.1	3.9	5.8	14.1	15.8	16.0	20.8	24.0	23.9	21.5	24.5	21.9	21.3	16.0	14.4	14.1	12.9	14.1	13.6	11.4	24.5	14.2	24
28	17.0	18.7	16.4	21.6	17.4	12.3	12.8	18.6	19.8	18.6	21.9	26.6	31.2	40.5	41.7	45.8	37.0	36.3	25.6	14.7	16.7	16.1	12.3	17.1	45.8	23.2	24
HOURLY MAX	52.4	53.2	55.7	54.3	45.1	42.3	44.4	43.8	50.5	44.0	44.8	45.3	40.7	40.5	46.8	45.8	37.0	41.4	35.7	40.8	38.8	45.0	45.4	54.0			
HOURLY AVG	18.4	18.7	18.3	19.3	18.4	18.4	18.8	19.7	19.7	19.3	19.7	21.9	22.5	23.4	22.5	22.8	21.7	19.9	17.4	17.6	17.3	18.1	18.0	18.6			

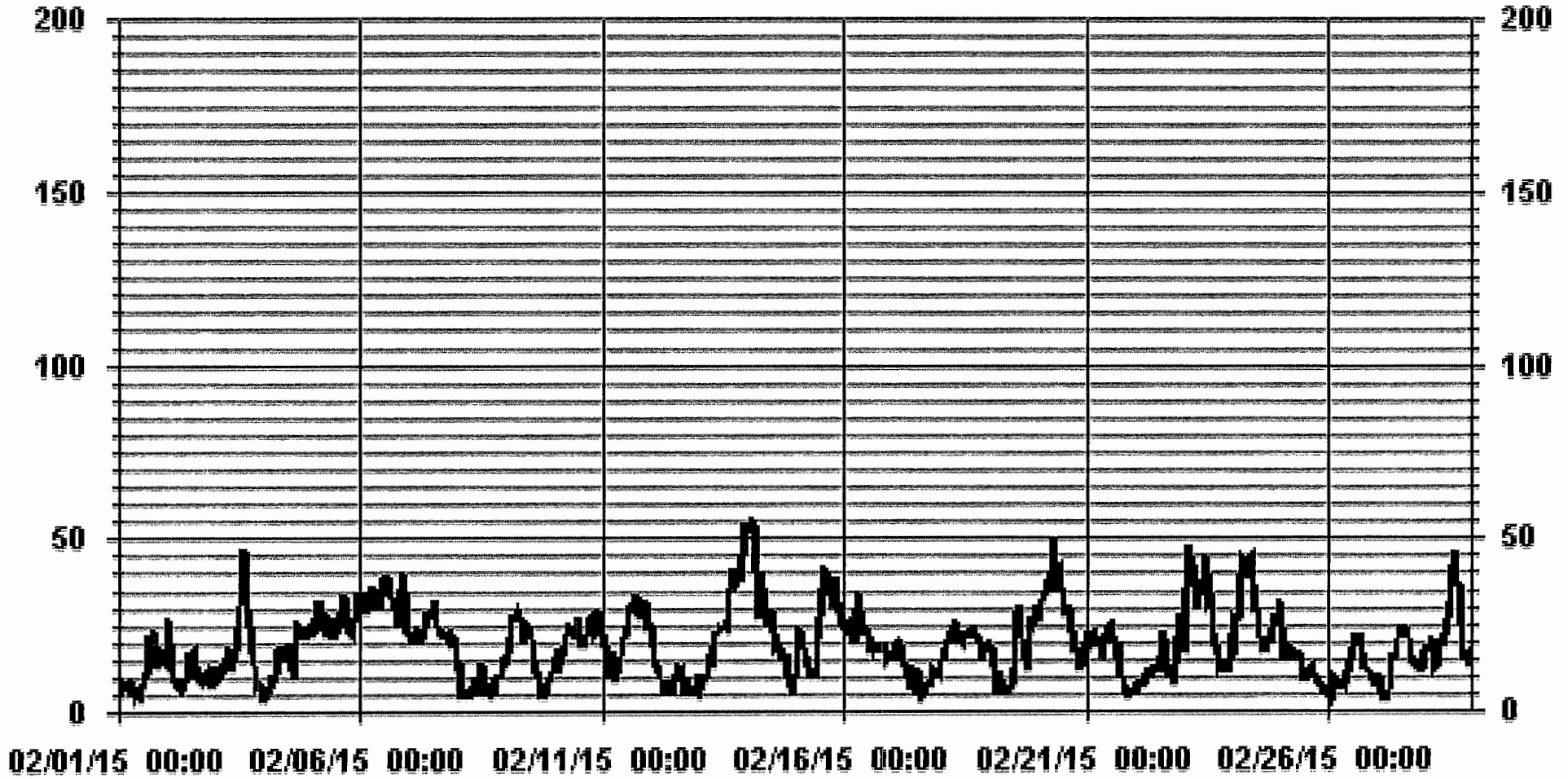
STATUS FLAG CODES

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

MAXIMUM INSTANTANEOUS VALUE:	55.7	KPH	@ HOUR(S)	2	ON DAY(S)	14
					VAR-VARIOUS	
OPERATIONAL TIME:				672	HRS	

### 01 Hour Averages



— LICA35 WSMAX KPH

LICA-ELK  
WSP / WDR Joint Frequency Distribution (Percent)

February 2015

Distribution By % Of Samples

Logger Id : 35  
Site Name : LICA-ELK  
Parameter : WSP  
Units : KPH

Wind Parameter : WDR  
Instrument Height : 10 Meters

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 6.0	1.33	.44	.89	1.33	3.86	2.23	1.19	.44	.59	1.19	1.19	2.08	2.82	1.63	.74	.89	22.91	
< 12.0	2.23	.29	.74	1.63	3.42	3.57	1.78	.89	.14	.44	1.19	3.42	4.76	1.93	2.23	3.12	31.84	
< 20.0	2.67	.44	.44	4.16	3.12	7.29	2.08	.00	.00	.00	.00	.89	3.27	4.01	5.50	1.93	35.86	
< 29.0	.14	.00	.00	.59	1.33	1.78	.14	.00	.00	.00	.00	.00	.29	1.04	1.04	1.04	7.44	
< 39.0	.00	.00	.00	.00	.00	1.48	.00	.00	.00	.00	.00	.00	.00	.29	.00	.14	1.93	
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	6.39	1.19	2.08	7.73	11.75	16.36	5.20	1.33	.74	1.63	2.38	6.39	11.16	8.92	9.52	7.14		

Calm : .00 %

Total # Operational Hours : 672

Distribution By Samples

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 6.0	9	3	6	9	26	15	8	3	4	8	8	14	19	11	5	6	154	
< 12.0	15	2	5	11	23	24	12	6	1	3	8	23	32	13	15	21	214	
< 20.0	18	3	3	28	21	49	14					6	22	27	37	13	241	
< 29.0	1			4	9	12	1						2	7	7	7	50	
< 39.0						10								2		1	13	
>= 39.0																		
Totals	43	8	14	52	79	110	35	9	5	11	16	43	75	60	64	48		

Calm : .00 %

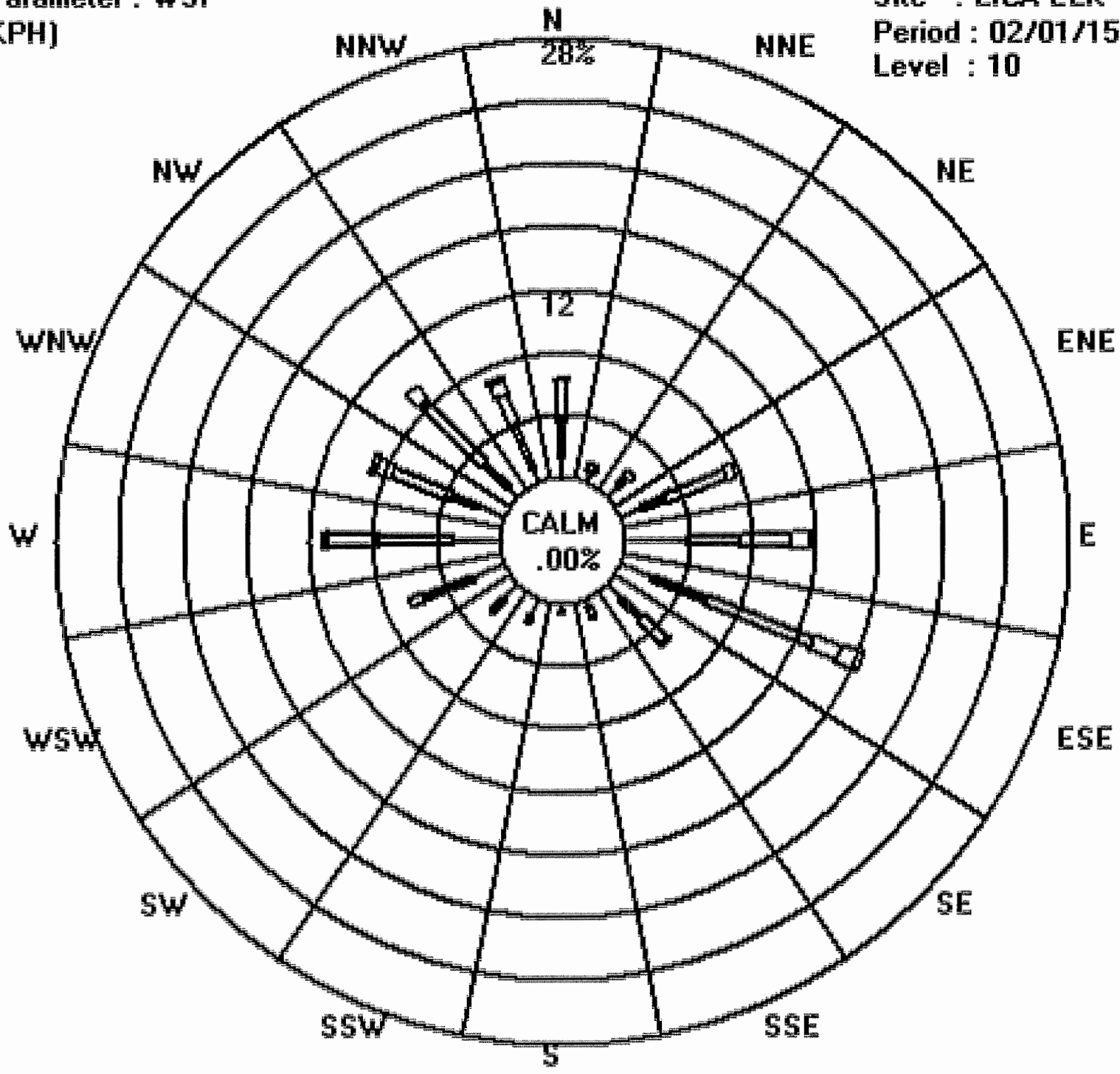
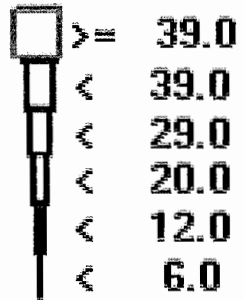
Total # Operational Hours : 672

Logger : 35 Parameter : WSP

Site : LICA-ELK

Class Limits (KPH)

Period : 02/01/15-02/28/15



***WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

WIND DIRECTION (WD) hourly averages

MST

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

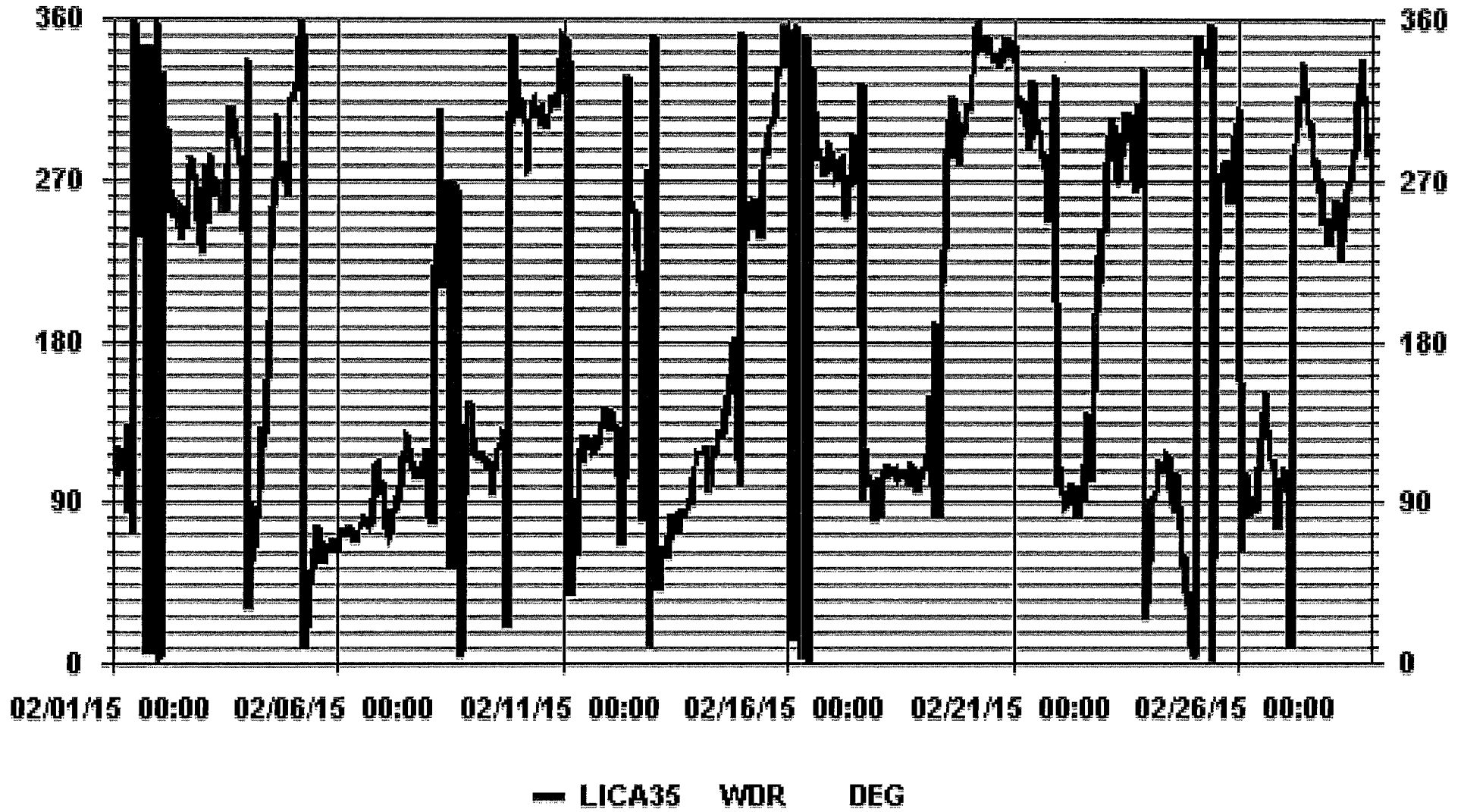
STATUS FLAG CODES

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

LAST CALIBRATION:	February 21, 2014
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	672 HRS
STANDARD DEVIATION:	105.52	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	NNE

### 01 Hour Averages





***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - FEBRUARY 2015

JOB # 2833-2015-02-35- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	
DAY																									
1	8	13	5	9	9	8	5	13	15	17	21	27	43	15	13	10	9	12	8	9	11	12	11	11	
2	13	13	10	5	9	7	9	11	22	12	14	12	12	21	17	11	8	6	10	7	8	7	6	14	
3	8	8	9	16	8	5	9	9	11	12	15	13	7	8	9	8	7	5	4	8	11	5	18	11	
4	29	8	19	16	18	26	9	16	10	11	16	15	13	14	16	14	8	3	11	8	8	11	12	9	
5	8	9	9	11	13	10	12	12	11	11	15	13	12	12	12	11	10	12	11	11	11	11	11	11	
6	11	10	11	10	10	10	10	10	11	11	11	10	9	9	8	10	10	8	9	7	6	6	7	7	
7	7	7	10	10	10	7	7	7	7	9	8	10	13	9	8	8	6	8	6	7	7	6	6	7	
8	12	9	11	39	32	34	46	19	14	11	31	34	33	28	57	14	30	40	19	12	12	15	11	12	
9	7	7	6	6	7	6	7	6	8	7	8	7	8	8	7	13	11	9	14	4	4	27	8	6	
10	7	16	7	6	6	6	7	8	8	8	7	7	10	9	8	7	8	8	9	8	7	8	9	10	
11	12	19	12	13	15	10	26	11	8	7	7	9	8	9	8	9	6	7	9	7	11	11	14	11	
12	11	18	13	12	14	8	12	23	15	32	61	23	16	14	10	14	14	30	16	13	19	48	31	21	
13	64	59	15	10	15	12	10	10	10	14	9	8	8	12	7	9	8	7	7	7	7	7	7	8	
14	7	7	8	7	8	14	7	6	7	6	8	9	9	10	15	11	13	12	10	11	11	35	26	26	
15	18	12	11	9	10	11	6	8	6	12	7	5	5	5	5	6	7	8	7	9	10	12	12	10	
16	10	13	13	16	14	15	13	13	13	13	10	15	14	8	8	5	4	3	4	4	5	6	5	2	
17	3	6	4	2	5	9	7	7	8	13	18	12	14	37	38	21	14	9	12	9	5	8	7	5	
18	6	8	10	6	5	6	5	5	6	7	5	5	5	6	6	6	7	8	6	6	5	6	6	6	
19	6	6	7	11	13	25	42	18	12	22	15	67	17	11	5	10	8	6	5	8	5	5	6	7	
20	8	7	8	10	13	12	14	11	10	11	12	12	10	11	11	10	9	11	13	10	8	10	10	10	
21	9	8	8	9	4	5	5	6	6	18	11	13	7	7	7	5	4	8	4	6	11	6	45	40	
22	29	58	9	6	5	4	6	5	4	5	9	8	8	8	11	10	4	16	20	15	13	17	12		
23	10	12	7	6	8	7	6	11	12	13	11	9	10	9	9	7	5	9	11	7	15	12	9	11	
24	11	12	8	7	6	7	6	6	7	7	6	9	7	10	9	10	12	12	9	11	11	12	11	12	
25	14	19	17	7	8	8	7	5	7	12	15	28	17	6	7	6	5	6	8	6	6	9	7	7	
26	13	48	45	8	12	9	32	7	6	6	5	15	13	14	16	13	8	5	6	7	5	12	9	8	
27	5	9	12	36	24	15	8	6	6	8	17	9	11	8	9	7	7	4	6	7	8	5	8	19	
28	8	8	6	6	11	6	8	7	11	12	9	6	6	6	8	9	9	9	9	6	6	3	5	9	

