

# Lakeland Industry & Community Association

Maskwa Monitoring Site  
Ambient Air Monitoring  
Data Report  
For  
February 2012

Prepared By:



March 23, 2012



## Introduction

The following Ambient Air Monitoring report was prepared for:

Mr. Mike Bisaga  
**Lakeland Industry & Community Association**  
Box 8237  
5107W – 50 Street  
Bonnyville, Alberta  
T9N 2J5

Monitoring Location: Maskwa  
Data Period: February 2012

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

# Calibration Procedure

The following calibration procedure applies to all calibrations conducted at the Lakeland Industry & Community Association Air Monitoring Station.

Calibration gas concentrations are generated using a dynamic mass flow controlled calibrator. EPA Protocol one gases are diluted with zero air generated on site. The Mass Flow Controllers in the calibrator are referenced using an NIST traceable flow meter once per month. All listed flows are reported as corrected to Standard Temperature and Pressure (STP).

Generated zero gas is introduced to the analyzer first. Three concentrations of calibration gas are then generated in order to introduce points at approximately 50-80%, 25-40% & 10-20% of the analyzer's full-scale range. An auto zero and span are then performed to validate the daily zero and span values recorded to the next multi-point calibration.

All indicated concentrations are taken from the ESC data logger used to collect the data for monthly reporting.

The calibrations conducted at the LICA - Maskwa Air Monitoring Stations conform to the following Maxxam Standard Operation Procedures:

- CAL SOP-00211
- CAL SOP-00209
- CAL SOP-00213
- CAL SOP-00214
- CAL SOP-00208

Conformance of each calibration to Alberta Environment regulations is outlined in the individual calibration reports. The slope and correlation coefficient are derived from the calculated and indicated analyzer responses. The percent change is calculated using the previous calibration correction factor and the current correction factor before adjustment. All calibration's and maintenance conforms to the procedures outlined in the *Air Monitoring Directive, Appendix A-10, Section 1.6*.

# MONTHLY CONTINUOUS DATA SUMMARY

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – MASKWA

### Continuous Ambient Monitoring – February 2012

LICA MASKWA SITE						MAXIMUM VALUES						OPERATIONAL TIME (PERCENT)	
						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	0.95	12	22	19	6.7	316(NW)	3.1	13	100.0
H2S (PPB)	10	3	0	0	0.19	4	1	9	0	252(WSW)	0.7	4	99.9
THC (PPM)	-	-	-	-	2.28	3.3	1	9	0	252(WSW)	2.7	1, 12	100.0
NOx (PPB)	-	-	-	-	5.65	49	1	10	2.8	214(SSW)	20.1	1	99.9
NO (PPB)	-	-	-	-	1.05	34	1	10	2.8	214(SSW)	6.1	1	99.9
NO <sub>2</sub> (PPB)	159	-	0	-	4.52	26	1	17	0.4	118(ESE)	13.7	1	99.9
VECTOR WS (KPH)	-	-	-	-	4.64	16.3	13	11	-	313(NW)	10.3	5	99.4
VECTOR WD (DEGREES)	-	-	-	-	257(WSW)	-	-	-	-	-	-	-	99.4
RELATIVE HUMIDITY (%)	-	-	-	-	66.11	87	5	6	3.8	298(WNW)	79.0	19	100.0
TEMPERATURE (DEG C)	-	-	-	-	-8.87	6.3	17	13	4.8	292(WNW)	-2.1	22	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	941	964	6	11	4.1	79(ENE)	961.7	10	100.0
PRECIPITATION (MM)	-	-	-	-	0.00	0.6	22	11	5.9	309(NW)	1.9	22	100.0

NA-NOT APPLICABLE VAR-VARIOUS

# General Monthly Summary

## Equipment Operation

The following summary outlines the analyzer performance. Any non-conformances, problems or maintenance performed are detailed at the end of each section.

### AQM STATION – LICA – Maskwa

#### Sulphur Dioxide (PPB)

- Analyzer make / model - API 100E, S/N: 508

The monthly calibration was performed on February 15<sup>th</sup>. The inlet filter was changed before the monthly calibration was started. The analyzer spanned high on February 25<sup>th</sup> due to the zero/span pump failure. As found points check was performed on February 28<sup>th</sup>, and the result was good. The pump for the zero/span system was rebuilt following the as found points. A post-repair calibration was done on February 19<sup>th</sup>. Data was corrected using daily zero information.

#### Hydrogen Sulphide (PPB)

- Analyzer make / model - API 101E, S/N: 511

No operational issue was observed during the month. The inlet filter was changed before the monthly calibration was started on February 15<sup>th</sup>. Data was corrected using daily zero information.

#### Total HydroCarbon (PPM)

- Analyzer make / model –TECO 51C-LT, S/N: 436609738

No operational issue was observed during the month. The inlet filter was changed before the monthly calibration was started on February 15<sup>th</sup>. Both the H2 and CH4 gas cylinders were replaced on February 15<sup>th</sup>. Data was corrected using daily zero information.

# General Monthly Summary

## AQM STATION – LICA – Maskwa

### Nitrogen Dioxide (PPB)

- Analyzer make / model - API 200E, S/N: 594

No operational issue was observed during the month. The inlet filter was changed before the monthly calibration was started on February 15<sup>th</sup>. Data was corrected using daily zero information.

### Vector Wind Speed (KPH) & Vector Wind Direction (DEG)

- System make / model - RM Young 5103 VK, S/N: 56589 replaced to MetOne 50.5H Sonic, S/N: H10703

The wind system is reported as vector wind speed and vector wind direction.

No operational issue was observed this month. The MetOne wind system was installed on February 23<sup>rd</sup>. The manufacturer calibration was performed on December 20<sup>th</sup>, 2011.

Wind speed maximum reading recorded on February 28<sup>th</sup> at hour of 2 was invalidated as the reading went above the full scale; reason unknown.

### Relative Humidity (PERCENT)

- System make / model - Met One 083

No operational issues observed during the month.

### Precipitation (MM)

- System make / model - Met One 387

No operational issues observed during this month.

# General Monthly Summary

## **AQM STATION – LICA – Maskwa**

### **Barometric Pressure (MILLIBAR)**

- System make / model - Met One 092

No operation issue was observed during the month.

### **Ambient Temperature (DEGC)**

- System make / model - Met One 060

No operational issue was observed during the month.

### **Trailer Temperature (DEG C)**

- System make / model – R&R 61

No operational issue was observed during the month.

### **Standard Deviation Wind Direction (DEG)**

- System make / model –Met One 50.5H

No operational issue was observed during the month.



# General Monthly Summary

## AQM STATION – LICA – Maskwa

### Datalogger

- System make / model - ESC 8832
- Software make/version - ESC v 5.51a

No operational issue was observed during the month.

### Trailer

The manifold was cleaned on February 15<sup>th</sup>.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Sulphur Dioxide

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA**  
**FEBRUARY 2012**  
**SULPHUR DIOXIDE (SO<sub>2</sub>) 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.	
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	1	0	1	0	1	1	0	0	0	1	1	1	1	4	2	1	1	1	1	1	IZS	0	0	0	0	4	0.8	24
2	1	3	1	2	3	4	10	1	0	1	0	0	0	0	1	0	0	0	0	IZS	0	0	0	0	10	1.2	24	
3	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	1	1	0	IZS	0	0	0	0	0	2	0.3	24	
4	0	0	0	0	0	0	0	0	0	0	2	4	3	4	4	4	4	IZS	2	2	2	0	0	1	4	1.4	24	
5	1	1	0	0	1	1	7	9	1	2	2	3	4	3	1	0	IZS	0	0	0	0	0	2	3	9	1.8	24	
6	7	3	2	1	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	7	0.6	24	
7	0	0	0	0	0	0	0	0	0	0	1	1	2	2	IZS	0	0	1	0	0	0	0	0	0	2	0.3	24	
8	1	1	1	1	0	0	0	0	0	0	1	0	0	IZS	0	1	1	1	1	2	3	3	1	1	3	0.8	24	
9	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
12	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.0	24	
13	0	0	0	0	0	0	0	0	IZS	1	6	4	8	8	0	0	2	4	10	10	3	3	10	3	10	3.1	24	
14	2	1	0	0	0	0	0	IZS	0	0	0	2	2	1	2	0	0	2	3	1	3	3	3	4	4	1.3	24	
15	0	0	1	0	3	1	IZS	0	0	0	0	2	2	1	C	C	C	C	0	2	3	0	0	0	3	0.8	24	
16	1	1	1	3	2	IZS	2	4	6	4	5	2	2	1	0	0	0	0	0	0	0	0	0	0	6	1.5	24	
17	0	0	0	0	IZS	0	0	0	0	0	5	1	3	2	0	0	0	0	0	0	0	0	0	0	5	0.5	24	
18	0	0	0	IZS	0	0	0	0	0	0	0	1	1	3	5	6	4	1	7	3	1	1	1	0	7	1.5	24	
19	0	0	IZS	1	0	0	1	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	4	1	4	0.5	24	
20	1	IZS	1	1	2	3	7	9	9	1	3	2	2	2	6	1	1	1	0	0	0	0	0	0	9	2.3	24	
21	IZS	0	0	0	0	0	1	2	1	1	2	2	2	2	1	1	1	1	1	1	0	0	0	IZS	2	0.9	24	
22	0	1	1	0	0	0	0	0	0	0	6	1	2	0	3	0	0	0	3	12	0	0	IZS	3	12	1.4	24	
23	3	3	3	2	2	2	1	1	1	0	0	1	1	1	1	1	0	0	0	0	0	IZS	0	0	3	1.0	24	
24	0	0	1	6	9	8	5	3	2	2	4	3	2	3	6	5	4	2	0	1	IZS	0	0	4	9	3.0	24	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0.0	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	1	1	0	IZS	0	0	0	0	0	3	0.4	24	
27	0	0	0	0	0	0	1	1	0	0	1	1	1	1	2	1	1	IZS	0	0	0	0	0	0	2	0.4	24	
28	0	0	0	0	0	0	0	0	0	0	2	4	1	2	2	1	IZS	C	C	2	2	2	2	2	4	1.0	24	
29	2	2	1	1	1	1	1	1	1	C	C	C	C	C	0	IZS	0	0	0	0	0	0	0	0	2	0.6	24	
HOURLY MAX	7	3	3	6	9	8	10	9	9	4	6	4	8	8	6	6	4	4	10	12	3	3	10	4				
HOURLY AVG	0.7	0.6	0.5	0.6	0.9	0.8	1.3	1.1	0.8	0.5	1.5	1.4	1.6	1.7	1.6	1.0	0.8	0.6	1.1	1.4	0.6	0.4	0.8	0.8				

**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

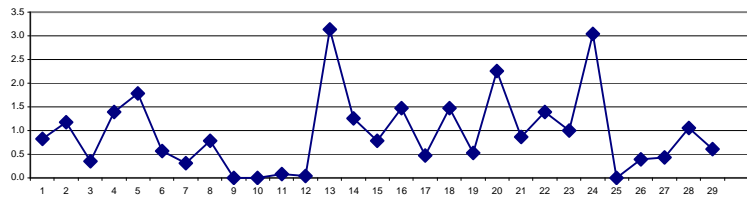
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	48	PPB
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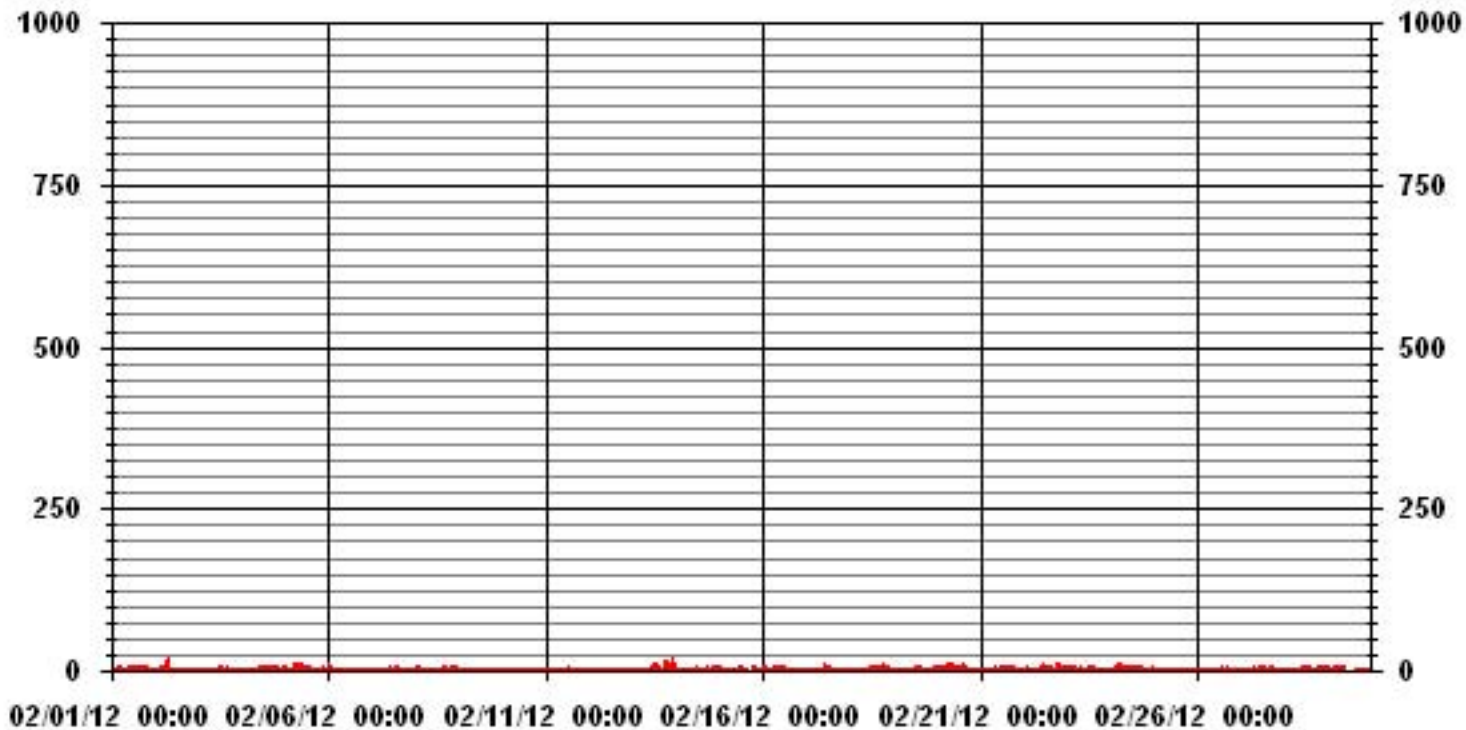
**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	260					
MAXIMUM 1-HR AVERAGE:	12	PPB	@ HOUR(S)	19	ON DAY(S)	22
MAXIMUM 24-HR AVERAGE:	3.1	PPB			ON DAY(S)	13
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	696	HRS	
MONTHLY CALIBRATION TIME:	11	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	1.75		MONTHLY AVERAGE:	0.95	PPB	

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



— LICA30 SO2\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

FEBRUARY 2012

## SULPHUR DIOXIDE MAX instantaneous maximum in ppt

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	0:00	MAX.	AVG.	RDGS.		
DAY																														
1		1	1	2	1	2	1	1	1	2	2	2	1	1	8	8	1	2	1	2	2	IZS	0	0	1	8	1.9	24		
2		3	5	3	4	6	15	15	4	2	3	1	1	2	1	3	0	0	0	0	IZS	0	0	0	0	15	3.0	24		
3		0	0	0	0	0	0	0	0	0	1	1	3	3	2	2	2	1	IZS	0	0	0	0	0	0	3	0.7	24		
4		0	0	0	0	0	0	0	0	0	0	5	5	4	5	4	5	5	IZS	6	4	3	1	1	2	6	2.2	24		
5		2	2	1	1	2	9	15	18	3	5	4	6	13	6	6	1	IZS	1	0	0	0	1	3	8	18	4.7	24		
6		10	9	3	2	1	0	0	0	0	0	0	1	1	2	2	IZS	0	1	1	1	1	1	1	1	10	1.7	24		
7		1	1	1	1	1	1	1	1	2	1	2	1	2	5	IZS	1	1	2	2	0	0	0	0	0	5	1.2	24		
8		2	2	1	1	1	1	1	1	1	1	2	2	1	IZS	1	1	1	3	1	3	3	4	3	1	4	1.7	24		
9		1	1	1	1	0	0	0	0	0	0	0	0	IZS	0	2	2	0	0	0	0	0	0	0	0	2	0.3	24		
10		0	0	0	0	0	0	0	0	0	0	2	IZS	1	0	0	0	0	0	0	0	0	0	0	0	2	0.1	24		
11		0	0	0	0	0	0	0	0	0	0	0	IZS	1	2	2	1	0	0	0	1	1	1	1	1	1	2	0.5	24	
12		1	1	1	0	0	1	1	1	1	IZS	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0.8	24		
13		0	0	0	0	0	0	0	0	IZS	5	13	11	17	22	9	0	9	22	24	17	8	11	20	10	24	8.6	24		
14		3	3	0	0	0	0	0	0	IZS	0	0	2	3	4	3	6	1	1	7	5	6	9	9	8	7	9	3.3	24	
15		1	1	2	2	5	3	IZS	1	1	1	2	4	3	1	C	C	C	C	1	10	9	2	0	0	10	2.6	24		
16		2	3	2	10	6	IZS	5	8	13	12	16	8	4	2	1	0	0	0	0	0	0	0	0	0	16	4.0	24		
17		0	0	0	0	IZS	2	1	1	1	1	14	6	9	5	2	1	0	0	0	1	1	0	0	0	14	2.0	24		
18		0	0	0	IZS	0	0	0	0	0	0	1	4	2	6	9	12	9	2	13	7	3	1	3	1	13	3.2	24		
19		1	1	IZS	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	11	2	11	1.5	24
20		3	IZS	2	2	4	9	11	16	15	5	9	5	8	16	2	2	1	1	1	1	1	1	2	1	16	5.4	24		
21		IZS	1	1	1	1	1	3	3	2	2	3	3	3	2	2	2	2	2	2	2	1	1	1	IZS	3	1.9	24		
22		0	2	3	0	0	0	1	1	0	4	14	4	5	4	12	0	0	1	14	27	1	2	IZS	4	27	4.3	24		
23		4	4	4	4	3	3	2	2	1	1	3	2	2	1	4	2	1	1	1	1	1	1	IZS	1	1	4	2.1	24	
24		1	1	3	10	10	10	7	4	3	4	5	4	3	6	7	6	6	3	1	2	IZS	0	2	8	10	4.6	24		
25		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	1	1	1	2	0.3	24		
26		1	1	1	1	1	1	1	1	1	1	1	1	4	7	9	1	1	1	IZS	0	0	0	0	0	9	1.5	24		
27		0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	1	IZS	1	1	1	1	1	1	1	2	1.0	24		
28		0	1	0	0	0	0	0	0	0	1	6	6	2	3	3	2	IZS	C	C	3	2	2	2	3	6	1.7	24		
29		2	2	2	2	2	2	2	2	2	C	C	C	C	C	C	IZS	0	0	0	0	0	0	0	0	2	1.1	24		
HOURLY MAX		10	9	4	10	10	15	15	18	15	12	16	11	17	22	16	12	9	22	24	27	9	11	20	10					
HOURLY AVG		1.5	1.5	1.2	1.6	1.7	2.2	2.5	2.4	1.8	1.9	4.0	3.1	3.7	4.0	4.2	1.8	1.8	2.0	3.0	3.3	1.8	1.5	2.2	1.9					

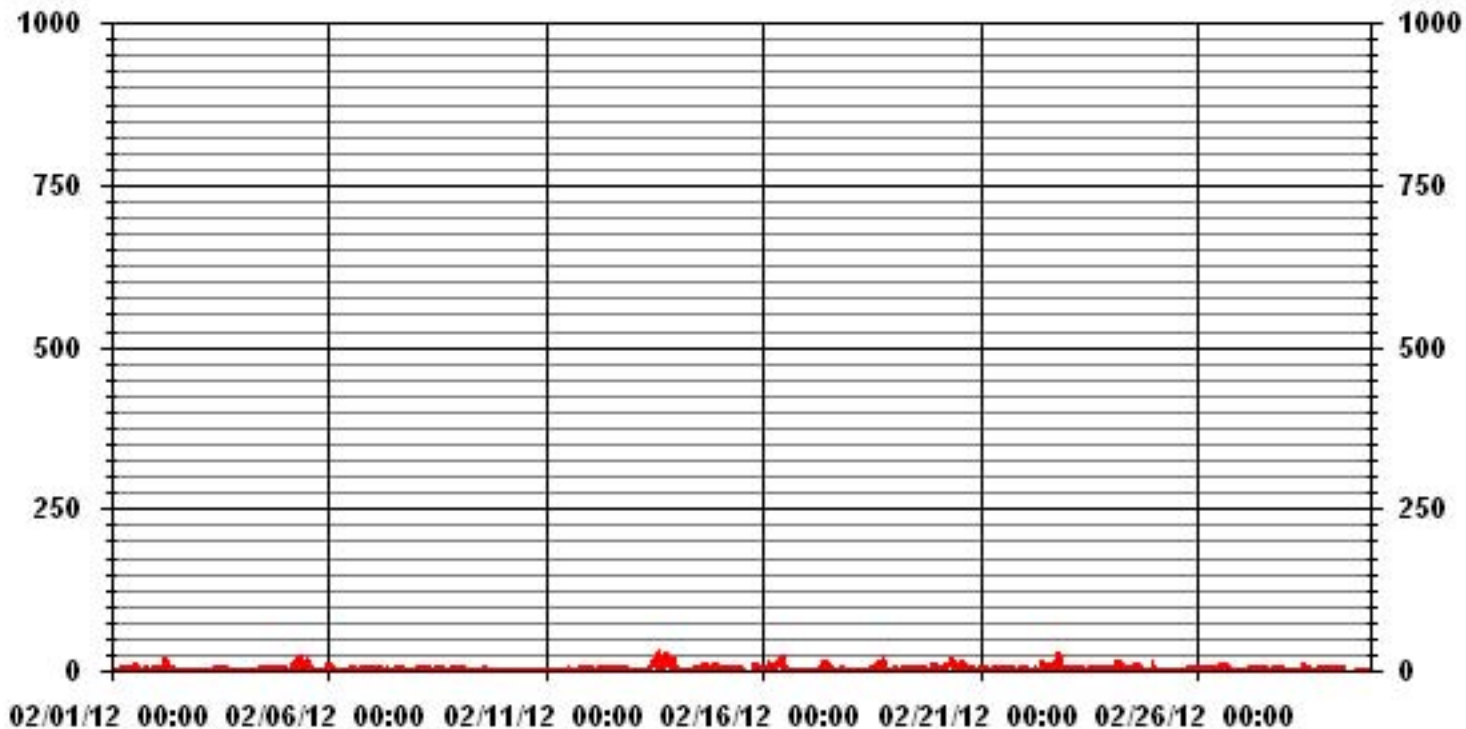
**STATUS FLAG CODES**

S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	452					
MAXIMUM INSTANTANEOUS VALUE:	27	PPB	@ HOUR(S)	19	ON DAY(S)	22
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	696	HRS	
MONTHLY CALIBRATION TIME:	12	HRS				
STANDARD DEVIATION:	3.67					

### 01 Hour Averages





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

February 2012

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LICA30  
 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	8.44	6.45	7.21	4.30	1.99	1.07	1.68	2.30	3.99	17.20	13.21	5.22	5.37	7.83	9.06	4.60	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	8.44	6.45	7.21	4.30	1.99	1.07	1.68	2.30	3.99	17.20	13.21	5.22	5.37	7.83	9.06	4.60	

Calm : .00 %

Total # Operational Hours : 651

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	55	42	47	28	13	7	11	15	26	112	86	34	35	51	59	30	651
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	55	42	47	28	13	7	11	15	26	112	86	34	35	51	59	30	

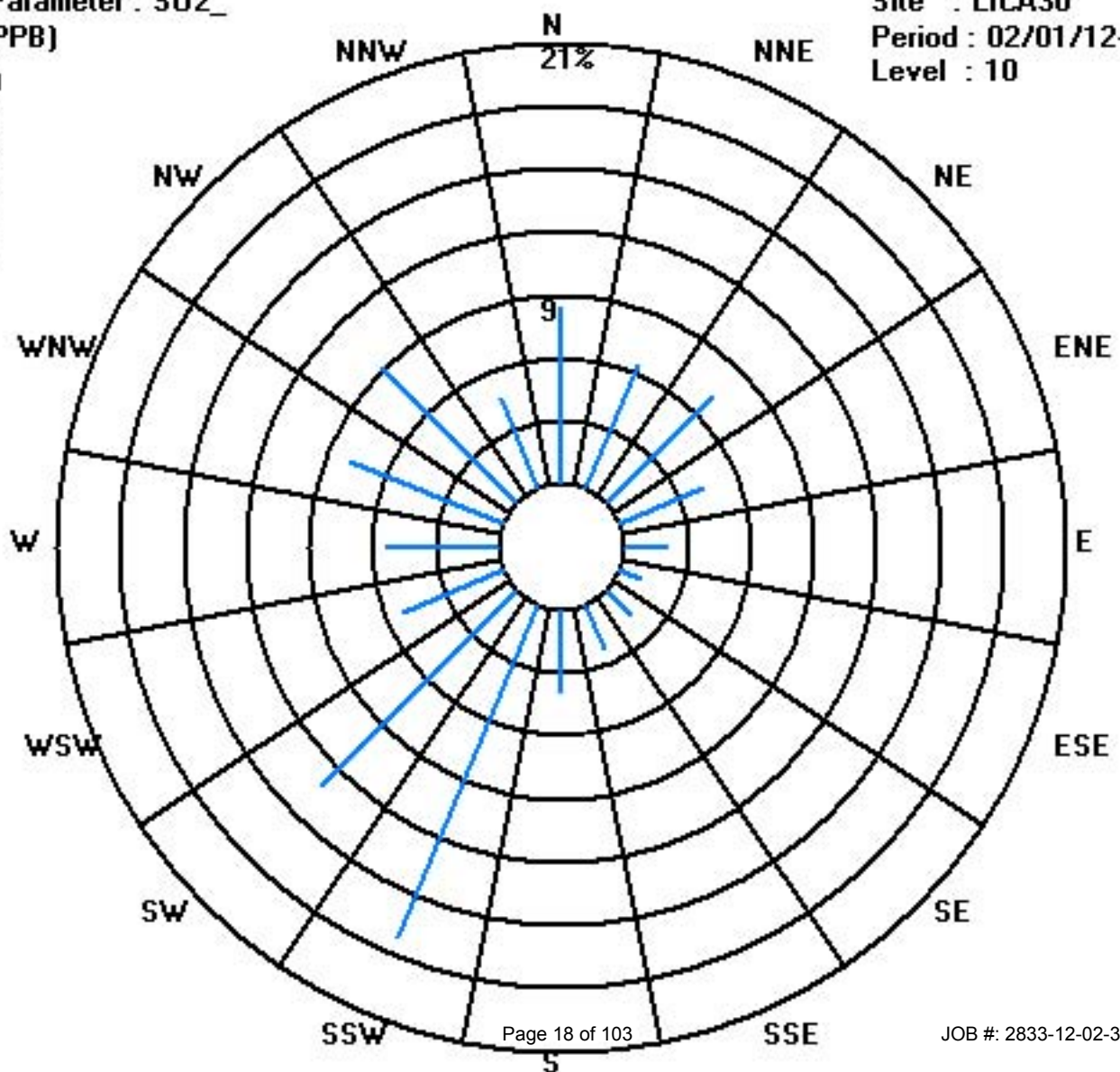
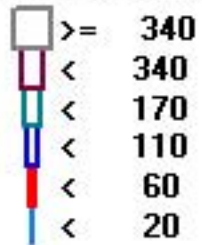
Calm : .00 %

Total # Operational Hours : 651

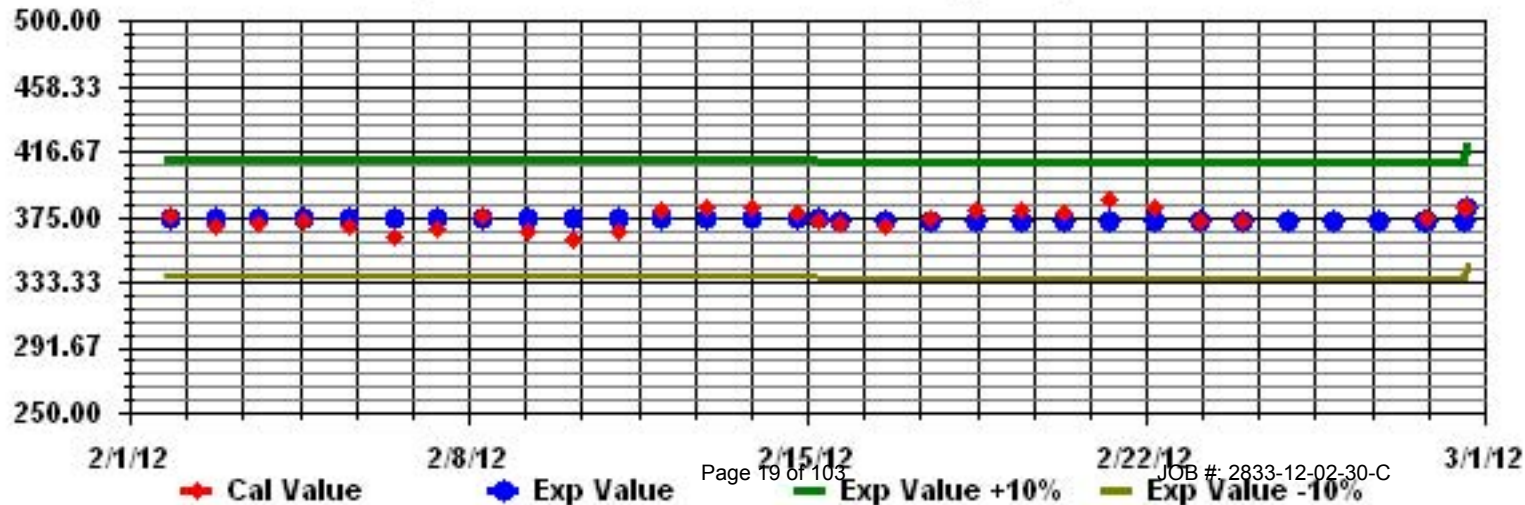
Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



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



# Hydrogen Sulphide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

## HYDROGEN SULPHIDE (H<sub>2</sub>S) 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	24:00	DAILY MAX.	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				
DAY 1		0	0	0	0	0	0	0	1	2	4	2	0	0	0	0	0	0	0	0	0	IZS	0	0	0	4	0.4	24	
2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	1	1	1	1	0.2	24	
4		3	0	1	1	1	0	1	2	1	1	0	1	1	1	1	1	1	IZS	0	0	0	0	0	0	3	0.7	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	24	
6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	24	
8		1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0.5	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	0.1	24	
10		1	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.3	24	
11		1	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	24	
12		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	24	
14		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	24	
16		1	0	1	1	0	0	0	1	1	1	0	0	1	1	0	0	0	0	1	1	1	0	1	0	1	0.6	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	24	
18		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
19		1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	24	
20		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
21		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	24	
24		0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	24	
25		0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	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	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	0.2	24	
28		0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	24	
29		1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.5	24	
HOURLY MAX		3	1	1	2	1	1	1	2	2	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
HOURLY AVG		0.3	0.2	0.1	0.2	0.1	0.1	0.2	0.3	0.4	0.4	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.1			

### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

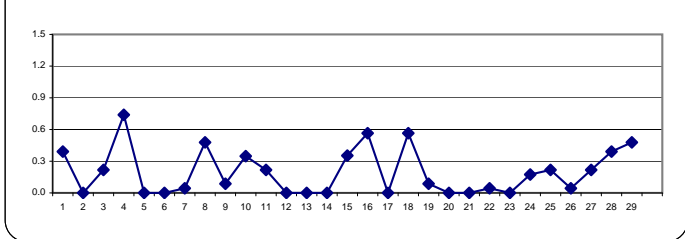
OBJECTIVE LIMIT:

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

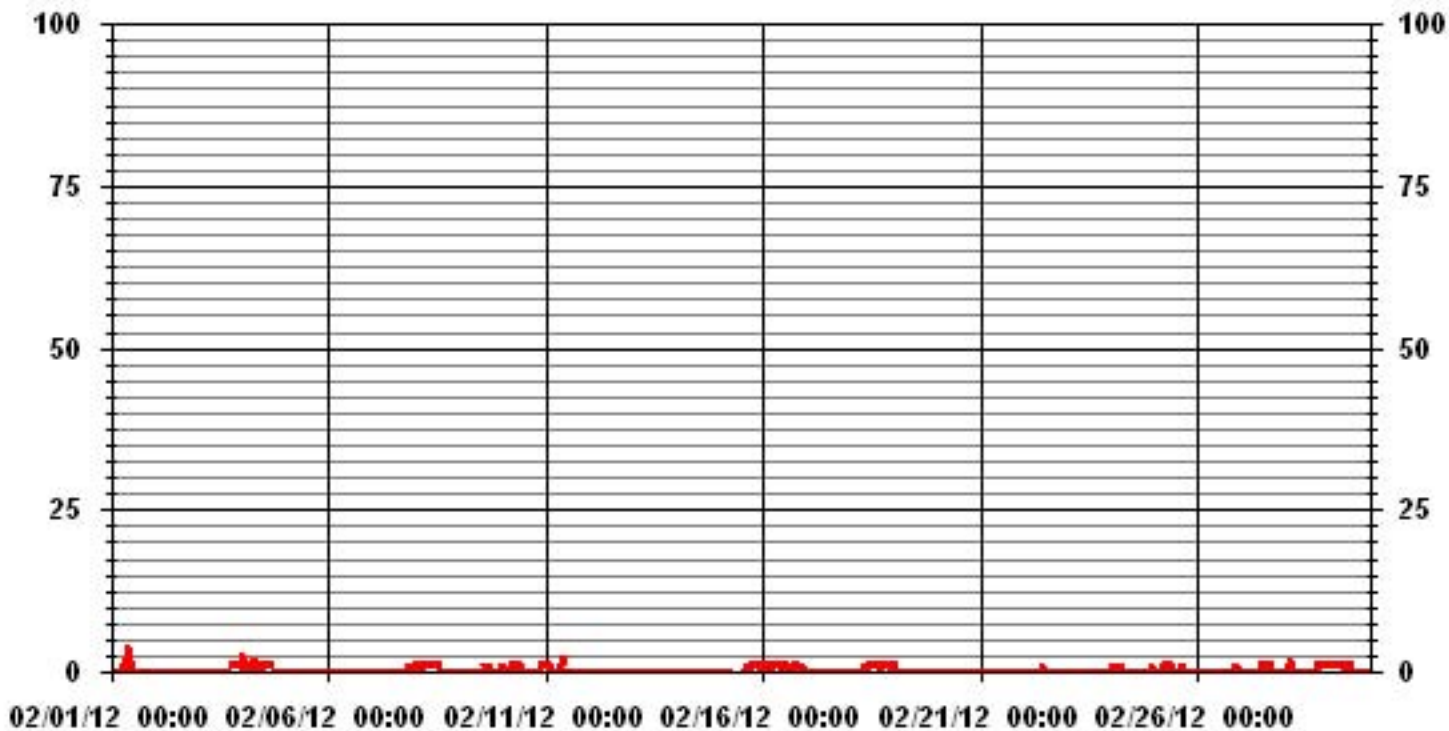
### MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	118
MAXIMUM 1-HR AVERAGE:	4 PPB @ HOUR(S) 9 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	0.7 PPB ON DAY(S) 4
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	695 HRS
AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	0.45
MONTHLY AVERAGE:	0.19 PPB

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

FEBRUARY 2012

## HYDROGEN SULPHIDE MAX instantaneous maximum 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	0:00	MAX.	AVG.	RDGS.	
DAY																													
1		0	1	0	0	1	1	1	3	4	5	4	1	0	0	0	0	1	1	0	0	IZS	0	0	0	5	1.0	24	
2		0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	1	0.1	24	
3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	1	1	1	2	2	0.3	24	
4		5	1	1	1	1	1	1	3	2	1	1	1	1	1	1	1	IZS	0	0	0	0	0	0	0	5	1.0	24	
5		0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	1	0.1	24	
6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0.0	24	
7		0	0	0	0	0	0	0	0	0	0	1	0	0	0	IZS	1	1	1	1	1	1	1	1	1	1	1	0.4	24
8		1	1	1	1	1	1	1	1	1	2	2	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	2	0.7	24
9		0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	1	1	1	1	1	1	1	0	1	0	1	0.4	24	
10		1	1	0	1	0	1	1	1	1	2	0	0	IZS	2	0	0	0	0	1	1	1	0	2	1	2	2	0.8	24
11		2	1	1	1	1	0	1	1	3	3	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.6	24	
12		0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0.2	24
13		1	0	1	1	1	0	0	IZS	1	1	1	0	1	1	0	0	0	0	1	1	0	0	1	0	1	0.5	24	
14		0	0	0	0	0	0	0	IZS	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0.2	24	
15		0	0	0	0	0	0	IZS	0	C	C	C	C	C	1	1	1	1	M	1	1	1	1	1	1	1	0.6	23	
16		1	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
17		1	1	1	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
18		0	0	0	IZS	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	0.9	24
19		1	1	IZS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
20		0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
21		IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0.0	24
22		0	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	1	1	0	0	IZS	0	1	0.3	24	
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	1	0.1	24	
24		0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	IZS	1	1	1	1	0.9	24	
25		1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	0	0	1	0	1	0.8	24		
26		1	1	0	0	0	0	1	1	1	0	1	1	1	0	0	0	1	1	IZS	1	1	1	1	0	1	0.6	24	
27		0	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	IZS	0	0	0	0	0	0	1	0.6	24	
28		0	1	2	4	0	1	1	0	1	1	1	0	0	0	0	0	IZS	1	1	1	2	1	2	2	4	1.0	24	
29		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	0	0	0	0	1	0	0	0	1	0.7	24	
HOURLY MAX		5	1	2	4	1	1	1	3	4	5	4	1	2	1	1	1	1	1	1	1	2	2	2	2				
HOURLY AVG		0.6	0.5	0.4	0.5	0.4	0.4	0.5	0.6	0.7	0.9	0.7	0.4	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5				

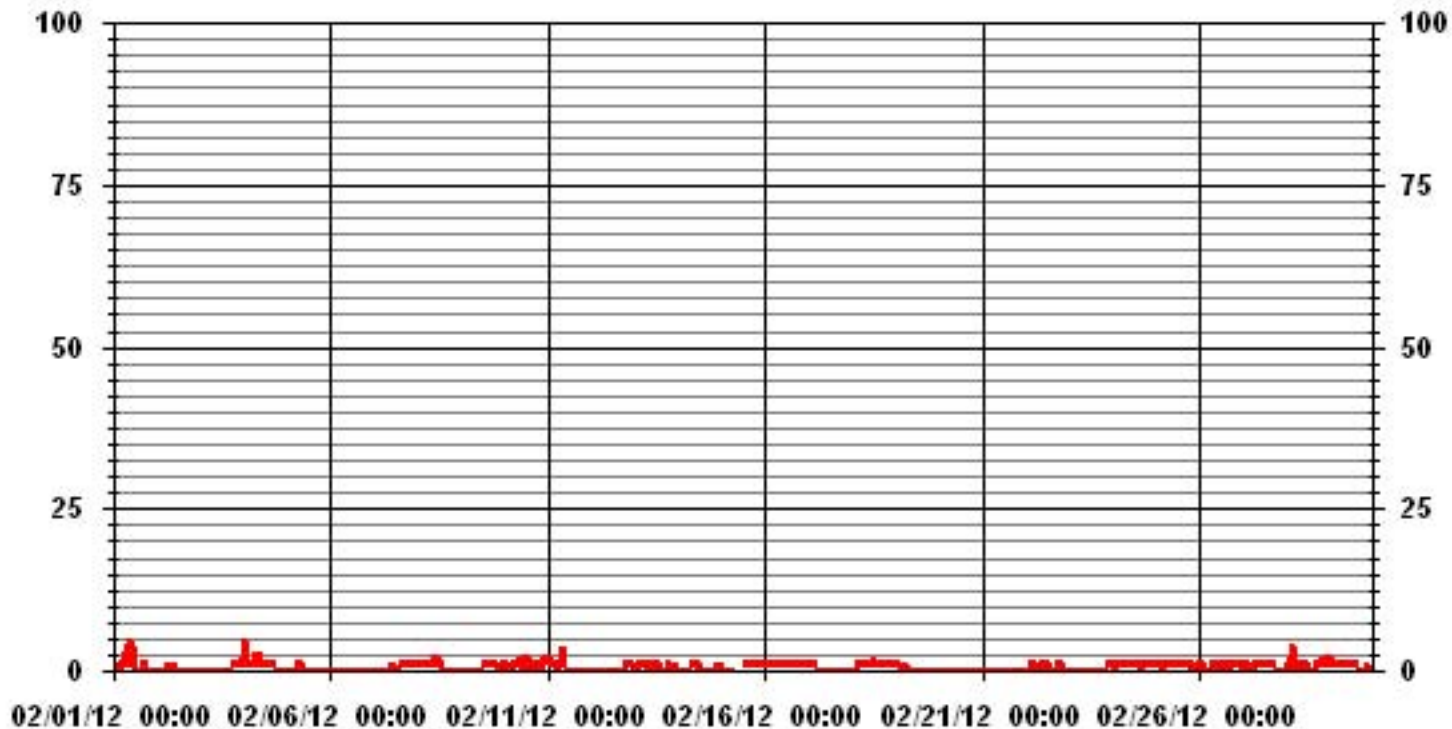
**STATUS FLAG CODES**

S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	282					
MAXIMUM INSTANTANEOUS VALUE:	5	PPB	@ HOUR(S)	9, 0	ON DAY(S)	1, 4
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	5	HRS				
STANDARD DEVIATION:	0.67					

### 01 Hour Averages





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

February 2012

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	8.23	6.40	7.77	4.42	2.13	1.21	1.67	2.28	3.96	17.37	12.95	4.72	5.18	7.77	8.99	4.57	99.69
< 10	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00	.30
< 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	8.38	6.40	7.77	4.42	2.13	1.21	1.67	2.28	3.96	17.37	12.95	4.87	5.18	7.77	8.99	4.57	

Calm : .00 %

Total # Operational Hours : 656

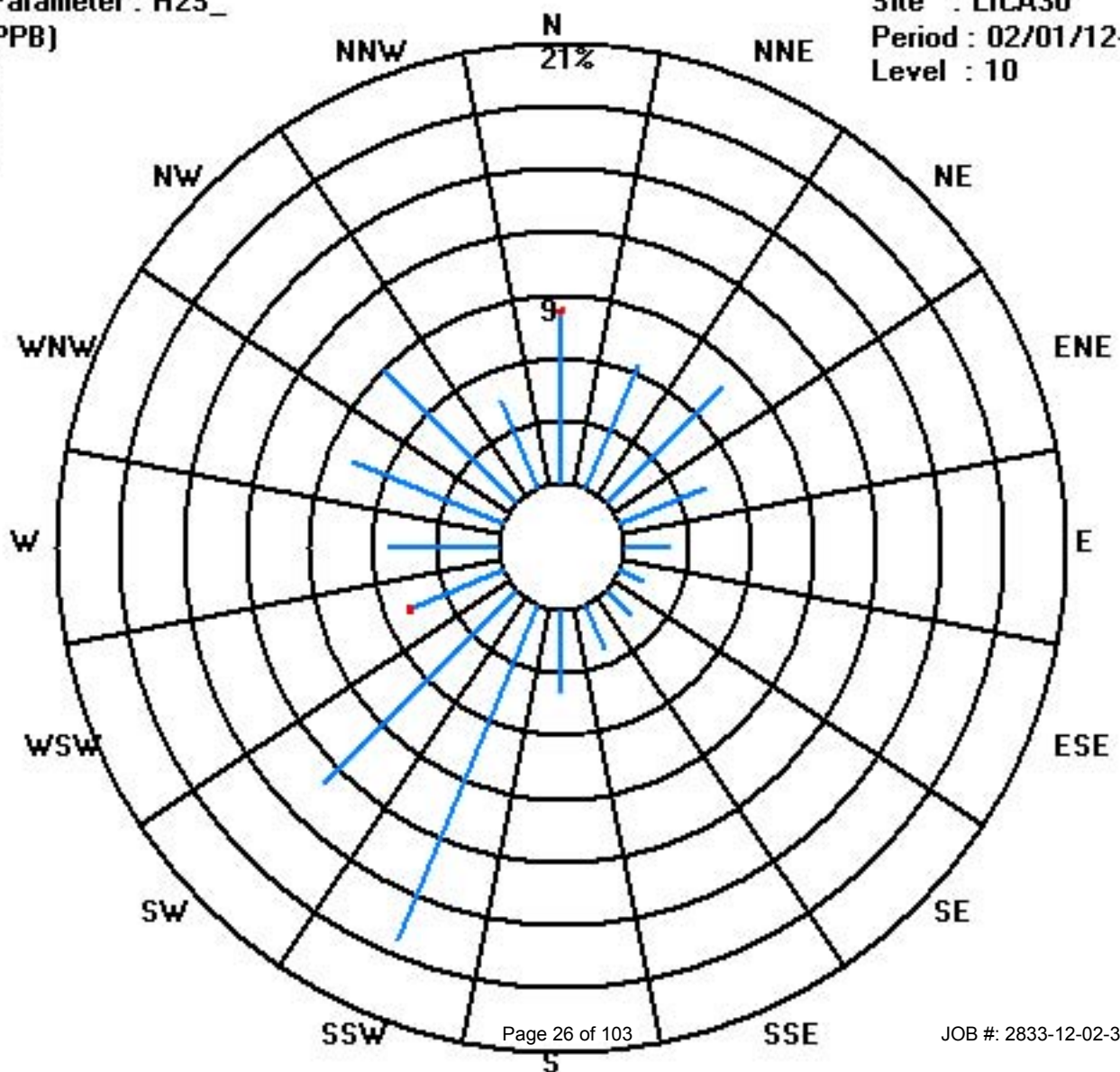
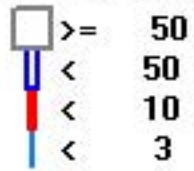
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	54	42	51	29	14	8	11	15	26	114	85	31	34	51	59	30	654
< 10	1											1					2
< 50																	
>= 50																	
Totals	55	42	51	29	14	8	11	15	26	114	85	32	34	51	59	30	

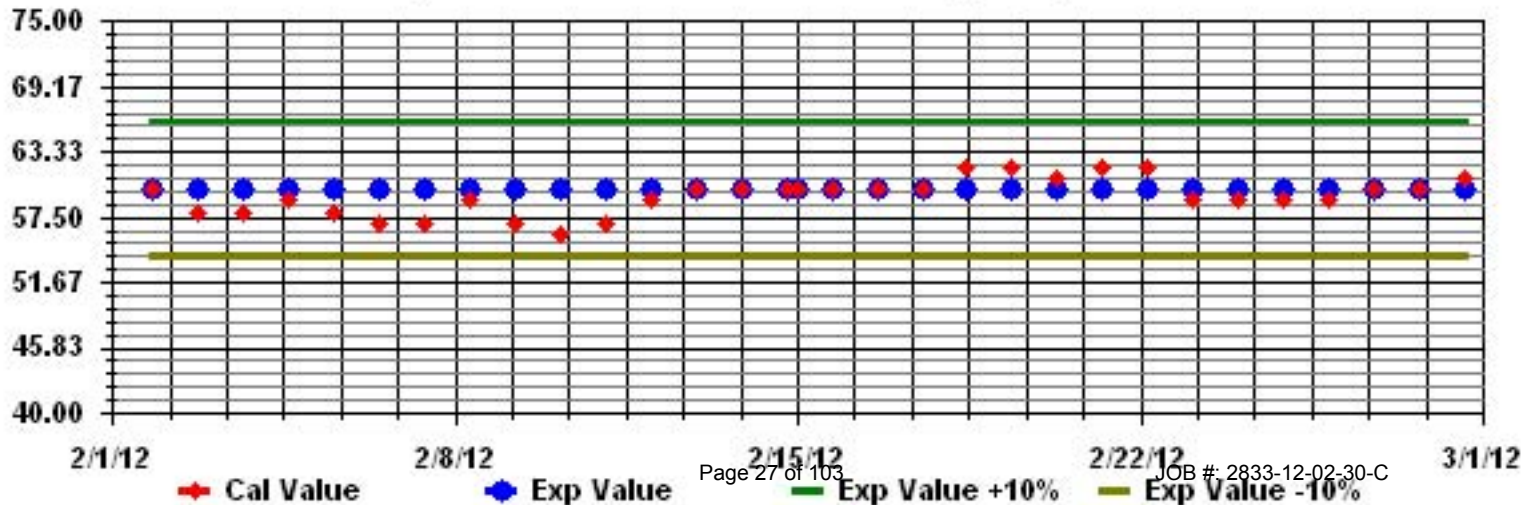
Calm : .00 %

Total # Operational Hours : 656

Class Limits (PPB)



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



# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

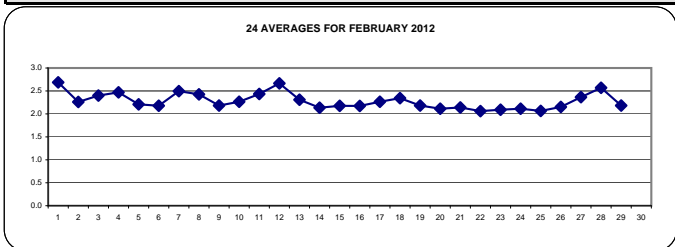
FEBRUARY 2012

TOTAL HYDROCARBONS 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			
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	MAX.	AVG.	RDGS.	
DAY																													
1		3	3	2.7	2.7	2.7	2.6	2.9	2.9	3	3.3	2.9	2.6	2.6	2.4	2.5	2.6	2.5	2.5	2.6	2.5	IZS	2.6	2.4	2.3	3.3	2.7	24	
2		2.2	2.2	2.2	2.3	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.6	2.4	2.2	2.2	IZS	2.3	2.3	2.4	2.4	2.6	2.3	24	
3		2.4	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	IZS	2.5	2.5	2.5	2.6	2.6	2.6	2.4	24	
4		2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.5	2.4	2.4	2.4	2.3	2.3	2.3	IZS	2.3	2.3	2.4	2.4	2.4	2.3	2.7	2.5	24	
5		2.3	2.3	2.4	2.4	2.3	2.3	2.5	2.4	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.2	24	
6		2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.1	2.2	IZS	2.1	2.1	2.1	2.2	2.1	2.1	2.3	2.4	2.4	2.2	24	
7		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.5	2.7	2.6	2.5	2.5	IZS	2.6	2.6	2.6	2.5	2.3	2.3	2.3	2.3	2.7	2.5	24		
8		2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.7	2.6	2.3	2.2	2.2	IZS	2.5	2.6	3	2.9	2.5	2.2	2.2	2.3	2.3	2.3	3.0	2.4	24	
9		2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.3	2.2	24	
10		2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.5	2.5	2.3	2.2	IZS	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.4	2.5	2.3	24	
11		2.4	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.5	IZS	2.6	2.6	2.6	2.5	2.4	2.3	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.6	2.4	24	
12		2.5	2.5	2.5	2.6	2.6	2.5	2.5	2.6	2.7	IZS	2.6	2.5	2.6	2.7	2.7	2.6	2.6	2.5	2.8	2.9	2.9	2.9	3	3	3.0	2.7	24	
13		3.1	3	3	2.7	2.4	2.3	2.2	2.2	IZS	2.2	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.3	3.1	2.3	24	
14		2.2	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.1	2.2	2.3	2.2	2.2	2.3	2.1	24	
15		2.1	2.1	2.1	2.1	2.2	2.2	IZS	2.3	2.2	2.2	2.3	C	C	C	C	C	C	C	2.3	2.2	2.1	2.1	2.1	2.1	2.3	2.2	24	
16		2.1	2.1	2.1	2.2	2.2	IZS	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.2	24	
17		2.3	2.3	2.3	2.3	IZS	2.4	2.3	2.4	2.5	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.3	2.3	2.2	2.3	2.5	2.3	2.4	24	
18		2.3	2.3	2.3	IZS	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.3	2.3	2.3	2.5	2.4	2.3	2.5	2.2	2.1	2.1	2.1	2.1	2.1	2.5	2.3	24
19		2.1	2.1	IZS	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.4	2.2	24	
20		2.2	IZS	2.1	2.1	2.3	2.3	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2	2	2	2	2.3	2.1	24	
21		IZS	2.1	2.1	2	2.1	2.1	2.1	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2	1.9	1.9	IZS	2.3	2.1	24	
22		2	2.2	2.3	2.2	2	2.1	2.1	2.2	2	1.9	2	2	1.9	1.9	2	2	2	2	2	2.4	2.2	2	2	IZS	2	2.4	2.1	24
23		2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	24
24		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	IZS	2.1	2.1	2.3	2.3	2.1	24
25		2.1	2.1	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	IZS	2.1	2.1	2.1	2.1	2.1	2.1	24
26		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.2	IZS	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.4	24
27		2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	IZS	2.4	2.4	2.5	2.6	2.6	2.6	2.6	2.4	24
28		2.6	2.6	2.6	2.7	2.6	2.6	2.6	2.6	2.5	2.7	2.7	2.5	2.6	2.5	2.4	2.4	IZS	2.5	2.6	2.6	2.6	2.5	2.6	2.5	2.7	2.6	2.4	24
29		2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2	2	IZS	2	2	2	2	2.1	2.1	2.1	2.1	2.5	2.2	2.4	24
HOURLY MAX		3.1	3.0	3.0	2.7	2.7	2.6	2.9	2.9	3.0	3.3	2.9	2.6	2.6	2.7	2.7	2.6	3.0	2.9	2.8	2.9	2.9	2.9	3.0	3.0				
HOURLY AVG		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	2.2	2.3	2.2	2.2	2.3	2.3	2.2	2.3	2.3	2.3				

STATUS FLAG CODES

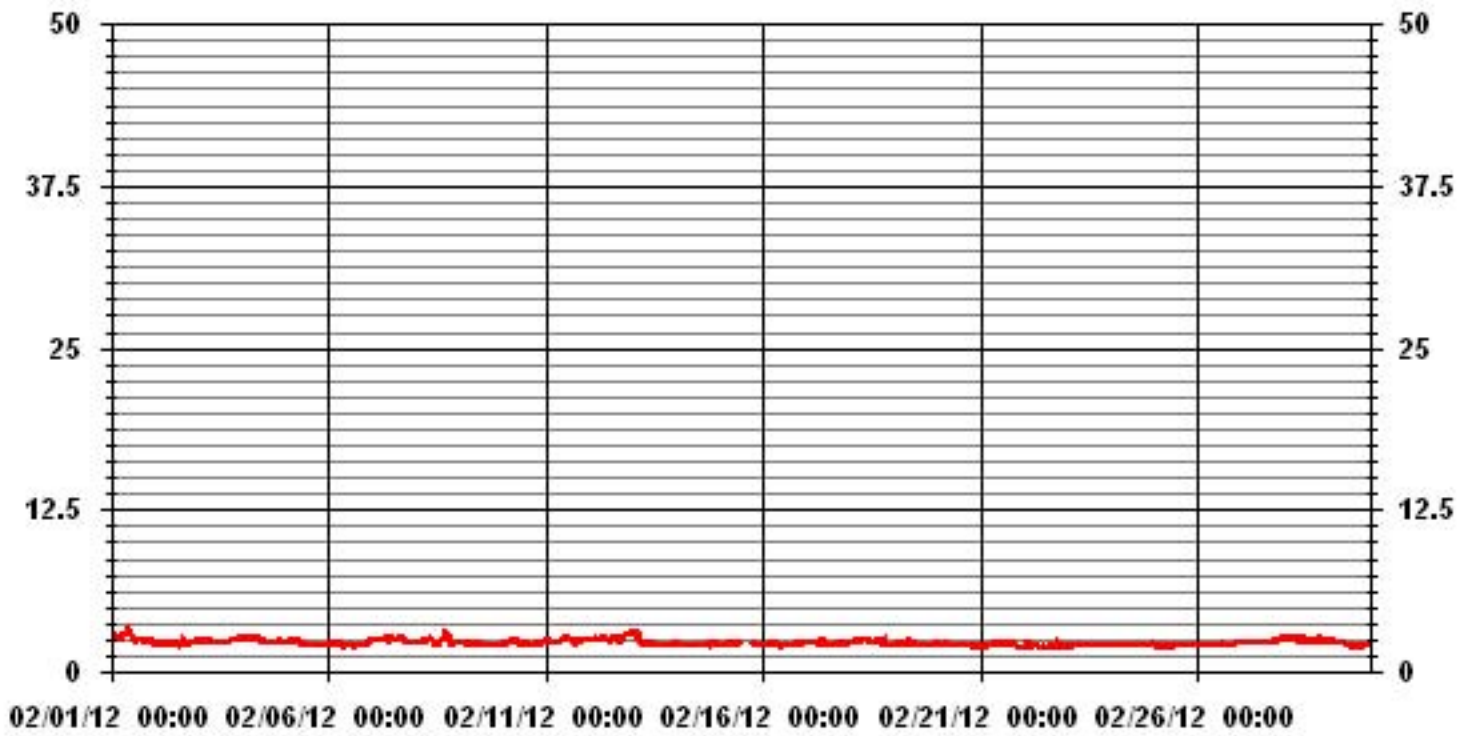
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	660
MAXIMUM 1-HR AVERAGE:	3.3 PPM @ HOUR(S) 9 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	2.7 PPM ON DAY(S) 1, 12
	VAR- VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	0.22
OPERATIONAL TIME:	696 HRS
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	2.28 PPM

### 01 Hour Averages



— LICA30 THC PPM

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

## TOTAL HYDROCARBONS MAX      instantaneous maximum in ppr

MST																										DAILY	24-HOUR			
HOURLY MAX	HOURLY AVG	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY																														
1		3.1	3	2.9	2.8	2.8	2.6	3.2	3.2	3.5	3.4	3.4	2.7	2.7	2.5	2.6	2.8	2.5	2.5	2.6	2.6	IZS	2.7	2.6	2.3	3.5	2.8	2.4		
2		2.3	2.3	2.3	2.4	2.5	2.4	2.3	2.2	2.2	2.3	2.2	2.3	2.3	2.2	2.5	2.8	2.5	2.3	2.2	IZS	2.4	2.3	2.5	2.4	2.8	2.4	2.4		
3		2.4	2.4	2.4	2.5	2.5	2.5	2.4	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	IZS	2.6	2.6	2.6	2.7	2.7	2.4	2.4	2.4		
4		2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.8	2.7	2.7	2.6	2.5	2.4	2.4	2.3	2.3	2.3	IZS	2.4	2.4	2.4	2.4	2.4	2.4	2.8	2.5	2.4		
5		2.3	2.3	2.6	2.6	2.3	2.5	2.7	2.6	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.7	2.3	2.4	
6		2.7	2.5	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.4	2.3	2.3	2.4	IZS	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.5	2.7	2.3	2.4		
7		2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.7	3	2.6	2.7	2.7	2.6	2.5	IZS	2.7	2.7	2.6	2.6	2.4	2.3	2.3	2.3	2.3	3	2.6	2.4		
8		2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.6	3	2.9	2.5	2.3	2.3	IZS	2.5	2.9	3	3	2.7	2.3	2.3	2.3	2.3	2.3	3	2.5	2.4		
9		2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	IZS	2.1	2.3	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.3	2.2	2.4		
10		2.2	2.2	2.4	2.9	2.4	2.5	2.5	2.6	2.8	2.4	2.4	IZS	2.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.6	2.5	2.9	2.4	2.4		
11		2.9	2.9	2.6	2.4	2.3	2.3	2.4	2.4	2.4	2.6	IZS	2.6	2.6	2.6	2.6	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.6	2.9	2.5	2.4		
12		2.5	2.5	2.6	2.7	2.8	2.7	2.6	2.7	2.7	IZS	2.6	2.6	2.7	2.8	2.7	2.6	2.6	2.9	2.9	2.9	2.9	2.9	3.3	3.2	3.3	2.7	2.4		
13		3.3	3.1	3.1	3	2.6	2.4	2.3	2.2	IZS	2.5	2.5	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.4	2.1	2.1	2.1	2.3	2.5	3.3	2.4	2.4		
14		2.4	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.1	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.5	2.2	2.4	2.5	2.3	2.4	2.5	2.2	2.4	
15		2.1	2.1	2.1	2.2	2.2	2.2	IZS	2.3	2.3	2.2	2.4	2.4	C	C	C	C	C	C	2.3	2.4	2.3	2.1	2.1	2.1	2.4	2.2	2.4		
16		2.2	2.2	2.1	2.5	2.4	IZS	2.5	2.3	2.3	2.3	2.4	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.5	2.5	2.3	2.4		
17		2.4	2.3	2.3	2.4	IZS	2.4	2.4	2.5	2.5	2.5	2.5	2.2	2.1	2.3	2.1	2.3	2.3	2.4	2.2	2.3	2.3	2.3	2.3	2.4	2.5	2.3	2.4		
18		2.3	2.3	2.4	IZS	2.4	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.4	2.4	2.5	2.7	2.6	2.3	2.8	2.5	2.4	2.2	2.3	2.1	2.8	2.5	2.4		
19		2.1	2.3	IZS	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.5	2.5	2.3	2.4		
20		2.4	IZS	2.2	2.1	2.4	2.4	2.4	2.2	2.4	2.1	2.2	2.1	2.2	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2	2	2.4	2.2	2.4		
21		IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2	1.9	2	IZS	2.4	2.2	2.4		
22		2	2.4	2.4	2.2	2.1	2.2	2.2	2.2	2.1	2	2.2	2.1	2	2	2.1	2	2	2	2.9	3	2	2	IZS	2	3	2.2	2.4		
23		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.7	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.7	2.1	2.4
24		2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	IZS	2.1	2.2	2.6	2.6	2.2	2.4	
25		2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.3	2.1	2.4
26		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.3	2.1	2.1	2.2	IZS	2.2	2.3	2.3	2.3	2.5	2.5	2.2	2.4		
27		2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	IZS	2.4	2.4	2.6	2.6	2.6	2.6	2.6	2.4	2.4	
28		2.6	2.6	2.8	3.3	2.8	2.7	2.7	2.9	2.6	2.8	2.7	2.6	2.7	2.6	2.5	2.5	IZS	2.5	2.6	2.7	2.6	2.6	2.7	2.6	3.3	2.7	2.4		
29		2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	IZS	2	2	2.1	2.1	2.1	2.2	2.1	2.1	2.5	2.2	2.4		
HOURLY MAX		3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
HOURLY AVG		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.4	2.4	2.4	2.4		

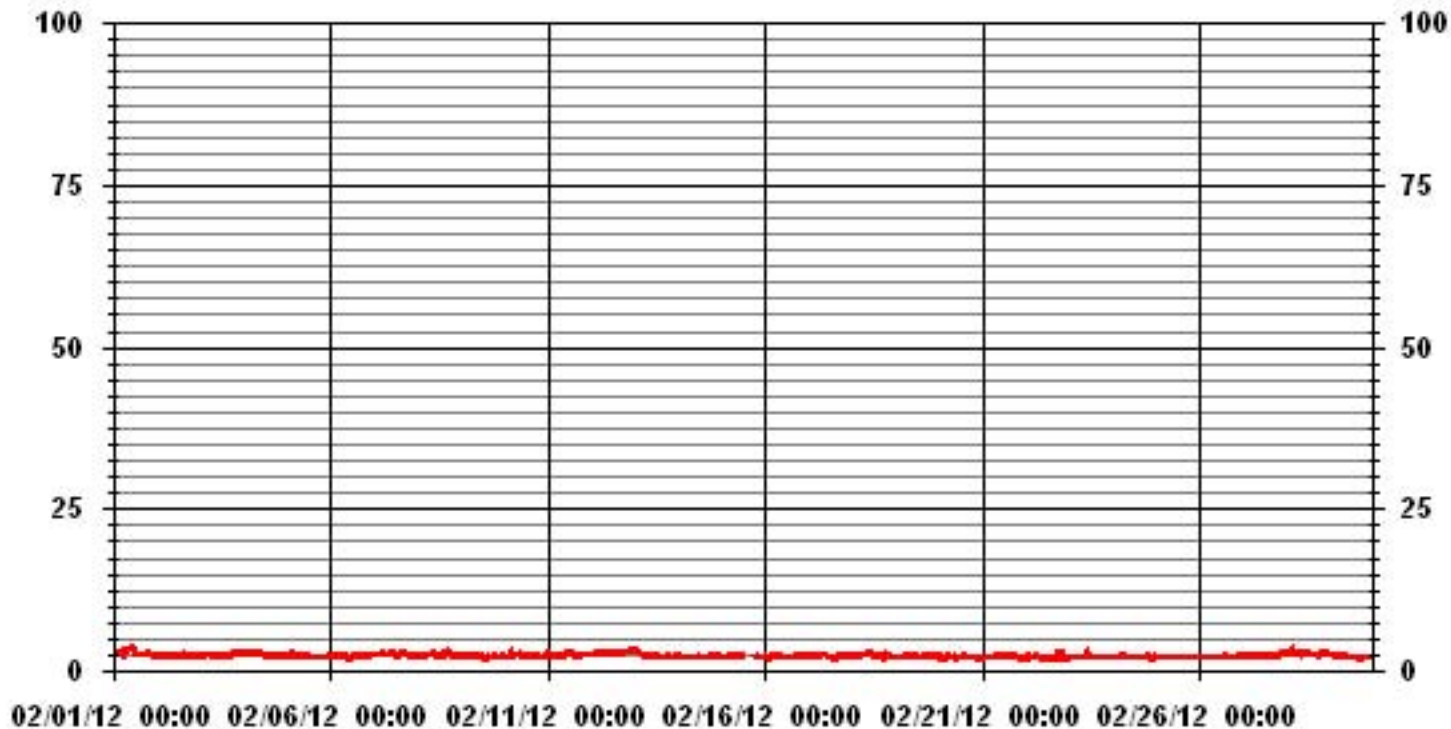
**STATUS FLAG CODES**

S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE
BB - BELOW BACKGROUND OF 1.5 PPM	

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	660					
MAXIMUM INSTANTANEOUS VALUE:	3.5	PPM	@ HOUR(S)	8	ON DAY(S)	1
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	696	HRS	
MONTHLY CALIBRATION TIME:	6	HRS				
STANDARD DEVIATION:	0.25					

### 01 Hour Averages



— LICA30 THCMAX PPM



LICA30  
 THC / WDR Joint Frequency Distribution (Percent)

February 2012

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	8.38	6.40	7.77	4.42	2.13	1.21	1.67	2.28	3.96	17.07	12.50	4.42	5.33	7.46	8.84	4.57	98.47
< 10.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.45	.60	.00	.30	.15	.00	1.52
< 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	8.38	6.40	7.77	4.42	2.13	1.21	1.67	2.28	3.96	17.07	12.95	5.03	5.33	7.77	8.99	4.57	

Calm : .00 %

Total # Operational Hours : 656

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	55	42	51	29	14	8	11	15	26	112	82	29	35	49	58	30	646
< 10.0											3	4		2	1		10
< 50.0																	
>= 50.0																	
Totals	55	42	51	29	14	8	11	15	26	112	85	33	35	51	59	30	

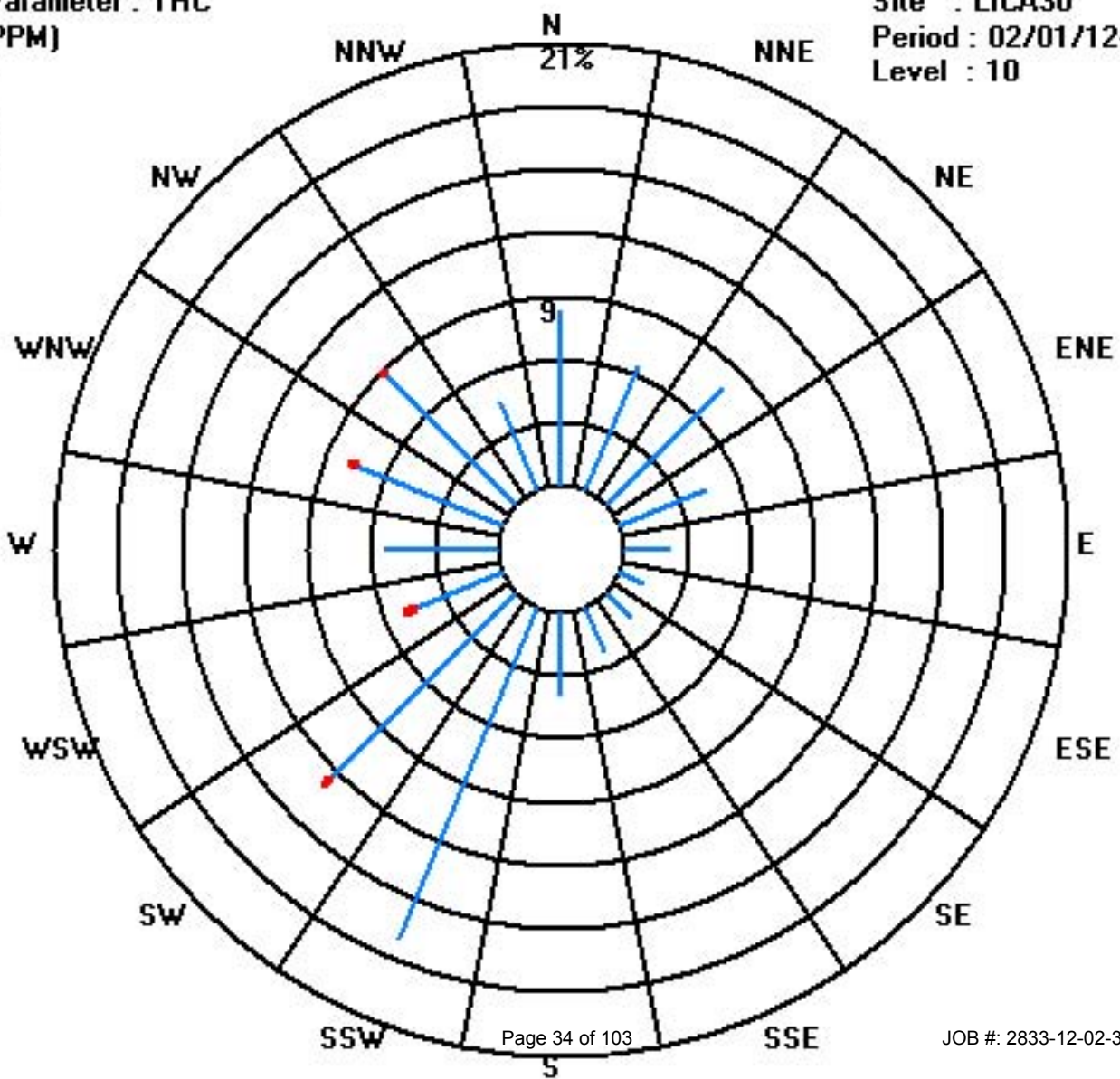
Calm : .00 %

Total # Operational Hours : 656

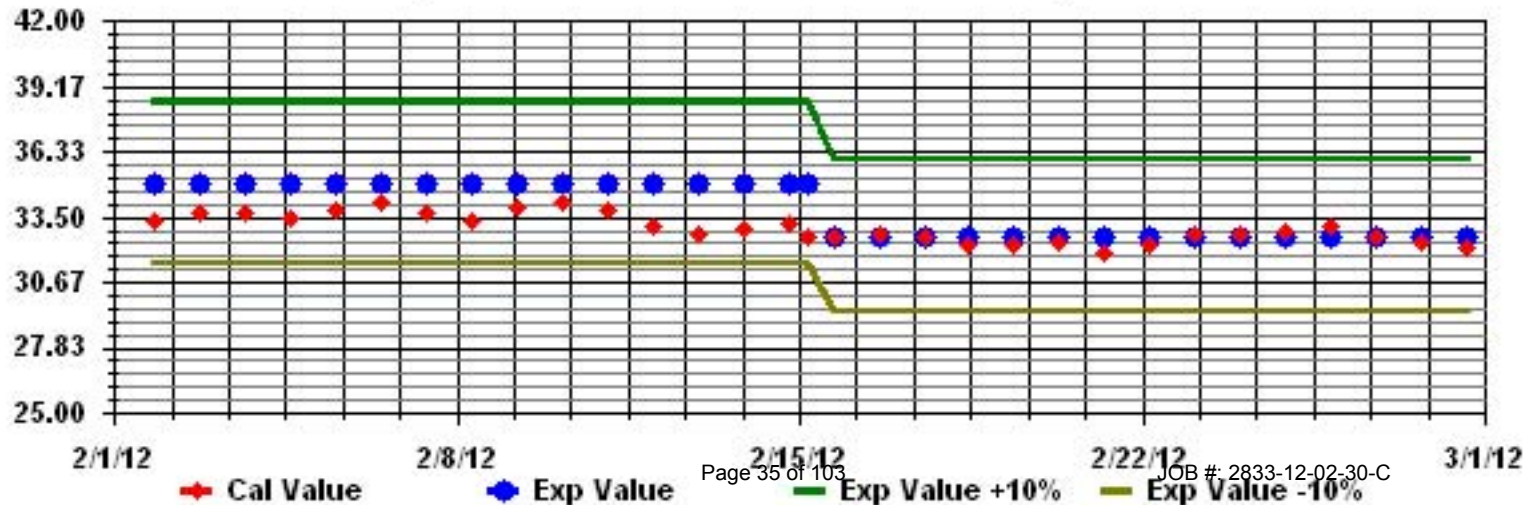
Class Limits (PPM)

Period : 02/01/12-02/29/12

Level : 10



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



# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

## NITROGEN DIOXIDE 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.	
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				
DAY																													
1		14	13	12	12	16	14	14	13	14	13	14	11	8	11	9	9	24	26	21	17	IZS	12	9	8	26	13.7	24	
2		13	13	11	9	11	9	19	15	12	13	7	5	4	3	5	9	8	5	5	IZS	4	4	4	4	19	8.3	24	
3		4	4	4	4	5	5	5	6	7	5	4	5	5	6	6	9	9	9	IZS	8	8	8	8	7	9	6.1	24	
4		6	6	6	5	5	5	4	5	4	2	4	4	3	4	4	6	IZS	7	6	6	6	6	6	7	7	5.0	24	
5		7	10	9	9	9	10	17	17	5	6	5	6	5	2	1	1	IZS	3	3	2	1	1	2	3	17	5.8	24	
6		8	6	3	3	2	1	3	2	0	1	0	0	2	2	2	IZS	1	0	1	0	0	1	1	2	8	1.8	24	
7		3	3	3	3	3	2	2	5	7	4	6	4	3	3	IZS	4	4	4	4	2	2	3	3	2	7	3.4	24	
8		3	3	3	2	3	4	5	6	10	10	6	3	3	IZS	4	7	12	17	8	3	2	2	1	1	17	5.1	24	
9		1	1	1	1	0	0	0	1	4	1	0	0	0	IZS	0	0	0	2	3	1	1	1	1	1	4	0.9	24	
10		1	1	1	2	1	1	2	2	5	12	1	IZS	2	2	1	2	1	5	4	3	3	4	3	3	12	2.7	24	
11		4	3	2	2	2	2	2	3	5	15	IZS	3	3	3	3	2	3	3	3	3	3	4	4	5	15	3.6	24	
12		4	5	4	4	4	4	5	8	9	IZS	3	4	4	4	5	6	8	10	10	11	12	11	11	12	6.8	24		
13		11	15	14	11	5	3	3	7	IZS	8	9	4	8	7	1	0	4	5	12	11	4	4	13	7	15	7.2	24	
14		8	7	0	0	0	0	1	IZS	4	2	4	8	7	5	4	1	3	4	6	2	6	8	11	15	15	4.6	24	
15		4	4	6	3	14	12	IZS	13	C	C	C	C	C	C	C	3	4	M	5	8	12	4	2	2	14	6.4	23	
16		9	6	6	12	11	IZS	9	10	10	5	4	3	2	1	1	1	1	2	2	2	2	2	2	3	12	4.6	24	
17		3	3	3	5	IZS	6	6	10	13	10	12	4	5	7	3	3	4	6	5	6	5	6	5	5	13	5.9	24	
18		4	4	3	IZS	2	3	3	4	5	3	2	3	2	6	9	9	6	2	8	3	2	1	1	1	9	3.7	24	
19		0	0	IZS	2	1	1	2	4	5	5	5	5	4	4	3	3	3	3	2	2	2	8	4	8	3.2	24		
20		5	IZS	5	5	10	10	11	11	13	2	5	2	3	4	8	2	1	1	1	1	0	0	0	0	13	4.3	24	
21		IZS	1	1	1	1	1	2	5	4	3	3	3	3	4	4	5	7	6	8	5	2	1	1	IZS	8	3.2	24	
22		2	7	8	4	3	4	6	8	9	4	9	2	3	1	5	1	2	1	12	16	2	3	IZS	3	16	5.0	24	
23		4	4	5	4	3	3	2	2	2	2	3	2	2	3	3	2	2	2	2	1	1	IZS	2	2	5	2.5	24	
24		1	1	2	4	7	6	7	5	4	3	3	2	2	2	3	4	2	2	2	3	IZS	1	1	6	7	3.2	24	
25		1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	1	0.1	24
26		0	0	0	0	0	0	0	1	0	0	0	0	1	3	2	1	1	2	IZS	2	2	2	3	3	3	1.0	24	
27		3	3	3	3	4	5	8	9	8	5	4	4	4	3	4	4	5	IZS	8	8	10	10	11	10	11	5.9	24	
28		9	8	8	8	7	6	6	6	5	6	9	7	5	5	5	5	IZS	6	8	6	5	4	4	4	9	6.2	24	
29		3	3	2	2	2	2	3	2	1	1	1	1	1	1	1	IZS	1	1	0	1	1	1	1	1	3	1.4	24	
HOURLY MAX		14	15	14	12	16	14	19	17	14	15	14	11	8	11	9	9	24	26	21	17	12	12	13	15				
HOURLY AVG		4.8	4.8	4.5	4.3	4.7	4.3	5.3	6.4	6.1	5.3	4.6	3.6	3.5	3.5	3.6	3.6	4.5	4.9	5.6	4.9	3.6	3.8	4.2	4.3				

### STATUS FLAG CODES

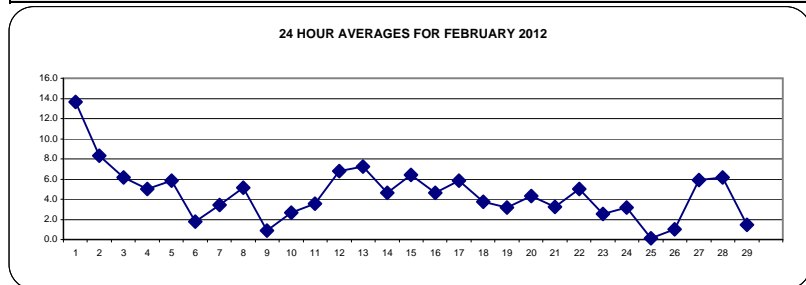
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

### OBJECTIVE LIMIT:

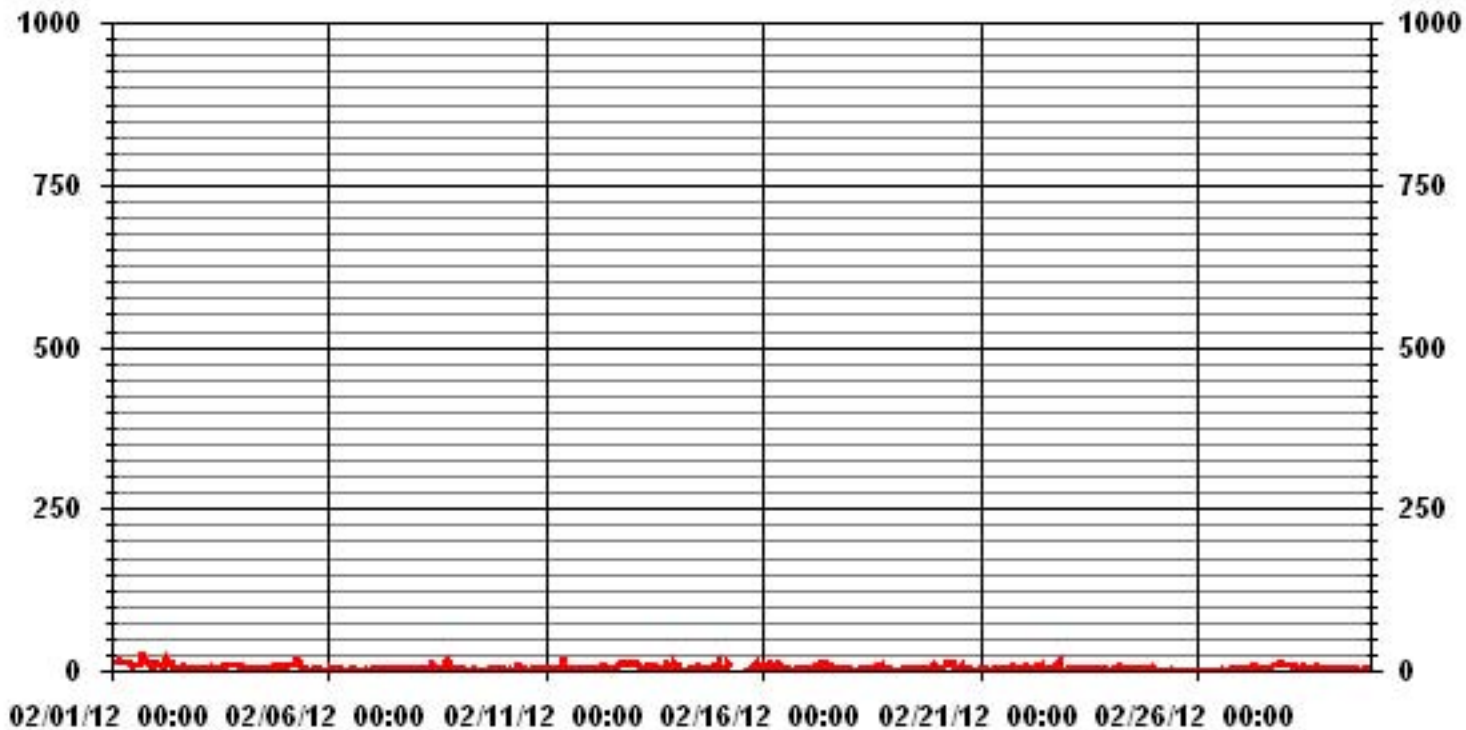
ALBERTA ENVIRONMENT: 1-HR 159 PPB

### MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	600					
MAXIMUM 1-HR AVERAGE:	26	PPB	@ HOUR(S)	17	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	13.7	PPB			ON DAY(S)	1
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.9	%	
STANDARD DEVIATION:	3.88		MONTHLY AVERAGE:	4.52	PPB	



### 01 Hour Averages



— LICA30 IIO2\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

## 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	0:00	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	18	13	13	15	18	16	17	16	25	21	33	16	11	27	15	11	38	32	26	20	IZS	13	12	16	38	19.2	24	
2	17	20	19	14	16	19	24	27	15	31	18	7	17	16	19	12	26	7	6	IZS	5	4	5	4	31	15.1	24	
3	4	5	5	5	5	6	6	7	9	6	13	6	6	7	7	12	11	11	IZS	9	9	9	8	8	13	7.6	24	
4	7	7	7	5	6	6	5	6	6	3	4	5	4	4	5	5	9	IZS	8	7	7	7	7	8	9	6.0	24	
5	12	12	11	11	12	20	22	31	10	7	7	8	11	3	3	2	IZS	5	6	2	2	1	3	8	31	9.1	24	
6	11	12	4	4	3	3	8	11	1	6	0	4	4	5	6	IZS	3	1	2	1	1	3	2	3	12	4.3	24	
7	3	4	4	5	4	3	8	21	17	9	18	13	14	4	IZS	7	6	5	5	3	3	3	3	3	21	7.2	24	
8	4	4	3	3	5	4	6	15	15	12	9	5	4	IZS	5	9	17	20	11	4	3	3	2	2	20	7.2	24	
9	2	1	1	1	1	1	1	3	11	2	1	1	IZS	1	3	4	2	5	5	3	2	2	2	2	11	2.5	24	
10	1	2	3	5	2	2	5	3	13	18	4	IZS	3	3	3	4	3	47	6	5	4	5	4	4	47	6.5	24	
11	5	4	4	3	3	2	12	25	20	26	IZS	4	4	4	3	3	3	4	4	4	4	4	5	5	26	6.7	24	
12	5	6	5	4	4	5	6	16	15	IZS	4	5	5	6	6	10	11	11	11	12	13	12	12	16	8.2	24		
13	13	16	17	14	8	4	4	10	IZS	12	13	11	16	16	8	2	35	21	25	18	9	12	23	13	35	13.9	24	
14	12	14	1	1	1	1	3	IZS	7	4	7	10	10	8	7	3	5	9	8	6	15	16	19	23	23	8.3	24	
15	8	7	10	11	19	13	IZS	22	C	C	C	C	C	C	C	5	5	M	7	18	18	12	4	3	22	10.8	23	
16	14	14	9	23	20	IZS	13	20	19	13	12	9	4	3	1	15	2	3	2	3	2	3	4	5	23	9.3	24	
17	4	3	4	6	IZS	8	9	12	26	13	17	9	11	11	6	6	6	8	6	6	6	9	6	5	26	8.6	24	
18	5	5	4	IZS	3	3	4	6	6	5	3	5	3	9	12	13	12	3	18	10	4	2	4	3	18	6.2	24	
19	1	2	IZS	3	2	2	3	6	6	7	5	5	6	6	5	5	6	3	3	3	3	3	4	17	9	17	4.9	24
20	7	IZS	8	7	13	14	18	21	19	7	10	5	7	10	19	3	2	1	1	2	2	2	2	1	21	7.9	24	
21	IZS	2	2	2	2	2	5	6	5	4	4	3	4	6	6	6	9	8	10	9	3	2	2	IZS	10	4.6	24	
22	3	10	11	6	4	7	8	14	17	8	18	5	7	6	15	2	3	5	27	30	4	5	IZS	4	30	9.5	24	
23	5	5	6	6	5	3	3	3	3	3	3	6	3	3	3	5	3	2	3	2	2	IZS	3	3	6	3.6	24	
24	2	2	3	6	8	8	8	6	6	4	5	3	3	2	4	7	3	4	3	4	IZS	2	3	12	12	4.7	24	
25	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	1	1	1	1	3	1.1	24	
26	1	1	1	1	1	1	1	2	1	1	1	1	3	6	5	2	2	3	IZS	2	3	3	4	5	6	2.2	24	
27	4	4	4	4	5	6	10	12	9	8	5	5	5	4	4	5	7	IZS	9	9	11	11	15	11	15	7.3	24	
28	10	9	8	9	8	7	7	10	6	8	13	9	6	6	7	6	IZS	7	10	8	5	5	5	5	13	7.6	24	
29	4	4	3	3	3	3	10	3	2	2	2	2	1	2	1	IZS	1	1	1	1	1	1	1	1	10	2.3	24	
HOURLY MAX	18	20	19	23	20	20	24	31	26	31	33	16	17	27	19	15	38	47	27	30	18	16	23	23				
HOURLY AVG	6.6	6.8	6.1	6.4	6.5	6.1	8.1	12.0	10.7	8.9	8.5	6.0	6.4	6.6	6.6	6.0	8.5	8.7	8.3	7.4	5.2	5.6	6.4	6.4				

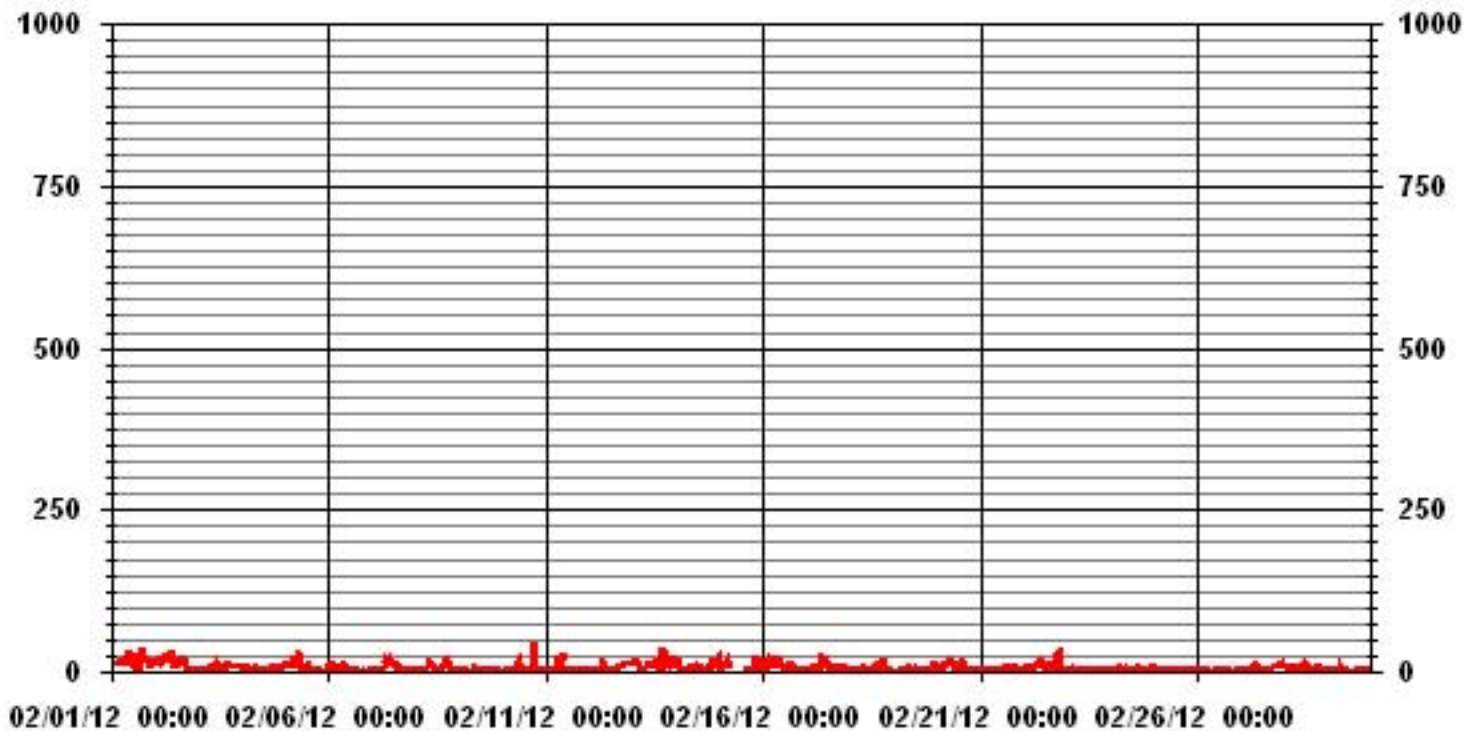
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	657					
MAXIMUM INSTANTANEOUS VALUE:	47	PPB	@ HOUR(S)	17	ON DAY(S)	10
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	6.37					

### 01 Hour Averages



— LICA30 IIO2MAX PPB



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

February 2012

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	8.40	6.42	7.79	4.43	2.14	1.22	1.68	2.29	3.97	17.27	12.99	4.74	5.19	7.79	9.02	4.58	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	8.40	6.42	7.79	4.43	2.14	1.22	1.68	2.29	3.97	17.27	12.99	4.74	5.19	7.79	9.02	4.58	

Calm : .00 %

Total # Operational Hours : 654

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	55	42	51	29	14	8	11	15	26	113	85	31	34	51	59	30	654
< 110																	
< 210																	
>= 210																	
Totals	55	42	51	29	14	8	11	15	26	113	85	31	34	51	59	30	

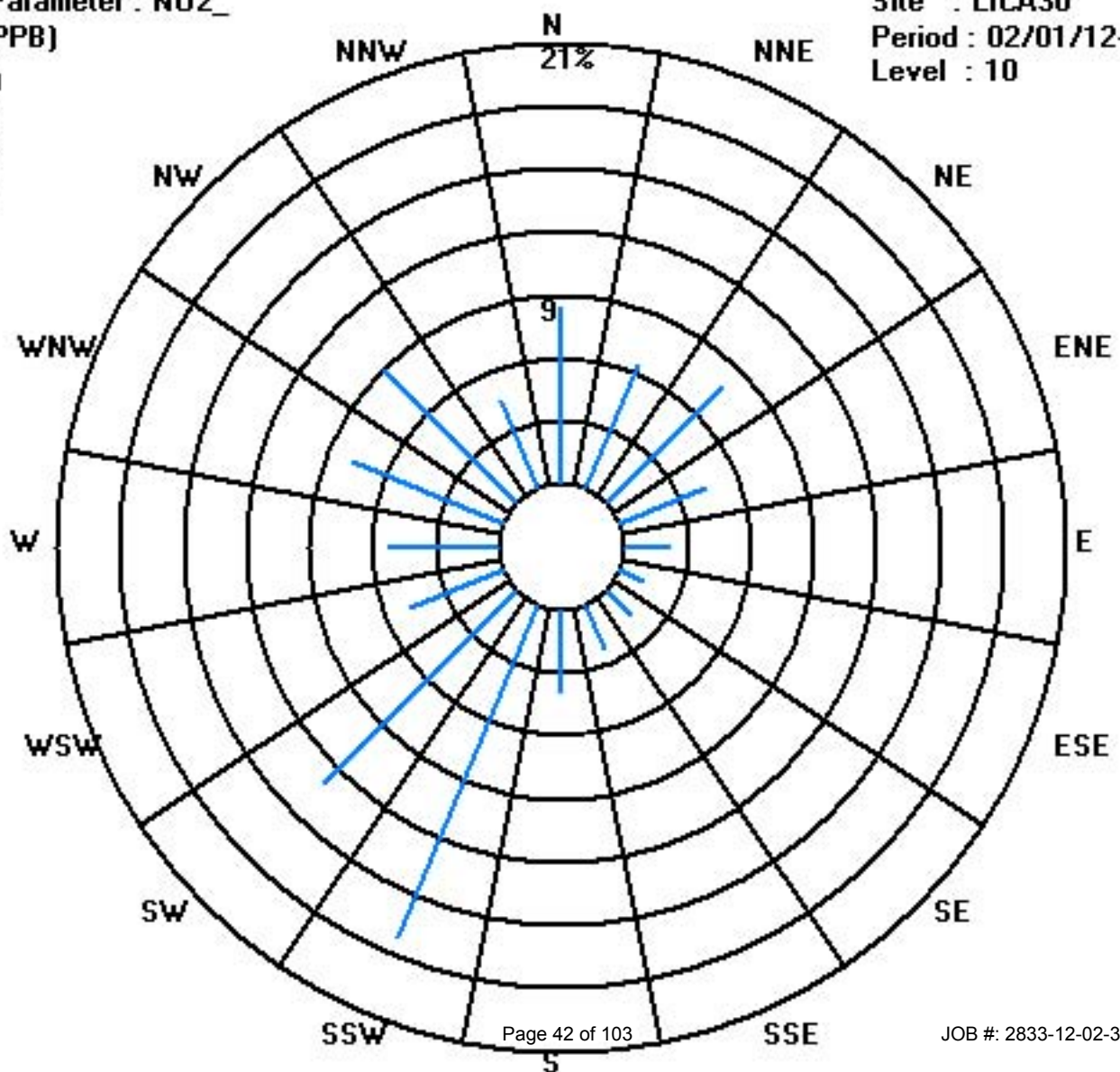
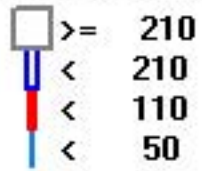
Calm : .00 %

Total # Operational Hours : 654

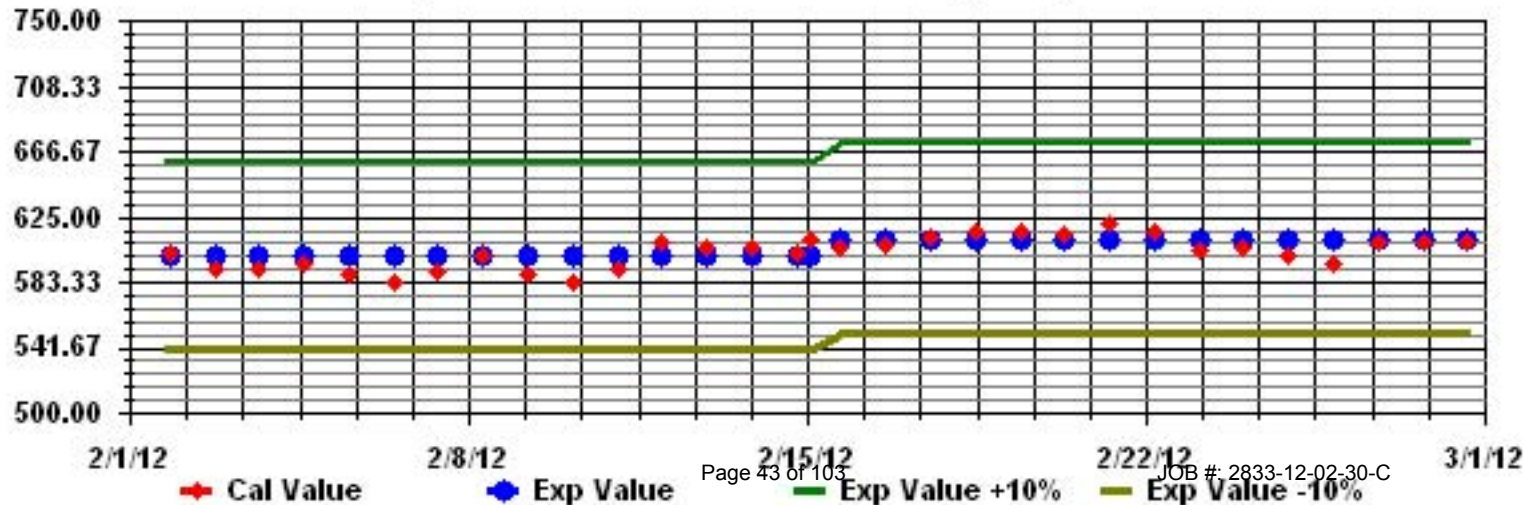
Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



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



# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSOICATION - MASKWA

FEBRUARY 2012

NITRIC OXIDE 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	0	0	0	0	0	1	0	25	29	34	5	3	6	4	2	21	7	1	0	IZS	1	1	1	1	34	6.1	24
2	1	1	1	1	2	1	6	5	3	13	7	6	4	3	3	4	2	0	0	IZS	0	0	0	0	0	13	2.7	24
3	0	0	0	0	0	0	1	1	2	1	2	3	3	3	3	1	0	IZS	0	0	0	0	0	0	0	3	1.0	24
4	0	0	0	0	0	0	1	1	1	2	2	2	2	2	2	1	1	IZS	0	0	0	0	1	1	2	0.8	24	
5	0	0	0	0	1	1	8	9	1	3	3	3	4	1	1	1	IZS	0	0	0	0	0	0	0	9	1.6	24	
6	1	0	0	0	0	0	1	1	0	1	0	0	1	1	1	IZS	0	0	0	0	0	0	0	0	1	0.3	24	
7	0	0	0	0	0	0	0	6	8	4	6	3	2	2	IZS	2	0	0	0	0	0	0	0	0	8	1.4	24	
8	0	0	0	0	0	0	0	0	2	6	4	2	2	IZS	3	4	4	2	0	1	0	0	0	0	6	1.3	24	
9	0	0	0	0	0	0	0	0	1	1	1	0	0	IZS	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
10	0	0	0	0	0	0	0	0	2	12	0	IZS	1	0	0	0	0	0	0	0	0	0	0	0	12	0.7	24	
11	0	0	0	0	0	0	0	1	2	15	IZS	1	1	1	0	0	0	0	0	0	0	0	0	0	15	0.9	24	
12	0	0	0	0	0	0	0	0	1	IZS	3	4	4	4	4	3	2	1	1	1	1	1	1	0	4	1.3	24	
13	1	1	2	2	1	0	0	1	IZS	4	7	3	6	6	0	0	0	0	2	2	0	0	1	0	7	1.7	24	
14	0	0	0	0	0	0	0	IZS	0	0	1	3	2	1	1	0	0	0	0	0	0	0	0	0	3	0.3	24	
15	0	0	0	0	0	0	IZS	2	C	C	C	C	C	C	C	1	0	M	0	1	1	0	0	0	2	0.3	23	
16	0	0	0	1	1	IZS	2	2	3	2	3	2	1	1	1	0	0	0	0	0	0	0	0	0	3	0.9	24	
17	0	0	0	0	IZS	0	0	0	4	3	7	1	2	2	0	0	0	0	0	0	0	0	0	0	7	0.8	24	
18	0	0	0	IZS	0	0	0	1	1	2	1	2	1	2	3	3	1	0	1	0	0	0	0	0	3	0.8	24	
19	0	0	IZS	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	3	0.5	24		
20	1	IZS	1	0	1	1	3	4	5	1	3	1	2	2	5	1	0	0	0	0	0	0	0	0	5	1.3	24	
21	IZS	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	2	0	0	0	0	0	0	0	IZS	2	0.4	24
22	0	0	0	0	0	0	0	0	2	1	5	1	2	0	2	0	1	1	2	3	0	0	IZS	0	5	0.9	24	
23	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1	0	0	0	0	0	0	0	IZS	0	2	0.3	24	
24	0	0	0	0	0	0	0	0	0	1	1	1	2	1	1	2	0	0	0	0	0	IZS	1	0	1	2	0.5	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0.0	24
26	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	0	0	1	IZS	0	0	0	0	0	2	0.3	24	
27	0	0	0	0	0	0	0	0	1	2	2	2	2	1	1	1	0	IZS	1	1	1	1	1	1	2	0.8	24	
28	0	0	1	1	1	1	1	2	3	8	12	6	4	4	3	2	IZS	0	0	0	0	0	0	0	12	2.1	24	
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0.0	24	
HOURLY MAX	1	1	2	2	2	1	8	9	25	29	34	6	6	6	5	4	21	7	2	3	1	1	3	1				
HOURLY AVG	0.1	0.1	0.2	0.2	0.3	0.1	0.9	1.3	2.5	4.2	4.0	2.0	2.0	1.8	1.6	1.3	1.3	0.5	0.3	0.3	0.1	0.1	0.3	0.1				

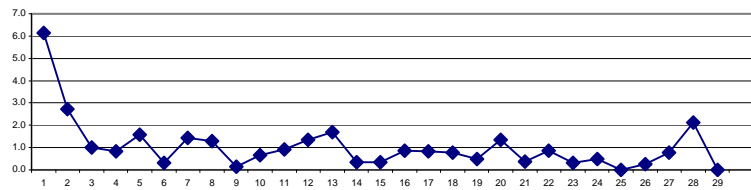
STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

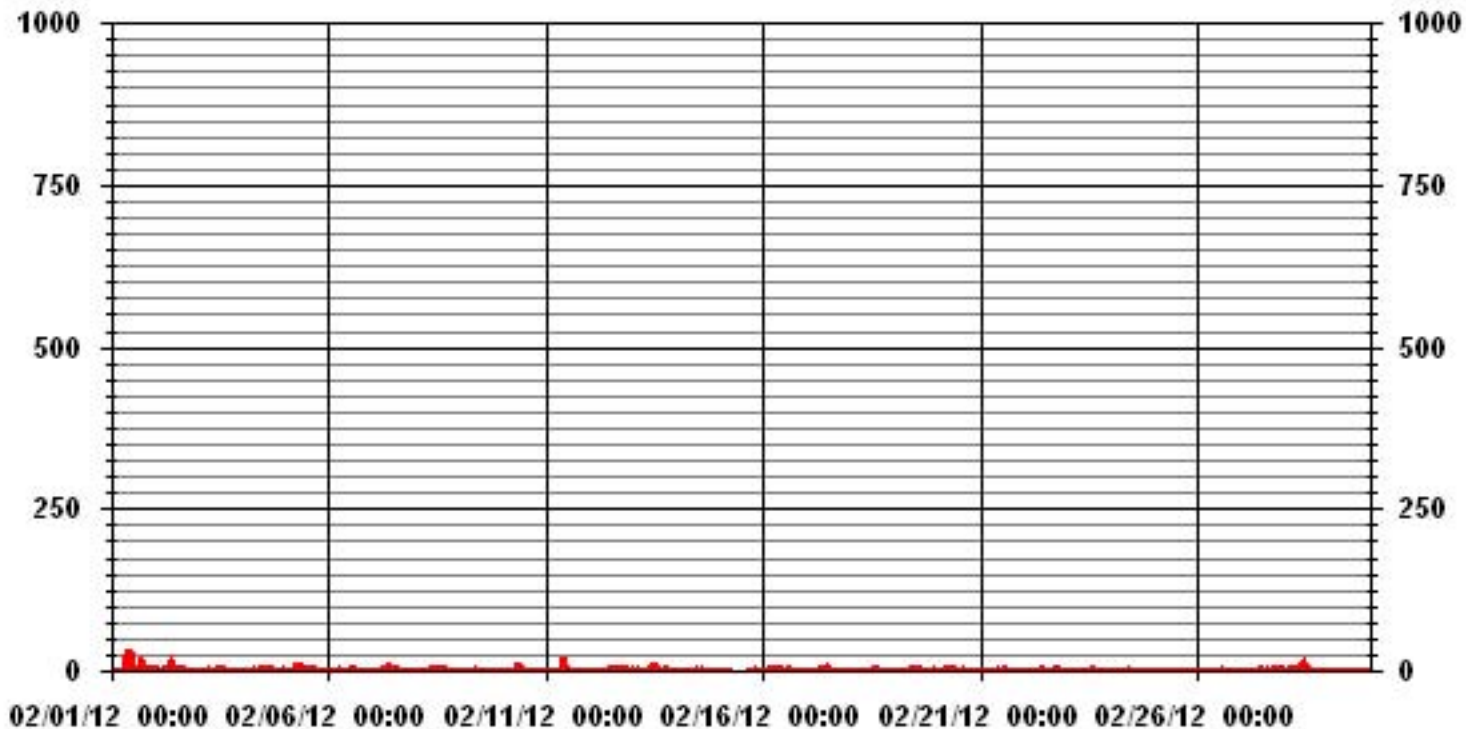
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	258					
MAXIMUM 1-HR AVERAGE:	34	PPB	@ HOUR(S)	10	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	6.1	PPB			ON DAY(S)	1
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.9	%	
STANDARD DEVIATION:	2.70		MONTHLY AVERAGE:	1.05	PPB	

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

**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.	
DAY																												
1	0	0	0	0	0	2	4	7	103	99	61	13	6	15	12	5	117	45	6	1	IZS	1	1	4	117	21.8	24	
2	2	3	2	2	4	9	13	16	6	88	17	9	25	27	21	8	23	1	1	IZS	1	1	1	1	88	12.2	24	
3	1	1	1	1	1	1	2	4	4	2	14	5	4	4	3	6	2	1	IZS	1	1	1	1	1	14	2.7	24	
4	1	1	1	1	1	1	2	2	2	2	3	3	3	3	2	2	4	IZS	1	1	1	1	1	1	4	1.7	24	
5	1	1	1	1	1	8	20	32	2	5	5	5	9	2	2	1	IZS	1	1	1	1	1	1	1	32	4.5	24	
6	1	1	1	1	1	1	4	6	1	3	1	2	2	2	2	IZS	0	0	0	0	0	0	0	0	6	1.3	24	
7	0	0	0	0	0	0	4	47	43	13	27	10	7	3	IZS	7	2	0	0	0	0	0	0	0	47	7.1	24	
8	0	0	0	0	0	0	1	1	5	9	7	5	3	IZS	5	6	6	5	1	1	1	1	1	1	9	2.6	24	
9	1	1	1	1	1	1	1	1	5	1	2	1	IZS	1	1	1	0	0	0	0	0	0	0	0	5	0.9	24	
10	0	0	0	0	0	0	0	0	10	26	3	IZS	3	1	1	1	0	27	0	0	0	0	0	0	27	3.1	24	
11	0	0	0	0	0	0	0	30	23	31	IZS	2	2	3	1	1	0	0	0	0	0	0	0	31	4.0	24		
12	0	0	0	0	0	0	0	1	3	IZS	4	5	5	5	4	3	2	1	1	1	1	1	1	1	5	1.9	24	
13	1	2	5	4	1	1	1	5	IZS	9	11	8	15	17	5	1	16	6	9	4	1	1	5	1	17	5.6	24	
14	0	0	0	0	0	0	0	IZS	1	1	2	5	4	2	2	0	3	1	0	0	0	0	0	0	5	0.9	24	
15	0	0	0	0	0	0	IZS	9	C	C	C	C	C	C	C	1	1	M	1	4	3	1	1	1	9	1.5	23	
16	1	1	1	4	3	IZS	4	6	7	6	9	4	3	3	1	7	1	1	1	1	1	1	1	1	9	3.0	24	
17	1	1	1	1	IZS	1	1	0	39	4	13	4	6	5	2	2	1	1	0	0	0	0	0	0	39	3.6	24	
18	0	0	0	IZS	1	1	1	1	2	2	2	3	2	4	5	6	4	1	2	1	1	1	1	1	6	1.8	24	
19	1	1	IZS	1	1	1	1	1	1	2	2	2	2	2	2	2	1	3	1	1	1	1	1	11	11	1.8	24	
20	2	IZS	1	1	2	6	8	10	9	3	17	3	5	8	14	2	1	1	1	1	1	1	1	1	17	4.3	24	
21	IZS	1	1	1	1	1	1	1	1	1	1	1	2	3	3	2	3	1	1	1	1	1	1	1	3	1.4	24	
22	1	1	1	1	1	1	2	2	6	4	11	3	4	4	11	1	2	1	7	9	1	1	IZS	1	11	3.3	24	
23	1	1	1	1	1	1	1	1	1	1	2	3	2	2	2	3	1	1	1	1	1	IZS	1	1	3	1.3	24	
24	1	1	1	1	1	1	1	1	1	1	2	2	3	2	2	4	1	1	1	1	IZS	1	1	2	4	1.4	24	
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	1	1	1	1	1	1.0	24	
26	1	1	1	1	1	1	1	1	1	1	1	1	2	5	4	1	1	1	IZS	0	0	0	0	0	5	1.1	24	
27	0	0	0	0	0	0	2	1	3	3	2	3	3	2	2	2	2	IZS	1	1	1	1	2	1	3	1.4	24	
28	1	1	1	1	1	1	1	4	6	11	17	8	5	4	6	4	IZS	1	0	0	0	0	0	0	17	3.2	24	
29	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	2	0.1	24	
HOURLY MAX	2	3	5	4	4	9	20	47	103	99	61	13	25	27	21	8	117	45	9	9	3	1	11	4				
HOURLY AVG	0.7	0.7	0.8	0.9	0.9	1.4	2.8	6.8	10.6	12.2	8.8	4.1	4.7	4.8	4.3	3.0	7.3	3.9	1.4	1.1	0.7	0.6	1.2	0.8				

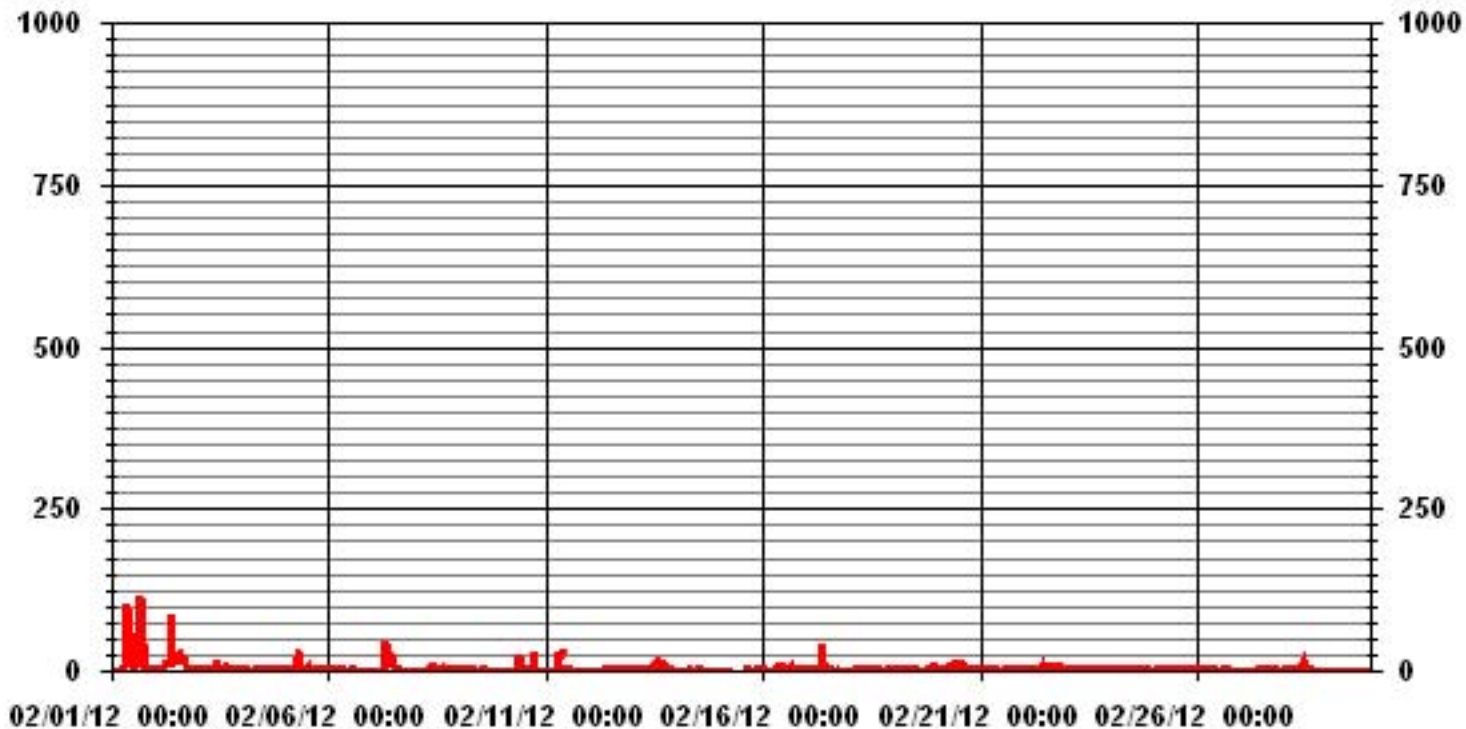
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	512				
MAXIMUM INSTANTANEOUS VALUE:	117	PPB	@ HOUR(S)	16	ON DAY(S) 1
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695	HRS
MONTHLY CALIBRATION TIME:	7	HRS			
STANDARD DEVIATION:	9.68				

# 01 Hour Averages





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

February 2012

Distribution By % Of Samples

Logger Id : 30  
 Site Name : LICA30  
 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	8.40	6.42	7.79	4.43	2.14	1.22	1.68	2.29	3.97	17.27	12.99	4.74	5.19	7.79	9.02	4.58	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	8.40	6.42	7.79	4.43	2.14	1.22	1.68	2.29	3.97	17.27	12.99	4.74	5.19	7.79	9.02	4.58	

Calm : .00 %

Total # Operational Hours : 654

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	55	42	51	29	14	8	11	15	26	113	85	31	34	51	59	30	654
< 110																	
< 210																	
>= 210																	
Totals	55	42	51	29	14	8	11	15	26	113	85	31	34	51	59	30	

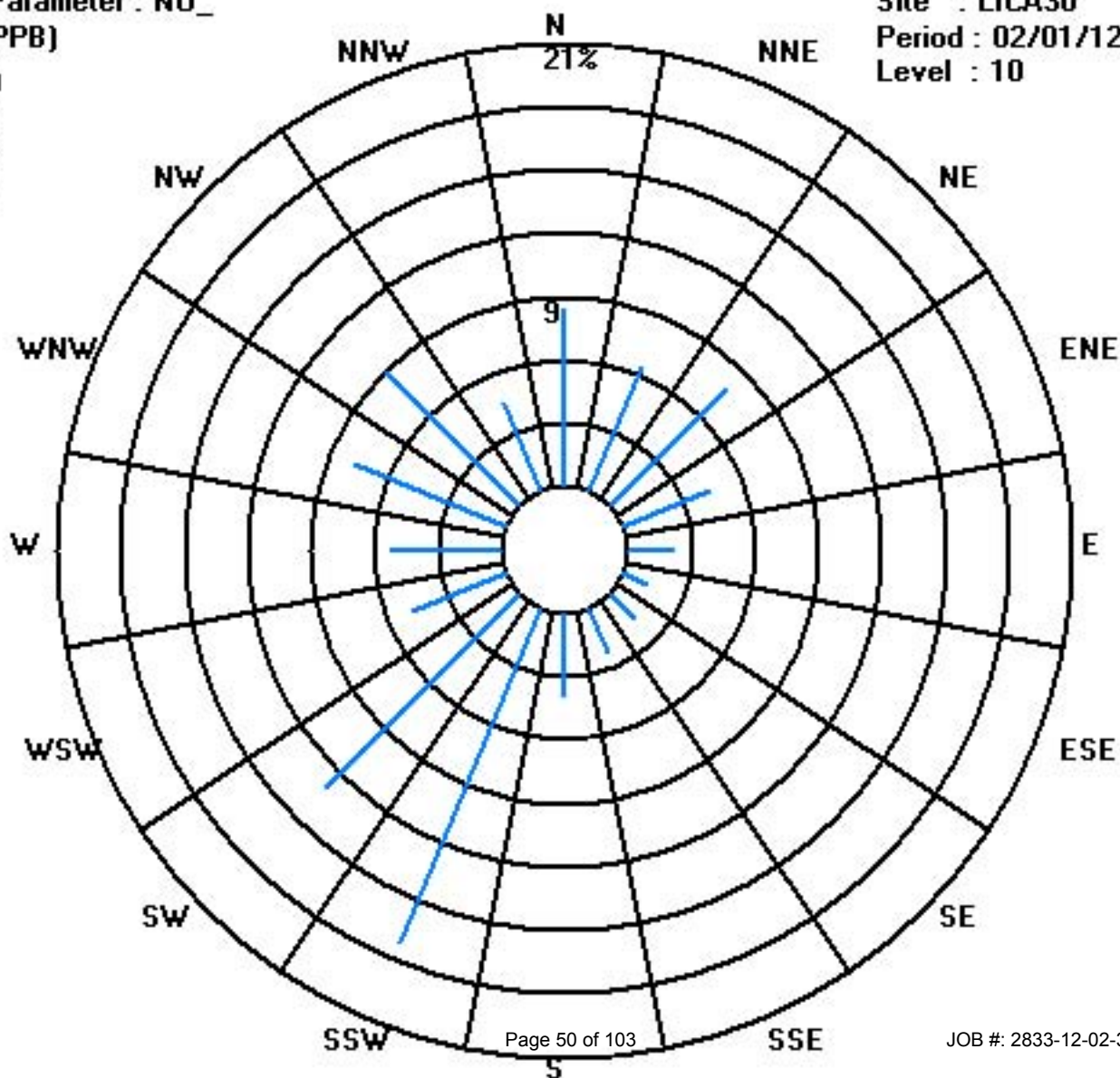
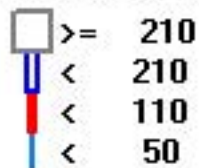
Calm : .00 %

Total # Operational Hours : 654

Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



# Oxides of Nitrogen

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA**  
**FEBRUARY 2012**

**OXIDES OF NITROGEN** hourly averages in ppb

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	14	13	12	12	16	14	16	14	40	42	<b>49</b>	17	12	18	13	11	46	33	23	17	<b>IZS</b>	12	9	9	<b>49</b>	<b>20.1</b>	24	
2	14	14	11	10	13	10	24	20	15	26	14	10	8	5	8	12	10	5	5	<b>IZS</b>	5	5	5	4	26	11.0	24	
3	4	5	5	5	6	6	6	7	9	7	7	8	8	10	9	12	11	10	<b>IZS</b>	9	7	8	8	7	12	7.6	24	
4	6	6	6	5	5	5	4	5	5	3	5	6	5	5	5	7	<b>IZS</b>	7	6	7	6	6	7	7	5.5	24		
5	7	10	9	9	9	10	24	26	6	8	8	9	8	2	1	1	<b>IZS</b>	4	4	2	2	2	3	4	26	7.3	24	
6	10	7	4	4	3	2	4	3	1	2	0	1	3	3	4	<b>IZS</b>	1	0	1	0	0	1	1	2	10	2.5	24	
7	3	3	3	3	3	2	3	11	16	8	13	8	6	6	<b>IZS</b>	8	6	5	4	3	3	3	4	3	16	5.5	24	
8	4	4	4	3	4	4	6	7	14	17	11	6	6	<b>IZS</b>	7	10	16	18	8	3	2	2	1	1	18	6.9	24	
9	1	1	0	1	0	0	0	1	5	1	1	0	<b>IZS</b>	0	0	0	0	2	3	1	1	1	1	1	5	0.9	24	
10	1	1	1	2	1	1	2	2	7	24	1	<b>IZS</b>	4	3	2	2	1	6	4	3	2	3	3	3	24	3.4	24	
11	4	3	2	2	2	1	2	4	7	31	<b>IZS</b>	4	5	5	4	3	3	3	3	3	3	3	4	5	31	4.6	24	
12	4	5	4	4	3	4	5	9	11	<b>IZS</b>	7	8	8	9	9	10	11	11	11	12	13	12	12	12	13	8.3	24	
13	12	16	16	13	6	4	4	9	<b>IZS</b>	12	17	8	14	13	1	0	5	6	14	13	4	4	14	8	17	9.3	24	
14	8	7	0	0	0	0	1	<b>IZS</b>	5	3	6	12	10	7	5	1	3	4	6	2	6	8	11	15	15	5.2	24	
15	4	4	6	3	15	12	<b>IZS</b>	14	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	4	4	<b>M</b>	5	8	12	4	2	2	2	15	6.6	23	
16	9	6	6	13	11	<b>IZS</b>	11	13	14	8	8	5	5	3	2	2	3	2	3	2	3	3	4	14	6.0	24		
17	4	4	4	5	<b>IZS</b>	7	7	11	17	13	19	5	8	10	4	4	5	6	5	5	5	6	5	5	19	7.1	24	
18	4	4	3	<b>IZS</b>	3	4	4	5	7	5	4	5	4	9	12	12	7	3	10	4	2	2	2	2	12	5.1	24	
19	1	1	<b>IZS</b>	2	1	0	2	4	5	6	5	6	5	5	4	4	3	3	2	2	2	11	4	11	3.7	24		
20	5	<b>IZS</b>	5	5	10	10	14	15	18	2	7	3	5	5	13	2	1	1	0	1	0	0	0	0	18	5.3	24	
21	<b>IZS</b>	1	1	1	1	1	2	5	4	4	3	3	3	5	5	6	8	7	8	5	2	1	1	<b>IZS</b>	8	3.5	24	
22	2	6	8	4	2	3	6	8	11	5	14	3	4	1	7	1	1	1	14	19	1	3	<b>IZS</b>	3	19	5.5	24	
23	4	3	5	4	3	3	2	2	2	2	4	3	3	3	4	1	1	1	1	1	1	1	<b>IZS</b>	1	1	5	2.4	24
24	0	0	1	3	6	6	6	5	4	3	3	3	3	2	3	5	2	2	2	2	<b>IZS</b>	1	1	6	6	3.0	24	
25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>IZS</b>	0	0	0	0	1	0.0	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	1	4	3	1	1	2	<b>IZS</b>	2	2	2	2	3	4	1.0	24	
27	3	3	3	3	4	5	8	9	9	8	7	7	6	5	5	6	<b>IZS</b>	9	9	11	11	12	11	12	6.9	24		
28	10	9	9	9	8	7	7	8	8	15	22	14	10	9	9	7	<b>IZS</b>	7	8	6	5	4	4	4	22	8.7	24	
29	3	2	2	2	2	2	3	2	1	1	1	1	1	1	0	<b>IZS</b>	1	0	0	0	0	0	1	0	3	1.1	24	
HOURLY MAX	14	16	16	13	16	14	24	26	40	42	49	17	14	18	13	12	46	33	23	19	12	13	14	15				
HOURLY AVG	5.1	4.9	4.6	4.5	4.9	4.4	6.2	7.8	8.9	9.5	8.7	5.8	5.8	5.5	5.1	4.9	6.0	5.5	5.9	5.2	3.7	3.9	4.5	4.5				

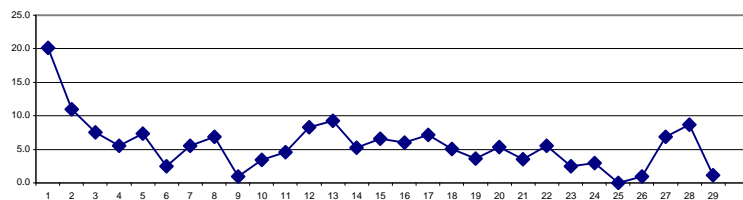
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

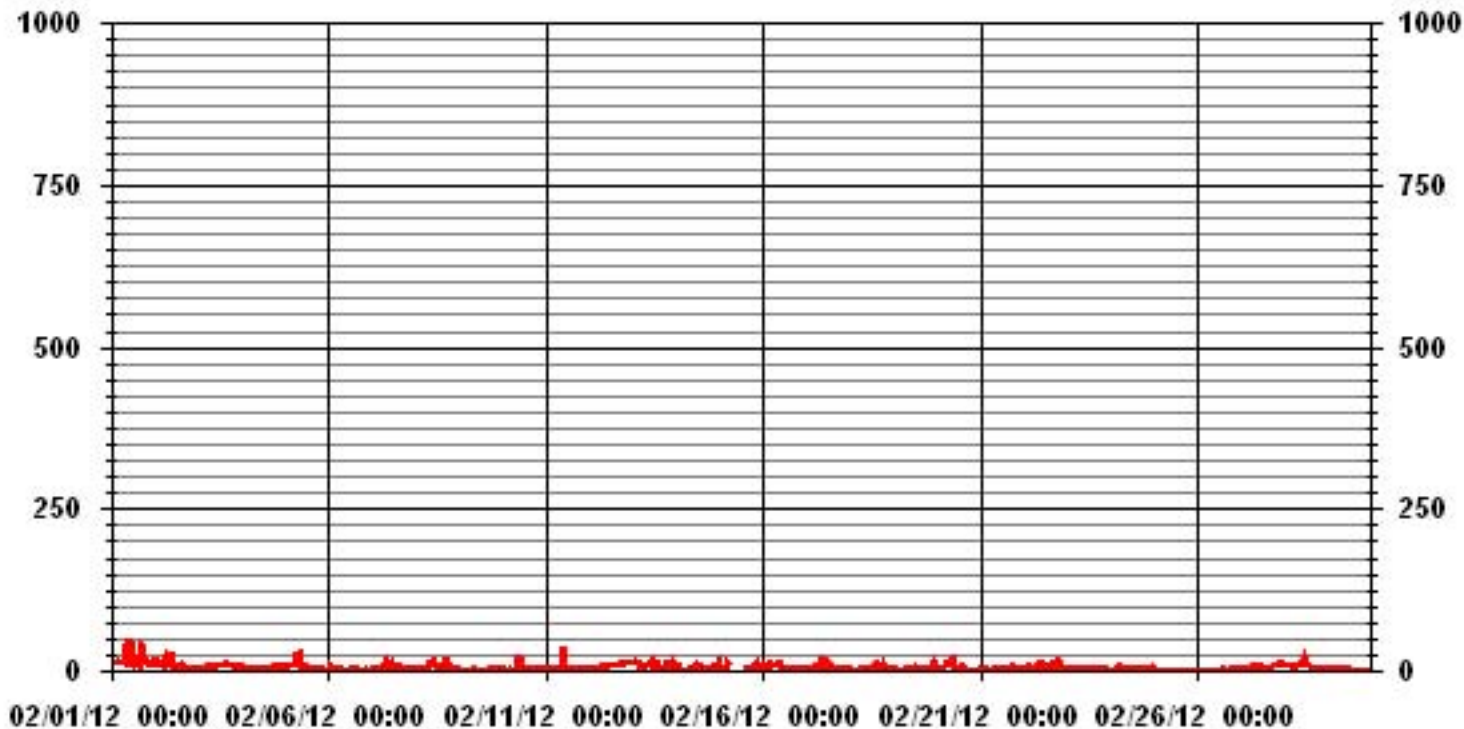
**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	591					
MAXIMUM 1-HR AVERAGE:	49	PPB	@ HOUR(S)	10	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	20.1	PPB			ON DAY(S)	1
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME	99.9	%	
STANDARD DEVIATION	5.74		MONTHLY AVERAGE	5.65	PPB	

**24 HOUR AVERAGES FOR FEBRUARY 2012**



### 01 Hour Averages



— LICA30 NOX\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

## 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	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	18	14	14	15	18	19	22	23	127	113	89	29	17	41	27	16	147	75	32	21	IZS	14	12	19	147	40.1	24	
2	18	21	21	16	18	26	36	43	21	112	33	15	35	41	35	19	46	7	6	IZS	7	5	6	5	112	25.7	24	
3	5	6	6	7	7	7	8	11	14	8	25	11	11	11	19	13	12	IZS	10	8	8	9	8	8	25	10.2	24	
4	7	7	6	6	6	6	6	7	6	4	6	7	6	6	7	7	12	IZS	8	8	7	7	7	9	12	6.9	24	
5	11	12	11	11	12	28	41	60	12	11	11	12	19	3	3	2	IZS	6	7	3	3	2	4	9	60	12.7	24	
6	12	13	5	5	4	3	11	16	2	9	1	7	7	7	9	IZS	4	1	2	1	1	2	2	3	16	5.5	24	
7	3	3	3	5	4	3	13	63	60	22	43	22	22	7	IZS	15	9	6	5	4	4	4	4	4	63	14.3	24	
8	4	5	4	4	6	6	9	17	20	23	17	12	9	IZS	9	15	22	23	12	4	3	3	2	1	23	10.0	24	
9	2	1	1	1	1	0	1	3	15	2	1	1	IZS	1	4	5	2	5	5	3	2	2	2	1	15	2.7	24	
10	1	2	2	6	2	2	5	3	22	43	8	IZS	7	4	4	4	3	74	6	4	4	5	4	3	74	9.5	24	
11	5	4	3	3	2	2	3	54	44	57	IZS	6	6	7	5	4	3	4	4	4	4	4	5	5	57	10.3	24	
12	5	5	5	4	4	5	5	17	18	IZS	8	10	9	11	10	10	12	13	12	13	14	13	13	18	9.9	24		
13	14	18	21	18	9	5	5	15	IZS	21	24	20	31	33	13	3	47	27	34	22	10	14	28	15	47	19.4	24	
14	13	14	1	1	1	1	3	IZS	9	5	10	16	15	10	10	3	8	9	8	6	15	16	19	23	23	9.4	24	
15	8	8	10	11	19	14	IZS	29	C	C	C	C	C	C	C	6	6	M	7	22	20	12	4	3	29	11.9	23	
16	14	14	10	26	23	IZS	17	25	26	20	20	14	7	5	3	20	3	4	3	3	4	5	6	26	12.0	24		
17	5	4	6	7	IZS	9	10	13	60	19	31	14	18	16	8	8	8	9	6	7	6	10	5	5	60	12.3	24	
18	5	5	4	IZS	4	5	5	7	9	7	5	8	5	14	18	19	16	4	20	11	5	3	5	3	20	8.1	24	
19	2	2	IZS	3	2	2	3	5	6	7	6	7	8	7	5	5	9	3	3	3	3	3	27	8	27	5.6	24	
20	9	IZS	8	7	14	20	25	30	27	10	26	7	11	17	32	5	1	1	1	2	2	2	2	1	32	11.3	24	
21	IZS	2	2	1	2	2	4	6	5	5	4	4	5	8	8	7	12	8	10	9	3	2	1	IZS	12	5.0	24	
22	3	10	12	6	4	8	9	15	23	10	28	8	11	9	26	2	3	5	33	37	3	4	IZS	4	37	11.9	24	
23	5	5	6	5	4	3	3	3	3	3	3	8	3	4	4	7	3	2	2	2	2	IZS	3	2	8	3.7	24	
24	1	2	3	6	7	8	8	6	6	4	6	4	5	3	5	11	3	4	3	4	IZS	2	3	13	13	5.1	24	
25	2	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	IZS	1	1	1	1	2	0.9	24	
26	1	1	1	1	1	1	1	1	1	1	1	1	4	9	8	2	2	2	IZS	2	3	3	3	5	9	2.4	24	
27	4	3	4	3	5	6	11	12	11	11	8	8	8	6	7	9	IZS	9	10	13	12	17	12	17	8.5	24		
28	11	10	10	10	9	8	8	14	11	19	29	17	12	10	13	10	IZS	8	10	8	5	5	5	5	29	10.7	24	
29	4	4	2	2	2	2	12	3	2	2	2	1	1	2	1	IZS	1	1	1	1	1	1	1	1	12	2.2	24	
HOURLY MAX	18	21	21	26	23	28	41	63	127	113	89	29	35	41	35	20	147	75	34	37	20	16	28	23				
HOURLY AVG	6.9	7.0	6.5	6.8	6.8	7.2	10.2	17.9	20.7	20.3	16.5	10.0	10.9	10.9	10.6	8.6	15.0	12.1	9.3	8.3	5.6	5.9	7.1	6.7				

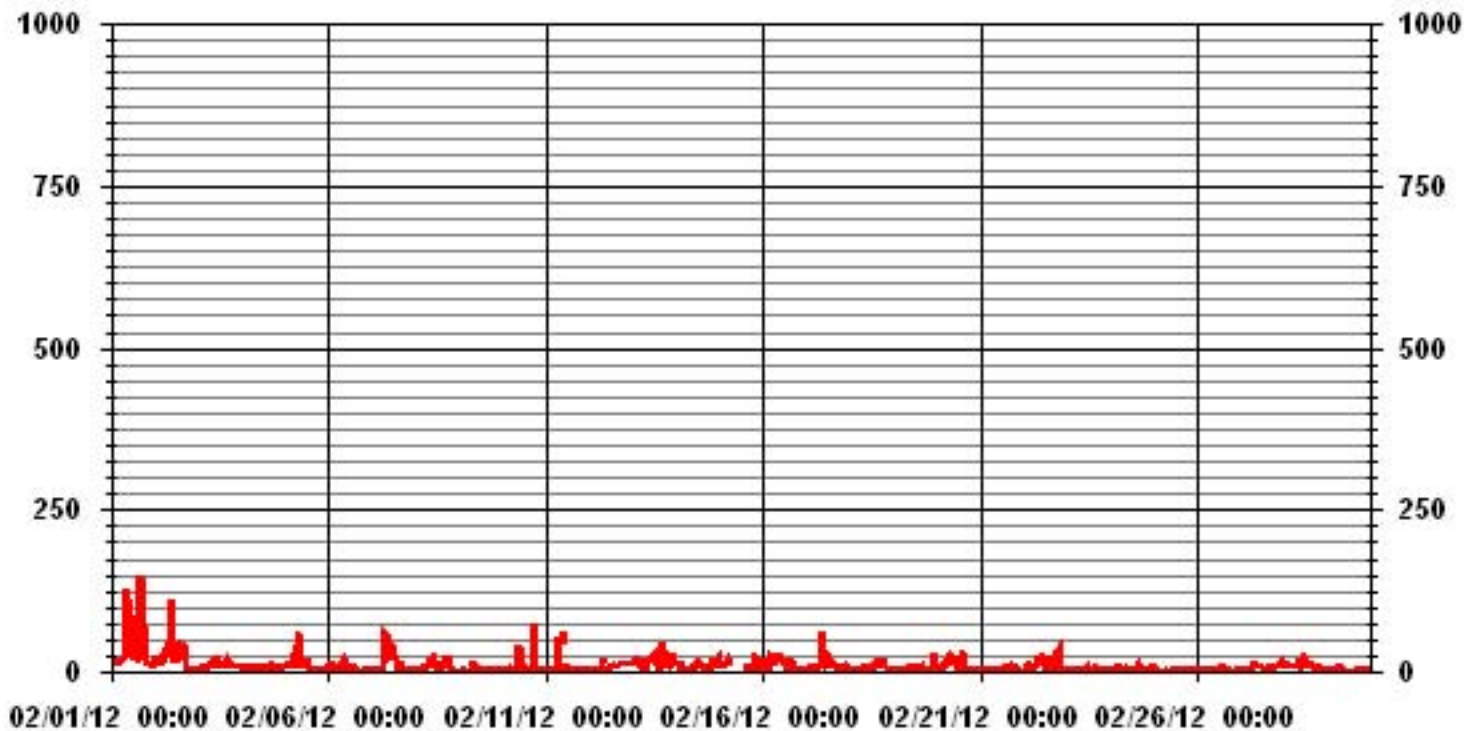
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	654		
MAXIMUM INSTANTANEOUS VALUE:	147 PPB @ HOUR(S) 16 ON DAY(S) 1		
IZS CALIBRATION TIME:	30 HRS	OPERATIONAL TIME:	695 HRS
MONTHLY CALIBRATION TIME:	7 HRS		
STANDARD DEVIATION:	13.96		

### 01 Hour Averages



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

February 2012

Distribution By % Of Samples

Logger Id : 30  
Site Name : LICA30  
Parameter : NOX\_  
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	8.40	6.42	7.79	4.43	2.14	1.22	1.68	2.29	3.97	17.27	12.99	4.74	5.19	7.79	9.02	4.58	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	8.40	6.42	7.79	4.43	2.14	1.22	1.68	2.29	3.97	17.27	12.99	4.74	5.19	7.79	9.02	4.58	

Calm : .00 %

Total # Operational Hours : 654

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	55	42	51	29	14	8	11	15	26	113	85	31	34	51	59	30	654
< 110																	
< 210																	
>= 210																	
Totals	55	42	51	29	14	8	11	15	26	113	85	31	34	51	59	30	

Calm : .00 %

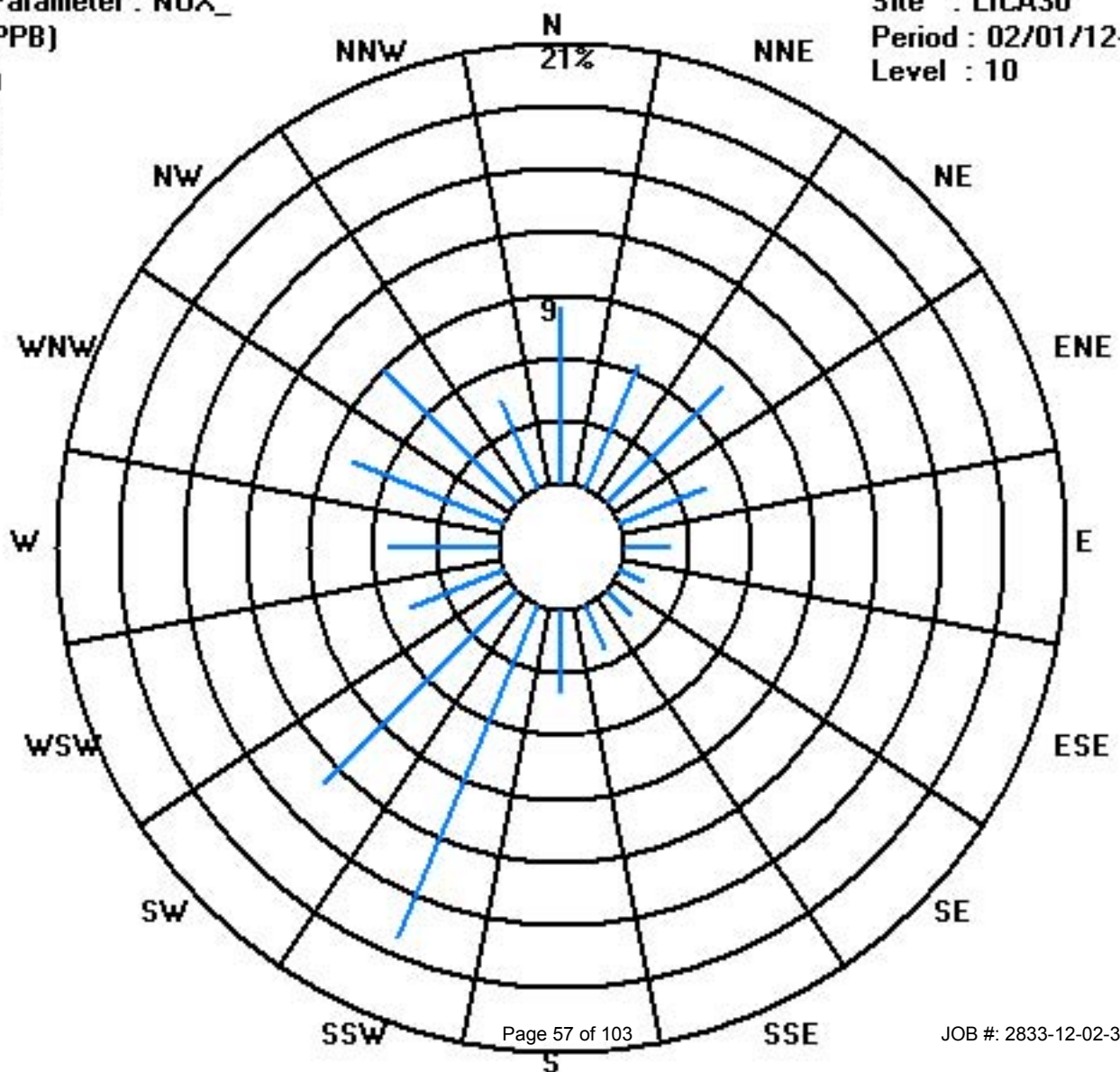
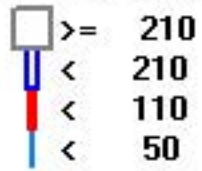
Total # Operational Hours : 654



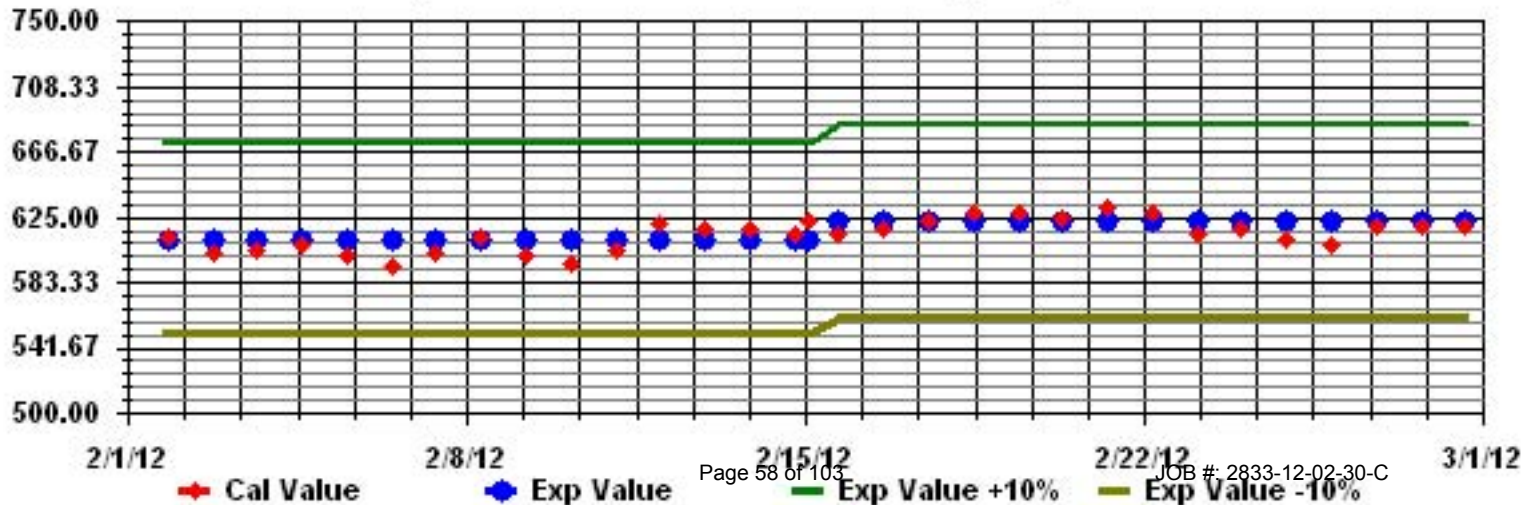
Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



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



# Temperature

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA  
FEBRUARY 2012

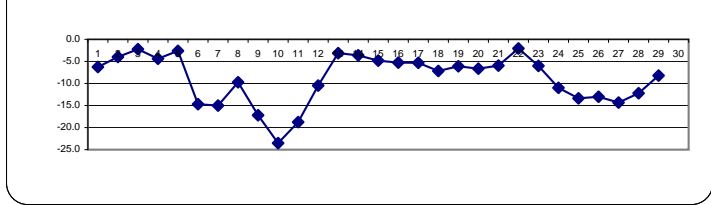
AMBIENT TEMPERATURE hourly averages (Degrees C)

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY 24-HOUR	
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	MAX.	AVG.	RDGS.
1	-4.8	-5.6	-6.3	-7.4	-6.9	-8	-10.3	-12.1	-12.8	-10.8	-6.9	-2.5	-1.3	1.2	1.5	-15.2	-16.2	-3.5	-3.4	-3.8	-3.2	-3.7	-3.9	-4.4	1.5	-6.3	24
2	-4.7	-5.3	-6.4	-6.7	-7.7	-8.3	-8.6	-9.5	-9.6	-6	-4	-1.4	1.6	2.1	1.4	-0.9	-2.6	-3	-2.4	-2.5	-2.5	-2.7	-2.9	-3.3	2.1	-4.0	24
3	-3.6	-4.2	-4.6	-4.8	-5.4	-6	-5.6	-5.8	-5.7	-3.9	-2.1	-0.4	1.6	2.6	3.4	2.2	1.1	0.1	-0.3	-0.8	-2.1	-1.8	-3	-4.4	3.4	-2.2	24
4	-7	-7.8	-8.6	-10.1	-10.6	-11.3	-12.3	-12.6	-12.5	-7.5	-0.7	1.6	3.5	4.3	4.2	3.5	1	-1.7	-3.3	-2.7	-3.5	-3.6	-3.7	-4	4.3	-4.4	24
5	-4.9	-5.1	-5.5	-6.1	-5.1	-6	-5.6	-5.2	-5	-2.4	1.9	2.3	4.3	4.5	3.7	3.4	1.3	-1	-2.5	-3.6	-4.7	-5.7	-6.8	-8.9	4.5	-2.6	24
6	-10.3	-12.5	-14.2	-15.1	-15.9	-16.2	-17.4	-18.2	-17.8	-15.3	-13.5	-12.9	-12.5	-11.5	-11.1	-8.2	-11.2	-13.6	-15.3	-17.5	-19.1	-20.4	-16	-17.1	-8.2	-14.7	24
7	-19.1	-20.3	-22.1	-23.1	-23.9	-24.5	-25.2	-25.5	-24.6	-18.3	-12.7	-9.8	-7	-6.2	-4.7	-10.2	-13.5	-8.7	-9.1	-9.6	-10.9	-10.3	-10.2	-10.9	-4.7	-15.0	24
8	-10.9	-11.1	-11.7	-11.8	-15.1	-14.1	-14	-13.7	-16.2	-12.7	-8.7	-5.8	-4	-4.3	-4.5	-9.1	-11.6	-7.8	-6.8	-5.5	-6.4	-7.5	-9.2	-10.9	-4.0	-9.7	24
9	-12.1	-13.4	-14.8	-16.1	-17.2	-19.5	-20.8	-21.9	-21.4	-17.6	-15	-13.9	-11.9	-10.7	-9.8	-12.3	-13	-16.1	-19.9	-20.7	-20.8	-23	-24.4	-26.4	-9.8	-17.2	24
10	-27.2	-28.1	-28.8	-29.7	-30.4	-31.1	-31.6	<b>-32.4</b>	-31	-24.5	-19.4	-13.8	-13.1	-13.3	-12.9	-13.2	-15.7	-18.8	-21.1	-23.5	-25.3	-26.5	-26.6	-26.6	-12.9	-23.5	24
11	-27.9	-27.7	-28.3	-29.1	-29.9	-30.4	-30.9	-31.4	-29.5	-22.4	-16.3	-14	-11.5	-9.4	-8.1	-1.5	-9.1	-11.3	-12.1	-12.8	-13.2	-14.4	-14.3	-14.6	-1.5	-18.8	24
12	-14.5	-17.2	-18.9	-19	-18.8	-15.7	-15.2	-16	-16	-12.4	-9.6	-7.1	-4.9	-3.2	-2.5	-2.4	-3.7	-5.3	-5.6	-5.6	-7.2	-8.7	-10.1	-11.8	-2.4	-10.5	24
13	-13.3	-13.3	-13.9	-12.4	-9.1	-7.9	-6.7	-6.5	-5.6	-2.4	1.9	3.4	4.6	5	4.4	2.5	1.6	0.1	-0.8	-0.6	-0.6	-0.7	-1.6	-3.2	5.0	-3.1	24
14	-4.5	-4.7	-5.1	-5.7	-6.4	-7.1	-7.6	-8.5	-7.3	-4.1	-2.7	-0.1	0.3	0.5	1.7	0.6	-0.8	-1.9	-3.5	-3.3	-4.1	-4.3	-4.2	-4.1	1.7	-3.6	24
15	-3.8	-3.7	-4.3	-6.2	-7.8	-9.9	-10.4	-12	-9.8	-5.1	-2.1	0.1	0.9	1.2	0.8	-9.5	-12	-2	-2.4	-2.1	-2	-3.8	-4.7	-5.4	1.2	-4.8	24
16	-5.1	-4.9	-4.3	-5.1	-6.4	-6.7	-5.7	-5.5	-5.2	-1.9	-0.2	1.1	1.4	1.5	2.2	-19.1	-19.4	-2.9	-4.1	-5.1	-6.1	-7	-8.6	-9.6	2.2	-5.3	24
17	-8.4	-8.4	-8.1	-8.4	-8.9	-9.3	-9.1	-9.2	-8.5	-4.6	0.9	2.9	5.3	<b>6.3</b>	5.7	-19	-19.8	-0.6	-2.3	-3.3	-4	-4.3	-5	-7.5	<b>6.3</b>	-5.3	24
18	-10.2	-11.1	-12.8	-13.7	-14.7	-14.8	-14.7	-15	-12	-8.1	-4.5	-0.5	2.2	1.4	2.3	-16.6	-18.5	-1.2	-1.1	-1.5	-1.5	-1.7	-2.2	2.3	-7.2	24	
19	-3.5	-5.1	-6.6	-8.2	-9.3	-7.2	-6.2	-6	-5.2	-4.1	-3.5	-2.4	-2.8	-2.4	-16.5	-17.8	-3.9	-4.3	-4.3	-4.7	-5	-5.1	-6.2	-2.4	-6.1	24	
20	-6.6	-6.8	-7	-7.2	-6.8	-6.7	-6.8	-7.1	-6.9	-6	-5.1	-3.6	-3.4	-4.1	-4.5	-14.1	-15.3	-5.3	-5.5	-5.8	-6	-6.2	-6.3	-6.5	-3.4	-6.7	24
21	-6.4	-6.5	-6.5	-6.7	-7.1	-8.7	-8.8	-8.2	-8	-7.2	-6	-5.6	-5.3	-4.5	-3.6	-12.6	-12.1	-3.4	-3.8	-3.5	-2.7	-2.1	-1.4	-2	-1.4	-5.9	24
22	-1.9	-2.4	-3	-3.6	-3.7	-4	-4.5	-4.8	-3.7	-1	1.7	3.6	4.6	4.4	4.2	-11.8	-12.5	0.2	-1.1	-1.3	-1.5	-2	-2.4	-3.1	4.6	<b>-2.1</b>	24
23	-3.7	-4.2	-4.5	-4.5	-4.9	-5.5	-6.1	-6.2	-6.2	-5.8	-4.5	-4.1	-3.6	-3.9	-2.7	-16.4	-17.1	-4	-4.4	-5	-5.9	-6.6	-7	-7.7	-2.7	-6.0	24
24	-8	-8.7	-8.6	-9	-9.7	-9.8	-10	-10.2	-10.5	-10.7	-10.5	-9.1	-6.7	-5.3	-4.7	-15.6	-16.9	-11.2	-13.3	-15.1	-15.8	-16.1	-14.7	-13.6	-4.7	-11.0	24
25	-13.8	-14.1	-14.2	-14.7	-15	-14.3	-13.6	-13.3	-12.7	-12.2	-11.5	-10.5	-10.5	-10.2	-10.1	-16.1	-16.8	-12.8	-13.4	-13.8	-14.2	-14.3	-14.4	-14.5	-10.1	-13.4	24
26	-14.8	-15.4	-15.7	-15.7	-15.6	-15.8	-17.6	-16.6	-15.3	-14.3	-12.4	-10.6	-8.8	-7.1	-7	-3.3	-10.5	-12.2	-12.8	-13.2	-13.4	-13.9	-14.6	-15.6	-3.3	-13.0	24
27	-16.5	-17.3	-18.4	-18.8	-19.4	-20	-20.1	-19.4	-18.4	-15.3	-13.3	-11.3	-9.2	-7.8	-7.1	-7.2	-8	-9.4	-11.7	-12.8	-14	-14.8	-15.7	-18	-7.1	-14.3	24
28	-20	-20.7	-21.6	-22.1	-22.3	-22.8	-23.2	-23.1	-18.7	-11.2	-6.2	-4.7	-3.7	-1.3	0.4	0	-1	-4	-6.8	-9.8	-11.3	-12.5	-13.2	-13.4	0.4	-12.2	24
29	-14.3	-14.8	-15.3	-15.6	-16	-17.1	-17	-16.2	-13.2	-9.6	-6.7	-4.4	-1.6	0.4	0.8	0.2	-0.2	-1.2	-2.8	-4.6	-6.2	-7	-7.2	-7.5	0.8	-8.2	24
HOURLY MAX	-1.9	-2.4	-3.0	-3.6	-3.7	-4.0	-4.5	-4.8	-3.7	-1.0	1.9	3.6	5.3	6.3	5.7	3.5	1.6	0.2	-0.3	-0.6	-0.6	-0.7	-1.4	-2.0			
HOURLY AVG	-10.4	-11.0	-11.7	-12.3	-12.8	-13.1	-13.3	-13.5	-12.8	-9.6	-6.6	-4.6	-3.1	-2.4	-2.0	-8.2	-10.0	-5.7	-6.8	-7.4	-8.0	-8.6	-8.9	-9.8			

STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

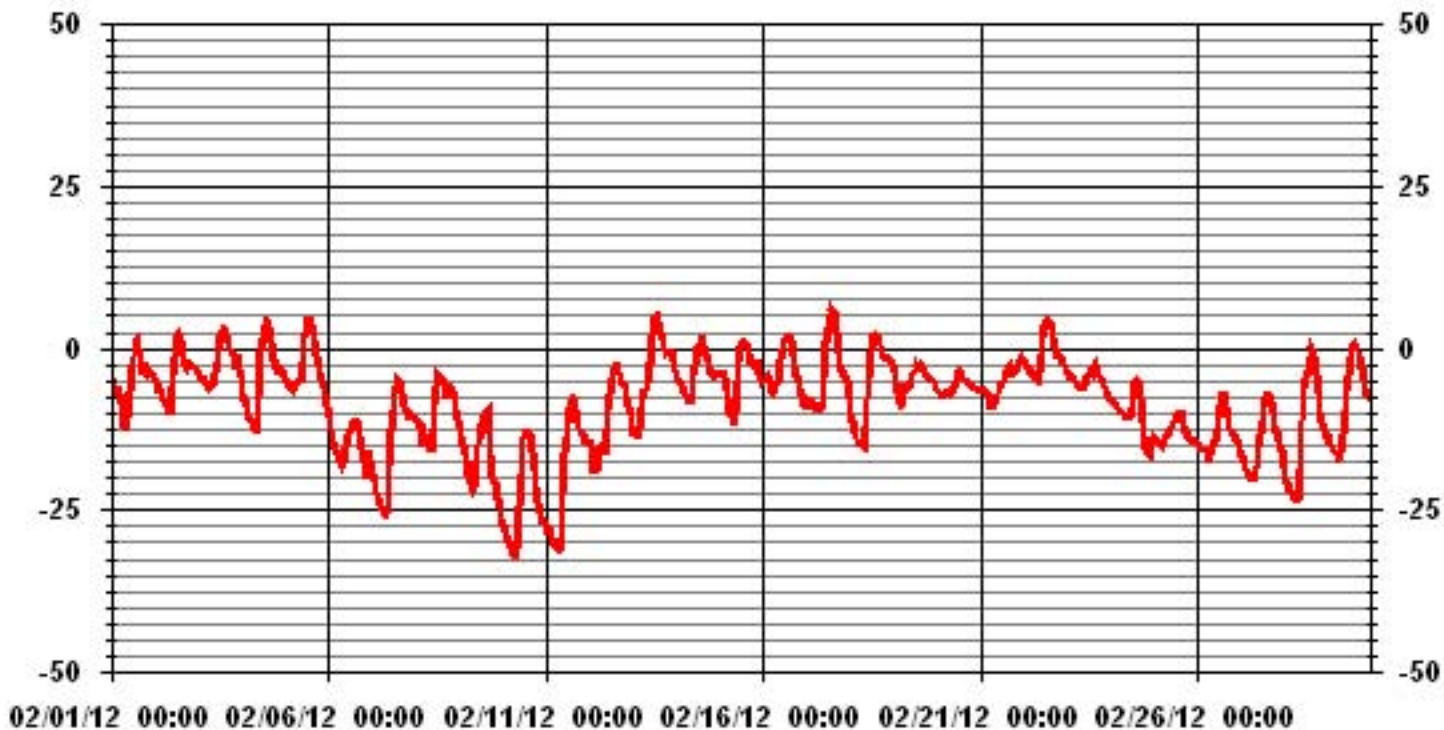
24 HOUR AVERAGES FOR FEBRUARY 2012



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-32.4 °C	@ HOUR(S)	7	ON DAY(S)	10
MAXIMUM 1-HR AVERAGE:	6.3 °C	@ HOUR(S)	13	ON DAY(S)	17
MAXIMUM 24-HR AVERAGE:	-2.1 °C			ON DAY(S)	22
CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	696 HRS		
STANDARD DEVIATION:	7.37	AMD OPERATION UPTIME:	100.0 %		
		MONTHLY AVERAGE:	-8.87 °C		