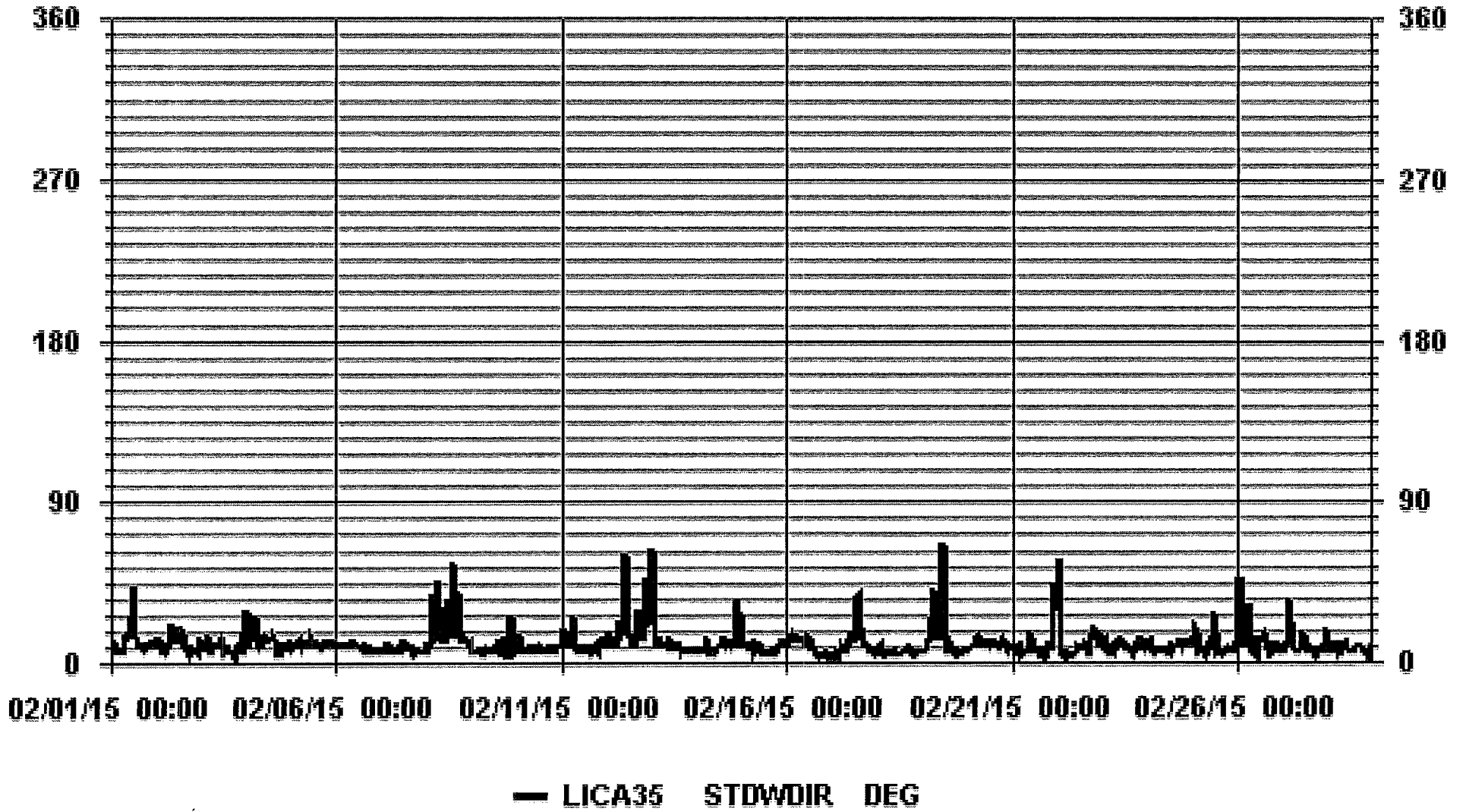
STATUS FLAG CODES

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

LAST CALIBRATION: February 21, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 672 HRS

### 01 Hour Averages



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

***VOC RESULTS***

Sample ID: 15020077-001

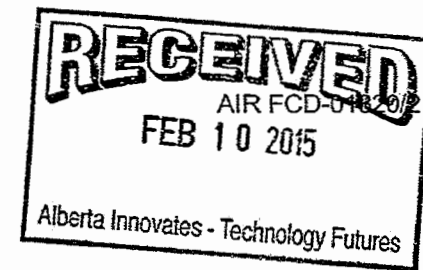
Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Feb 5, 2015

Priority: Normal

# Maxxam

## VOC Sample Collection Data Sheet



Client: LICA  
 Location: ELK POINT AIRPORT  
 Station ID: LICA 35  
 Field Sample ID: LICA/VOC/EP/Feb  
NA

Sampler S/N: 100-1020 / NA  
 Canister ID: H 3298  
 Canister Installation Date/Time: NA  
 Canister Removal Date/Time: Feb 6 @ 12:24  
2015

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>—</u>	<u>—</u>	<u>—</u>

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
<u>28.8</u>	<u>—</u>

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

Comments: No sampling has been done / The VOC sampler  
is out for repair services  
The canister # H3298 does NOT  
require analysis

Technician Signature: Alex Yakupov  
Feb 6, 2015

Sample ID: 15020208-001

Customer ID: LICA

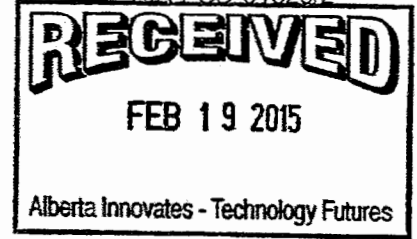
Cust Samp ID: LICA/PUF/EP/Feb 11, 2015

Priority: Normal

# Maxxam Analytics Inc.

## Xontech Model 910A VOC Sample Collection Data Sheet

AIR FCD-01320/2



Client: LICA

Location: ELK POINT AIRPORT

Station ID: LICA 35

(NA) Field Sample ID: LICA/VOCTEP / Feb 2015

Sampler s/n: NA

Canister ID: 1688

Canister Installation Date/Time: NA

Canister Removal Date/Time: Feb 14, 2015 @ 14:32

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
NA	NA	NA	NA

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

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

Canister valve open prior to sampling?: ~~YES~~ NA  
 Timer set to 0.00 minutes prior to sampling? ~~YES~~ NA  
 Canister valve closed prior to disconnection?: ~~YES~~ NA

Comments: No sampling has been done / The VOC sampler is out for repair services  
The canister # 1688 does NOT require analysis

Technician Signature: Alex Vakupov

Feb 14, 2015

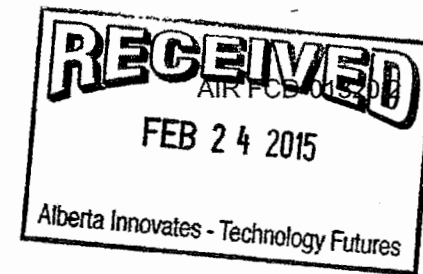
Sample ID: 15020240-001

Customer ID: LICA

Cust Samp ID: LICA/PUF/Feb 17, 2015/EP

Priority: Normal

# Maxxam Analytics Inc.



## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA  
 Location: ELC Point Airport  
 Station ID: Lica/35  
 Field Sample ID: LICA/VOC/EP/NA

Sampler s/n: NA  
 Canister ID: 1136  
 Canister Installation Date/Time: NA  
 Canister Removal Date/Time: Feb 20, 2015 @ 12:34

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
NA	NA	NA	NA

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
na	na	na
<del>10.0</del>		<del>24</del>

A-Y.

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

Canister valve open prior to sampling?: YES - NA  
 Timer set to 0.00 minutes prior to sampling? YES - NA  
 Canister valve closed prior to disconnection?: YES - NA

Comments: No sampling has been done / the VOC sampler is out for repair services.

The canister # 1136 does NOT require analysis

Technician Signature: Alex Yakupov Feb 20, 2015



Sample ID: 15030014-001

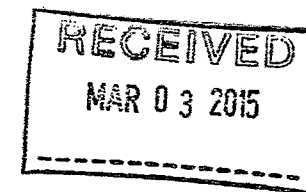
AIR FCD-01320/2

Customer ID: LICA

Cust Samp ID: LICA/PUF/Feb 23, 2015/EP

Priority: Normal

Maxxam



VOC Sample Collection Data Sheet

Client: LICA
Location: ELK POINT AIRPORT
Station ID: LICA 35
Field Sample ID: LICA/VOC/EP/NA

Sampler S/N: NA
Canister ID: 1517
Canister Installation Date/Time: NA
Canister Removal Date/Time: Feb 26, 2015 @ 13:33

Table with 4 columns: Sample Date, Start Time (MST), End Time (MST), Elapsed Time (Hours). All cells contain NA.

Table with 3 columns: Meter Reading (sccm), Pot Set Pt., Pump Pressure Setting (psig). All cells contain NA.

Table with 2 columns: Initial Canister Vacuum (inHg), Final Canister Pressure (psig). Values are -28.8 and -28.8 (na).

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

Comments: No sampling has been done / VOC sampler is out for repair services
The canister # 1517 does NOT require analysis

Technician Signature: Alex Yalupov

***PAH RESULTS***

Sample ID: 15020077-003

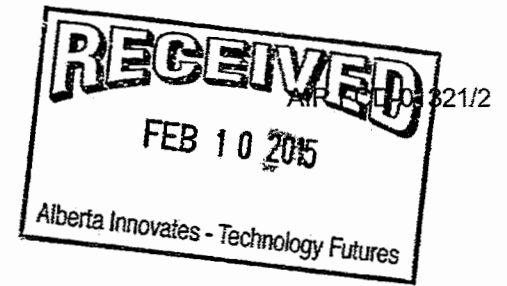
Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/Feb 5, 2015

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet



Client: LICA  
Location: EIK POINT AIRPORT  
Station ID: LICA 35  
Field Sample ID: LICA / PUF / EP / Feb 5, 2015

Puf+ S/N: 100-1020 / TE-01  
Motor S/N: 1139  
Installation Date/Time: Feb 3, 2015 @ 11:03  
Removal Date/Time: Feb 6, 2015 @ 12:09

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>Feb 5, 2015</u>	<u>00:00</u>	<u>00:00</u>	<u>24</u>

Feb 5, 2015    Feb 6, 2015

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-SEP-11

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

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (	Volume (Vstd m <sup>3</sup> )
<u>710</u>	<u>229</u>	<u>-16.0</u>	<u>330.19</u>

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 - Alex Yakupov  
Sample out - Alex Yakupov

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: FEBRUARY 5, 2015  
PUFS/N: TE-01

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.22
2-Methylnaphthalene	0.11
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	0.03
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	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.17
Perylene	< 0.01
Phenanthrene	0.05
Pyrene	0.02
Retene	0.01

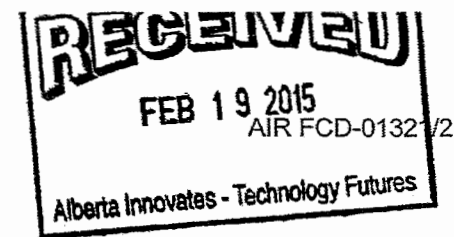
Sample ID: 15020208-001

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/Feb 11, 2015

Priority: Normal

Maxxam



Hi-Vol PUF+ Sample Collection Data Sheet

Client: LICA Puf+ S/N: 100-1020 TE06  
 Location: ELK POINT Airport Motor S/N: 1839  
 Station ID: LICA 35 Installation Date/Time: Feb 6, 2015 @ 12:11  
 Field Sample ID: LICA/PUF/EP/Feb 11, 2015 Removal Date/Time: Feb 14, 2015 @ 14:21

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
Feb 11, 2015	00:00 Feb 11, 2015	00:00 Feb 12, 2015	24

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

Set Flow Rate (slpm): 230  
 Date of Last Calibration: 22 - sep - 11

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature ( )	Volume (Vstd m <sup>3</sup> )
724	229	-21.5	330.17

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 - Alex Yakupov  
Sample out - Alex Yakupov

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: FEBRUARY 11, 2015  
PUF S/N: TE06

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.36
2-Methylnaphthalene	0.61
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.03
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.03
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	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.65
Perylene	< 0.01
Phenanthrene	0.06
Pyrene	0.02
Retene	0.01

Sample ID: 15020240-001

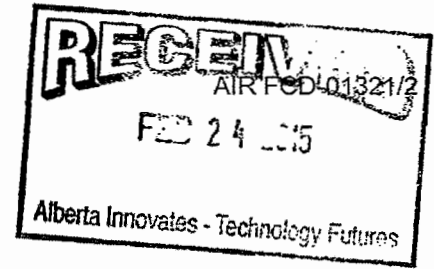
Customer ID: LICA

Cust Samp ID: LICA/PUF/feb 17, 2015/EP

Priority: Normal

# Maxxam Analytics Inc.

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet



Client: Lica

Location: ETIK POINT Airport

Station ID: LICA 31

Field Sample ID: LICA/PUF/feb 17, 2015/EP  
#.Y

Puf+ s/n: 100-1020

Motor s/n: 1138 1139(A-V)

Installation Date/Time: Feb 14 2015 @ 14:26

Removal Date/Time: Feb 20 2015 @ 12:16

TE-11

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
Feb 17, 2015	00:00 Feb 17, 2015	00:00 Feb 18, 2015	24

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

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)	Volume (Vstd m <sup>3</sup> )
718	229	-17.9	330.19

Time set correctly prior to sampling? YES

Timer set correctly prior to sampling? YES

Sampling data saved to memory card after sampling? NO

Comments:

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Technician Signature:

Sample in - Alex Yakupov

Sample out - Alex Yakupov

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: FEBRUARY 17 , 2015  
PUF S/N: TE11

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.36
2-Methylnaphthalene	0.66
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.03
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.03
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	0.35
Perylene	< 0.01
Phenanthrene	0.07
Pyrene	0.03
Retene	0.02



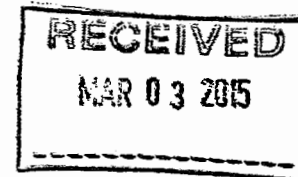
Sample ID: 15030014-001

Customer ID: LICA  
 Cust Samp ID: LICA/PUF/Feb 23, 2015/EP

Priority: Normal

# Maxxam Analytics Inc.

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet



Client: Lica  
 Location: ELK POINT Airport  
 Station ID: LICA 35  
 Field Sample ID: LICA/PUF/Feb 23/EP  
2015

Puf+ s/n: 100-1020 **TE05**  
 Motor s/n: 1138 1139 (A.Y.)  
 Installation Date/Time: Feb 20, 2015 @ 12:18  
 Removal Date/Time: Feb 26, 2015 @ 13:34

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

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

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure (mmHg)	Average Flow (Qstd slpm)	Average Temperature (C)	Volume (Vstd m <sup>3</sup> )
722	229	(+) 2.5	330.19

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

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: FEBRUARY 23, 2015  
PUF S/N: TE05

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.06
2-Methylnaphthalene	0.11
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.05
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
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	0.08
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.12
Perylene	< 0.01
Phenanthrene	0.15
Pyrene	0.02
Retene	0.03

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

***SULPHUR DIOXIDE***

## API 100A SO2 Analyzer Calibration

---

Date: 3-Feb-15

Company: LICA

Station Name/Location: Elk Point

Performed by: TB/AY

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

Start/End Time (mst): 0915/1300

Calibration Purpose: Shut down

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Aug-17

---

Analyzer:

Serial Number: 467

Last Calibration Date: 8-Jan-15

Previous Cal High Point C.F.: 1.001

Range ppb: 1000

As Found C.F.: 0.974

New C.F.: 0.977

**As found:**

SLOPE: 0.933

OFFSET: 33.8

HVPS: 528

DCPS: n/a

RCELL TEMP: 50

BOX TEMP: 31.3

PMT TEMP: 8.1

IZS TEMP: 45.0

STABIL: 0.0

PRES: 24.7

SAMP FL: 619

PMT: 41.8

UV LAMP: 2495 (94.4%)

STR. LGT: 15.8

DRK PMT: 13.7

DRK LMP: 2.6

Internal Span: 350

**As left:**

SLOPE: 0.933

OFFSET: 33.8

HVPS: 528

DCPS: n/a

RCELL TEMP: 50

BOX TEMP: 31.3

PMT TEMP: 8.1

IZS TEMP: 45.0

STABIL: 0.0

PRES: 24.7

SAMP FL: 619

PMT: 41.8

UV LAMP: 2495 (94.4%)

STR. LGT: 15.8

DRK PMT: 13.7

DRK LMP: 2.6

Internal Span: 350

---

Calibrator:

Flow Meter ID's: na

Make & Model: EnviroNics 6100

Serial #: 5212

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	5000	77	5077
mid	5000	37	5037
low	5000	17	5017

---

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	1.4	NA
adjusted zero	NA	0.0	0	0		NA
as found high	4913	80.25	4993	808.4	830.0	0.974
adjusted high	NA					
mid	4956	39.10	4995	393.7	402.0	0.979
low	4976	19.52	4996	196.5	201.0	0.978
calibrator zero	NA	0.00	0	0	0.0	NA
<b>Average C.F.=</b>						<b>0.977</b>

---

**Linear Regression/Calibration Results:**

Correlation Coefficient = <u>1.000</u>	LIMITS	Pass/Fail ?
Slope = <u>0.974</u>	> or = 0.995	PASS
b (Intercept as % of full scale) = <u>0.08%</u>	0.85-1.15	PASS
% change in C.F. from last cal = <u>2.70%</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\*\***

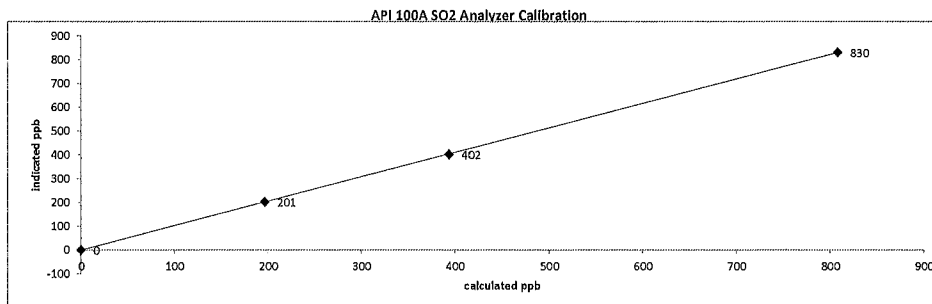
SO<sub>2</sub> High Point gas concentration: NA      Time gas run (mst): NA

Zero corrected analyzer response: NA

---

Comments:

After calibration, do annual maintenance.



## API 100A SO2 Analyzer Calibration

---

Date: 3-Feb-15

Company: LICA

Station Name/Location: Elk Point

Performed by: TB/AY

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

Start/End Time (mst): 1855/2040

Calibration Purpose: Post Repair (AF)

Converter Make & Model: NA

Converter Serial #: NA

Cal Gas Expiry Date: 12-Aug-17

---

Analyzer:

Serial Number: 467

Last Calibration Date: 8-Jan-15

Previous Cal High Point C.F.: 1.001

Range ppb: 1000

As Found C.F.: NA

New C.F.: NA

---

**As found:**

SLOPE: 0.933

OFFSET: 33.8

HVPS: 528

DCPS: n/a

RCELL TEMP: 50

BOX TEMP: 31.3

PMT TEMP: 8.1

IZS TEMP: 45.0

STABIL: 0.0

PRES: 24.7

SAMP FL: 619

PMT: 41.8

UV LAMP: 2495 (94.4%)

STR. LGT: 15.8

DRK PMT: 13.7

DRK LMP: 2.6

Internal Span: 350

**As left:**

SLOPE: 0.933

OFFSET: 33.8

HVPS: 528

DCPS: n/a

RCELL TEMP: 50

BOX TEMP: 31.3

PMT TEMP: 8.1

IZS TEMP: 45.0

STABIL: 0.0

PRES: 24.7

SAMP FL: 619

PMT: 41.8

UV LAMP: 2495 (94.4%)

STR. LGT: 15.8

DRK PMT: 13.7

DRK LMP: 2.6

Internal Span: 350

---

Calibrator:

Flow Meter ID's: na

Make & Model: EnviroNics G100

Serial #: 5212

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	5000	77	5077
mid	5000	37	5037
low	5000	17	5017

---

**Calibration:**

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	NA	0.0	0	0		NA
adjusted zero	4994	0.0	4994	0	0.0	NA
as found high		NA				
adjusted high	4914	80.21	4994	807.8	808.0	1.000
mid		NA				
low		NA				
calibrator zero	NA					NA
Average C.F.=						1.000

---

**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

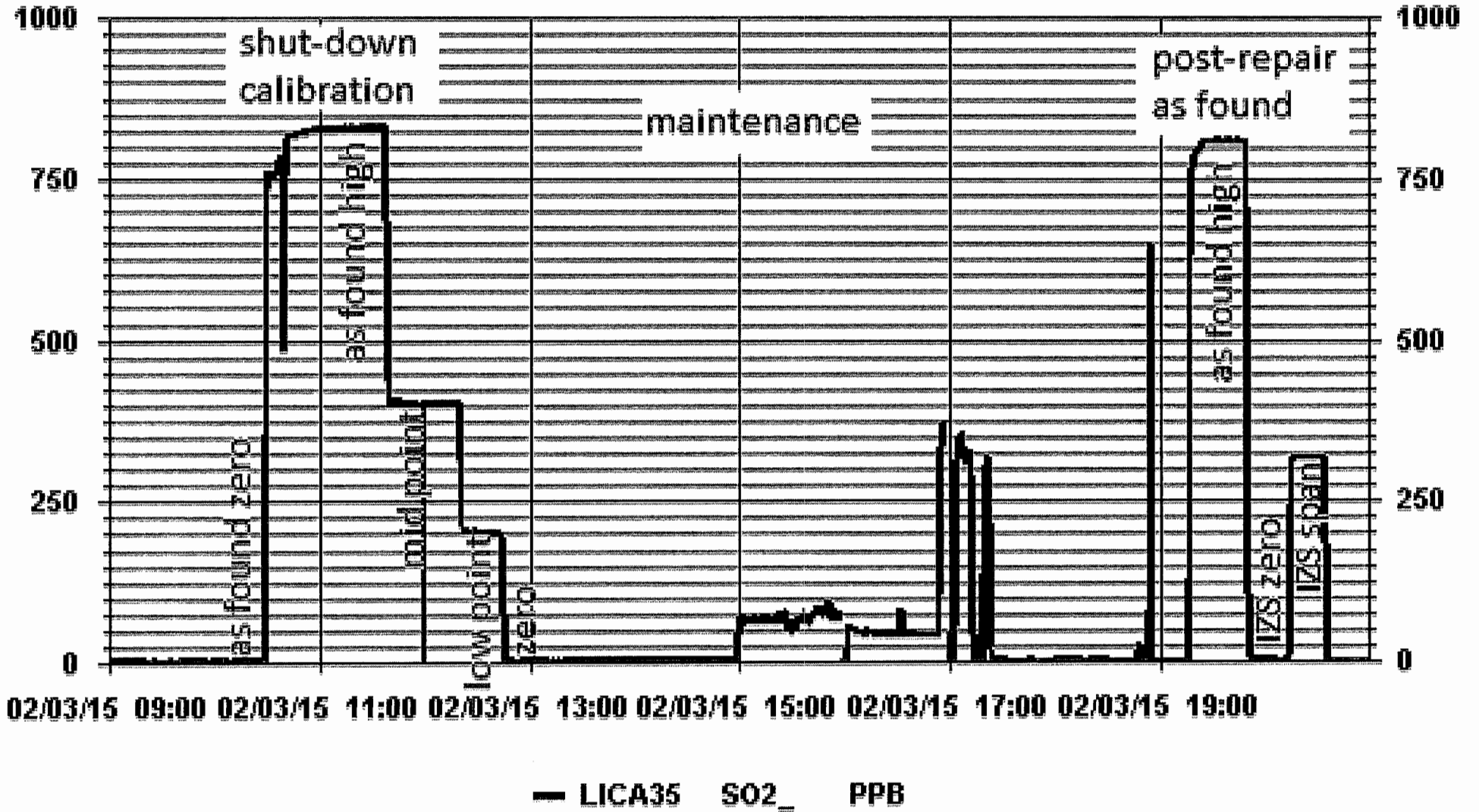
Zero corrected analyzer response: NA

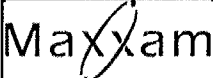
---

Comments:

API 100A SO2 Analyzer Calibration

### 01 Minute Averages





## API 100A SO2 Analyzer Calibration

---

Date: 4-Feb-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): 11:06/17:20

Calibration Purpose: Post-repair

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 12-Aug-17

---

Analyzer:

Serial Number: 4760

Last Calibration Date: 3-Feb-15

Previous Cal High Point C.F.: 1.001

Range ppb: 1000

As Found C.F.: 0.989

New C.F.: 1.001

---

**As found:**

SLOPE: 0.996

OFFSET: 115.2

HVPS: S24

DCPS: NA

RCELL TEMP: 50.0

BOX TEMP: 32.3

PMT TEMP: 8.1

IZS TEMP: 45.0

STABIL: 0.1

PRES: 24.5

SAMP FL: 613

PMT: 108.3

UV LAMP: 2743

STR. LGT: 57.4

DRK PMT: 13.4

DRK LMP: 2.8

Internal Span: 320.0

**As left:**

SLOPE: 0.985

OFFSET: 117.1

HVPS: S24

DCPS: NA

RCELL TEMP: 50.0

BOX TEMP: 32.6

PMT TEMP: 8.1

IZS TEMP: 45.0

STABIL: 0.1

PRES: 24.5

SAMP FL: 614

PMT: 108

UV LAMP: 2755.4

STR. LGT: 57.7

DRK PMT: 14.1

DRK LMP: 2.8

Internal Span: 320.0

---

Calibrator:

Flow Meter ID's: NA

Make & Model: EnviroNics 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	5000	77	5077
mid	5000	37	5037
low	5000	19	5019

---

**Calibrator Flow Rates (cc/min)**

Point	Diluent	Cal Gas	Total
as found zero	4995	0.0	4995
adjusted zero	4992	0.0	4992
as found high	4995	76.81	5072
adjusted high	4995	76.81	5072
mid	4995	37.00	5032
low	4995	19.00	5014
calibrator zero	4995	0.00	4995

**Calculated Concentration:**

Point	Calculated (ppb)	Indicated (ppb)	Correction Factors
as found zero	0	0.6	NA
adjusted zero	0	0.0	NA
as found high	761.8	770.6	0.989
adjusted high	761.8	762.2	0.999
mid	369.9	368.8	1.003
low	190.6	190.6	1.000
calibrator zero	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>0.03%</u>	0.85-1.15	PASS
% change in C.F. from last cal = <u>1.25%</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\*\*

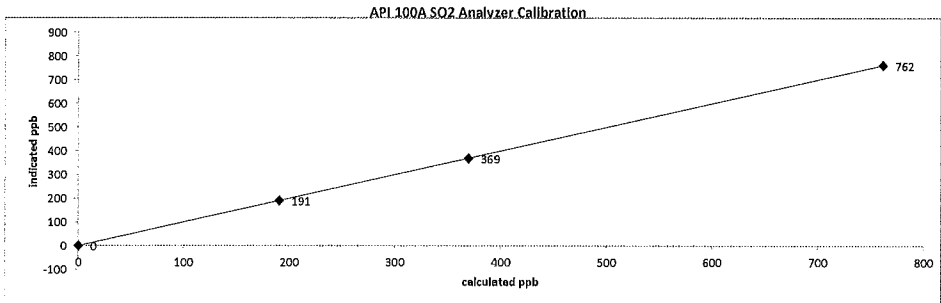
SO<sub>2</sub> High Point gas concentration: NA      Time gas run (mst): NA

Zero corrected analyzer response: NA

---

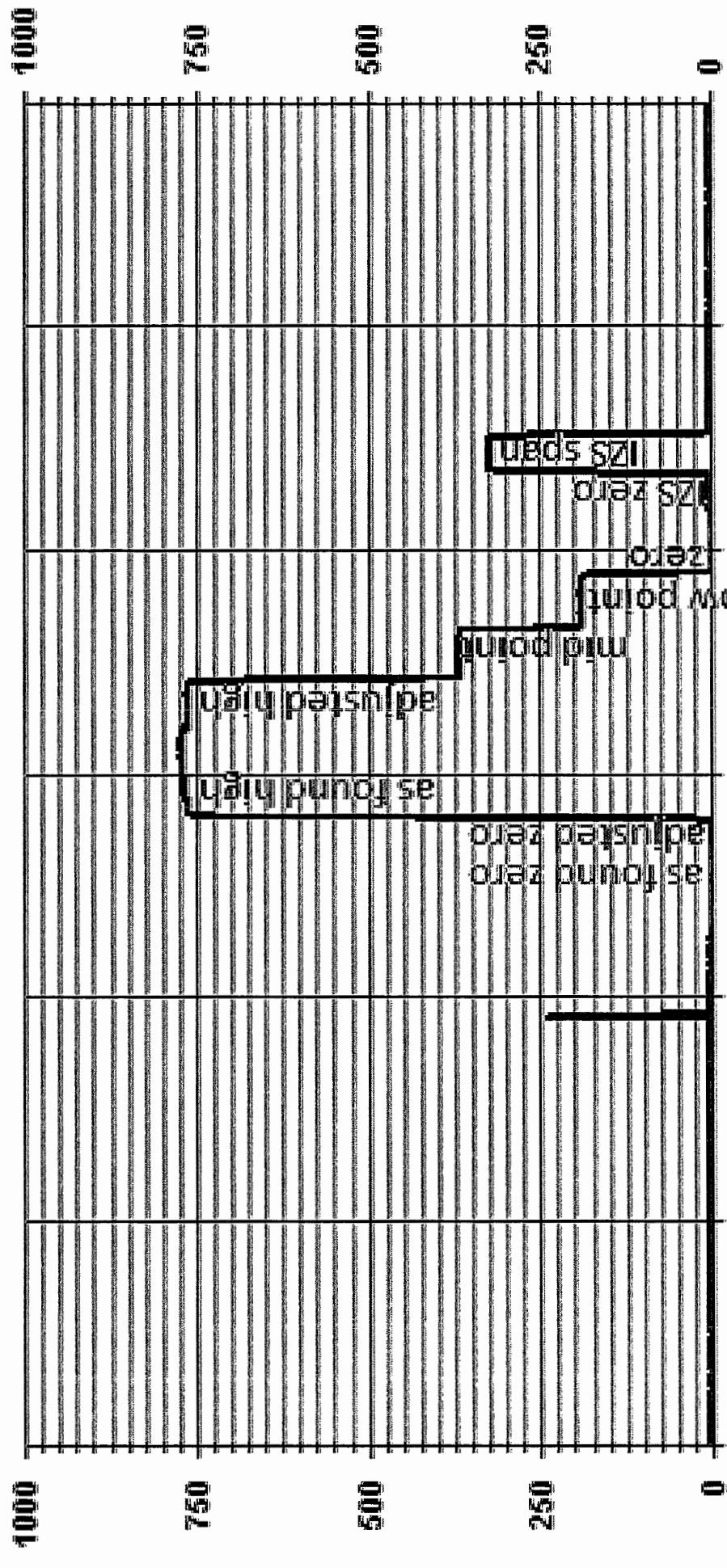
Comments:

Sample filter changed





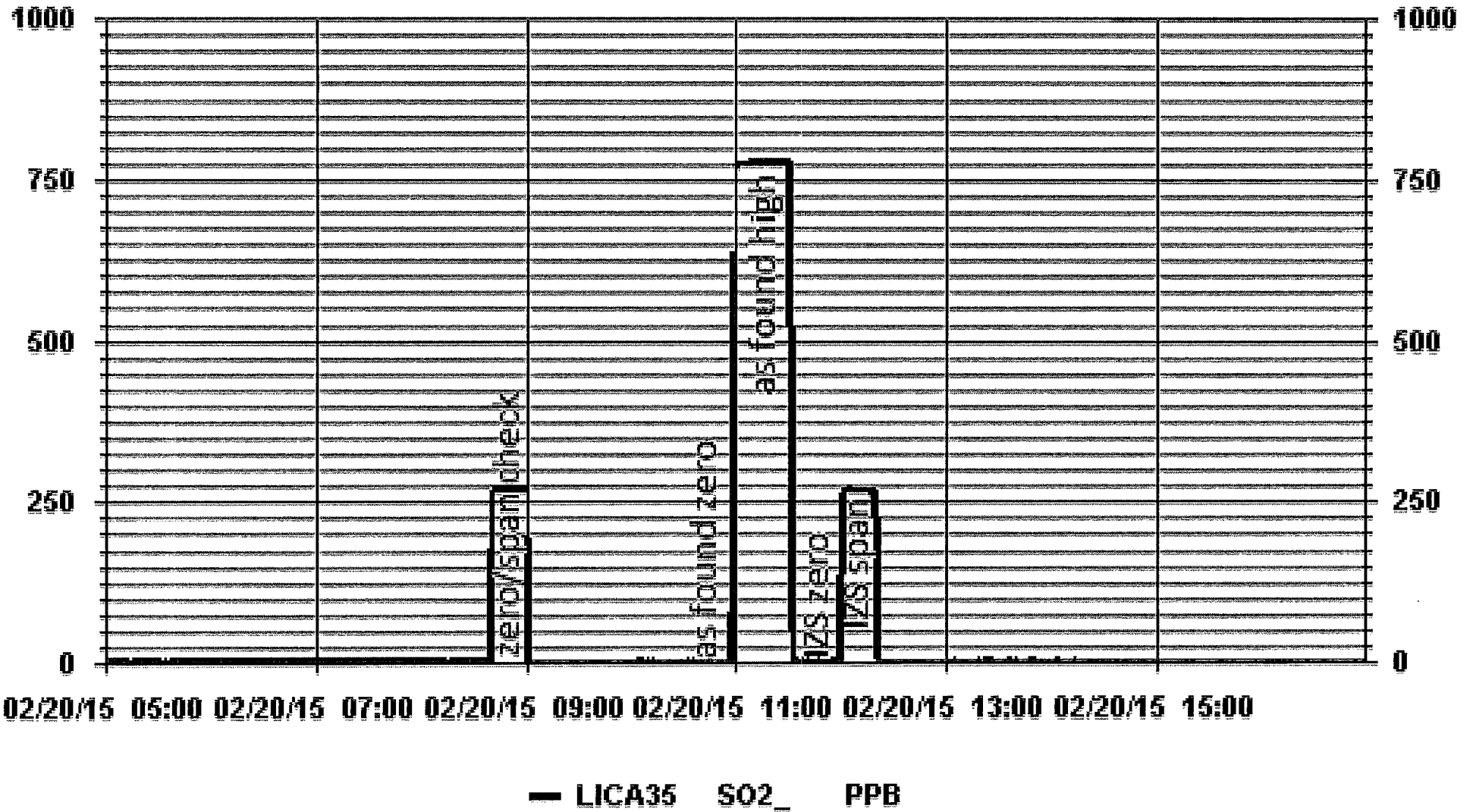
01 Minute Averages



— LICA35 SO2\_ PPB

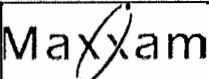


# 01 Minute Averages



***HYDROGEN SULPHIDE***





## API 101E H2S Analyzer Calibration

---

Date: 3-Feb-15

Company: LICA

Station Name/Location: Elk Point

Performed by: LL/AY

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

Start/End Time (mst): 1830/2010

Calibration Purpose: Post Repair (AF)

Converter Make & Model: Internal

Converter Serial #: NA

Cal Gas Expiry Date: 25-Dec-15

---

Analyzer:

Serial Number: 510

Last Calibration Date: 6-Jan-15

Previous Cal High Point C.F.: 0.999

Range ppb: 100

As Found C.F.: NA

New C.F.: NA

**As found:**

SLOPE: 1.179

OFFSET: 28.7

HVPS: 526

RCELL TEMP: 50.0

BOX TEMP: 33.2

PMT TEMP: 8.4

IZS TEMP: 45.0

STABIL: 0.1

PRES: 22.4

SAMP FL: 522

PMT: 56.7

NORM PMT: 29.3

UV LAMP: 3406

LAMP RATIO: 96.8%

STR. LGT: 16.9

DRK PMT: 34.6

DRK LMP: -1.8

Internal Span: 55.91

**As left:**

SLOPE: 0.992

OFFSET: 30.9

HVPS: 534

RCELL TEMP: 50.0

BOX TEMP: 33.2

PMT TEMP: 8.4

IZS TEMP: 45.0

STABIL: 0.1

PRES: 22.4

SAMP FL: 524

PMT: 56.7

NORM PMT: 29.3

UV LAMP: 3285

LAMP RATIO: 97.6%

STR. LGT: 16.9

DRK PMT: 34.6

DRK LMP: -1.8

Internal Span: 53.5

---

Calibrator:

Flow Meter ID's: NA

Make & Model: API 700

Serial #: 831

Cal Gas Cylinder I.D. #: BLM0005049

Cal Gas Conc. (ppm): 10.1

**Calibrator Flow Targets:**

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	5000	38	5038
mid	5000	18	5018
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	5000	0.0	5000	0	0.1	NA
adjusted zero	NA	0.0	0	0		NA
as found high	4959	38.60	4998	78.0	78.0	1.000
adjusted high		NA				
mid						
low		NA				
calibrator zero	NA					NA
Average C.F.=						1.000

---

**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:**

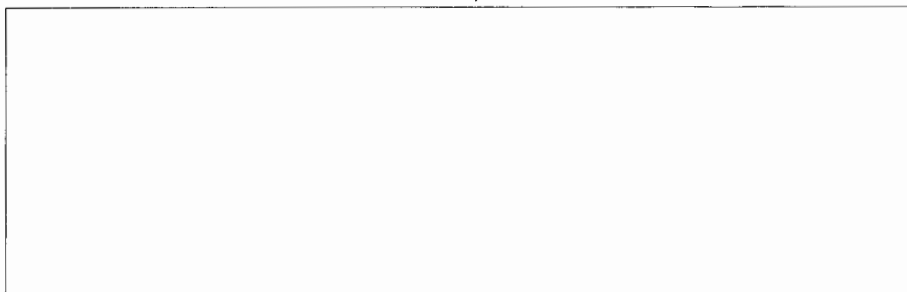
**\*\*run converter efficiency test immediately following zero adjust\*\***

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

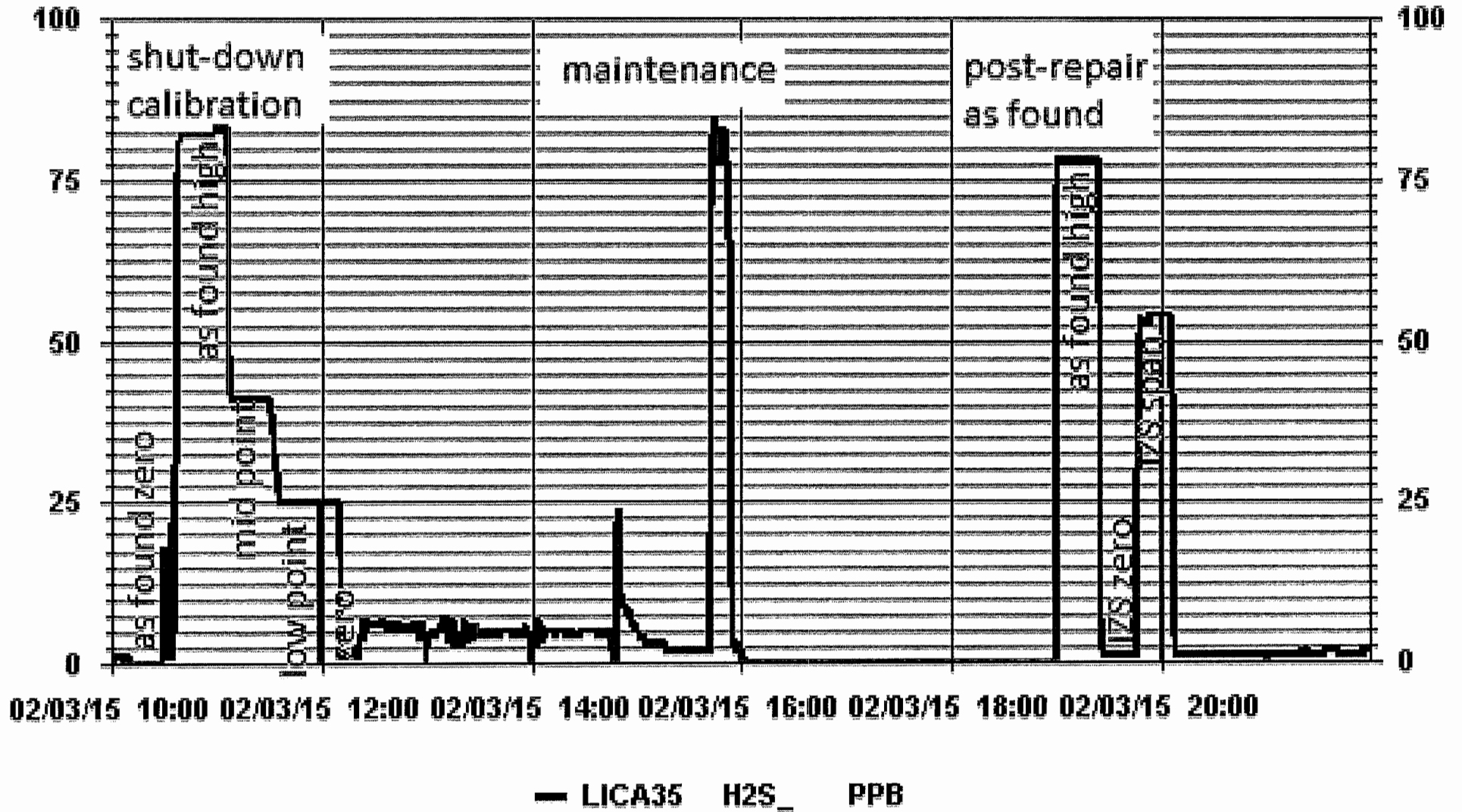
Zero corrected analyzer response: NA

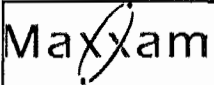
---

Comments:



### 01 Minute Averages





## API 101E H2S Analyzer Calibration

---

**Date:** 4-Feb-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):** 11:06/17:20

**Calibration Purpose:** Post-repair

**Converter Make & Model:** Internal

**Converter Serial #:** NA

**Cal Gas Expiry Date:** 25-Dec-15

---

**Analyzer:**

**Serial Number:** 831

**Last Calibration Date:** 3-Feb-15

**Previous Cal High Point C.F.:** 0.999

**Range ppb:** 100

**As Found C.F.:** 0.998

**New C.F.:** 0.998

---

**As found:**

SLOPE: 0.992

OFFSET: 30.9

HVPS: 534

RCELL TEMP: 50.0

BOX TEMP: 33.6

PMT TEMP: 8.4

IZS TEMP: 45.0

TEST: n/a

STABIL: 0.0

PRES: 22.2

SAMP FL: 515

PMT: 58.7

NORM PMT: 32.6

UV LAMP: 3272.6

LAMP RATIO: 97.3 %

STR. LGT: 15.3

DRK PMT: 36.6

DRK LMP: -1.8

Internal Span: 55.91

**As left:**

SLOPE: 0.999

OFFSET: 32.2

HVPS: 534

RCELL TEMP: 50.0

BOX TEMP: 33.8

PMT TEMP: 8.4

IZS TEMP: 45.0

TEST: n/a

STABIL: 0.1

PRES: 22.2

SAMP FL: 515

PMT: 60.5

NORM PMT: 32.1

UV LAMP: 3272.2

LAMP RATIO: 97.4 %

STR. LGT: 16.2

DRK PMT: 36.7

DRK LMP: -1.8

Internal Span: 55.91

---

**Calibrator:**

**Flow Meter ID's:** NA

**Make & Model:** Envirotronics 6100

**Serial #:** 4760

**Cal Gas Cylinder I.D. #:** BLM005049

**Cal Gas Conc. (ppm):** 10.1

**Calibrator Flow Targets:**

point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	5000	0	5000
high	5000	38	5038
mid	5000	18	5018
low	5000	9	5009

---

**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	0.1	NA
adjusted zero	4995	0.0	4995	0	0.0	NA
as found high	4994	38.00	5032	76.3	76.5	0.998
adjusted high	4994	38.00	5032	76.3	76.4	0.998
mid	4994	18.00	5012	36.3	36.5	0.995
low	4994	9.00	5003	18.2	18.2	1.001
calibrator zero	4995	0.00	4995	0	0.0	NA

Average C.F.= 0.998

---

**Linear Regression/Calibration Results:**

Correlation Coefficient = 1.000	LIMITS > or = 0.995	PASS
Slope = 0.998	0.85-1.15	PASS
b (Intercept as % of full scale) = -0.02%	± 3% F.S.	PASS
% change in C.F. from last cal = 0.13%	± 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

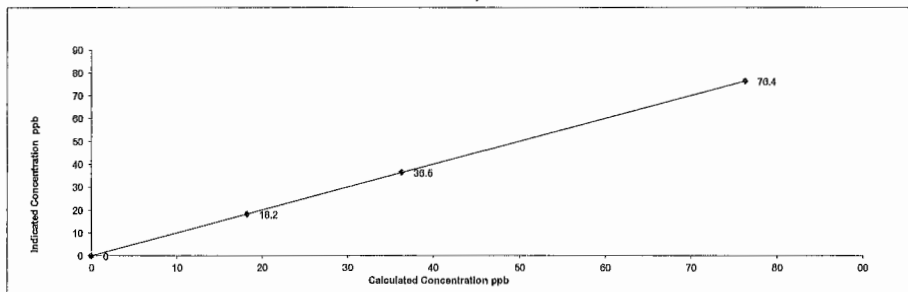
Zero corrected analyzer response: NA

---

**Comments:**

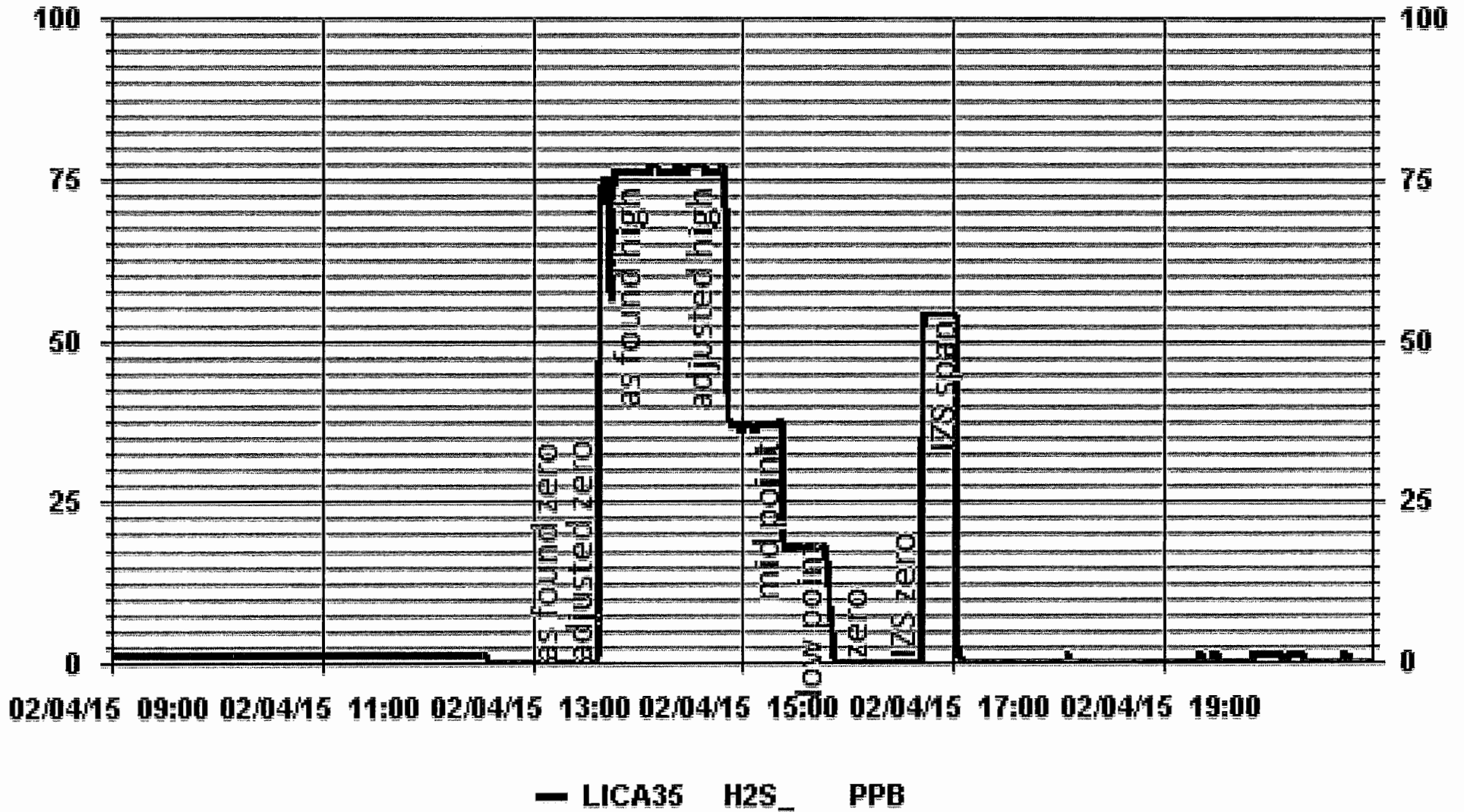
Sample filter changed.