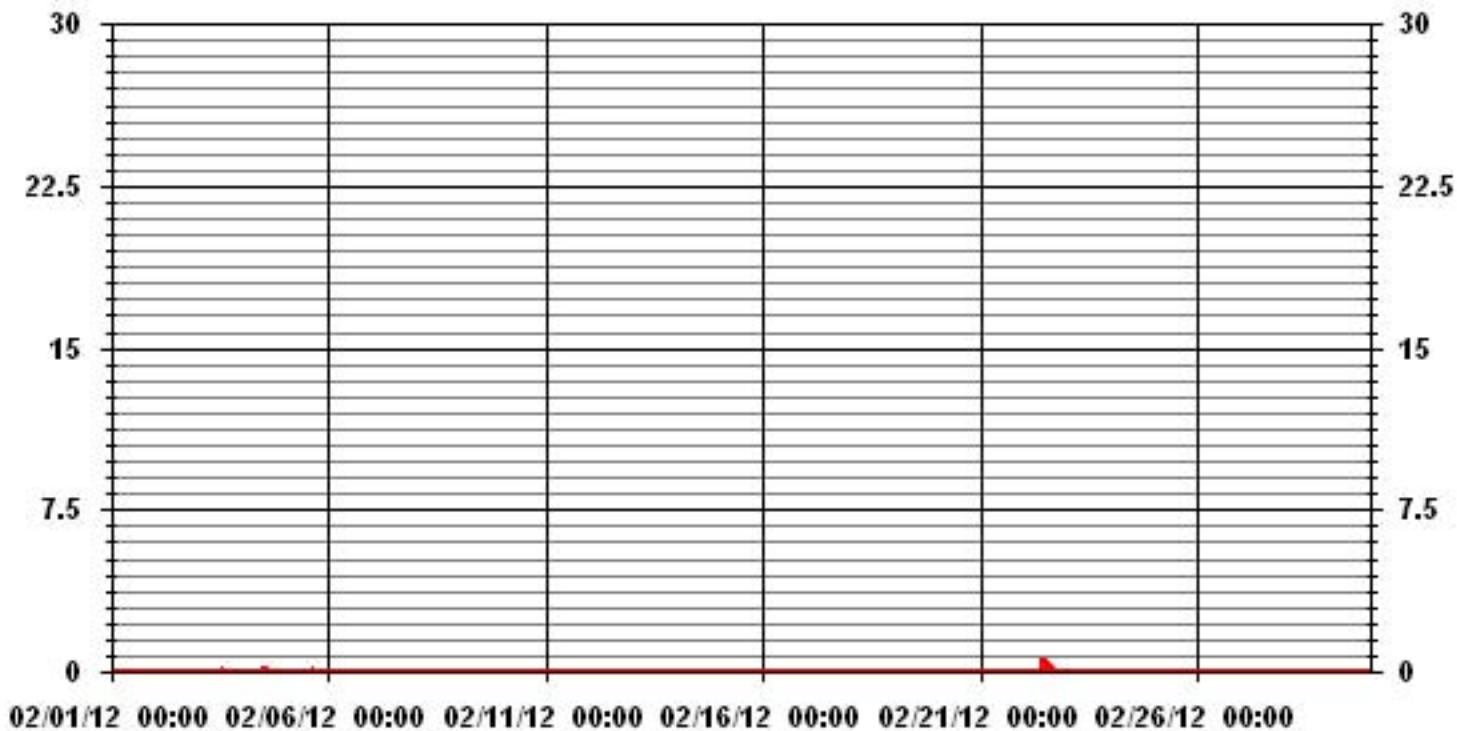
### 01 Hour Averages



# Precipitation



### 01 Hour Averages





# Relative Humidity

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

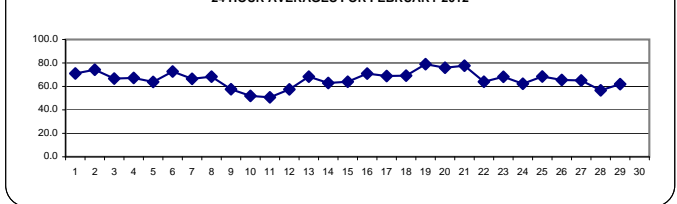
### RELATIVE HUMIDITY hourly averages (%)

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	DAILY	24-HOUR	
DAY	HR	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	79	80	82	84	83	82	80	83	80	78	74	63	60	50	48	54	59	66	66	68	67	70	73	76	84	71.0	24	
2	79	82	86	86	86	86	85	84	84	82	77	67	58	57	59	65	69	70	69	69	70	70	70	71	86	74.2	24	
3	71	72	73	74	76	78	77	77	77	71	66	59	53	49	48	52	57	60	63	64	70	69	72	73	78	66.7	24	
4	77	82	84	83	83	82	81	81	79	74	59	51	46	43	42	44	52	61	67	66	69	69	69	69	84	67.2	24	
5	73	75	77	82	83	85	87	86	85	78	63	61	49	46	44	43	47	56	61	59	48	42	47	55	87	63.8	24	
6	63	70	76	78	78	75	77	77	75	67	62	62	71	70	68	68	72	76	78	78	76	74	78	76	78	72.7	24	
7	75	74	71	71	70	69	68	68	68	69	69	65	57	52	48	50	55	60	65	70	75	75	75	77	77	66.5	24	
8	77	76	77	77	77	79	80	78	76	74	70	64	59	58	56	58	64	66	62	57	59	62	65	69	80	68.3	24	
9	71	73	75	76	74	75	75	72	70	57	48	43	37	33	30	28	35	46	57	59	56	61	65	67	76	57.6	24	
10	68	67	67	65	64	64	63	62	57	47	34	30	29	27	26	29	38	47	54	61	63	64	58	68	51.9	24		
11	62	62	64	63	64	64	63	62	53	45	42	39	35	33	30	31	36	42	46	50	55	56	56	64	50.7	24		
12	56	64	66	67	66	60	58	60	61	52	48	45	42	40	41	42	48	55	59	60	65	72	74	79	79	57.5	24	
13	78	81	80	83	85	85	86	85	85	79	64	55	48	48	45	49	52	59	68	66	64	65	65	65	86	68.3	24	
14	67	68	72	77	80	80	80	81	74	62	56	48	47	46	42	45	51	56	60	60	64	65	64	65	81	62.9	24	
15	64	64	65	69	72	78	78	81	77	61	52	46	45	46	47	48	52	57	59	62	74	83	82	74	83	64.0	24	
16	68	67	76	83	85	86	85	84	82	69	63	57	55	54	52	53	57	64	69	72	76	79	83	84	86	71.0	24	
17	84	83	82	82	82	81	79	80	78	68	57	53	46	42	41	42	55	64	70	74	75	76	78	81	84	68.9	24	
18	83	83	81	80	79	80	80	79	80	77	74	62	53	55	53	54	57	63	63	63	64	65	66	67	83	69.2	24	
19	70	74	78	81	81	79	78	79	79	77	77	75	70	75	78	78	79	83	85	85	84	84	83	81	85	79.0	24	
20	81	81	82	82	81	81	80	80	78	74	72	66	67	70	71	73	73	75	76	77	77	75	76	75	82	76.0	24	
21	75	76	76	76	77	82	82	81	80	77	73	74	79	79	75	74	75	79	82	83	80	78	75	76	83	77.7	24	
22	75	75	75	75	73	73	74	73	68	59	52	47	47	48	47	53	54	61	63	66	66	68	71	73	75	64.0	24	
23	74	73	76	74	73	72	70	70	70	69	66	64	63	65	65	60	61	66	67	66	68	70	67	68	76	68.2	24	
24	67	68	69	70	71	72	70	72	69	66	62	57	48	43	40	41	47	56	62	69	69	69	69	69	72	62.3	24	
25	70	72	73	73	74	74	73	73	72	70	68	64	63	61	60	61	64	66	67	69	69	69	69	69	74	68.5	24	
26	71	74	74	73	73	72	75	74	69	65	57	52	47	43	43	48	55	63	69	73	75	75	76	76	76	65.5	24	
27	76	75	75	75	74	73	73	73	72	69	65	57	51	47	45	46	49	54	61	65	69	70	73	75	76	65.1	24	
28	75	74	72	72	71	71	70	69	67	55	45	43	39	33	31	32	35	41	49	57	61	64	66	68	75	56.7	24	
29	72	77	76	79	79	78	77	77	74	68	63	57	47	41	41	44	45	47	51	55	57	57	60	65	79	62.0	24	
HOURLY MAX		84	83	86	86	86	87	86	85	82	77	75	79	79	78	78	79	83	85	85	84	84	83	84				
HOURLY AVG		72.4	73.9	75.2	76.2	76.3	76.4	76.0	75.9	74.2	68.2	61.9	56.3	52.3	50.3	49.0	50.4	54.4	60.1	64.0	65.9	67.5	68.8	70.0	70.9			

#### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

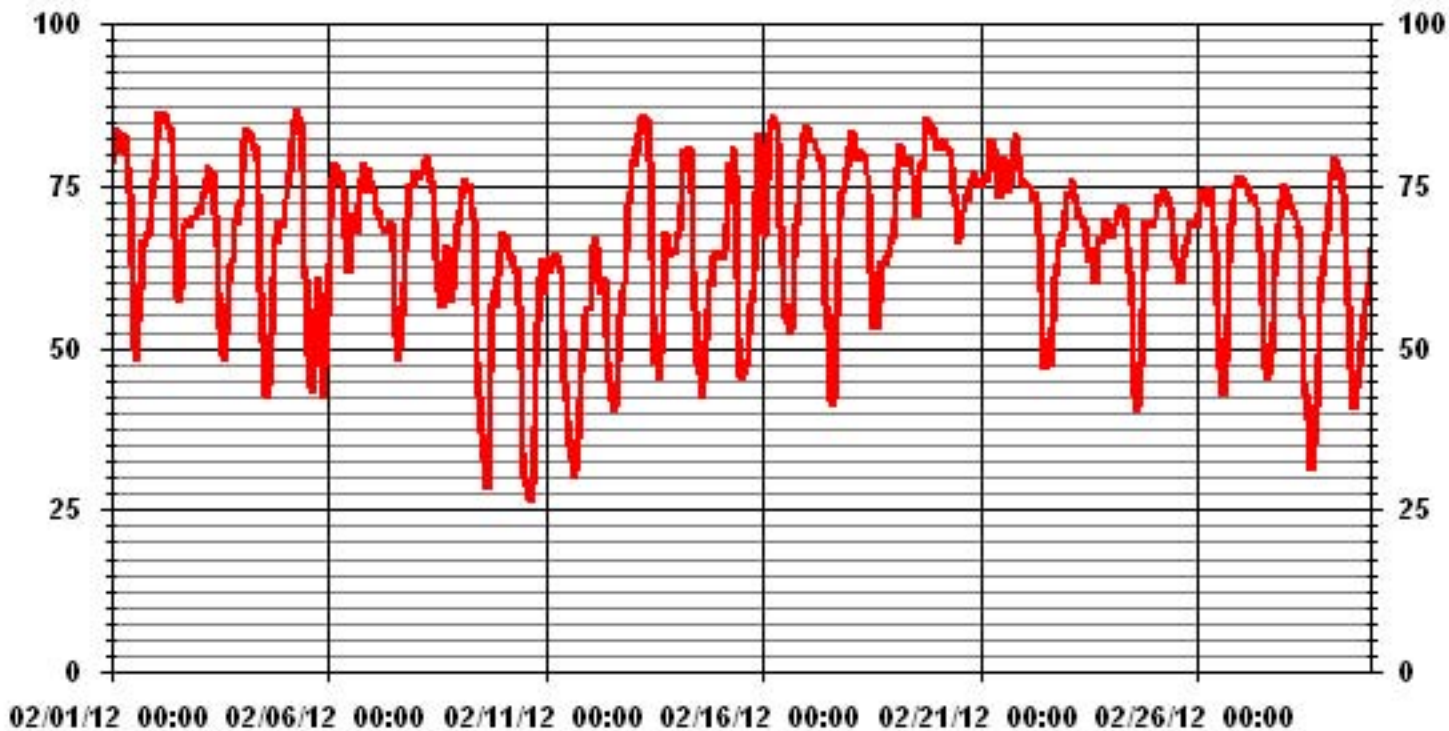
24 HOUR AVERAGES FOR FEBRUARY 2012



#### MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	87	%	@ HOUR(S)	6	ON DAY(S)	5
MAXIMUM 24-HR AVERAGE:	79.0	%			ON DAY(S)	19
					VAR-VARIOUS	
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	696	HRS	
STANDARD DEVIATION:	12.90		AMD OPERATION UPTIME:	100.0	%	
			MONTHLY AVERAGE:	66.11	%	

### 01 Hour Averages



# Barometric Pressure

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

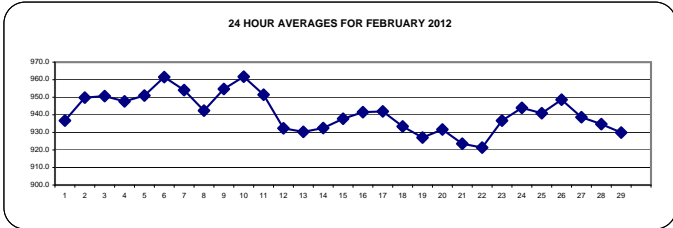
FEBRUARY 2012

## BAROMETRIC PRESSURE hourly averages (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	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		934	934	934	934	934	934	934	934	935	935	935	936	936	936	937	937	938	938	939	940	941	941	942	943	943	936.7	24		
2		944	944	945	946	947	948	948	949	949	950	951	952	952	952	952	952	952	952	952	952	952	952	951	951	952	949.8	24		
3		951	951	951	951	951	951	951	951	951	951	952	951	951	951	951	951	951	951	950	950	950	950	950	949	949	952	950.7	24	
4		949	949	949	949	949	949	948	948	948	949	949	949	949	948	947	947	947	946	946	946	946	946	946	945	946	949	947.7	24	
5		946	946	946	946	947	947	947	947	948	949	950	950	951	951	952	953	953	954	955	956	956	956	957	958	958	958	951.0	24	
6		958	959	959	959	959	960	960	961	962	963	963	964	963	963	963	963	963	963	962	962	962	962	962	961	961	964	961.5	24	
7		961	961	960	960	959	959	958	957	957	956	956	955	954	954	953	952	951	950	949	949	948	947	946	946	946	961	954.1	24	
8		945	945	945	944	944	943	942	942	941	942	941	941	941	940	940	940	940	941	941	942	943	944	945	945	945	945	942.4	24	
9		947	948	949	949	950	952	952	953	954	955	955	956	956	956	956	956	956	957	958	959	959	959	959	960	961	961	954.7	24	
10		961	961	962	963	963	963	963	963	964	963	962	962	962	962	961	961	961	960	960	960	960	961	961	960	960	964	961.7	24	
11		960	959	959	958	958	958	958	957	956	955	954	953	952	950	950	949	947	946	945	944	943	942	941	941	941	960	951.5	24	
12		940	939	938	937	936	935	934	934	933	933	933	932	932	931	931	930	930	929	929	928	928	928	928	928	928	940	932.3	24	
13		928	928	928	928	928	929	929	929	929	930	930	931	931	931	931	931	931	931	931	932	932	932	933	933	932	933	933	930.3	24
14		932	932	932	932	931	931	931	931	931	932	932	932	932	932	932	933	933	933	933	933	934	934	934	934	935	935	932.5	24	
15		935	935	936	936	936	936	937	937	937	938	939	939	939	939	938	938	938	938	939	939	939	939	939	939	939	939	937.8	24	
16		939	940	940	940	940	941	941	941	941	943	943	943	943	943	942	942	941	942	942	942	942	941	942	942	942	943	941.5	24	
17		942	942	942	942	942	942	942	942	942	943	944	944	944	944	944	943	942	942	941	941	940	940	939	938	944	942.0	24		
18		938	937	937	936	935	935	935	935	934	934	934	934	933	933	932	932	931	931	931	931	931	930	930	929	938	933.4	24		
19		929	928	928	928	927	927	927	927	927	927	927	927	926	926	926	926	927	927	927	927	927	927	927	927	927	929	927.0	24	
20		928	928	928	929	929	930	930	931	931	931	932	933	933	933	933	934	934	934	933	934	934	934	933	932	932	934	931.6	24	
21		932	930	930	929	928	927	927	926	925	924	923	922	921	920	920	920	920	920	920	920	920	920	920	920	920	932	923.5	24	
22		920	920	920	919	919	919	918	918	918	918	919	919	919	920	921	921	922	923	924	925	926	927	928	929	929	929	921.3	24	
23		930	931	931	932	933	934	934	935	936	936	937	937	937	938	938	939	939	939	940	940	940	941	942	942	942	942	936.7	24	
24		942	942	943	943	944	944	945	945	945	945	946	946	946	946	946	945	944	943	942	941	941	941	941	941	941	946	944.0	24	
25		941	940	939	938	938	938	938	938	939	939	939	939	940	940	941	942	943	944	945	945	945	945	946	947	947	947	940.9	24	
26		947	947	948	948	948	949	949	949	950	950	950	950	950	950	949	949	949	949	948	948	947	947	946	946	946	950	948.6	24	
27		945	945	944	943	943	942	941	941	940	939	939	938	938	937	936	936	935	935	935	935	935	935	935	935	935	945	938.6	24	
28		936	936	936	935	935	935	935	935	935	935	936	936	936	936	936	935	935	934	933	933	933	932	933	932	936	934.7	24		
29		932	931	931	930	930	930	930	930	930	930	930	929	929	929	929	929	929	929	929	930	930	930	930	931	932	929.9	24		
HOURLY MAX		961	961	962	963	963	963	963	963	964	963	963	964	963	963	963	963	963	963	962	962	962	962	962	961					
HOURLY AVG		941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941				

### STATUS FLAG CODES

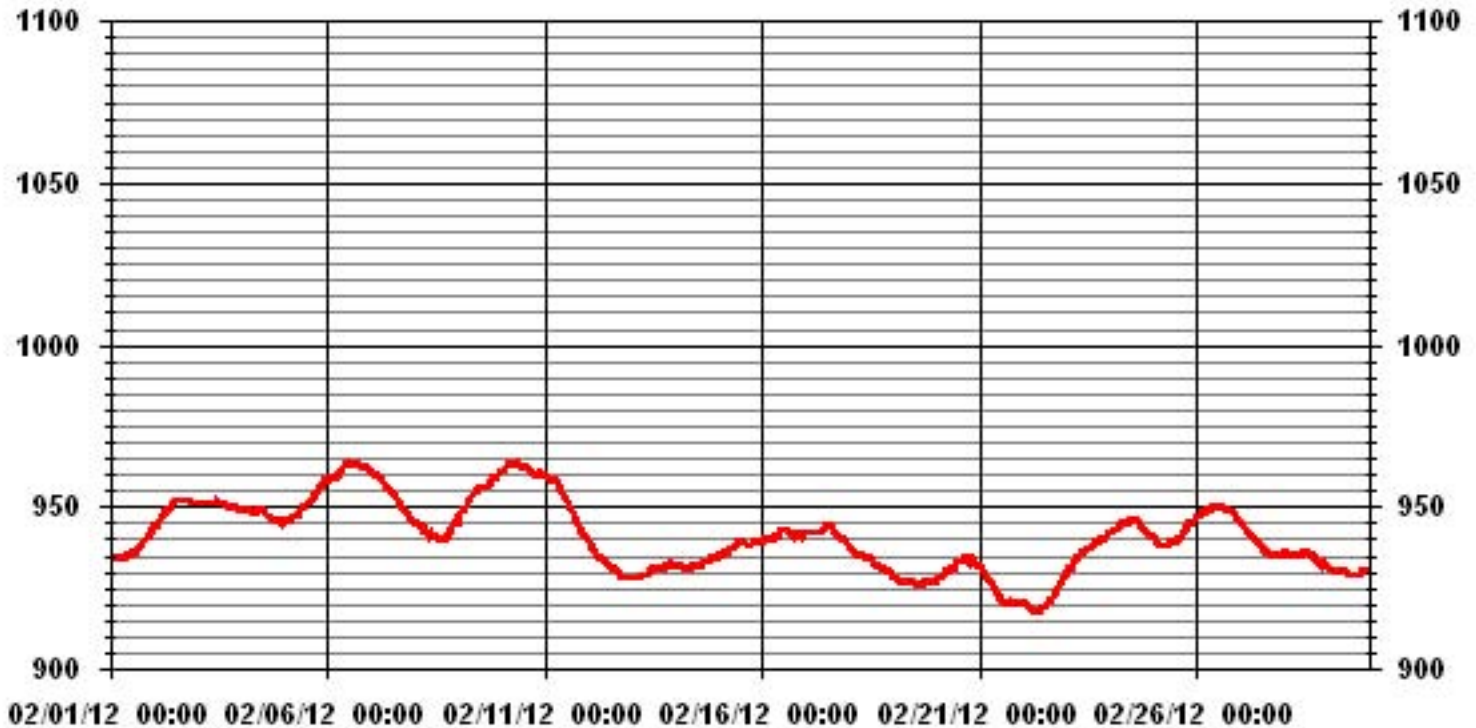
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



### MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	964	MB	@ HOUR(S)	11	ON DAY(S)	6
MAXIMUM 24-HR AVERAGE:	961.7	MB			ON DAY(S)	10
					VAR-VARIOUS	
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	696	HRS	
STANDARD DEVIATION:	10.88		AMD OPERATION UPTIME:	100.0	%	
			MONTHLY AVERAGE:	941	MB	

### 01 Hour Averages



# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

FEBRUARY 2012

WIND SPEED hourly averages (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	5.2	4.6	3.5	2.5	4.6	2.4	1.7	0.1	0.3	0	2.8	5.4	5.6	2.2	4.6	1.2	0.8	0.4	0.1	1.5	2.9	1	2	3.4	5.6	2.3	24
2	2.6	1.6	2.2	3.6	1.5	1.6	1	2.4	1.3	0.7	2.5	2.1	2.8	3.6	5.6	6	4.5	5	6.6	7.4	6.2	5.9	9.1	8.1	9.1	3.4	24
3	7.7	5.5	4.7	6.7	6.8	6.7	8.8	7.9	7.3	6	7.3	7.4	6.9	6.2	5.6	5.9	4.6	4.3	4.5	4.8	2.5	5	2.5	2.1	8.8	5.7	24
4	0.9	0.2	0	0.1	0	1	0.4	1	1.4	0.9	7.4	6.9	5	7.4	9.8	8	5.8	1.9	2.2	3	1.8	2.2	3.1	2.7	9.8	2.4	24
5	1.8	2.2	3.2	1.8	2.7	1.4	3.8	4.4	3.5	3.2	2.4	3.9	5.6	9.9	11.1	7.6	9.2	10.5	10.1	9.6	9.4	9.3	5.8	2.4	11.1	4.8	24
6	2.2	0.9	1.3	1.4	2	4	1.6	3.6	3.1	4.3	5.6	4.1	3.5	3.3	3.1	2.8	4	3.3	0.9	0	0	1	4.3	2.1	5.6	0.8	24
7	0.6	0.2	0	0	0	0	0.1	0.1	0.4	0.3	2.9	4.6	4.7	7.8	5.3	5.4	4.7	4.4	7.3	7.7	3.4	8.5	8.4	6	8.5	3.3	24
8	6.5	4.4	5.1	3.9	1	3.9	6	4.3	0.3	0.3	4.5	4.2	4.5	7.5	6.5	5	2	2.1	3.4	10.7	13.1	11.9	12.5	8.3	13.1	1.1	24
9	7	6.9	6.1	5.5	5.6	2.2	1.4	1.7	0.7	2.9	3.2	5.2	5.2	5.5	3.6	0.8	1	2.4	0.3	2.2	2.8	0.8	1.7	0.1	7	2.7	24
10	0.2	0.1	0	0.1	0.6	0	0.2	0.1	0.1	2	3.4	0.4	2.9	4	3.3	3.2	2.8	1.2	2.4	1.6	0.1	0	1.3	2.2	4	0.7	24
11	1.5	1.9	0.9	1	0.1	0	0.2	0.1	0.9	0.3	7.5	7.1	7.6	7.7	7.9	6.6	5.9	4.3	8.1	7.5	7.4	4.8	6.1	6.3	8.1	3.9	24
12	6.6	1	1.2	2.9	3.6	5.7	5.7	1.9	3.7	5.4	5.4	6.5	7	5.7	7.2	7	5.5	5.4	6.5	6.9	2.5	1.9	1.8	1.2	7.2	4.4	24
13	0.1	0	0.3	1.7	1.9	3.3	3.8	4	3.9	2.1	5.4	7.4	8.9	9.1	9.3	6.5	6.6	5.3	6.9	7.4	5.9	5.7	5.5	4.9	9.3	4.6	24
14	3.1	4.7	6.2	6	4.3	4.8	4	4	5.6	5.3	5.4	5.7	5.6	4.8	3.6	4.7	4.2	2.8	2.7	3.2	2.1	1.8	3.2	2.9	6.2	4	24
15	4.2	4.3	3.6	3.4	2.2	1	3.3	1.7	1.3	1.8	2.5	5.5	6.7	6.2	8.6	7.6	6.3	5.2	4.6	4.3	1.9	1.9	2.4	4.9	8.6	3.5	24
16	5	6.2	6.4	4.2	3.2	3	3.9	3.7	2.2	3.4	4.4	3.1	2.2	1.9	4.3	5.9	7.9	6.5	6.2	3.7	3	3.4	2.3	3.1	7.9	3	24
17	5	4	6.4	7.2	5.2	4.2	5.2	3.6	3.4	3.2	3.5	6.2	4	4.8	4.5	4.3	7.1	7.8	5.9	3.7	3.7	6.2	4.7	1.2	7.8	4	24
18	1.1	0.4	0.4	0.1	0.3	0.5	0.9	1.3	3	3	5	3.9	5.5	6.9	8.3	8.2	7.2	7.2	8.5	6	6.2	5.7	4.8	4.4	8.5	3.6	24
19	3.7	3.1	1.5	1.6	1	1.6	2.4	2.1	4.1	4.9	7.1	8.2	8.6	9.2	8.1	7.3	4.3	5	4.6	5.1	2.9	1.5	6.1	7.1	9.2	3	24
20	6.9	6.2	5.5	5.6	7.3	7	6.5	6.7	6	5.1	5.5	6.4	6.1	6.7	7	5.3	4	2.5	1.9	4.5	3.3	1.9	1.3	0.9	7.3	4.8	24
21	1.3	2.2	3.4	4.1	3.8	4.3	4.6	5.7	6.8	7.2	8.8	7.4	9.2	8.3	6	6.1	3.9	4.1	6.2	4	4.8	5.2	4	4.1	9.2	4.1	24
22	3.7	4.6	4.4	3.6	3.5	5.2	5.6	4.3	3.9	5.2	5.5	5.9	6.9	8.7	8.2	7.9	M	7.5	7.2	6.7	6.1	3.4	6.9	6.6	8.7	3.8	23
23	6.8	5.4	3.6	6.2	7	7.6	7.7	7.4	M	M	M	3.5	3.5	4.9	3.9	3.1	4.4	3.4	5.4	5.4	8.5	3.7	6.2	4.8	8.5	5.2	21
24	4.5	3.4	4.7	3.7	2.6	4.3	4.7	4.2	7.1	9.2	8.1	5.5	4.3	1.7	2.1	2.8	6.5	3.5	2.9	2.4	3.8	4.1	5.5	6.9	9.2	2.8	24
25	8.9	8.9	8.1	7	7.6	7.7	7.8	7.6	8.5	10.7	12.5	13.1	16.3	15.9	14.7	15.1	14.9	10.8	10.7	11.8	12.4	8.9	9	7	16.3	10.3	24
26	5.6	4.5	5.1	5.5	5.1	3.8	2.2	4	8	7.9	7.1	5.9	3.3	2.2	3	6.2	5.7	5.9	5.8	4.6	3.5	4.5	5.9	7.1	8	1.6	24
27	6.6	6.5	6.6	7.6	7.8	5.8	5.8	6.6	7.2	8.3	10.6	11.6	10.6	10.5	9.9	11.1	9.3	6	5.3	4.7	4.8	4.1	3.5	1.2	11.6	7.1	24
28	1	0.5	0.5	1.4	0.4	0.7	1.3	1	0.9	0.7	1.4	5.7	6.5	4.8	4.1	5.1	5.4	3.6	3.4	2.7	2.3	2	1.5	3.4	6.5	1.1	24
29	2.8	2.8	3	4.3	3.2	1.7	2.3	3.1	3.9	6.3	8	9	8.5	8.6	9.4	10.1	7.9	7.9	10.1	11.1	10.2	11.8	13.2	13.5	13.5	7.1	24
HOURLY MAX	8.9	8.9	8.1	7.6	7.8	7.7	8.8	7.9	8.5	10.7	12.5	13.1	16.3	15.9	14.7	15.1	14.9	10.8	10.7	11.8	13.1	11.9	13.2	13.5			
HOURLY AVG	3.9	3.4	3.4	3.5	3.3	3.3	3.5	3.4	3.5	4.0	5.6	5.9	6.1	6.4	6.5	6.1	5.6	4.8	5.2	5.3	4.7	4.4	5.0	4.4			

**STATUS FLAG CODES**

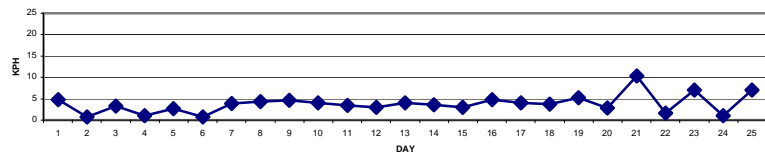
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: December 20, 2011

**MONTHLY SUMMARY**

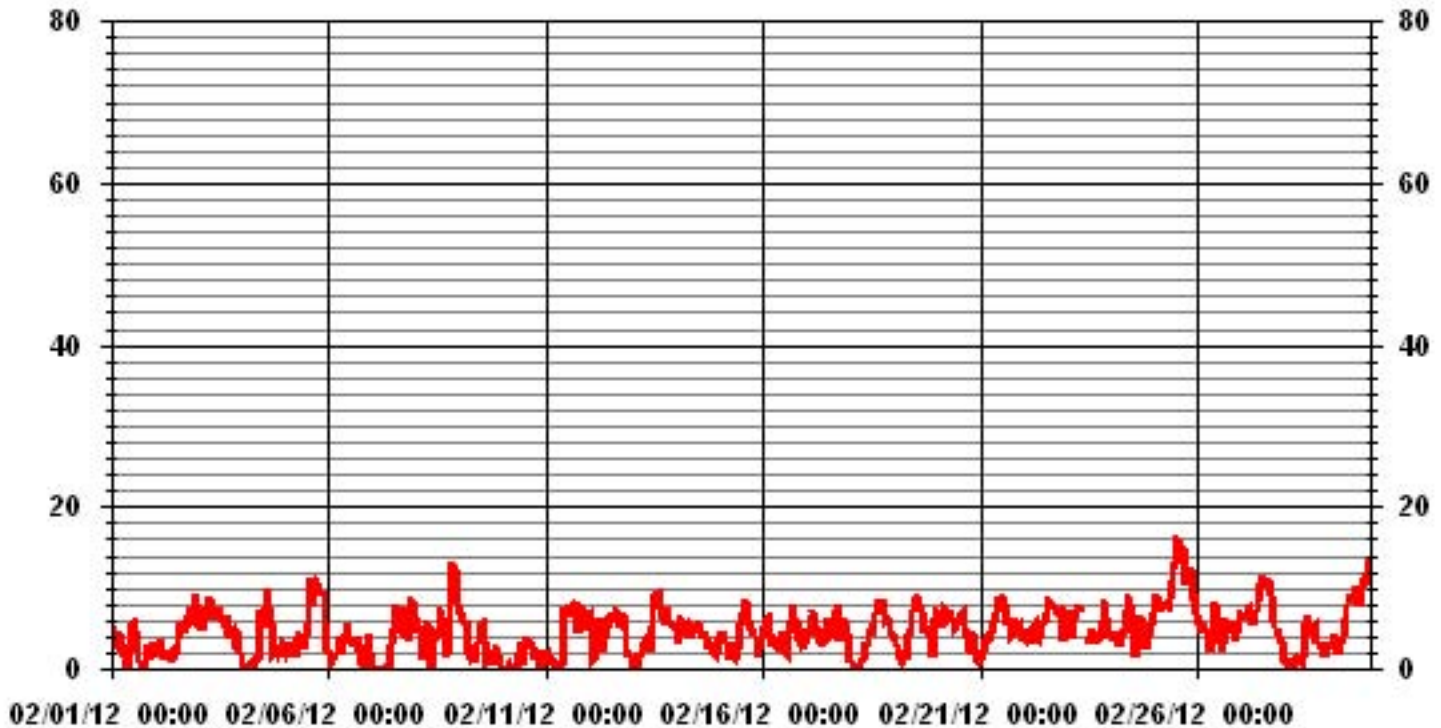
MAXIMUM 1-HR AVERAGE:	16.3 KPH	@ HOUR(S)	11	ON DAY(S)	13
MAXIMUM 24-HR AVERAGE:	10.3 KPH			ON DAY(S)	5
CALMS (≤ 1 KPH)	8.76 %	OPERATIONAL TIME:	692	HRS	
MONTHLY CALIBRATION TIME:	0 HRS	AMD OPERATION UPTIME	99.4	%	
STANDARD DEVIATION	2.92	MONTHLY AVERAGE	4.64	KPH	

24 HOUR AVERAGES FOR FEBRUARY 2012





# 01 Hour Averages



— LICA30 WSP KPH

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

### 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	
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.	
DAY																										
1	12	12.6	11	8.1	13.5	8.9	10.5	3.1	5.6	2.3	14	13.8	14.6	10.6	12.2	10.7	5.3	4.1	2.9	6.8	8.6	5.9	8.9	12.5	14.6	
2	9.7	9.1	11.3	9.2	8.4	10.3	7.1	8.5	8.8	7	6.9	7.8	9.5	10.5	15.4	14.7	11.2	12	15.6	17.7	21.2	17.7	18.7	17.4	21.2	
3	17.9	13.4	13.3	15.3	15	16.5	16.9	17.8	21.2	16.8	20.4	21.7	18.8	19.3	14	14.2	11.9	10.6	11.9	12.7	8.8	13.6	10.2	8.8	21.7	
4	4.2	2.5	1.6	2	2.7	6.7	3.4	5	4.6	7	19.4	16.3	14.8	20.2	22	20.9	13.1	10	12.2	9.6	8	9.8	9	9.4	22	
5	8.2	7.4	8.4	6.9	9.5	7.1	8.6	17.1	11.8	9.8	9.1	13.8	30.8	30.7	31.2	23	28.6	33.6	31.3	33.7	30.8	26	17.4	9.8	33.7	
6	8.6	5.4	7.3	5.6	9.1	8.7	5.8	8.8	10.1	11.5	14.9	13.5	15	15.4	14.1	14.5	10.6	11.1	5.8	2.2	0.7	8.6	11	8	15.4	
7	5.9	4	0	1.2	0	0	2.6	1.9	2.9	2.8	10.5	11	14.4	17.7	15.5	15.4	13.5	11	18.9	21.1	12.5	21.6	19.7	18.3	21.6	
8	15.7	12.4	13.7	13.9	7.6	13	12.7	14.6	2.8	4	16.7	12.4	10.3	14.6	11.9	13.4	8.5	11.9	16.5	30.3	29.3	25.8	29.3	21.2	30.3	
9	18	13.8	14.2	14.8	16.3	8.8	7.1	5.5	5	13	11.4	12.7	15.1	16.8	14.1	9	8.6	6.9	6.6	7.4	8.1	6	7.3	1.4	18	
10	2.5	2	0	2.6	3.7	0	2.4	1.7	1.7	7.4	6.2	5.5	12.1	12.6	10.2	12	9.5	6.9	6	6.2	3.3	1.5	7.7	12.1	12.6	
11	8.2	12.3	6.2	4.5	3.3	2.6	3.4	2.6	4.4	11.6	18.5	15.9	16.9	20.4	21.1	18.3	17.6	14.4	24.9	21.6	20.1	14.8	14.4	14.5	24.9	
12	20.5	8.3	7.1	10	13.3	15.1	16.6	14.1	11.9	13.8	13	15	13.7	13.4	14.6	14.1	14.2	12.8	15.5	17	10.8	8.8	7.7	6	20.5	
13	3.1	0	3.5	7	9	12.1	12.1	13.5	13.3	9.2	19.3	22.7	30.3	27.4	31.4	26.1	21.8	20.8	22	23.9	20.2	16.4	18.4	11.6	31.4	
14	11	14.6	20.2	19	14.2	15.8	12.7	14.1	15.2	15.2	16.3	16	18.7	14.7	14.3	18	13	13.2	14.7	12.7	8.6	8.5	10.5	13	20.2	
15	14.6	12.9	11.5	10.9	10.3	6.8	10.8	7.4	7.5	6.6	8.7	13.7	16.6	18.8	18.6	16.5	15	13.5	14.1	25.6	15.8	8.2	9.3	15.9	25.6	
16	15.5	19.8	19.4	12.7	10.4	13	14.3	20.3	9.8	12.2	13.2	10.6	9.7	9.3	13.7	13.7	16.1	13.1	13.3	9.1	8.6	8.5	7.6	9	20.3	
17	10.8	11.1	15.2	16.4	14	9.7	10.7	8.7	8.6	10.6	15.8	18	11.3	16.3	13.7	13.7	14.7	13.2	13.4	12.3	10	11.4	11.2	6.6	18	
18	8.2	6.5	3.9	3.5	4.5	5.7	5.4	9	9.1	8.9	8.6	13.5	16.9	20.3	25.8	27.9	20.6	23.7	26.9	19.8	18.4	16.7	15.5	13.6	27.9	
19	8.8	8.2	7.4	5.6	7.5	10.4	10.3	7.5	14.4	13.5	16.9	19.2	19.7	20.7	18.9	20.2	12.3	13	10.4	12.4	11.5	7.8	22.2	19.7	22.2	
20	22.4	18.7	17.2	24.7	23.1	22.5	21.6	20.1	17.3	21.1	17.5	19.7	19.8	23.5	23.9	17.1	14.1	10.3	7.5	17.4	13.5	11.6	8.4	7.3	24.7	
21	11.7	7.4	13.3	11.1	10.9	11.2	15.3	18.2	19.9	23.6	24.6	20	25.3	22	20	17.1	10.6	11.2	11.7	14.1	22.7	19.7	15.9	12.9	25.3	
22	9.7	12.1	12.4	9.4	8	10.6	14.1	10.7	17.5	18.7	18.2	20	22.2	29.3	27.8	26.5	M	M	24.2	22.7	18.3	14.6	17.9	19.2	29.3	
23	20.8	17.3	14.1	32.6	24.9	29.7	33.9	27.1	M	M	M	M	10.7	12.7	11.4	14.8	18.3	11.8	20.1	17.7	24	16.1	23.2	19.9	33.9	
24	19	13.5	17.2	13.1	11.1	16.8	13.7	14.2	16.8	18.4	16	19.3	20.1	16.4	13.9	18.8	15.9	31.3	16.7	16.2	47.8	45.6	23.6	25.9	47.8	
25	28.7	44	28.4	26.9	24.4	25.6	24.3	25.4	28	28.7	32	31.1	32.6	32	34.4	31.7	36.6	32.2	31.7	28.7	31.5	26.3	25.4	21.4	44	
26	16.2	13.3	12.7	12	16.6	15.1	25.9	16.6	22.7	22.1	19.7	20.6	18.6	16.8	18.6	17	14.4	14.4	14	11.1	11.6	14	12.6	19.2	25.9	
27	13.3	14	14.6	17.3	16.8	12.9	15.3	15.1	16.8	18.6	30.2	28.6	31.7	30	28	30.2	29.1	17.9	14.2	14	11.8	12.2	11.5	18.1	31.7	
28	24.7	23.4	N	33.3	21	31.8	26.5	29.4	73.9	26.5	32.2	14.2	13.9	14.6	12.3	13.9	12.9	13.5	13.3	12.2	10.4	14	12.9	16.4	73.9	
29	14.8	26.2	14.6	41.3	28.2	13.3	55.2	27.6	11.8	20.1	24.5	24.5	24.2	25.3	26	24.9	21	23.6	32.6	30	29.7	29.7	36.8	28	55.2	
PEAK	28.7	44.0	28.4	41.3	28.2	31.8	55.2	29.4	73.9	28.7	32.2	31.1	32.6	32.0	34.4	31.7	36.6	33.6	32.6	33.7	47.8	45.6	36.8	28.0		

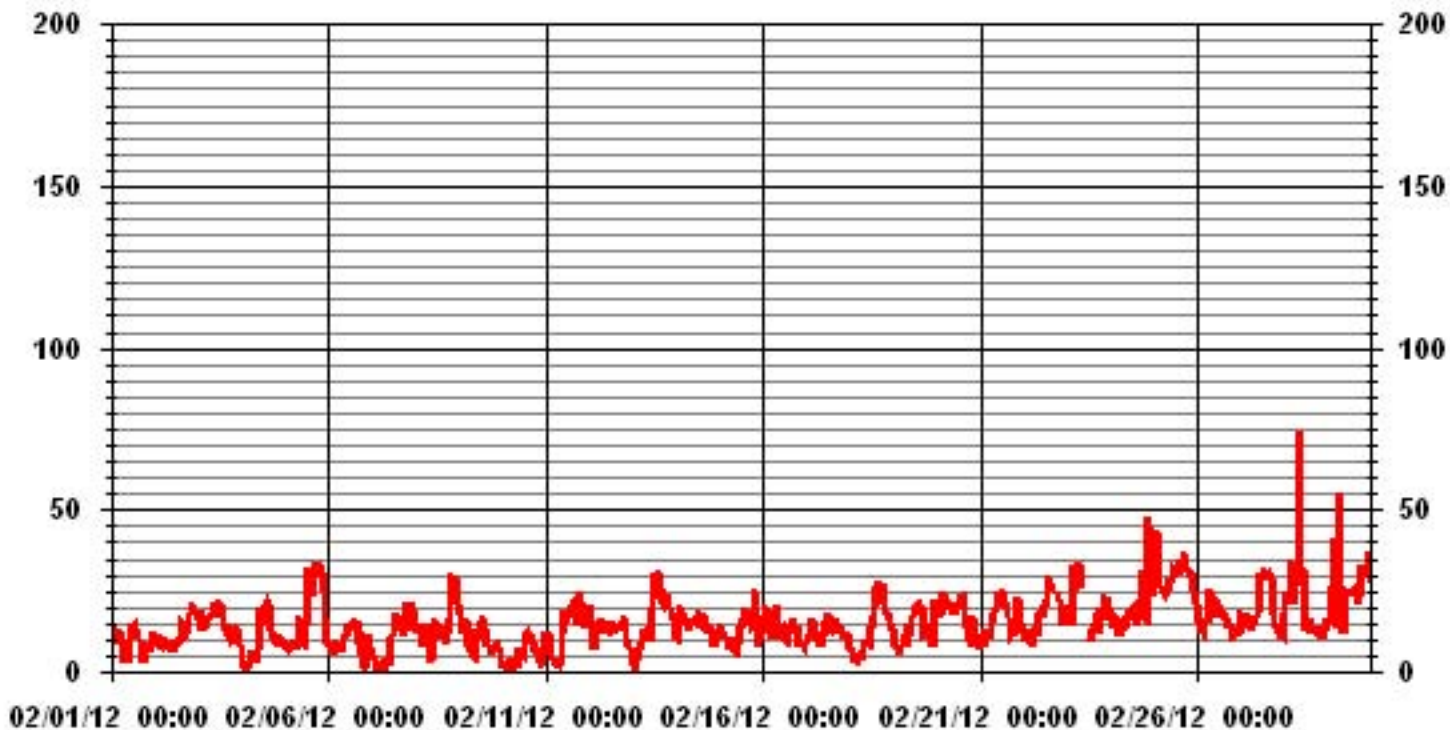
**STATUS FLAG CODES**

S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE

**MONTHLY SUMMARY**

MAXIMUM INSTANTANEOUS READING	73.9	KPH	@ HOUR(S)	8
			ON DAY(S)	28

### 01 Hour Averages



LICA30  
WSP / WDR Joint Frequency Distribution (Percent)

February 2012

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	5.49	4.62	3.61	2.60	1.15	.86	1.73	1.30	2.60	7.94	10.69	5.05	5.49	6.06	4.47	3.32	67.05
< 12.0	2.45	1.30	2.89	1.73	.86	.43	.00	.86	1.30	9.39	2.60	.14	.00	1.58	2.89	.72	29.19
< 20.0	.00	.57	1.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.73
< 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	7.94	6.50	7.65	4.33	2.02	1.30	1.73	2.16	3.90	17.34	13.29	5.20	5.49	7.65	7.36	4.04	

Calm : 2.02 %

Total # Operational Hours : 692

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	38	32	25	18	8	6	12	9	18	55	74	35	38	42	31	23	464
< 12.0	17	9	20	12	6	3		6	9	65	18	1		11	20	5	202
< 20.0		4	8														12
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	55	45	53	30	14	9	12	15	27	120	92	36	38	53	51	28	

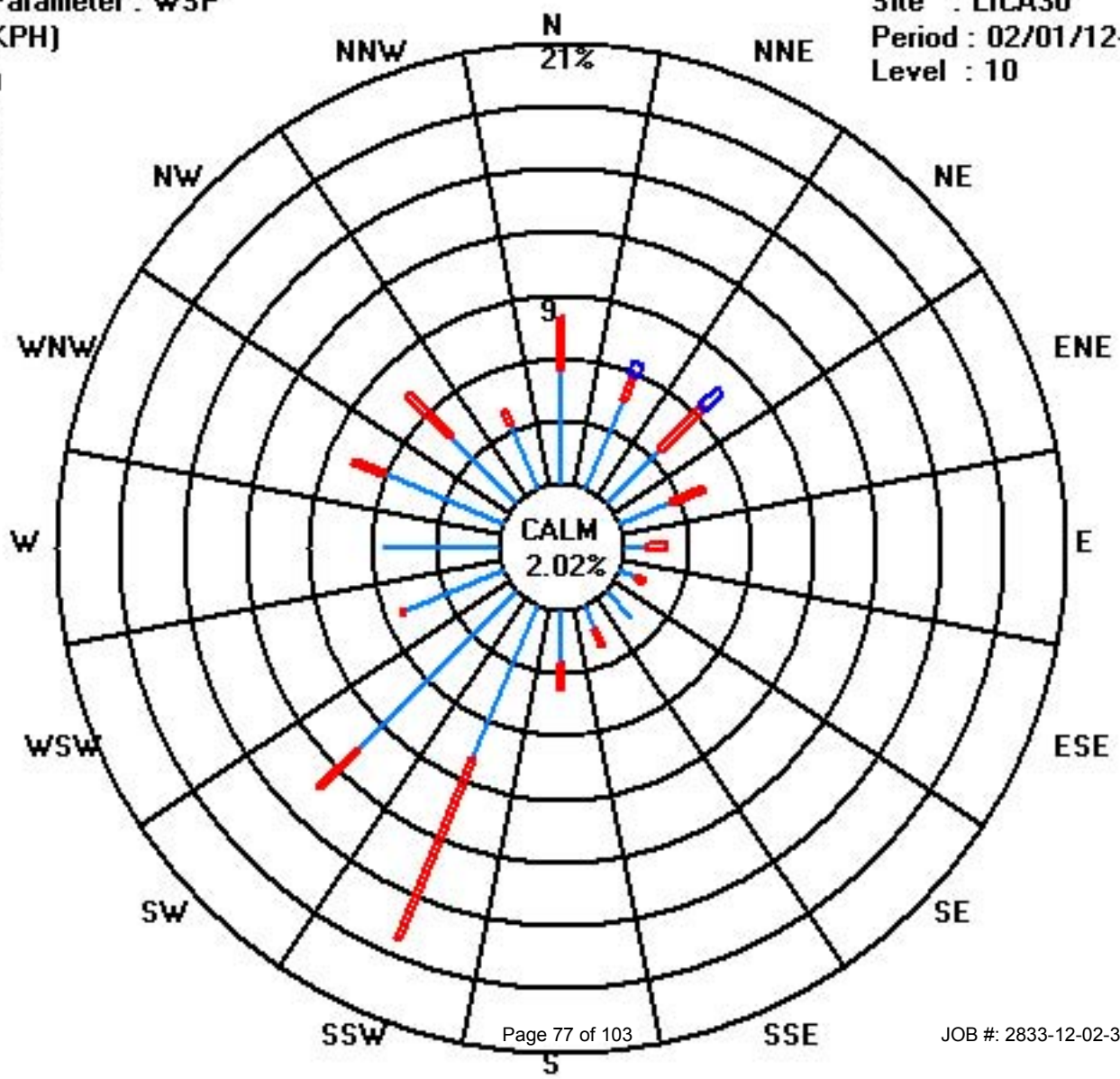
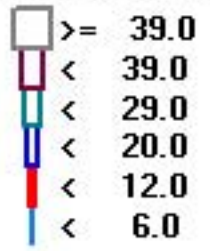
Calm : 2.02 %

Total # Operational Hours : 692

Class Limits (KPH)

Period : 02/01/12-02/29/12

Level : 10



# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -COLD LAKE- MASKWA

FEBRUARY 2012

WIND DIRECTION 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	24-HOUR	24-HOUR 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	AVG.	QUADRANT	RDGS.	
DAY																												
1	221	225	228	238	221	227	233	147	287	252	214	211	216	243	218	257	229	118	31	231	234	288	269	279	229	SW	24	
2	282	286	291	293	297	302	310	237	290	213	235	213	260	230	199	209	211	205	210	207	211	210	206	209	224	SW	24	
3	208	215	220	213	212	213	209	213	214	222	214	227	227	223	222	206	220	221	213	216	231	215	224	204	216	SW	24	
4	359	354	341	341	357	135	344	352	3	349	188	207	237	203	204	209	203	253	222	247	258	252	245	266	218	SW	24	
5	250	242	238	272	276	311	298	309	318	310	319	310	321	354	356	350	356	359	357	355	357	6	357	325	341	NNW	24	
6	307	336	1	0	350	7	353	10	21	20	41	79	124	128	75	114	173	182	149	350	317	165	205	214	64	ENE	24	
7	256	246	320	330	322	321	346	312	2	354	202	208	204	204	186	186	190	187	186	196	212	211	215	224	202	SSW	24	
8	219	224	217	222	252	226	211	216	328	251	230	237	206	204	198	203	218	247	8	16	8	17	16	15	18	286	WNW	24
9	7	12	16	16	18	356	1	1	339	11	19	20	14	17	82	141	43	217	349	11	58	30	60	325	20	NNE	24	
10	336	197	310	53	72	323	1	346	344	18	15	270	219	207	214	204	201	145	127	152	201	324	188	188	190	S	24	
11	209	210	42	9	15	35	27	338	7	210	200	198	199	186	176	176	181	191	186	185	188	186	193	197	189	S	24	
12	202	238	236	220	217	211	204	230	212	217	214	212	203	199	201	205	204	210	214	211	235	232	237	239	211	SSW	24	
13	295	313	234	266	270	272	272	267	276	288	300	313	310	312	319	326	315	317	306	314	318	315	304	297	305	WNW	24	
14	297	284	284	283	279	279	275	280	279	280	282	288	286	284	319	326	330	323	298	322	302	285	298	288	292	WNW	24	
15	282	280	280	283	280	249	236	266	252	262	240	225	226	237	211	212	223	226	235	279	290	250	253	282	244	WSW	24	
16	283	285	284	291	294	290	295	303	305	308	314	304	251	270	209	185	199	206	206	226	225	213	231	231	253	WSW	24	
17	222	225	215	216	226	229	216	233	236	267	302	315	314	292	279	243	210	202	211	231	227	208	210	203	233	SW	24	
18	46	48	354	25	42	12	25	41	37	28	22	55	125	111	110	98	83	78	103	96	77	66	80	74	82	E	24	
19	30	28	50	81	22	135	132	171	188	194	199	198	197	196	196	216	211	200	197	206	250	271	304	290	206	SSW	24	
20	290	283	280	282	290	294	308	310	308	320	309	321	318	311	303	333	335	332	336	285	282	263	278	267	303	WNW	24	
21	257	198	194	193	173	160	150	158	160	158	157	159	188	205	227	219	225	228	221	249	272	277	265	244	198	SSW	24	
22	236	229	235	238	239	223	221	228	259	279	303	309	318	343	316	339	M	324	302	316	350	344	15	20	304	WNW	23	
23	13	2	347	342	347	359	356	359	M	M	M	351	0	14	20	317	348	350	351	346	7	351	340	337	355	N	21	
24	337	327	323	358	356	2	9	4	11	22	24	356	15	343	124	168	150	128	100	77	64	57	81	96	32	NNE	24	
25	92	83	75	62	61	59	62	59	58	49	48	42	33	33	36	35	36	41	46	42	41	48	48	48	48	N	24	
26	44	40	30	37	43	45	32	30	44	45	53	77	71	109	159	160	174	202	199	203	221	215	204	197	96	E	24	
27	204	207	199	201	202	208	209	201	208	201	199	194	203	195	196	202	196	205	204	206	208	219	219	193	202	SSW	24	
28	17	10	47	107	105	54	88	46	32	313	296	189	192	198	217	178	144	106	87	44	30	65	57	67	142	SE	24	
29	46	69	49	78	70	41	72	55	41	55	62	47	50	51	48	40	47	57	60	47	46	41	38	36	49	NE	24	
HOURLY AVG	359	354	354	358	357	359	356	359	344	354	319	356	321	354	356	350	356	359	357	355	357	351	357	337				

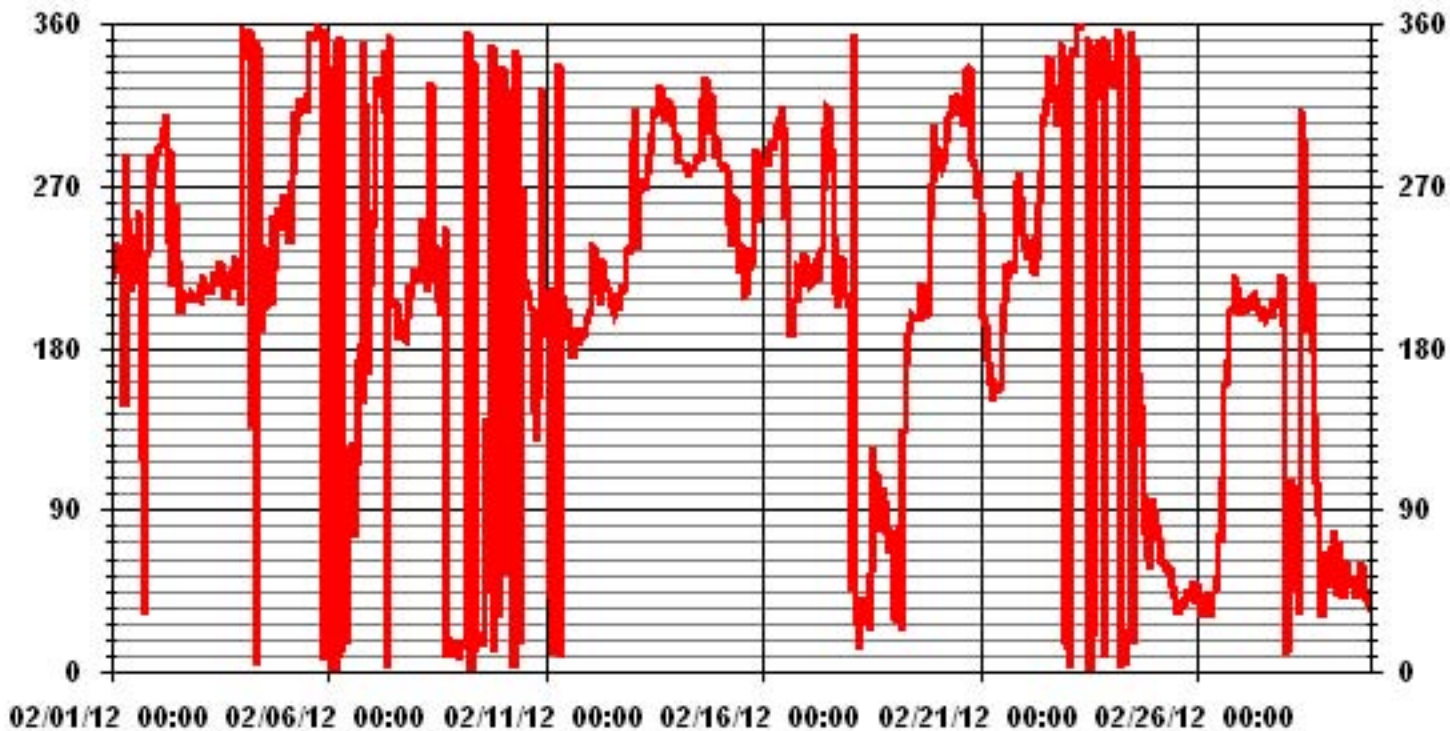
STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION:	December 20, 2011
DECLINATION :	19 DEGREES FROM MAGNETIC NORTH

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	692 HRS
STANDARD DEVIATION	103.92	AMD OPERATION UPTIME	99.4 %
		MONTHLY AVERAGE	257 DEG

### 01 Hour Averages





# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

FEBRUARY 2012

## STANDARD DEVIATION WIND DIRECTION (STDWDIR) 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	19	20	23	24	20	28	29	40	23	27	23	25	23	27	28	29	43	48	24	27	25	14	19	19
2	19	17	15	15	18	22	25	28	18	30	26	29	27	26	20	21	17	17	18	18	24	19	15	15
3	16	19	23	19	16	19	15	18	21	23	20	26	24	25	23	20	21	22	23	22	30	23	32	34
4	23	13	12	8	9	75	13	16	26	31	23	21	26	22	20	21	24	24	27	24	25	25	16	20
5	25	21	19	18	21	11	13	20	18	16	18	19	26	26	24	27	23	24	24	24	23	21	20	16
6	14	18	12	10	11	11	10	11	16	16	30	49	55	59	49	62	29	29	57	11	6	41	21	28
7	18	21	4	10	4	5	13	11	12	10	30	23	33	21	30	32	26	22	22	18	34	19	21	23
8	22	24	21	27	28	26	16	22	18	17	29	27	28	16	18	23	22	23	23	20	15	16	17	15
9	17	14	15	16	16	14	14	15	12	19	20	21	29	31	51	78	44	25	15	18	21	23	27	9
10	18	30	8	21	43	6	13	15	11	14	12	55	48	40	33	39	37	36	25	60	39	7	44	50
11	25	31	31	24	14	25	15	18	10	40	20	22	18	25	27	30	28	34	22	22	22	19	18	
12	24	30	35	32	27	20	23	33	27	24	26	23	19	24	23	18	21	16	18	17	26	28	27	22
13	13	4	23	22	21	20	21	23	21	22	22	28	30	29	30	29	25	25	21	26	25	23	19	13
14	18	19	20	20	22	21	23	21	21	22	23	23	25	25	27	26	24	27	18	23	18	16	16	16
15	20	20	19	18	21	19	18	20	24	20	25	22	23	27	20	19	21	21	22	25	25	21	23	17
16	19	19	20	19	16	20	20	25	20	16	24	26	34	28	46	31	18	14	13	21	20	16	25	24
17	16	20	15	17	22	20	16	20	20	23	21	24	25	21	24	27	18	13	15	19	20	12	16	23
18	21	21	14	13	24	22	24	24	21	20	12	33	38	31	32	28	29	27	27	27	28	26	31	27
19	17	23	34	30	25	65	52	47	33	31	21	20	21	20	22	23	24	17	19	20	29	26	24	22
20	22	21	20	22	22	22	23	25	22	25	26	26	27	28	25	26	23	19	20	20	21	27	33	22
21	25	34	31	35	33	25	34	31	29	33	28	28	23	25	30	25	28	23	14	25	24	22	26	25
22	20	21	20	18	13	15	16	18	22	29	28	29	27	29	29	28	41	35	27	30	30	34	20	18
23	22	24	27	33	32	24	27	26	23	36	62	37	36	26	34	36	31	33	27	28	22	25	33	33
24	37	35	35	26	26	25	20	23	20	16	19	33	48	67	65	55	20	20	19	23	17	17	25	26
25	24	26	24	21	23	23	22	23	23	21	22	21	16	15	18	18	17	20	21	19	18	22	23	22
26	20	15	11	16	20	19	26	16	22	22	30	35	56	71	60	27	27	17	17	18	24	20	14	14
27	12	14	12	13	12	16	15	14	16	18	18	17	22	20	20	18	18	16	14	18	16	19	19	50
28	27	61	60	43	44	49	35	56	65	54	58	28	19	32	33	28	21	19	17	17	26	39	38	16

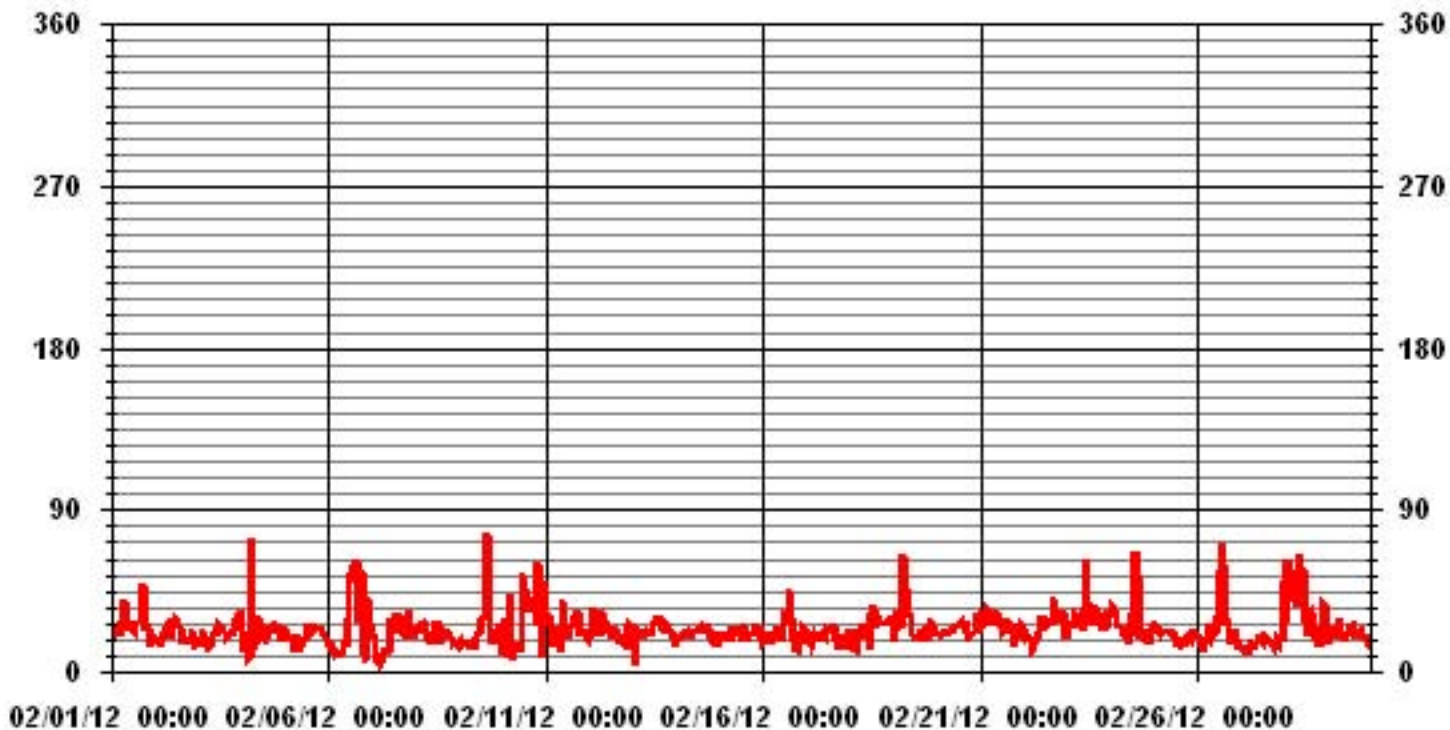
### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: December 20, 2011

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 696 HRS

### 01 Hour Averages



# Calibration Reports

# Sulphur Dioxide

**SO2 Calibration Report**  
**Station Information**

Calibration Date	February 15, 2012	Previous Calibration	January 4, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	Cold Lake - Maskwa		
Start Time (MST)	14:18	End Time (MST)	17:58
Reason:	Monthly Calibration		
Barometric Pressure	939 mmHg	Station Temperature	23 Deg C
Cal Gas	48.3 ppm	Gas Cyl. #	LL103831
DAS Output Voltage	0 - 1 Volts	Cal Gas Expiry date	February 28, 2013
		Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	API 100E	S/N :	508	Method:	Fluorescent
Converter Make / Model:	NA	S/N :	NA		
Calibrator Make / Model:	EnviroNics 6100	S/N :	4760	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	AO 791		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	EnviroNics 6100	S/N :	4760		

**Analyzer Settings**

Before Calibration		After Calibration	
Concentration Range	0 - 1000		
Sample Flow / Box Temp	594 ccm, 36.4 Deg C	589 ccm, 31.7 Deg C	
HVPS / Lamp Setting	494, 2630	494, 2633	
PMT / RxCell Temp	7.7 Deg C, 50 Deg C	7.7 Deg C, 50 Deg C	
Converter / IZS Temp	NA Deg C, 45 Deg C	NA Deg C, 45.0 Deg C	
Offset / Slope	39.5, 1.24	40.2, 1.241	

**Calibration Data**

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4994	0	0	1	N/A
4994	0	0	0	N/A
4917	77.4	749	748	1.0007
	No Span Adj.			
4954	41.3	399	393	1.0161
4978	17.5	169	166	1.0193
4997	0	0	0	N/A
Sum of Least Squares				1.0046
New Correction Factor				1.0007

	Before Calibration	After Calibration
Auto Zero	1.6	0.6
Auto Span	378.0	372.0
Sample Lines Connected		YES

**Percent Change**

Previous Month's Calibration Correction Factor:	0.9980
Current Correction Factor Before Span Adjust:	1.0007
Percent Change:	-0.3%

Notes: **N/A : Not applicable**

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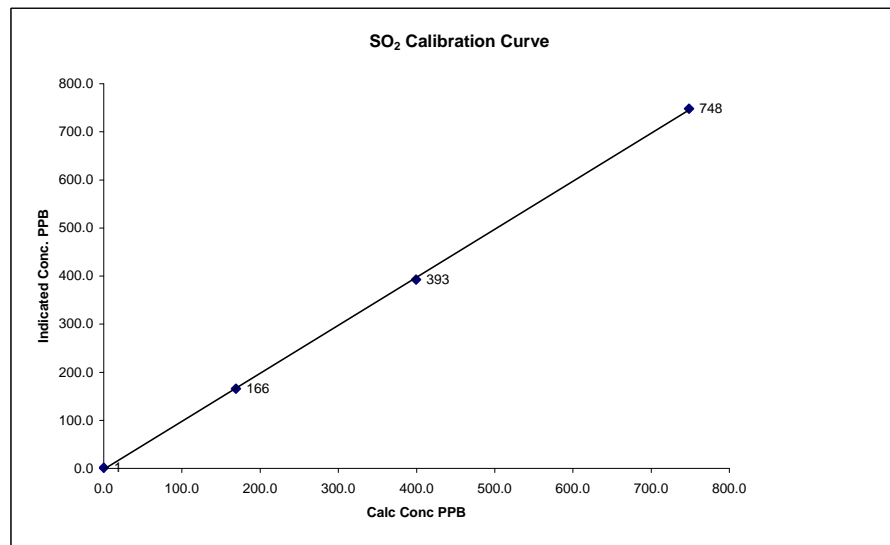
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Calibration Performed by: Ting Xu

**SO2 Calibration Curve**

Calibration Date	February 15, 2012
Company	Lakeland Industry & Community Association
Plant / Location	Cold Lake - Maskwa
Start Time (MST)	14:18
End Time (MST)	17:58

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	1	n/a		0.999903
169	166	1.0193		0.998477
399	393	1.0161		
749	748	1.0007		-1.762875



**Notes:**

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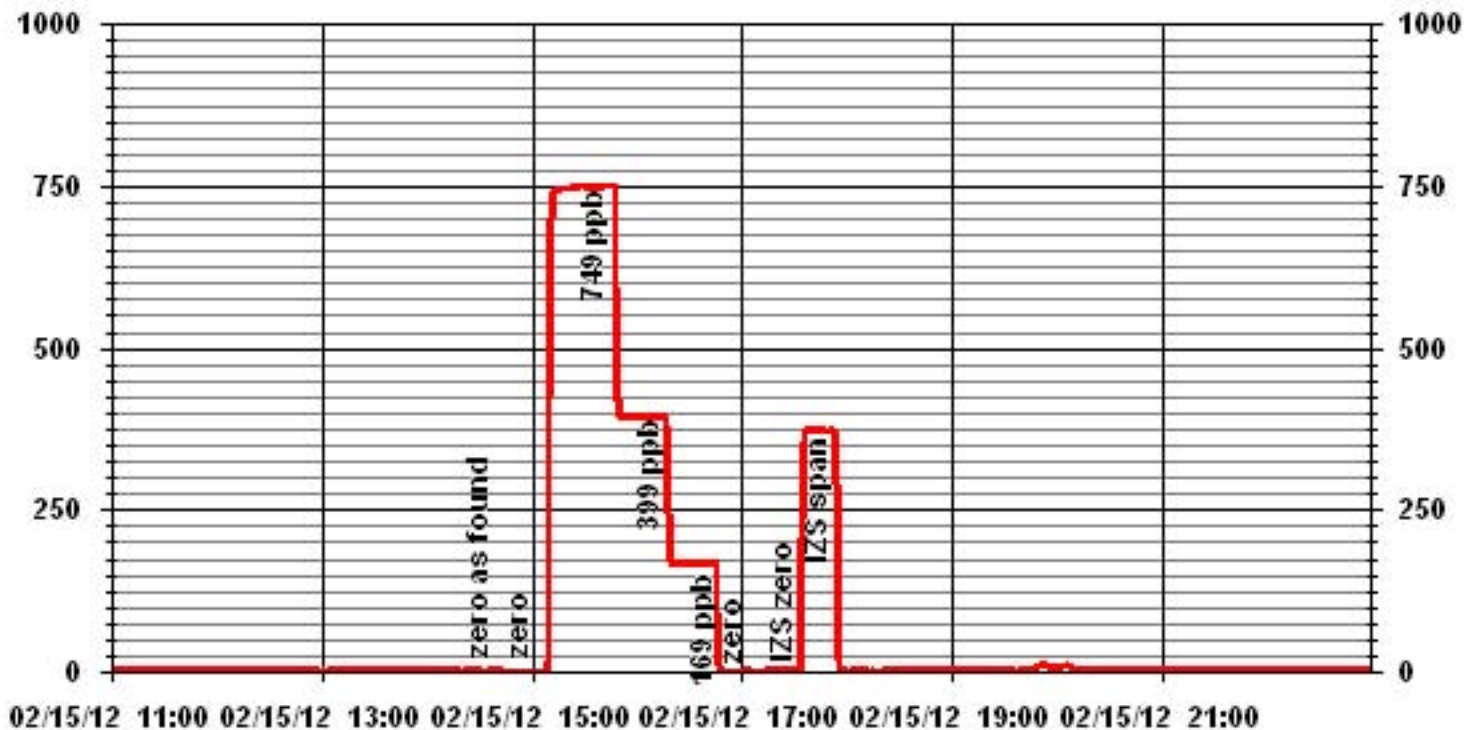


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### 01 Minute Averages

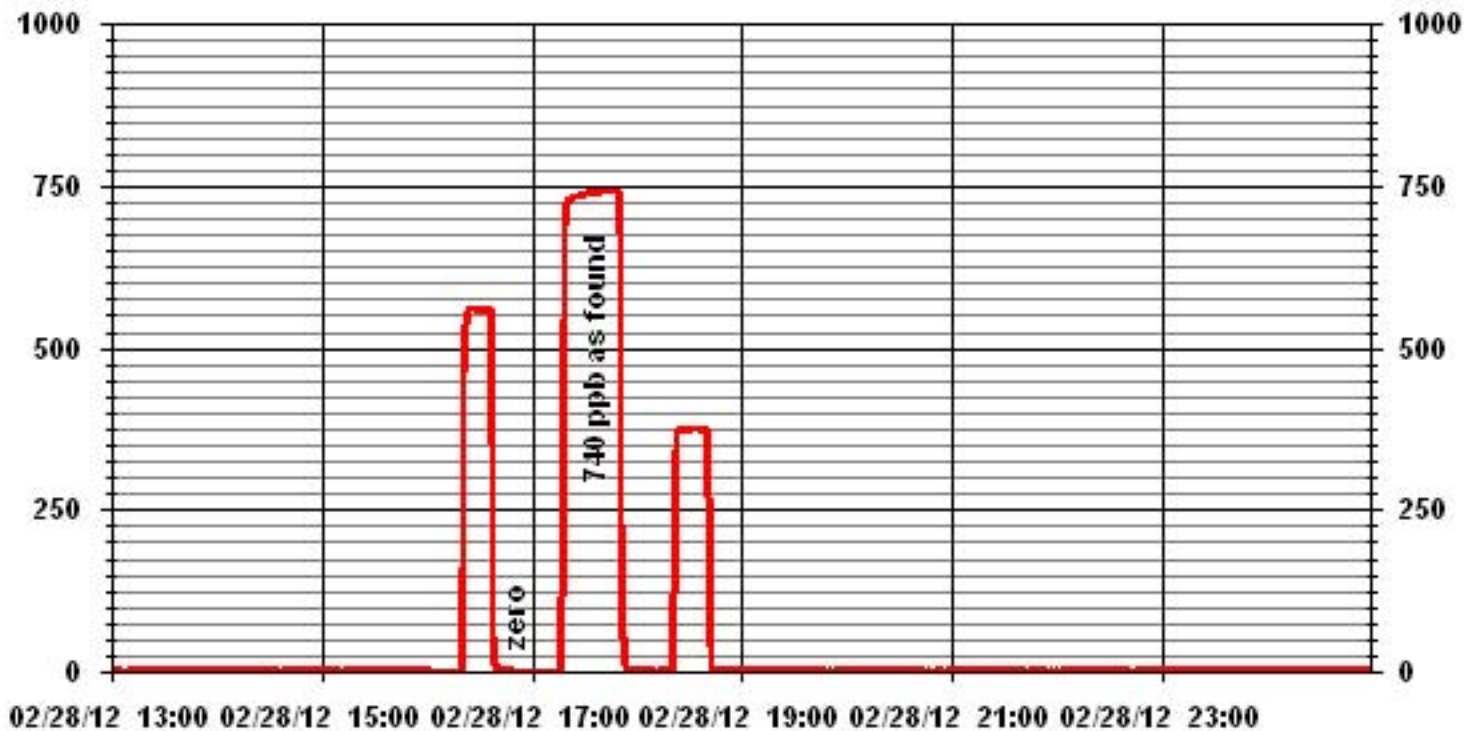


— LICA30 SO2\_ PPB





### 01 Minute Averages



**SO2 Calibration Report**  
**Station Information**

Calibration Date	February 29, 2012	Previous Calibration	February 28, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	Cold Lake - Maskwa		
Start Time (MST)	9:26	End Time (MST)	13:21
Reason:	Post Repair Calibration		
Barometric Pressure	929 mmHg	Station Temperature	21 Deg C
Cal Gas	48.3 ppm	Gas Cyl. #	LL103831
DAS Output Voltage	0 - 1 Volts	Cal Gas Expiry date	February 28, 2013
		Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	API 100E	S/N :	508	Method:	Fluorescent
Converter Make / Model:	NA	S/N :	NA		
Calibrator Make / Model:	API 700	S/N :	831	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	AO 791		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	API 700	S/N :	831		

**Analyzer Settings**

Before Calibration		After Calibration	
Concentration Range	0 - 1000	ppb	
Sample Flow / Box Temp	590 ccm, 31.1 Deg C	588 ccm, 29.6 Deg C	
HVPS / Lamp Setting	494, 2616	494, 2620	
PMT / RxCell Temp	7.7 Deg C, 50 Deg C	7.7 Deg C, 50 Deg C	
Converter / IZS Temp	NA Deg C, 45 Deg C	NA Deg C, 45.0 Deg C	
Offset / Slope	40.2, 1.241	40.2, 1.254	

**Calibration Data**

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4997	0	0	1	N/A
	No Zero Adj.			
4918	77.6	750	741	1.0125
4918	77.6	750	752	0.9977
4953	41.4	400	402	0.9960
4981	17.6	170	170	1.0000
4998	0	0	1	N/A
Sum of Least Squares				0.9974
New Correction Factor				0.9977

**Before Calibration**

**After Calibration**

Auto Zero	-	1.2
Auto Span	374.0	382.0
Sample Lines Connected		YES

**Percent Change**

Previous Month's Calibration Correction Factor:	1.0137
Current Correction Factor Before Span Adjust:	1.0125
Percent Change:	0.1%

Notes: **N/A : Not applicable**

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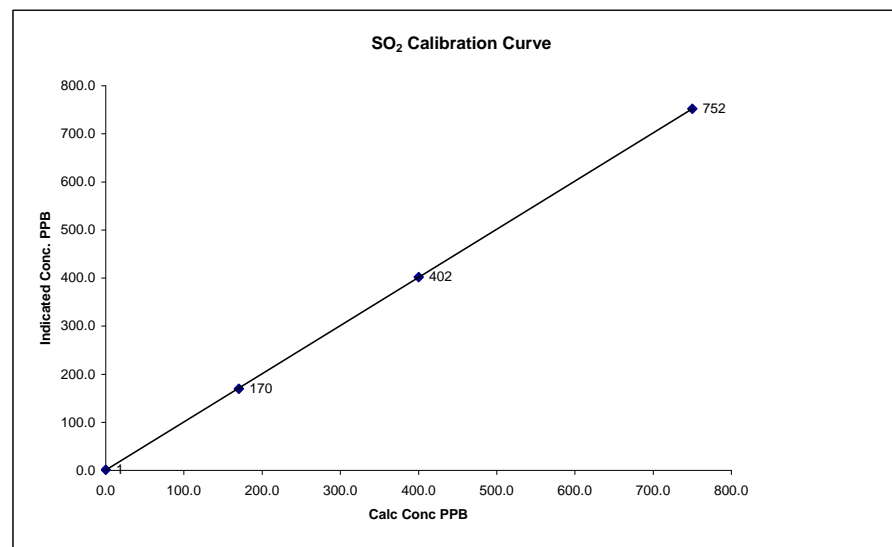
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Calibration Performed by: Ting Xu

**SO2 Calibration Curve**

Calibration Date	February 29, 2012
Company	Lakeland Industry & Community Association
Plant / Location	Cold Lake - Maskwa
Start Time (MST)	9:26
End Time (MST)	13:21

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	1	n/a		0.999996
170	170	1.0004		1.001640
400	402	0.9960		0.530378
750	752	0.9977		



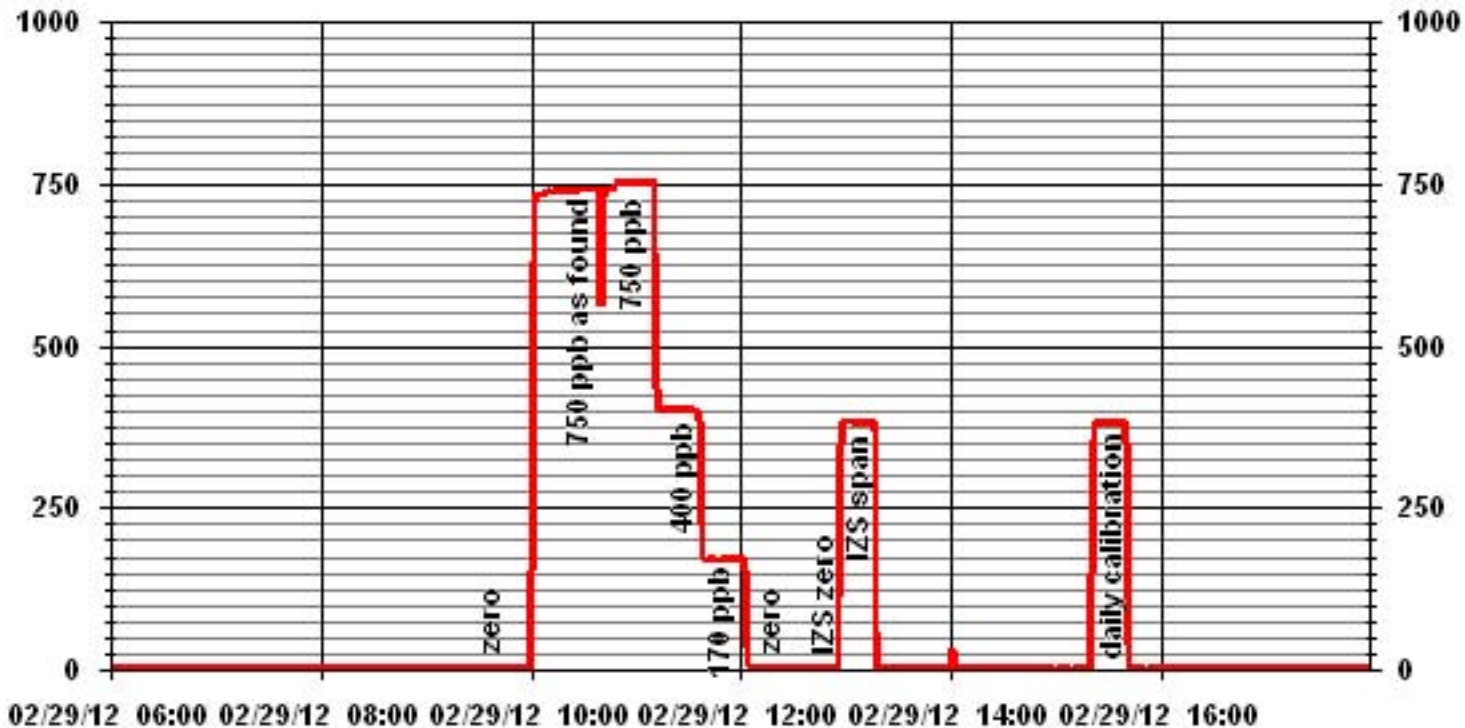
Notes:

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### 01 Minute Averages



# Hydrogen Sulphide

**H2S Calibration Report**

**Station Information**

Calibration Date	February 15, 2012	Previous Calibration	January 3, 2012
Company	Lakelnad Industry & Community Association		
Plant / Location	Cold Lake - Maskwa		
Start Time (MST)	8:41	End Time (MST)	12:53
Reason:	Monthly Calibration		
Barometric Pressure	937 mBar	Station Temperature	21 Deg C
Cal Gas	10.2 ppm	Gas Cyl. #	BLM00080 Cal Gas Expiry date
DAS Output Voltage	0 - 1 Volts	Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	API 101E	S/N :	511	Method:	Fluorescent
Converter Make / Model:	Internal	S/N :	NA		
Calibrator Make / Model:	API 700	S/N :	831	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	AO 791		
Chart Recorder Make / Model:	Not in use		S/N:	NA	
Flow Meter:	API 700	S/N :	831		

**Analyzer Settings**

Before Calibration		After Calibration	
Concentration Range	0 - 100	ppb	
Sample Flow / Box Temp	477 ccm 30.1 Deg C	477 ccm	31 Deg C
HVPS / Lamp Setting	552 2536	552	2534
PMT / RxCell Temp	7.9 Deg C 50 Deg C	7.9 Deg C	50 Deg C
Converter / IZS Temp	315.4 Deg C 45 Deg C	315.5 Deg C	45.0 Deg C
Offset / Slope	37.6 0.834	35.7	0.834

**Calibration Data**

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4997	0	0	-1	NA
4996	0	0	0	NA
4960	39.2	80	79	1.0124
4960	39.2	80	80	1.0000
4976	19.6	40	41	0.9761
4986	11.3	23	24	0.9610
4996	0	0	0	NA
Sum of Least Squares				0.9927
New Correction Factor				1.0000

Before Calibration		After Calibration	
Auto Zero	-0.2		0.3
Auto Span	59.7		60.0
Sample Lines Connected			YES

**Percent Change**

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	1.0124
Percent Change:	-1.2%

**Notes:**

**NA : Not Applicable**

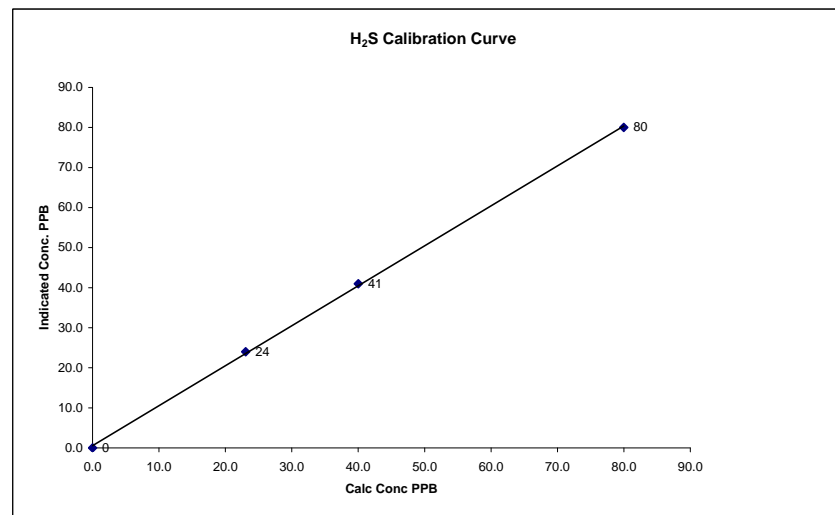
When starting as found point, the cal gas flow rate wasn't set right, aborted calibration, corrected gas concentration in the calibrator, redid the point.