API 101E H2S Analyzer Calibration





### 01 Minute Averages



***TOTAL HYDROCARBON***

## Thermo 551 Methane/Non-Methane Analyzer Calibration

---

Date: 3-Feb-15

Company: LICA

Station Name: Elk Point

Performed by: LL/AY

Start Time (mst): 12:17

End Time (mst): 19:00

Calibration Purpose: routine monthly

Cal Gas Expiry Date: 26-Mar-17

---

**Analyzer & Diagnostics:**

Serial Number: 1236656107

Last Calibration Date: 7-Jan-15

**As found C.F.**

CH<sub>4</sub>= 1.085

NMHC= 1.080

THC= 1.080

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

CH<sub>4</sub>= 1.002

NMHC= 1.003

THC= 1.001

**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

**Interface Board Voltages:**

3.3: 3.3

5.0: 5.0

15.0: 15.0

24.0: 23.4

-15.0: -15.1

Bias Supply: -292.6

**Temperatures:**

Detector Oven: 175.1

Filter: 175.0

Column Oven: 74.8

Flame: 378.4

Internal: 32.6

**Pressures cylinder/reg.:**

Carrier: 1700 | 31.1

Fuel: 2000 | 40.3

Air: 45 | 32.4

**FID Status:**

Status: LIT

Counts: 26053

Flame: 378.3

Det Base: 175.1

**Flame and Power Stats:**

Last Power On: Dce 25 @ 0834

Flameouts: 3

Det Oven at Start: 133.6

Col Oven at Start: 65.4

**Calibration History>1:**

Time: NA

Type: NA

Status: NA

Check/Adjust: NA

CH<sub>4</sub> Span Conc: NA

**Calibration History cnt'd>1:**

CH<sub>4</sub> SP Ratio: NA

CH<sub>4</sub> RT: NA

CH<sub>4</sub> PK IDX: NA

CH<sub>4</sub> PK HT: NA

NM Span Conc: NA

NM SP Ratio: NA

NM Peak Area: NA

Date: Jan 7, 2015

Time: 1257

CH<sub>4</sub> PK HT: 9581

CH<sub>4</sub> RT: 12.2

CH<sub>4</sub> Baseline: 2215

CH<sub>4</sub> LOD: 43

CH<sub>4</sub> SD: 16

CH<sub>4</sub> CONC: 6.95

NM PK HT: 1466

NM Peak Area: 40533

NM CONC: 6.43

NM Base Start: 2208

NM Base End: 2224

NM LOD: 13

NM Start IDX: 10

NM End IDX: 91

NM Max Slope: .82

NM Min Slope: -0.66

NM PT Count: 80

Previous CH<sub>4</sub>: 9.48

Previous NMHC: 14.13

Previous THC: 23.64

New CH<sub>4</sub>: 9.2

New NMHC: 13.62

New THC: 22.9

**Daily Zero/Span Values:**

---

**Calibrator and Gas Information:**

Make & Model: API 700

Serial #: 831

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	3000	0	3000
high	3000	36	3036
mid	3000	18	3018
low	3000	10	3010

---

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	3000	0.00	3000	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
20 min as found high point	3000	36.00	3036	7.13	6.59	13.72	6.57	6.10	12.70	1.085	1.080	1.080
20 min adjusted high	3000	36.00	3036	7.13	6.59	13.72	7.13	6.59	13.72	1.000	1.000	1.000
20 min mid	2999	18.00	3017	3.59	3.31	6.90	3.65	3.40	7.01	0.983	0.975	0.985
20 min low	3000	10.00	3010	2.00	1.85	3.84	2.05	1.94	3.99	0.975	0.951	0.963
20 min calibrator zero	3000	0.00	3000	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
Average C.F.=										0.986	0.975	0.983

---

**Linear Regression/Calibration Results:**

	CH <sub>4</sub>	NMHC	THC
Correlation Coefficient =	1.000	1.000	1.000
Slope =	0.998	0.997	0.998
b (Intercept as % of full scale)=	0.16%	0.27%	0.20%
% change in C.F. from last cal=	-7.68%	7.11%	7.33%

**LIMITS**

> or = 0.995

0.85-1.15

± 3% F.S.

+/-15%

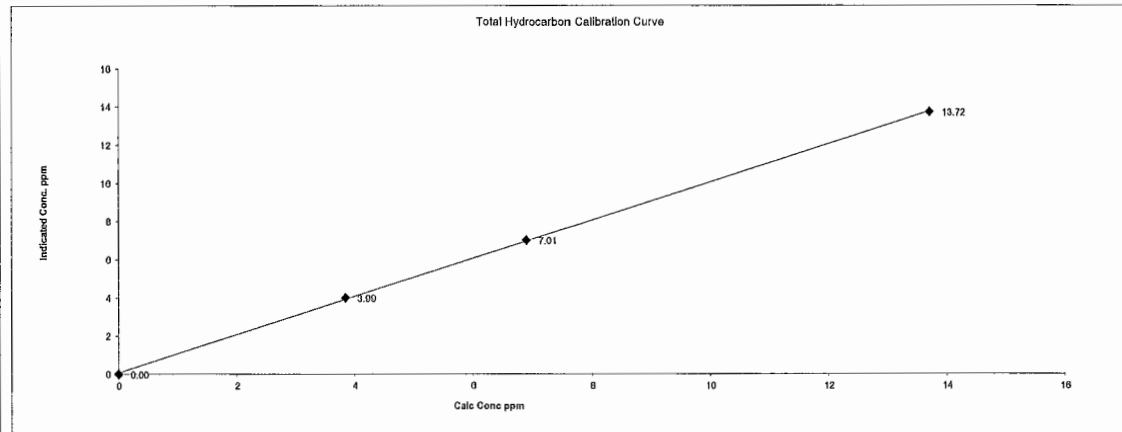
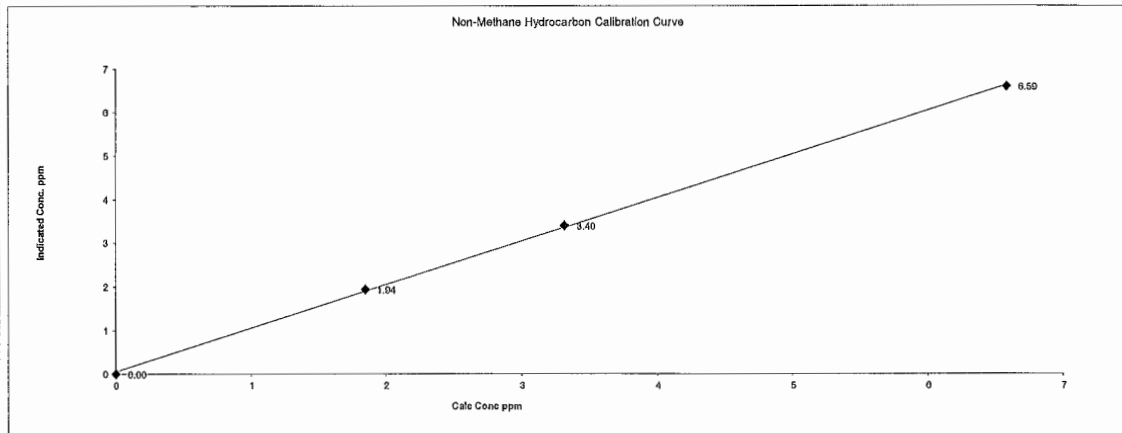
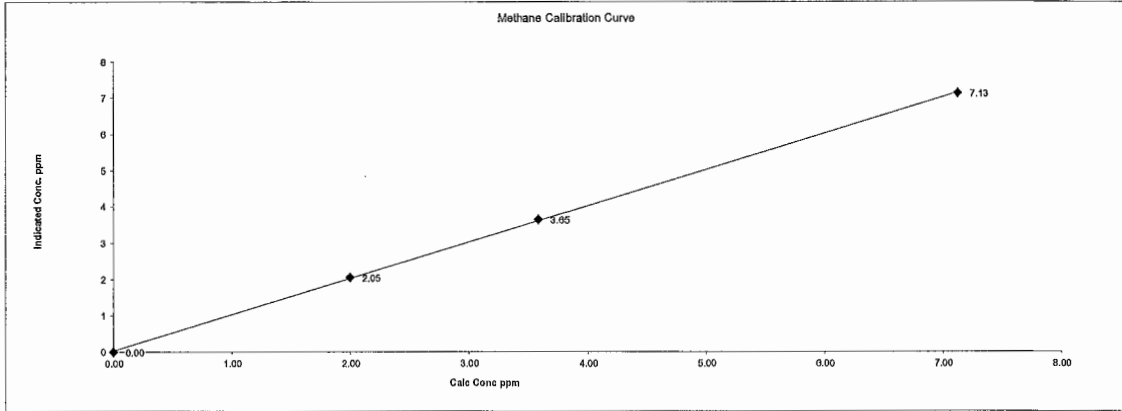
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**Comments:**

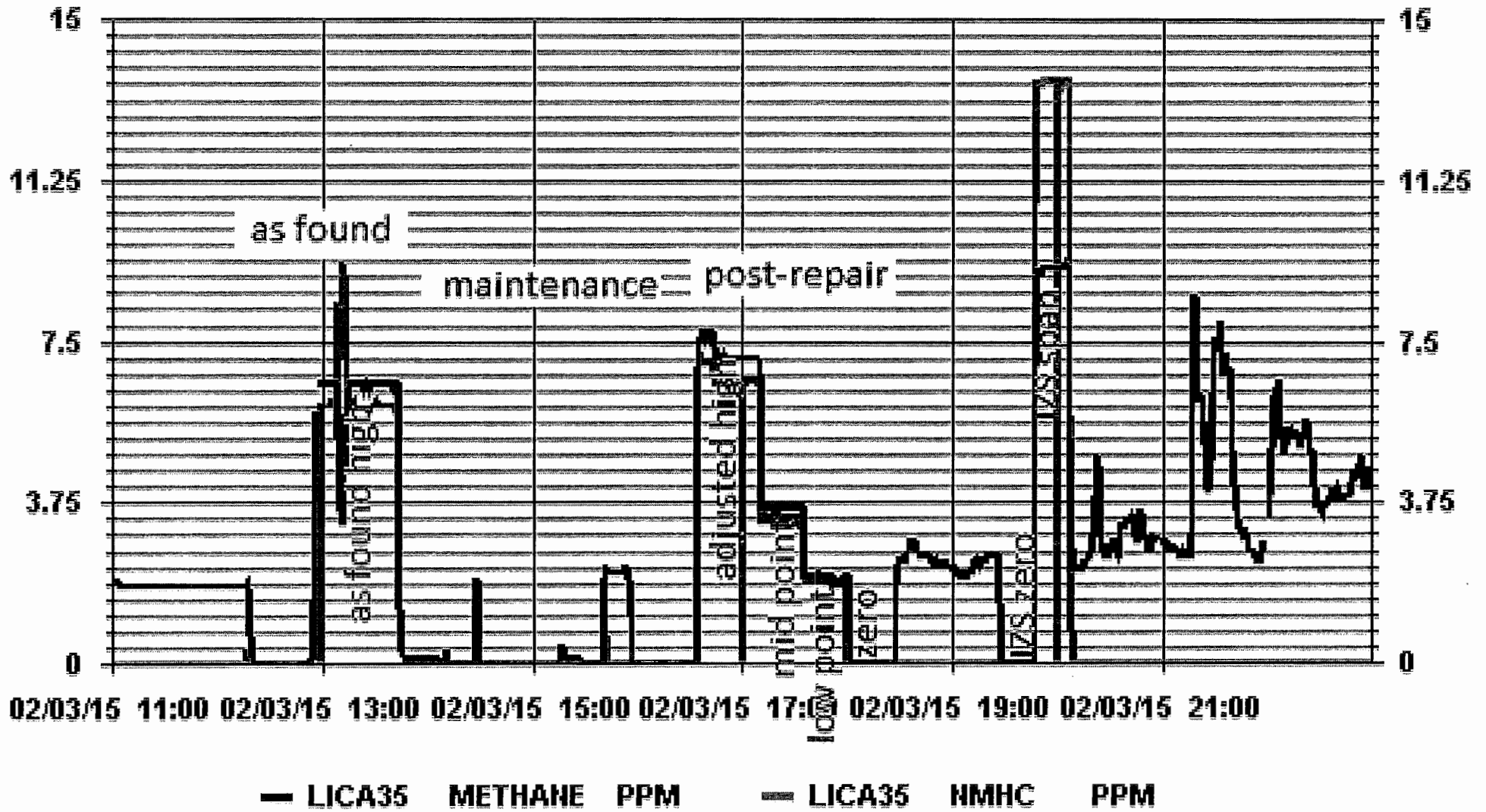
After as found point, change pump because sample flow rate is only 0.03LPM. New pump flow rate is 1.13LPM.

Date:	3-Feb-15	Start Time (mst):	12:17
Company:	LICA	End Time (mst):	19:00
Station Name:	Elk Point	Calibration Purpose:	routine monthly
Performed by:	LL/AY	Cal Gas Expiry Date:	26-Mar-17

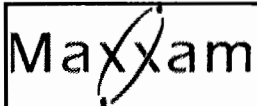
Thermo 55C Methane/Non-Methane Analyzer Calibration



### 01 Minute Averages



***NITROGEN DIOXIDE***



API 200E NOx Analyzer Calibration

Date: 3-Feb-15  
 Company: LICA  
 Station Name/Location: Elk Point  
 Performed by: LL/AY

Start Time (mst): 9:15  
 End Time (mst): 16:34  
 Calibration Purpose: routine monthly  
 Cal Gas Expiry Date: 12-Aug-17

Correction Factors:

Analyzer Serial Number: 2166  
 Last Calibration Date: 8-Jan-15  
 Range ppb: 1000

As found C.F. Previous Cal High Point C.F.:  
 NO= 1.013 NO= 1.001  
 NOx= 1.014 NOx= 1.001  
 NO<sub>2</sub>= 1.000 NO<sub>2</sub>= 1.002

As found:  
 NOx SLOPE: 0.935  
 NOx OFFS: 0  
 NO SLOPE: 0.938  
 NO OFFS: -0.6  
 TEST: 1381.5  
 SAMP FLW: 487  
 OZONE FL: 75  
 PMT: 10.3  
 NORM PMT: 3.4  
 AZERO: 11.6  
 HVPS: 691  
 RCELL TEMP: 50.8  
 BOX TEMP: 27  
 PMT TEMP: 7.0  
 IZS TEMP: 45.1  
 MOLY TEMP: 314.5  
 RCEL: 7.9  
 SAMP: 26.4  
 Internal Span: 4.5/354/359

As left:  
 NOx SLOPE: 0.950  
 NOx OFFS: 0.0  
 NO SLOPE: 0.947  
 NO OFFS: -0.6  
 TEST: 1381.5  
 SAMP FLW: 488  
 OZONE FL: 75  
 PMT: 0.4  
 NORM PMT: 0.1  
 AZERO: 11.7  
 HVPS: 691  
 RCELL TEMP: 49.9  
 BOX TEMP: 26.2  
 PMT TEMP: 7.0  
 IZS TEMP: 45.1  
 MOLY TEMP: 316.4  
 RCEL: 8.0  
 SAMP: 26.9  
 Internal Span: 4.5/341/345

Calibrator Flow Targets:

Make & Model: EnviroNics 6100  
 Serial #: 5212  
 Cal Gas Cylinder I.D. #: LL42575  
 NO Cylinder Conc. (ppm): 48.5  
 NOx Cylinder Conc. (ppm): 48.5

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	80	0.500	5080
mid	5000	39	0.180	5039
low	5000	20	0.900	5020

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	5000	0.0	5000	0	0	0.2	0.1	NA	NA
adjusted zero	5000	0.0	5000	0	0	0.2	0.1	NA	NA
as found high	4913	80.25	4993	779.5	779.5	770	769	1.013	1.014
adjusted high	4913	80.25	4993	779.5	779.5	780	780	1.000	0.999
mid	4956	39.10	4995	379.6	379.6	376	376	1.010	1.010
low	4976	19.52	4996	189.5	189.5	187	187	1.014	1.014
calibrator zero	5000	0.00	5000	0	0	0.2	0.0	NA	NA
Average C.F. =								1.008	1.008

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	4913	80.25	4993	0.0	784.0	784.0	0.0	0.2	-0.1	
as found NO <sub>2</sub>	4913	80.25	4993	0.5	224.0	784.0	560.0	560.0	560.0	1.000
gpt mid	4913	80.25	4993	0.2	579.0	786.0	207.0	205.0	207.0	0.990
gpt low	4913	80.25	4993	0.9	685.0	786.0	101.0	99.0	101.0	0.980
Average NO <sub>2</sub> C.F. =										1.017

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	0.999	> or = 0.995
Slope =	1.001	1.001	0.920	0.85-1.15
b (Intercept as % of full scale) =	-0.17%	-0.18%	0.80%	± 3% F.S.
% change in C.F. from last cal =	-1.16%	-1.28%	0.20%	+/-15%
NO <sub>2</sub> converter efficiency			98.4%	>85%

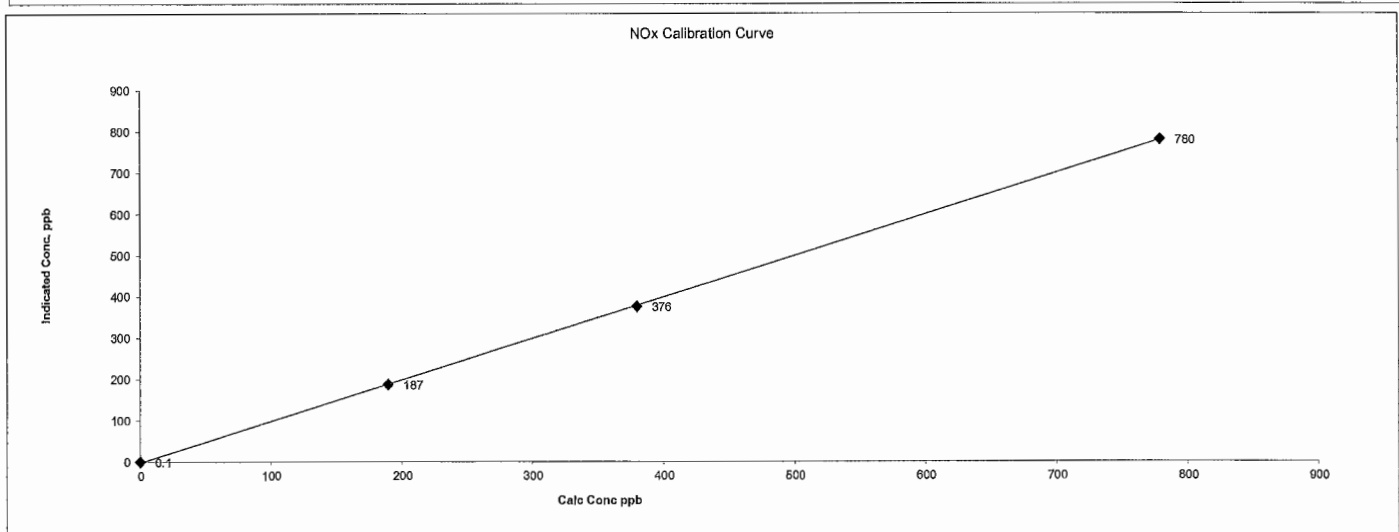
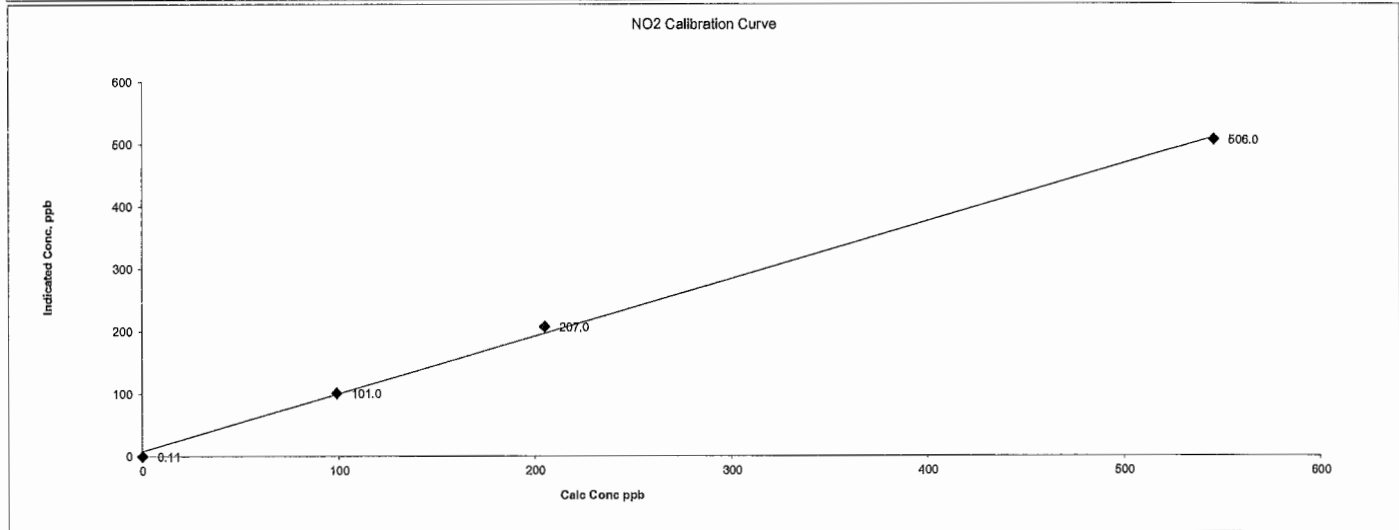
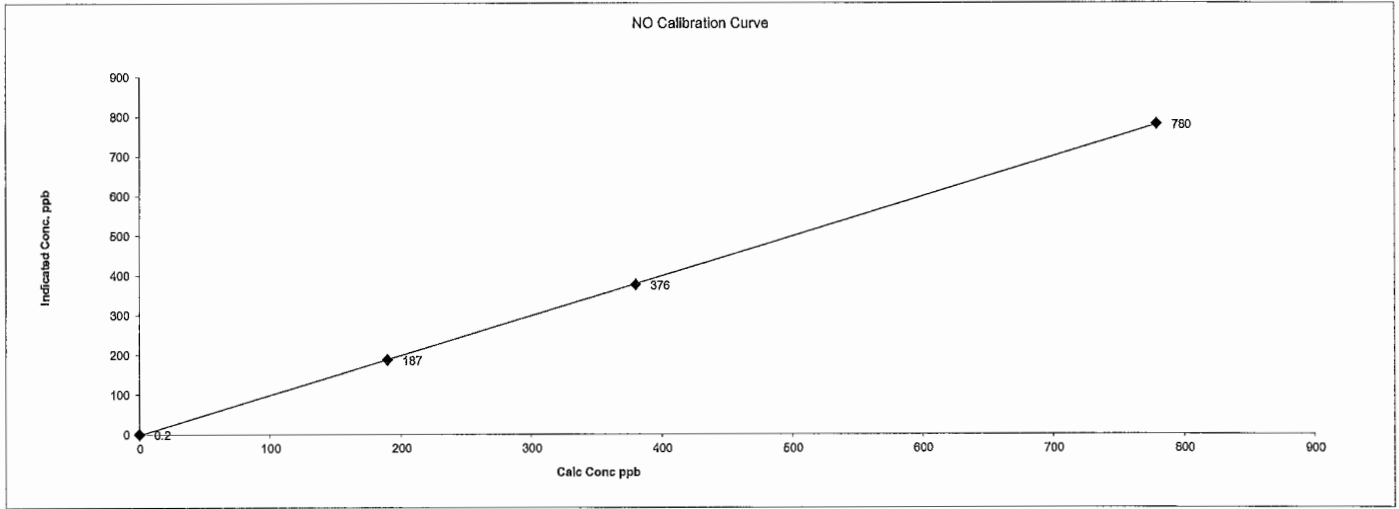
Comments:

One more GPT point for O3 Cal. O3:0.355. NO:383 NOx: 784 NO<sub>2</sub>:401

Date: 3-Feb-15  
 Company: LICA  
 Station Name/Location: Elk Point  
 Performed by: LL/AY

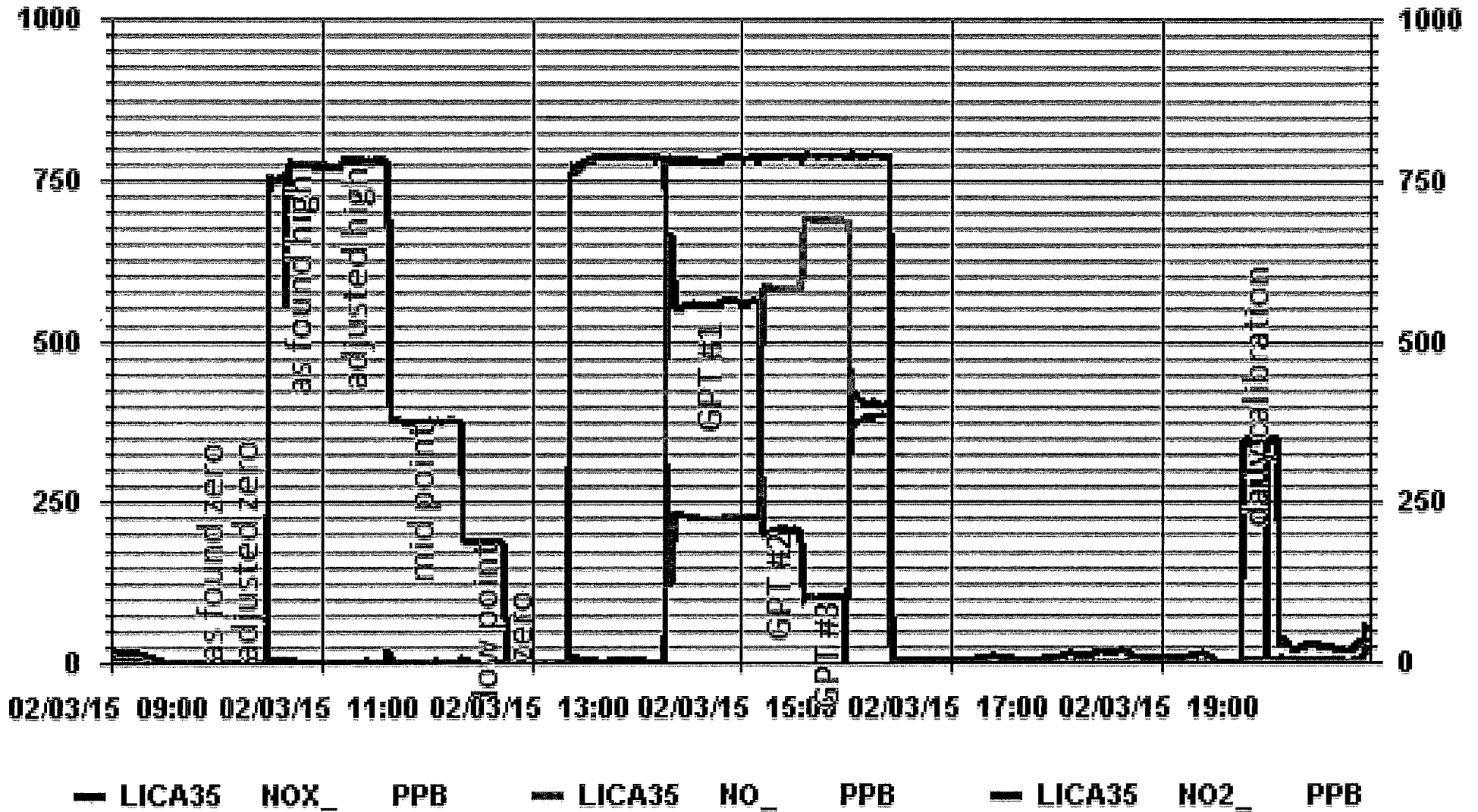
Start Time (mst): 9:15  
 End Time (mst): 16:34  
 Calibration Purpose: routine monthly  
 Cal Gas Expiry Date: 12-Aug-17

API 200E NOx Analyzer Calibration





### 01 Minute Averages



**OZONE**

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

Date: <u>3-Feb-15</u>	Start Time (mst): <u>16:25</u>
Company: <u>LICA</u>	End Time (mst): <u>19:00</u>
Station Name/Location: <u>Elk Point</u>	Calibration Purpose: <u>routine monthly</u>
Performed by: <u>LL/AY</u>	G.P.T. Date: <u>12-Aug-17</u>

---

Analyzer: <u>1002240372</u>	Range ppm: <u>500</u>
Serial Number: <u>13-Jan-15</u>	As Found C.F.: <u>1.000</u>
Last Calibration Date: <u>1.000</u>	New C.F.: <u>0.977</u>
Previous Cal High Point C.F.:	

As found:

O <sub>3</sub> Bkg:	<u>-0.3</u>
O <sub>3</sub> Coef:	<u>1.026</u>
Motherboard:	<u>3.3</u>
15.0	<u>15.0</u>
24.0	<u>23.9</u>
-3.3	<u>-3.2</u>
Interface Board:	<u>3.3</u>
5.0	<u>5.0</u>
15.0	<u>14.9</u>
-15.0	<u>-15.1</u>
Photo Lamp	<u>9.8</u>
24.0	<u>23.5</u>
O <sub>3</sub> Lamp	<u>9.4</u>
Bench:	<u>29.1</u>
Bench Lamp:	<u>54.1</u>
O <sub>3</sub> Lamp:	<u>68.2</u>
Pressure:	<u>701.5</u>
Cell A lpm:	<u>0.750</u>
Cell B lpm:	<u>0.590</u>
O <sub>3</sub> ppb:	<u>33.2</u>
Cell A ppb:	<u>34.4</u>
Cell B ppb:	<u>32</u>
Cell A Int:	<u>49557</u>
Cell B Int:	<u>47890</u>
Internal Span:	<u>362</u>

As left:

O <sub>3</sub> Bkg:	<u>-3</u>
O <sub>3</sub> Coef:	<u>1.026</u>
Motherboard:	<u>3.3</u>
15.0	<u>15.0</u>
24.0	<u>23.9</u>
-3.3	<u>-3.2</u>
Interface Board:	<u>3.3</u>
5.0	<u>5.0</u>
15.0	<u>14.9</u>
-15.0	<u>-15.1</u>
Photo Lamp	<u>9.8</u>
24.0	<u>23.5</u>
O <sub>3</sub> Lamp	<u>9.4</u>
Bench:	<u>29.1</u>
Bench Lamp:	<u>54.1</u>
O <sub>3</sub> Lamp:	<u>68.2</u>
Pressure:	<u>700.3</u>
Cell A lpm:	<u>.748</u>
Cell B lpm:	<u>.757</u>
O <sub>3</sub> ppb:	<u>322</u>
Cell A ppb:	<u>319</u>
Cell B ppb:	<u>320</u>
Cell A Int:	<u>50010</u>
Cell B Int:	<u>48197</u>
Internal Span:	<u>343</u>

---

<b>Callibrator:</b> Make & Model: <u>Enviroincs 6100</u> Serial #: <u>5212</u> NOx Gas Cylinder I.D. #: <u>LL42475</u> NOx Cylinder Conc. (ppm): <u>48.5</u>	<b>Callibrator Flow Targets:</b> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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>5000</td><td>0</td></tr> <tr><td>high</td><td>5000</td><td>0.355</td></tr> <tr><td>mid</td><td>5000</td><td>0.180</td></tr> <tr><td>low</td><td>5000</td><td>0.090</td></tr> </tbody> </table>	point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)	zero	5000	0	high	5000	0.355	mid	5000	0.180	low	5000	0.090
point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)														
zero	5000	0														
high	5000	0.355														
mid	5000	0.180														
low	5000	0.090														

---

Callibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	4994	0.0	4994	0.0	0.3	NA
adjusted high	4994	0.00	4994	401.0	408.0	0.984
mid	4994	0.00	4994	205.0	210.8	0.974
low	4994	0.00	4994	99.0	102.0	0.973
callibrator zero	4994	0.00	4994	0.0	0.2	NA

Average C.F.= 0.977

---

\*\*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>1.016</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>0.224%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>0%</u>	± 3% F.S.	PASS
		± 15%	PASS

---

**Comments:**

Pump vaccum is -19".