Calibration Performed by: Ting Xu / Theo McLaren

**H<sub>2</sub>S Calibration Curve**

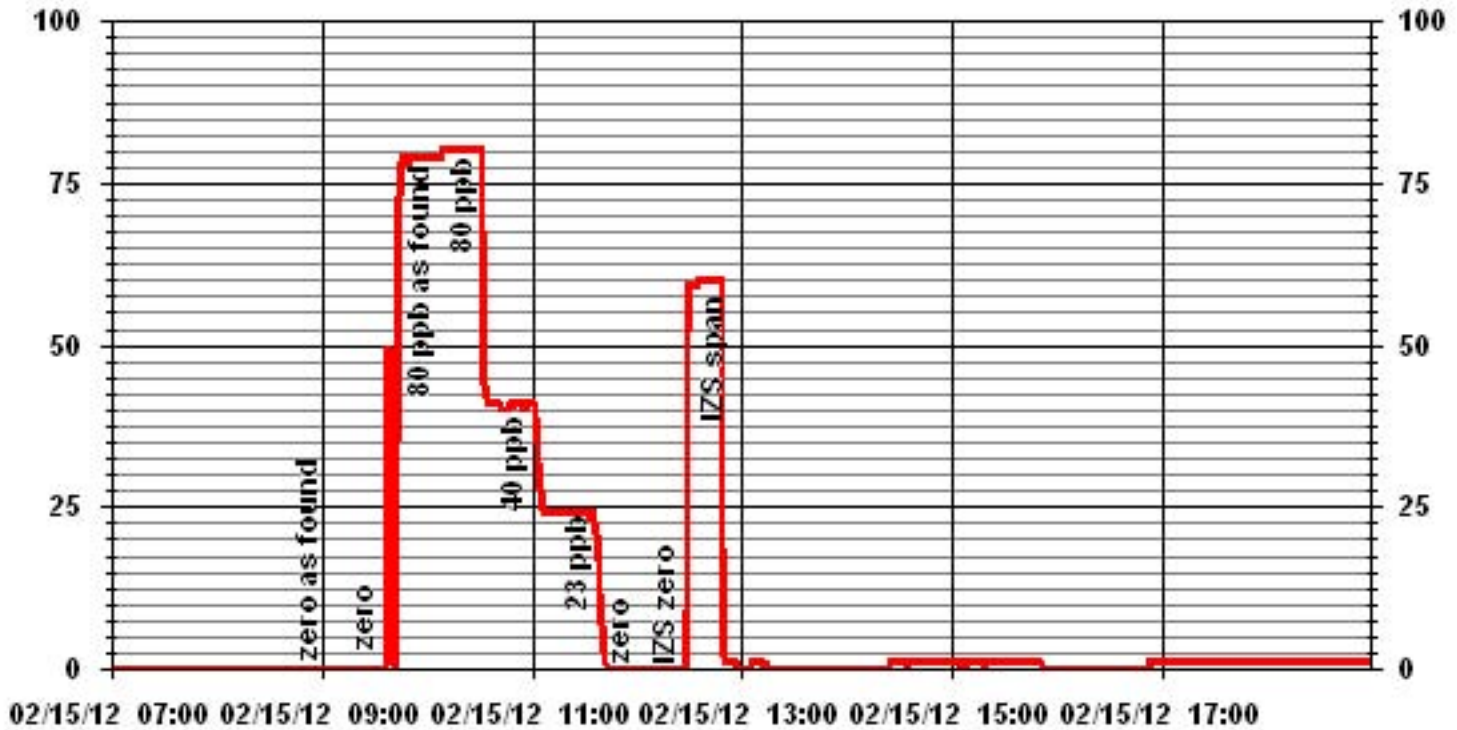
Calibration Date	February 15, 2012
Company	Lakelnad Industry & Community Association
Plant / Location	Cold Lake - Maskwa
Start Time (MST)	8:41
End Time (MST)	12:53

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999739
0	0		Intercept	(± 3% F.S.)	0.555786
23	24	0.9610			
40	41	0.9761			
80	80	0.9998			



**Notes:**

### 01 Minute Averages



# Total Hydrocarbons

**THC Calibration Report**

Station Information					
Calibration Date:	February 15, 2012	Previous Calibration	January 4, 2012		
Company:	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION				
Plant / Location:	Maskwa				
Start Time (MST)	12:21	End Time (MST)	16:32		
Reason:	Monthly Calibration				
Barometric Pressure:	939	mmHg	Station Temperature:	22	Deg C
Calibrator:	API 700		S/N:	831	
Cal Gas Concentration:	CH4 980 PPM	C3H8 304 PPM			
	TOTAL CH4 1816.0 PPM	Gas Cyl. # LL84144	Cal Gas Expiry Date:	December 3, 2013	
DAS make & Model:	ESC 8832	S/N :	AO 791		
Chart Recorder:	NA	S/N:	NA		
Output Voltage Range:	0 - 1	VDC	Chart Speed:	NA	mm/hr

Analyzer Information			
Make / Model	Thermo 51C-LT	S/N :	436609738
Method	Flame Ionization		

Analyzer Settings				
	Before Calibration		After Calibration	
Concentration Range	0 - 50	ppm	0 - 50	ppm
Sample Pressure	7.5	psi	7.5	psi
Hydrogen Pressure	8	psi	8	psi
Air Pressure	20	psi	20	psi

Calibration Data				
Dilution Flow	Source Gas Flow	Calculated Concentration	Indicated Concentration	Correction Factor
3000	0.0	0.0	0.1	NA
3000	0.0	0.0	0.0	NA
3000	70.0	41.4	42.4	0.9766
3000	70.0	41.4	41.6	0.9954
3000	35.0	20.9	20.9	1.0000
3000	20.0	12.0	12.0	1.0000
3000	0.0	0.0	0.0	NA
New Correction Factor:				0.9954

Percent Change	
Previous Calibration Correction Factor:	0.9954
Current Correction Factor Before Span Adjust:	0.9766
Percent Change:	1.9%

IZS Calibration Data		
	Before Calibration	After Calibration
Auto Zero	0.1	0.0
Auto Span	33.2	32.7
Sample Lines Connected	YES	

Cylinder Pressures			
Span	1800 psi	Hydrogen	1400 psi
Zero Air	32 psi		

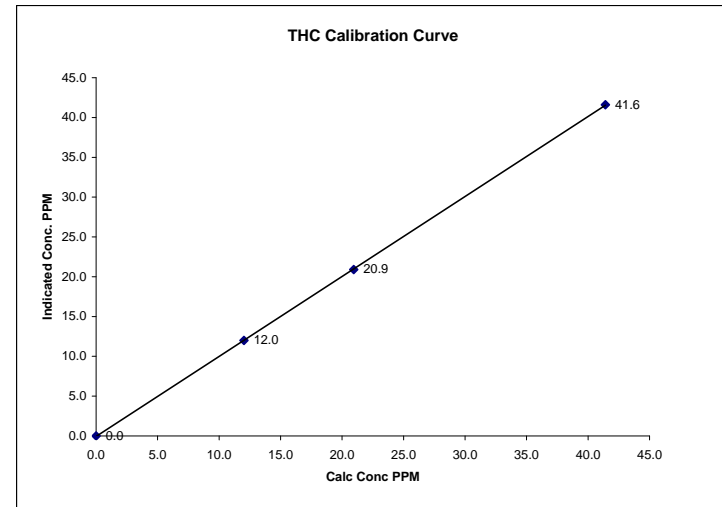
Notes: **NA : Not Applicable**  
 Both CH4/H2 gas cylinders were replaced on January 13.

Calibration Performed by: Ting Xu

**THC Calibration Curve**

Calibration Date	February 15, 2012		
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	Maskwa		
Start Time (MST)	12:21	End Time (MST)	16:32

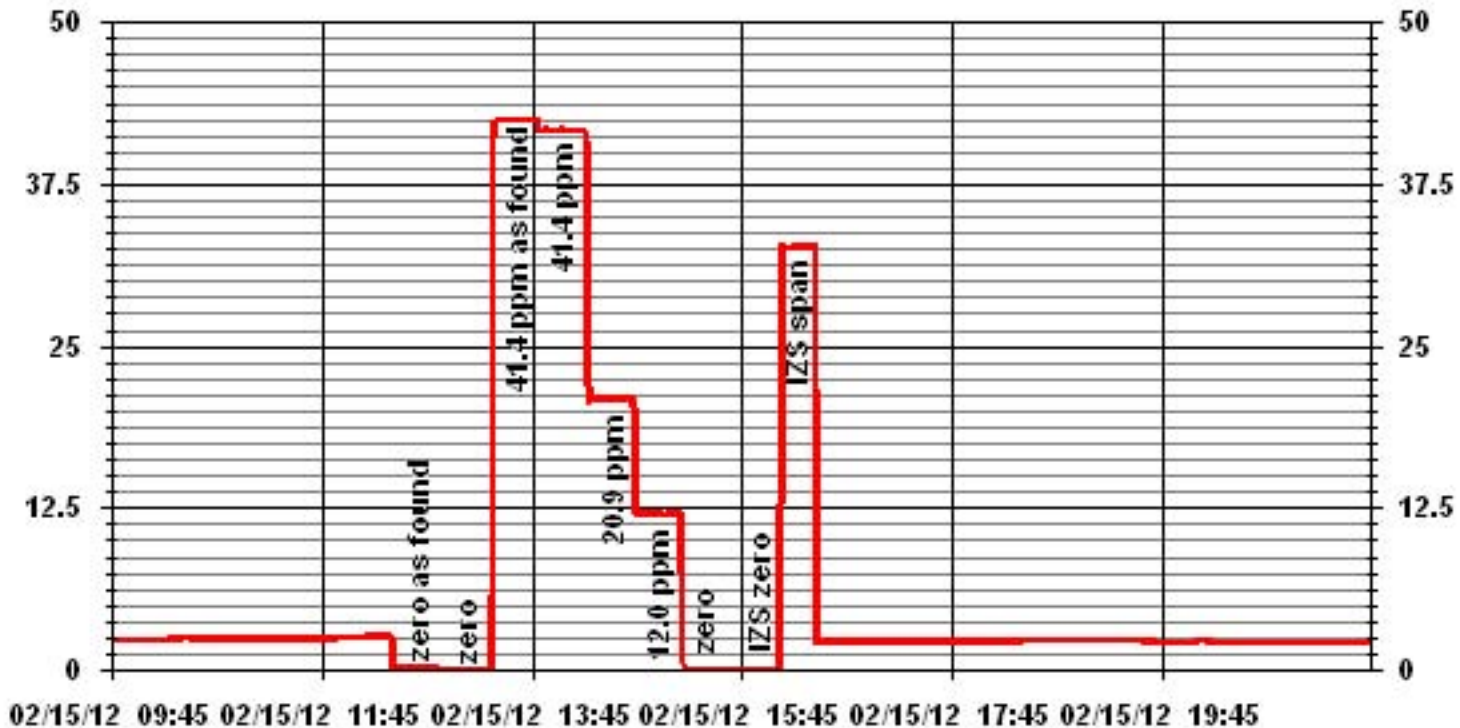
Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient Slope (0.85 to 1.15)	Correlation Coefficient Intercept (±3% F.S.)
0.0	0.0	NA	0.999985	1.004890
12.0	12.0	1.0022		-0.05993
20.9	20.9	1.0020		
41.4	41.6	0.9954		



Notes:



### 01 Minute Averages



# Nitrogen Dioxide

**NOx - NO- NO2 Calibration Report**  
**Station Information**

Calibration Date	February 15, 2012	Previous Calibration	January 3, 2012
Company	LICA	Plant/Location	Maskwa
Start Time (MST)	8:41	End Time (MST)	14:50
Reason:	Monthly Calibration		
Barometric Pressure	937 mBar	Station Temperature	20 Deg C
Cal Gas Concentration	NOx 49.7 ppm	NO	49.4 ppm
Cal Gas Cylinder #	LL103831	Cal Gas Expiry date	February 28, 2013
DAS Output Voltage	0 - 1 Volts	Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	API 200E	S/N :	594	Method:	Chemiluminescent
Calibrator Make / Model:	Enviroincs 6100	S/N :	4760		
DAS Make / Model:	ESC 8832	S/N :	AO 791		
Chart Recorder Make / Model:	Not in use	S/N :	NA		
Flow Meter:	ESC 8832	S/N :	4760		

**Analyzer Settings**

Before Calibration			After Calibration		
Concentration Range	0 - 1000				
Sample Flow/Conv. Temp	455 ccm	314 Deg C	455 ccm	316 Deg C	
Ozone Flow / Vacuum	79 ccm	5.3 °Hg-A	79 ccm	5.3 °Hg-A	
HVPS / A ZERO	767 Volts	16.4 MV	767 Volts	17 MV	
Rx/ Temp / PMT Temp	49.9 Deg C	6.5 Deg C	50.0 Deg C	6.6 Deg C	
Box Temp / IZS Temp	29.5 Deg C	40.2 Deg C	32.1 Deg C	40.3 Deg C	
Offset	0.9 NOx	0.8 NO	0.9 NOx	0.8 NO	
Slope	1.191 NOx	1.185 NO	1.205 NOx	1.196 NO	
NO <sub>2</sub> COEF / Conv Efficiency	NA NO <sub>2</sub>	0.994	NA NO <sub>2</sub>	0.994	

**Dilution Calibration Data**

Dilution Air Flow Rate	Source Flow Rate	O3 Set Point	Calculated Concentration			Indicated Concentration			Correction Factor	
			NOx	NO	NO2	NOx	NO	NO2	NOx	NO
4994	0.0	NA	0	0	NA	1	1	1	NA	NA
	No Zero Adj.									
4919	75.7	NA	753	749	NA	745	744	2	1.0124	1.0077
4919	75.7	NA	753	749	NA	754	751	4	1.0003	0.9983
4960	35.3	NA	351	349	NA	350	349	2	1.0063	1.0000
4975	20.2	NA	201	200	NA	200	199	2	1.0100	1.0089
4994	0.0	NA	0	0	NA	0	1	0	NA	NA

**Gas Phase Titration Calibration Data**

Dilution Air Flow Rate	Source Flow Rate	O3 Set Point	Calculated Concentration			Indicated Concentration			NO <sub>2</sub> Correction Factor	NO <sub>2</sub> Conv Efficiency
			NOx	NO	NO2	NOx	NO	NO2		
4919	75.7	NA	753	749	NA	755	751	5	NA	NA
	No Adj.									
4919	75.7	600	753	NA	548	754	208	547	1.0037	99.82%
4919	75.7	250	753	NA	231	755	525	231	1.0043	100.00%
4919	75.7	140	753	NA	131	757	625	133	0.9924	101.59%

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= 1.009	NO= 1.005	NO2= 1.001
				NOx= 1.0003	NO= 0.9983	NO2= 1.0037
Average Converter Efficiency= 100.47%						

**Before Calibration**

Auto Zero	1.5 NOx	1.7 NO2	0.5 NOx	0.6 NO2
Auto Span	614 NOx	603 NO2	622 NOx	611 NO2
Sample Lines Connected: YES				
Percent Change from Previous Calibration	NOx -1.4%	NO -0.8%	NO2 -0.2%	

Notes:

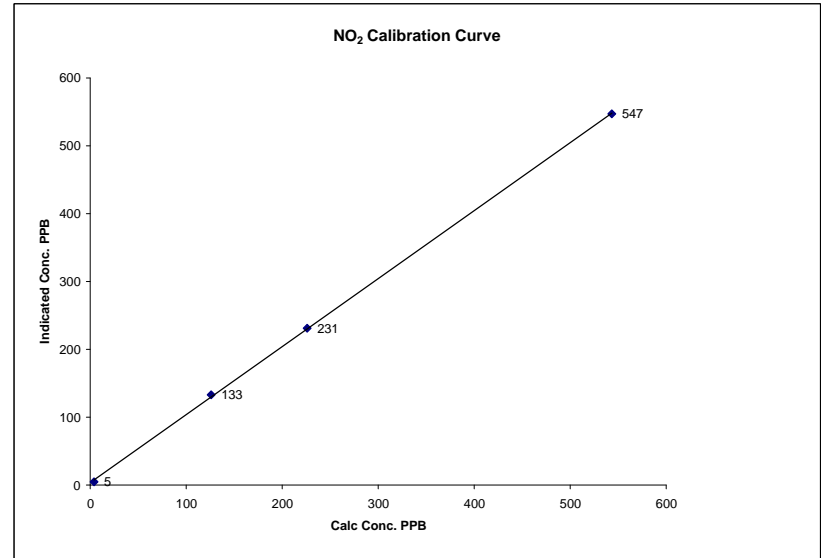
NA : Not Applicable

Calibration Performed by: Ting Xu / Theo McLaren

**NO<sub>2</sub> Calibration Curve**

Calibration Date	February 15, 2012	Company	LICA
Plant / Location	Maskwa	Start Time (MST)	8:41
End Time (MST)	14:50		

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995)	0.999888
4	5	N/A	Intercept	(± 3% F.S.)	3.73338
126	133	0.9474			
226	231	0.9784			
543	547	0.9927			

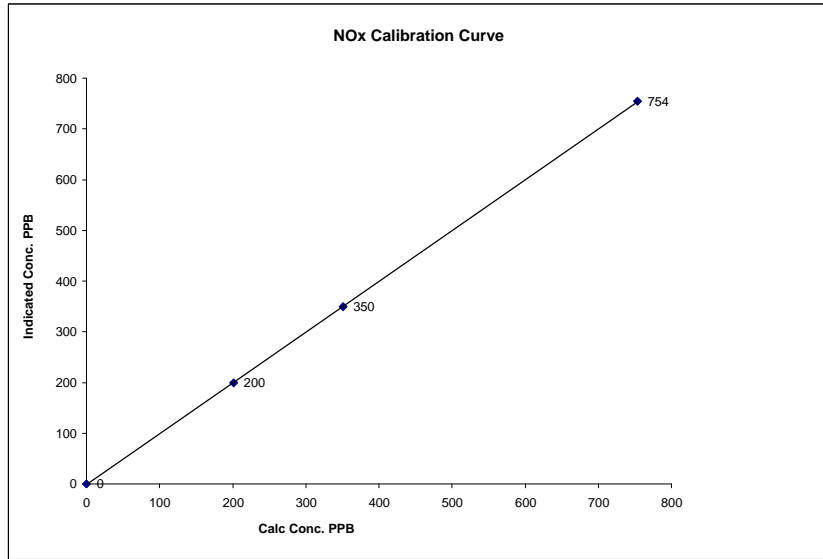


Notes:

**NOx Calibration Curve**

Calibration Date	February 15, 2012	
Company	LICA	
Plant / Location	Maskwa	
Start Time (MST)	8:41	End Time (MST) 14:50

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999994
0	0	N/A	Slope (0.85 to 1.15)	1.001345
201	200	1.0049	Intercept (± 3% F.S.)	-0.80128
351	350	1.0035		
753	754	0.9990		

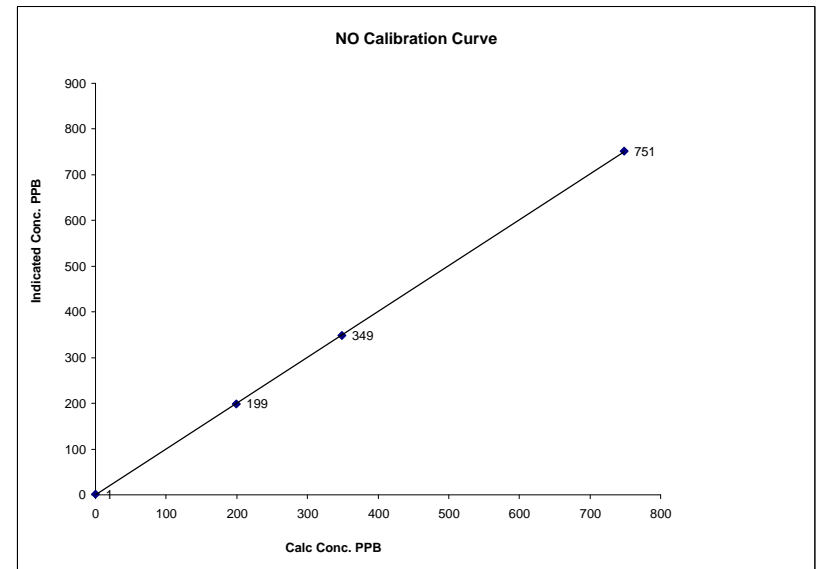


Notes:

**NO Calibration Curve**

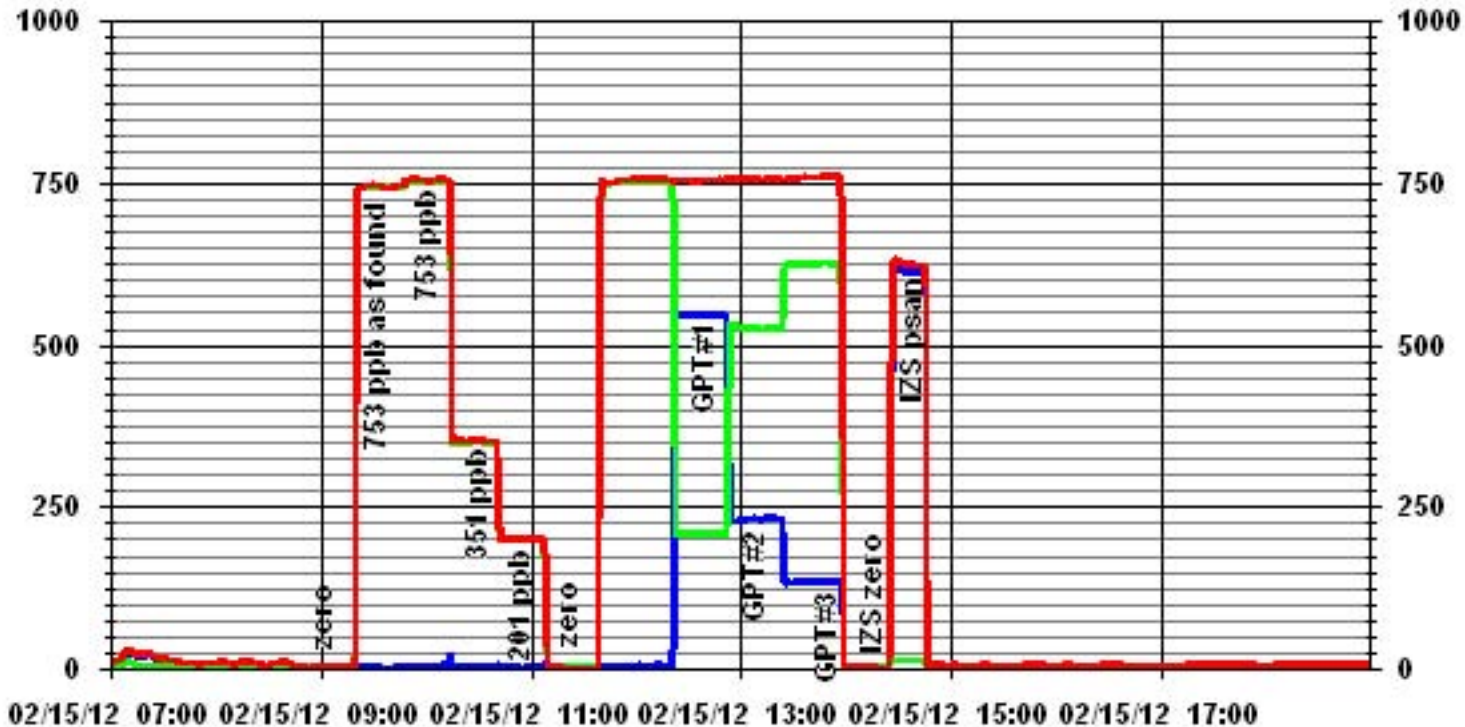
Calibration Date	February 15, 2012	
Company	LICA	
Plant / Location	Maskwa	
Start Time (MST)	8:41	End Time (MST) 14:50

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999988
0	1	N/A	Slope (0.85 to 1.15)	1.005652
200	199	1.0039	Intercept (± 3% F.S.)	-2.1734
349	349	1.0003		
749	751	0.9970		



Notes:

### 01 Minute Averages



— LICA30 IIOX\_ PPB

— LICA30 IIO\_ PPB

— LICA30 IIO2\_ PPB

# Nitrogen Dioxide



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

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

### Sonic Wind Sensor Certificate of Calibration

Sensor Model No: 50.5H Sonic Sensor Serial No: H10703  
 Customer: MAXXAM P.O. No: \_\_\_\_\_ Sales Order: RA 32411  
 Final Calibration By: Kevin Ricks Calibration Date: 12-20-11  
 Quality Control Inspected By: *[Signature]* Inspection Date: 12-27-2011

New Unit  Repair/Adjust  Re-Calibration  As Found   
 Unit Within Tolerance as Found  Unit Within Tolerance as Left

#### Calibration Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Due
Digital Multimeter 1	Agilent	34401A	MY41039534	3/02/2012
Digital Multimeter 2	HP	34401A	US36094551	7/05/2012
Frequency Counter	Agilent	53131A	MY40009285	4/28/2012
Standard Sensor	Climet	011-1	2551	7/18/2013
Standard Cup Set	Climet	014	0008	7/18/2013
Temperature Probe	MOI	920005/PC8340	E3402	8/25/2012

Test 1: Average Wind Tunnel Speed: 3.07 Meters per Second Firmware Version: 3194-01 R2.62

WD Setting (Deg)	WD Output (Volts)	WD Indication (Deg)	WD Error (+/- 3 Deg)	WS Standard (m/s)	WS Output (Volts)	WS Indication (m/s)	WS Error (+/- .20 m/s)	Output Type:
30	.084	30.2	.2	3.06	.06	3	-.05	0 to 1 volt <input checked="" type="checkbox"/>
60	.165	59.4	-.6	3.05	.06	3.02	-.03	0 to 2.5 volt <input type="checkbox"/>
120	.335	120.6	.6	3.07	.061	3.03	-.04	0 to 5 volt <input type="checkbox"/>
150	.416	149.8	-.2	3.06	.06	3.01	-.05	RS-232 <input checked="" type="checkbox"/>
210	.585	210.6	.6	3.11	.06	3	-.11	SDI-12 <input type="checkbox"/>
240	.666	239.7	-.3	3.06	.06	3.01	-.05	RS-422 <input type="checkbox"/>
300	.837	301.5	1.5	3.06	.06	3.02	-.04	RS-485 <input type="checkbox"/>
330	.918	330.3	.3	3.05	.06	3	-.04	<input type="checkbox"/>

Test 2: Average Wind Tunnel Speed: 11.66 Meters per Second Output Range: 0-50 m/s

WD Setting (Deg)	WD Output (Volts)	WD Indication (Deg)	WD Error (+/- 3 Deg)	WS Standard (m/s)	WS Output (Volts)	WS Indication (m/s)	WS Error (+/- .24 m/s)	Test Items:
30	.082	29.6	-.4	11.63	.233	11.65	.03	Array Alignment <input checked="" type="checkbox"/>
60	.163	58.8	-1.2	11.66	.236	11.82	.16	Jumper Config <input checked="" type="checkbox"/>
120	.335	120.7	.7	11.7	.235	11.74	.04	Firmware Config <input checked="" type="checkbox"/>
150	.417	150	0	11.67	.234	11.68	.02	Zero Calibration <input checked="" type="checkbox"/>
210	.584	210.2	.2	11.67	.233	11.64	-.03	Low Speed Test OK <input checked="" type="checkbox"/>
240	.666	239.6	-.4	11.64	.235	11.76	.11	High Speed Test OK <input checked="" type="checkbox"/>
300	.837	301.3	1.3	11.66	.237	11.84	.17	Sensor Function <input checked="" type="checkbox"/>
330	.917	330	0	11.64	.234	11.72	.08	Physical Inspection <input checked="" type="checkbox"/>

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

# Lakeland Industry & Community Association

St. Lina Monitoring Site  
Ambient Air Monitoring  
Data Report  
For  
February 2012

Prepared By:



March 23, 2012



# Lakeland Industry & Community Association

## St. Lina

### Ambient Air Monitoring

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## Introduction

The following Ambient Air Monitoring report was prepared for:

Mr. Mike Bisaga

**Lakeland Industry & Community Association**

Box 8237

5107W – 50 Street

Bonnyville, Alberta

T9N 2J5

Monitoring Location: St. Lina

Data Period: February 2012

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

# Calibration Procedure

The following calibration procedure applies to all calibrations conducted at the Lakeland Industry & Community Association Air Monitoring Station.

Calibration gas concentrations are generated using a dynamic mass flow controlled calibrator. EPA Protocol one gases are diluted with zero air generated on site. The Mass Flow Controllers in the calibrator are referenced using an NIST traceable flow meter once per month. All listed flows are reported as corrected to Standard Temperature and Pressure (STP).

Generated zero gas is introduced to the analyzer first. Three concentrations of calibration gas are then generated in order to introduce points at approximately 50-80%, 25-40% & 10-20% of the analyzer's full-scale range. An auto zero and span are then performed to validate the daily zero and span values recorded to the next multi-point calibration.

All indicated concentrations are taken from the ESC data logger used to collect the data for monthly reporting.

The calibrations conducted at the LICA – St. Lina Air Monitoring Stations conform to the following Maxxam Standard Operation Procedures:

- CAL SOP-00211
- CAL SOP-00209
- CAL SOP-00213
- CAL SOP-00214
- CAL SOP-00208
- CAL SOP-00215

Conformance of each calibration to Alberta Environment regulations is outlined in the individual calibration reports. The slope and correlation coefficient are derived from the calculated and indicated analyzer responses. The percent change is calculated using the previous calibration correction factor and the current correction factor before adjustment. All calibration's and maintenance conforms to the procedures outlined in the *Air Monitoring Directive, Appendix A-10, Section 1.6*.

# MONTHLY CONTINUOUS DATA SUMMARY

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – ST. LINA

### Continuous Ambient Monitoring – February 2012

LICA ST. LINA SITE						MAXIMUM VALUES							OPERATIONAL TIME (PERCENT)
						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO2 (PPB)	172	48	0	0	0.28	4	VAR	VAR	VAR	VAR	1.1	27	99.7
H2S (PPB)	10	3	0	0	0.17	1	VAR	VAR	VAR	VAR	0.8	21, 27	99.9
THC (PPM)	-	-	-	-	2.16	3.5	18	10	13.2	104(ESE)	2.6	18, 28	99.9
OZONE (PPB)	82	-	0	-	28.4	40	22, 29	VAR	VAR	VAR	38.2	22	99.7
NOx (PPB)	-	-	-	-	3.47	26	1	0	9.2	340(NNW)	10.5	28	99.9
NO (PPB)	-	-	-	-	0.73	6	12	12	12.1	317(NW)	1.8	12	99.9
NO <sub>2</sub> (PPB)	159	-	0	-	2.84	26	1	0	9.2	340(NNW)	9.0	1	99.9
PM2.5 (ug/m3)	-	30	-	0	5.68	34.6	11	12	3.5	310(NW)	12.5	28	99.6
TEMPERATURE (DEGREE C)	-	-	-	-	-7.45	6.0	17	14	2.2	293(WNW)	-1.3	22	99.9
BP (MILLIBAR)	-	-	-	-	928	949	6	VAR	VAR	VAR	946.9	6	99.9
RH (%)	-	-	-	-	65.57	85	13, 19	VAR	VAR	VAR	81.5	19	99.9
PRECIPITATION (MM)	-	-	-	-	0.00	0.0	ALL	ALL	VAR	VAR	0.0	ALL	99.7
VECTOR WS (KPH)	-	-	-	-	9.69	21.8	18	12	-	68(ENE)	11.9	13	99.9
VECTOR WD (DEGREES)	-	-	-	-	317(NW)	-	-	-	-	-	-	-	99.9

VAR-VARIOUS

# General Monthly Summary

## Equipment Operation

The following summary outlines the analyzer performance. Any non-conformances, problems or maintenance performed are detailed at the end of each section.

### AQM STATION – LICA – St. Lina

#### Sulphur Dioxide (PPB)

Analyzer make / model - API 100E, S/N: 468

The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on February 8<sup>th</sup>. Maximum data on February 21<sup>st</sup> at hour of 16 was invalidated due to a small power outage. Data on February 23<sup>rd</sup> at hour of 5 is missing. Data was corrected using daily zero information.

#### Hydrogen Sulphide (PPB)

Analyzer make / model - API 101E, S/N: 510

The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on February 8<sup>th</sup>. Maximum data on February 21<sup>st</sup> at hour of 16 was invalidated due to a small power outage. Data on February 23<sup>rd</sup> at hour of 5 is missing. Data was corrected using daily zero information.

#### Total HydroCarbon (PPM)

Analyzer make / model –TECO 51C, S/N: 77021-384

The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on February 9<sup>th</sup>. Maximum data on February 21<sup>st</sup> at hour of 16 was invalidated due to a small power outage. Data on February 23<sup>rd</sup> at hour of 5 is missing. Data was corrected using daily zero information.

# General Monthly Summary

## AQM STATION – LICA – St. Lina

### Ozone (PPB)

The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on February 9<sup>th</sup>. Maximum data on February 21<sup>st</sup> at hour of 16 was invalidated due to a small power outage. Data on February 23<sup>rd</sup> at hour of 5 is missing. Data was corrected using daily zero information.

### Nitrogen Dioxide (PPB)

Analyzer make / model - API 200E, S/N: 592

The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on February 8<sup>th</sup>. Maximum data on February 21<sup>st</sup> at hour of 16 was invalidated due to a small power outage. Data on February 23<sup>rd</sup> at hour of 5 is missing. Data was corrected using daily zero information.

### Particulate Matter 2.5 (UG/M3)

Analyzer make / model –Thermo Scientific Series 1405F, S/N: 1405A207691003

The Teom unit was working well throughout the month. A routine Teom audit was performed on February 9<sup>th</sup>. Data on February 23<sup>rd</sup> at hour of 5 is missing. Data was corrected using Alberta air quality guideline. If the data was between 0 to –3, the data was corrected to 0. If the data was below –3, the data was invalidated. 2 hours of data were invalidated as the data were below –3 ug/m<sup>3</sup>.

# General Monthly Summary

## AQM STATION – LICA – St. Lina

### Temperature (Degree C)

Analyzer make / model – Met One 060

No operational issue was observed during the month. Data on February 23<sup>rd</sup> at hour of 5 is missing.

### Barometric Pressure (Millibar)

Analyzer make / model - Met One 092

No operational issue was observed during this month. Data on February 23<sup>rd</sup> at hour of 5 is missing.

### Relative Humidity (%)

Analyzer make / model - Met One 083

No operational issue was observed during this month. Data on February 23<sup>rd</sup> at hour of 5 is missing.

### Precipitation (MM)

Analyzer make / model - Met One 387

During the site visit on February 8<sup>th</sup>, it was found that the heater for the tipping bucket was not working. We are not sure when the heater failed. Data should be used with caution. A new tipping bucket funnel/heater assembly was installed on March 14<sup>th</sup>. Data on February 23<sup>rd</sup> at hour of 5 is missing.

### Vector Wind Speed (KPH) & Vector Wind Direction (DEG)

System make / model – Met 50.5, S/N: H12635

The wind system is reported as vector wind speed and vector wind direction.

The wind system was working well throughout the month. Maximum WS data on February 21<sup>st</sup> at hour of 16 was invalidated due to a small power outage. Data on February 23<sup>rd</sup> at hour of 5 is missing.

## General Monthly Summary

### **AQM STATION – LICA – St. Lina**

#### **Datalogger**

System make / model - ESC 8832, S/N: AO717

Software make/version - ESC v 5.51a

The station is connected to a modem to allow for daily polling of the station.

#### **Trailer**

No issue was observed this month. The manifold was cleaned on February 9<sup>th</sup>.

#### **Air Quality Index (AQI)**

The AQI data was adjusted to reflect regular monthly and daily calibrations, maintenance, and downtime. All AQI values for recorded in February 2012 were within the Good range. The highest hourly concentration of Ozone was 40 ppb and an AQI value of 20, on February 22<sup>nd</sup> and 29<sup>th</sup>, in various hours. The highest AQI value of PM2.5 was 18, on February 19<sup>th</sup>, hour of 3.



# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Air Quality Index



# Sulphur Dioxide

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -ST. LINA**  
**FEBRUARY 2012**  
**SULPHUR DIOXIDE (SO<sub>2</sub>) 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.		
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	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	2	1	0	0	0	0	0	0	0	3	0.4	24	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
3	0	0	0	0	0	0	0	0	0	0	0	1	2	2	3	1	0	0	0	0	0	0	0	0	0	3	0.4	24	
4	0	0	0	0	0	0	0	0	0	1	2	1	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	0	0	3	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3	0.2	24	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
7	0	0	0	0	0	0	1	2	4	2	1	1	1	1	4	2	0	0	0	0	0	0	0	1	1	4	1.0	24	
8	1	0	1	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	M	0	0	1	2	2	0.3	23	
9	2	1	1	0	0	0	0	0	0	0	0	0	C	0	0	0	0	0	0	0	0	0	0	1	1	2	0.3	24	
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.0	24	
11	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	2	0.2	24	
12	0	1	1	1	0	0	0	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1.0	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	1	0.2	24	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24		
18	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
19	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
20	0	0	0	0	0	0	1	1	1	2	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	4	0.7	24	
21	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.2	24	
22	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.3	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	23	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
25	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
27	0	0	1	1	1	1	1	1	1	1	2	2	3	2	2	2	1	2	1	0	0	0	0	0	0	3	1.1	24	
28	0	1	0	0	1	1	1	1	1	1	1	1	2	4	1	0	0	1	0	0	2	2	1	1	0	4	1.0	24	
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.0	24	
HOURLY MAX	2	1	1	1	1	1	1	2	4	4	3	2	3	4	4	3	2	2	2	2	2	2	2	1	2				
HOURLY AVG	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.5	0.4	0.4	0.6	0.6	0.4	0.2	0.3	0.1	0.2	0.1	0.1	0.3	0.2					

**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

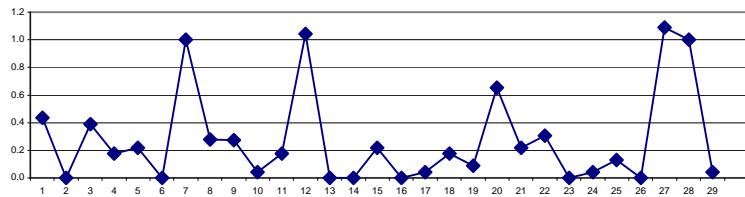
OBJECTIVE LIMIT:

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

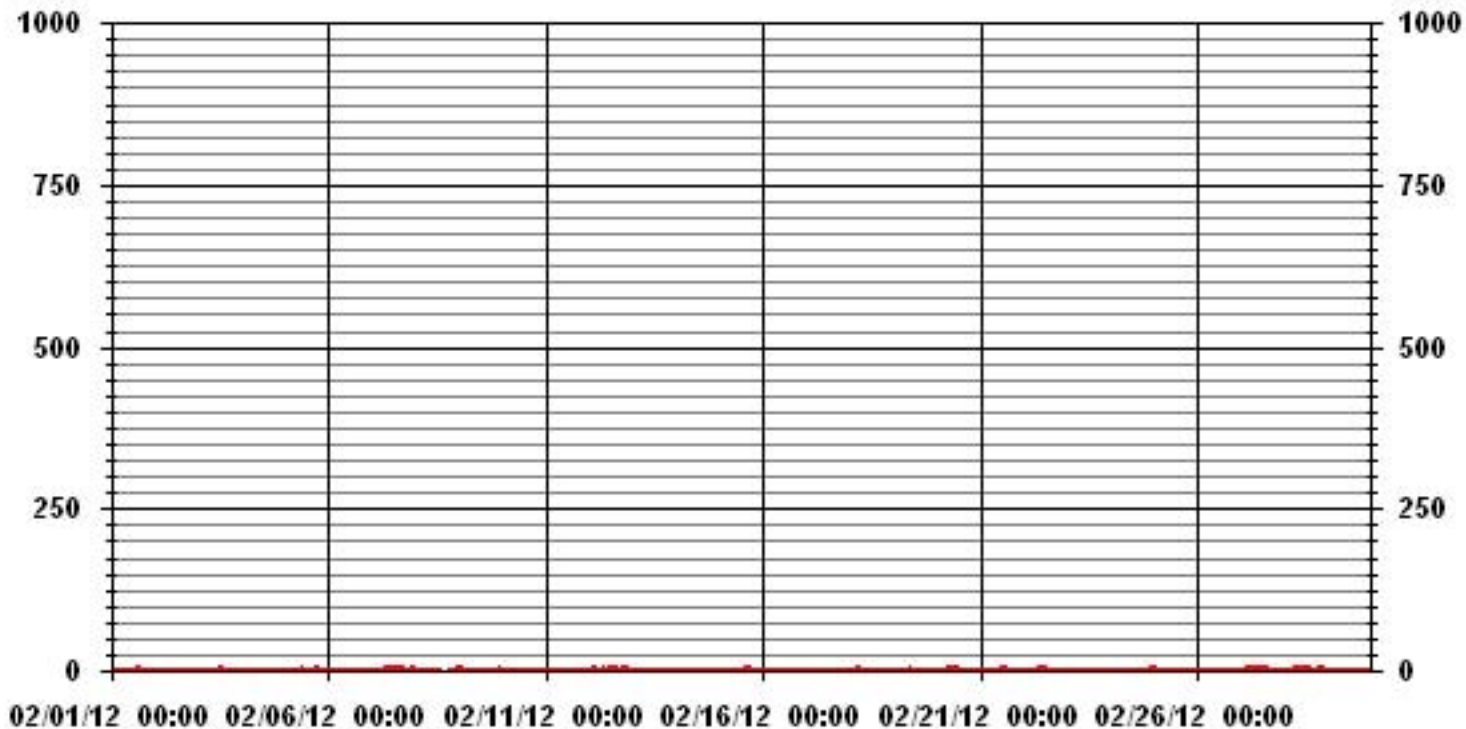
**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	131					
MAXIMUM 1-HR AVERAGE:	4	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	1.1	PPB			ON DAY(S)	27
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	694 HRS		
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.7 %		
STANDARD DEVIATION:	0.64		MONTHLY AVERAGE:	0.28 PPB		

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## SULPHUR DIOXIDE MAX instantaneous maximum in ppt

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	0:00	MAX.	AVG.	RDGS.	
DAY																													
1		1	1	1	1	1	1	0	1	0	1	0	1	1	2	5	5	3	2	2	0	0	0	<b>IZS</b>	1	1	5	1.3	24
2		1	1	1	1	1	1	0	0	0	0	0	0	0	2	0	1	0	1	1	1	1	<b>IZS</b>	1	1	1	1	0.6	24
3		1	1	1	1	0	0	0	0	1	1	2	2	3	4	5	3	1	1	1	1	<b>IZS</b>	1	1	1	1	5	1.4	24
4		1	1	1	1	1	1	1	1	1	3	2	2	1	1	1	1	1	1	1	<b>IZS</b>	1	1	1	1	1	3	1.2	24
5		1	1	1	1	1	1	1	1	1	5	2	1	0	0	0	3	3	<b>IZS</b>	<b>IZS</b>	1	1	1	1	1	1	5	1.2	24
6		1	1	1	0	0	0	0	0	0	0	1	0	1	1	0	0	<b>IZS</b>	<b>IZS</b>	1	1	1	1	1	1	1	1	0.5	24
7		1	1	1	1	1	1	2	3	5	4	2	2	2	2	<b>9</b>	3	<b>IZS</b>	2	2	1	1	1	1	2	2	<b>9</b>	2.2	24
8		2	1	1	1	1	1	1	1	1	1	1	1	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	1	<b>M</b>	<b>M</b>	1	3	3	3	1.3	22	
9		2	2	2	1	1	1	0	0	0	<b>C</b>	<b>C</b>	<b>C</b>	1	<b>IZS</b>	1	1	1	1	1	1	1	1	2	2	2	1.1	24	
10		1	1	1	1	1	1	1	1	1	2	1	1	1	<b>IZS</b>	1	1	1	1	1	1	1	1	2	1	1	2	1.1	24
11		1	1	1	1	1	1	1	1	1	1	1	4	<b>IZS</b>	3	2	1	1	1	1	1	1	1	1	1	1	4	1.3	24
12		1	2	2	2	1	1	1	1	1	2	3	<b>IZS</b>	2	3	3	2	2	3	3	3	3	3	2	1	3	2.0	24	
13		1	1	1	1	1	1	0	1	1	<b>IZS</b>	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	24
14		0	0	0	0	0	0	0	0	1	<b>IZS</b>	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0.2	24
15		0	0	0	0	0	0	0	<b>IZS</b>	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	2	0.8	24
16		1	1	1	1	1	1	1	<b>IZS</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
17		0	0	0	0	0	0	<b>IZS</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	0.8	24	
18		1	1	1	1	2	<b>IZS</b>	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	24
19		1	1	1	1	<b>IZS</b>	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24
20		1	1	1	<b>IZS</b>	1	2	2	2	5	6	4	3	2	1	1	0	1	1	1	1	1	1	1	1	1	6	1.7	24
21		1	1	<b>IZS</b>	1	1	1	1	1	1	1	2	1	2	2	2	2	<b>P</b>	1	1	1	1	1	1	1	1	2	1.2	23
22		1	<b>IZS</b>	1	1	1	1	2	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2	24
23		<b>IZS</b>	0	1	0	0	<b>N</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>IZS</b>	1	0.0	23
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	<b>IZS</b>	2	2	0.2	24
25		2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	<b>IZS</b>	1	1	2	1.1	24
26		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	<b>IZS</b>	1	1	1	1	1.0	24
27		1	1	1	2	2	2	2	2	2	2	3	3	5	4	3	3	2	2	2	<b>IZS</b>	1	1	1	1	1	5	2.1	24
28		2	1	1	1	2	2	2	1	2	1	2	2	6	6	3	1	1	2	<b>IZS</b>	3	3	2	2	1	6	2.1	24	
29		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	<b>IZS</b>	1	1	1	1	1	1	1	1	1	1.0	24
HOURLY MAX		2	2	2	2	2	2	3	5	6	4	4	6	6	9	5	3	3	3	3	3	3	3	3	3	3			
HOURLY AVG		1.0	0.9	1.0	0.9	0.9	0.9	0.8	1.1	1.4	1.4	1.3	1.4	1.4	1.6	1.1	1.0	1.2	1.0	1.0	1.0	1.0	1.0	1.1	1.1				

**STATUS FLAG CODES**

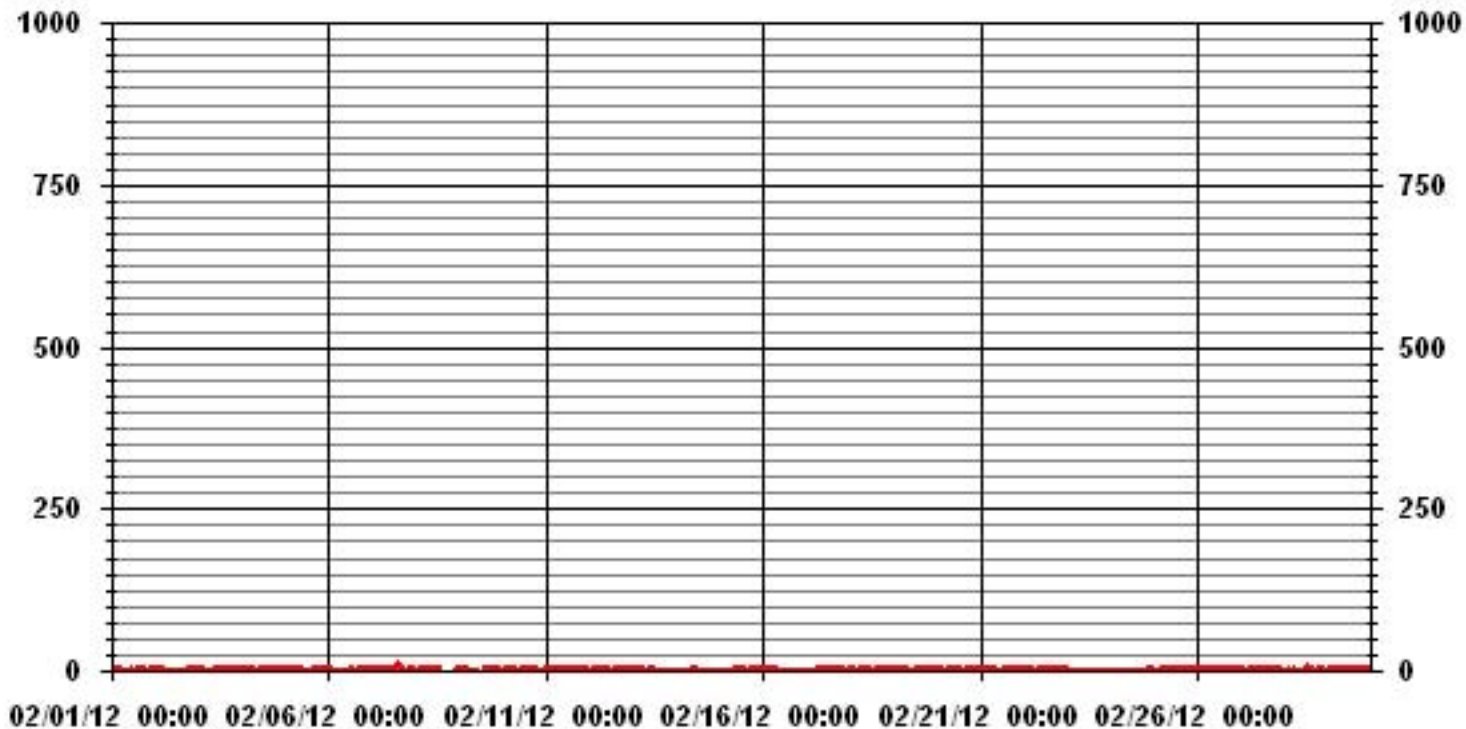
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	516					
MAXIMUM INSTANTANEOUS VALUE:	9	PPB	@ HOUR(S)	14	ON DAY(S)	7
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	692	HRS	
MONTHLY CALIBRATION TIME:	8	HRS				
STANDARD DEVIATION:	0.97					



### 01 Hour Averages



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

February 2012

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	5.91	6.06	8.04	5.46	3.49	2.88	2.27	1.82	3.64	5.00	5.31	5.00	7.28	10.92	17.14	9.71	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	5.91	6.06	8.04	5.46	3.49	2.88	2.27	1.82	3.64	5.00	5.31	5.00	7.28	10.92	17.14	9.71	

Calm : .00 %

Total # Operational Hours : 659

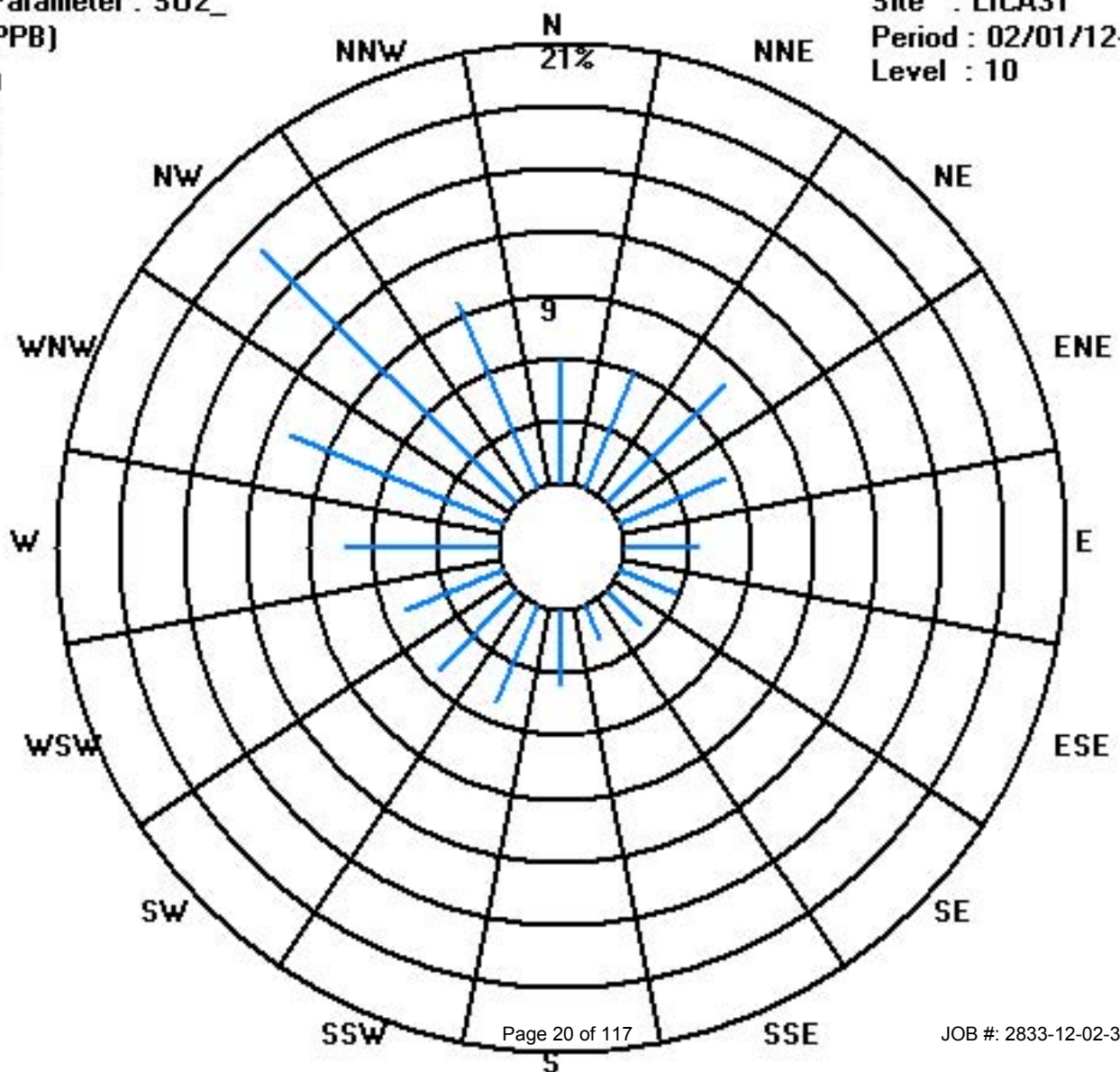
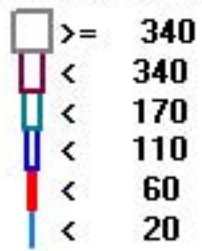
Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	39	40	53	36	23	19	15	12	24	33	35	33	48	72	113	64	659
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	39	40	53	36	23	19	15	12	24	33	35	33	48	72	113	64	

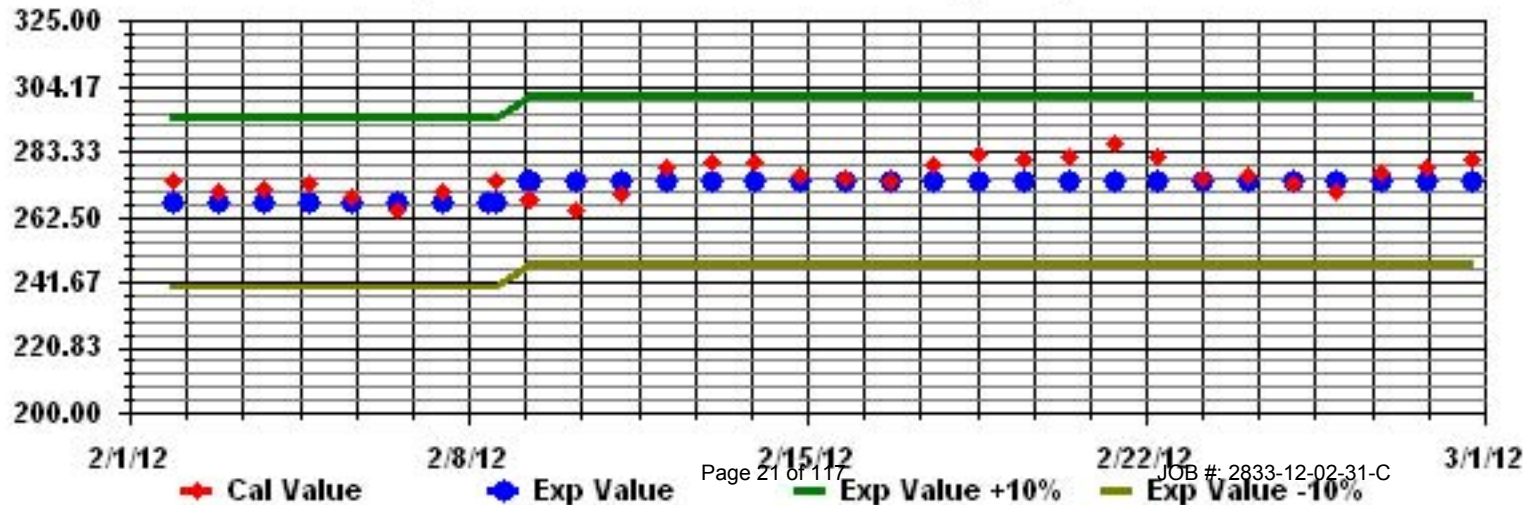
Calm : .00 %

Total # Operational Hours : 659

Class Limits (PPB)



Calibration Graph for Site: LICA31 Parameter: S02\_ Sequence: S02 Phase: SPAll



# Hydrogen Sulphide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## HYDROGEN SULPHIDE (H<sub>2</sub>S) 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	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	0:00	MAX.	AVG.	RDGS.		
DAY	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	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	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	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	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	24
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
7	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0.2	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	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	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	24
11	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.4	24
12	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	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	24
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	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	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	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	24
19	0	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	0.7	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	24
22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0.0	23
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	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	24
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0.8	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	0.2	24
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0.7	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	1	1	
HOURLY AVG		0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2				

### STATUS FLAG CODES

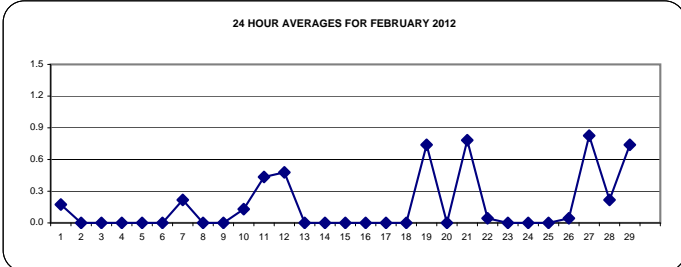
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

### OBJECTIVE LIMIT:

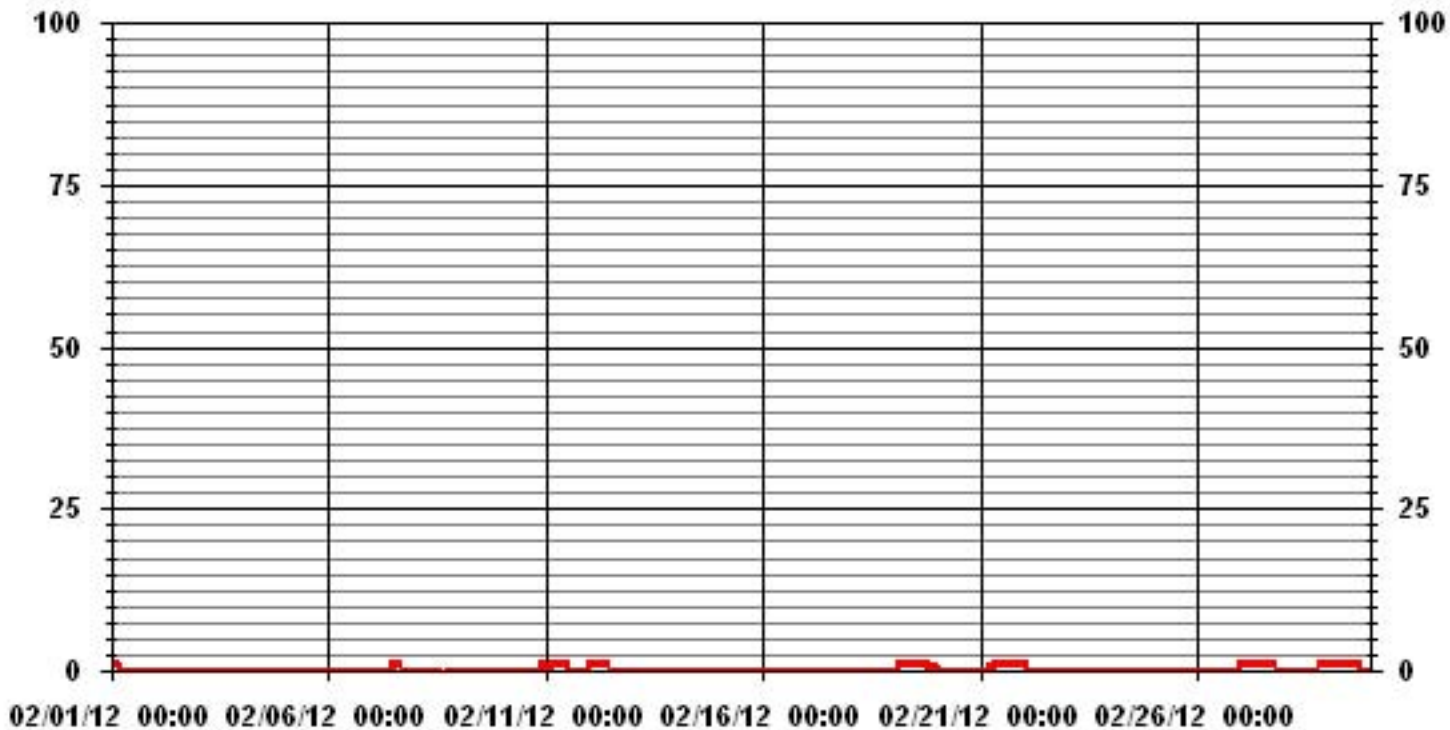
ALBERTA ENVIRONMENT: 1-HR 10 PPB 24-HR 3 PPB

### MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	111
MAXIMUM 1-HR AVERAGE:	1 PPB @ HOUR(S) VAR ON DAY(S) VAR
MAXIMUM 24-HR AVERAGE:	0.8 PPB ON DAY(S) 21, 27 VAR-VARIOUS
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	695 HRS
AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	0.37
MONTHLY AVERAGE:	0.17 PPB



### 01 Hour Averages



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## HYDROGEN SULPHIDE MAX instantaneous maximum 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	0:00	MAX.	AVG.	RDGS.	
DAY																													
1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.7	24
2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
6		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
7		0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.3	24
8		0	0	0	0	0	0	0	0	0	0	1	0	0	C	C	C	C	C	C	C	1	1	1	0	0	1	0.2	24
9		0	0	0	0	0	0	0	0	0	0	C	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	1	0.4	24
11		1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0.7	24
12		1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0.8	24
13		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
14		1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
15		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
16		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
17		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
18		0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24
19		1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
20		1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
21		1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1.0	23
22		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.1	23
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
27		1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	0	0	0	0	0	0	2	1.1	24
28		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1.0	24
29		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.7	24
HOURLY MAX		1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	1	1	1	1	1	1	1			
HOURLY AVG		0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3			

**STATUS FLAG CODES**

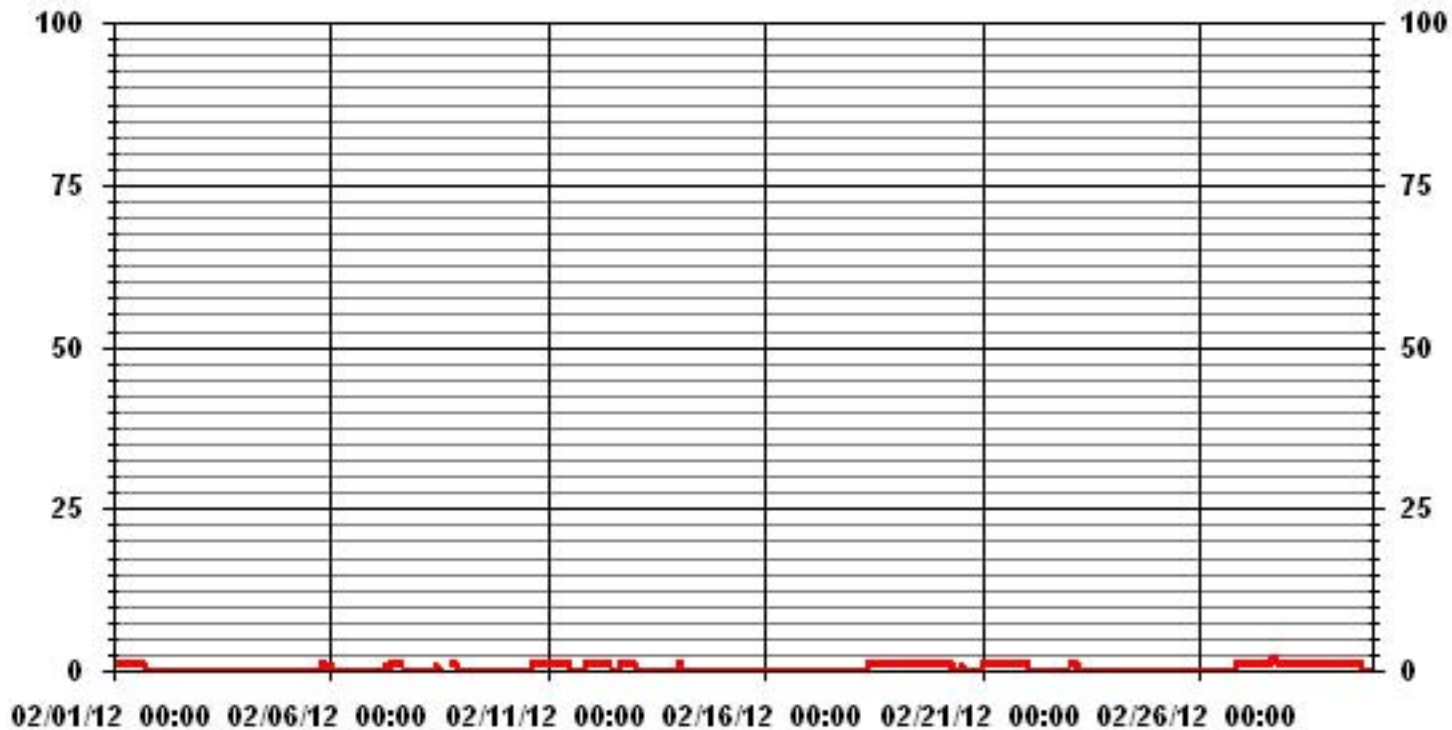
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	215					
MAXIMUM INSTANTANEOUS VALUE:	2	PPB	@ HOUR(S)	VAR	ON DAY(S)	27
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	694	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	0.48					



### 01 Hour Averages



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

February 2012

Distribution By % Of Samples

Logger Id : 31  
Site Name : LICA31  
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	5.90	6.05	8.01	5.44	3.47	2.87	2.42	1.81	3.63	4.99	5.29	4.99	7.26	10.89	17.24	9.68	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	5.90	6.05	8.01	5.44	3.47	2.87	2.42	1.81	3.63	4.99	5.29	4.99	7.26	10.89	17.24	9.68	

Calm : .00 %

Total # Operational Hours : 661

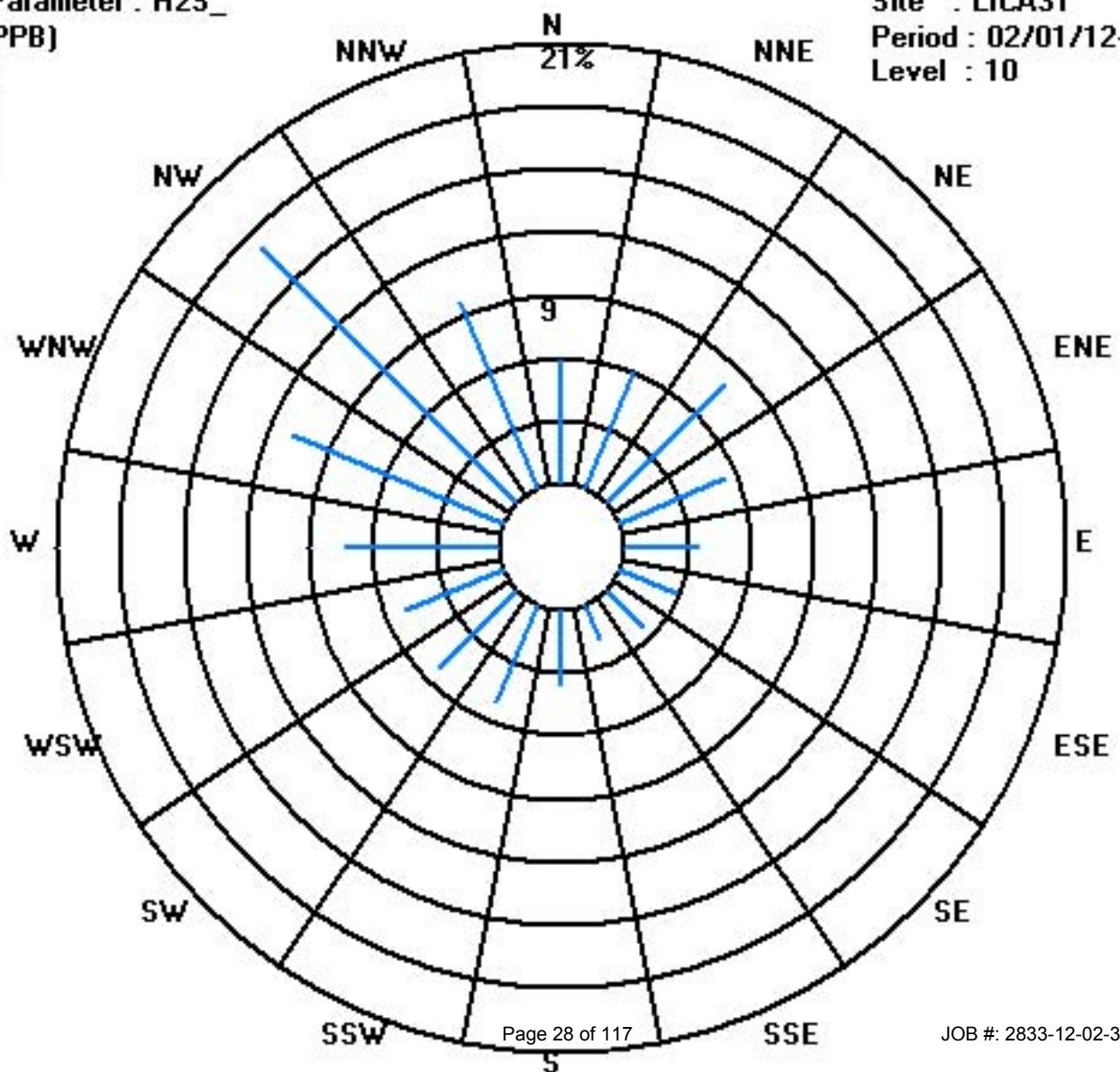
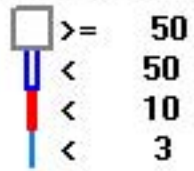
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	39	40	53	36	23	19	16	12	24	33	35	33	48	72	114	64	661
< 10																	
< 50																	
>= 50																	
Totals	39	40	53	36	23	19	16	12	24	33	35	33	48	72	114	64	

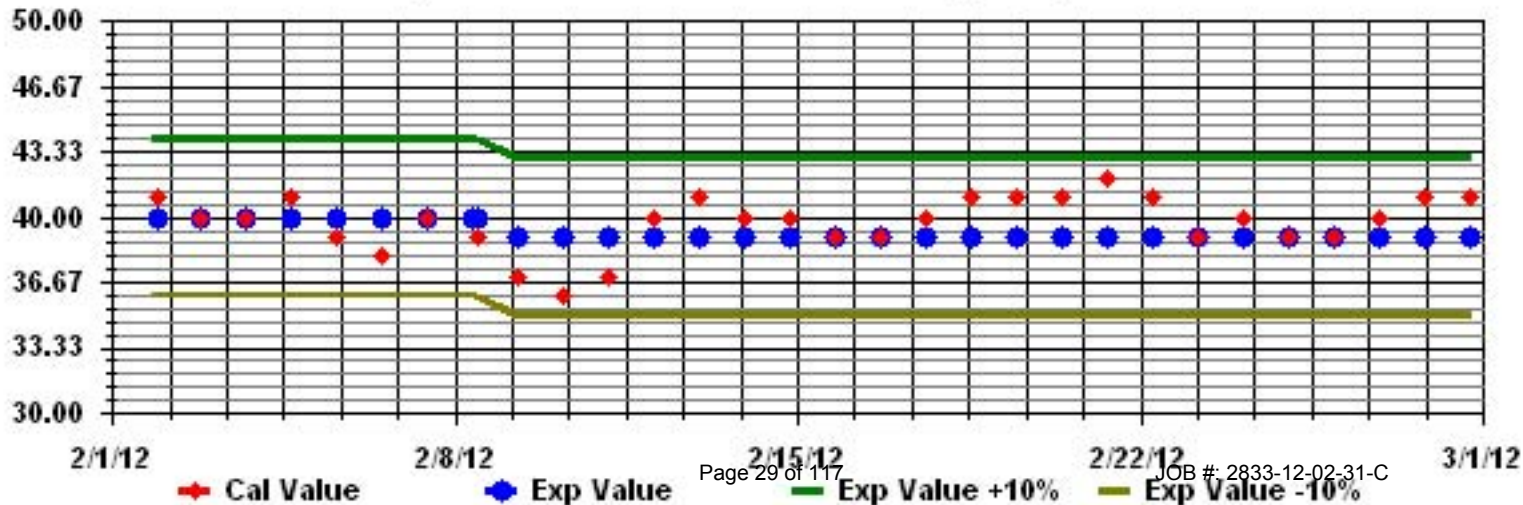
Calm : .00 %

Total # Operational Hours : 661

Class Limits (PPB)