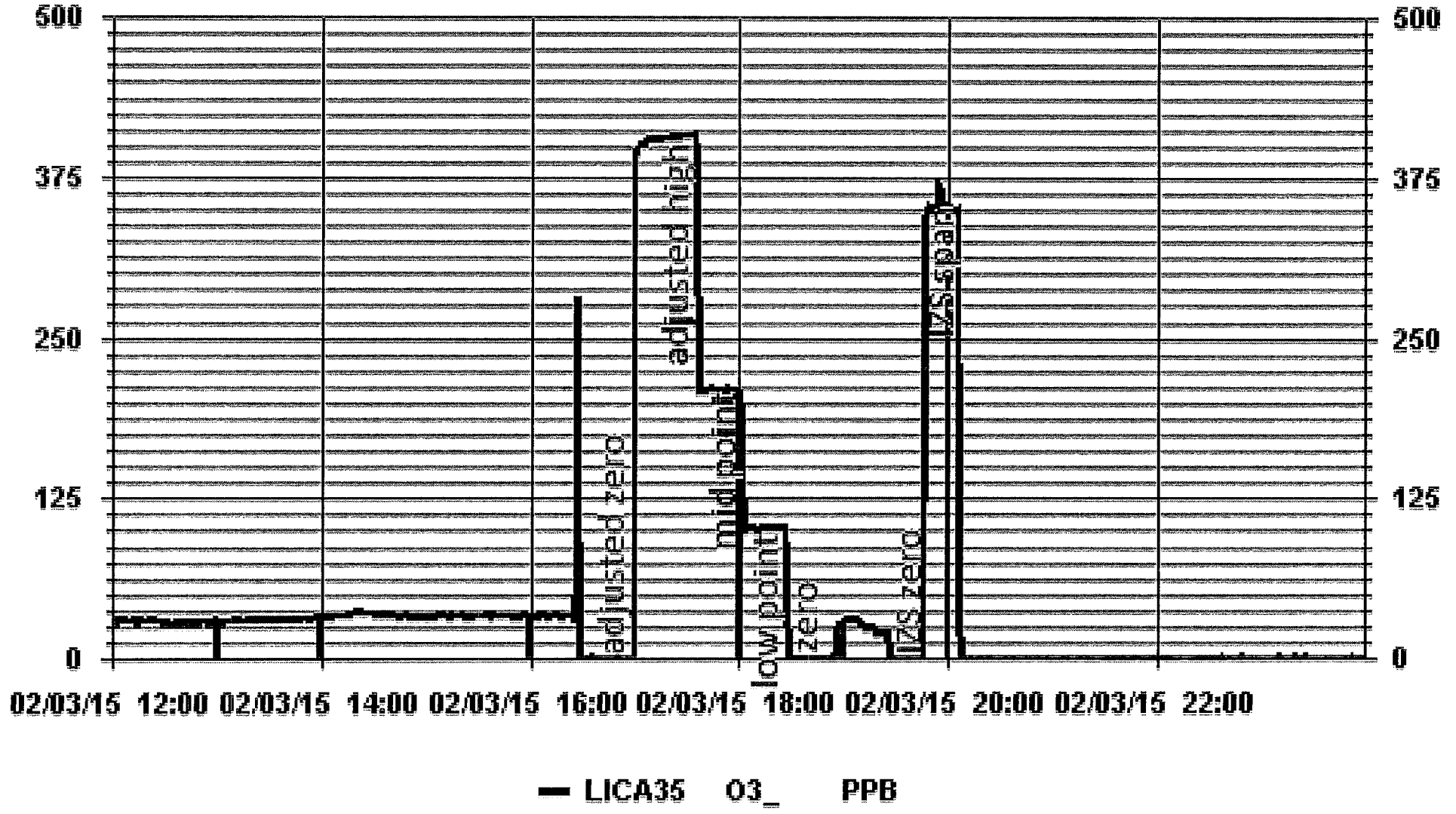
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**Thermo 49i O<sub>3</sub> Analyzer Calibration**

**O<sub>3</sub> Calibration Curve**

Calc Conc ppb	Indicated Conc. ppb
0	0
102.0	102.0
210.8	210.8
408.0	408.0

### 01 Minute Averages



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

Date: <u>24-Feb-15</u>	Start Time (mst): <u>11:55</u>
Company: <u>LICA</u>	End Time (mst): <u>13:43</u>
Station Name/Location: <u>Elk Point</u>	Calibration Purpose: <u>Shutdown</u>
Performed by: <u>Chris W / Alex Y</u>	G.P.T. Date: <u>24-Feb-15</u>

Analyzer: Serial Number: <u>1002240372</u>	Range ppm: <u>500</u>
Last Calibration Date: <u>3-Feb-15</u>	As Found C.F.: <u>0.968</u>
Previous Cal High Point C.F.: <u>0.984</u>	New C.F.: <u>NA</u>

	As found:	As left:
Motherboard:	O <sub>3</sub> Bkg: <u>-0.3</u>	O <sub>3</sub> Bkg: <u>NA</u>
	O <sub>3</sub> Coef: <u>1.026</u>	O <sub>3</sub> Coef: <u>NA</u>
	<u>3.3</u>	<u>3.3</u>
	<u>15.0</u>	<u>15.0</u>
	<u>24.0</u>	<u>24.0</u>
Interface Board:	<u>-3.3</u>	<u>-3.3</u>
	<u>3.3</u>	<u>3.3</u>
	<u>5.0</u>	<u>5.0</u>
	<u>15.0</u>	<u>15.0</u>
	<u>-15.0</u>	<u>-15.0</u>
Photo Lamp:	<u>9.8</u>	<u>NA</u>
	<u>24.0</u>	<u>24.0</u>
O <sub>3</sub> Lamp:	<u>9.4</u>	<u>NA</u>
	<u>28.0</u>	<u>NA</u>
Bench:	<u>54.1</u>	<u>NA</u>
	<u>68.1</u>	<u>NA</u>
Pressure:	<u>696.8</u>	<u>NA</u>
	<u>0.747</u>	<u>NA</u>
Cell A lpm:	<u>0.756</u>	<u>NA</u>
	<u>-0.2</u>	<u>NA</u>
Cell B lpm:	<u>2.5</u>	<u>NA</u>
	<u>-3.6</u>	<u>NA</u>
Cell A ppb:	<u>48533</u>	<u>NA</u>
	<u>45964</u>	<u>NA</u>
Cell B ppb:	<u>343</u>	<u>NA</u>

Calibrator:	Calibrator Flow Targets:															
Make & Model: <u>EnviroNics 6100</u>	<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>320</td> </tr> <tr> <td>mld</td> <td>4995</td> <td>160</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	320	mld	4995	160	low	4995	80
point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)														
zero	4995	0														
high	4995	320														
mld	4995	160														
low	4995	80														
Serial #: <u>4760</u>																
NOx Gas Cylinder I.D. #: <u>LL42575</u>																
NOx Cylinder Conc. (ppm): <u>48.5</u>																

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	0.1	NA
adjusted zero	NA	0.0	0	0.0		NA
as found high	4994	320.00	5314	382.0	394.5	0.968
adjusted high		NA				
mld	4994	160.00	5154	192.0	201.5	0.953
low	4994	80.00	5074	92.0	96.7	0.951
calibrator zero	NA	0.00	0	0.0		NA
**copy and paste flows and NO decrease from NOx cal in to calculated concentration**					Average C.F. =	0.957

Linear Regression/Calibration Results:			
Correlation Coefficient =	<u>1.000</u>	LIMITS	Pass/Fail ?
Slope =	<u>1.050</u>	> or = 0.995	PASS
b (Intercept as % of full scale) =	<u>0.006%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>2%</u>	± 3% F.S.	PASS
		± 15%	PASS

Comments:

Sample Span Valve has been changed Part # 102443-00 (p/n M22W4DFR-LV-123)

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

O<sub>3</sub> Calibration Curve

Calc Conc (ppb)	Indicated Conc. (ppb)
0	0
90.7	90.7
201.5	201.5

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

Date: <u>24-Feb-15</u>	Start Time (mst): <u>15:00</u>
Company: <u>LICA</u>	End Time (mst): <u>18:52</u>
Station Name/Location: <u>ELK Point</u>	Calibration Purpose: <u>Post-Repair</u>
Performed by: <u>Chris W / Alex Y</u>	G.P.T. Date: <u>24-Feb-15</u>

Analyzer: Serial Number: <u>1002240372</u>	Range ppm: <u>500</u>
Last Calibration Date: <u>3-Feb-15</u>	As Found C.F.: <u>NA</u>
Previous Cal High Point C.F.: <u>0.984</u>	New C.F.: <u>0.989</u>

	As found:	As left:
Motherboard:	O <sub>3</sub> Bkg: <u>-0.3</u>	O <sub>3</sub> Bkg: <u>-0.1</u>
	O <sub>3</sub> Coef: <u>1.026</u>	O <sub>3</sub> Coef: <u>1.005</u>
	<u>3.3</u> <u>3.3</u>	<u>3.3</u> <u>3.3</u>
	<u>15.0</u> <u>15.0</u>	<u>15.0</u> <u>5.0</u>
	<u>24.0</u> <u>23.8</u>	<u>24.0</u> <u>15.0</u>
Interface Board:	<u>-3.3</u> <u>-3.2</u>	<u>-3.3</u> <u>-3.2</u>
	<u>3.3</u> <u>3.3</u>	<u>3.3</u> <u>3.3</u>
	<u>5.0</u> <u>5.0</u>	<u>5.0</u> <u>5.0</u>
	<u>15.0</u> <u>14.9</u>	<u>15.0</u> <u>14.9</u>
	<u>-15.0</u> <u>-15.1</u>	<u>-15.0</u> <u>-15.1</u>
Photo Lamp:	<u>9.8</u> <u>9.8</u>	<u>9.8</u> <u>9.8</u>
	<u>24.0</u> <u>23.8</u>	<u>24.0</u> <u>23.8</u>
	O <sub>3</sub> Lamp: <u>8.1</u>	O <sub>3</sub> Lamp: <u>8.1</u>
	Bench: <u>23.1</u>	Bench: <u>28.2</u>
	Bench Lamp: <u>54.0</u>	Bench Lamp: <u>54.0</u>
O <sub>3</sub> Lamp:	<u>68.1</u>	<u>68.1</u>
	Pressure: <u>694.4</u>	Pressure: <u>696.2</u>
	Cell A lpm: <u>0.743</u>	Cell A lpm: <u>0.746</u>
	Cell B lpm: <u>0.755</u>	Cell B lpm: <u>0.756</u>
	O <sub>3</sub> ppb: <u>-0.2</u>	O <sub>3</sub> ppb: <u>0.4</u>
Cell A ppb:	<u>1.7</u>	<u>2.9</u>
	Cell B ppb: <u>-2.8</u>	Cell B ppb: <u>-2.2</u>
	Cell A Int: <u>49462</u>	Cell A Int: <u>49347</u>
	Cell B Int: <u>45654</u>	Cell B Int: <u>45779</u>
	Internal Span: <u>343</u>	Internal Span: <u>332.9</u>

Calibrator: Make & Model: <u>Enviroics 6100</u> Serial #: <u>4760</u> NOx Gas Cyl/nder I.D. #: <u>LL42575</u> NOx Cylinder Conc. (ppm): <u>48.5</u>	Calibrator Flow Targets:		
	point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)
	zero	4995	0
	high	4995	320
	mid	4995	160
low	4995	80	

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	(ppb)
as found zero	NA	0.0	0	0.0	0.0	NA
adjusted zero	4994	0.0	4994	0.0	0.0	NA
as found high	NA	NA	NA	NA	NA	NA
adjusted high	4994	320.00	5314	382.0	382.4	0.999
mid	4994	160.00	5154	192.0	194.4	0.988
low	4994	80.00	5074	92.0	93.7	0.982
calibrator zero	4994	0.00	4994	0.0	0.0	NA
**copy and paste flows and NO decrease from NOx cal in to calculated concentration**						Average C.F.= <u>0.989</u>

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>0.216%</u>	0.85-1.15	PASS
% change in C.F. from last cal	<u>NA</u>	± 3% F.S.	PASS
		± 15%	NA

Comments:

Post-repair calibration following installation of new sample/span valve.  
 Incorrect target set in calibrator 17:07 to 17:13. Low point starts at 17:14

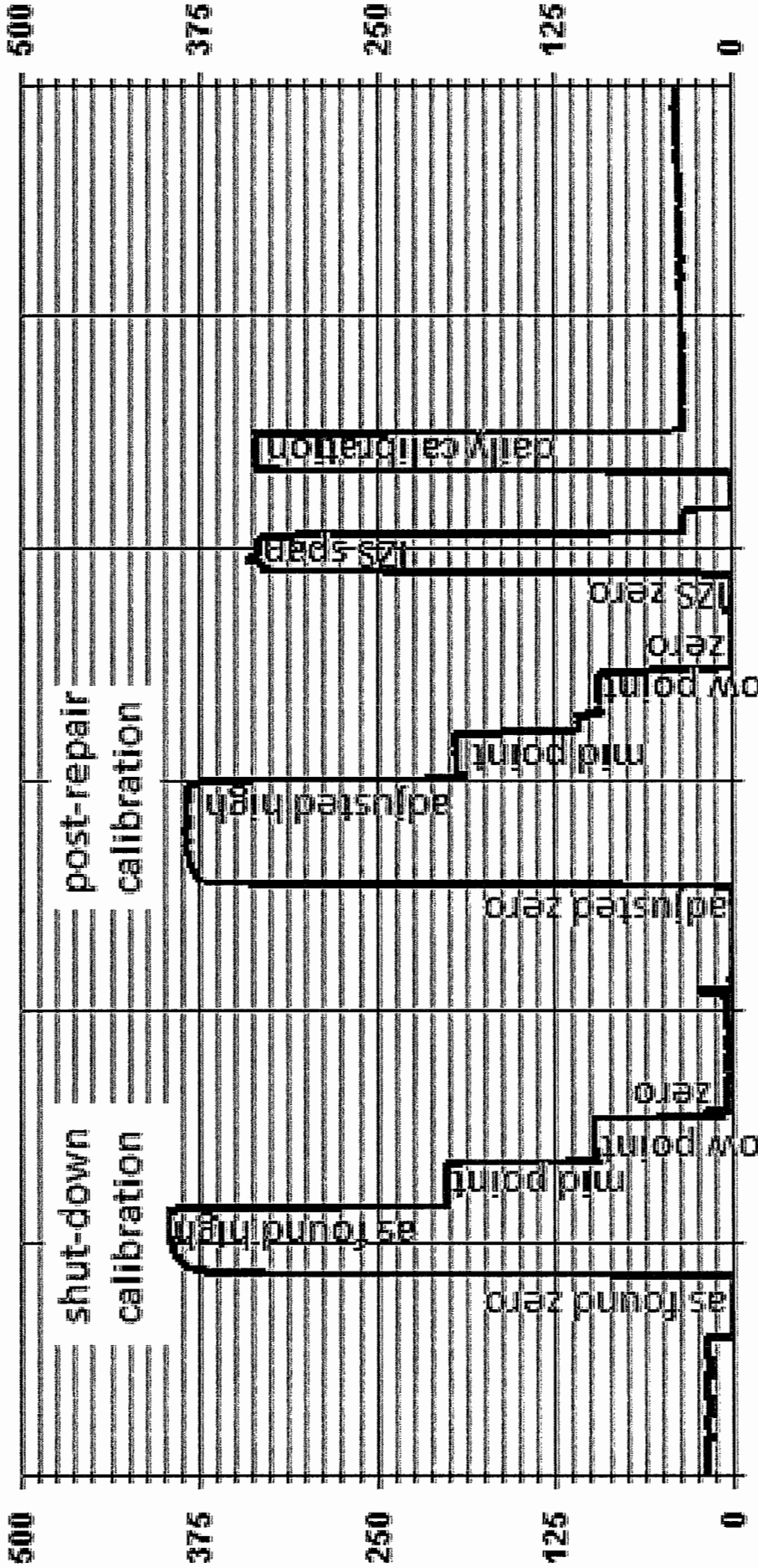
  

### Thermo 49i O<sub>3</sub> Analyzer Calibration

#### O<sub>3</sub> Calibration Curve

Calc Conc (ppb)	Indicated Conc (ppb)
0	0
93.7	93.7
194.4	194.4
382.4	382.4

01 Minute Averages



02/24/15 10:40 02/24/15 12:40 02/24/15 14:40 02/24/15 16:40 02/24/15 18:40 02/24/15 20:40

— LICA35 03\_ PPB

***PARTICULATE MATTER***





## R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 3-Feb-15  
 Company: LICA  
 Station Name/Location: Elk Point  
 Previous Audit Date: 13-Jan-15

Parameter: PM2.5  
 Performed by: LL/AY  
 Start/End Time (mst): 17:30/20:00  
 Calibration Purpose: monthly routine

**1400A Information and Status:**

Serial Number: 1405A207691003 As Found Filter Loading %: 18.99%  
 Ko Factor: 15634 As Left Filter Loading %: 18 %  
 Ambient Temperature °C: -18.3 As Found Noise: 0.003  
 Ambient Pressure atm: 0.939 As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.37  
 Aux Flow Reading lpm: 13.67 Warnings: none

**Reference Standards:**

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher Scientific</u>	<u>Fisher Scientific</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>11-Apr-14</u>	<u>11-Apr-14</u>

**As found leak check:**

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	0.04	0.00	0.04
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	0.46	0.00	0.46
	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	0.04	0.00	0.04
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	0.46	0.00	0.46
	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>-18.7</u>	1405F pressure atm: <u>0.939</u>
reference temperature °C: <u>-18.3</u>	reference pressure: <u>0.939</u>
difference °C: <u>0.4</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>-18.7</u>	1405F pressure atm: <u>0.939</u>
reference temperature °C: <u>-18.3</u>	reference pressure: <u>0.939</u>
difference °C: <u>0.4</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>13.67</u>
reference main flow lpm: <u>2.90</u>	reference total/aux flow lpm: <u>13.00</u>
difference lpm: <u>-0.10</u>	difference lpm: <u>-0.67</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>13.67</u>
reference main flow lpm: <u>2.84</u>	reference total/aux flow lpm: <u>12.98</u>
difference lpm: <u>-0.16</u>	difference lpm: <u>-0.69</u>

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

Last K<sub>o</sub> audit date: NA  
 1405F K<sub>o</sub> factor: 15634  
 Measured K<sub>o</sub> factor: NA  
 % difference: NA

**Comments:**



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: 17-Feb-15  
 Company: LICA  
 Station Name/Location: Elk Point  
 Previous Audit Date: 5-Feb-15

Parameter: PM 2.5  
 Performed by: Alex Yakupov  
 Start/End Time (mst): 17:22 - 18:32  
 Calibration Purpose: 2nd Audit

**1400A Information and Status:**

Serial Number:	<u>1405A207691003</u>	As Found Filter Loading %:	<u>21.03</u>
Ko Factor:	<u>14578</u>	As Left Filter Loading %:	<u>18.90</u>
Ambient Temperature °C:	<u>-15.60</u>	As Found Noise:	<u>0.011</u>
Ambient Pressure atm:	<u>0.938</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>11-Apr-14</u>	<u>11-Apr-14</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	-0.44	0.00	-0.44
	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	-0.44	0.00	-0.44
	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>0.938</u>
reference temperature °C: <u>-15.3</u>	reference pressure: <u>0.934</u>
difference °C: <u>0.3</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>-15.6</u>	1405F pressure atm: <u>0.938</u>
reference temperature °C: <u>-15.3</u>	reference pressure: <u>0.934</u>
difference °C: <u>0.3</u>	difference: <u>-0.004</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>13.67</u>
reference main flow lpm: <u>2.92</u>	reference total/aux flow lpm: <u>13.85</u>
difference lpm: <u>-0.08</u>	difference lpm: <u>0.18</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>13.67</u>
reference main flow lpm: <u>2.92</u>	reference total/aux flow lpm: <u>13.85</u>
difference lpm: <u>-0.08</u>	difference lpm: <u>0.18</u>

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

Last K<sub>o</sub> audit date: 1-May-14  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: NA  
 % difference: NA

**Comments:**

***WIND SYSTEM***



# Meteorological Sensor Audit

## Station Information

Company:	LICA	Performed By:	Chris Wesson/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	35.28	35.54	35.53	0.99
3000	52.92	53.29	53.31	0.99
4000	70.56	71.08	71.08	0.99
5000	88.2	88.88	88.91	0.99
6000	105.84	106.6	106.7	0.99
7000	123.48	124.4	124.5	0.99
8000	141.12	142.2	142.2	0.99
9000	158.76	160	160.1	0.99
10000	176.4	177.8	177.8	0.99
Average Correction Factor:				0.99

## Wind Direction

Sensor make:	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: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

***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>5212</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>October 2013</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>LL42475</u>	Barometric Pressure	<u>N/A</u>
NO/NOX Concentration	<u>48.5/48.5</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>	Gas flows not available from display.	