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



# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

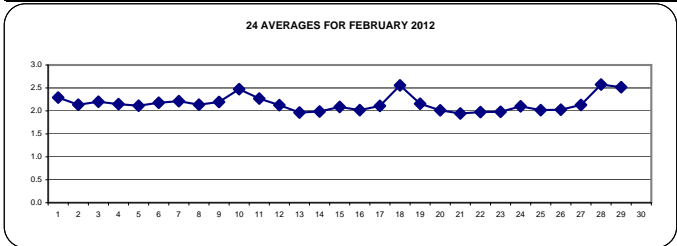
FEBRUARY 2012

TOTAL HYDROCARBONS 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					
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	0:00	MAX.	AVG.	RDGS.			
1		2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.4	2.4	2.3	24		
2		2	2	2	2	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.3	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	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.3	2.2	24		
4		2.1	2.1	2.1	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	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.4	24	
5		2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.4	24	
6		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.1	2.1	2.1	2.2	2.3	2.4	2.4	2.2	2.4	24	
7		2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.2	24	
8		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.4	24	
9		2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	C	C	C	C	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.2	2.4	24	
10		2.4	2.4	2.4	2.3	2.3	2.4	2.5	2.4	2.4	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5	2.8	2.8	2.7	2.6	2.7	2.7	2.8	2.5	24	
11		2.8	2.7	2.7	2.6	2.5	2.4	2.3	2.4	2.4	2.4	2.3	2.2	2.2	2.2	2	2	2	2	2	2.1	2.1	2.2	2.1	2	2	2.8	2.3	2.4	24	
12		2	2	2	1.9	1.9	1.9	2	2	2	2	2	2	2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.4	2.4	2.3	2.2	2.4	2.1	2.4	24	
13		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	1.9	2.1	2.0	24	
14		1.9	1.9	1.9	1.9	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.1	2.0	24	
15		2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.4	24	
16		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.0	24	
17		2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24	
18		2.1	2.1	2.2	2.4	2.5	2.5	2.6	2.9	3.3	3.5	3.2	2.9	2.7	2.6	2.6	2.6	2.5	2.4	2.3	2.4	2.3	2.3	2.2	2.3	3.5	2.6	2.4	24		
19		2.3	2.3	2.2	2.2	2.3	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	2.1	2.1	2.3	2.2	2.4	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	2.1	2.0	24	
21		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	1.9	2.4	24	
22		1.9	2	2	2	2	2	2	2	2	2	1.9	1.9	1.9	1.9	1.9	2	2	2	2	2	2	2	2	2	2	2.0	2.0	2.4	24	
23		2.1	1.9	1.9	1.9	1.9	N	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.0	2.0	2.3	24	
24		2.1	2	2.1	2	2.1	2.1	2.1	2.1	2.1	2.1	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.4	24	
25		2.1	2.1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.1	2.1	2.1	2.1	1.9	2	2.1	2.0	2.4	24	
26		2	2	2	2	2	2	2	2	2	2.1	2.2	2.1	2.1	2	2	2	2	2	2	2	2	2	2	2	2	2.2	2.0	2.4	24	
27		2	2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	24
28		2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.8	2.9	2.9	3.3	3.4	3.4	3.3	3.1	3.4	2.6	2.4	24	
29		3.1	2.9	2.7	3	3	3.1	3.1	3	3.2	3	2.7	2.5	2.3	2.1	2	2	2	2	2	2	2	2	2	2.1	2.1	3.2	2.5	2.4	24	
HOURLY MAX		3.1	2.9	2.7	3.0	3.0	3.1	3.1	3.0	3.2	3.3	3.5	3.2	2.9	2.7	2.6	2.6	2.8	2.9	2.8	3.3	3.4	3.4	3.3	3.1						
HOURLY AVG		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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2					

STATUS FLAG CODES

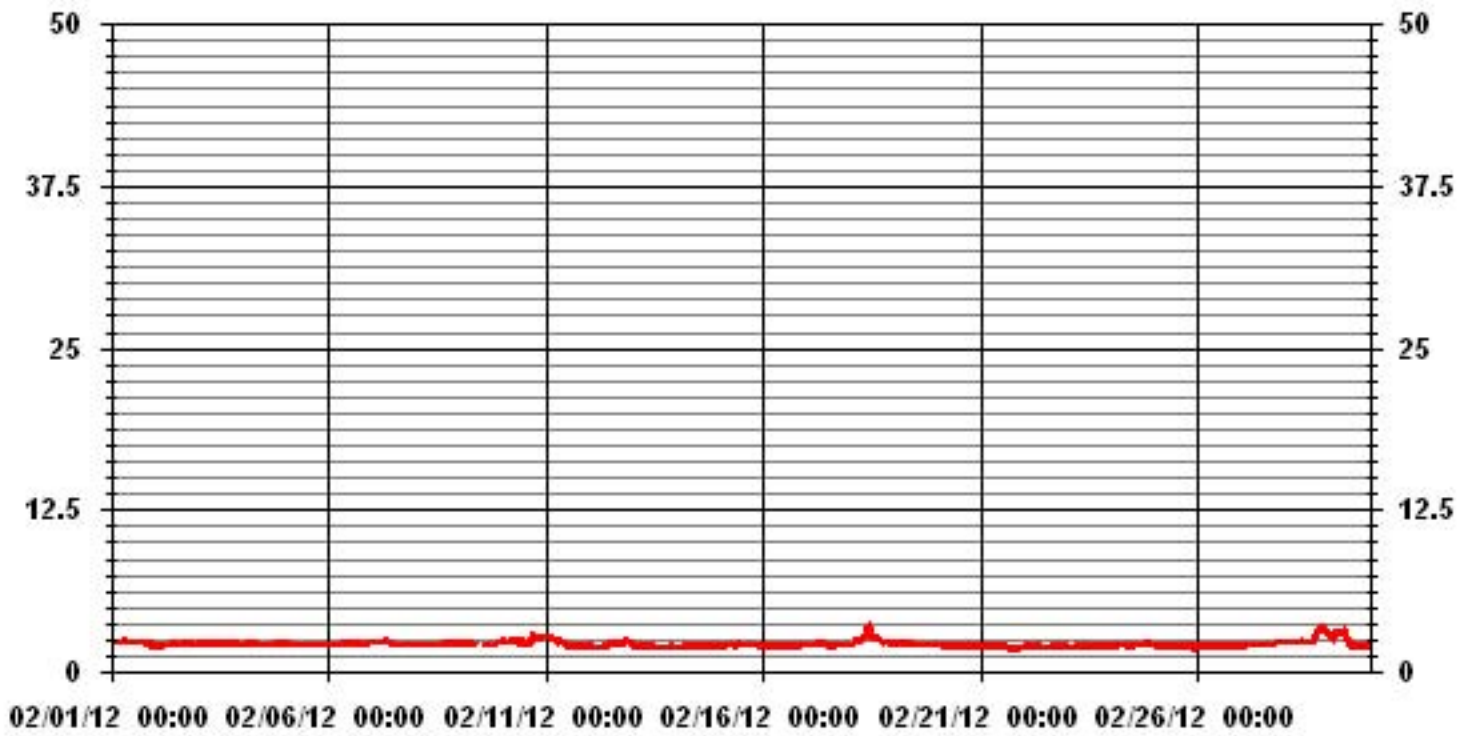
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	661
MAXIMUM 1-HR AVERAGE:	3.5 PPM @ HOUR(S) 10 ON DAY(S) 18
MAXIMUM 24-HR AVERAGE:	2.6 PPM ON DAY(S) 18, 28
	VAR- VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.24
OPERATIONAL TIME:	695 HRS
AMD OPERATION UPTIME:	99.9 %
MONTHLY AVERAGE:	2.16 PPM

### 01 Hour Averages



— LICA31 THC PPM

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## TOTAL HYDROCARBONS MAX instantaneous maximum in ppr

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	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		2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.4	2.9	2.4	2.3	2.2	2.2	<b>IZS</b>	2.1	2.9	2.4	24		
2		2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	<b>IZS</b>	2.1	2.2	2.3	24		
3		2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.3	2.2	2.2	2.2	<b>IZS</b>	2.2	2.2	2.2	2.4	2.2	24		
4		2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	<b>IZS</b>	2.2	2.2	2.2	2.2	2.3	24		
5		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	<b>IZS</b>	2.1	2.1	2.1	2.1	2.1	2.1	2.2	24		
6		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.5	2.6	2.5	2.4	2.6	2.7	2.9	<b>IZS</b>	2.1	2.8	2.2	2.3	2.4	2.4	2.9	2.3	24	
7		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.2	2.2	2.1	2.1	2.2	<b>IZS</b>	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	24	
8		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	<b>IZS</b>	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.2	2.3	2.1	24		
9		2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>IZS</b>	2.3	2.6	2.2	2.2	2.4	2.1	2.3	2.3	2.5	2.6	2.3	24		
10		3.1	3	3.1	2.6	2.4	2.5	2.6	2.8	2.4	2.4	2.4	2.4	<b>IZS</b>	2.3	2.6	2.7	2.9	2.9	2.7	2.6	2.8	2.8	2.8	3.1	2.7	24		
11		2.8	2.8	2.7	2.7	2.5	2.5	2.4	2.4	2.5	2.5	2.3	2.3	<b>IZS</b>	2.1	2.1	2	2	2	2.1	2.2	2.2	2.1	2.1	2	2.8	2.3	24	
12		2	2	2	2	2	2	2	2.3	2	2	2.1	<b>IZS</b>	2.2	2.2	2.2	2.2	2.3	2.5	2.4	2.4	2.4	2.4	2.3	2.5	2.2	24		
13		2.2	2.1	2.1	2.1	2.1	2.1	2	2	2	2	<b>IZS</b>	2	2	2	1.9	2	2	2	2	2	2	2	2	2	2.2	2.0	24	
14		2	1.9	2	2	2	2	2	2	2	<b>IZS</b>	2	2	2	2	2	2	2	2	2.1	2.1	2.1	2	2	2	2.1	2.0	24	
15		2	2	2.1	2.1	2.1	2.2	2.1	2.2	<b>IZS</b>	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	2	2.2	2.1	24	
16		2	2.1	2.1	2.1	2.1	2.1	2	<b>IZS</b>	2.1	2.1	2.1	2.1	2	2	2	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	24	
17		2.1	2.1	2.1	2.1	2.2	2.2	<b>IZS</b>	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24	
18		2.1	2.1	2.3	2.5	2.5	<b>IZS</b>	2.6	2.7	3	3.9	4	3.5	3	2.9	2.7	2.6	2.6	2.5	2.5	2.8	2.4	2.7	2.7	3.3	4	2.8	24	
19		2.6	2.5	2.3	2.2	<b>IZS</b>	2.3	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	2.6	2.2	24	
20		2.1	2.1	2.1	<b>IZS</b>	2	2	2.1	2.1	2	2	2	2	2	2	2	2	2	2	2	2	2.6	2	2	2	2.6	2.0	24	
21		2	2.1	<b>IZS</b>	2	2	2	2	2	2	2	2	2	2	2	2	2	<b>P</b>	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.0	23
22		2	<b>IZS</b>	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.1	2.1	2.0	24
23		<b>IZS</b>	1.9	1.9	2	2	<b>N</b>	2	2	2	2	2	2	2	2	2	2	2	2.3	2	2	2	2.5	2.5	<b>IZS</b>	2.5	2.1	23	
24		2.4	2.1	2.2	2.2	2.3	2.3	2.2	2.2	2.3	2.1	2	2	2.2	2.4	2.5	2.5	2.7	3	3.4	2.9	2.8	2.6	<b>IZS</b>	2.7	3.4	2.4	24	
25		2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.2	2.1	2	2.2	2	2	2.1	2	2.1	2.1	2.1	2.1	2.1	2.1	<b>IZS</b>	2	2	2.4	2.1	24	
26		2	2	2	2	2	2	2	2.1	2.5	2.5	2.2	2.4	2.1	2.2	2.9	2.5	2	2	2	2.1	<b>IZS</b>	2	2.1	2.1	2.9	2.2	24	
27		2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	<b>IZS</b>	2.3	2.3	2.3	2.4	2.4	2.2	24		
28		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	2.4	2.3	2.5	3.4	3.5	<b>IZS</b>	3.4	3.4	3.5	3.5	3.2	3.5	2.7	24	
29		<b>4.2</b>	3.4	3	3.7	3.4	3.6	3.4	3.4	3.3	3.2	2.8	2.7	2.5	2.1	2.1	2	2.1	<b>IZS</b>	2	2.1	2.1	2.1	2.1	2.1	<b>4.2</b>	2.8	24	
HOURLY MAX		4	3	3	4	3	4	3	3	3	4	4	4	3	3	3	3	3	4	3	3	3	4	4	3				
HOURLY AVG		2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.3	2.2	2.3	2.2	2.3		

**STATUS FLAG CODES**

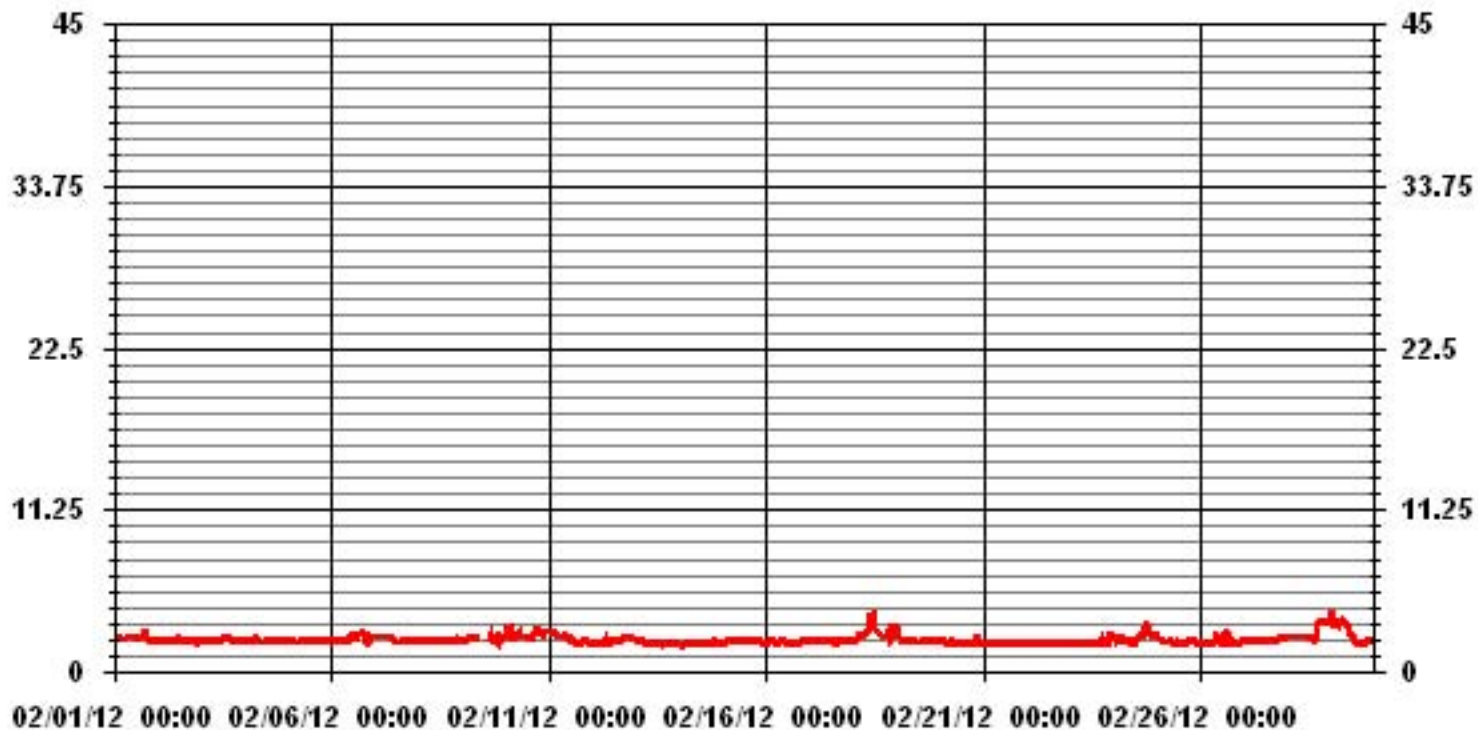
S - OUT OF SERVICE	IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE
BB - BELOW BACKGROUND OF 1.5 PPM	

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	659					
MAXIMUM INSTANTANEOUS VALUE:	4.2	PPM	@ HOUR(S)	0	ON DAY(S)	29
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	694 HRS		
MONTHLY CALIBRATION TIME:	5	HRS				
STANDARD DEVIATION:	0.32					



### 01 Hour Averages



— LICA31 THCMAX PPM

LICA31  
 THC / WDR Joint Frequency Distribution (Percent)

February 2012

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 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	5.90	6.05	7.86	4.99	2.57	2.57	1.21	1.81	3.63	4.99	5.29	4.99	7.56	10.89	17.54	9.68	97.57
< 10.0	.00	.00	.15	.30	.90	.30	.75	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.42
< 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	5.90	6.05	8.01	5.29	3.47	2.87	1.96	1.81	3.63	4.99	5.29	4.99	7.56	10.89	17.54	9.68	

Calm : .00 %

Total # Operational Hours : 661

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	39	40	52	33	17	17	8	12	24	33	35	33	50	72	116	64	645
< 10.0			1	2	6	2	5										16
< 50.0																	
>= 50.0																	
Totals	39	40	53	35	23	19	13	12	24	33	35	33	50	72	116	64	

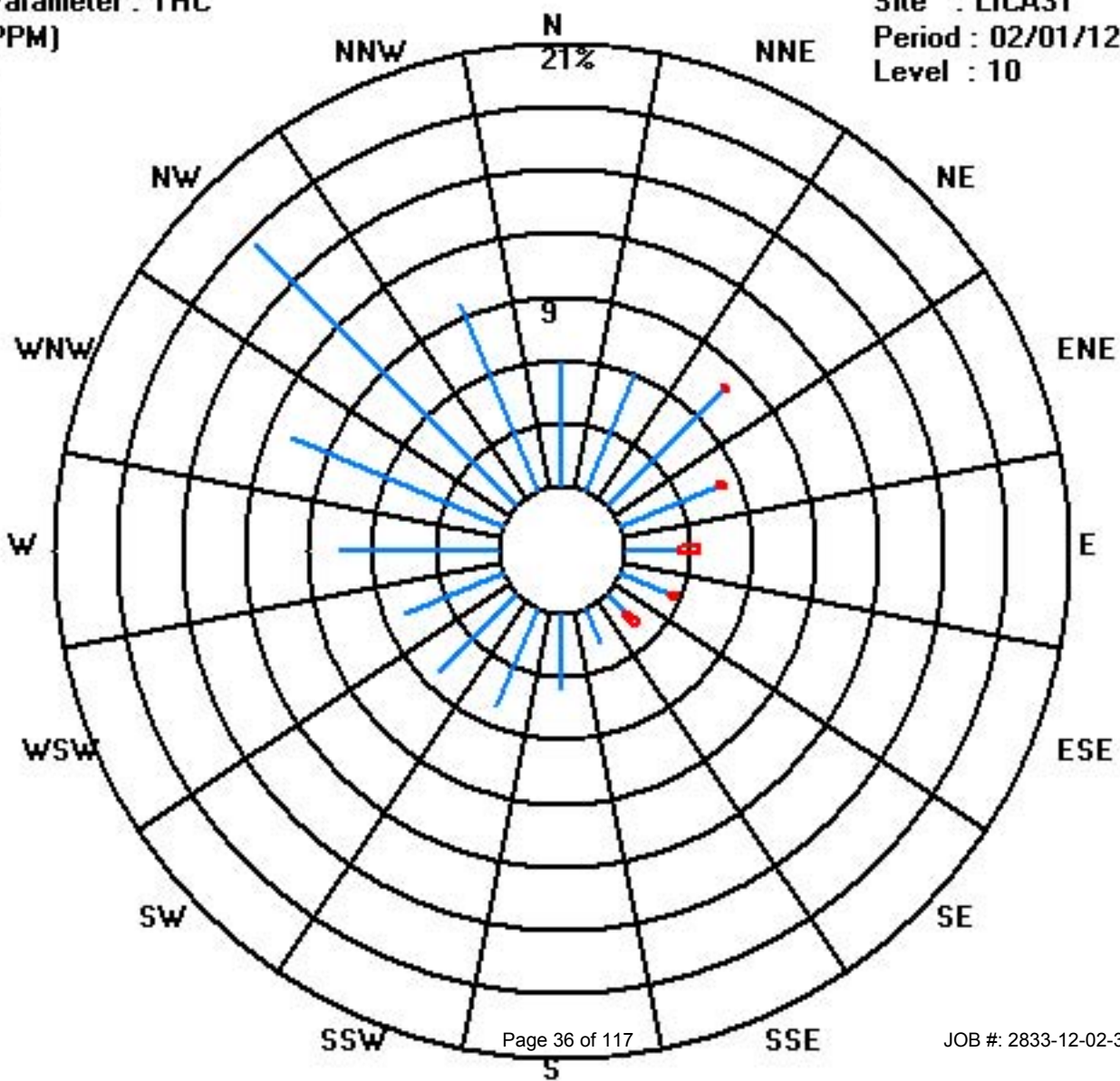
Calm : .00 %

Total # Operational Hours : 661

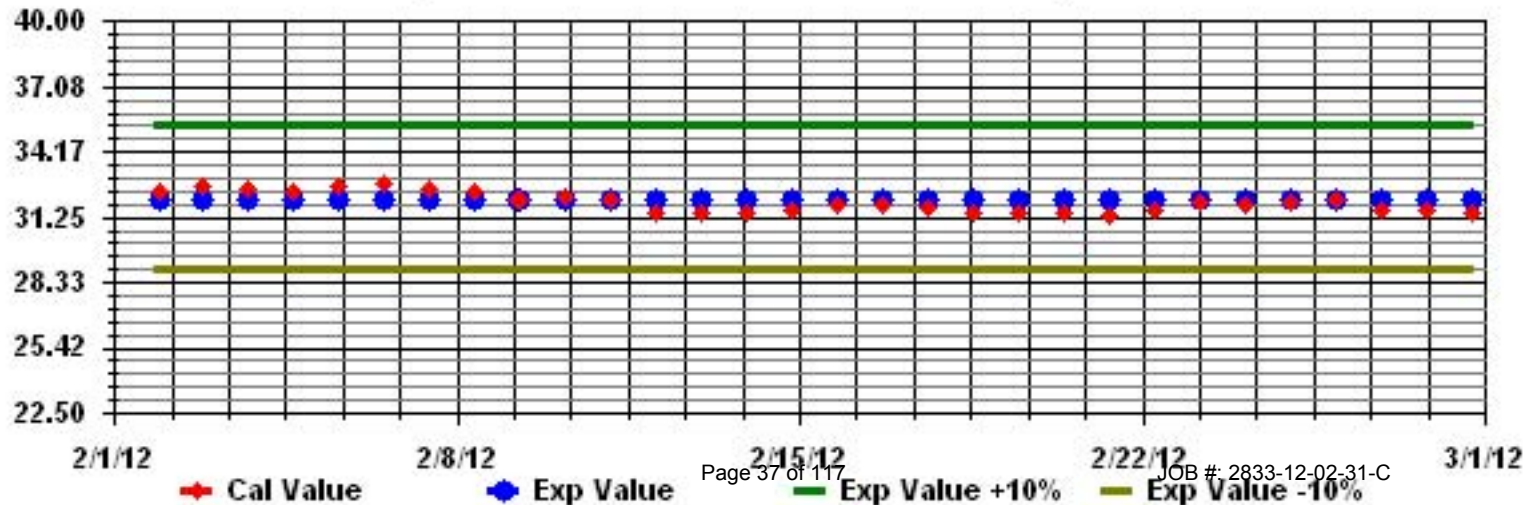
Class Limits (PPM)

Period : 02/01/12-02/29/12

Level : 10



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



# Ozone

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

OZONE (O<sub>3</sub>) hourly averages in ppb

MST

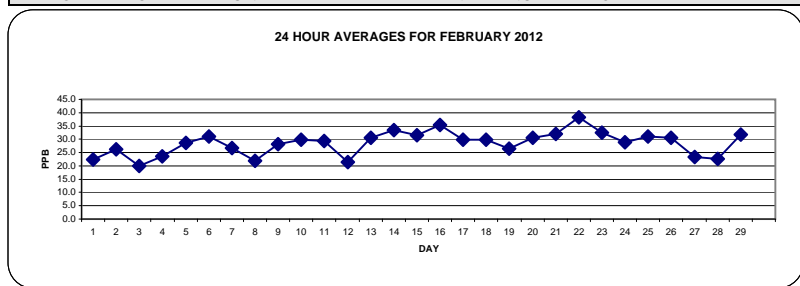
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY																												
1	7	12	17	17	19	22	22	21	21	22	23	23	25	26	27	28	26	26	24	24	27	27	IZS	29	29	22.4	24	
2	30	31	30	29	29	28	25	26	25	24	24	23	26	29	28	28	25	24	24	24	25	IZS	24	24	31	26.3	24	
3	23	22	21	20	19	19	19	19	18	18	18	21	22	22	23	22	19	19	18	17	IZS	18	20	23	23	20.0	24	
4	25	25	25	24	24	24	24	23	23	24	25	25	26	28	28	28	25	23	21	IZS	20	18	18	17	28	23.6	24	
5	18	20	21	23	25	24	24	25	25	26	27	30	31	33	33	32	34	35	IZS	33	34	34	35	34	35	28.5	24	
6	33	33	32	34	34	33	32	31	30	30	30	30	31	31	30	30	30	IZS	31	30	31	29	28	29	34	31.0	24	
7	29	28	27	27	27	26	26	24	22	24	26	27	28	28	28	28	IZS	28	28	28	28	27	26	25	29	26.7	24	
8	25	24	24	24	23	22	22	21	20	20	19	20	21	21	21	IZS	22	22	21	M	M	21	22	23	25	21.8	22	
9	25	25	27	27	19	22	24	23	24	C	C	C	C	32	IZS	36	35	34	33	34	30	27	25	36	28.2	24		
10	25	25	26	28	27	26	23	28	32	33	33	33	34	IZS	35	35	32	30	30	30	30	30	30	30	35	29.8	24	
11	30	29	29	28	28	28	28	28	27	27	28	30	IZS	31	33	33	33	32	30	29	29	29	29	29	33	29.4	24	
12	29	28	27	27	26	25	24	23	22	22	20	IZS	21	23	24	25	22	17	13	13	11	13	16	20	29	21.3	24	
13	25	28	28	27	27	26	27	27	27	27	IZS	26	32	34	34	34	33	35	36	35	34	34	34	34	36	30.6	24	
14	36	36	36	35	34	33	32	32	32	IZS	32	33	33	32	32	32	33	33	33	32	33	35	35	34	36	33.4	24	
15	34	34	33	31	30	27	29	28	IZS	27	28	27	31	34	34	35	33	32	32	32	32	33	35	36	36	31.6	24	
16	36	35	35	35	35	34	33	IZS	34	34	35	35	37	38	38	38	38	36	37	36	35	34	34	33	38	35.4	24	
17	32	30	29	28	27	26	IZS	24	24	24	26	30	32	34	36	36	33	30	29	29	32	33	31	29	36	29.7	24	
18	29	31	29	28	27	IZS	26	26	25	24	25	28	30	32	34	33	32	32	33	33	30	33	33	32	34	29.8	24	
19	31	29	20	19	IZS	21	21	23	22	24	28	29	29	30	29	29	28	27	26	31	31	30	28	26	31	26.6	24	
20	26	27	27	IZS	27	28	27	27	27	29	28	29	30	34	32	32	34	35	36	35	35	34	33	32	36	30.6	24	
21	32	31	IZS	33	32	32	33	32	32	32	31	30	29	28	28	30	33	34	34	35	35	34	34	34	35	32.1	24	
22	34	IZS	37	38	38	39	38	38	37	37	37	39	40	40	40	40	40	39	39	38	38	38	37	37	40	38.2	24	
23	IZS	37	35	33	32	N	32	31	31	31	33	34	34	34	35	35	33	32	32	31	30	30	29	IZS	37	32.6	24	
24	27	27	27	27	27	26	26	26	27	27	30	31	32	32	32	33	32	31	30	28	28	IZS	29	33	28.8	24		
25	30	31	31	31	31	32	31	31	31	31	30	31	31	32	32	32	31	31	30	30	31	IZS	31	31	32	31.0	24	
26	31	31	31	31	31	30	31	31	30	30	30	30	30	31	31	31	31	31	31	31	31	IZS	31	30	29	31	30.6	24
27	29	29	26	24	22	20	21	23	24	24	25	25	25	27	26	25	25	24	22	IZS	20	19	17	17	29	23.4	24	
28	16	16	15	15	15	15	15	16	20	23	26	30	31	29	31	33	28	25	IZS	23	24	25	25	26	33	22.7	24	
29	26	27	28	27	26	27	27	26	22	25	28	31	34	37	39	40	40	IZS	39	38	38	37	35	36	40	31.9	24	
HOURLY MAX	36	37	37	38	38	39	38	38	37	37	37	39	40	40	40	40	40	39	39	38	38	38	37	37				
HOURLY AVG	27.6	27.9	27.6	27.5	27.2	26.5	26.5	26.2	26.2	26.6	27.6	28.9	29.8	30.8	31.2	31.9	30.7	29.5	29.3	30.0	29.8	29.0	28.7	28.7				

**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OBJECTIVE LIMIT:

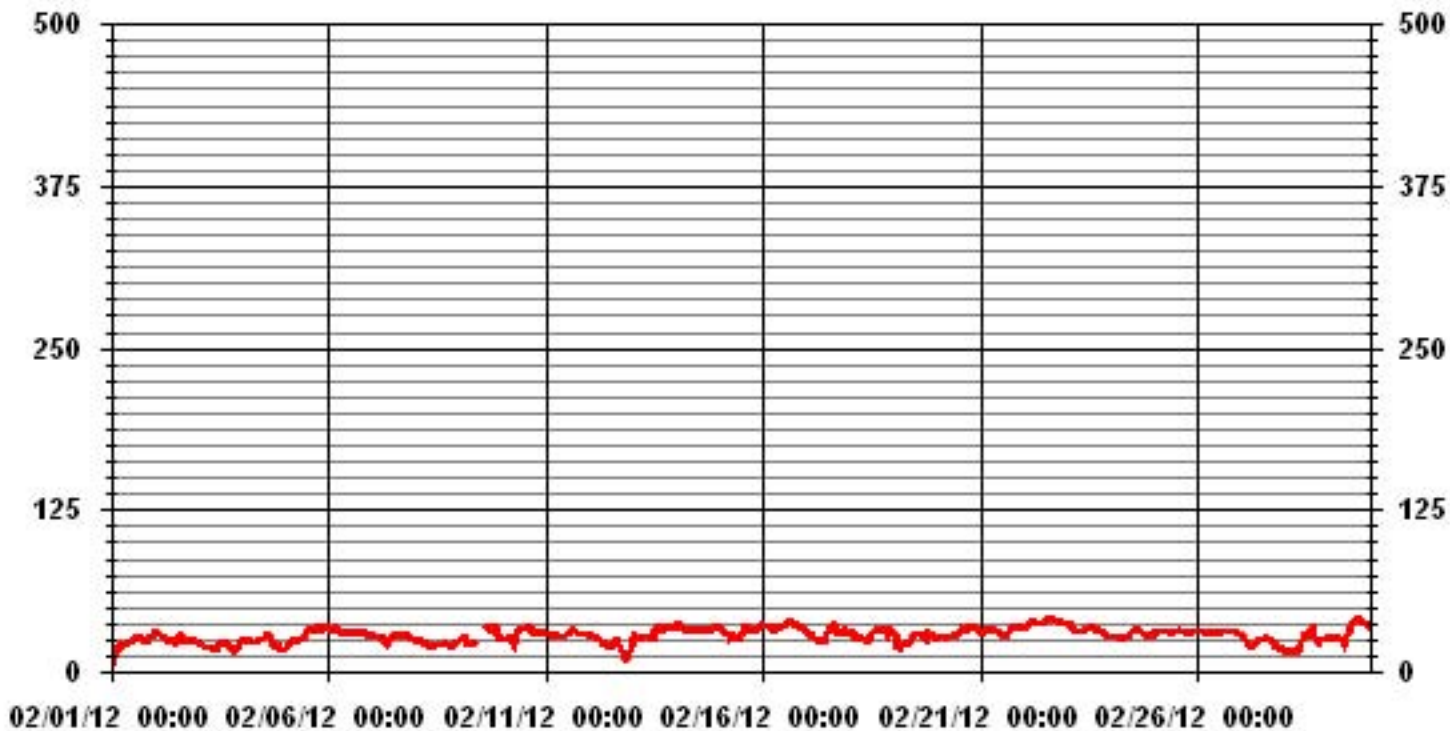
ALBERTA ENVIRONMENT: 1-HR 82 PPB



**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	636				
MAXIMUM 1-HR AVERAGE:	40	PPB	@ HOUR(S)	VAR	ON DAY(S) 22, 29
MAXIMUM 24-HR AVERAGE:	38.2	PPB			ON DAY(S) 22
					VAR-VARIOUS
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	694	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME	99.7	%
STANDARD DEVIATION	5.40		MONTHLY AVERAGE	28.4	PPB

### 01 Hour Averages



— LICA31\_03\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## 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	9	16	18	18	21	22	22	21	22	23	23	24	26	27	29	30	29	29	27	26	28	28	<b>IZS</b>	30	30	23.8	24
2	31	31	31	29	29	29	26	26	25	25	25	24	28	30	30	29	28	24	25	25	26	<b>IZS</b>	25	24	31	27.2	24
3	23	22	21	20	19	19	19	19	18	19	20	22	23	23	23	22	21	19	19	17	<b>IZS</b>	20	22	25	25	20.7	24
4	25	25	25	25	24	25	24	23	24	25	26	26	27	28	28	28	27	23	21	<b>IZS</b>	20	19	18	18	28	24.1	24
5	19	21	22	24	25	24	24	25	25	26	28	31	34	34	34	33	35	36	<b>IZS</b>	34	35	35	35	34	36	29.3	24
6	34	33	33	35	34	33	32	32	30	30	30	31	32	32	31	30	31	<b>IZS</b>	31	31	31	30	29	29	35	31.5	24
7	29	29	28	28	27	27	26	25	23	25	26	27	28	29	29	28	<b>IZS</b>	28	28	28	28	27	26	25	29	27.1	24
8	25	25	24	24	23	22	22	21	20	20	20	20	21	22	22	<b>IZS</b>	23	22	22	M	M	21	23	23	25	22.1	22
9	26	27	27	28	23	24	25	23	25	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	33	<b>IZS</b>	37	36	35	34	34	34	33	28	26	37	29.4	24
10	26	26	27	30	28	27	24	31	33	33	33	33	34	<b>IZS</b>	35	35	33	31	30	30	31	30	31	31	35	30.5	24
11	30	30	29	28	28	28	29	29	27	28	30	33	<b>IZS</b>	32	34	33	33	33	31	30	29	30	30	30	34	30.2	24
12	29	29	27	27	27	26	25	24	22	22	21	<b>IZS</b>	21	23	25	26	24	19	15	13	12	14	19	21	29	22.2	24
13	28	28	28	28	28	27	27	28	27	27	<b>IZS</b>	29	33	34	35	36	34	36	36	36	35	34	34	35	36	31.4	24
14	36	36	36	36	35	33	32	32	32	<b>IZS</b>	33	33	34	32	32	33	33	34	34	33	34	35	35	35	36	33.8	24
15	34	34	34	32	31	30	29	30	<b>IZS</b>	28	29	29	33	34	35	35	34	32	32	32	33	35	36	36	36	32.5	24
16	36	36	36	35	35	35	34	<b>IZS</b>	34	34	35	36	37	38	39	38	38	37	37	37	35	34	34	34	39	35.8	24
17	32	31	30	29	28	27	<b>IZS</b>	25	24	25	30	31	33	36	37	37	34	31	30	30	34	34	32	30	37	30.9	24
18	31	32	30	29	28	<b>IZS</b>	26	26	25	25	26	30	30	33	34	34	32	33	33	34	32	33	33	33	34	30.5	24
19	31	30	27	20	<b>IZS</b>	21	22	23	23	26	29	29	30	31	30	29	29	28	29	32	32	31	30	26	32	27.7	24
20	26	27	27	<b>IZS</b>	28	28	28	27	28	30	29	29	33	35	34	34	35	36	36	36	35	34	33	33	36	31.3	24
21	33	32	<b>IZS</b>	33	32	32	33	33	32	32	31	30	29	28	29	31	<b>P</b>	34	35	35	35	34	34	34	35	32.3	23
22	36	<b>IZS</b>	38	38	39	39	39	38	37	38	38	39	40	40	40	40	40	39	39	39	38	38	37	37	40	38.5	24
23	<b>IZS</b>	37	36	33	32	<b>N</b>	32	31	31	32	34	34	35	35	36	34	33	32	31	31	29	29	30	<b>IZS</b>	37	33.0	23
24	28	28	27	27	27	27	26	27	27	28	31	32	32	33	33	33	32	31	31	29	29	29	<b>IZS</b>	29	33	29.4	24
25	30	31	31	31	32	32	32	31	31	31	31	31	31	32	32	31	31	31	31	31	31	31	<b>IZS</b>	32	32	31.3	24
26	31	31	31	31	31	30	31	31	30	30	30	30	31	31	31	31	32	32	31	31	<b>IZS</b>	31	31	30	32	30.8	24
27	30	30	28	25	22	21	21	24	24	25	25	25	25	27	27	26	25	24	23	<b>IZS</b>	21	19	18	17	30	24.0	24
28	16	16	16	15	15	15	15	19	22	23	29	31	32	31	32	35	32	27	<b>IZS</b>	23	26	26	26	26	35	23.8	24
29	27	29	29	28	27	27	27	27	23	27	29	32	36	38	40	<b>41</b>	<b>41</b>	<b>IZS</b>	39	39	38	38	36	36	<b>41</b>	32.8	24
HOURLY MAX	36	37	38	38	39	39	39	38	37	38	38	39	40	40	40	41	41	39	39	39	38	38	37	37			
HOURLY AVG	28.3	28.6	28.4	28.1	27.8	27.0	26.9	26.8	26.6	27.3	28.6	29.7	30.6	31.5	32.0	32.5	31.7	30.3	30.0	30.6	30.5	29.7	29.5	29.3			

**STATUS FLAG CODES**

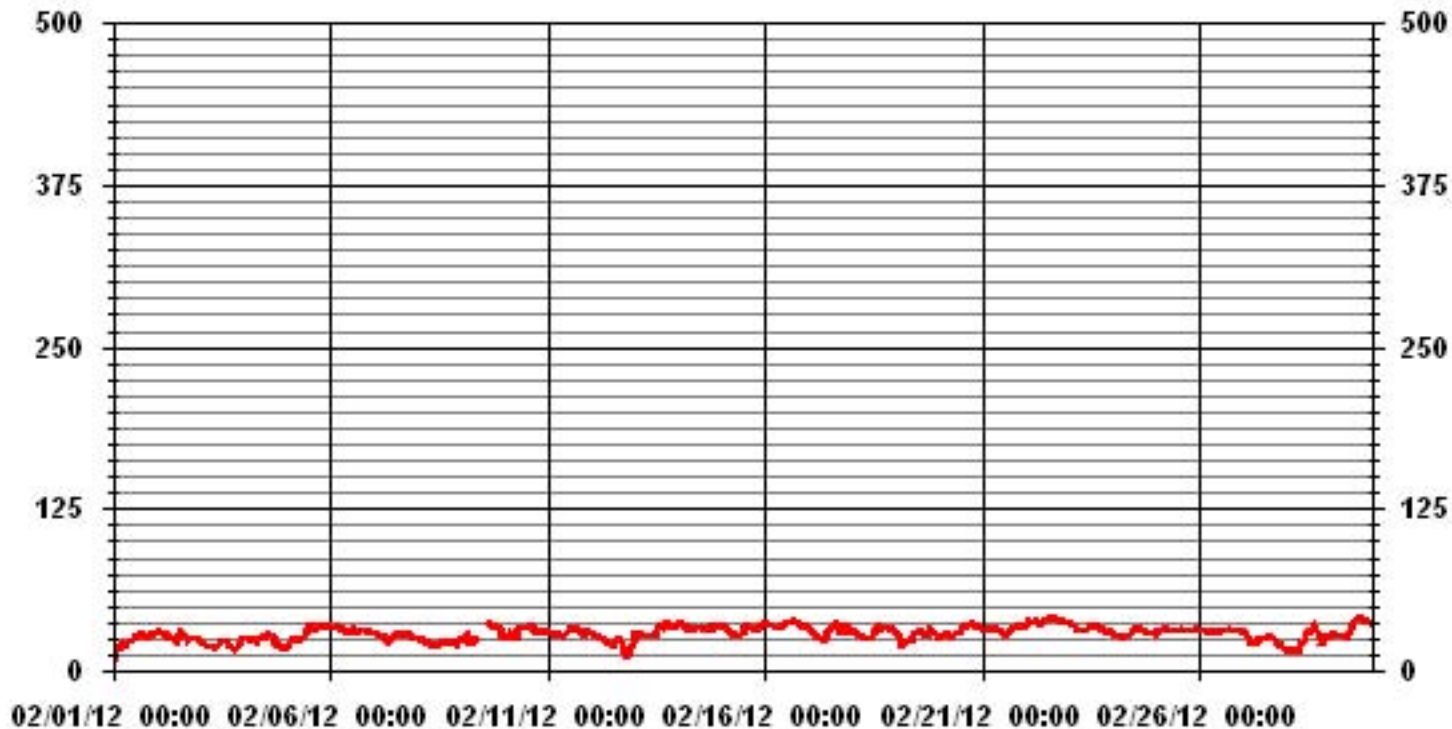
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	658					
MAXIMUM INSTANTANEOUS VALUE:	41	PPB	@ HOUR(S)	15, 16	ON DAY(S)	29
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	692	HRS	
MONTHLY CALIBRATION TIME:	4	HRS				
STANDARD DEVIATION	5.36					



### 01 Hour Averages



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

February 2012

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : O3\_  
 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	5.91	6.06	8.04	5.31	3.49	2.88	1.97	1.82	3.64	5.00	5.15	5.00	7.58	10.92	17.45	9.71	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	5.91	6.06	8.04	5.31	3.49	2.88	1.97	1.82	3.64	5.00	5.15	5.00	7.58	10.92	17.45	9.71	

Calm : .00 %

Total # Operational Hours : 659

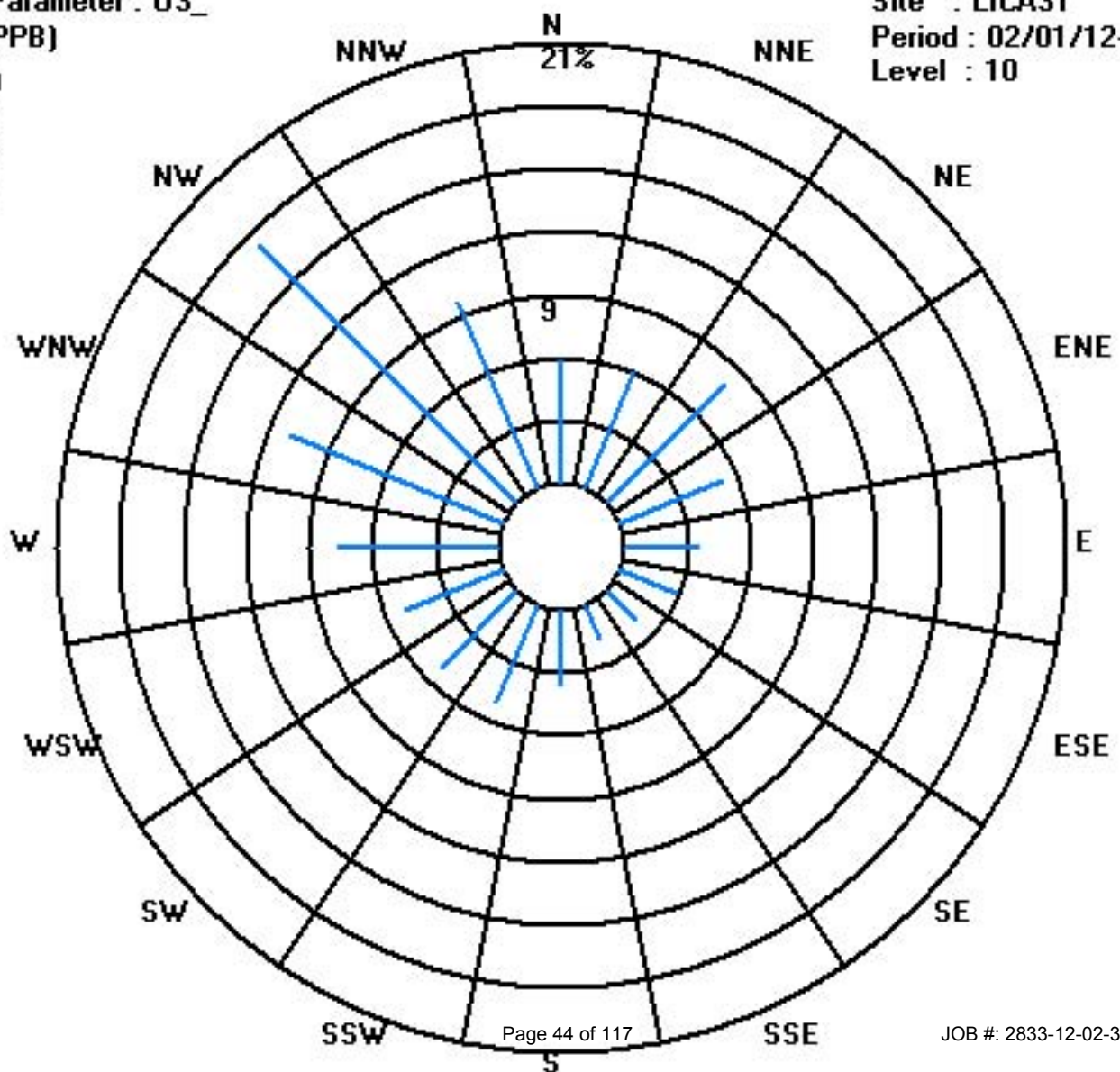
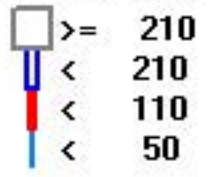
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	39	40	53	35	23	19	13	12	24	33	34	33	50	72	115	64	659
< 110																	
< 210																	
>= 210																	
Totals	39	40	53	35	23	19	13	12	24	33	34	33	50	72	115	64	

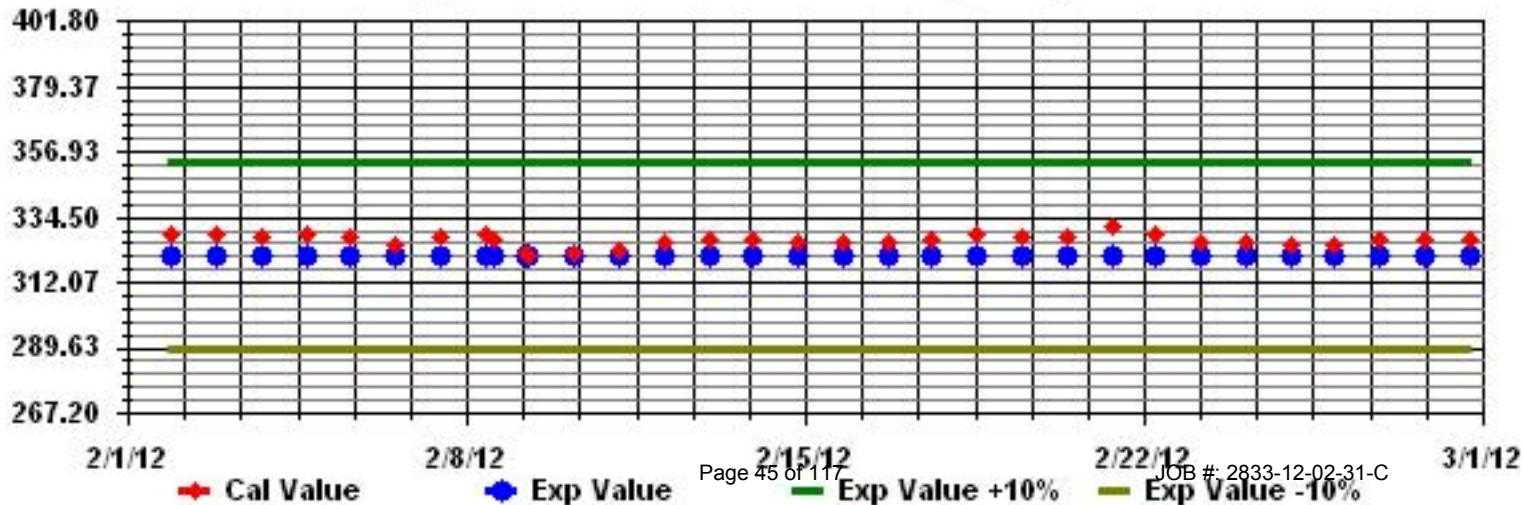
Calm : .00 %

Total # Operational Hours : 659

Class Limits (PPB)



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



# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## NITROGEN DIOXIDE 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	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00					
1	26	18	13	11	10	8	8	8	8	8	7	7	6	6	7	8	8	8	8	6	5	IZS	2	26	8.8	24			
2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	3	5	5	5	4	IZS	4	4	5	2.1	24			
3	4	4	4	4	4	4	4	4	4	4	5	4	5	5	6	6	8	8	8	9	IZS	6	4	3	9	5.1	24		
4	2	2	1	1	1	1	1	2	2	2	1	1	1	1	1	2	2	3	IZS	3	5	6	6	6	6	2.1	24		
5	5	5	4	4	3	3	2	2	2	2	1	1	1	1	1	1	1	1	IZS	1	1	1	1	1	5	2.0	24		
6	1	1	1	0	0	0	0	0	1	1	2	1	1	1	2	2	2	IZS	1	1	1	2	2	2	2	2	1.1	24	
7	2	2	2	2	2	2	2	3	4	3	2	2	2	2	3	2	IZS	2	2	2	2	2	2	2	4	2.2	24		
8	2	2	2	2	2	2	2	2	2	1	1	2	2	C	C	C	C	C	C	C	C	4	4	4	3	4	2.3	24	
9	2	2	2	2	6	4	3	3	2	1	1	1	1	1	IZS	1	2	2	3	2	2	4	6	7	7	2.6	24		
10	8	8	7	5	5	6	8	5	3	2	2	2	2	IZS	1	1	3	5	5	4	4	4	4	4	4	8	4.3	24	
11	3	3	3	3	2	2	2	2	3	2	2	3	IZS	0	0	0	0	0	1	1	1	1	1	0	3	1.5	24		
12	1	1	1	1	1	1	1	1	1	1	3	IZS	4	5	6	6	8	14	17	15	16	13	10	17	6.2	24			
13	6	4	3	3	3	3	2	2	2	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1.8	24		
14	1	1	1	1	1	1	1	1	1	IZS	1	1	1	2	2	2	2	2	2	3	2	1	1	1	3	1.4	24		
15	1	1	1	2	3	4	3	3	IZS	3	3	3	3	2	3	2	4	5	4	4	4	3	2	1	5	2.8	24		
16	1	1	1	1	1	1	1	IZS	1	1	1	1	1	0	1	1	1	1	1	2	2	2	2	2	2	1.2	24		
17	3	3	3	3	4	4	IZS	3	4	4	3	2	2	1	1	1	2	3	4	4	2	2	3	3	4	2.8	24		
18	3	2	2	3	3	IZS	3	3	4	4	5	4	4	4	4	4	4	4	3	3	4	3	2	2	5	3.3	24		
19	3	3	4	5	IZS	3	3	3	3	3	2	1	1	1	0	1	1	1	1	0	0	0	1	1	5	1.8	24		
20	1	1	1	IZS	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.3	24		
21	1	2	IZS	1	2	1	1	1	2	2	2	2	3	3	5	5	2	1	1	1	1	1	1	2	5	1.9	24		
22	2	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	2	1.0	24		
23	IZS	0	0	1	0	N	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	IZS	1	0.7	23		
24	1	1	1	0	1	1	1	1	1	1	0	0	0	1	0	1	1	2	2	3	3	3	IZS	2	3	1.2	24		
25	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	2	1	IZS	0	1	2	0.7	24		
26	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	IZS	1	2	2	2	1.2	24		
27	2	2	3	5	7	8	8	6	5	5	5	5	5	4	5	6	7	9	10	IZS	11	12	13	13	13	6.8	24		
28	13	12	13	12	12	12	12	11	8	7	7	6	6	7	6	6	8	10	IZS	9	9	8	7	6	13	9.0	24		
29	5	5	4	4	4	4	4	4	6	5	4	3	2	1	1	1	1	IZS	1	2	1	1	2	2	6	2.9	24		
HOURLY MAX	26	18	13	12	12	12	12	11	8	8	7	7	6	7	7	8	14	17	15	16	16	13	13						
HOURLY AVG	3.6	3.2	2.9	2.9	3.0	3.0	2.8	2.7	2.7	2.5	2.3	2.1	2.1	2.0	2.3	2.3	2.8	3.5	3.4	3.3	3.3	3.4	3.2	3.0					

### STATUS FLAG CODES

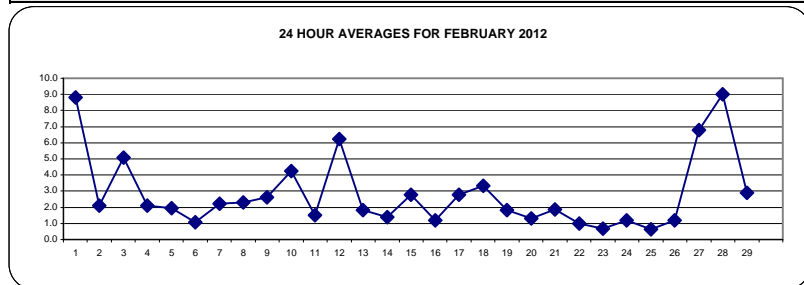
S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MAINTENANCE
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE

### OBJECTIVE LIMIT:

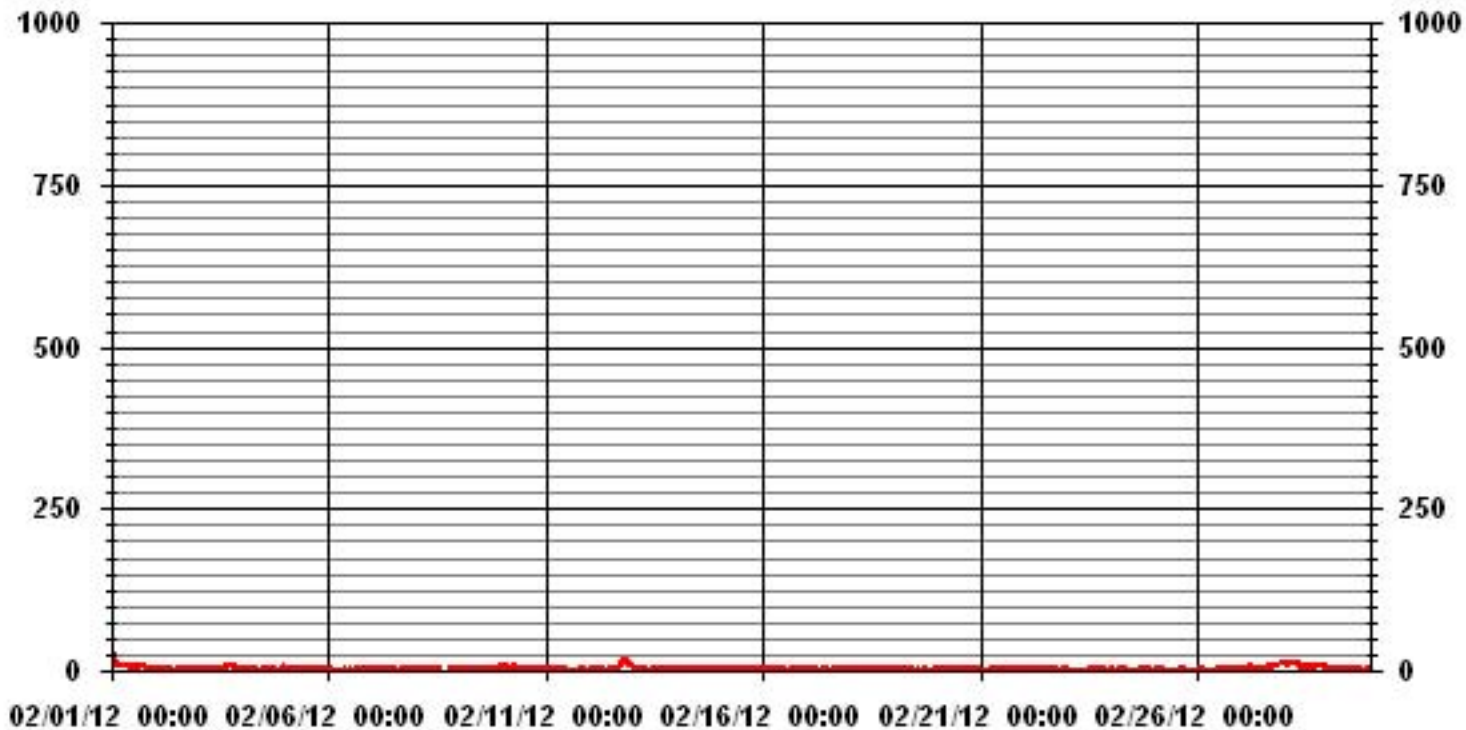
ALBERTA ENVIRONMENT: 1-HR 159 PPB

### MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	621					
MAXIMUM 1-HR AVERAGE:	26	PPB	@ HOUR(S)	0	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	9.0	PPB			ON DAY(S)	1
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.9	%	
STANDARD DEVIATION:	2.95		MONTHLY AVERAGE:	2.84	PPB	



### 01 Hour Averages



— LICA31 IIO2\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## 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		
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	28	24	15	13	11	9	9	9	9	8	8	8	7	7	7	9	9	9	10	9	7	6	IZS	3	28	10.2	24	
2	2	1	2	2	1	2	2	1	2	2	2	3	2	2	2	4	5	8	5	6	4	IZS	5	5	8	3.0	24	
3	5	5	5	5	5	5	5	5	5	10	9	6	5	6	7	7	9	9	9	10	IZS	7	5	4	10	6.4	24	
4	3	2	2	2	2	2	2	2	2	3	2	2	2	2	2	3	4	4	4	IZS	4	6	7	7	7	3.0	24	
5	6	6	5	5	4	4	4	3	2	3	2	2	2	1	2	1	2	1	IZS	2	2	1	2	1	6	2.7	24	
6	1	1	2	1	1	1	1	1	2	1	3	2	1	2	2	2	3	IZS	3	2	2	3	3	2	3	1.8	24	
7	3	2	3	3	3	3	3	4	6	4	3	2	2	2	5	3	IZS	3	3	3	2	2	3	3	6	3.0	24	
8	3	3	2	2	2	3	2	3	3	2	2	3	3	C	C	C	C	C	C	C	C	C	5	5	4	5	2.9	24
9	4	3	2	3	8	7	3	3	3	3	2	C	2	2	2	IZS	2	3	4	4	3	3	6	7	9	9	3.9	24
10	9	9	8	7	6	9	10	8	4	3	3	3	3	IZS	2	2	5	5	5	5	4	5	5	5	10	5.4	24	
11	4	4	4	4	3	3	3	3	4	3	2	5	IZS	1	1	1	1	1	2	2	2	2	2	1	5	2.5	24	
12	1	1	2	2	2	2	2	2	2	2	2	4	IZS	6	6	7	7	12	16	19	19	18	17	15	12	19	7.7	24
13	9	5	4	4	4	4	3	3	3	2	IZS	2	2	2	2	1	2	1	1	2	2	2	2	2	9	2.8	24	
14	2	2	1	1	2	2	2	2	2	IZS	2	2	2	2	3	3	3	4	4	4	3	3	2	2	4	2.3	24	
15	2	2	3	3	3	5	4	4	IZS	4	4	4	4	3	4	3	5	5	5	5	4	4	2	2	5	3.7	24	
16	2	2	2	2	2	2	2	IZS	1	2	2	1	1	1	3	2	1	2	3	3	3	3	3	3	3	2.1	24	
17	3	5	4	4	5	5	IZS	13	5	4	4	3	2	2	2	2	3	5	6	5	4	4	3	4	13	4.2	24	
18	4	3	3	4	4	IZS	4	4	5	5	5	5	5	5	4	5	5	5	4	4	5	4	3	4	5	4.3	24	
19	4	3	5	6	IZS	4	3	3	4	4	9	2	2	2	1	1	2	2	2	1	0	1	2	2	9	2.8	24	
20	2	2	2	IZS	3	3	3	4	3	3	2	2	2	2	11	2	2	2	2	2	2	2	3	2	11	2.7	24	
21	2	4	IZS	2	3	2	2	2	3	3	3	3	3	4	6	6	P	2	2	2	2	2	2	2	6	2.8	23	
22	3	IZS	2	2	2	1	4	2	2	2	2	2	2	2	2	1	1	14	2	1	1	1	2	14	2.4	24		
23	IZS	1	1	1	1	N	1	10	1	2	1	1	1	1	1	2	2	15	2	2	2	2	1	IZS	15	2.4	23	
24	1	1	1	1	1	2	2	4	4	2	1	1	1	1	1	2	2	2	3	4	4	4	IZS	3	4	2.1	24	
25	2	2	1	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	3	3	IZS	1	1	3	1.6	24	
26	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	3	2	2	3	IZS	2	2	3	3	2.2	24	
27	3	3	5	6	8	9	9	7	12	5	6	8	6	5	6	7	8	10	11	IZS	13	14	15	14	15	8.3	24	
28	14	13	13	13	13	13	12	12	9	8	8	7	7	8	7	8	11	12	IZS	11	10	9	8	6	14	10.1	24	
29	6	6	4	5	4	5	4	6	7	7	5	4	3	2	2	2	1	IZS	2	3	2	3	3	2	7	3.8	24	
HOURLY MAX	28	24	15	13	13	13	12	13	12	10	9	8	7	8	11	9	12	16	19	19	18	17	15	14				
HOURLY AVG	4.6	4.2	3.8	3.8	3.8	4.1	3.7	4.4	3.9	3.5	3.6	3.1	2.9	2.8	3.6	3.3	4.0	5.6	4.5	4.4	4.2	4.4	4.2	3.9				

**STATUS FLAG CODES**

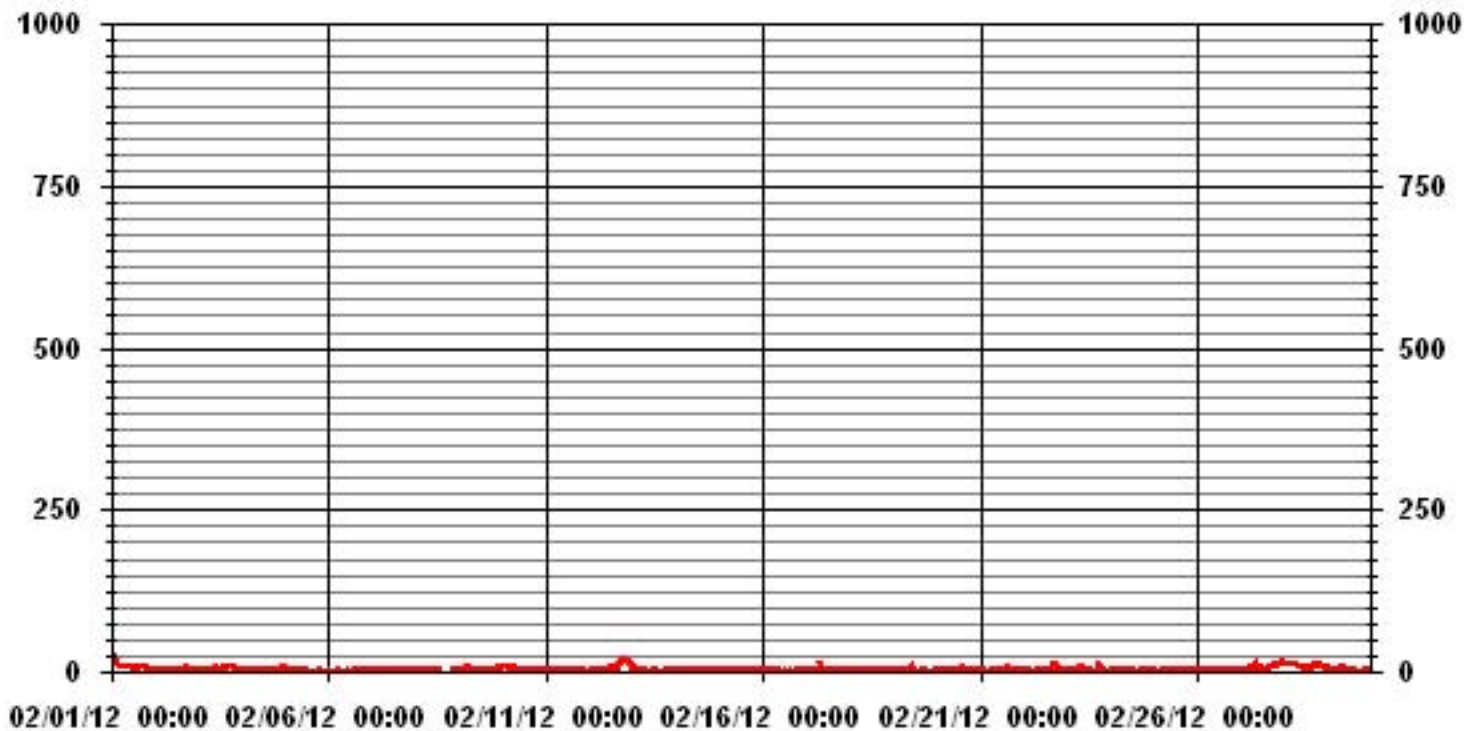
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	655		
MAXIMUM INSTANTANEOUS VALUE:	28 PPB @ HOUR(S) 0 ON DAY(S) 1		
IZS CALIBRATION TIME:	29 HRS	OPERATIONAL TIME:	694 HRS
MONTHLY CALIBRATION TIME:	9 HRS		
STANDARD DEVIATION	3.31		



### 01 Hour Averages



— LICA31 IIO2MAX PPB

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

February 2012

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 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	5.91	6.06	8.04	5.46	3.49	2.88	2.42	1.82	3.64	5.00	5.31	5.00	7.28	10.92	16.99	9.71	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	5.91	6.06	8.04	5.46	3.49	2.88	2.42	1.82	3.64	5.00	5.31	5.00	7.28	10.92	16.99	9.71	

Calm : .00 %

Total # Operational Hours : 659

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	39	40	53	36	23	19	16	12	24	33	35	33	48	72	112	64	659
< 110																	
< 210																	
>= 210																	
Totals	39	40	53	36	23	19	16	12	24	33	35	33	48	72	112	64	

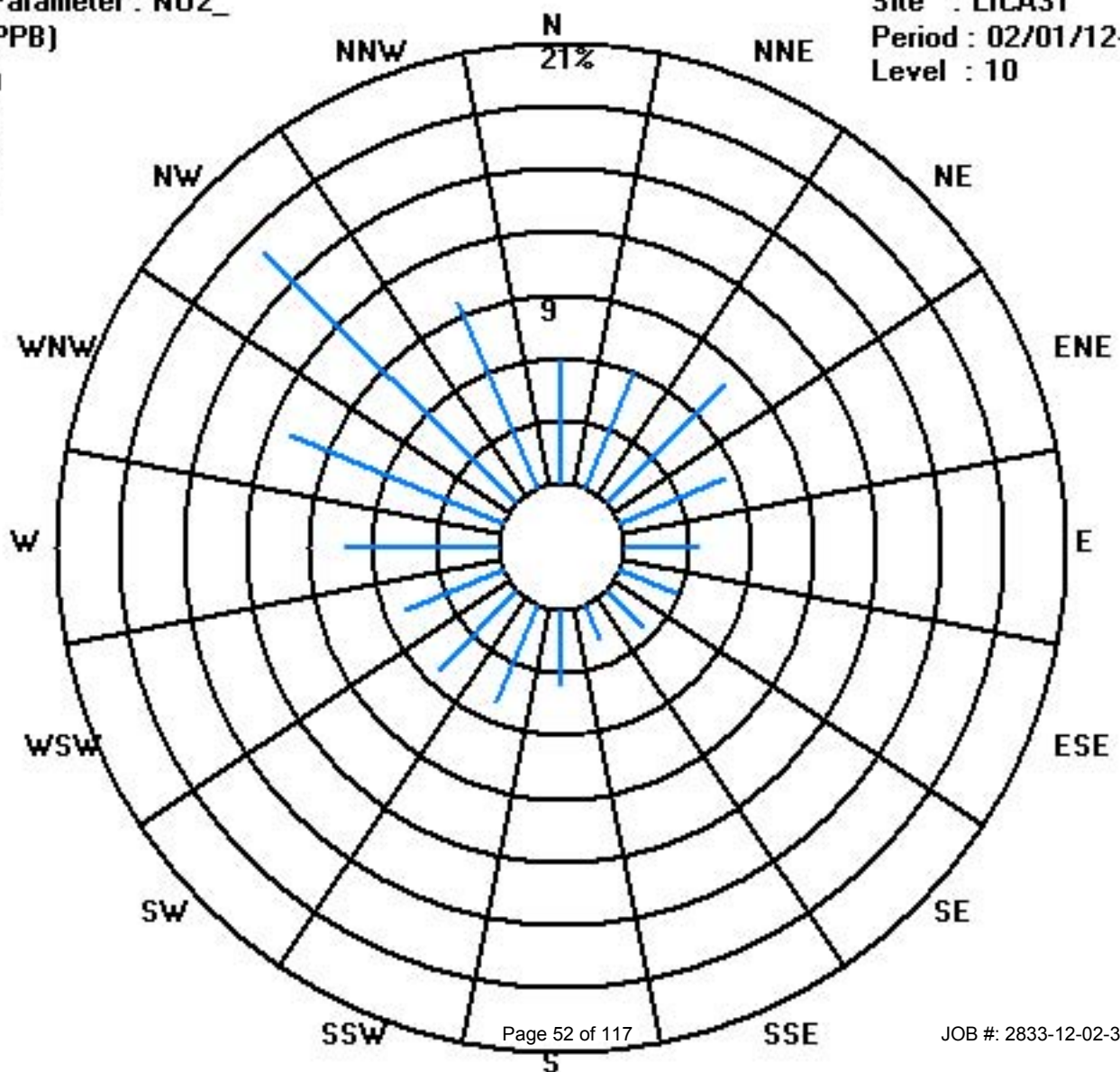
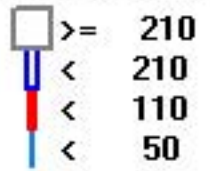
Calm : .00 %

Total # Operational Hours : 659

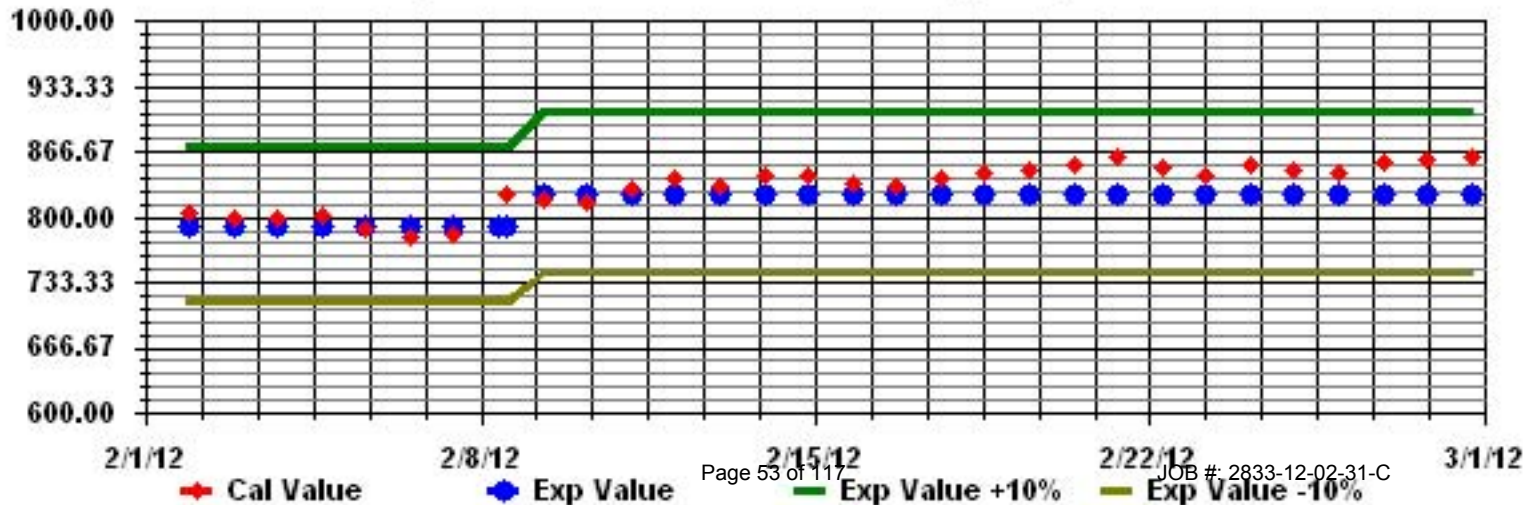
Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



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



# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNICATY ASSOCIATION - ST. LINA

FEBRUARY 2012

NITRIC OXIDE 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	2	1	0	0	0	0	0	0	0	1	2	3	3	3	2	1	1	0	0	0	0	0	0	0	0	0	3	0.9	24
2	1	0	0	1	1	1	1	1	1	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.0	24
3	0	0	0	0	0	0	0	0	0	1	3	3	3	3	2	2	1	0	0	0	0	1	1	1	1	1	3	1.0	24
4	1	1	1	1	0	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	24
5	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0.7	24
6	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	2	0.5	24
7	1	1	1	0	1	1	1	1	1	2	2	2	1	1	2	1	1	1	0	0	0	0	0	0	0	2	0.9	24	
8	0	0	0	0	0	0	0	0	0	0	1	1	1	C	C	C	C	C	C	C	C	2	0	0	0	2	0.3	24	
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	1	1	1	1	1	1	2	0.4	24	
10	2	1	1	1	1	1	2	1	1	1	1	2	2	IZS	1	0	1	0	0	0	0	0	0	0	0	2	0.8	24	
11	0	0	0	0	0	0	0	0	0	1	1	1	IZS	3	1	1	1	1	1	1	1	1	1	1	1	3	0.7	24	
12	1	1	1	1	1	1	1	1	1	2	4	IZS	6	5	4	3	2	1	1	1	1	1	1	1	0	6	1.8	24	
13	0	0	0	0	0	0	0	0	0	0	IZS	2	1	1	1	1	0	1	0	0	1	1	1	1	1	2	0.5	24	
14	1	1	1	1	0	0	1	1	1	IZS	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1.0	24	
15	1	1	1	1	1	1	1	1	1	IZS	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	3	1.4	24	
16	1	1	1	1	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
17	1	1	1	1	1	1	IZS	1	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.6	24	
18	0	0	0	0	0	IZS	1	0	1	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	2	0.6	24	
19	0	0	0	0	0	IZS	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
20	0	0	0	0	IZS	1	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	IZS	1	0	0	0	0	0	0	0	0	0	1	2	3	1	0	0	0	0	0	0	0	0	3	0.3	24	
22	0	IZS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
23	IZS	1	1	1	1	N	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0.9	23	
24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
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	1	0.0	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
27	0	0	0	0	0	0	1	1	1	2	2	3	4	4	3	3	3	2	2	1	1	1	1	1	1	4	1.6	24	
28	1	1	1	1	1	1	1	1	1	3	4	5	3	4	4	3	1	2	2	IZS	1	1	0	0	0	5	1.8	24	
29	0	0	0	0	0	0	0	0	2	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	3	0.7	24		
HOURLY MAX	2	1	1	1	1	1	2	1	3	4	5	4	6	5	4	3	2	2	2	2	1	2	2	1	1				
HOURLY AVG	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.6	1.1	1.5	1.4	1.5	1.3	1.2	0.9	0.7	0.6	0.5	0.4	0.6	0.6	0.5	0.5					

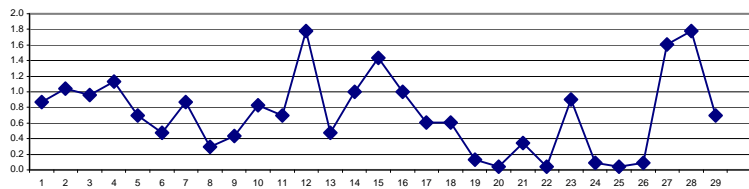
STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

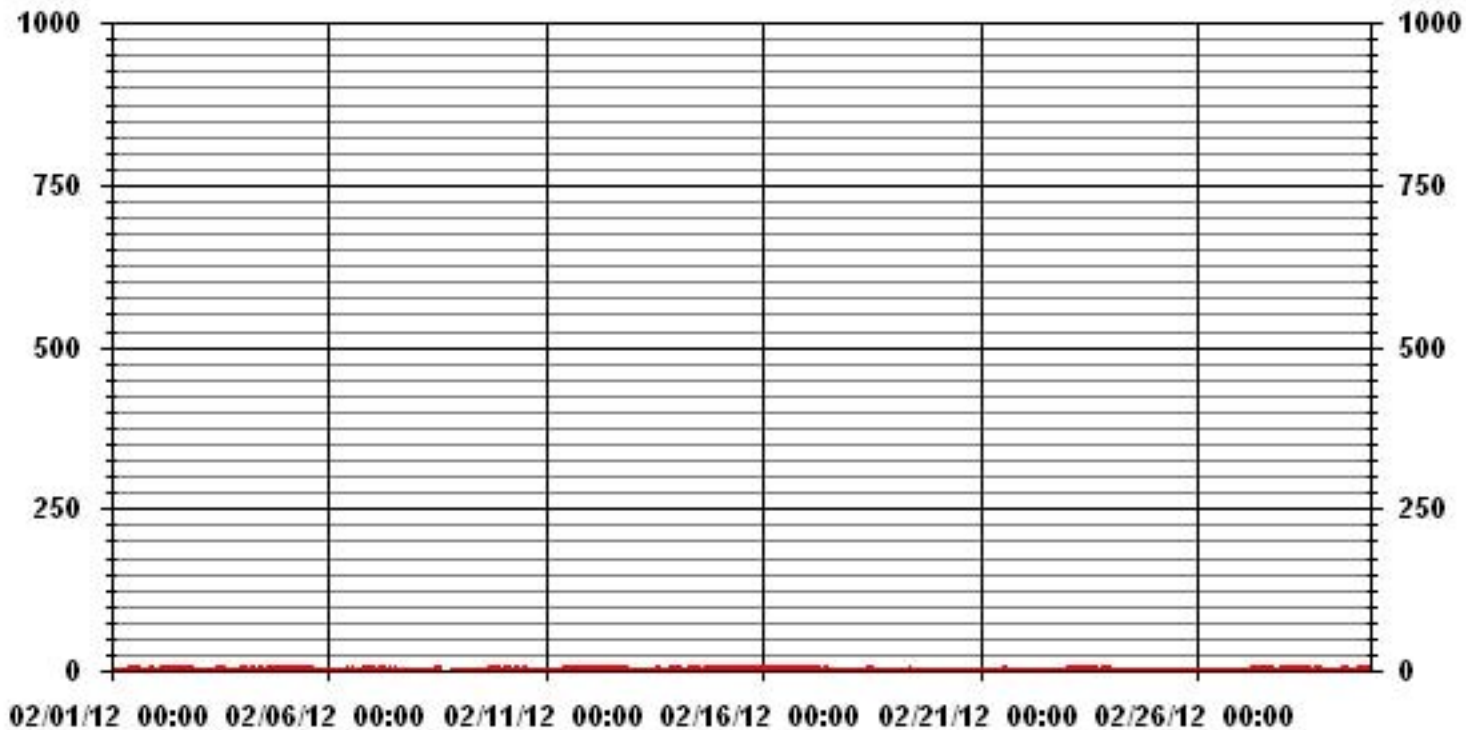
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	350					
MAXIMUM 1-HR AVERAGE:	6	PPB	@ HOUR(S)	12	ON DAY(S)	12
MAXIMUM 24-HR AVERAGE:	1.8	PPB			ON DAY(S)	12
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.9	%	
STANDARD DEVIATION:	0.89		MONTHLY AVERAGE:	0.73	PPB	

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

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.		
DAY																													
1	3	2	1	1	1	1	1	1	2	2	4	4	4	4	3	3	2	1	1	1	1	1	1	<b>IZS</b>	3	4	2.0	24	
2	2	1	1	1	1	1	1	1	2	2	2	4	3	2	3	2	2	3	2	2	2	1	<b>IZS</b>	2	0	4	1.8	24	
3	1	1	0	0	0	1	1	1	1	14	7	5	4	4	3	3	2	2	1	1	<b>IZS</b>	3	2	1	14	2.5	24		
4	2	1	1	1	1	1	1	1	2	3	3	3	4	2	2	2	2	2	2	<b>IZS</b>	3	2	2	2	4	2.0	24		
5	2	2	2	1	1	2	1	2	1	1	2	2	1	1	1	1	1	<b>IZS</b>	2	0	0	0	0	0	2	1.2	24		
6	0	0	0	0	0	0	0	0	1	1	2	1	1	2	2	1	1	<b>IZS</b>	3	2	1	1	1	1	3	0.9	24		
7	2	2	1	1	1	1	2	2	2	3	3	2	2	2	3	2	<b>IZS</b>	2	1	0	0	0	0	0	3	1.5	24		
8	0	0	0	0	0	0	0	0	1	2	2	3	2	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	1	1	1	3	0.8	24
9	0	1	0	0	1	0	0	0	1	1	<b>C</b>	1	1	1	<b>IZS</b>	3	2	2	1	2	1	2	2	2	2	3	1.1	24	
10	2	2	2	2	2	2	2	2	2	2	2	3	3	<b>IZS</b>	3	1	1	1	1	1	1	1	1	1	1	3	1.7	24	
11	1	1	1	1	0	1	1	1	1	1	2	2	<b>IZS</b>	5	2	2	1	1	1	1	1	1	2	2	1	5	1.4	24	
12	1	1	1	1	1	1	1	2	2	3	6	<b>IZS</b>	7	6	6	4	3	3	2	2	2	2	2	1	7	2.6	24		
13	1	0	1	0	1	1	0	0	2	1	<b>IZS</b>	3	2	1	1	2	1	1	1	1	1	3	1	1	3	1.1	24		
14	1	1	1	1	1	1	1	1	2	<b>IZS</b>	3	2	2	2	3	3	2	2	2	2	2	2	1	1	3	1.7	24		
15	1	1	2	1	1	2	1	2	<b>IZS</b>	4	4	4	3	2	2	3	2	3	1	2	2	1	1	1	4	2.0	24		
16	1	2	1	1	1	2	1	<b>IZS</b>	2	2	2	1	2	1	3	2	2	1	1	1	2	2	1	2	3	1.6	24		
17	1	2	1	2	2	2	<b>IZS</b>	9	2	3	3	3	1	1	3	1	1	1	2	1	1	0	1	1	9	1.9	24		
18	0	0	0	0	1	<b>IZS</b>	2	1	2	2	3	3	2	3	2	1	1	1	0	0	0	1	0	0	3	1.1	24		
19	1	0	1	1	<b>IZS</b>	3	1	1	1	2	8	2	1	1	1	1	1	1	0	0	0	1	0	0	8	1.2	24		
20	0	0	0	<b>IZS</b>	2	1	0	1	1	1	3	1	0	1	15	0	0	0	0	0	0	0	0	0	15	1.1	24		
21	0	0	<b>IZS</b>	3	1	1	0	1	0	1	1	1	1	3	3	2	<b>P</b>	1	1	0	0	1	0	0	3	1.0	23		
22	0	<b>IZS</b>	2	1	0	0	22	1	1	1	0	1	1	1	0	0	0	17	0	0	0	0	1	2	22	2.2	24		
23	<b>IZS</b>	3	2	1	1	<b>N</b>	1	8	2	1	2	1	1	2	1	2	2	<b>24</b>	1	2	2	1	1	<b>IZS</b>	<b>24</b>	2.9	23		
24	3	0	0	0	0	0	0	2	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	<b>IZS</b>	3	3	0.8	24	
25	1	1	1	1	1	1	0	0	1	0	0	0	0	1	1	1	1	1	0	1	0	<b>IZS</b>	3	1	3	0.7	24		
26	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	2	1	0	1	<b>IZS</b>	2	1	1	2	0.9	24		
27	1	1	1	1	1	1	1	2	4	3	4	15	6	5	4	3	3	3	3	<b>IZS</b>	3	3	4	2	15	3.2	24		
28	2	2	2	2	2	2	2	3	4	5	6	4	5	5	4	3	3	3	<b>IZS</b>	2	1	1	1	1	6	2.8	24		
29	1	1	1	1	1	1	1	2	4	4	3	3	2	1	1	1	1	<b>IZS</b>	3	2	1	1	2	1	4	1.7	24		
HOURLY MAX	3	3	2	3	2	3	22	9	4	14	8	15	7	6	15	4	3	24	3	2	3	3	4	3					
HOURLY AVG	1.1	1.0	0.9	0.9	0.9	1.1	1.6	1.7	1.7	2.4	2.9	2.7	2.3	2.2	2.7	1.8	1.5	3.0	1.2	1.2	1.0	1.3	1.2	1.1					

**STATUS FLAG CODES**

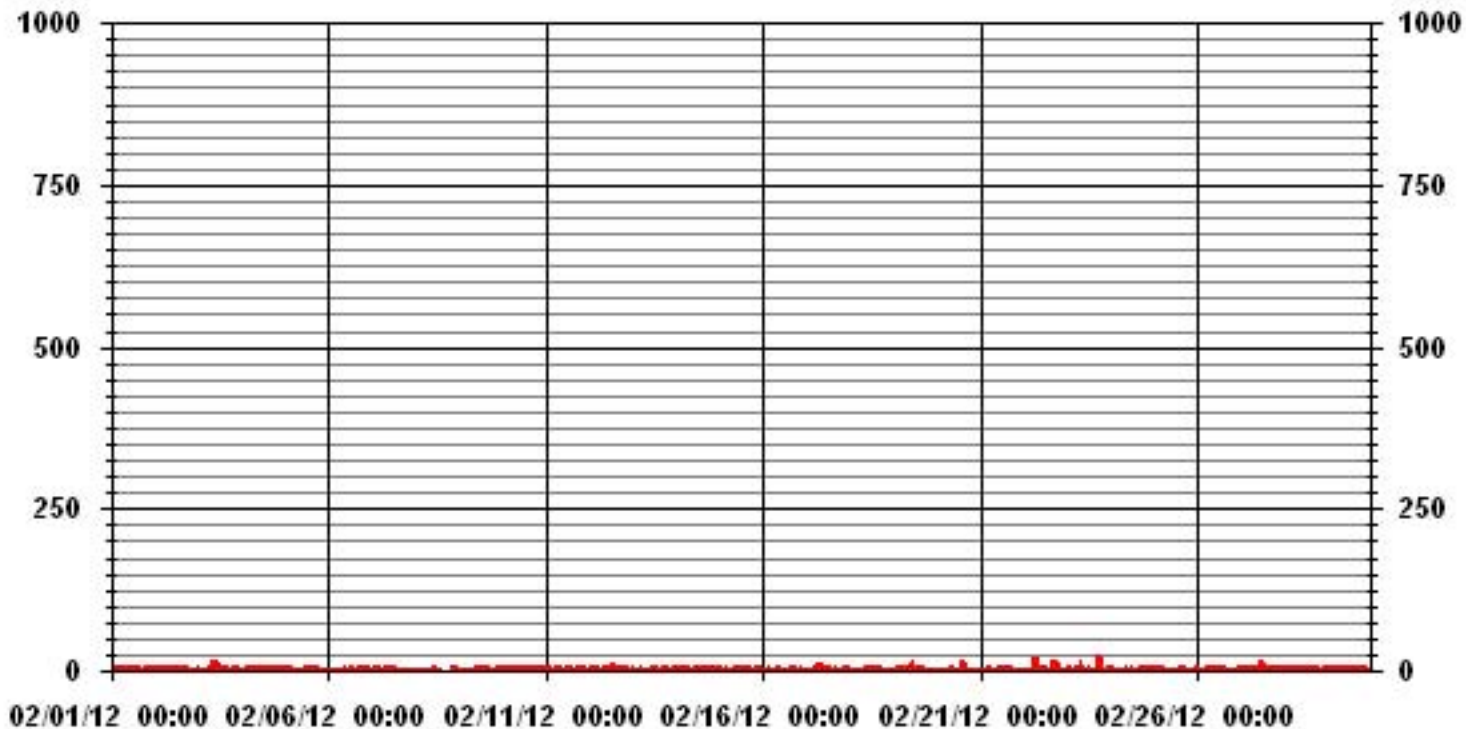
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	546					
MAXIMUM INSTANTANEOUS VALUE:	24	PPB	@ HOUR(S)	17	ON DAY(S)	23
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	694	HRS	
MONTHLY CALIBRATION TIME:	9	HRS				
STANDARD DEVIATION	2.02					



### 01 Hour Averages



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

February 2012

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	5.91	6.06	8.04	5.46	3.49	2.88	2.42	1.82	3.64	5.00	5.31	5.00	7.28	10.92	16.99	9.71	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	5.91	6.06	8.04	5.46	3.49	2.88	2.42	1.82	3.64	5.00	5.31	5.00	7.28	10.92	16.99	9.71	

Calm : .00 %

Total # Operational Hours : 659

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	39	40	53	36	23	19	16	12	24	33	35	33	48	72	112	64	659
< 110																	
< 210																	
>= 210																	
Totals	39	40	53	36	23	19	16	12	24	33	35	33	48	72	112	64	

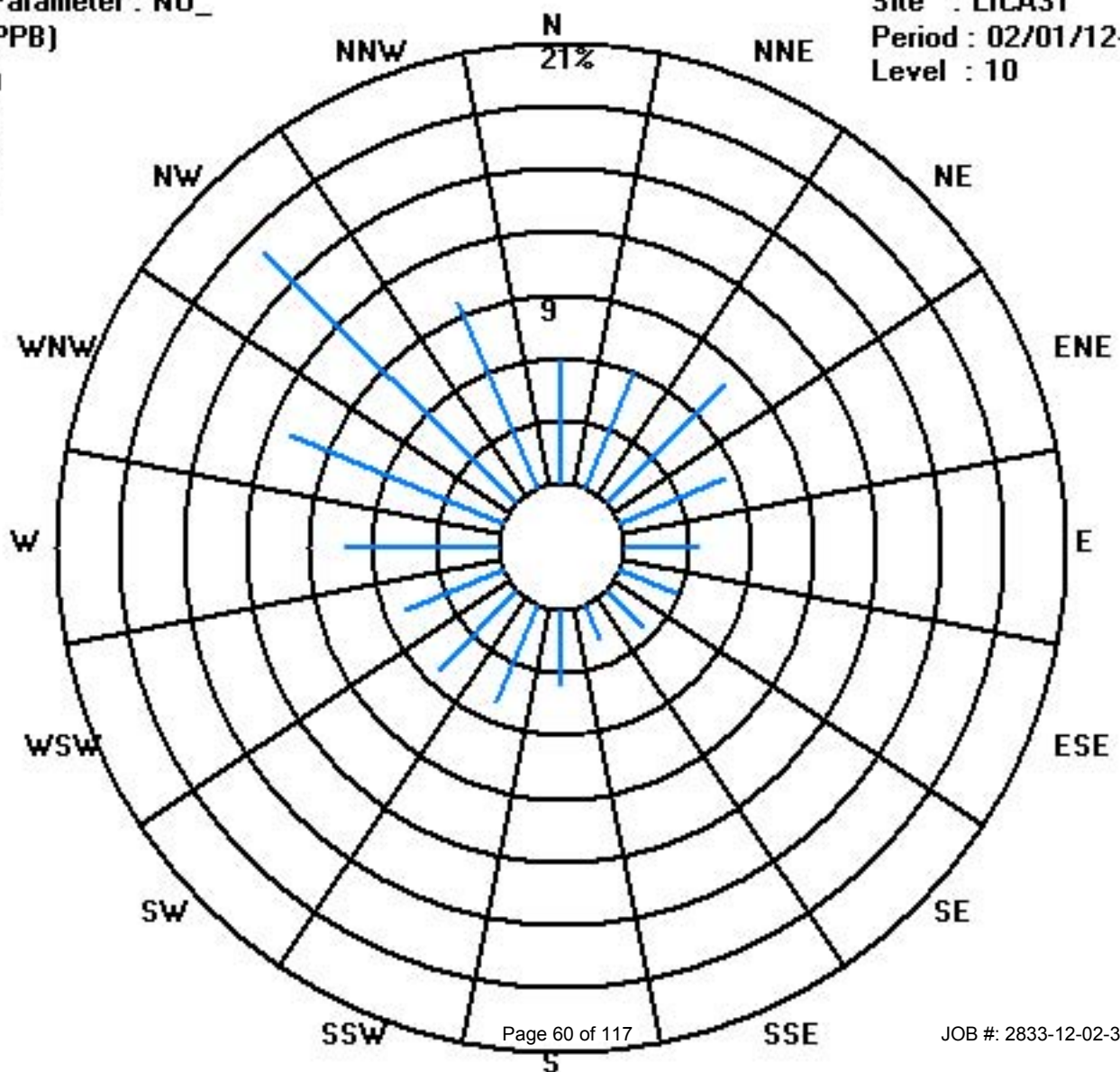
Calm : .00 %

Total # Operational Hours : 659

Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



# Oxides of Nitrogen

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

OXIDES OF NITROGEN hourly averages in ppb

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	26	17	12	10	9	7	7	7	7	8	8	9	8	8	8	7	7	7	7	7	4	4	IZS	2	26	8.5	24
2	1	1	1	1	1	1	2	1	1	2	2	4	3	2	2	3	4	6	5	5	4	IZS	4	4	6	2.6	24
3	3	4	4	3	4	3	4	4	4	5	8	7	7	7	7	8	8	8	8	IZS	7	5	3	8	5.6	24	
4	2	2	2	1	1	2	1	2	2	3	3	2	2	2	2	2	3	4	IZS	4	5	6	7	7	2.7	24	
5	6	5	5	4	3	4	3	2	2	2	2	1	1	1	1	1	1	IZS	2	1	1	1	1	6	2.2	24	
6	1	0	1	0	0	0	0	0	1	1	3	2	1	2	3	2	3	IZS	2	2	1	2	2	2	3	1.3	24
7	2	2	2	2	2	2	2	3	5	5	3	3	3	2	4	3	IZS	3	3	2	2	2	2	2	5	2.7	24
8	2	2	2	2	2	2	2	2	2	2	3	3	4	C	C	C	C	C	C	5	5	5	4	5	2.9	24	
9	3	3	2	2	7	5	3	3	3	2	2	2	2	2	IZS	2	2	3	3	3	3	4	7	8	8	3.3	24
10	9	8	8	6	6	7	10	6	4	3	3	4	4	IZS	2	2	4	5	5	5	4	5	5	4	10	5.2	24
11	4	4	4	3	3	3	3	3	3	4	3	5	IZS	3	2	1	1	2	2	2	3	3	2	2	5	2.8	24
12	2	2	3	2	2	2	3	3	3	4	7	IZS	11	12	12	10	11	16	19	17	17	17	15	11	19	8.7	24
13	6	4	4	4	3	3	2	2	2	2	IZS	3	2	1	1	1	1	1	1	1	1	1	1	1	6	2.1	24
14	1	1	1	1	1	1	1	2	1	IZS	2	2	2	2	3	3	3	3	3	3	3	2	1	1	3	1.9	24
15	1	1	2	2	3	4	4	3	IZS	5	5	5	5	4	4	4	4	5	5	4	4	4	2	1	5	3.5	24
16	1	2	2	1	1	2	2	IZS	2	1	2	1	1	1	1	1	1	2	2	2	3	2	3	3	3	1.7	24
17	3	4	3	4	4	4	IZS	5	6	6	5	4	3	2	2	1	3	4	5	5	3	3	3	4	6	3.7	24
18	3	2	3	3	3	IZS	4	4	6	7	8	7	7	6	5	5	5	5	4	4	5	3	3	3	8	4.6	24
19	4	3	5	5	IZS	4	3	3	4	4	4	3	2	2	1	1	1	1	1	0	0	0	1	2	5	2.3	24
20	1	1	1	IZS	2	2	1	2	2	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	2	0.8	24
21	0	1	IZS	2	2	2	1	1	2	2	3	3	4	6	8	7	3	1	1	1	1	1	1	2	8	2.4	24
22	2	IZS	2	1	1	1	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2	24
23	IZS	1	1	1	1	N	0	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	IZS	2	1.0	23
24	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2	2	3	4	3	IZS	2	4	1.5	24
25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	IZS	2	1	2	0.3	24
26	2	1	1	1	1	2	1	1	2	2	2	2	2	2	2	2	2	1	1	2	IZS	2	2	3	3	1.7	24
27	2	2	4	6	8	9	9	7	7	7	8	9	10	8	8	9	10	11	12	IZS	12	13	14	14	14	8.7	24
28	13	13	13	12	13	12	12	12	10	11	11	9	10	11	8	7	10	11	IZS	11	10	9	8	6	13	10.5	24
29	6	5	4	5	4	5	4	5	9	8	6	6	4	2	2	1	1	IZS	2	2	1	2	3	2	9	3.9	24
HOURLY MAX	26	17	13	12	13	12	12	12	10	11	11	9	11	12	12	10	11	16	19	17	17	17	15	14			
HOURLY AVG	3.9	3.3	3.3	3.0	3.1	3.3	3.1	3.1	3.4	3.6	3.8	3.6	3.6	3.4	3.4	3.0	3.4	4.0	3.8	3.6	3.6	3.8	3.7	3.5			

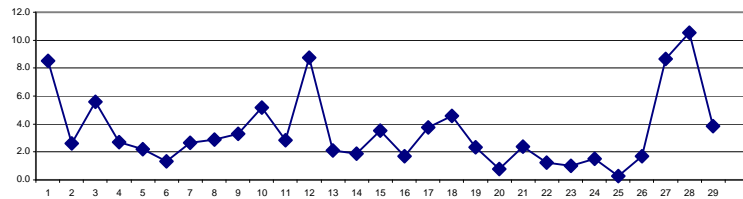
STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

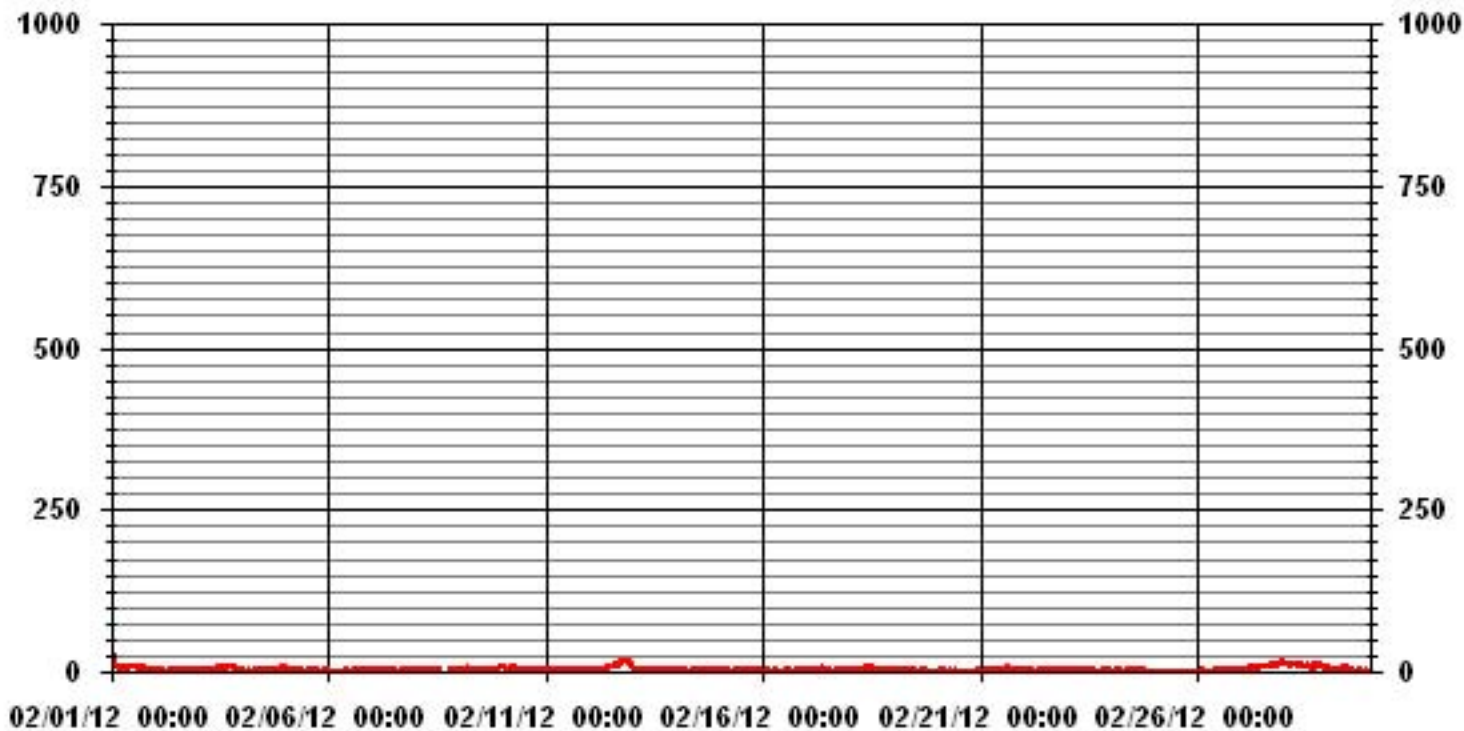
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	621					
MAXIMUM 1-HR AVERAGE:	26	PPB	@ HOUR(S)	0	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	10.5	PPB			ON DAY(S)	28
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME	99.9	%	
STANDARD DEVIATION	3.28		MONTHLY AVERAGE	3.47	PPB	

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



— LICA31 NOX\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## 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	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	28	23	14	12	10	8	9	8	8	8	10	9	9	9	8	8	8	9	9	6	5	IZS	4	28	10.0	24		
2	2	1	2	2	2	2	3	2	3	3	4	5	5	3	3	5	10	6	6	5	IZS	6	4	10	3.9	24		
3	5	5	4	4	5	4	5	4	5	18	15	10	8	9	9	8	10	9	8	9	IZS	8	6	5	18	7.5	24	
4	3	2	2	2	2	2	2	3	3	4	4	4	4	2	2	3	3	4	4	IZS	6	6	8	8	8	3.6	24	
5	7	6	5	5	4	5	4	3	2	3	3	3	2	2	2	2	2	1	IZS	3	2	2	2	2	7	3.1	24	
6	1	1	1	1	1	1	1	1	2	2	5	3	2	4	4	3	4	IZS	3	3	2	3	3	3	5	2.3	24	
7	3	3	3	2	3	3	3	4	7	6	4	4	3	3	6	4	IZS	5	3	3	3	2	3	3	7	3.6	24	
8	3	2	3	3	3	3	3	3	3	4	4	5	5	C	C	C	C	C	C	C	C	C	6	6	4	6	3.8	24
9	4	4	3	4	9	7	4	4	4	3	C	3	2	2	IZS	3	3	4	4	4	3	6	8	10	10	4.5	24	
10	10	9	9	8	7	11	11	9	4	4	4	5	5	IZS	3	3	6	6	6	6	5	6	6	6	11	6.5	24	
11	5	5	4	4	3	4	4	4	4	4	4	7	IZS	6	3	2	2	2	3	3	4	3	3	3	7	3.7	24	
12	2	3	3	3	3	3	3	4	4	4	5	11	IZS	12	12	13	11	15	18	21	20	19	19	17	13	21	10.2	24
13	10	5	5	4	4	4	4	3	4	3	IZS	3	3	2	2	2	2	2	1	2	2	4	2	2	10	3.3	24	
14	2	2	2	2	2	2	2	3	3	IZS	3	2	3	4	4	6	4	5	4	4	3	2	2	2	6	3.0	24	
15	2	2	3	3	4	6	5	4	IZS	7	7	7	6	4	5	5	6	7	6	6	5	5	3	2	7	4.8	24	
16	2	3	2	2	2	2	2	IZS	2	2	3	2	2	2	5	3	3	3	3	3	3	3	3	3	4	5	2.7	24
17	3	6	4	5	5	5	IZS	19	6	7	6	5	4	3	5	3	4	5	8	7	5	4	4	5	19	5.6	24	
18	5	3	3	4	5	IZS	6	5	7	7	8	8	7	7	6	6	6	5	5	4	6	4	3	4	8	5.4	24	
19	4	3	6	6	IZS	5	4	4	5	6	18	4	3	3	2	2	3	3	2	1	1	2	2	3	18	4.0	24	
20	2	2	2	IZS	4	3	2	3	2	2	4	2	1	1	23	1	1	1	1	1	1	1	1	2	1	23	2.7	24
21	1	3	IZS	3	3	3	2	3	2	3	4	4	5	8	9	8	P	3	2	3	2	2	2	2	9	3.5	23	
22	2	IZS	3	2	2	2	24	3	3	3	2	3	3	3	2	1	2	27	2	1	2	1	2	4	27	4.3	24	
23	IZS	2	2	2	1	N	1	18	2	2	2	2	2	2	2	3	35	2	3	4	2	1	IZS	35	4.4	23		
24	3	2	2	1	1	2	2	6	5	2	2	2	2	2	1	2	2	3	3	4	4	4	IZS	3	6	2.6	24	
25	2	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	2	1	IZS	3	2	3	0.9	24	
26	2	2	2	2	2	3	3	3	3	2	3	3	3	3	3	2	5	2	2	3	IZS	3	3	4	5	2.7	24	
27	3	4	6	8	9	11	10	9	16	9	10	18	12	10	10	10	11	12	13	IZS	13	17	19	15	19	11.1	24	
28	16	14	14	13	14	14	13	13	11	12	13	10	11	12	10	10	12	12	IZS	12	11	10	9	7	16	11.9	24	
29	6	7	5	6	5	5	5	8	11	11	7	7	6	3	3	2	2	IZS	4	3	3	3	4	3	11	5.2	24	
HOURLY MAX	28	23	14	13	14	14	24	19	16	18	18	18	12	12	23	11	15	35	21	20	19	19	19	15				
HOURLY AVG	4.9	4.5	4.1	4.1	4.1	4.5	4.9	5.5	4.7	5.1	5.9	5.0	4.6	4.5	5.4	4.2	4.8	7.4	4.8	4.8	4.7	4.9	4.9	4.6				

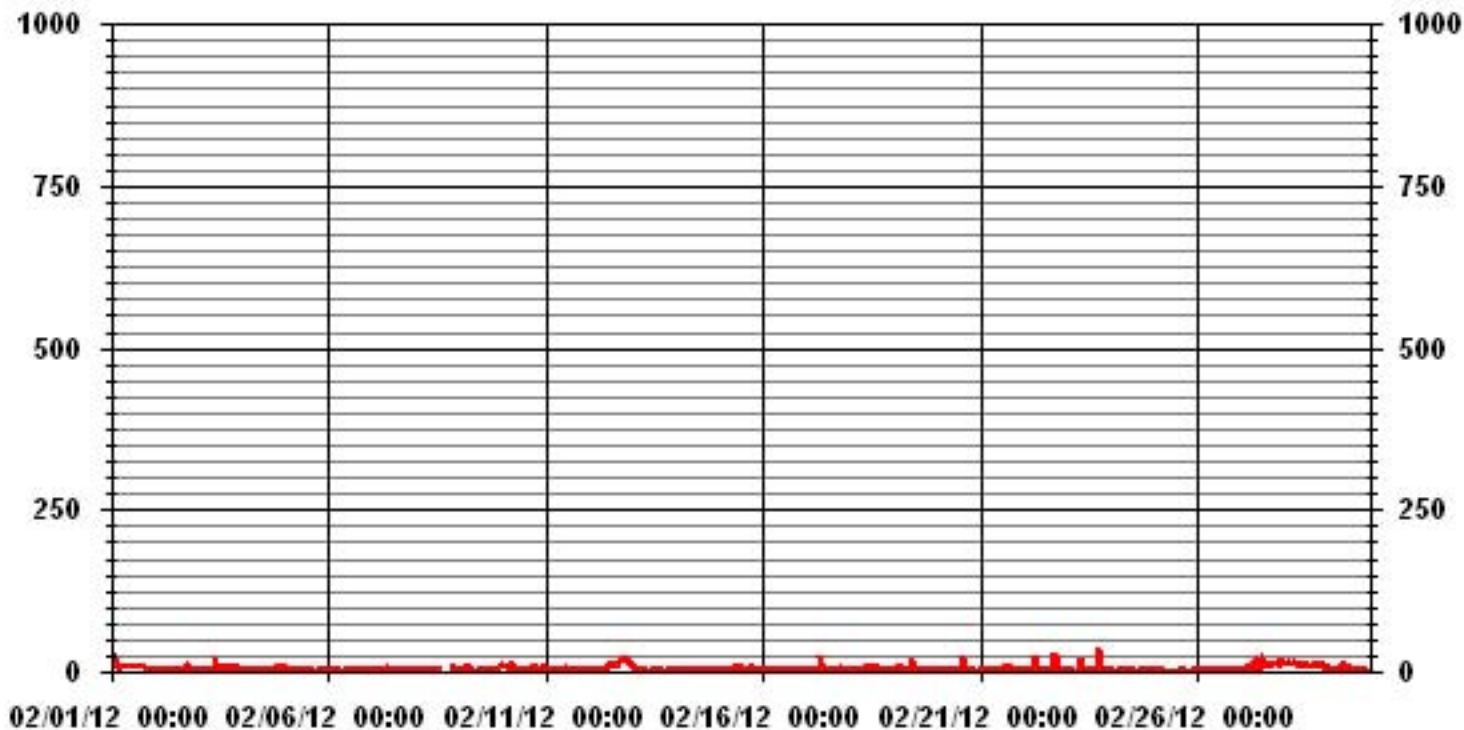
### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

### MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	648
MAXIMUM INSTANTANEOUS VALUE:	35 PPB @ HOUR(S) 17 ON DAY(S) 23
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	9 HRS
STANDARD DEVIATION	4.19
OPERATIONAL TIME:	694 HRS

### 01 Hour Averages



— LICA31 NOXMAX PPB



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

February 2012

Distribution By % Of Samples

Logger Id : 31  
 Site Name : LICA31  
 Parameter : NOX\_  
 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	5.91	6.06	8.04	5.46	3.49	2.88	2.42	1.82	3.64	5.00	5.31	5.00	7.28	10.92	16.99	9.71	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	5.91	6.06	8.04	5.46	3.49	2.88	2.42	1.82	3.64	5.00	5.31	5.00	7.28	10.92	16.99	9.71	

Calm : .00 %

Total # Operational Hours : 659

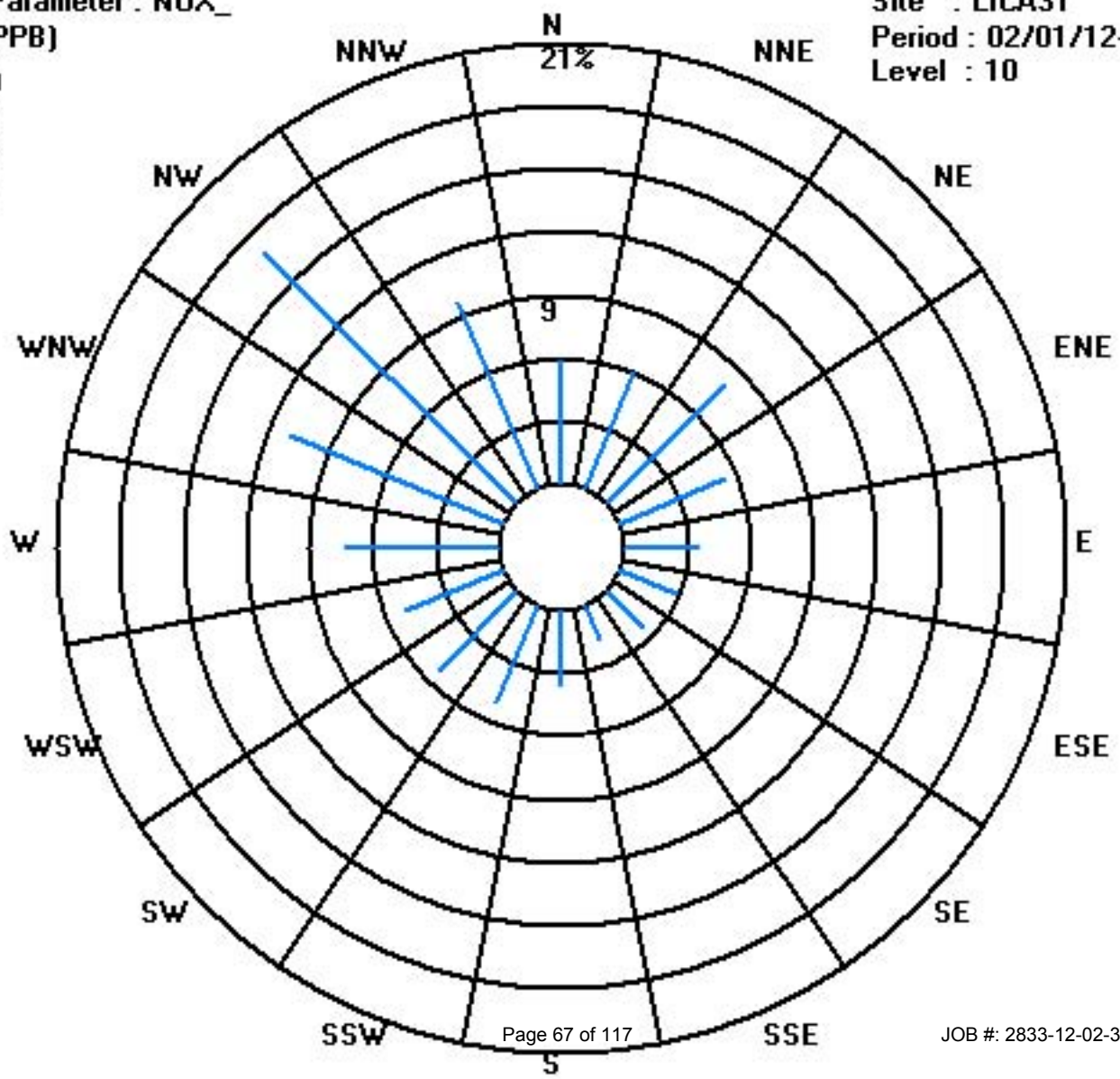
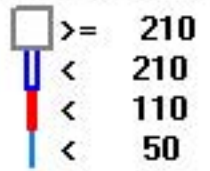
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	39	40	53	36	23	19	16	12	24	33	35	33	48	72	112	64	659
< 110																	
< 210																	
>= 210																	
Totals	39	40	53	36	23	19	16	12	24	33	35	33	48	72	112	64	

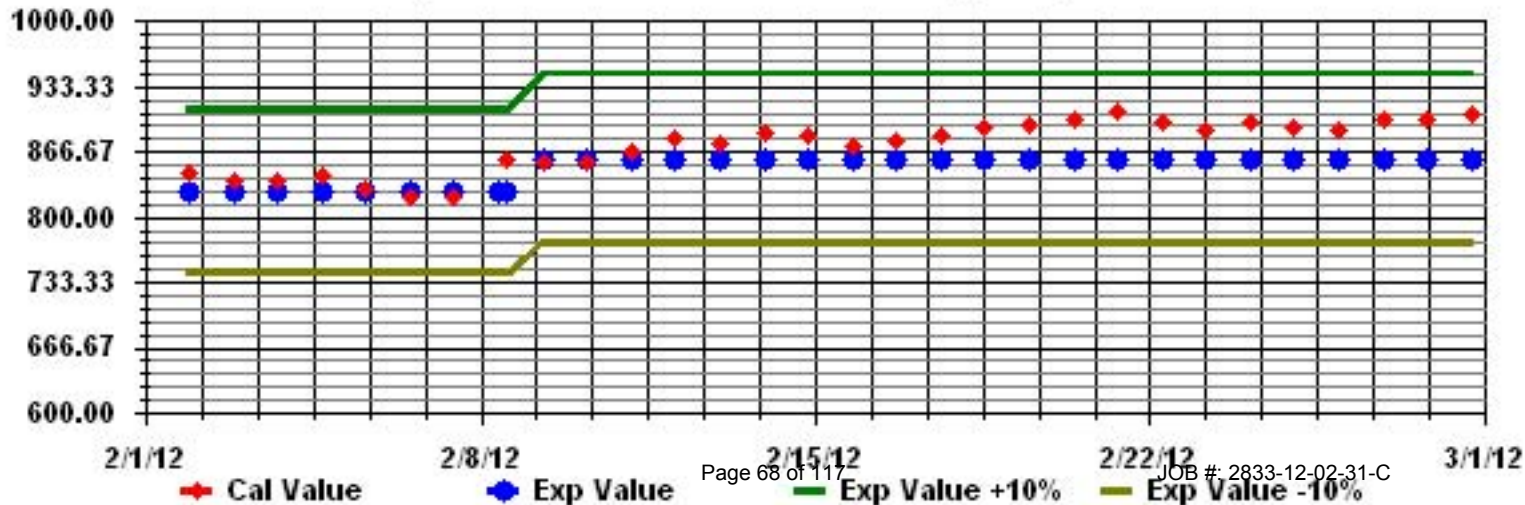
Calm : .00 %

Total # Operational Hours : 659

Class Limits (PPB)



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



# Particulate Matter 2.5

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## PARTICULATE MATTER 2.5 (PM2.5) hourly averages in ug/m<sup>3</sup>

MST

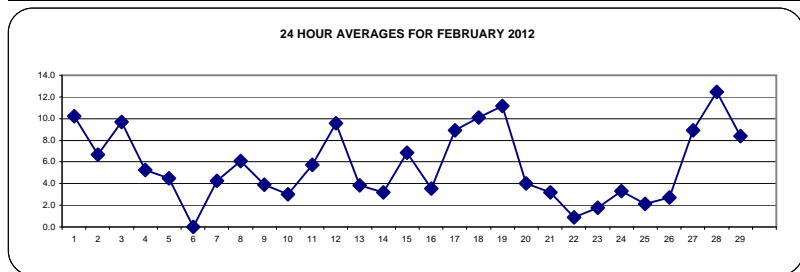
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	23:00	DAILY	24-HOUR	
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY																												
1	15.3	17.9	16	14.3	12.2	8	10.5	9.8	8.6	9.3	9.8	8.6	8.3	9.3	11.3	7.8	8.9	15.5	11.3	10.5	7.3	3.4	7.4	4.3	17.9	10.2	24	
2	6.1	3.8	1.8	2.1	2.6	2.7	7.1	5.1	5.1	7	10.3	7.6	8	4.9	3.7	13.3	8.3	8.9	7.4	11.4	7.7	6.4	8.4	10.5	13.3	6.7	24	
3	7	8.4	10.2	9.6	8.9	9	7	11.7	11.1	10.7	13.3	10.8	10.1	10.9	12	11.7	12.7	9.7	11.6	9.6	11.5	6.1	7	2.1	13.3	9.7	24	
4	1.5	5.1	4.7	2.2	4.4	3.6	2.8	6.4	4.9	6.6	2.6	2.5	5.3	6.1	1.3	5.1	4.5	4.1	4	5.5	6.5	8.6	14.1	14.1	14.1	5.3	24	
5	12.1	13	8	9.5	4.1	8.6	6.6	6.6	4.6	6.6	4.6	3.6	3	4.6	0	6	0	0	0	2.5	0.6	2.1	0.5	0	13.0	4.5	24	
6	3	2.6	0.5	0	0	2.6	2.1	3.6	2.1	2.6	3.6	6.1	1.5	2.6	1.5	1.1	3	0	1.5	1.5	3	3.6	2.6	3.6	6.1	0.0	24	
7	3.1	2.6	4	4.6	5.5	4	6.6	4.6	5.1	6.1	2.1	4	5.1	4.6	3.6	3	5.5	6.6	1.5	4.6	5.5	4	4	2.1	6.6	4.3	24	
8	2.6	4	0	0.5	1.1	3.6	3.6	3.6	4.6	6.6	6.1	4.6	10.5	10.5	7.1	7.1	9.5	10.1	11.1	9.1	9.6	10.5	4	6.6	11.1	6.1	24	
9	5.1	6.6	4	1.5	7.6	9.6	7.1	4	4.6	C	C	C	C	3.6	N	2.6	2.6	1.1	0.5	1.5	3.6	2.1	1.5	5.1	9.6	3.9	23	
10	3.6	2.1	0	2.6	1.5	2.1	1.5	1.1	1.5	3.6	3.1	3.1	5.5	4.6	4	4.6	2.1	2.1	2.6	4.6	5.1	5.5	4	2.1	5.5	3.0	24	
11	2.1	1.5	3	2.6	1.1	5.1	1.5	0	2.1	0.5	7.1	12.1	34.6	11.6	4	5.5	2.6	2.1	4.6	1.1	10.1	7.6	5.1	9.6	34.6	5.7	24	
12	7.6	5.1	3	0.5	1.1	3	8	2.6	2.1	4	4.6	12.5	11	13.6	13.6	10.5	12.6	15.1	13.1	15	17.1	18.6	19.6	16	19.6	9.6	24	
13	12.1	6.6	5.5	6.1	7.1	5.5	5.1	1.1	4	5.1	9.6	2.1	2.1	5.1	0	0.5	0	3.1	3	0	0.5	0.5	5.5	2.1	12.1	3.8	24	
14	0	3	2.1	0	1.5	2.1	2.6	2.1	3.1	4	3.6	0	1.5	1.5	8.6	5.5	5.1	1.5	4.6	2.6	7.1	3.6	8.1	2.1	8.6	3.2	24	
15	2.1	1.5	4.6	3.6	5.5	4	2.6	5.1	6.6	9.1	7.6	12.1	7.6	5.5	3.6	3	5.1	10.1	9.6	12.6	14.1	12.6	9.1	7.6	14.1	6.9	24	
16	4	6.1	5.5	4	3	2.1	3.6	5.1	6.6	2.1	0	6.6	2.1	0	4	0	4	0	4	0	5.5	4.6	6.1	5.5	6.6	3.5	24	
17	5.5	7.1	10.1	9.6	8.6	8.6	10.5	9.6	11.1	15.5	10.1	11.6	12.1	4.6	6.6	13.1	5.1	10.1	9.5	7.6	11.6	5.1	6.1	6.1	15.5	8.9	24	
18	10.5	5.1	7.1	10.1	12.6	12.1	10.5	11.1	12.6	16.1	15.5	13.1	8.6	15	13.1	10.5	7.1	11.6	2.6	15	7.6	3.6	6.6	5.1	16.1	10.1	24	
19	3.6	15.1	18	21.5	17.1	19.6	17.6	15	16	18.6	12.6	12.6	11	5.1	7.6	10.5	6.6	8.6	7.6	4	5.1	2.1	7.1	5.1	21.5	11.2	24	
20	4	3.1	3.6	7.1	2.6	4	5.1	2.1	4.6	4	3	4.6	7.1	5.1	3.6	1.5	3.6	2.6	5.1	2.1	2.6	4.6	4.6	6.6	7.1	4.0	24	
21	2.1	7.6	3.6	5.1	6.1	2.1	6.1	3.6	0.5	6.6	5.5	3	3	5.1	8	5.1	0.5	0	0.5	0	0	0.5	2.6	8.0	3.2	24		
22	0.5	0	0	0	2.1	1.1	2.1	2.6	1.5	1.5	0	2.6	0	1.1	0.5	0.5	1.5	1.1	0	0.5	0.5	0	0	1.1	2.6	0.9	24	
23	2.1	1.1	2.6	0.5	3	N	0.5	0.5	1.5	0	0	1.1	3	3	2.6	2.1	0.5	2.6	0	0.5	6.6	2.1	2.1	3.1	6.6	1.8	23	
24	2.1	5.1	5.1	N	4	4.6	4	6.1	3.6	3.6	1.5	0	2.6	4.6	0.5	2.1	0.5	1.1	1.5	8	5.1	6.1	3	1.1	8.0	3.3	23	
25	2.1	1.5	2.6	4	1.1	2.1	3.1	0	2.6	3	2.1	0	3	0	0	1.1	4.6	2.1	2.1	5.1	2.1	2.6	1.5	2.6	5.1	2.1	24	
26	4	2.6	1.1	1.1	1.5	4.6	2.6	2.1	1.1	2.1	0	1.1	3	0.5	2.6	2.6	4	4	3.6	6.6	3.6	4.6	3.6	2.6	6.6	2.7	24	
27	4.6	3.6	5.5	11.1	11	10.1	9.6	6.6	9.6	6.6	3	6.1	6.6	5.5	11.1	9.6	9.5	8.6	12.1	14.6	11.6	13	13.6	11.1	14.6	8.9	24	
28	13.6	13.6	13.1	15.1	15.1	14.1	11.6	15.6	15.5	11.6	9.6	8.6	9.1	9.1	10.1	8.6	11.1	13.1	17.5	14.1	12.1	14.6	13.6	9.5	17.5	12.5	24	
29	11	10	12.5	14.1	15.6	13.1	7.6	11	14.1	13.6	10.5	9.5	10.1	8	4.6	6.1	3.6	2.1	1.5	5.1	4	8	2.1	3.5	15.6	8.4	24	
HOURLY MAX	15	18	18	22	17	20	18	16	16	19	16	13	35	15	14	13	13	16	18	15	17	19	20	16				
HOURLY AVG	5.3	5.7	5.4	5.8	5.8	6.1	5.8	5.5	5.9	6.7	5.8	6.1	7.0	5.7	5.3	5.5	5.0	5.4	5.3	6.1	6.5	5.7	5.9	5.3				

### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

### OBJECTIVE LIMIT:

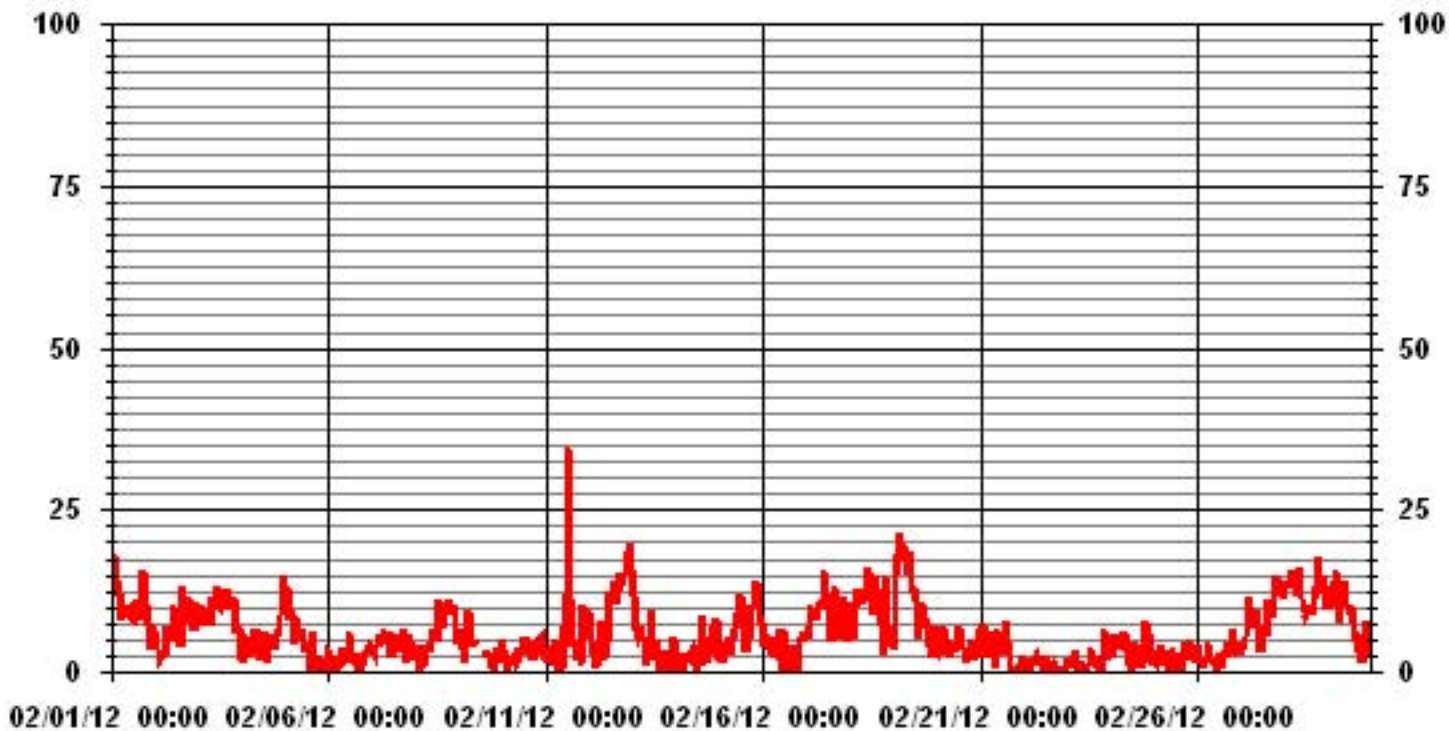
ALBERTA ENVIRONMENT: 1-HR - ug/m<sup>3</sup> 24-HR 30 ug/m<sup>3</sup>



### MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	-	PROPOSED CANADA WIDE GUIDELINE
NUMBER OF 24-HR EXCEEDENCES:	0	
NUMBER OF NON-ZERO READINGS:	622	
MAXIMUM 1-HR AVERAGE:	34.6 UG/M <sup>3</sup>	@ HOUR(S) 12 ON DAY(S) 11
MAXIMUM 24-HR AVERAGE:	12.5 UG/M <sup>3</sup>	ON DAY(S) 28
IZS CALIBRATION TIME:	0 HRS	OPERATIONAL TIME: 693 HRS
MONTHLY CALIBRATION TIME:	4 HRS	AMD OPERATION UPTIME: 99.6 %
STANDARD DEVIATION:	4.51	MONTHLY AVERAGE: 5.68 UG/M <sup>3</sup>

### 01 Hour Averages



— LICA31 PM2 UG/M3

LICA31  
PM2 / WDR Joint Frequency Distribution (Percent)

February 2012

Distribution By % Of Samples

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

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
< 30.0	5.80	5.95	8.12	5.22	3.48	2.90	1.88	1.74	3.48	4.93	5.22	4.78	7.54	11.32	17.70	9.72	99.85
< 60.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.14
< 80.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 120.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	5.80	5.95	8.12	5.22	3.48	2.90	1.88	1.74	3.48	4.93	5.22	4.78	7.54	11.32	17.85	9.72	

Calm : .00 %

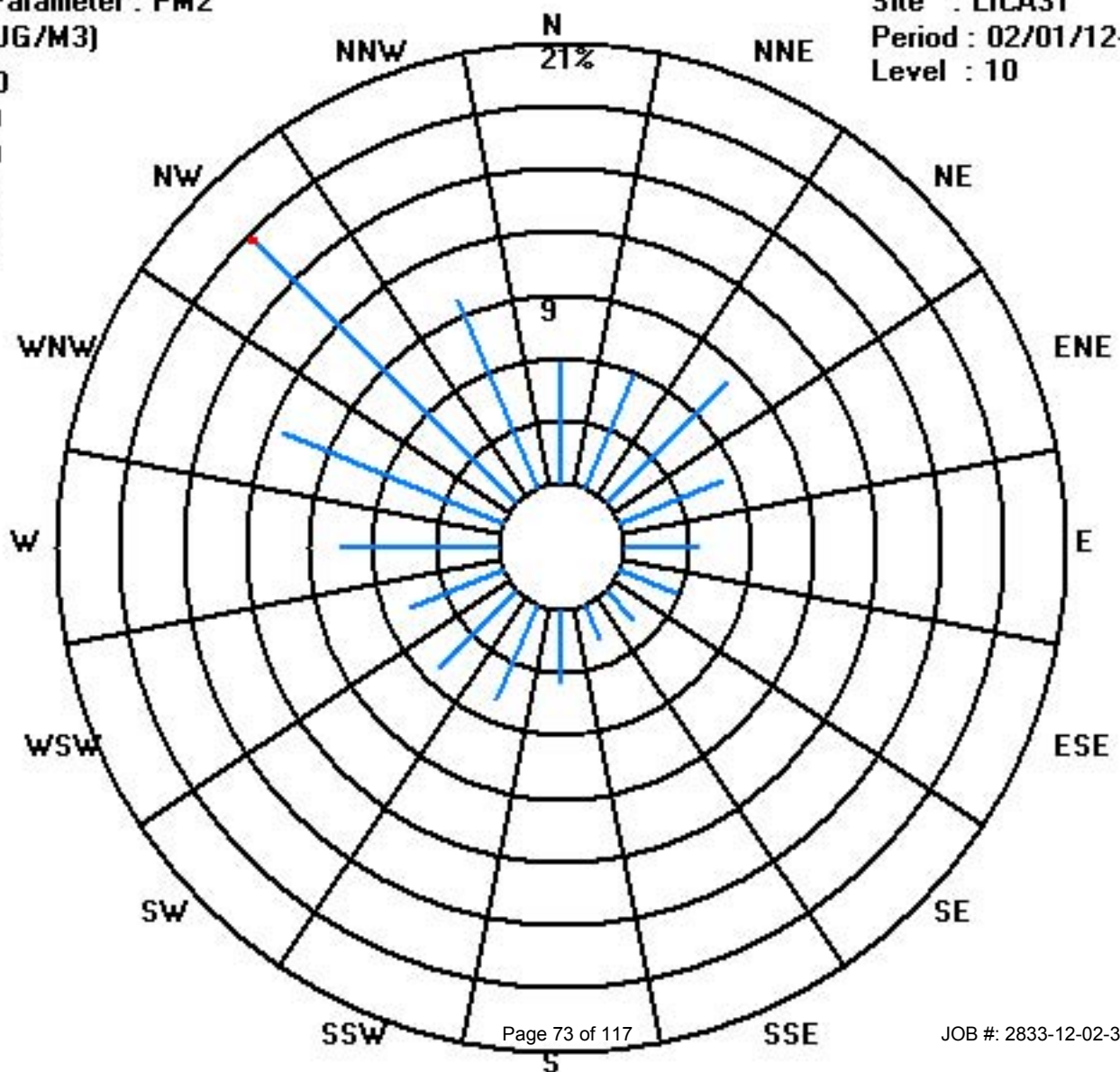
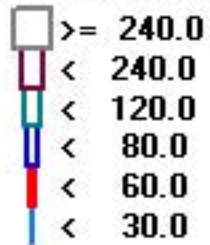
Total # Operational Hours : 689

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30.0	40	41	56	36	24	20	13	12	24	34	36	33	52	78	122	67	688
< 60.0															1		1
< 80.0																	
< 120.0																	
< 240.0																	
>= 240.0																	
Totals	40	41	56	36	24	20	13	12	24	34	36	33	52	78	123	67	

Calm : .00 %

Total # Operational Hours : 689





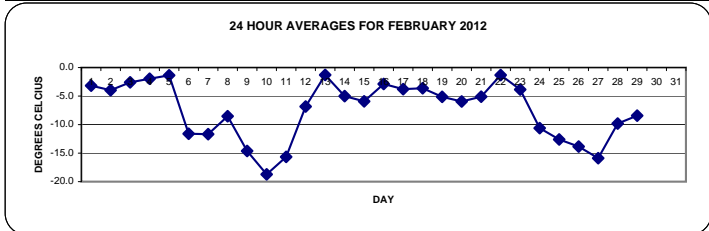
# Temperature

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA**  
**FEBRUARY 2012**  
**AMBIENT TEMPERATURE hourly averages (Degrees C)**

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY MAX.	24-HOUR AVG.	RDGS
DAY	HOURLY MAX	HOURLY AVG	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00			
1	-4.5	-5.3	-5.7	-7	-7.6	-7.7	-8	-7.7	-7	-6.7	-5.9	-3.3	-0.4	1.8	3.4	2.6	0.7	-0.4	-0.8	-1	-1	-1.3	-1.4	-2	3.4	-3.2	24		
2	-2.4	-2.7	-3.4	-4	-4.5	-6.1	-8.5	-8.1	-8	-6.8	-4.9	-3.5	-0.7	-0.8	-1.1	-2.2	-3.6	-4.1	-3.9	-3.3	-2.9	-2.8	-3.4	-3.6	-0.7	-4.0	24		
3	-3.6	-4.1	-4.9	-5.5	-6.3	-6.8	-7.1	-7.7	-7.2	-6	-3.9	-1.5	0.2	1.7	2.9	2.9	1.2	0	-0.6	-0.6	-1.3	-1.2	-1.5	-1.3	2.9	-2.6	24		
4	-1.5	-2.2	-2.7	-3.2	-3.7	-4.3	-4.8	-5.4	-4.8	-3.1	-1.3	-0.2	1.3	2.7	2.6	2.3	0.4	-1.8	-2.5	-3	-3.5	-3.1	-2.6	-2.6	2.7	-2.0	24		
5	-2.2	-1.9	-1.4	-1.2	-1.4	-2.3	-3.5	-3.9	-2.9	-0.8	0.8	2.5	3.7	3.7	3.2	2.2	1.4	-0.7	-2	-3.2	-4.4	-5.5	-6.2	-6.8	3.7	-1.4	24		
6	-7.7	-8.4	-8.7	-8.4	-8.9	-10.2	-11.6	-12.5	-10.8	-10.2	-9.7	-9.3	-9	-9.3	-10.1	-11.8	-14.2	-15.2	-15.7	-15.4	-15.5	-16.2	-17.1	-7.7	-11.6	24			
7	-17.3	-17.2	-17.4	-17.3	-17.5	-17.4	-17.6	-17.6	-14.9	-11.9	-9	-7.2	-6	-4.8	-4.8	-5.5	-6.9	-8.1	-8.5	-8.9	-9.3	-9.1	-9.3	-4.8	-11.7	24			
8	-9.9	-10.4	-10.9	-11.4	-11.8	-12.4	-12.9	-13	-12.9	-11	-8.8	-7.7	-4.8	-3.3	-3.2	-3.5	-4.5	-7.2	-8	-7.8	-7.1	-6.8	-7.3	-8.1	-3.2	-8.5	24		
9	-9.6	-11.1	-12.1	-13.2	-14.3	-15.5	-16.6	-17.1	-16.6	-15.4	-14.2	-12.1	-11.2	-11	-11	-11.6	-12.8	-15.2	-16.6	-17	-17.5	-18.9	-19.8	-20.5	-9.6	-14.6	24		
10	-20.6	-20.8	-21.2	-21.1	-21.9	-22.8	-23.9	-22.9	-20.6	-18.2	-16.7	-15.6	-14	-13.1	-12.7	-13.4	-15.1	-17.1	-18.1	-18.9	-19.5	-20	-20.5	-20.7	-17.7	-18.7	24		
11	-21	-21.2	-21.7	-22.3	-22	-22	-21.5	-21.9	-21.2	-19	-15.8	-12.8	-10.5	-9.4	-8.4	-8	-8.6	-10.6	-12.3	-13.1	-13.4	-13.1	-12.9	-13.2	-8.0	-15.7	24		
12	-13.4	-13.8	-14.3	-14.3	-13.7	-12.2	-12.7	-12.5	-11	-8.2	-5.2	-2.3	-0.7	0.7	1.1	0.4	-1.3	-1.8	-2.7	-3.5	-2.9	-3.1	-2.9	1.1	-6.8	24			
13	-2.5	-2.2	-3.1	-3.7	-4.2	-5.1	-4.7	-3.8	-2.6	-1.1	0.1	1.9	3.2	2.7	3.4	2.7	0.7	-0.1	-1	-1.7	-2.1	-2.3	-2.5	-3	3.4	-1.3	24		
14	-3.7	-4.5	-5.2	-5.7	-6.9	-7.6	-8.1	-8.6	-7.2	-6	-3.5	-2.3	-1.6	-1.9	-2.7	-3.3	-3	-3.8	-5	-5.8	-6.5	-5.6	-5.6	-6	-1.6	-5.0	24		
15	-6.2	-7.5	-8.9	-10	-10.2	-12	-11.6	-12.2	-12	-10.2	-6.8	-5.6	-2.6	-0.8	-0.1	-0.4	-2.3	-2.8	-3.2	-2.7	-2.9	-3.6	-3.5	-4.1	-0.1	-5.9	24		
16	-4.2	-4.3	-4.5	-4.2	-3.8	-3.9	-4.1	-4.4	-4.7	-2.2	1.1	2.5	1.7	2.4	1.2	0.6	-0.6	-2.7	-4.1	-4.9	-5.7	-6.1	-6.9	-7.3	2.5	-2.9	24		
17	-7.9	-8.7	-9.2	-9.6	-9.8	-9.8	-10.2	-10.2	-6.8	-4.8	-1.6	1.8	3	4.6	6	4.9	1.9	-1.2	-2.8	-3.6	-3.4	-3.9	-4.6	-5	6.0	-3.8	24		
18	-5.5	-5.3	-5.9	-5.9	-6.3	-6.8	-6.8	-6.8	-5.6	-4.8	-4.5	-3.2	-2	0	0.3	-0.5	-1	-1.4	-1.4	-1.6	-2.3	-2.7	-3.2	-3.8	0.3	-3.6	24		
19	-4.5	-4.8	-5.5	-5.8	-5.9	-6.1	-6.1	-6	-5.8	-5.6	-4.2	-4.5	-4.1	-4	-3.7	-4.1	-4.3	-4.4	-4.6	-5.2	-5.6	-5.9	-6.1	-6.3	-3.7	-5.1	24		
20	-6.4	-6	-6	-6.2	-6.4	-6.5	-6.7	-6.9	-6.7	-5.8	-4.5	-3.7	-3.6	-3.9	-4.4	-4.8	-5.2	-5.7	-5.9	-5.8	-6.1	-7.6	-8.6	-9.3	-3.6	-5.9	24		
21	-9.6	-10.5	-11.4	-10.7	-11.4	-11.4	-10.6	-9.9	-8.9	-8.1	-7.8	-6.6	-5	-1.9	0.2	2.3	2.5	1.5	0.6	0.4	-0.3	-1.1	-2	-2.9	2.5	-5.1	24		
22	-3.8	-3.4	-3.9	-4.3	-4.4	-4.5	-5	-5.4	-4.3	-1.6	0.9	2.5	3.4	3.5	2.9	2.4	1.6	0.1	-0.2	-1	-1.3	-2.1	-1.9	-2	3.5	-1.3	24		
23	-2.2	-2.1	-2.8	-3.1	-3.3	N	-3.6	-3.8	-4.1	-3.5	-2.7	-2.2	-1	-1	-0.7	-1.7	-2.4	-3.7	-4.8	-5.9	-6.9	-7.9	-9.2	-10	-0.7	-3.9	23		
24	-10.9	-11.5	-11.8	-12.1	-12.8	-13.4	-14.2	-14.1	-11.4	-9.2	-8.1	-6.2	-4.8	-4.7	-6.2	-7.3	-8.3	-11	-12	-12.5	-12.7	-13.3	-13.3	-13	-4.7	-10.6	24		
25	-13.2	-13.5	-14	-14.3	-14.4	-14.5	-14.5	-14.2	-13.6	-12.7	-11.2	-10.3	-9.6	-9.7	-9.4	-9.7	-9.9	-11.3	-12.2	-12.9	-13.4	-14	-14.5	-15.4	-9.4	-12.6	24		
26	-15.8	-16	-15.8	-15.6	-15.5	-15.6	-15.7	-15.7	-15.3	-14	-11.8	-9	-8.5	-8.6	-8.5	-9.5	-11	-12.6	-14.6	-15.4	-15.6	-16.4	-17.5	-18.4	-8.5	-13.9	24		
27	-19.1	-19.8	-20.8	-21.7	-22.2	-22.3	-22.3	-21.6	-18.5	-16.6	-14.8	-13.2	-10.9	-9.2	-9.5	-10.4	-11.3	-12.1	-13.3	-13.6	-14.1	-14.3	-14.7	-15	-9.2	-15.9	24		
28	-15.5	-15.9	-16.2	-16.5	-16.6	-16.6	-16.2	-15.8	-13.4	-11.3	-8	-4.8	-2.4	-2.5	-1.4	-1.8	-2.6	-6.1	-7.6	-8.2	-8.5	-8.5	-9.2	-10	-1.4	-9.8	24		
29	-11.1	-11.7	-11.4	-12.7	-13.3	-13	-13.2	-13.9	-14.4	-12	-10.8	-8.1	-5.2	-3.9	-2.7	-2.4	-2.8	-3.8	-5.1	-5.3	-5	-6.1	-7	-7.4	-2.4	-8.4	24		
HOURLY MAX	-1.5	-1.9	-1.4	-1.2	-1.4	-2.3	-3.5	-3.8	-2.6	-0.8	1.1	2.5	3.7	4.6	6.0	4.9	2.5	1.5	0.6	0.4	-0.3	-1.1	-1.4	-1.3					
HOURLY AVG	-8.8	-9.2	-9.7	-10.0	-10.4	-11.1	-11.1	-11.2	-10.3	-8.7	-6.9	-5.1	-3.6	-2.8	-2.5	-2.9	-4.0	-5.5	-6.5	-6.9	-7.3	-7.6	-8.1	-8.5					

**STATUS FLAG CODES**

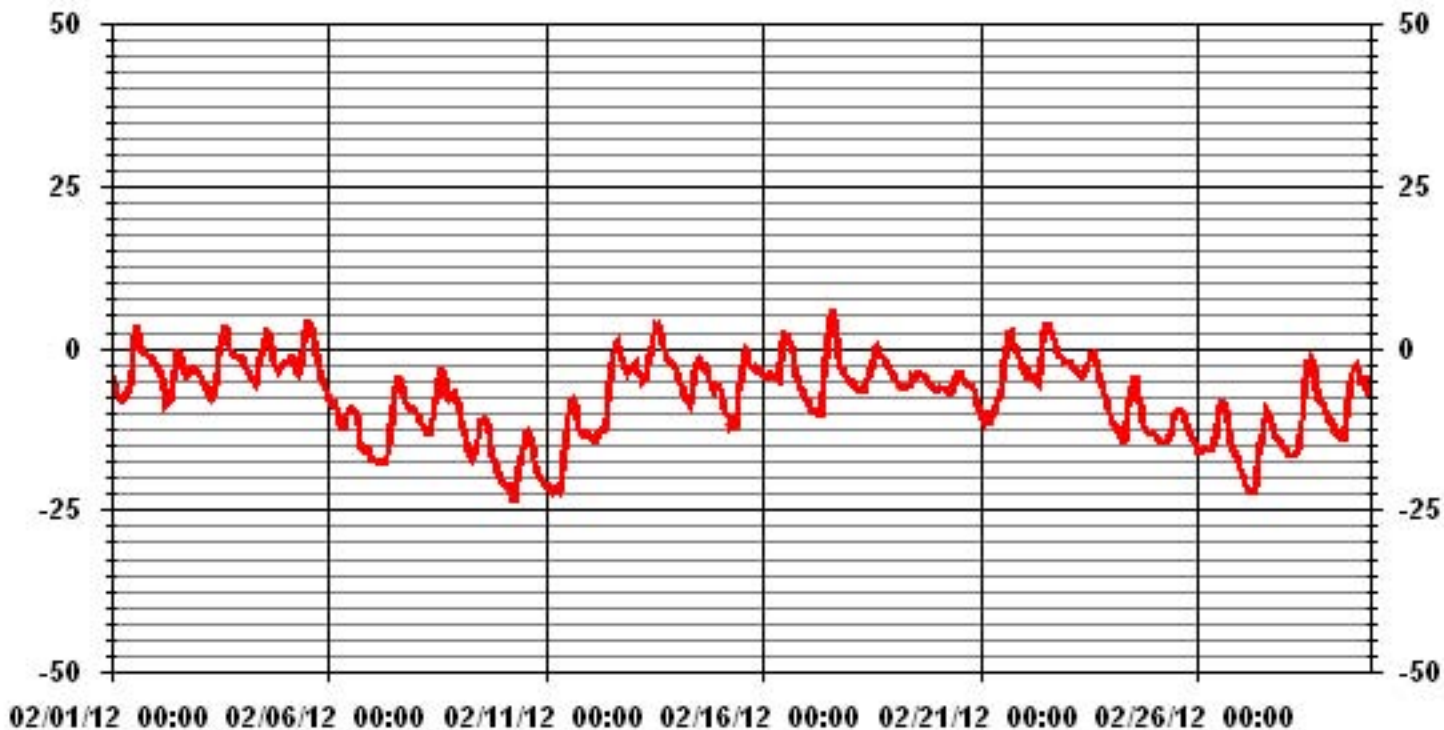
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



**MONTHLY SUMMARY**

MINIMUM 1-HR AVERAGE:	-23.9 °C	@ HOUR(S)	6	ON DAY(S)	10
MAXIMUM 1-HR AVERAGE:	6.0 °C	@ HOUR(S)	14	ON DAY(S)	17
MAXIMUM 24-HR AVERAGE:	-1.3 °C			ON DAY(S)	22
CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	695 HRS		
STANDARD DEVIATION:	6.08	AMD OPERATION UPTIME:	99.9 %		
		MONTHLY AVERAGE:	-7.45 °C		

### 01 Hour Averages



— LICA31 TPX DGC

# Barometric Pressure

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

## BAROMETRIC PRESSURE hourly averages (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	0:00	DAILY	24-HOUR	
DAY	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	921	921	921	921	921	921	921	921	921	921	922	922	923	924	925	926	926	927	928	929	930	931	931	931	931	931	931	924.1	24
2	932	933	934	934	935	935	935	936	936	937	938	939	939	939	939	939	939	938	939	939	938	939	939	938	938	938	939	937.0	24
3	938	938	938	938	938	938	938	938	938	938	938	938	939	939	939	939	939	938	938	937	937	937	936	936	936	939	938.0	24	
4	936	936	936	936	936	935	935	934	934	935	935	935	935	935	935	935	935	934	934	934	934	933	934	934	936	934.8	24		
5	934	934	935	935	935	935	935	935	936	937	938	938	939	940	941	941	942	942	943	943	944	945	945	945	945	945	945	939.0	24
6	945	945	945	945	946	946	946	947	947	948	948	949	949	949	949	948	948	947	946	946	946	946	946	945	949	946.9	24		
7	945	944	944	943	943	942	941	941	940	940	939	940	939	939	938	938	937	936	935	934	934	933	932	931	945	938.7	24		
8	931	930	930	929	929	928	927	927	927	927	927	927	927	928	927	928	928	928	928	928	928	929	930	931	932	932	928.5	24	
9	933	933	934	935	935	936	937	938	938	939	940	940	941	941	942	942	942	942	942	942	942	942	943	943	943	943	939.3	24	
10	944	944	944	945	945	944	944	945	945	945	946	946	946	946	946	945	944	944	944	943	943	943	943	943	946	944.6	24		
11	942	942	941	940	940	939	939	938	937	937	937	937	936	936	935	934	933	932	931	930	929	928	927	926	925	942	934.8	24	
12	924	923	923	922	921	920	920	919	919	919	919	919	919	919	919	918	918	917	917	917	916	916	916	916	916	924	919.0	24	
13	916	917	917	917	917	917	917	917	918	918	918	919	919	920	920	920	920	920	920	920	920	920	920	921	921	921	921	918.8	24
14	920	920	920	919	919	919	918	918	919	919	919	920	920	920	920	920	920	920	921	921	921	921	922	922	922	922	919.9	24	
15	922	922	922	922	923	923	923	923	923	924	925	925	926	927	926	926	926	926	926	927	927	927	927	927	927	927	927	924.8	24
16	928	928	928	928	928	928	929	929	929	929	930	931	931	931	931	930	930	929	929	929	928	928	928	928	928	928	931	928.9	24
17	929	929	928	928	928	928	928	928	929	930	931	932	932	932	932	931	929	928	928	927	926	925	925	932	929.0	24			
18	924	923	923	922	921	921	920	920	919	919	919	919	918	918	918	918	917	917	917	917	916	916	915	924	919.0	24			
19	915	915	915	914	914	914	914	914	914	913	914	913	913	913	913	913	914	914	914	914	915	915	915	915	915	915	914.0	24	
20	915	916	916	916	917	917	918	918	919	919	920	920	921	920	921	921	921	921	921	921	921	920	919	918	918	921	918.9	24	
21	917	916	915	914	913	912	911	910	909	909	908	908	908	909	910	910	910	910	910	910	910	910	909	909	909	917	910.7	24	
22	908	908	908	907	907	907	906	906	906	906	907	908	908	909	910	911	911	912	913	914	914	915	916	917	917	909.8	24		
23	917	918	919	920	921	N	922	923	923	924	924	925	925	925	926	926	926	926	927	927	927	927	928	928	928	928	924.1	23	
24	929	929	929	929	930	930	930	931	931	932	932	932	932	932	931	930	929	928	927	926	925	925	932	929.4	24				
25	924	923	922	922	921	921	920	921	921	922	922	923	924	924	925	926	927	928	928	929	930	930	931	931	931	931	924.8	24	
26	931	932	932	932	933	933	933	934	934	935	935	936	936	936	936	936	935	935	934	933	933	933	933	932	931	936	933.8	24	
27	930	929	929	928	927	926	925	924	924	924	923	923	923	923	922	922	921	921	921	921	921	921	920	921	920	930	923.7	24	
28	920	920	920	920	919	919	919	919	919	919	920	920	921	922	922	922	922	921	920	919	919	918	918	918	917	922	919.8	24	
29	917	916	916	915	914	914	914	914	914	914	914	914	914	915	915	916	916	915	915	915	916	916	916	916	916	917	915.1	24	
HOURLY MAX	945	945	945	945	946	946	946	947	947	948	948	949	949	949	949	949	948	948	947	946	946	946	946	945					
HOURLY AVG	927	927	927	927	927	927	926	927	927	927	927	928	928	928	928	928	928	927	927	927	927	927	927	927					

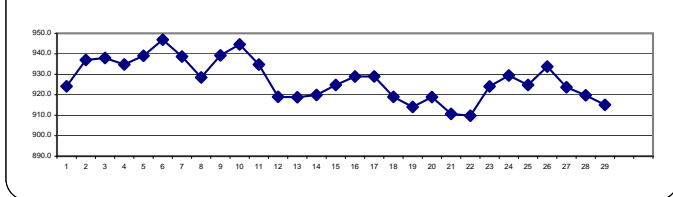
### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

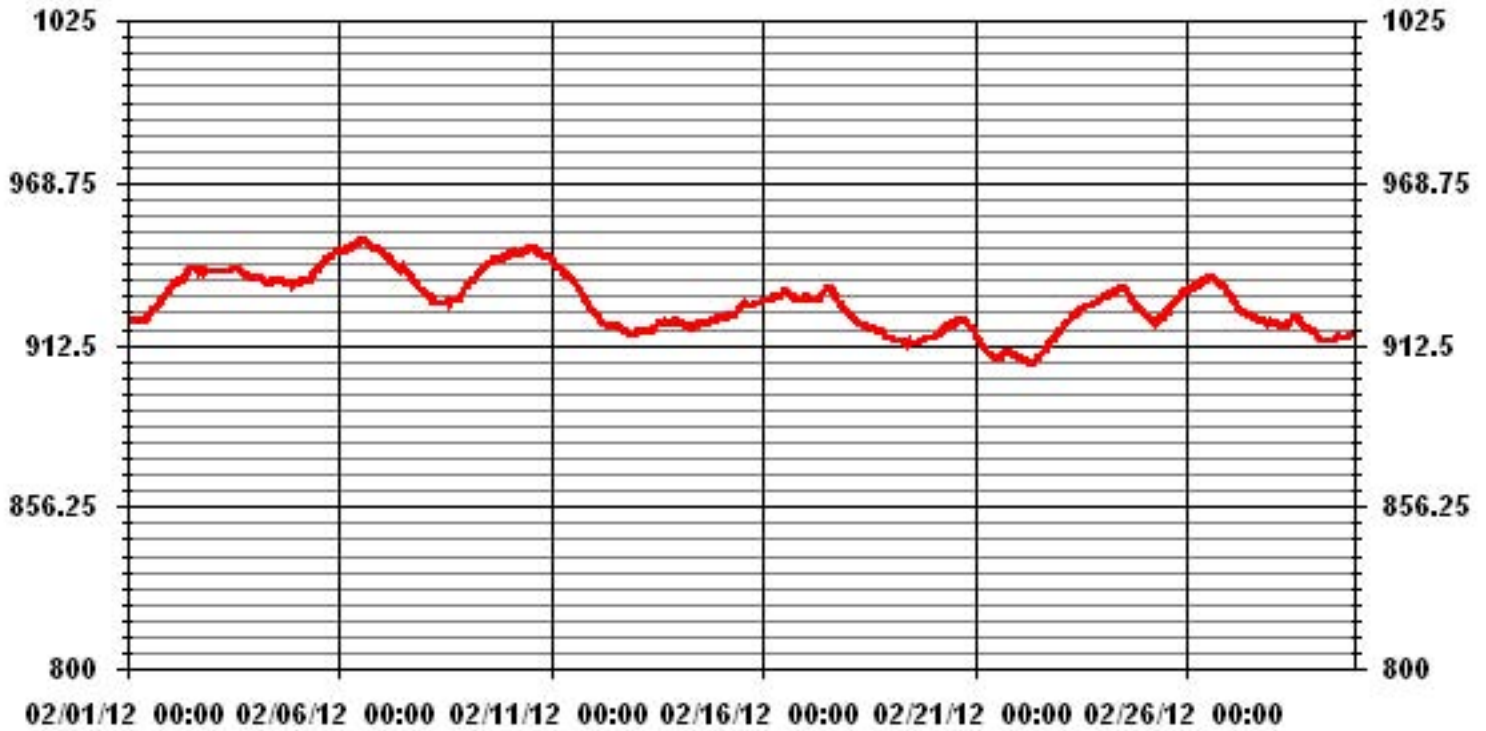
### MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	949	MB	@ HOUR(S)	VAR	ON DAY(S)	6
MAXIMUM 24-HR AVERAGE:	946.9	MB			ON DAY(S)	6
				VAR-VARIOUS		
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	695	HRS	
STANDARD DEVIATION:	10.07		AMD OPERATION UPTIME:	99.9	%	
			MONTHLY AVERAGE:	928	MB	

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



# Relative Humidity

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

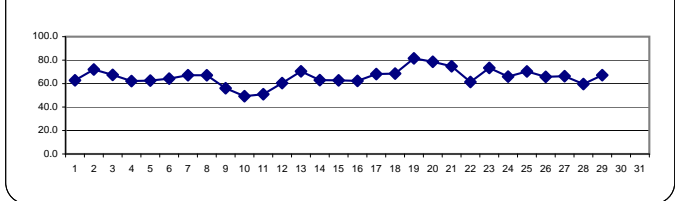
### RELATIVE HUMIDITY hourly averages (%)