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
4995	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4997	0.0	0.800	0.800	0.814	-0.001	0.813	2%	2%
4995	0.0	0.400	0.400	0.409	-0.001	0.408	2%	2%
4998	0.0	0.200	0.200	0.204	0.000	0.204	2%	2%
Absolute Average Percent Difference							2%	2%

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

NO		LIMITS		NOx	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0176	<b>0.90-1.10</b>		m (Slope)=	1.0161
b (Intercept % of FS)=	0.0600	± 3% F.S.		b (Intercept % of FS)=	0.0600

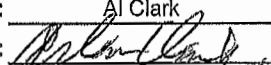
Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
4997	0.000	0.000	0.813	-0.001	0.802	NO <sub>2</sub>	% Diff. Limit
4997	0.580	0.527	0.286	0.527	0.813	0	± 10%
4997	0.300	0.278	0.535	0.238	0.813	0	± 10%
4997	0.100	0.093	0.720	0.091	0.811	0	± 10%
Absolute Average Percent Difference						0	± 10%

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

NO <sub>2</sub>		LIMITS	
Correlation=	0.9965	≥ 0.995	
m (Slope)=	0.9898	<b>0.90-1.10</b>	
b (Intercept % of FS)=	-0.8461	± 3% F.S.	

AENV Standards		NO <sub>x</sub> Analyzer	
<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 18, 2014  
Location: McIntyre Center Edmonton

<b>Company</b> <u>Maxxam</u>		<b>Operator:</b> <u>Limin Li</u>	
<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>		

<b>Dilution Flow (sccm)</b>			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
		Pt. #3	<u>5000</u>
<b>Gas Flow (sccm)</b>			
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%
<b>Absolute Average Percent Difference</b>							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%
<b>Absolute Average Percent Difference</b>						0	± 10%

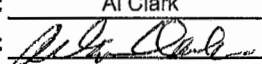
**LINEAR REGRESSION ANALYSIS** *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<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 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 Date: December 17, 2014

Operator Signature:  Location: McIntyre Center Edmonton



# Calibrator Performance Audit

## Hydrogen Sulphide (by Cylinder Dilution)

File No. 2012-301A

Company: Maxxam Operator: Ting Xu

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>831</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>Dec 21/11</u>	Temperature (°C)	<u>N/A</u>
H <sub>2</sub> S Cylinder Conc.	<u>LL42648</u>	Barometric Pressure	<u>N/A</u>
H <sub>2</sub> S Cylinder S/N	<u>10.0</u>		

**Flow Measurements**

Pt. No. 1 40 Pt. No. 2 20 Pt. No. 3 11.5

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.0000	0.0000		
4960	0.0800	0.0809	1%	± 10%
4977	0.0400	0.0404	1%	± 10%
4987	0.0230	0.0234	2%	± 10%
Absolute Average Percent Difference			1%	± 10%

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

H <sub>2</sub> S	LIMITS
Correlation=	1.0000    ≥ 0.995
m (Slope)=	1.0107    0.90-1.10
b (Intercept % of FS)=	0.0439    ± 3% F.S.

AENV Standards	H <sub>2</sub> S Analyzer
Audit Calibrator	Make/Model
Make/Model	<u>Teco 45C</u>
Serial/AMU Number	Serial/AMU Number
<u>R&amp;R MFC 201</u>	<u>AMU 1624</u>
<u>AMU 1690</u>	Last Calibration Date
	<u>Dec13/12</u>
	Full Scale (ppm)
	<u>0.1</u>

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

Auditor: Al Clark Date: December 13, 2012  
 Operator Signature:  Location: McIntyre Center Edmonton



***CALIBRATION GASES***



# 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: 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:					<b>49.0</b>

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. 2013-324CGA

Company: Maxxam Operator's Name: Chris Wesson  
 Cylinder #: BLM005049 Concentration PPM: 10.1 Tolerance(%): 2 Certified By: Air Liquide

**Reference Calibrator and Gas:**

Make/Model: R&R MFC 201  
 Serial Number: AMU 1690  
 Last Verification Date: February 21, 2013  
 Gas Type: H2S Conc. 20.02  
 Cylinder Number: D249556

**Flow Measurement Device:**

Make/Model: Bios DC2  
 Serial Number: AMU 1659  
 Temp. °C: 21.0 C  
 B.P. 696 mmHg

**Reference Analyzer:**

Make/Model: Teco 45C Serial/AMU Number: 1624  
 Instrument Settings: Zero: 7.5 Span: 1.023 Range: 0.1  
 Last Calibration: Date: Feb 21/13 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>0.00749</del>	<del>133.586</del>	<del>10.3</del>
5103	38.2	0.0768	0.00749	133.586	10.3
5087	17.9	0.0355	0.00362	284.190	10.1
5064	9.2	0.0182	0.00182	550.435	10.0
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.1

Percent variance from Stated: 0.2

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

Auditor: Al Clark  
 Operator Signature: *Chris Wesson*

Date: February 21, 2013  
 Location: McIntyre Center Edmonton



# Calibration Gas Audit

## NO Cylinder Gas

File No. 2014-252CGA

Company: Maxxam Operators name: Limin Li  
Cylinder #: LL42475 Conc (PPM) 48.5/48.5 Tolerance (%) 1 Certified By: Air Liquide

**Reference Calibrator and Gas:**

Make/Model Teco 146i  
Serial Number AMU 1809  
Last Verification Date December 15, 2014  
Gas Type NO Conc. 48.79  
Cylinder Number CAL017892

**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 42i Serial/AMU Number: 1868  
Instrument Settings Zero: 4.3 Span: 1.017 Range: 1.0  
Last Calibration: Date: Dec15/14 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>0.01662</del>	<del>60.181</del>	<del>50.0</del>	<del>50.1</del>
4983	82.8	0.830	0.832	0.01662	60.181	50.0	50.1
4998	40.9	0.414	0.415	0.00818	122.200	50.6	60.7
4981	20.3	0.206	0.206	0.00408	245.369	50.5	50.5
Average Cylinder Concentration:						<b>50.4</b>	<b>50.4</b>

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>48.5</u>	<u>48.5</u>
Percent variance from Stated: <u>3.8</u>	<u>4.0</u>

**Cylinder gas tolerances based on NO only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  COMMENTS: \_\_\_\_\_  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration  Contains 50.3 ppm of SO2.  
 > 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.  
 5551-56th Street  
 Edmonton, AB T5B 2Z9  
 Tel: 780-443-6775  
 Fax: 780-443-5302

03/27/2014

MAXAM ANALYTICAL INC/NA  
 9372 48TH ST  
 EDMONTON, AB T6B 2L7

Work Order No. 20248656  
 Customer Reference No.

Product Lot/Batch No. Z582 4 085 02  
 Product Part No. NI ME 600P2P-AQ

**CERTIFICATE OF ANALYSIS**  
*Primary Standard*

Component	Requested Concentration	Certified Concentration	Analytical Precision	Analytical Accuracy
Methane	500.0ppm	501.4ppm	U	±1% rel
Propane	200.0ppm	202.2ppm	U	±1% rel
Nitrogen	Balance	Balance		

Analytical Instruments: Mettler Toledo Analytical Balance-102g x USA--  
 Hewlett-Packard (Agilent) 8890--GC-FID

Cylinder Style: AQ  
 Cylinder Pressure: 2200 psig  
 Cylinder Volume: 32.8 ltr  
 Valve Outlet Connection: CGA-330  
 Cylinder No(s): LL33874

Filling Method: Gravimetric  
 Date of Fill: 03/23/2014  
 Expiration Date: 03/28/2017

Analyst: *T. Myrland*  
 Todd Myrland

The gas analyzed herein was prepared by Praxair Canada, Inc. in accordance with a certified method. It is prepared by gravimetric, volumetric, or partial pressure techniques. The certified method is prepared in accordance with Praxair Canada, Inc. Technical Standards which are either included by weight reference in the National Methods of Standards and Technology (NIST), Standards Canada or in other NIST Primary Reference Standard (PRS) methods.

- NOTE: The following is a description of the type of error that can be expected to occur in a typical analytical result:
- |   |   |   |   |
|---|---|---|---|
| 1. Gas preparation with random error    | 2. Gas chromatography with random error | 3. Gas chromatography with random error | 4. Gas chromatography with random error |
| 5. Gas chromatography with random error | 6. Gas chromatography with random error | 7. Gas chromatography with random error | 8. Gas chromatography with random error |

The information contained herein has been prepared in accordance with Praxair Canada, Inc. 100% and reflects the information as provided within the limits of the analytical methods described and is intended to be used as the specific analytical performed, with no warranty or representation as to the accuracy of the gas or the information for any particular purpose. The information is intended for the use of the customer and the user of the gas. Praxair Canada, Inc. shall not be liable for any loss or damage, including consequential loss, arising out of the use of the information contained herein, including the establishment or recording of such information.

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

***PAH SAMPLES***

<b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15020077-003  <b>MATRIX:</b> Air Filter  <b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/Feb 5, 2015  <b>CANISTER ID:</b> TE-01  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 05-Feb-15 0:00  <b>DATE RECEIVED:</b> 10-Feb-15  <b>REPORT CREATED:</b> 04-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.22 ug/PUF	0.01	NA-017	01-Mar-15
2-Methylnaphthalene		0.11 ug/PUF	0.01	NA-017	01-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(b,j,k)fluoranthene		0.03 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Chrysene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Fluoranthene		0.02 ug/PUF	0.01	NA-017	01-Mar-15
Fluorene		0.07 ug/PUF	0.01	NA-017	01-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Naphthalene		0.17 ug/PUF	0.01	NA-017	01-Mar-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Phenanthrene		0.05 ug/PUF	0.01	NA-017	01-Mar-15
Pyrene		0.02 ug/PUF	0.01	NA-017	01-Mar-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, Ops Manager <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 LICA 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> 15020077-003</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/Feb 5, 2015</p> <p><b>CANISTER ID:</b> TE-01</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 05-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 10-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-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	01-Mar-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, Ops Manager</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 LICA 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> 15020208-001  <b>MATRIX:</b> Air Filter  <b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/Feb 11, 2015  <b>CANISTER ID:</b> TE06  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 11-Feb-15 0:00  <b>DATE RECEIVED:</b> 19-Feb-15  <b>REPORT CREATED:</b> 04-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.36 ug/PUF	0.01	NA-017	01-Mar-15
2-Methylnaphthalene		0.61 ug/PUF	0.01	NA-017	01-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthene		0.03 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(b,j,k)fluoranthene		0.03 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Chrysene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Fluoranthene		0.02 ug/PUF	0.01	NA-017	01-Mar-15
Fluorene		0.07 ug/PUF	0.01	NA-017	01-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Naphthalene		0.65 ug/PUF	0.01	NA-017	01-Mar-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Phenanthrene		0.06 ug/PUF	0.01	NA-017	01-Mar-15
Pyrene		0.02 ug/PUF	0.01	NA-017	01-Mar-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, Ops Manager  
**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 LICA 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> 15020208-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/EP/Feb 11, 2015</p> <p><b>CANISTER ID:</b> TE06</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 11-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 19-Feb-15</p> <p><b>REPORT CREATED:</b> 04-Mar-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	01-Mar-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, Ops Manager</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 LICA 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> 15020240-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/Feb 17, 2015/EP</p> <p><b>CANISTER ID:</b> TE-11</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 17-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 24-Feb-15</p> <p><b>REPORT CREATED:</b> 05-Mar-15</p> <p><b>REPORT VERSION:</b> Version 01</p>
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Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.36 ug/PUF	0.01	NA-017	01-Mar-15
2-Methylnaphthalene		0.66 ug/PUF	0.01	NA-017	01-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthene		0.03 ug/PUF	0.01	NA-017	01-Mar-15
Acenaphthylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Acridine	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(b,j,k)fluoranthene		0.03 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Chrysene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Fluoranthene		0.03 ug/PUF	0.01	NA-017	01-Mar-15
Fluorene		0.05 ug/PUF	0.01	NA-017	01-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Naphthalene		0.35 ug/PUF	0.01	NA-017	01-Mar-15
Perylene	K, T, U	< 0.01 ug/PUF	0.01	NA-017	01-Mar-15
Phenanthrene		0.07 ug/PUF	0.01	NA-017	01-Mar-15
Pyrene		0.03 ug/PUF	0.01	NA-017	01-Mar-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, Ops Manager</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 LICA 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> 15020240-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/Feb 17, 2015/EP</p> <p><b>CANISTER ID:</b> TE-11</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 17-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 24-Feb-15</p> <p><b>REPORT CREATED:</b> 05-Mar-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	01-Mar-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, Ops Manager</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 LICA 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> 15030014-001  <b>MATRIX:</b> Air Filter  <b>CLIENT SAMPLE ID:</b> LICA/PUF/Feb 23, 2015/EP  <b>CANISTER ID:</b> TE05  <b>DESCRIPTION:</b> Elk Point Airport  <b>DATE SAMPLED:</b> 23-Feb-15 0:00  <b>DATE RECEIVED:</b> 03-Mar-15  <b>REPORT CREATED:</b> 25-Mar-15  <b>REPORT VERSION:</b> Version 01
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Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.06	ug/Filter	0.01	NA-017	15-Mar-15
2-Methylnaphthalene		0.11	ug/Filter	0.01	NA-017	15-Mar-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Acenaphthene		0.05	ug/Filter	0.01	NA-017	15-Mar-15
Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Acridine	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Chrysene		0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Fluoranthene		0.04	ug/Filter	0.01	NA-017	15-Mar-15
Fluorene		0.08	ug/Filter	0.01	NA-017	15-Mar-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Naphthalene		0.12	ug/Filter	0.01	NA-017	15-Mar-15
Perylene	K, T, U	< 0.01	ug/Filter	0.01	NA-017	15-Mar-15
Phenanthrene		0.15	ug/Filter	0.01	NA-017	15-Mar-15
Pyrene		0.02	ug/Filter	0.01	NA-017	15-Mar-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

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**On behalf of:** PJ Pretorius, Portfolio Manager, EAS

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<p><b>RESULTS TO:</b> Adewunmi Adekanmbi LICA 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> 15030014-001</p> <p><b>MATRIX:</b> Air Filter</p> <p><b>CLIENT SAMPLE ID:</b> LICA/PUF/Feb 23, 2015/EP</p> <p><b>CANISTER ID:</b> TE05</p> <p><b>DESCRIPTION:</b> Elk Point Airport</p> <p><b>DATE SAMPLED:</b> 23-Feb-15 0:00</p> <p><b>DATE RECEIVED:</b> 03-Mar-15</p> <p><b>REPORT CREATED:</b> 25-Mar-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/Filter	0.01	NA-017	15-Mar-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><b>Certified By:</b> Graham Knox, Ops Manager</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

<b>Client:</b> <u>Lakeland Industry &amp; Community Association</u>	<b>Project #:</b> <u>2833-2015-02-35- C</u>
<b>Site:</b> <u>Elk Point site</u>	<b>Contact:</b> <u>Mike Bisaga</u>

QA Check Complete      msdmka      Date March 02, 2015

QA Check Review      msdmka      Date March 02, 2015

Report Complete      msdmka      Date April 08, 2015

Report Reviewed      [Signature]      Date 9- Apr -15

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

Notes