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	DAILY	24-HOUR		
DAY	HOURLY MAX	HOURLY AVG	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	76	76	74	76	76	73	72	70	67	66	64	57	51	46	42	43	49	54	56	57	61	64	67	70	76	76	62.8	24	
2	71	72	75	76	78	82	83	83	83	78	70	66	59	61	63	66	69	71	72	72	70	69	69	70	69	70	83	72.0	24
3	71	72	74	76	77	78	79	79	77	72	65	60	57	55	52	53	60	65	68	68	69	66	64	61	79	67.4	24		
4	60	61	64	67	68	68	70	71	68	61	56	54	51	48	48	51	56	63	65	68	70	69	67	68	71	62.2	24		
5	70	73	73	73	74	77	80	83	81	71	65	55	49	45	47	51	50	51	56	62	54	53	53	55	83	62.5	24		
6	59	61	66	60	62	66	71	74	75	65	60	56	55	53	54	55	59	65	68	70	69	70	73	76	76	64.3	24		
7	76	75	75	75	75	75	74	75	73	72	68	59	55	52	50	51	55	61	66	68	70	72	70	69	76	67.1	24		
8	71	72	74	76	77	79	80	80	77	73	68	66	57	53	53	54	55	62	64	65	64	63	63	64	80	67.1	24		
9	66	69	70	73	76	77	78	76	71	64	54	40	38	36	34	33	37	44	47	48	49	52	55	58	78	56.0	24		
10	58	60	62	60	62	65	66	61	49	43	42	40	38	36	34	36	42	45	45	45	47	49	49	48	66	49.3	24		
11	50	52	55	57	57	58	57	57	56	52	49	46	44	42	40	39	42	47	52	55	56	55	53	52	58	51.0	24		
12	52	53	55	55	56	58	60	63	62	60	58	55	51	52	52	54	57	63	66	69	74	74	75	76	76	60.4	24		
13	76	77	80	82	83	85	84	82	76	71	69	63	51	50	51	56	65	71	72	74	69	67	67	70	85	70.5	24		
14	71	73	74	71	73	74	73	72	64	59	53	51	51	52	55	56	55	57	61	64	65	62	62	63	74	63.0	24		
15	64	68	72	74	75	78	78	78	73	68	62	60	54	51	49	49	54	56	57	56	56	59	57	58	78	62.8	24		
16	57	60	72	68	63	64	64	65	66	56	48	46	49	48	52	53	57	63	67	70	75	76	78	79	79	62.3	24		
17	80	80	81	80	79	78	79	79	71	63	57	51	49	47	44	47	55	64	70	74	75	76	77	79	81	68.1	24		
18	80	77	78	77	77	77	76	73	69	65	62	60	56	55	58	61	63	65	66	69	70	72	74	80	68.5	24			
19	76	77	78	79	82	83	83	84	83	81	78	81	79	79	79	82	84	85	85	83	83	84	84	84	85	81.5	81.5	24	
20	84	84	83	83	83	83	83	82	81	78	73	70	71	71	74	74	75	76	76	76	76	82	84	84	84	84	78.6	24	
21	83	81	81	81	80	80	81	81	82	81	81	80	80	73	68	65	61	63	67	66	69	69	71	70	83	74.8	24		
22	68	62	62	62	61	63	65	69	67	65	63	56	48	46	48	49	54	64	60	64	67	73	68	69	73	61.4	24		
23	71	74	81	77	75	N	74	75	76	73	69	65	61	61	61	69	77	78	79	79	79	79	76	77	80	81	73.3	23	
24	80	81	79	79	79	79	79	78	69	62	58	50	44	43	49	50	53	63	66	68	68	68	69	69	81	66.0	24		
25	70	71	73	75	76	76	76	76	76	75	73	70	67	65	63	63	62	65	67	68	69	70	71	72	76	70.4	24		
26	73	74	74	74	74	74	73	74	72	67	58	50	47	49	50	52	56	61	66	68	70	72	75	75	75	65.8	24		
27	75	74	73	72	71	71	71	71	69	70	68	62	53	49	50	54	58	60	64	67	70	72	74	74	75	66.3	24		
28	75	76	76	76	76	75	73	73	66	59	50	39	34	38	38	35	41	51	54	56	62	66	69	73	76	59.6	24		
29	75	76	75	79	80	79	79	78	76	76	76	68	60	59	55	53	54	55	58	59	59	62	62	59	80	67.2	24		
HOURLY MAX	84	84	83	83	83	85	84	84	83	81	81	81	80	79	79	82	84	85	85	85	83	83	84	84	84				
HOURLY AVG	70.3	71.1	72.7	72.9	73.3	74.1	74.5	74.6	71.6	67.1	62.8	57.9	53.9	52.3	52.1	53.5	57.0	61.6	64.1	65.7	66.7	67.6	68.1	68.9					

#### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

24 HOUR AVERAGES FOR FEBRUARY 2012

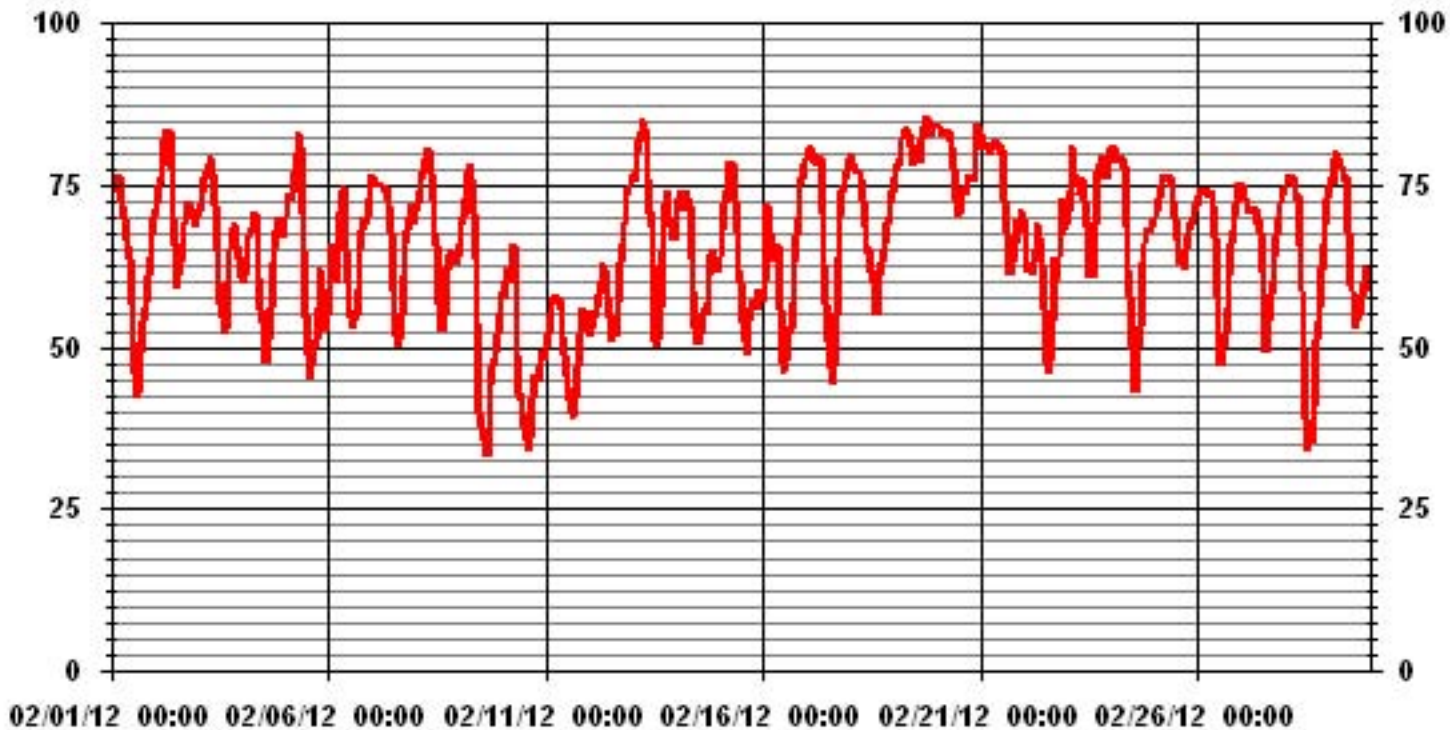


#### MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	85	%	@ HOUR(S)	VAR	ON DAY(S)	13, 19
MAXIMUM 24-HR AVERAGE:	81.5	%			ON DAY(S)	19
					VAR-VARIOUS	
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	695	HRS	
			AMD OPERATION UPTIME:	99.9	%	
STANDARD DEVIATION:	11.47		MONTHLY AVERAGE:	65.57	%	



### 01 Hour Averages



# Precipitation

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA**  
**FEBRUARY 2012**  
**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 MAX.	DAILY TOTAL	RDGS.	
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	0:00				
1	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	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	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	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	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	24	
6	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	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	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	24	
9	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	0	0.0	0.0	23	
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	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	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	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	24	
14	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	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	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	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	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	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	24	
20	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	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	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	24	
23	0.0	0	0	0	0	0	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	23	
24	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	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	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	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	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	24	
29	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
HOURLY MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

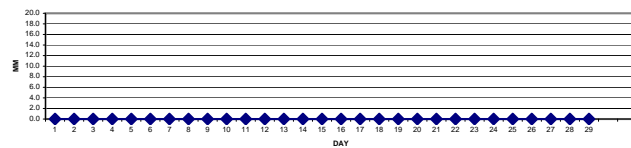
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	MD	-MISSING DATA

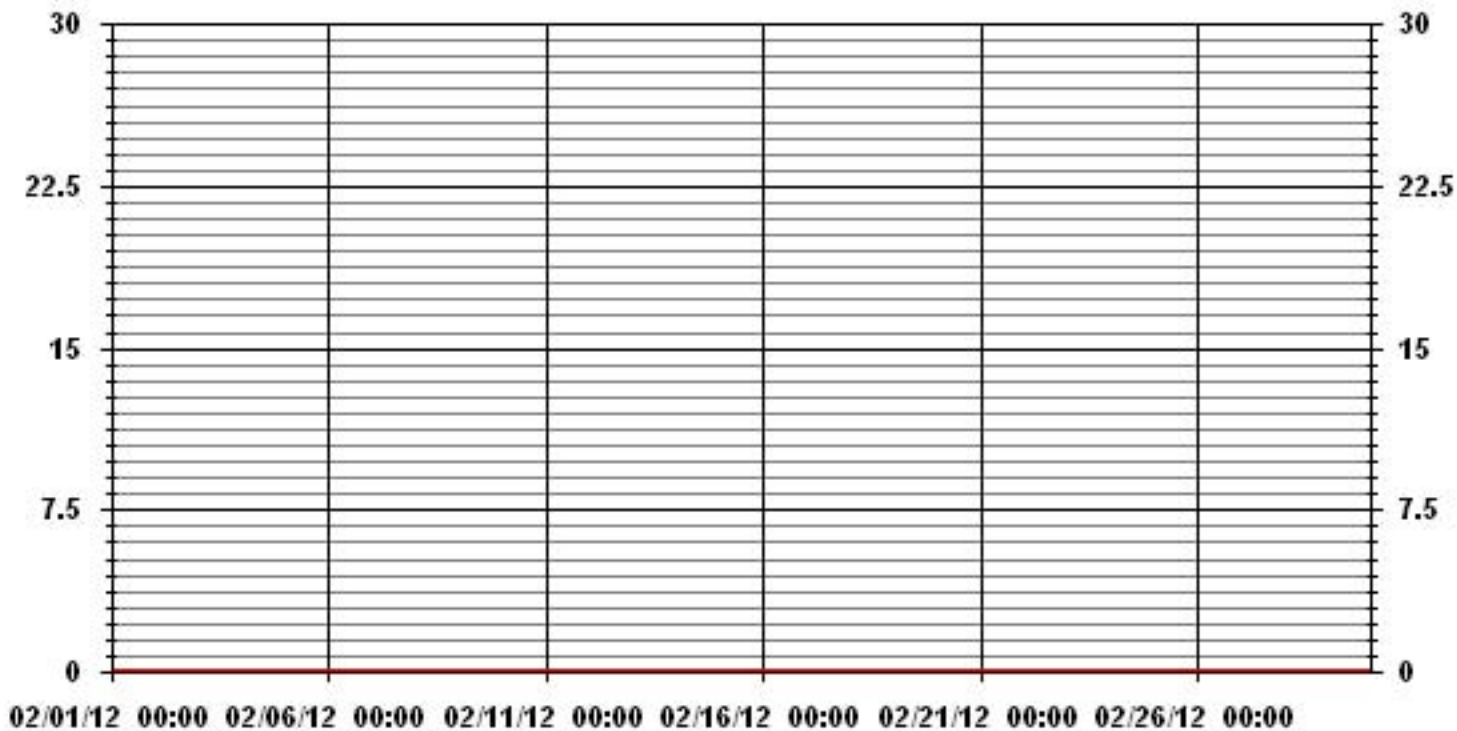
**MONTHLY SUMMARY**

MAXIMUM 1-HR AVERAGE:	0.0	MM	HOUR(S)	13	ON DAY(S)	9
MAXIMUM DAILY TOTAL	0.0	MM			ON DAY(S)	9
MONTHLY TOTAL	0.0	MM				
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	694	HRS	
STANDARD DEVIATION:	0.00		AMD OPERATION UPTIME:	99.7	%	
			MONTHLY AVERAGE:	0.00	MM	

**DAILY TOTALS FOR FEBRUARY 2012**



### 01 Hour Averages



— LICA31 PRECIP MM

# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -ST. LINA

FEBRUARY 2012

WIND SPEED hourly averages (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	9.2	8.8	9.7	9.8	9	9.5	7.4	10.2	9.7	9.9	11.3	14.8	13.3	12.7	14.4	4	3.8	12.4	11.1	12.1	10.3	12.2	11.5	12.1	14.8	8.5	24
2	13.9	11.6	11.6	11.6	9.4	9.9	9.1	11.3	9	6.9	7.2	8.5	8	8.8	8.9	8	8.7	10.1	9.3	6.8	7.3	6.1	5.8	7.6	13.9	6.6	24
3	8.6	9.6	8.9	8.6	8.1	9.9	8	8.5	8.4	9.5	8.9	11.7	14.8	11.7	9.6	8.5	8	8.1	8.5	6.6	6.7	5.7	4.9	4.2	14.8	8.2	24
4	5.8	5.3	5	3.5	4.5	2.3	2.2	2.2	4.2	1.8	2.4	7	8.7	8.3	6.9	7.3	13.2	13.4	13.7	14.9	15.2	10.5	10.8	11.4	15.2	6.3	24
5	12.5	13.1	12.8	14.1	14.8	13.8	11.7	10.9	8.6	6.1	6.3	9.1	9.9	6.9	7.5	9.2	5.8	4.7	6	6.8	5.2	10.5	9.8	8.9	14.8	7.7	24
6	6.9	7.4	7.8	8.4	8.6	10	10.6	12.2	12.1	12.8	11.1	8.7	7.5	6.6	6	7.7	8.1	8.8	6.9	11.1	10.5	5.7	7	7.3	12.8	4.7	24
7	6.9	6.7	7.5	9.4	9	7.9	8.6	8.1	6.9	6.5	8.1	6.8	7	3.7	5.7	6.5	8.2	7.9	5	4.7	4.9	5.1	5.6	8.3	9.4	5.8	24
8	8.7	7.1	9.4	6.6	8.7	8.7	7.2	8.2	12	11.1	11.5	13.6	6.1	6.3	8.2	8.7	10.4	12.2	11.8	11.4	4.9	8.9	7	6.3	13.6	7	24
9	8.4	8	8.7	10.5	8.3	10.4	11.2	10.2	10.1	10.3	10.6	7	6.2	11.3	12	6.1	4.6	15	3.4	8.6	10.1	13.6	12.9	11.2	15	5.8	24
10	11.7	11.4	10	9.2	10.7	9.7	10.9	10.1	5.3	10.9	11.2	12.1	12.7	12.1	12.3	8.3	8.5	8.8	12.1	11.7	8.5	7.8	9.7	6.1	12.7	7.5	24
11	5	6	3.6	6.1	6.2	6.4	9.3	6.7	8	6.9	5.1	2.3	3.5	1.4	2.6	6.2	6.9	6.4	5.9	1.9	2.9	2.6	3.2	4.1	9.3	4.1	24
12	4.6	5.8	8.9	8.8	9.7	9.5	9.8	10.8	10.6	11.2	12.5	13.3	12.1	13.5	11.4	11.5	11.1	11.8	13.2	13.1	14.2	16.9	16.9	10.7	16.9	11.2	24
13	11	10.5	10.2	11.1	9.8	10.6	11.1	11.9	12.6	13.1	14.5	14.2	18.3	18.3	17	15.9	14.5	12.4	11.4	9.6	11.6	11.2	10.8	10.6	18.3	11.9	24
14	10.3	9.8	10.3	12.2	13.1	13.6	13.3	12.8	12.7	11.8	12.5	14.3	12.5	12.9	13.6	10.3	8.4	6.3	5.9	7	9.1	10.4	11.9	12.9	14.3	10.8	24
15	12.2	10.8	10.9	11.4	10.5	8.8	9.7	8.2	8.9	8.8	7.4	9.3	12.3	12.4	10.3	12.4	13.6	11	8.6	7.2	6.7	8.8	9.8	9.5	13.6	9.3	24
16	8	9.1	9.2	9.6	9.8	9.3	7.7	5.7	7.3	5.5	11.8	2.3	12.6	4.9	7.8	8.8	11	6.6	9.1	8.7	8.7	11	10.8	10.6	12.6	5.7	24
17	9.6	9.8	9	9	11	11.9	11.8	13.8	12.1	7.6	6.5	6.9	5.5	6.1	2.2	5.5	7.8	10	10.1	8.4	4.7	7.6	9.1	7.9	13.8	4.9	24
18	6.9	6.3	7.1	7.1	7.4	7.5	8.9	12.5	14.7	9.4	13.2	14.9	21.8	20.7	15.1	14.1	11.2	14.5	13	11.8	9.9	9.8	7.6	6.6	21.8	10.4	24
19	6.5	1.5	13.3	14.4	14.4	12.9	13.9	13.1	12.7	13.2	14.1	14.6	17.4	17.8	17	18.1	16.8	7.9	7.9	10.4	8.9	11.6	9.8	7.6	18.1	8.4	24
20	6.3	6.8	7.7	7.4	8.3	8.8	10.5	10.7	10.5	12.2	12.7	12.5	11.1	12.4	9.9	11.5	14.1	10	4.2	4.7	3.5	13.4	11.5	10.8	14.1	8.1	24
21	10.2	9	10.3	7.4	8.1	6.6	5.2	6.5	4.5	2.1	2.7	4.7	9.2	16.7	19	14.7	17.7	11.6	11.3	9	6.5	7.6	7.3	10.3	19	6.7	24
22	11.3	10.6	9.5	11.1	11.1	11.2	10.4	9.8	9.6	10.1	10.7	14.8	16.2	13.9	13.9	13.8	12.8	10.9	11.6	13	16.3	10.1	10.6	13	16.3	10.5	24
23	10.2	9.5	8.3	9.4	9.7	N	12	11.8	12.1	12	11.3	11.7	12.1	12.1	11.1	9.8	14	8.1	12.3	11	10.8	11.4	11.9	11	14	9.7	23
24	12.2	10.9	12.3	11.2	12	7.1	7.7	11.6	10.3	13.5	10.5	13.3	12	3.1	6.3	7.9	7.2	8.8	10.3	11.5	10	0.7	2.4	1.3	13.5	5	24
25	3.7	4.6	5.9	7.6	9.1	9.5	11.2	10.9	11.5	13.6	11.7	13.5	14.4	15.3	15.1	14.6	11.7	11.2	11.7	9.5	9.2	9.1	8.7	9.8	15.3	9.5	24
26	10.7	10.8	10	9.4	10.1	10	9.1	10	7	8.2	5.4	4	13.8	3.6	3.9	10.7	12.9	13.1	11.7	10.6	9.9	9.1	11.1	10.2	13.8	4.9	24
27	6.4	10.6	10	8.7	10.1	9.8	10.3	7.8	9.2	8.8	8.1	6.7	9.9	8.4	7.8	7.1	9.1	9.6	11	8.7	8.9	8.8	8.8	8.9	11	8.7	24
28	8.7	10.3	10	10.5	10.6	10.4	10.5	10.3	8.1	9.1	9.6	9.4	8.5	7.8	10.2	8.2	8	10.2	11.8	9.7	13.7	14.3	14.6	10.6	14.6	4.7	24
29	8.1	11.8	11.8	11.2	12.2	11	9.2	8.2	9	6.9	12.2	12.7	13	14.5	9.8	12.6	10.2	9.6	8.7	15	16.6	12.4	15.7	15.9	16.6	10.2	24
HOURLY MAX	13.9	13.1	13.3	14.4	14.8	13.8	13.9	13.8	14.7	13.6	14.5	14.9	21.8	20.7	19.0	18.1	17.7	15.0	13.7	15.0	16.6	16.9	16.9	15.9			
HOURLY AVG	8.8	8.7	9.3	9.5	9.8	9.5	9.6	9.8	9.6	9.3	9.7	10.2	11.4	10.5	10.2	9.9	10.3	10.0	9.6	9.5	9.2	9.4	9.6	9.2			

**STATUS FLAG CODES**

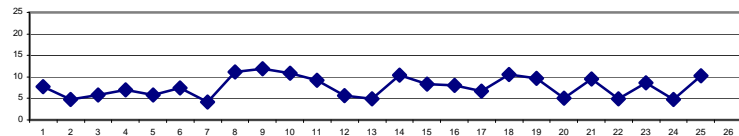
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: June 17, 2010

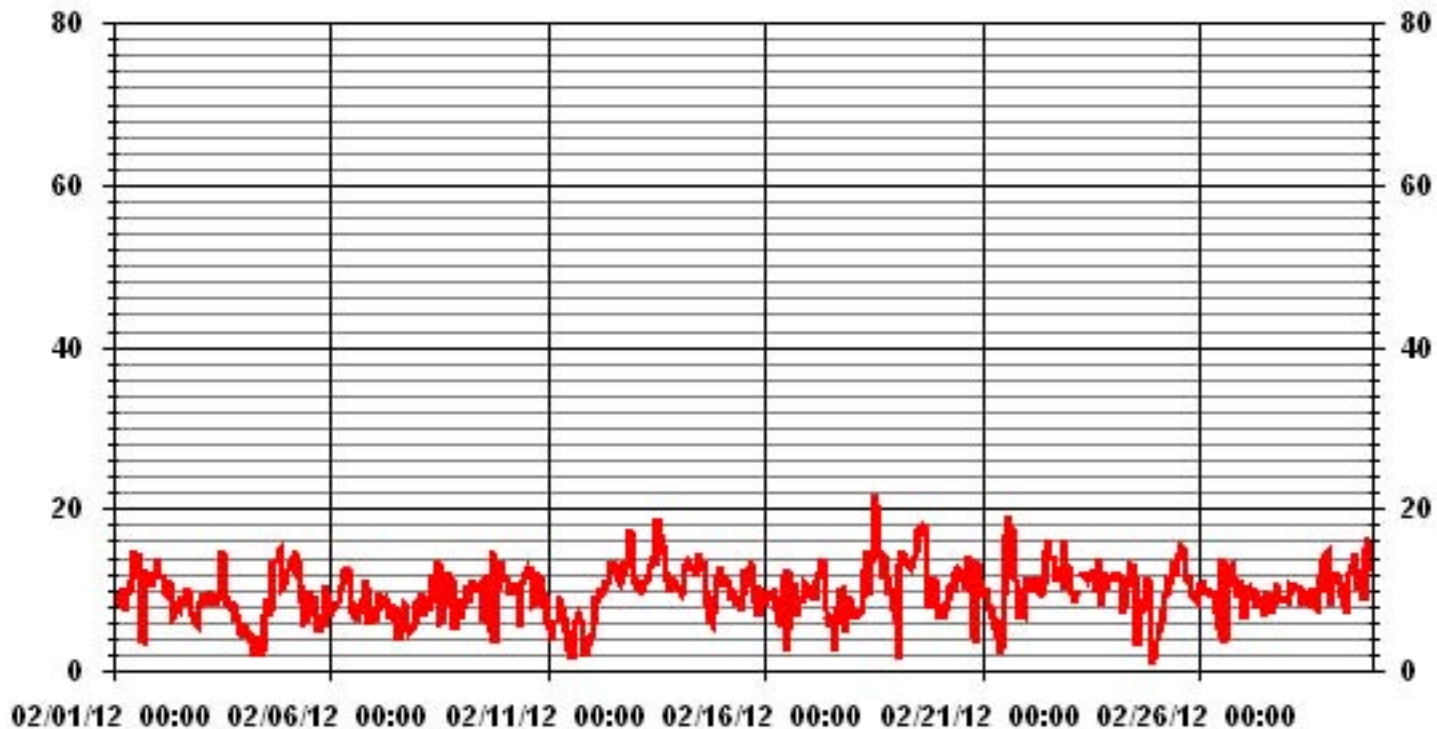
**MONTHLY SUMMARY**

MAXIMUM 1-HR AVERAGE:	21.8	KPH	@ HOUR(S)	12	ON DAY(S)	18
MAXIMUM 24-HR AVERAGE:	11.9	KPH			ON DAY(S)	13
CALMS (≤ 0 KPH)	0.13	%	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME	99.9	%	
STANDARD DEVIATION	3.17		MONTHLY AVERAGE	9.69	KPH	

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



— LICA31 WSP KPH

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

FEBRUARY 2012

### VECTOR WIND SPEED MAX instantaneous maximum 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	
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	MAX.	
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		15.6	15.4	14.8	15.4	15.4	18.2	16.5	16.7	17.1	16	19.3	23.5	23.9	19.3	17.6	21.7	21.1	23.5	23.2	23.2	21.3	21	21.7	24.1	24.1	
2		23.9	24.8	20.7	22.8	20.8	16.7	13.9	17.1	16	11.9	12.1	11.5	11.4	17.6	17.1	19.5	17.6	19.3	16.3	17.1	18.9	16.2	14.7	16.7	24.8	
3		16.9	16.9	14.9	16	13.2	14.7	13.9	14.3	14.5	14.1	14.3	18.2	21.7	18.2	14.3	14.3	16.7	16.2	15.6	16	15.6	15.4	13.6	15.4	21.7	
4		16	13.8	15.4	15.4	14.9	18	19.4	19.4	16	21.5	26.1	20.9	18	19.5	25	17.1	20	17.2	16.7	18.2	20.2	21.1	20.8	24.1	26.1	
5		26.7	24.3	27.2	23.5	25.6	25.6	23.7	23.7	17.4	22.4	18.4	17.3	19.1	25.3	23.7	19.1	23.2	21.5	18.2	20.8	23.9	20	20.4	19.1	27.2	
6		19.1	18.4	19.7	18.7	18.9	19.7	20	24.4	15.8	17.8	22.6	19.5	19.1	15.6	17.3	17.2	18.5	18	20.9	19.5	17.6	16	17	20.4	24.4	
7		19.8	17.6	18.9	22.6	19.1	22.2	19.5	19.6	19.3	19.8	20.2	18.7	19.1	18	18	17.6	17.6	20.6	16.9	16.3	14.7	15.2	19.5	21	22.6	
8		19.8	17.6	18.2	14.7	16.5	19.1	17	15.4	17.8	17.1	16.1	18.9	21.3	15.4	20.4	18.5	22.8	22.4	23	22.4	19.8	22.4	20.8	17.6	23	
9		23.3	21.7	20.6	23.3	20.9	23	20.6	25.5	20.9	20.2	20.6	19.3	25	25	22.2	20	26.8	33.4	<b>55.4</b>	26.5	16.9	19.3	20.9	20.4	<b>55.4</b>	
10		21.5	20	17.4	15.4	17.4	12.8	19.3	14.3	17.8	24.4	20.5	25.7	25.9	22.8	23.3	21.1	17.6	16	23.5	21.1	20.9	18.2	19.1	15.8	25.9	
11		14.3	16.5	18.7	20.6	17.6	17.8	17.1	16	18.7	19.1	17.4	41.7	21.9	20.9	17.6	18.7	17.3	15.6	17.4	17.1	17.6	19.1	17.6	14.5	41.7	
12		18.7	16.3	16.3	16	18.2	16.5	18.7	15.8	14.5	14.9	19.3	18.4	16.3	18.7	16.7	16.9	17.3	15.4	16.3	16.2	19.8	20.4	19.8	20	20.4	
13		19.7	16.7	15.6	14.7	15.2	16.7	18.9	20.4	22.8	23.9	27.2	32.2	42.7	42.1	38.3	39.4	32	29.2	21.9	20.2	21	22.6	21.7	20	42.7	
14		20	20.2	17.6	21.3	18.9	23.2	20.8	21.9	21.5	19.5	22.4	25.2	20.8	18.9	19.7	16.9	13.2	13.2	10.3	9	15.4	18.4	20.4	22.6	25.2	
15		22.4	16.7	15.8	15.6	16.5	11.4	12.1	15.6	11.4	13	11	13	18.7	19.5	17.1	19.1	22.1	19.1	13.2	13.8	14.7	19.7	19.5	18	22.4	
16		15.4	19.1	17.3	22.8	18.2	17.6	14.6	12.1	16.7	11.4	25.4	23.9	21	16.7	15.2	13.6	15	13.6	15.2	13.4	18	20.4	13.8	14.5	25.4	
17		14.9	13.8	14.7	14	13.6	13.9	14.1	17.8	18.7	12.5	17.1	14.3	12.1	13.8	13.8	13.2	14.5	21.3	21.9	18.2	18.5	14.9	16.7	16	21.9	
18		14.5	13	15.4	15.6	15.6	15.8	17.3	24.3	27	23.9	24.1	45.8	40.8	40.8	35.7	24.3	21.5	24.6	22.8	21	16.9	16.9	15.8	11	45.8	
19		11.5	18.9	18.9	21.5	21.5	20	19.7	20.2	21.3	23.5	26.7	23	28.1	26.1	26.1	27.4	24.3	24.1	27	21	17.6	19.5	18.4	16.5	28.1	
20		14.3	15.4	17.6	16.5	18.4	18.9	20.2	20.9	21.9	27.2	27	24.8	25.6	26.1	21.9	25.7	23.9	23.7	20.2	17.6	29.4	21.1	14.7	17.8	29.4	
21		18.4	19.8	20.9	16.7	16.3	18.7	16.9	19.5	16.3	22.4	21.7	21.5	21.3	29.2	29.2	30	<b>P</b>	28.7	20.4	19.3	16.2	19.7	16.5	18.2	30	
22		20.2	16.2	13.6	18.2	16.9	16	18	14.7	15.2	19.5	21.7	35.9	32.5	30.9	27.2	29.2	38.6	28.9	26.3	25.9	38.3	23.2	23.9	28.3	38.6	
23		20.2	24.3	20.6	19.8	19.7	<b>N</b>	24.8	20.4	20.2	23.2	22.1	21.3	21.3	22.4	22.4	21.5	23.9	23	20.8	20.4	20.8	22.4	18.9	17.1	24.8	
24		18	17.3	20	19.3	17.4	18.2	16.7	22.6	21.3	24.6	23.3	24.6	27	27.8	15.8	18	16.9	19.5	20.9	23.5	26.8	15	13	12.1	27.8	
25		26.8	20.6	19.5	26.5	30.3	26.8	29.4	32	29	30.7	32.2	32.5	39.2	36.6	39	33	27.8	25.5	25.7	25.5	19.3	22.4	20	16.5	39.2	
26		17.8	16.5	16.9	21.9	19.5	17.6	15.8	16.3	18	20	22.2	31.6	28.1	30.1	26.1	25.2	24.2	23.3	20.4	17.4	17.8	14.5	16.9	16	31.6	
27		19.3	19.8	20.7	19.8	19.8	20.5	20.9	17.4	17.2	21.5	18.4	18.2	18.9	18.7	18.2	17.4	20.2	18.5	15.6	13.8	16.7	13.8	17	18	21.5	
28		18.7	18.7	17.4	19.3	18.2	16.7	15.6	21.1	20	23.3	23.3	21.7	20.2	18	20	18.7	17.6	18	19.8	20	23.7	25.7	24.6	19.5	25.7	
29		17.1	27	22.4	19.8	22.2	22	20.4	20.6	14.5	14.3	24.3	24.1	24.1	27.4	23.9	25.4	20.4	16.3	13.4	35.1	27.6	26.5	30.5	30.3	35.1	
PEAK		26.8	27.0	27.2	26.5	30.3	26.8	29.4	32.0	29.0	30.7	32.2	45.8	42.7	42.1	39.0	39.4	38.6	33.4	55.4	35.1	38.3	26.5	30.5	30.3		

**STATUS FLAG CODES**

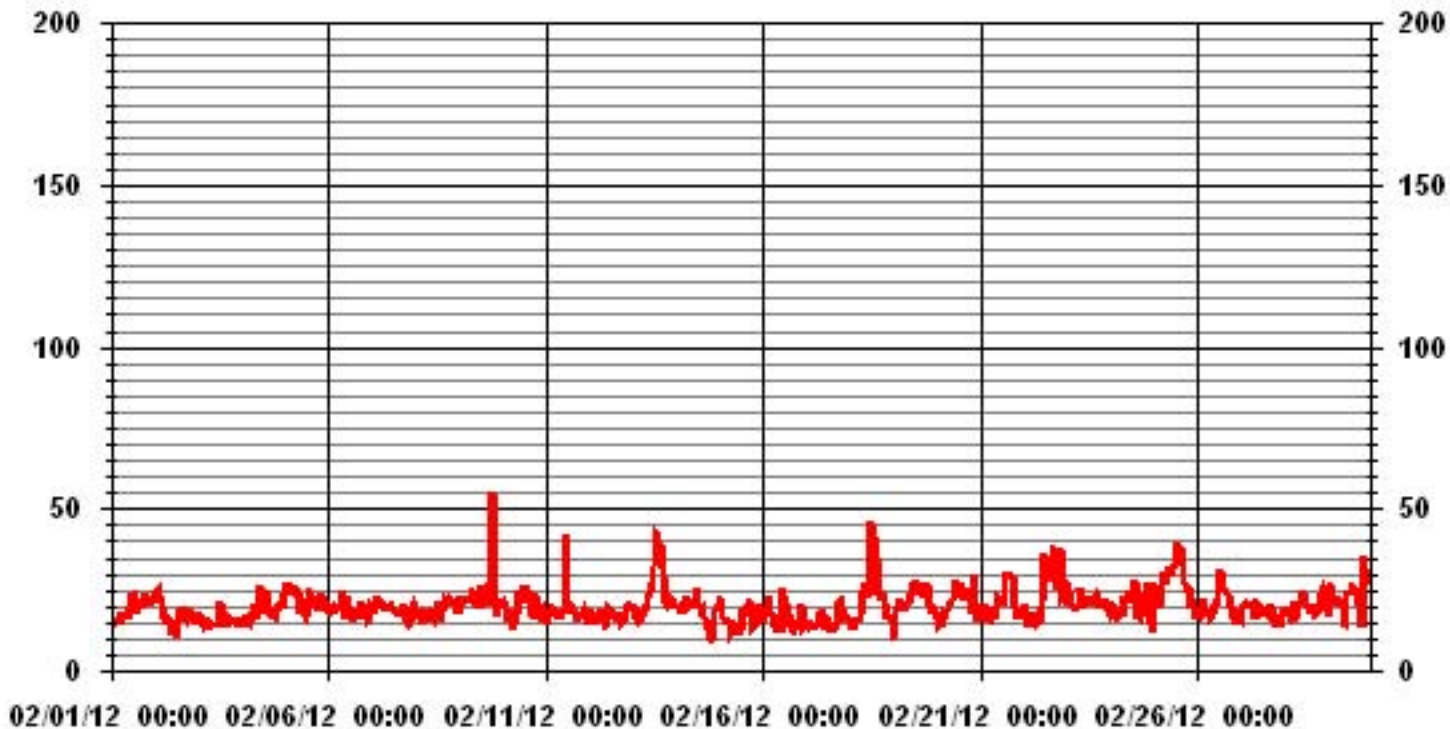
S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE

**MONTHLY SUMMARY**

MAXIMUM INSTANTANEOUS READING	55.4	KPH	@ HOUR(S)	18
			ON DAY(S)	9



### 01 Hour Averages



LICA31  
WSP / WDR Joint Frequency Distribution (Percent)

February 2012

Distribution By % Of Samples

Logger Id : 31  
Site Name : LICA31  
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	1.15	2.01	1.15	.43	.14	.14	.28	.14	.28	.71	.28	.28	1.15	.86	1.29	.43	10.79
< 12.0	3.59	3.16	5.17	3.59	3.02	2.15	1.15	1.29	1.87	3.88	3.45	4.02	5.03	6.33	10.79	8.20	66.76
< 20.0	1.00	.71	1.72	1.00	.28	.43	1.00	.28	1.29	.43	1.43	.43	1.29	4.02	5.61	1.00	22.01
< 29.0	.00	.00	.00	.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.28
< 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	5.75	5.89	8.05	5.32	3.45	2.73	2.44	1.72	3.45	5.03	5.17	4.74	7.48	11.22	17.69	9.64	

Calm : .14 %

Total # Operational Hours : 695

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	8	14	8	3	1	1	2	1	2	5	2	2	8	6	9	3	75
< 12.0	25	22	36	25	21	15	8	9	13	27	24	28	35	44	75	57	464
< 20.0	7	5	12	7	2	3	7	2	9	3	10	3	9	28	39	7	153
< 29.0				2													2
< 39.0																	
>= 39.0																	
Totals	40	41	56	37	24	19	17	12	24	35	36	33	52	78	123	67	

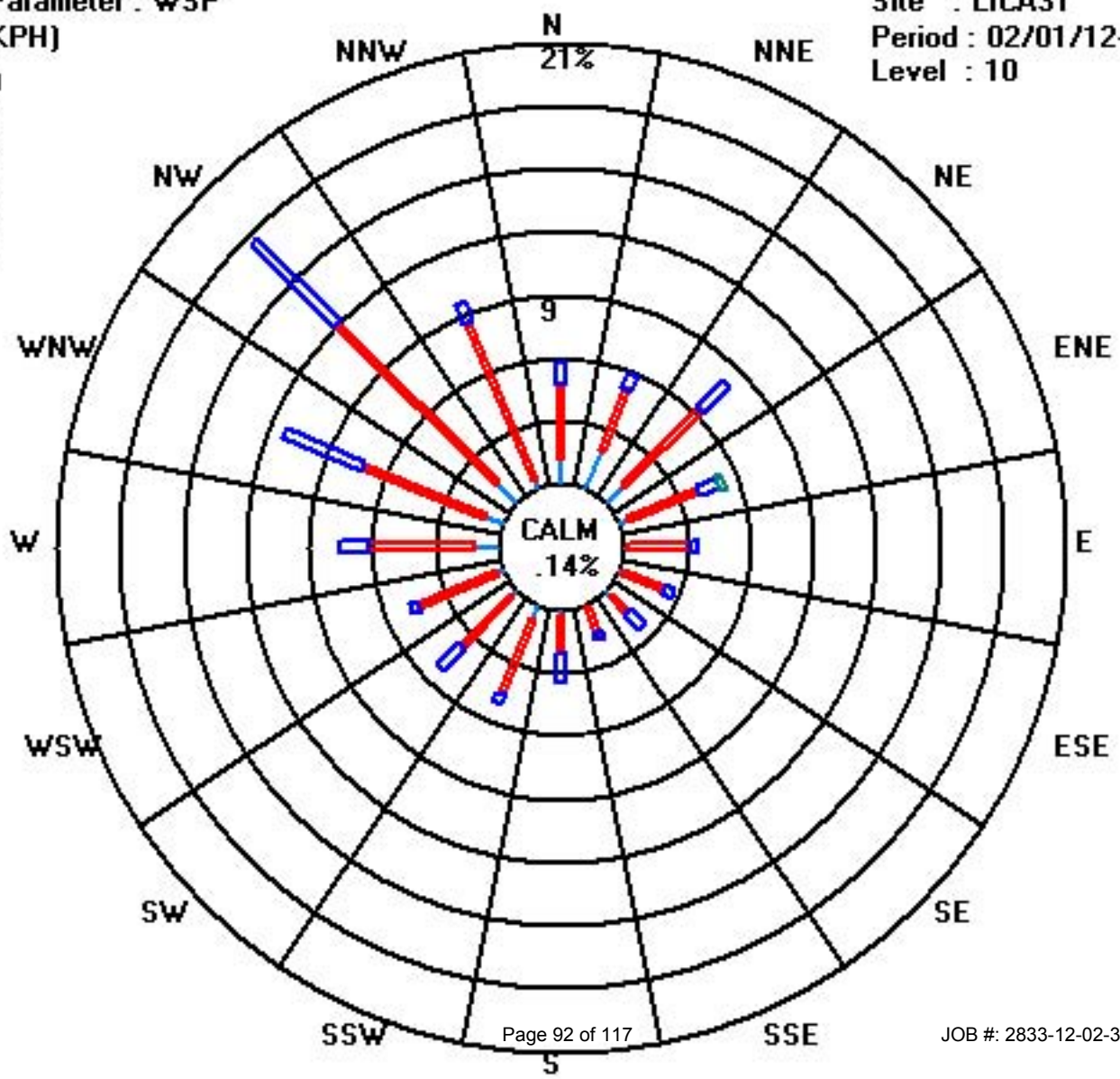
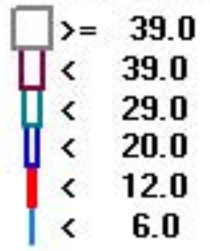
Calm : .14 %

Total # Operational Hours : 695

Class Limits (KPH)

Period : 02/01/12-02/29/12

Level : 10



# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -ST. LINA

FEBRUARY 2012

WIND DIRECTION hourly averages in degrees

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR	24-HOUR		
DAY	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	AVG.	QUADRANT	RDGS.
1	340	342	329	339	344	349	341	346	341	335	345	356	348	340	339	262	202	174	310	318	312	296	295	290	328	NNW	24		
2	300	297	302	303	297	212	248	264	266	251	245	234	221	214	209	198	342	345	334	302	295	320	315	312	278	W	24		
3	304	321	329	324	316	309	325	317	313	314	318	302	287	296	312	324	341	333	330	336	337	350	360	13	319	NW	24		
4	12	11	13	14	7	41	128	41	318	263	197	286	319	307	301	320	306	318	323	326	321	282	298	292	318	NW	24		
5	305	298	287	235	236	242	240	242	230	217	212	218	220	226	246	211	223	207	206	199	175	181	174	190	231	SW	24		
6	175	184	183	199	211	201	206	170	157	152	119	69	75	98	79	70	94	93	67	66	119	44	19	350	128	SE	24		
7	348	347	338	348	356	4	358	17	4	2	355	328	348	5	18	39	37	32	44	355	343	327	265	262	356	N	24		
8	285	289	288	306	315	312	309	304	301	306	317	323	278	267	268	297	314	319	319	319	231	192	162	143	298	WNW	24		
9	151	157	152	173	157	157	161	172	161	136	140	60	129	159	145	78	65	7	20	32	52	56	58	72	117	ESE	24		
10	83	87	84	108	90	74	84	120	73	20	20	14	12	17	357	55	111	127	125	130	45	41	37	49	66	ENE	24		
11	49	27	33	355	35	22	44	50	39	35	26	327	310	24	360	58	47	39	51	19	325	262	288	317	26	NNE	24		
12	303	311	302	304	300	310	314	307	309	306	296	301	317	301	305	305	308	306	310	314	315	318	322	269	307	NW	24		
13	281	279	268	264	257	263	275	284	282	293	291	302	314	322	325	315	313	317	310	301	302	300	298	289	296	296	WNW	24	
14	293	285	276	272	267	271	273	274	272	264	267	265	260	248	247	251	261	265	238	246	262	293	295	294	269	W	24		
15	296	271	262	261	259	247	256	239	218	242	230	224	235	223	219	225	235	244	263	275	253	266	283	274	250	WSW	24		
16	279	299	296	301	303	301	291	285	284	303	190	267	345	254	223	223	224	207	216	208	347	345	321	321	282	W	24		
17	330	321	325	322	318	323	330	321	309	252	264	300	307	306	293	207	200	185	202	202	182	15	14	16	304	WNW	24		
18	21	37	33	41	35	42	35	47	49	83	104	95	68	69	58	46	64	108	102	85	67	79	68	66	66	ENE	24		
19	88	357	312	309	310	308	313	303	294	292	290	292	292	300	307	305	312	301	73	53	62	63	73	76	317	NW	24		
20	83	78	68	60	53	51	50	47	42	35	45	45	52	41	45	44	59	53	45	271	194	352	340	338	41	NE	24		
21	360	359	2	15	2	11	33	20	23	312	275	272	286	282	300	285	299	281	269	270	286	280	237	244	305	WNW	24		
22	241	259	251	249	243	251	256	245	254	280	278	307	313	313	311	304	322	316	299	303	308	315	312	319	289	WNW	24		
23	315	310	209	221	223	0	220	214	200	208	221	220	212	191	205	202	185	201	187	201	187	196	202	212	210	SSW	23		
24	225	226	220	207	214	249	307	191	199	181	179	176	183	94	105	109	108	106	90	90	83	105	297	318	177	S	24		
25	32	51	26	18	40	29	26	26	24	21	19	19	5	1	343	346	344	333	326	335	327	331	319	311	0	N	24		
26	306	307	309	316	307	307	311	297	306	77	107	153	181	143	60	357	356	348	347	336	312	241	223	214	311	NW	24		
27	327	347	348	345	343	357	354	337	321	319	317	323	320	324	323	336	349	336	324	324	331	335	339	344	335	NNW	24		
28	345	347	347	347	347	339	342	350	1	352	353	354	4	356	17	44	118	100	117	124	128	133	137	131	34	NE	24		
29	123	116	116	92	93	94	100	63	44	59	67	64	125	127	104	54	53	51	51	66	64	53	50	45	77	ENE	24		
HOURLY AVG	360	359	348	355	356	357	358	350	341	352	355	356	348	356	360	357	356	348	347	355	347	352	360	350					

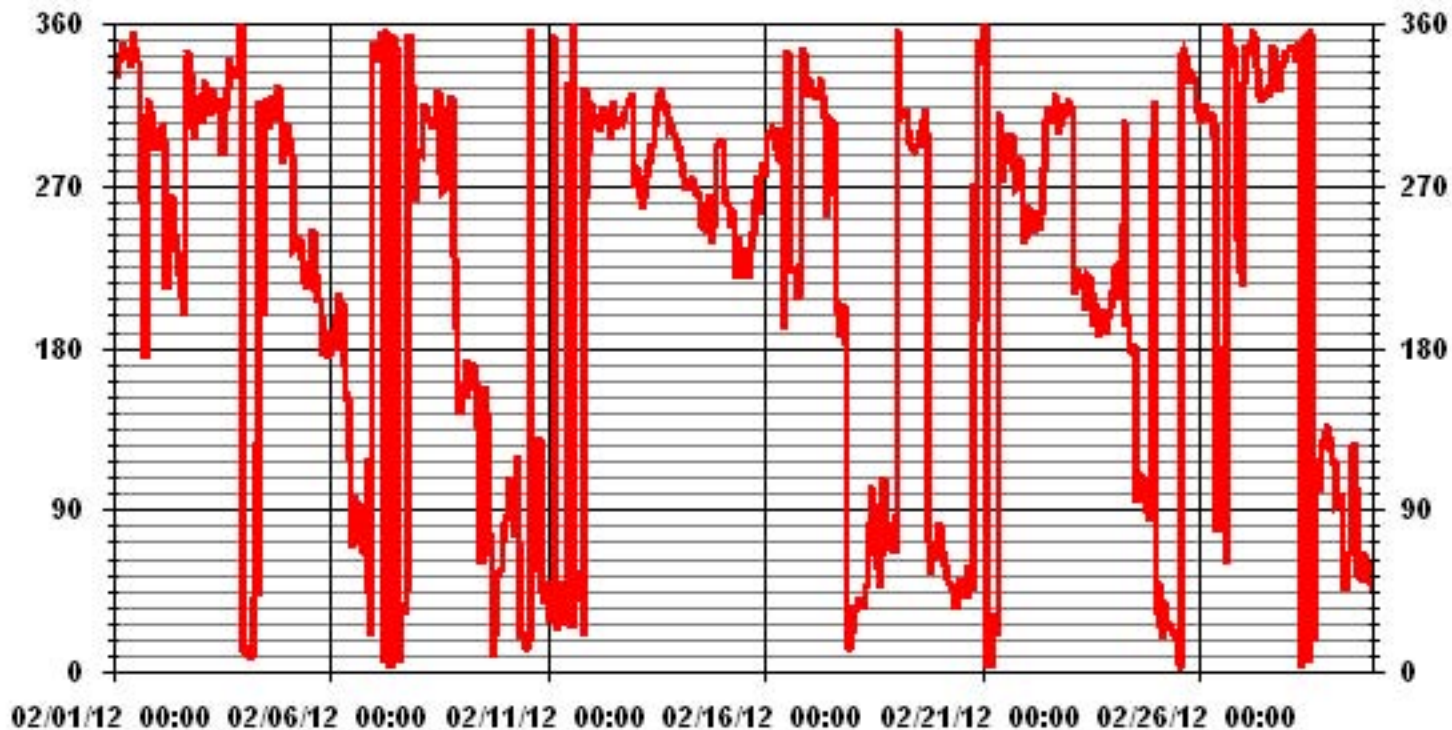
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION:	June 17, 2010
DECLINATION :	19 DEGREES FROM MAGNETIC NORTH

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	695 HRS
STANDARD DEVIATION	112.98	AMD OPERATION UPTIME	99.9 %
		MONTHLY AVERAGE	317 DEG

### 01 Hour Averages



# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST.LINA

FEBRUARY 2012

## STANDARD DEVIATION WIND DIRECTION (STDWDIR) 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	6	9	7	6	16	18	34	12	7	8	10	8	6	6	4	13	48	25	12	10	10	11	12	12
2	11	11	11	10	34	14	7	4	8	11	12	7	7	9	9	18	21	10	12	26	24	29	28	24
3	17	13	9	12	12	8	12	12	14	11	13	9	7	8	11	15	17	16	14	23	23	32	38	43
4	28	35	40	51	47	66	71	59	46	76	80	30	21	25	32	23	10	4	4	3	17	12	12	13
5	11	11	19	13	14	14	16	17	22	50	44	21	22	40	38	21	51	55	44	44	57	26	29	30
6	51	51	47	27	21	15	9	9	5	7	24	15	15	22	28	12	10	7	34	8	9	25	34	38
7	43	43	29	20	30	42	36	25	47	50	36	32	40	60	47	37	22	22	41	54	46	45	40	26
8	19	23	15	23	17	15	20	18	7	10	9	7	42	17	26	15	13	10	11	11	34	32	39	39
9	22	26	20	18	24	14	9	14	12	15	14	25	27	19	23	19	33	24	44	22	4	5	6	6
10	5	5	5	5	7	3	5	6	32	12	12	11	14	16	18	14	11	10	10	10	31	22	14	29
11	38	36	61	54	35	44	16	24	20	31	54	77	67	81	73	41	31	30	31	70	67	71	64	50
12	43	30	14	16	14	16	13	9	7	7	7	6	7	7	11	10	9	5	4	3	2	3	3	15
13	9	8	5	4	5	5	8	11	11	13	14	14	13	13	14	14	12	13	12	12	12	12	12	13
14	13	12	10	9	6	9	9	9	9	8	11	12	13	8	7	7	7	10	21	4	6	11	11	11
15	10	7	6	3	4	4	3	5	7	5	6	5	7	9	8	7	6	7	11	8	9	11	9	9
16	9	13	13	12	11	13	13	14	13	17	22	51	27	31	14	9	7	9	5	6	48	8	6	8
17	7	8	11	10	4	3	3	2	17	5	16	19	23	19	40	14	11	10	8	6	20	20	9	19
18	19	19	16	20	17	18	17	13	15	22	12	18	21	25	23	15	24	10	10	9	9	9	11	11
19	8	29	8	7	8	8	7	9	12	11	11	11	10	9	12	10	13	45	19	17	19	13	14	20
20	22	24	22	26	22	21	18	17	18	19	16	17	20	18	24	23	25	53	29	16	57	4	4	7
21	21	37	19	20	19	34	42	32	45	77	73	60	24	11	9	38	14	13	11	11	15	13	13	6
22	9	7	6	6	5	6	4	5	6	13	14	16	14	15	13	14	16	13	14	14	13	12	12	13
23	13	15	35	21	25	N	16	14	11	12	19	16	17	19	19	24	15	35	14	10	20	13	8	10
24	11	13	12	10	10	19	34	11	32	12	27	13	40	62	19	14	15	9	8	9	45	88	56	77
25	59	59	43	37	34	33	30	30	29	25	28	27	23	21	20	21	23	19	15	26	22	25	21	16
26	11	10	12	16	13	14	16	12	23	12	32	55	23	54	48	47	14	7	7	7	17	8	7	6
27	17	7	13	23	11	24	16	24	17	20	22	34	19	23	23	35	31	21	7	12	10	8	13	15
28	16	7	9	8	9	6	6	10	37	26	28	24	35	34	17	26	13	8	9	11	10	9	9	11
29	9	8	10	6	5	6	7	8	6	11	10	14	17	16	22	11	10	8	6	8	9	8	8	9

### STATUS FLAG CODES

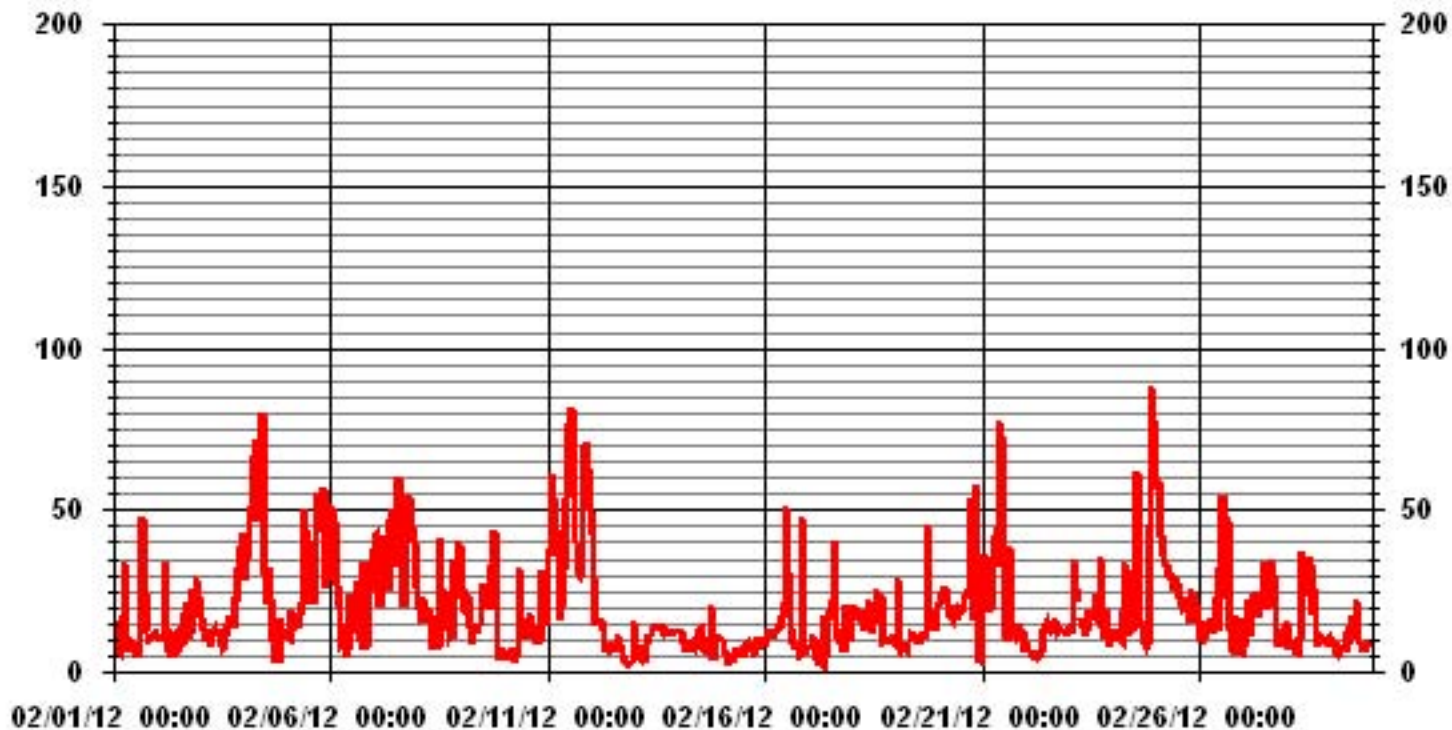
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: June 17, 2010

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 695 HRS



### 01 Hour Averages



# Calibration Reports

# Sulphur Dioxide

**SO2 Calibration Report**  
**Station Information**

Calibration Date	February 8, 2012	Previous Calibration	January 10, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST. LINA		
Start Time (MST)	13:50	End Time (MST)	17:20
Reason:	Monthly Calibration		
Barometric Pressure	928 mBar	Station Temperature	25 Deg C
Cal Gas	48.3 ppm	Gas Cyl. #	LL103831
DAS Output Voltage	0 - 1 Volts	Cal Gas Expiry date	February 28, 2013
		Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	API 100E	S/N :	468	Method:	Fluorescent
Converter Make / Model:	NA	S/N :	NA		
Calibrator Make / Model:	EnviroNics 6100	S/N :	4760	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	AO717		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	EnviroNics 6100	S/N :	4760		

**Analyzer Settings**

Before Calibration		After Calibration	
Concentration Range	0 - 1000		
Sample Flow / Box Temp	521 ccm, 31.5 Deg C	521 ccm, 31.6 Deg C	
HVPS / Lamp Setting	540, 2328	540, 326	
PMT / RxCell Temp	7.8 Deg C, 50 Deg C	7.8 Deg C, 50 Deg C	
Converter / IZS Temp	NA Deg C, 40 Deg C	NA Deg C, 45.0 Deg C	
Offset / Slope	78.4, 1.038	80.6, 1.039	

**Calibration Data**

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4994	0	0	1	N/A
4994	0	0	0	N/A
4914	75.7	733	738	0.9929
	No Span Adj.			
4956	35.3	342	342	1.0000
4976	17.2	166	166	1.0000
5000	0	0	0	N/A
Sum of Least Squares				0.9943
New Correction Factor				0.9929

	Before Calibration	After Calibration
Auto Zero	0.4	0.0
Auto Span	267.0	274.0
Sample Lines Connected		YES

**Percent Change**

Previous Month's Calibration Correction Factor:	1.0042
Current Correction Factor Before Span Adjust:	0.9929
Percent Change:	1.1%

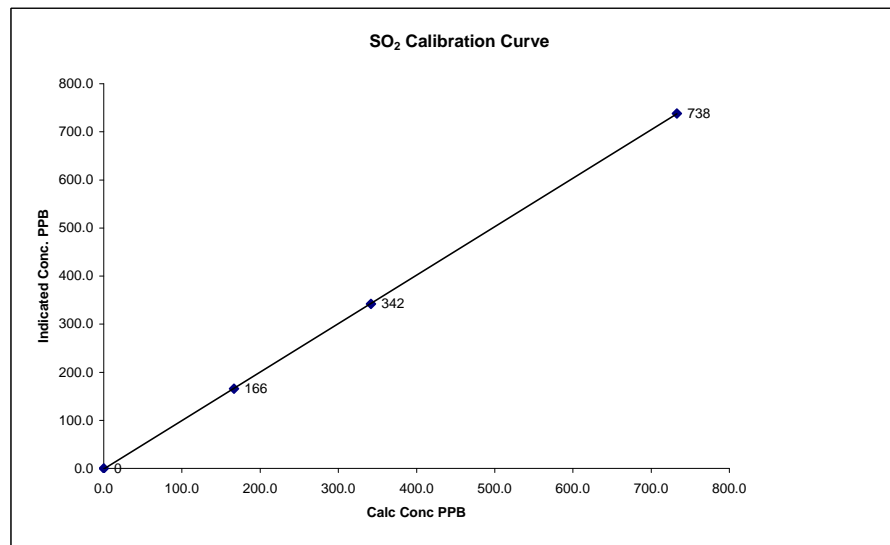
Notes: **N/A : Not applicable**  
 When doing A/F points check, the daily cal ran. Aboarded the daily cal. Re-did A/F check.

Calibration Performed by: Limin Li

**SO2 Calibration Curve**

Calibration Date	February 8, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Plant / Location	ST. LINA
Start Time (MST)	13:50
End Time (MST)	17:20

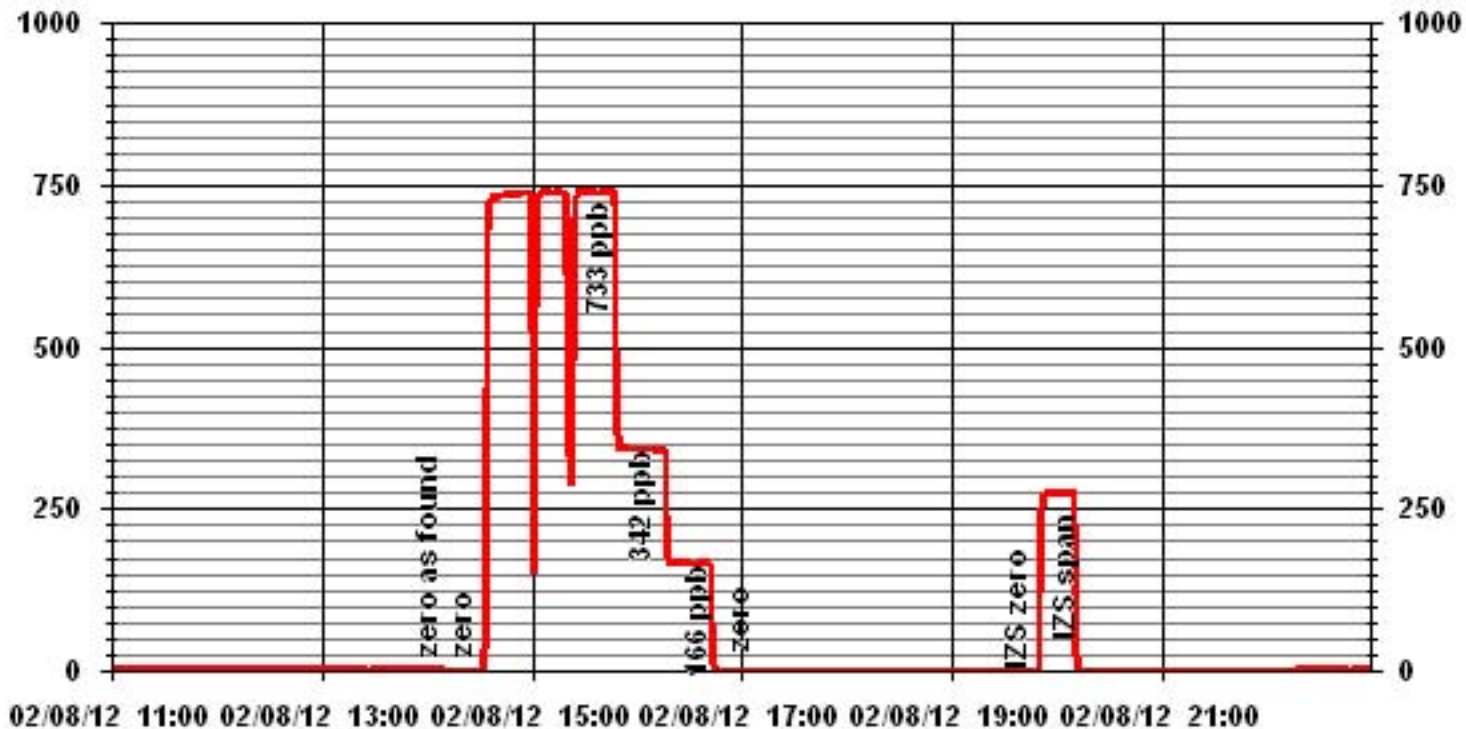
Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	0	n/a		0.999989
166	166	1.0023		1.007680
342	342	0.9988		-1.067626
733	738	0.9929		



**Notes:**

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### 01 Minute Averages



# Hydrogen Sulphide

**H2S Calibration Report**

**Station Information**

Calibration Date	February 8, 2012	Previous Calibration	January 10, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST.LINA		
Start Time (MST)	13:50	End Time (MST)	18:10
Reason:	Monthly Calibration		
Barometric Pressure	705.28 mmHg	Station Temperature	25 Deg C
Cal Gas	10 ppm	Gas Cyl. #	LL42531
DAS Output Voltage	0 - 1 Volts	Cal Gas Expiry date	December 27, 2012
		Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	API 101E	S/N :	510	Method:	Fluorescent
Converter Make / Model:	NA	S/N :	NA		
Calibrator Make / Model:	API 700	S/N :	831	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	A0717		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	API 700	S/N :	831		

**Analyzer Settings**

Before Calibration		After Calibration	
Concentration Range	0 - 100	ppb	
Sample Flow / Box Temp	535 ccm 33.8 Deg C	535 ccm 33.8 Deg C	
HV/PS / Lamp Setting	518 2420	518 2420	
PMT / RxCell Temp	8.4 Deg C 50 Deg C	8.4 Deg C 50 Deg C	
Converter / IZS Temp	314.8 Deg C 45 Deg C	314.5 Deg C 45.0 Deg C	
Offset / Slope	75.6 1.052	75.6 1.005	

**Calibration Data**

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
5000	0	0	1	NA
5000	0	0	0	1.0000
4960	40.0	80	83	0.9639
4960	40.0	80	80	1.0000
4980	20.0	40	40	1.0000
4988	12.0	24	24	1.0000
5000	0	0	0	NA
Sum of Least Squares				1.0000
New Correction Factor				1.0000

Before Calibration		After Calibration	
Auto Zero	2.0		0.0
Auto Span	41.4		39.0
Sample Lines Connected			YES

**Percent Change**

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	0.9639
Percent Change:	3.8%

**Notes:**

**NA : Not Applicable**

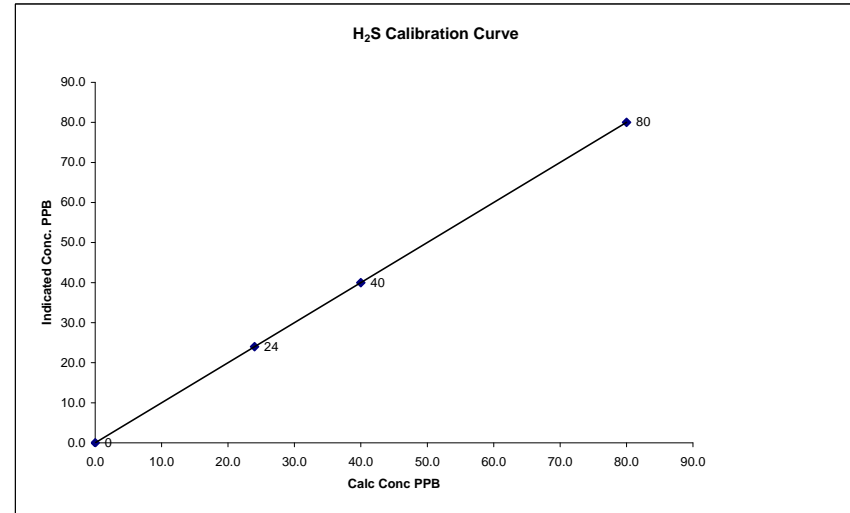
When doing A/F points check, the daily cal ran. Aboarded the daily cal. Re-did A/F check.

Calibration Performed by: Limin Li

**H<sub>2</sub>S Calibration Curve**

Calibration Date	February 8, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Plant / Location	ST.LINA
Start Time (MST)	13:50
End Time (MST)	18:10

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	0			1.000000
24	24	1.0000		1.000000
40	40	1.0000		0.000000
80	80	1.0000		

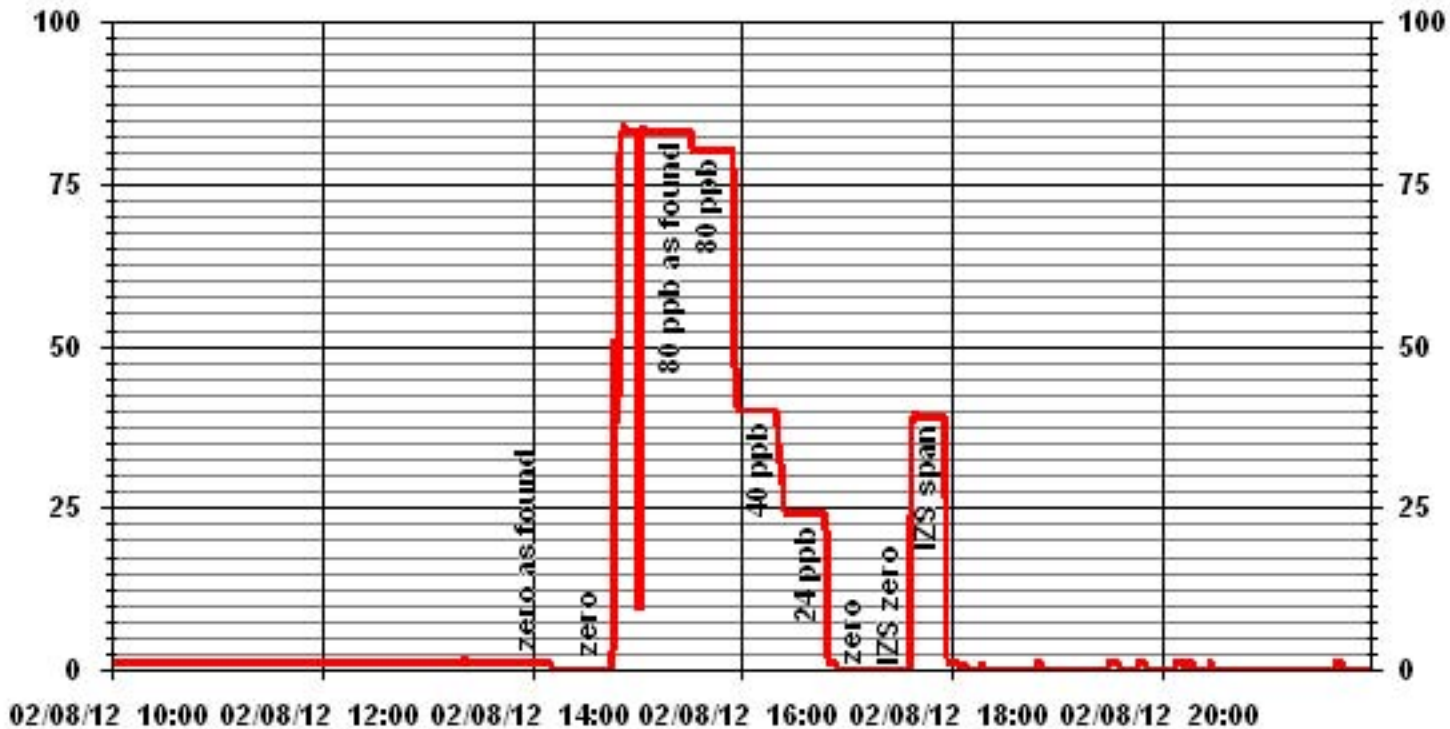


**Notes:**

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### 01 Minute Averages





# Total Hydrocarbons

**THC Calibration Report**

Station Information			
Calibration Date:	February 9, 2012	Previous Calibration	January 17, 2012
Company:	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location:	ST. LINA		
Start Time (MST)	9:20	End Time (MST)	13:10
Reason:	Monthly Calibration		
Barometric Pressure:	713.64 mmHg	Station Temperature:	24 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 980 PPM	C3H8 304 PPM	
	TOTAL CH4 1816.0 PPM	Gas Cyl. # LL84144	Cal Gas Expiry Date: December 3, 2013
DAS make & Model:	ESC 8832	S/N :	AO 717
Chart Recorder:	NA	S/N:	NA
Output Voltage Range:	0 - 10 VDC	Chart Speed:	NA mm/hr

**Analyzer Information**

Make / Model	TECO 51C	S/N :	77021-384	Method	Flame Ionization
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**Analyzer Settings**

	Before Calibration		After Calibration	
Concentration Range	0 - 50	ppm	0 - 50	ppm
Sample Pressure	6.9	psi	6.9	psi
Hydrogen Pressure	10	psi	10	psi
Air Pressure	21	psi	21	psi

**Calibration Data**

Dilution Flow	Source Gas Flow	Calculated Concentration	Indicated Concentration	Correction Factor
3000	0.0	0.0	-0.2	NA
3000	0.0	0.0	0.0	1.0000
3000	70.0	41.4	42.4	0.9766
3000	70.0	41.4	41.4	1.0000
3000	35.0	20.9	20.8	1.0068
3000	20.0	12.0	12.0	1.0000
3000	0.0	0.0	0.0	NA
New Correction Factor:				1.0000

**Percent Change**

Previous Calibration Correction Factor:	0.9930
Current Correction Factor Before Span Adjust:	0.9766
Percent Change:	1.7%

**IZS Calibration Data**

	Before Calibration	After Calibration
Auto Zero	-0.1	0.0
Auto Span	32.8	32.1
Sample Lines Connected		YES

Cylinder Pressures			
Span	1250 psi	Hydrogen	1250 psi
		Zero Air	34 psi

Notes: **NA : Not Applicable**

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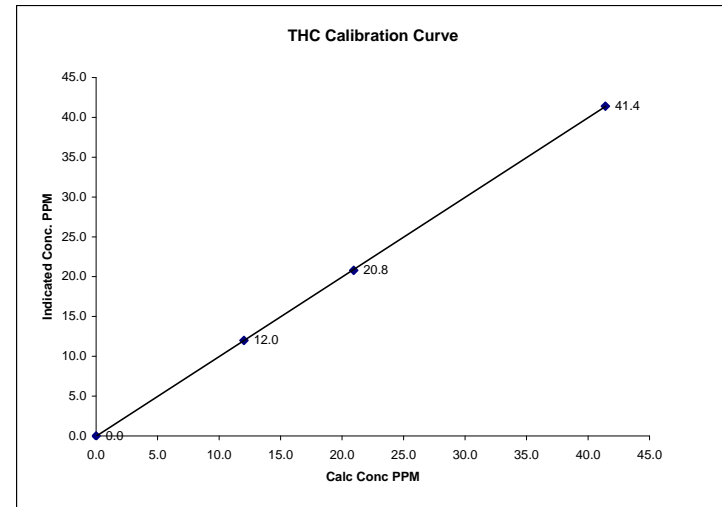
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Calibration Performed by: Limin Li

**THC Calibration Curve**

Calibration Date	February 9, 2012		
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST. LINA		
Start Time (MST)	9:20	End Time (MST)	13:10

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient Slope (0.85 to 1.15)	Correlation Coefficient Intercept (±3% F.S.)
0.0	0.0	NA	0.999986	0.999646
12.0	12.0	1.0022		-0.03742
20.9	20.8	1.0068		
41.4	41.4	1.0002		



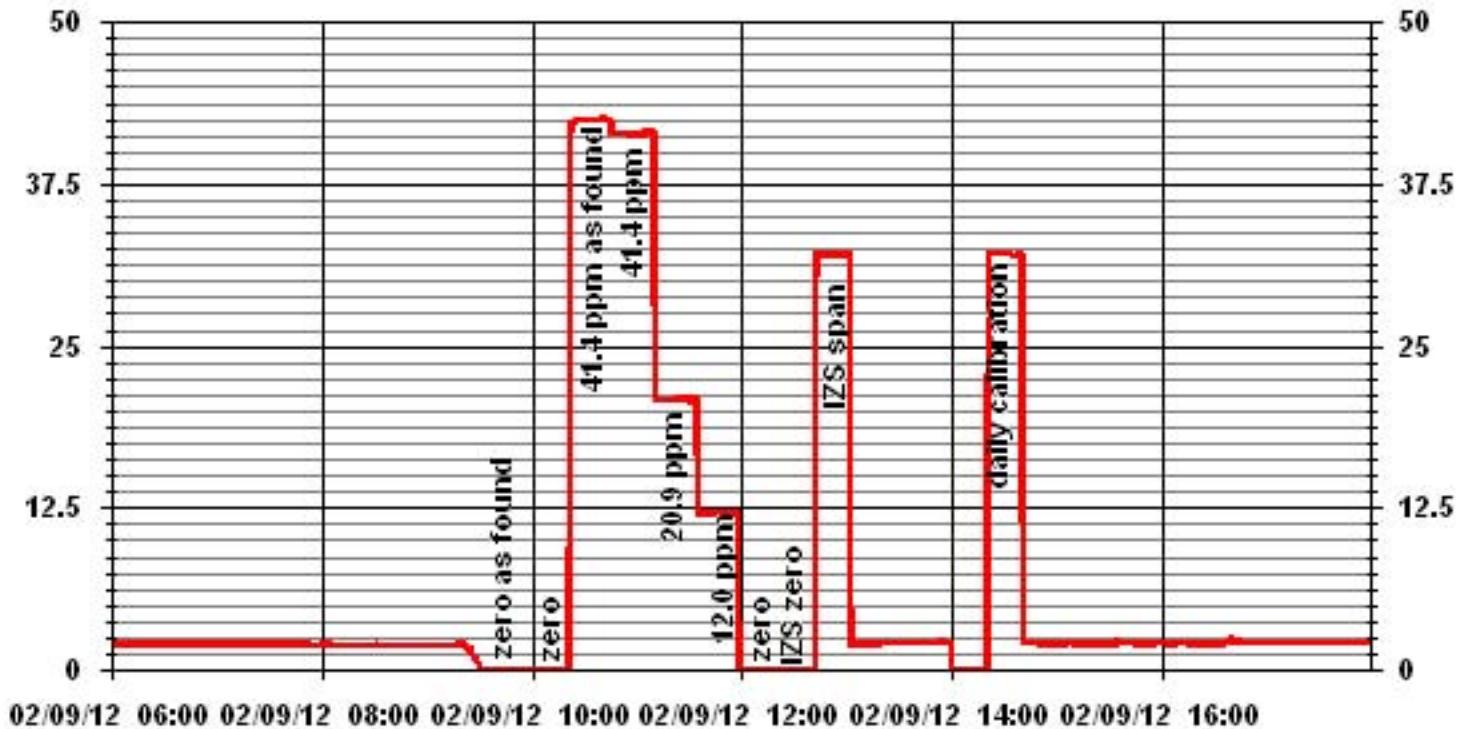
Notes:

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### 01 Minute Averages



# Nitrogen Dioxide

**NOx - NO- NO2 Calibration Report**  
**Station Information**

Calibration Date	February 8, 2012	Previous Calibration	January 6, 2012
Company	LICA	Plant/Location	St. Lina
Start Time (MST)	13:50	End Time (MST)	20:20
Reason:	Monthly Calibration		
Barometric Pressure	928 mBar	Station Temperature	25 Deg C
Cal Gas Concentration	NOx 49.7 ppm	NO	49.4 ppm
Cal Gas Cylinder #	LL103831	Cal Gas Expiry date	February 28, 2013
DAS Output Voltage	0 - 1 Volts	Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	TAPI 200E	S/N :	592	Method:	Chemiluminescent
Calibrator Make / Model:	EnviroNics 6100	S/N :	4760		
DAS Make / Model:	ESC 8832	S/N :	AO717		
Chart Recorder Make / Model:	NA	S/N :	NA		
Flow Meter:	EnviroNics 6100	S/N :	4760		

**Analyzer Settings**

Before Calibration			After Calibration		
Concentration Range	0 - 1000		ppb		
Sample Flow/Conv. Temp	482 ccm	315 Deg C	483 ccm	314 Deg C	
Ozone Flow / Vacuum	73 ccm	5.0 "Hg-A	73 ccm	5 "Hg-A	
HVPS / A ZERO	662 Volts	19.7 MV	662 Volts	19.6 MV	
Rx/ Temp / PMT Temp	50.0 Deg C	6.8 Deg C	50.0 Deg C	6.8 Deg C	
Box Temp / IZS Temp	31.1 Deg C	45.0 Deg C	31.2 Deg C	45.3 Deg C	
Offset	1.5 NOx	0.2 NO	1.5 NOx	0.2 NO	
Slope	1.236 NOx	1.222 NO	1.289 NOx	1.266 NO	
NO2 COEF / Conv Efficiency	NA NO2	0.993	NA NO2	0.993	

**Dilution Calibration Data**

Dilution Air Flow Rate	Source Flow Rate	O3 Set Point	Calculated Concentration			Indicated Concentration			Correction Factor	
			NOx	NO	NO2	NOx	NO	NO2	NOx	NO
4994	0.0	NA	0	0	NA	1	1	1	NA	NA
4994	0.0	NA	0	0	NA	0	0	0	NA	NA
4914	75.7	NA	754	749	NA	718	722	-4	1.0516	1.0395
4914	75.7	NA	754	749	NA	754	750	4	1.0000	1.0006
4956	35.3	NA	351	349	NA	351	348	3	1.0000	1.0068
4976	17.2	NA	171	170	NA	171	170	1	1.0000	1.0000
4994	0.0	NA	0	0	NA	0	0	0	NA	NA

**Gas Phase Titration Calibration Data**

Dilution Air Flow Rate	Source Flow Rate	O3 Set Point	Calculated Concentration			Indicated Concentration			NO2 Correction Factor	NO2 Conv Efficiency
			NOx	NO	NO2	NOx	NO	NO2		
4915	75.7	NA	754	749	NA	758	751	7	NA	NA
4915	75.7	600	754	NA	539	759	219	540	1.0000	100.19%
	No Span Adj.									
4915	75.7	300	754	NA	274	761	484	277	0.9928	101.12%
4915	75.7	120	754	NA	112	761	646	115	0.9825	102.86%

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= $\frac{1.000}{1.0000}$	NO= $\frac{1.000}{1.0006}$	NO2= $\frac{0.996}{1.0000}$
				Average Converter Efficiency=		

Before Calibration			After Calibration		
Auto Zero	0.8 NOx	1.1 NO2	0.0 NOx	0.0 NO2	
Auto Span	804 NOx	768 NO2	860 NOx	824 NO2	
Sample Lines Connected			YES		

Percent Change from Previous Calibration	NOx	-5.1%	NO	-3.6%	NO2	0.0%
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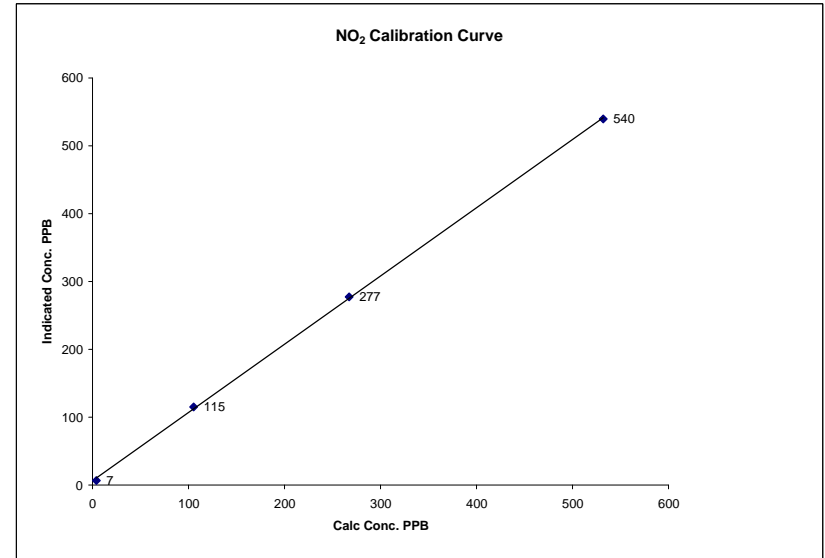
Notes: **NA : Not Applicable**  
 Additional GPT was done for O3 clibration. O3 set point 450, NO=352, NO2=409, NOx=761  
 After A/F points, the daily cal ran. Aboarted dialy cal. Continued multi-point calibration.

Calibration Performed by: Limin Li

**NO2 Calibration Curve**

Calibration Date	February 8, 2012	Company	LICA
Plant / Location	St. Lina	Start Time (MST)	13:50
End Time (MST)	20:20		

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999832
4	7	N/A	Intercept	(± 3% F.S.)	1.005972
105	115	0.9130			6.39431
267	277	0.9639			
532	540	0.9852			

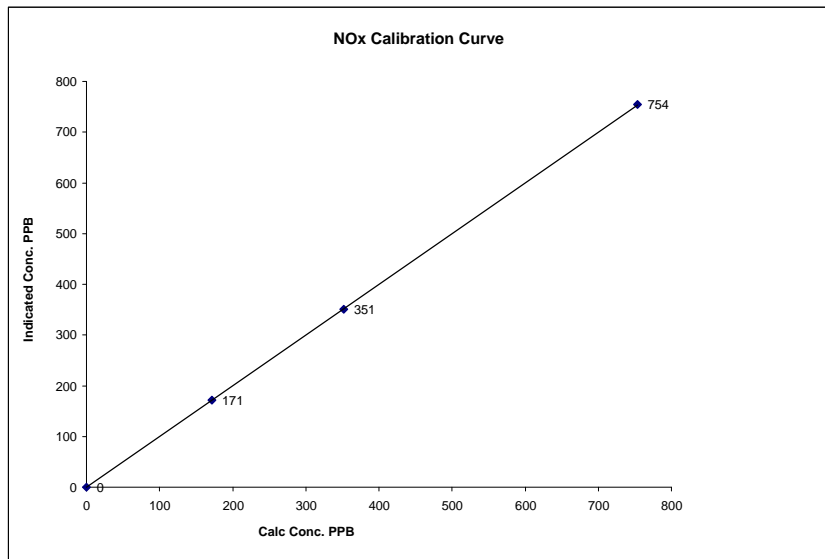


Notes:

### NOx Calibration Curve

Calibration Date February 8, 2012  
 Company LICA  
 Plant / Location St. Lina  
 Start Time (MST) 13:50 End Time (MST) 20:20

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999999
0	0	N/A	Slope (0.85 to 1.15)	1.000028
171	171	1.0012	Intercept (± 3% F.S.)	-0.18544
351	351	1.0014		
754	754	1.0000		

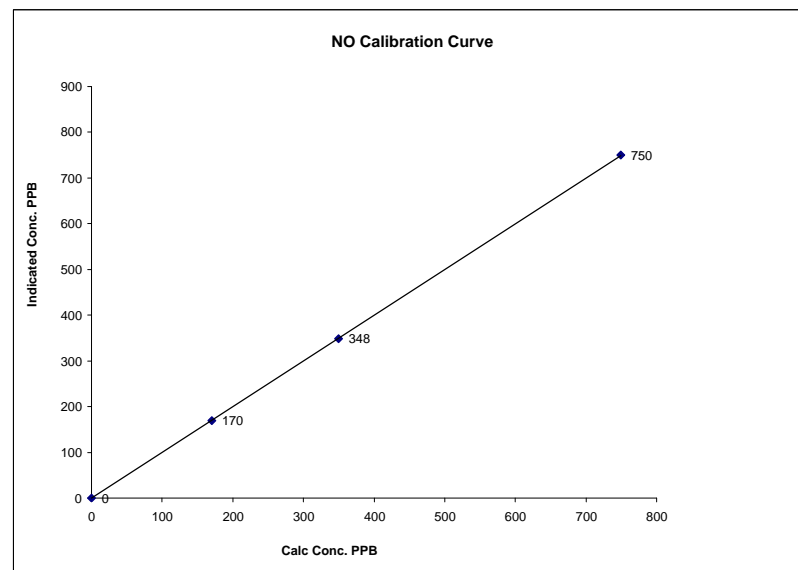


Notes:

### NO Calibration Curve

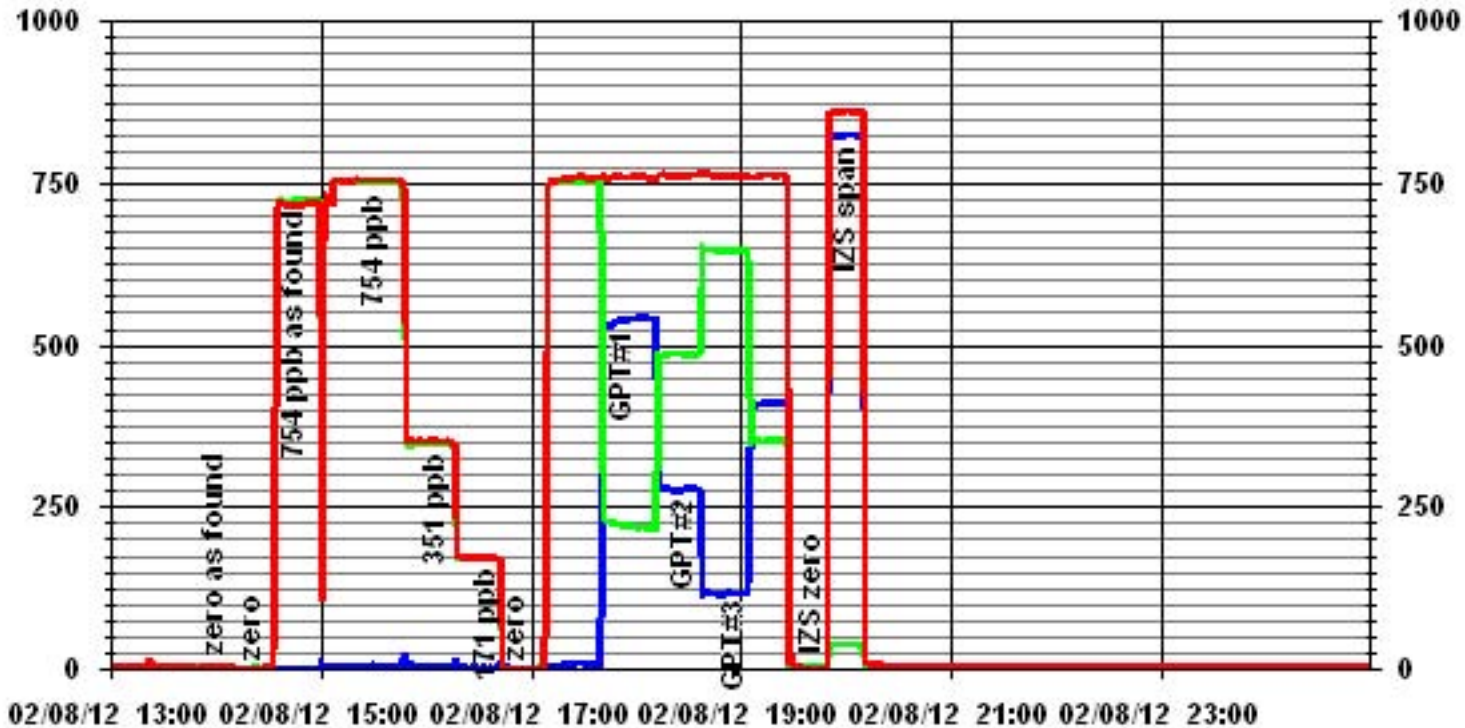
Calibration Date February 8, 2012  
 Company LICA  
 Plant / Location St. Lina  
 Start Time (MST) 13:50 End Time (MST) 20:20

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999994
0	0	N/A	Slope (0.85 to 1.15)	1.001817
170	170	1.0010	Intercept (± 3% F.S.)	-3.0416
349	348	1.0039		
749	750	0.9993		



Notes:

### 01 Minute Averages



— LICA31 IIOX\_ PPB

— LICA31 IIO\_ PPB

— LICA31 IIO2\_ PPB

# Ozone



### O<sub>3</sub> Calibration Report

#### Station Information

Calibration Date	February 9, 2012	Previous Calibration	January 17, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	St. Lina		
Start Time (MST)	9:20	End Time (MST)	12:45
Reason:	Monthly Calibration		
Barometric Pressure	713.64 mmHg	Station Temperature	24 Deg C
DAS Output Voltage	0 - 10 Volts		

#### Equipment Information

Analyzer Make / Model:	Thermo 49C	S/N :	49C-54926-302	Method:	Fluorescent
Calibrator Make / Model:	Enviroics 6100	S/N :	4760	Method:	GPT
DAS Make / Model:	ESC 8832	S/N :	AO 717		

#### Analyzer Settings

	Before Calibration		After Calibration	
	0 - 500		ppb	
Concentration Range	841 ccm	857 ccm	841 ccm	857 ccm
Cell A Flow / Cell B Flow	707.6 mmHg		707.6 mmHg	
Pressure	56.8 Deg C		56.8 Deg C	
Bench Temp	80 Deg C	32 Deg C	80 Deg C	32.7 Deg C
O3 Lamp / Box Temp	0.1	0.986	0.1	0.978
Offset / Slope				

#### Calibration Data

Dilution Flow Rate	Ozone Set Point	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4994	0	0	0	NA
	No Zero Adj			
4994	450	399	405	0.9852
4994	450	399	399	1.0000
4994	300	267	266	1.0038
4994	120	105	106	0.9906
4994	0	0	0	N/A
			Sum of Least Squares	N/A
			New Correction Factor	1.0000

	Before Calibration	After Calibration
Auto Zero	0.0	0.0
Auto Span	321	321
Sample Lines Connected		YES
Percent Change from Previous Calibration		0.5%

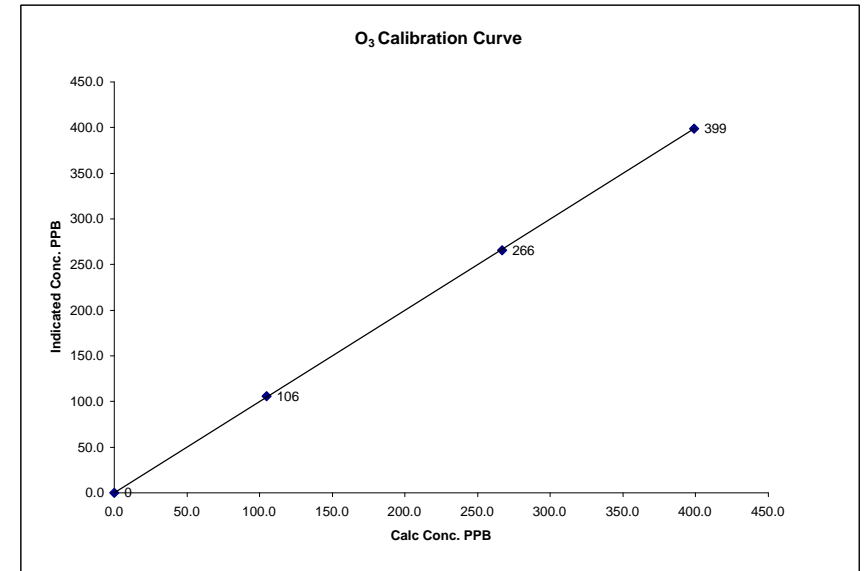
Note:

Calibration Performed by: Limin Li

### O<sub>3</sub> Calibration Curve

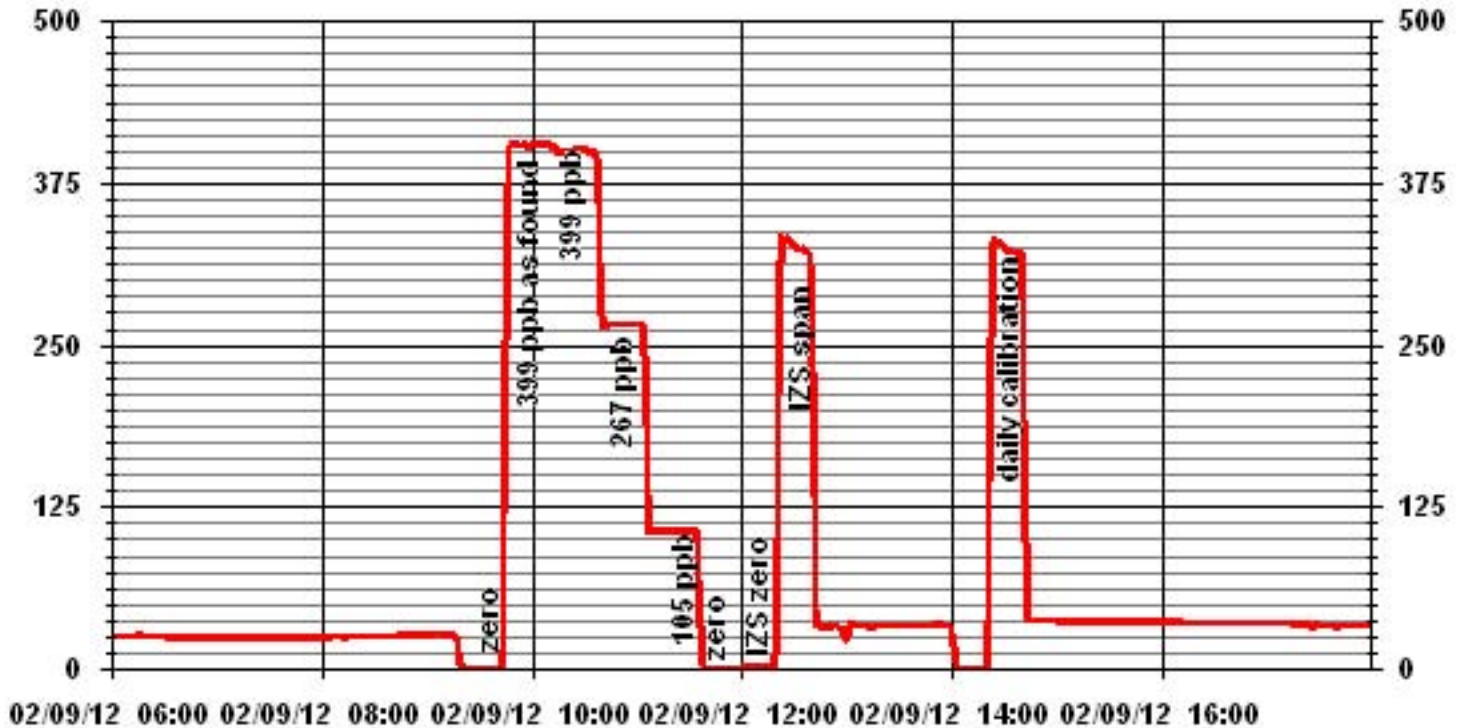
Calibration Date	February 9, 2012
Company	Lakeland Industry & Community Association
Plant / Location	St. Lina
Start Time (MST)	9:20
End Time (MST)	12:45

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope (≥ 0.995) (0.85 to 1.15)	0.999981
0	0	n/a	Intercept (± 3% F.S.)	0.998256
105	106	0.9906		
267	266	1.0038		
399	399	1.0000		



Notes:

# 01 Minute Averages



# Particulate Matter 2.5

**TEOMÒ 1405F Audit**

	<b><u>Station</u></b>		<b><u>Audit Transfer Standard</u></b>
Date:	<u>February 9, 2012</u>	Make/Model:	<u>Streamline FTS</u>
Station Name:	<u>Lica St. Lina (CASA # 31)</u>	Serial Number:	<u>LO 091099, Hi 091001</u>
Location:	<u>St. Lina Station</u>	Cell s/n:	<u>NA</u>
Operator:	<u>LICA</u>	Thermometer s:	<u>Station Temp. Sensor</u>

	<b><u>Sampler</u></b>		<b><u>Set-up and current Sampler readings</u></b>
Make/Model	<u>Thermo Scientific Series 1405F</u>	F-Main Set Pt (l/min)	<u>3.00</u>
Unit #	<u>NA</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Unit s/n	<u>1405A207691003</u>	Filter Load (%)	<u>30.4%</u>
Firmware Ver.	<u>1.51</u>	K <sub>o</sub> Factor	<u>15634.0</u>
Parameter	<u>PM 2.5 (with FDMS)</u>	Temp (°C)	<u>-11.9</u>
		Press (ATM)	<u>0.940</u>

**Conversion from mmHg or "Hg to ATM (Atmospheres)**

ATM = (mmHg) X (1.316 X 10<sup>-3</sup>) or ATM = ("Hg) X (3.34207 X 10<sup>-2</sup>)

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

**Audit**

<b>Status</b>			
Noise <b>&lt;0.10ug</b>	<u>0.002</u>	Warnings	<u>None</u>
Pump Vacuum <b>&lt;0.4atm</b>	<u>0.30</u>	Pump Gauge (inHg)	<u>19</u>
<b>Temperature/Pressure</b>			
Measured Temp ( <b>± 2 °C</b> )	<u>-11.8</u>	<b>D °C</b>	<u>-0.1</u>
Measured Press ( <b>± 0.01atm</b> )	<u>0.939</u>	<b>DATM</b>	<u>0.001</u>
<b>Flow Audit</b>			
Indicated Main Flow (l/min)	<u>3.00</u>	Main Flow Drift ( <b>±10.0%</b> )	<u>1.93%</u>
Measured Main Flow (l/min)	<u>3.00</u>	Flow Adjusted to Measured?	<u>YES</u>
Indicated Bypass Flow (l/min)	<u>13.67</u>	Bypass Flow Drift ( <b>±10.0%</b> )	<u>2.53%</u>
Measured Bypass Flow (l/min)	<u>13.41</u>	Flow Adjusted to Measured?	<u>YES</u>
<b>Leak Check</b>		<b>Instrument Setup</b>	
Main ( <b>&lt; 0.15 l/min</b> )	<u>Base=-0.01 Ref=-0.00</u>	<u>Flow Control = Active</u>	
Aux ( <b>&lt; 0.6 l/min</b> )	<u>Base=0.00 Ref= 0.00</u>	<u>Report Conditions = Actual</u>	
<b>K<sub>o</sub> Factor</b>			
Measured	<u>NA</u>		
K <sub>o</sub> Difference ( <b>± 2.5%</b> )	<u>NA</u>		

**Start Time:** 11:30      **Finish Time:** 13:00

**Sample Inlet Cleaned:** Yes      **New Filters Installed:** No  
**New Filter Loading %:** NA

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

**Auditor/s:** Limin Li

# Lakeland Industry & Community Association

Cold Lake Monitoring Site  
Ambient Air Monitoring  
Data Report  
For  
February 2012

Prepared By:



March 26, 2012

# Lakeland Industry & Community Association

## Cold Lake Monitoring Site

### Ambient Air Monitoring

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# Introduction

The following Ambient Air Monitoring report was prepared for:

Mr. Mike Bisaga  
**Lakeland Industry & Community Association**  
Box 8237  
5107W – 50 Street  
Bonnyville, Alberta  
T9N 2J5

Monitoring Location: Cold Lake  
Data Period: February 2012

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

The monthly analytical report for passive monitoring:  
Authorized by Levi Manchak

The 6-day analytical report for VOCs and PAHs:  
Authorized by Petro Oh

## Calibration Procedure

The following calibration procedure applies to all calibrations conducted at the Lakeland Industry & Community Association Air Monitoring Station.

Calibration gas concentrations are generated using a dynamic mass flow controlled calibrator. EPA Protocol one gases are diluted with zero air generated on site. The Mass Flow Controllers in the calibrator are referenced using an NIST traceable flow meter once per month. All listed flows are reported as corrected to Standard Temperature and Pressure (STP).

Generated zero gas is introduced to the analyzer first. Three concentrations of calibration gas are then generated in order to introduce points at approximately 50-80%, 25-40% & 10-20% of the analyzer's full-scale range. An auto zero and span are then performed to validate the daily zero and span values recorded to the next multi-point calibration.

All indicated concentrations are taken from the ESC data logger used to collect the data for monthly reporting.

Conformance of each calibration to Alberta Environment regulations is outlined in the individual calibration reports. The slope and correlation coefficient are derived from the calculated and indicated analyzer responses. The percent change is calculated using the previous calibration correction factor and the current correction factor before adjustment. The calibration conforms to the procedure outlined in the *Air Monitoring Directive, Appendix A-10, Section 1.6*.



# MONTHLY CONTINUOUS DATA SUMMARY

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

### Continuous Ambient Monitoring – February 2012

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION COLD LAKE SITE						MAXIMUM VALUES							OPERATIONAL TIME (PERCENT)
						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO <sub>2</sub> (PPB)	172	48	0	0	0.35	10	24	6	3.5	327(NW)	2.5	24	100.0
TRS (PPB)	-	-	-	-	0.00	0	ALL	ALL	VAR	VAR	0.0	ALL	99.9
NO <sub>2</sub> (PPB)	159	-	0	-	8.38	28	VAR	VAR	VAR	VAR	18.8	1	99.9
NO (PPB)	-	-	-	-	2.69	102	1	8	0.2	75(ENE)	14.8	1	99.9
NO <sub>x</sub> (PPB)	-	-	-	-	11.10	124	1	8	0.2	75(ENE)	33.6	1	99.9
O <sub>3</sub> (PPB)	82	-	0	-	23.29	41	22, 29	VAR	VAR	VAR	36.4	22	100.0
THC (PPM)	-	-	-	-	2.35	4.2	1	23	3.3	238(SW)	3.1	1	99.9
PM 2.5 (UG/M <sup>3</sup> )	-	30	-	0	6.60	35.0	1	10	0.7	298(WNW)	17.4	1	99.6
TEMPERATURE (DEG C)	-	-	-	-	-9.03	5.3	4	14	4.9	224(WSW)	-1.1	22	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	70.16	91	19	19, 20	4.7, 5.5	220(SW), 237(SW)	80.6	19	100.0
VECTOR WS (KPH)	-	-	-	-	4.24	13.9	25	10	-	58(ENE)	10.9	25	100.0
VECTOR WD (DEGREES)	-	-	-	-	268(W)	-	-	-	-	-	-	-	100.0

VAR-VARIOUS    NA: NOT AVAILABLE

# Monthly Non-Continuous Data Summary

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

### Passive Ambient Monitoring Network – February 2012

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION PASSIVE NETWORK			
NETWORK MAXIMUM			NETWORK AVERAGE
PARAMETER	STATION	READING (PPB)	READING (PPB)
SO <sub>2</sub>	#27	1.8	0.73
H <sub>2</sub> S	#17	0.17	0.12
NO <sub>2</sub>	#28	7.3	2.4
O <sub>3</sub>	#4	38.2	31.0

## Volatile Organics Data Summary

### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – COLD LAKE

#### Xontech Model 910A – February 3 2012

Maximum reading (ug/m3)	Volatile Organic
<32.0	Hexachlorobutadiene

#### Xontech Model 910A – February 9 2012

Maximum reading (ug/m3)	Volatile Organic
<32.0	Hexachlorobutadiene

#### Xontech Model 910A – February 15 2012

Maximum reading (ug/m3)	Volatile Organic
<32.0	Hexachlorobutadiene

#### Xontech Model 910A – February 21 2012

Maximum reading (ug/m3)	Volatile Organic
<32.0	Hexachlorobutadiene

#### Xontech Model 910A – February 27 2012

Maximum reading (ug/m3)	Volatile Organic
<32.0	Hexachlorobutadiene

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – COLD LAKE

### PUF cartridge – February 3 2012

<b>Maximum reading (ng/m3)</b>	<b>Semi-Volatile Organic</b>
11.078	2-Methylnaphthalene

### PUF cartridge – February 9 2012

<b>Maximum reading (ng/m3)</b>	<b>Semi-Volatile Organic</b>
<6.055	Naphthalene

### PUF cartridge – February 15 2012

<b>Maximum reading (ng/m3)</b>	<b>Semi-Volatile Organic</b>
<6.054	3-Methylcholanthrene

### PUF cartridge – February 21 2012

<b>Maximum reading (ng/m3)</b>	<b>Semi-Volatile Organic</b>
<6.054	3-Methylcholanthrene

### PUF cartridge – February 27 2012

<b>Maximum reading (ng/m3)</b>	<b>Semi-Volatile Organic</b>
<6.054	3-Methylcholanthrene

# General Monthly Summary - Cold Lake

## Equipment Operation

The following summary outlines the analyzer performance. Any non-conformances, problems or maintenance performed are detailed at the end of each section.

## AQM STATION – LICA – COLD LAKE

### Sulphur Dioxide (PPB)

- Analyzer make / model – Thermo 43i, S/N: 806528242

No operational issues observed during the month. The inlet filter was changed before the monthly calibration was started on February 24<sup>th</sup>. Data was corrected using daily zero information.

### Total Reduced Sulphur (PPB)

- Analyzer make / model –TEI 450i, S/N: 812728560
- Converter - CD NOVA CDN 101, S/N: 250

No operational issues observed during the month. The inlet filter was changed before the monthly calibration was started on February 24<sup>th</sup>. Data was corrected using daily zero information.

### Ozone (PPB)

- Analyzer make / model –Thermo 49i, S/N: 700419951

No operational issue observed during the month. The inlet filter was changed before the monthly calibration was started on February 24<sup>th</sup>. Data was corrected using daily zero information.

# General Monthly Summary - Cold Lake

## AQM STATION – LICA – COLD LAKE

### Total Hydrocarbon (PPM)

- Analyzer make / model -TECO 51C-LT, S/N: 427408718

No operational issue observed during the month. The inlet filter was changed before the monthly calibration was started on February 24<sup>th</sup>. Data was corrected using daily zero information.

### Nitrogen Dioxide (PPB)

- Analyzer make / model - TECO 42C, S/N: 427408716

No operational issue observed during the month. The inlet filter was changed before the monthly calibration was started on February 24<sup>th</sup>. Data was corrected using daily zero information.

### Particulate Matter 2.5 (UG/M3)

- Analyzer make / model –TEOM1405F, S/N: 1405A201620804

No operational issue was observed this month. A routine Teom audit and a leak check were performed on February 24<sup>th</sup>. Both the Teom filter and the FDMS filter were changed on February 24<sup>th</sup>. Data was corrected using Alberta air quality guideline. If the data was between 0 to –3, the data was corrected to 0. If the data was below –3, the data was invalidated. Three hours of data were invalidated as the data were below –3 ug/m3.

# General Monthly Summary - Cold Lake

## AQM STATION – LICA – COLD LAKE

### Vector Wind Speed (KPH) & Vector Wind Direction (DEG)

- System make / model –RM Young, S/N: 46553

The wind system is reported as vector wind speed and vector wind direction.

No operational issue was observed during the month.

### Relative Humidity (PERCENT)

- System make / model - Rotronic Hygroclip-S3

No operational issue was observed during the month.

### Ambient Temperature (DEGC)

- System make / model - Rotronic Hygroclip-S3

No operational issues observed during the month.

### Trailer Temperature (DEGC)

- System make / model - R&R 61

No operational issues observed during the month.

### Datalogger

- System make / model - ESC 8832, S/N: 263

- Software make / version - ESC v 5.51a

The ESC 8832 is connected to a modem with DSL for continuous connection with the base computer.

### Trailer

No issue was observed during this month.

The manifold was cleaned on February 24<sup>th</sup>.

# General Monthly Summary - Cold Lake

## AQM STATION – LICA – COLD LAKE

### Air Quality Index (AQI)

The AQI data was adjusted to reflect regular monthly and daily calibrations, maintenance, and downtime. One hour of AQI value for PM2.5 recorded in February 2012 was within the Fair range, and others were within the Good range. The highest hourly concentration of ozone was 41 ppb and an AQI value of 21 on February 22<sup>nd</sup> and 29<sup>th</sup>, in various hours. The highest hourly concentration of PM2.5 was 35.0 ug/m3 and an AQI value of 28 on February 1<sup>st</sup>, hour of 10.

### Passive Network

The 10% duplicate sampling program was run this month.  
The O3 sample at station #23 is missing.

### Volatile Organics (VOCs)

The volatile organics were sampled from February 3<sup>rd</sup> to February 27<sup>th</sup>. The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the VOCs in this report were reported as ug/m3 in 3 significant figures.

### Polycyclic Aromatic Hydrocarbons (PAHs)

The PAHs scheduled to be sampled on February 3<sup>rd</sup> to February 27<sup>th</sup>. The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs in this report were reported as ng/m3.



# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Air Quality Index

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012  
AIR QUALITY INDEX (AQI)

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	
DAY	PEAK	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	
1		PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	NA	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2
2		PM2	PM2	PM2	PM2	PM2	O3_	PM2	PM2	PM2	NA	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	PM2	PM2	PM2	O3_	O3_	O3_	O3_	PM2
3		O3_	O3_	O3_	PM2	PM2	PM2	PM2	PM2	NA	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2	O3_
4		PM2	PM2	PM2	PM2	PM2	O3_	NA	PM2	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	O3_	O3_	O3_	O3_
5		PM2	PM2	PM2	PM2	PM2	PM2	NA	PM2	PM2	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_
6		18	16	17	17	17	-	15	16	12	16	17	17	18	18	18	18	18	18	17	11	5	5	4	4	4	18
7		7	7	5	3	-	6	4	5	3	8	15	15	15	15	16	16	16	15	14	10	13	10	8	7	11	16
8		O3_	O3_	O3_	PM2	NA	O3_	O3_	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_
9		O3_	O3_	NA	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	PM2	O3_	O3_	O3_
10		6	-	5	4	3	4	7	5	6	7	9	16	19	19	19	20	18	14	9	7	8	6	6	5	20	
11		PM2	NA	PM2	PM2	PM2	PM2	PM2	PM2	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	PM2	PM2	PM2	O3_	O3_	O3_	O3_
12		-	8	4	4	4	4	4	2	5	8	15	16	16	16	16	18	14	10	10	10	14	11	10	-	18	
13		NA	PM2	O3_	PM2	O3_	PM2	PM2	PM2	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	PM2	PM2	PM2	PM2	PM2	NA	PM2
14		8	6	5	9	11	8	5	6	9	11	12	13	13	12	12	12	11	13	10	15	18	17	-	14	18	
15		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	PM2	PM2	PM2	PM2	PM2	NA	PM2
16		17	15	15	14	14	-	14	13	12	13	15	16	17	18	17	18	18	16	13	12	-	10	12	12	18	
17		O3_	O3_	O3_	O3_	O3_	NA	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	NA	O3_	O3_	O3_	O3_
18		12	13	13	14	14	15	15	12	13	14	15	16	17	18	18	18	18	17	16	-	15	16	15	14	18	
19		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	NA	O3_	O3_	O3_	O3_
20		12	12	14	15	16	16	14	8	7	9	15	16	17	19	20	20	20	17	-	10	7	5	5	4	20	
21		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	NA	O3_	O3_	O3_	O3_	O3_	O3_	O3_
22		16	17	18	18	18	17	18	18	16	17	19	19	-	20	20	21	-	20	20	20	19	19	17	17	21	
23		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	NA	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_
24		16	15	14	15	14	13	11	10	-	-	-	-	-	-	-	-	-	-	-	-	6	5	13	16	17	
25		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	PM2	O3_	O3_	O3_	O3_	O3_	
26		18	18	18	17	17	17	17	16	-	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	18	
27		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	NA	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_
28		17	17	16	15	15	14	15	15	-	16	16	16	17	17	17	17	17	16	16	16	16	16	16	16	16	17
29		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	NA	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_
30		12	10	7	12	10	12	-	13	12	15	12	13	14	14	14	13	13	15	22	20	17	10	13	10	22	
31		PM2	PM2	PM2	PM2	PM2	PM2	NA	PM2	PM2	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	PM2	PM2	PM2	PM2	PM2	PM2	PM2	PM2
32		8	11	10	9	10	-	10	9	10	16	18	18	19	19	20	21	21	20	15	15	19	20	19	18	21	
33		PM2	PM2	PM2	O3_	PM2	NA	PM2	PM2	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_
34		19	19	19	20	20	26	18	24	19	20	19	19	19	20	20	21	21	20	22	20	20	20	19	20	20	
35		O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_	O3_

STATUS FLAG CODES		NA - NOT APPLICABLE										V - VARIOUS										
AQI CLASS	OZONE (O <sub>3</sub> )					PARTICULATE MATTER 2.5 (PM <sub>2.5</sub> )					NITROGEN DIOXIDE (NO <sub>2</sub> )					SULPHUR DIOXIDE (SO <sub>2</sub> )					FREQUENCY	
	HRS	%	MAX AQI	HR	DAY	HRS	%	MAX AQI	HR	DAY	HRS	%	MAX AQI	HR	DAY	HRS	%	MAX AQI	HR	DAY	HRS	%
VERY POOR (101-255)	0	0.0%	-	-	-	0	0.0%	-	-	-	0	0.0%	-	-	-	0	0.0%	-	-	-	0	0.0%
POOR (51-100)	0	0.0%	-	-	-	0	0.0%	-	-	-	0	0.0%	-	-	-	0	0.0%	-	-	-	0	0.0%
FAIR (26-50)	0	0.0%	-	-	-	1	0.1%	28	10	1	0	0.0%	-	-	-	0	0.0%	-	-	-	1	0.1%
GOOD (1-25)	497	66.8%	21	VARIOUS	22.29	155	20.8%	-	-	-	0	0.0%	-	-	-	0	0.0%	-	-	-	652	93.7%
OVERALL	497	66.8%	-	-	-	156	21.0%	-	-	-	0	0.0%	-	-	-	0	0.0%	-	-	-	653	93.8%
UNAVAILABLE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	6.2%

# Sulphur Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

SULPHUR DIOXIDE (SO<sub>2</sub>) hourly averages in ppb

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	0	0	0	0	0	0	0	0	1	1	IZS	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
2	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	0	0	1	1	2	1	0	0	0	0	0	0	0	0	0	2	0.2	24	
4	0	0	0	0	0	0	0	0	IZS	0	0	1	2	1	1	2	1	0	0	0	0	1	1	0	0	2	0.4	24	
5	0	0	0	0	0	0	0	IZS	0	0	0	0	1	1	2	5	1	1	1	1	0	0	1	0	0	5	0.6	24	
6	1	1	1	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
7	0	0	0	0	0	IZS	0	0	0	0	0	0	0	1	1	3	2	1	0	0	0	0	0	0	0	3	0.3	24	
8	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	1	1	1	0.3	24	
9	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
10	0	0	IZS	0	0	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	IZS	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	0.1	24
12	0	0	0	0	0	0	0	0	0	0	0	1	1	3	3	3	2	1	1	0	0	0	0	IZS	0	3	0.7	24	
13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	IZS	1	0	1	0.2	24	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0.0	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0.0	24	
16	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
17	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	IZS	0	0	0	0	0	0	0	1	0.1	24	
18	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	IZS	2	1	1	1	1	1	1	0	2	0.5	24	
19	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	IZS	1	0	0	0	0	0	0	0	0	1	0.3	24	
20	0	0	0	0	0	0	0	0	0	1	1	1	1	1	IZS	1	2	2	2	2	1	1	0	0	0	2	0.6	24	
21	0	0	0	0	0	0	0	0	0	1	3	4	2	IZS	1	1	1	1	0	0	0	0	0	0	0	4	0.6	24	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	1	1	0	0	0	1	2	2	0.2	24	
23	2	2	2	2	2	2	1	1	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	1	0	2	1.2	24	
24	1	1	0	0	0	4	10	8	5	2	IZS	5	3	3	5	C	C	C	C	0	0	0	0	0	10	2.5	24		
25	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	0	1	1	2	2	2	1	1	2	1	1	1	1	0	0	0	2	0.7	24	
28	0	0	0	0	0	0	0	IZS	0	0	1	1	1	1	1	1	1	1	1	0	0	0	1	0	1	0.5	24		
29	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0	24	
HOURLY MAX	2	2	2	2	2	4	10	8	5	2	3	5	3	3	5	3	2	2	2	1	1	1	1	2					
HOURLY AVG	0.2	0.2	0.1	0.1	0.1	0.2	0.4	0.3	0.3	0.3	0.4	0.8	0.6	0.7	0.9	0.6	0.6	0.5	0.3	0.1	0.2	0.2	0.2	0.1					

**STATUS FLAG CODES**

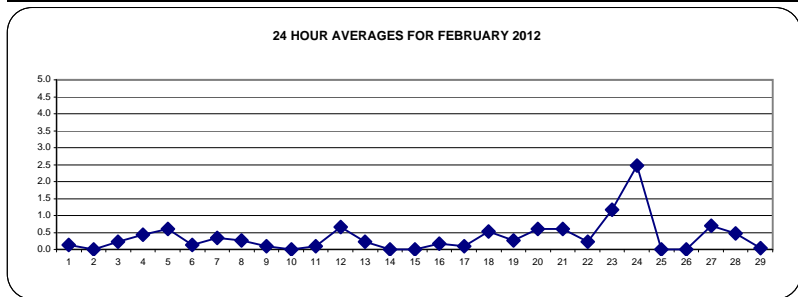
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**OBJECTIVE LIMIT:**

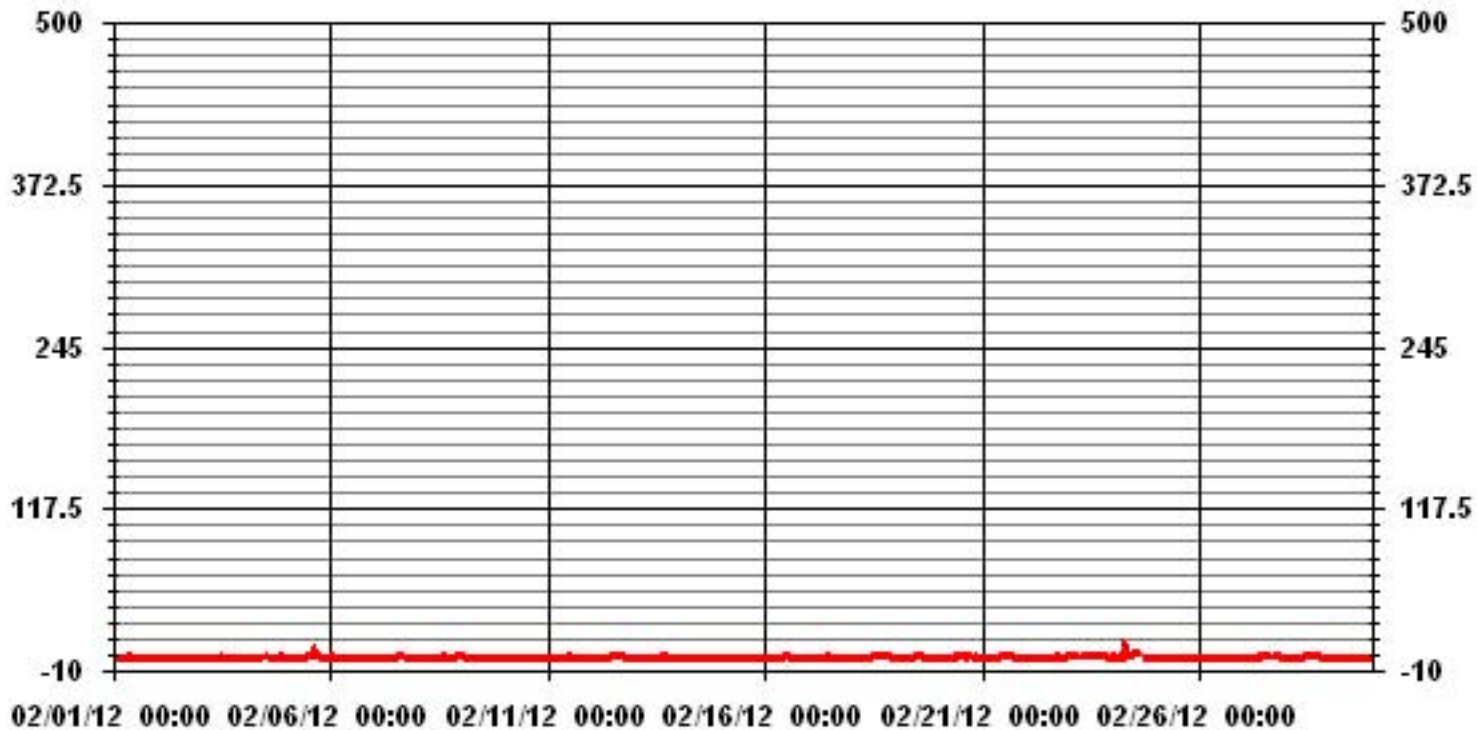
<b>ALBERTA ENVIRONMENT:</b>	1-HR	172	PPB	24-HR	48	PPB
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**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	157					
MAXIMUM 1-HR AVERAGE:	10	PPB	@ HOUR(S)	6	ON DAY(S)	24
MAXIMUM 24-HR AVERAGE:	2.5	PPB			ON DAY(S)	24
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	696	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.86		MONTHLY AVERAGE:	0.35	PPB	



### 01 Hour Averages



— LICA SO2\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## SULPHUR DIOXIDE MAX instantaneous maximum 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	HR	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		1	1	0	0	1	1	0	1	2	1	IZS	1	1	1	1	1	1	1	0	0	1	0	1	2	0.8	24	
2		0	0	0	0	0	0	0	1	0	IZS	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0.2	24	
3		1	1	0	0	0	1	0	0	IZS	1	1	1	2	2	2	1	1	0	0	0	1	1	1	2	0.8	24	
4		1	1	0	1	1	1	0	IZS	0	1	2	3	1	2	2	2	1	1	0	0	1	1	1	3	1.1	24	
5		1	1	1	0	0	0	IZS	0	1	1	1	2	2	4	8	2	1	2	1	1	1	1	1	8	1.4	24	
6		2	2	2	1	1	IZS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4	24	
7		0	0	0	0	IZS	0	0	0	0	0	1	1	1	2	5	4	2	1	1	0	0	0	0	5	0.8	24	
8		1	0	0	IZS	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	2	1	1	2	0.8	24	
9		1	1	IZS	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0.3	24	
10		0	IZS	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
11		IZS	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	IZS	1	0.5	24
12		0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	3	3	2	1	1	1	1	IZS	0	4	1.0	24
13		0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	1	1	0.7	24	
14		0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	IZS	0	0	1	1	0.4	24	
15		0	0	0	1	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	IZS	1	1	0	0	1	0.5	24
16		1	0	0	1	0	0	0	1	0	1	1	1	2	2	1	1	0	0	IZS	0	0	0	0	0	2	0.5	24
17		0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	IZS	0	0	0	0	0	0	1	0.3	24
18		1	0	1	0	1	1	0	0	0	1	1	1	1	1	1	1	IZS	2	2	2	1	1	1	2	0.9	24	
19		1	1	1	1	0	0	1	1	1	1	1	1	1	1	IZS	1	1	1	0	0	0	0	0	0	1	0.7	24
20		0	1	0	0	0	0	0	1	1	1	2	2	2	2	IZS	1	2	3	2	2	1	1	1	3	1.1	24	
21		1	0	1	0	0	0	0	0	0	3	4	5	2	IZS	2	1	1	1	1	1	0	1	1	0	5	1.1	24
22		0	0	0	0	0	0	0	0	0	0	1	IZS	1	1	1	1	1	1	1	1	1	1	2	3	3	0.7	24
23		2	2	2	2	3	3	2	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	1	3	1.4	24	
24		1	1	1	0	1	9	11	10	7	3	IZS	6	4	5	8	C	C	C	C	1	1	0	1	0	11	3.7	24
25		0	0	0	0	1	0	0	0	0	0	IZS	0	1	0	0	1	0	0	0	0	0	0	0	1	0.1	24	
26		0	0	0	0	0	1	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
27		0	0	0	0	0	0	0	IZS	1	1	2	2	2	2	2	1	2	2	1	1	1	1	1	0	2	1.0	24
28		0	0	0	0	0	1	IZS	0	1	1	1	1	2	2	2	1	1	2	1	1	1	1	1	2	0.9	24	
29		1	1	1	0	0	IZS	1	0	0	0	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	0.7	24
HOURLY MAX		2	2	2	2	3	9	11	10	7	3	4	6	4	5	8	5	4	3	2	2	1	2	2	3			
HOURLY AVG		0.6	0.5	0.4	0.3	0.4	0.7	0.7	0.7	0.7	0.8	1.0	1.3	1.2	1.3	1.6	1.1	1.0	1.0	0.7	0.6	0.6	0.6	0.6	0.5			

### STATUS FLAG CODES

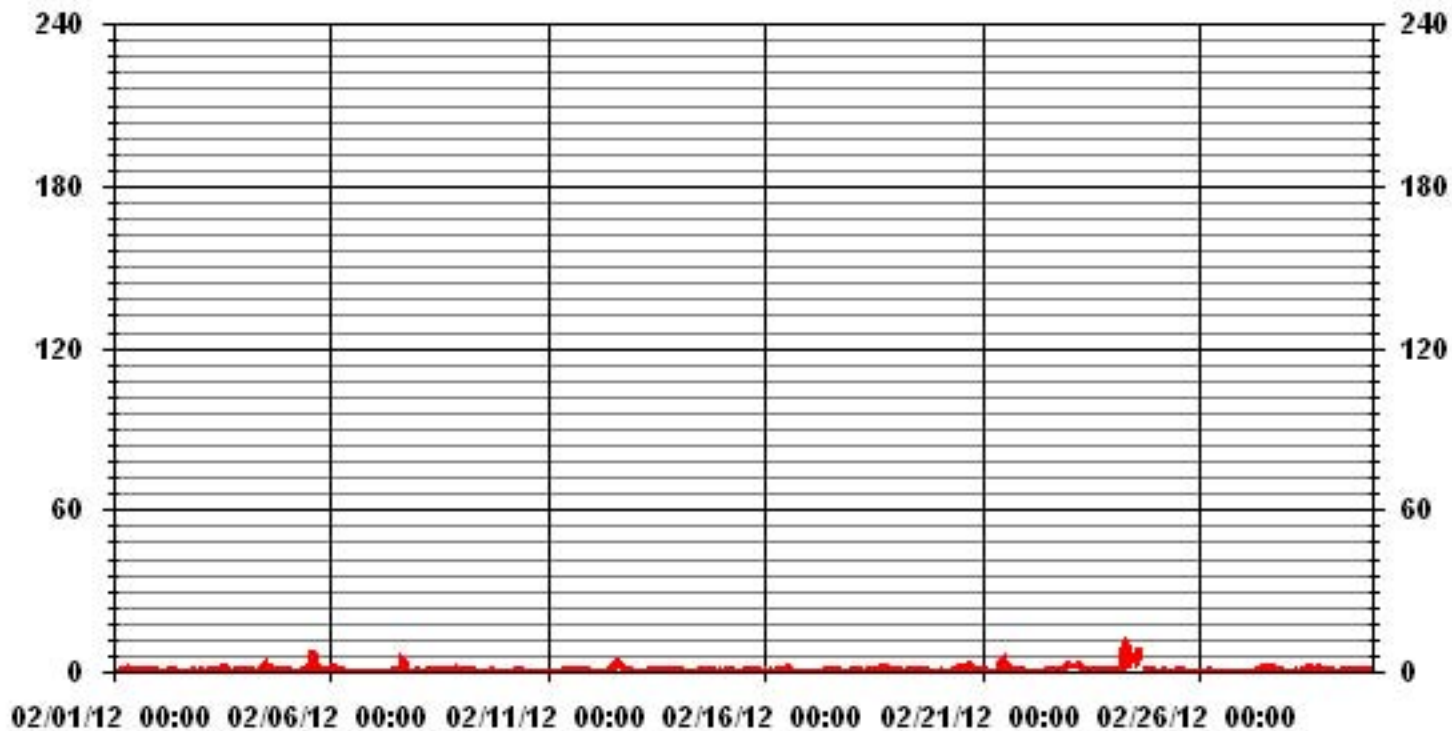
S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE

### MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	365					
MAXIMUM INSTANTANEOUS VALUE:	11	PPB	@ HOUR(S)	6	ON DAY(S)	24
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	696	HRS	
MONTHLY CALIBRATION TIME:	4	HRS				
STANDARD DEVIATION:	1.13					



### 01 Hour Averages



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

February 2012

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	3.32	6.34	6.49	5.89	8.15	4.07	8.15	3.32	4.38	4.38	15.55	13.59	4.83	3.77	4.22	3.47	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.32	6.34	6.49	5.89	8.15	4.07	8.15	3.32	4.38	4.38	15.55	13.59	4.83	3.77	4.22	3.47	

Calm : .00 %

Total # Operational Hours : 662

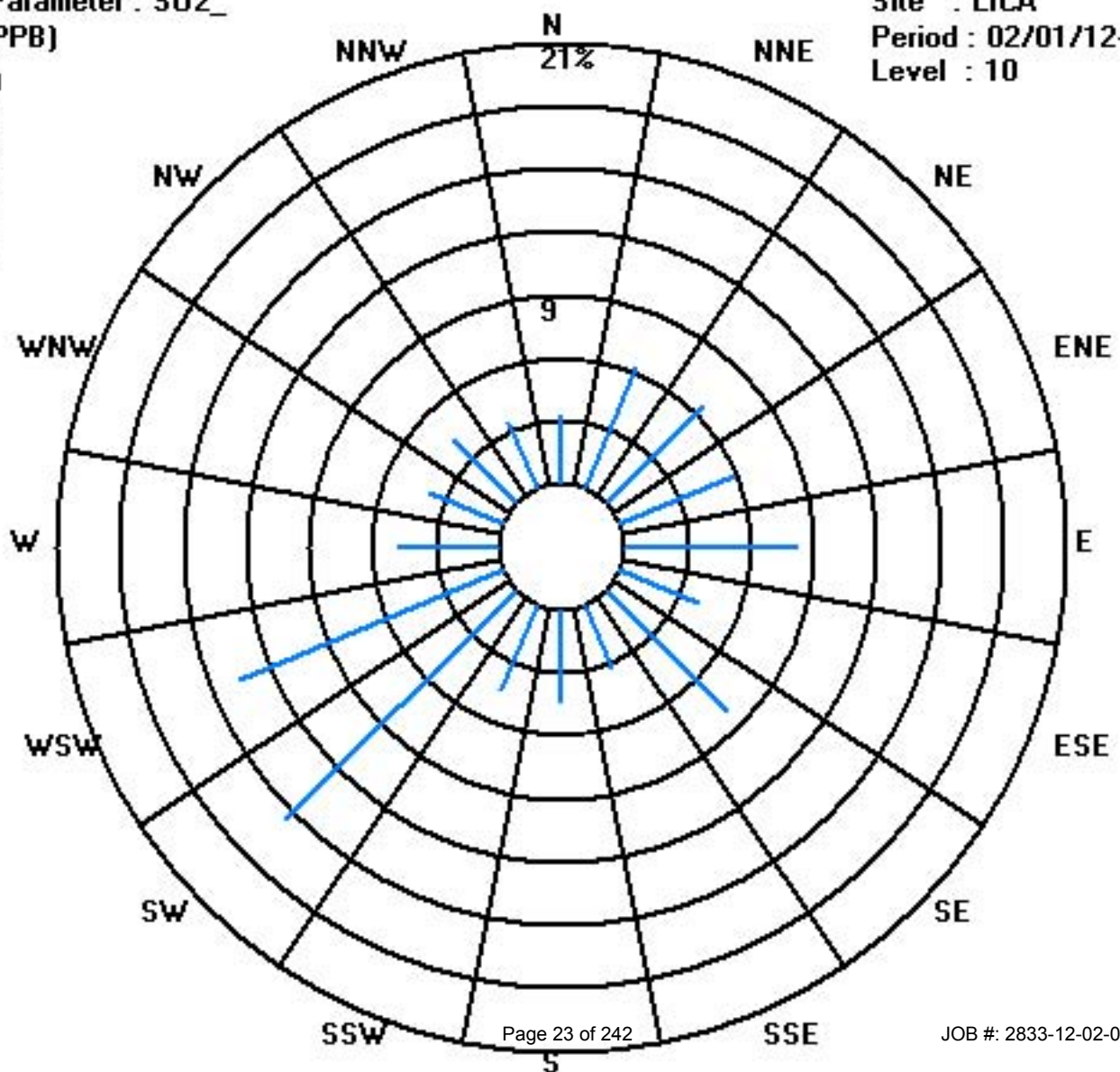
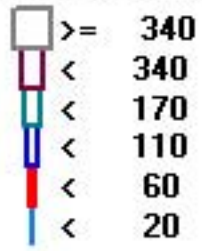
Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	22	42	43	39	54	27	54	22	29	29	103	90	32	25	28	23	662
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	22	42	43	39	54	27	54	22	29	29	103	90	32	25	28	23	

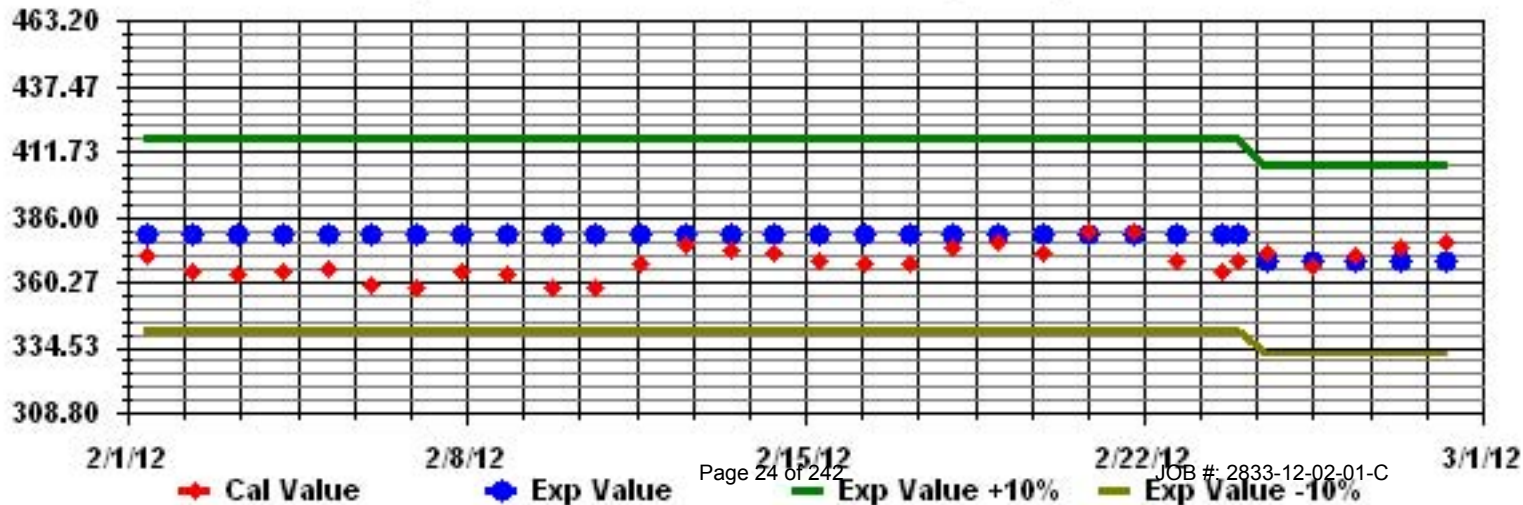
Calm : .00 %

Total # Operational Hours : 662

Class Limits (PPB)



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



# Total Reduced Sulphur

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

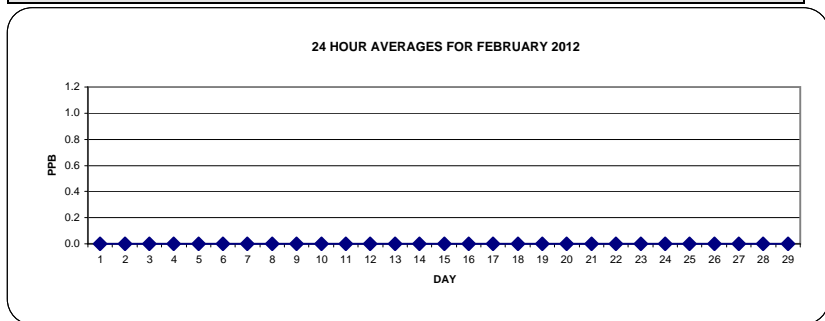
## TOTAL REDUCED SULPHUR (TRS) hourly averages in ppb

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.	
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	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	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	IZS	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	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
6	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
7	0	0	0	0	IZS	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	IZS	0	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	IZS	0	0	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	IZS	0	0	0	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	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	0	0	0.0	24	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0.0	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0.0	24	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	0	0	0	0	0	0	0	0	0.0	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	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	C	C	C	C	C	C	0	0	0	0	N	0	0	0	0	0	0	0	0.0	23
25	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	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	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
29	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
HOURLY MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

### STATUS FLAG CODES

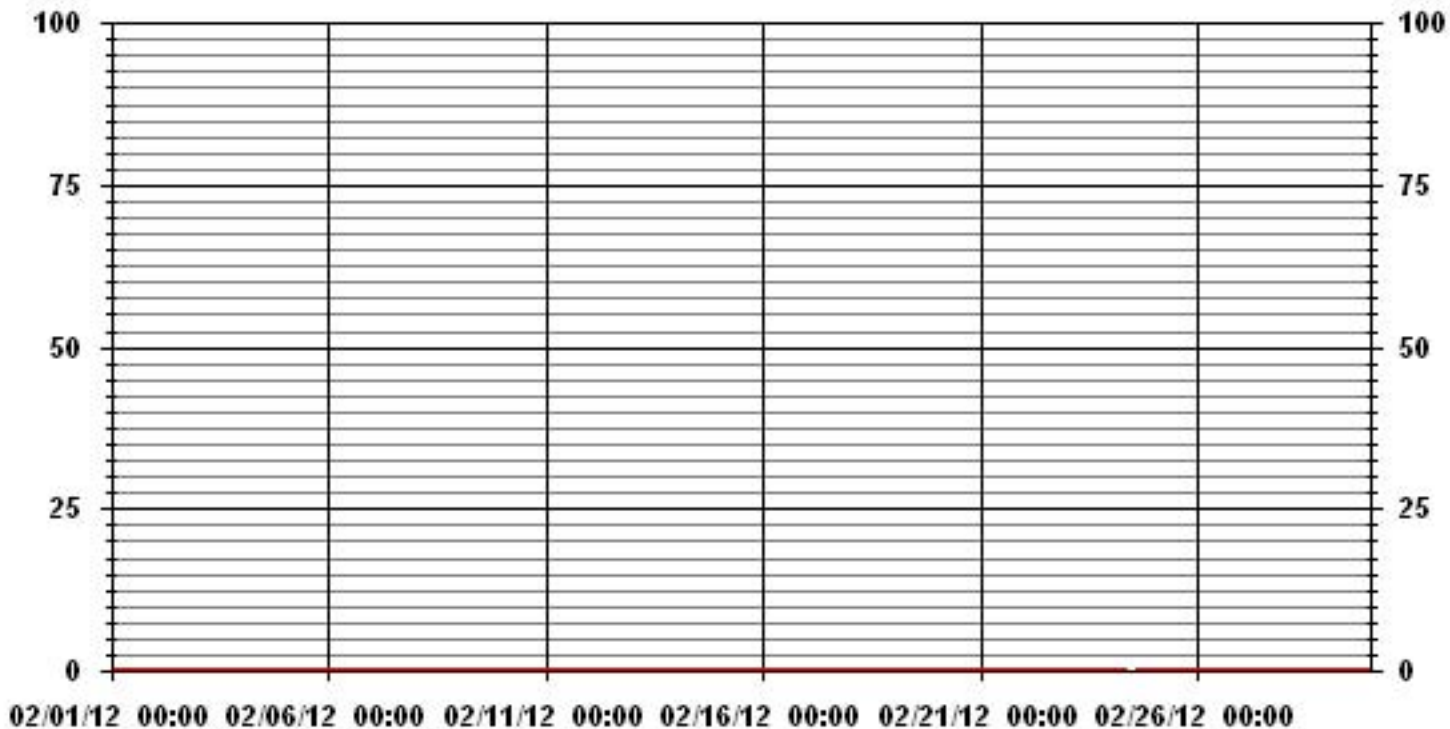
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



### MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF 24-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	0				
MAXIMUM 1-HR AVERAGE:	0	PPB	@ HOUR(S)	ALL	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	0.0	PPB		ALL	ON DAY(S)
				VAR-VARIOUS	ALL
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION	0.00		MONTHLY AVERAGE	0.00	PPB

### 01 Hour Averages



— LICA TRS\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## TOTAL REDUCED SULPHUR MAX    instantaneous maximum in ppb

MST																									DAILY	24-HOUR		
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	0	0	0	0	0	0	0	1	1	IZS	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0.1	24	
2	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	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	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
6	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
7	0	0	0	0	IZS	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	IZS	0	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	IZS	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.1	24	
10	0	IZS	0	0	0	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	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	0	0	0.0	24
13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	1	0.0	24
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0.0	24
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0.0	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	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	IZS	0	0	0	0	0	0	0	0	0	0	0.0	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0.0	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	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	C	C	C	C	C	C	C	C	0	0	M	0	0	0	1	1	1	1	0.1	23
25	0	0	0	0	0	0	0	0	0	IZS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
26	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
29	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
HOURLY MAX	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	0	0	0	1	1				
HOURLY AVG	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	0.0	0.0	0.0			

**STATUS FLAG CODES**

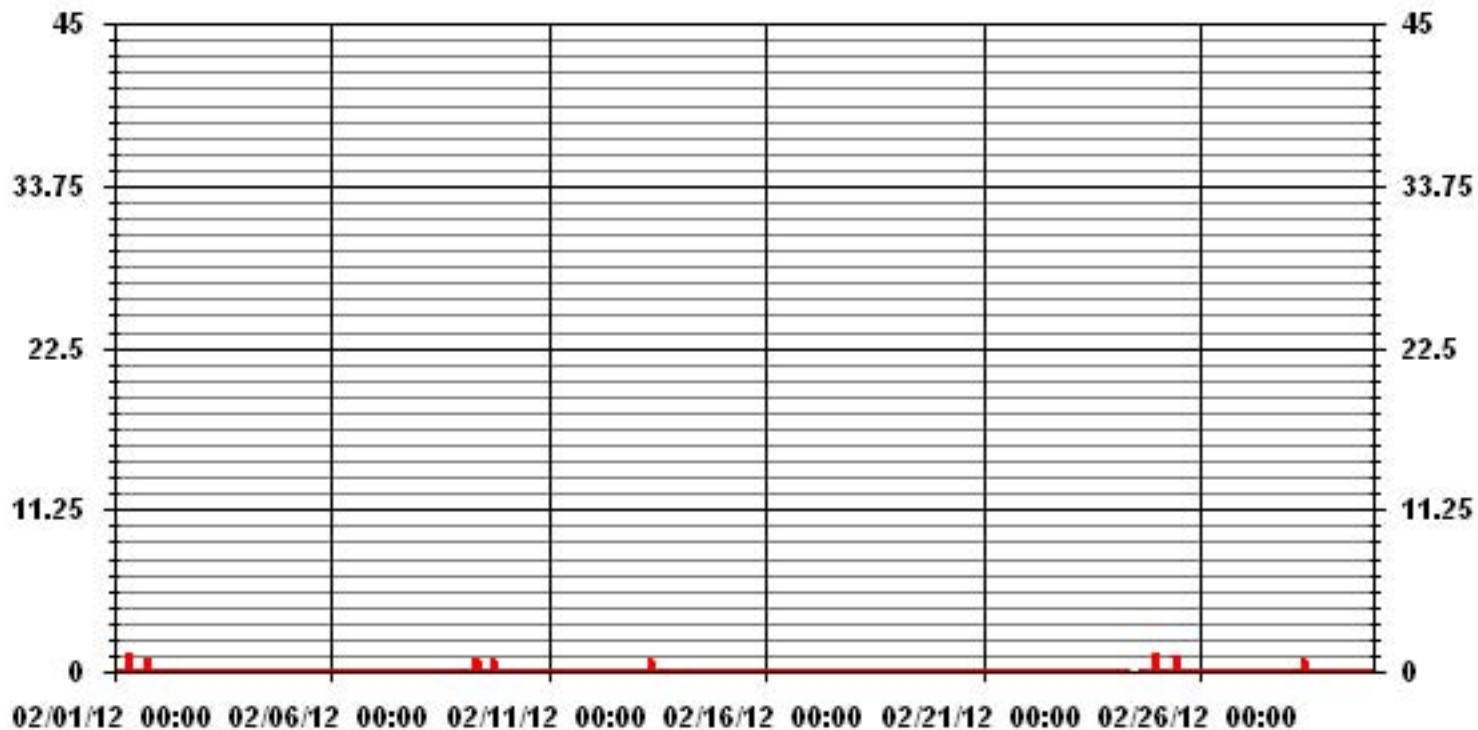
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	10					
MAXIMUM INSTANTANEOUS VALUE:	1	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR
					VAR - VARIOUS	
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	8	HRS				
STANDARD DEVIATION:	0.12					



### 01 Hour Averages



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

February 2012

Distribution By % Of Samples

Logger Id : 01  
 Site Name : LICA  
 Parameter : TRS\_  
 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	3.33	6.06	6.67	5.46	8.19	4.09	8.34	3.33	4.40	4.40	15.62	13.65	4.85	3.79	4.24	3.49	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	3.33	6.06	6.67	5.46	8.19	4.09	8.34	3.33	4.40	4.40	15.62	13.65	4.85	3.79	4.24	3.49	

Calm : .00 %

Total # Operational Hours : 659

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	22	40	44	36	54	27	55	22	29	29	103	90	32	25	28	23	659
< 10																	
< 50																	
>= 50																	
Totals	22	40	44	36	54	27	55	22	29	29	103	90	32	25	28	23	

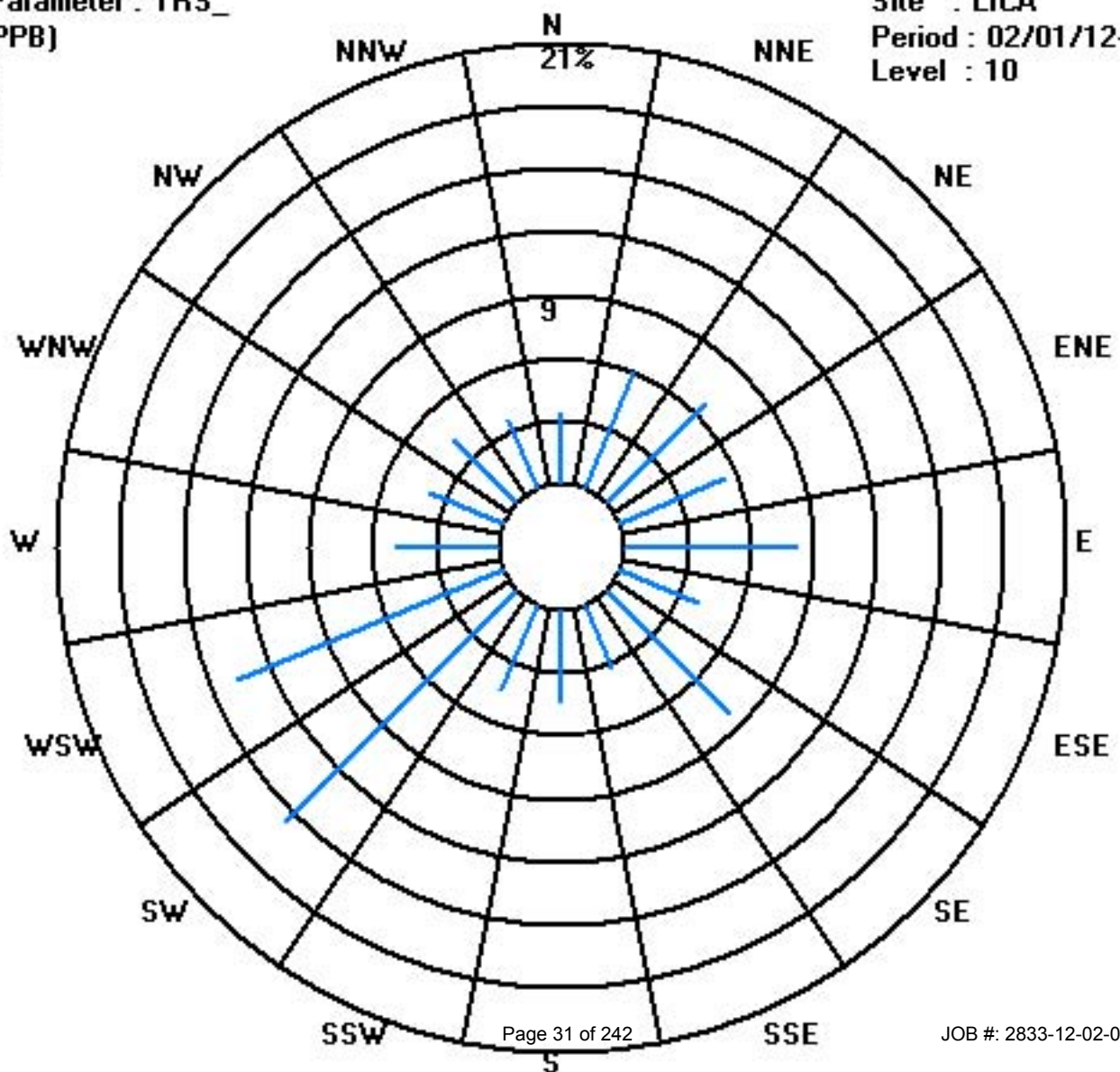
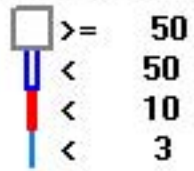
Calm : .00 %

Total # Operational Hours : 659

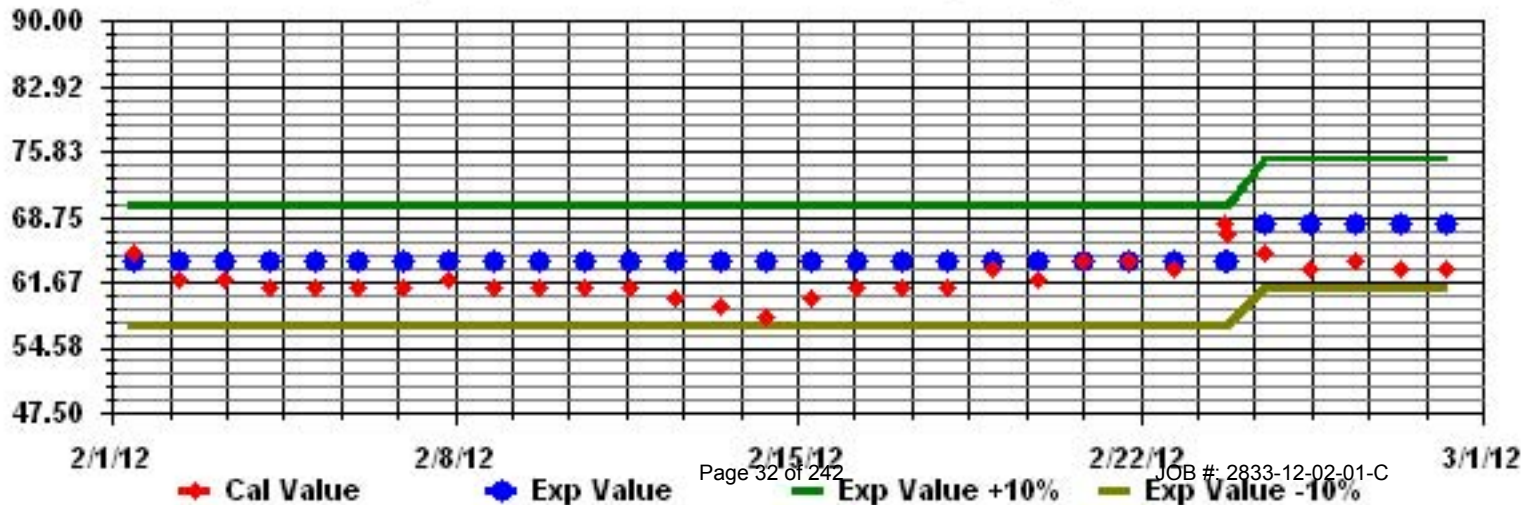
Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



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



# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

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		1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00				
1		2.4	2.5	2.7	2.7	2.6	2.9	2.9	3	3.3	3.1	<b>IZS</b>	2.9	3.2	3.3	3.5	3.3	3.1	3.2	3.3	3.2	3.2	3.3	3.6	<b>4.2</b>	<b>4.2</b>	<b>3.1</b>	24	
2		4.1	4	3.6	3.1	2.9	2.6	2.9	3	3	<b>IZS</b>	2.8	2.7	2.4	2.3	2.3	2.1	2.1	2.2	2.1	2.2	2.5	2.7	2.5	2.5	4.1	2.7	24	
3		2.5	2.4	2.4	2.4	2.4	2.5	2.5	2.6	<b>IZS</b>	2.5	2.5	2.5	2.5	2.5	2.4	2.5	2.6	2.7	2.7	2.8	2.9	3.1	3.1	3.1	3.1	2.6	24	
4		3.3	3.1	3.1	3.1	3	2.9	2.6	<b>IZS</b>	2.6	2.7	2.4	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.5	2.5	2.4	2.4	3.3	2.5	24	
5		2.4	2.5	2.4	2.4	2.5	2.7	<b>IZS</b>	3	3	3.1	2.9	2.5	2.6	2.4	1.9	1.9	1.9	1.9	2	1.9	1.9	1.9	1.9	1.9	1.9	3.1	2.3	24
6		2	2	2	1.9	2	<b>IZS</b>	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.1	2.1	2.1	2.1	2.0	24
7		2.4	2.6	2.6	2.9	<b>IZS</b>	3.5	3.5	3.3	3.1	2.8	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.4	2.2	3.5	2.6	24	
8		2.1	2.1	2.1	<b>IZS</b>	2.3	2.3	2.4	2.4	2.3	2.5	2.8	2.8	2.4	2.3	2.2	2.3	2.3	2.4	2.5	2.5	2.5	2.2	2.1	2.2	2.8	2.3	24	
9		2.2	2.2	<b>IZS</b>	2	1.9	1.9	2	2	2	2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2	2	2	2.1	2.1	2.2	2.2	2.2	2.0	24	
10		2.2	<b>IZS</b>	2.3	2.4	2.6	2.6	2.7	2.7	2.8	2.9	2.5	2.1	2	2	2	2	2	2	2	2	2.1	2	2	2.1	2.2	2.9	2.3	24
11		<b>IZS</b>	2.6	2.5	2.6	2.5	2.6	2.6	2.6	2.5	2.6	2.6	2.6	2.5	2.5	2.4	2.2	2.4	2.4	2.4	2.5	2.6	2.6	2.6	<b>IZS</b>	2.6	2.5	24	
12		2.6	2.6	2.6	2.5	2.5	2.6	2.7	2.8	3.1	3.1	3	2.8	2.7	2.6	2.7	2.6	2.7	3	3	3.1	3.2	<b>IZS</b>	3	3.2	2.8	24		
13		3	3	3.1	3.1	3.1	3.2	3.3	3.5	3.7	3.3	3.7	2.6	2.4	2	1.9	1.9	1.9	1.9	2	1.9	1.9	<b>IZS</b>	1.9	2	3.7	2.6	24	
14		2.1	2.2	2.2	2.4	2.5	2.6	2.5	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2	2	2.1	2.1	2.2	<b>IZS</b>	2.3	2.6	2.6	2.6	2.3	24	
15		2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.2	2.2	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.4	<b>IZS</b>	2.2	2.2	2.3	2.5	2.5	2.2	24	
16		2.3	2.5	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2	2.1	2	2.1	2.1	<b>IZS</b>	2.1	2.3	2.5	2.6	2.6	2.6	2.2	24	
17		2.6	3	3.3	3.8	3.8	3.1	3.3	3.6	3.2	3.3	3	2.5	2.5	2.5	2.6	2.4	2.3	<b>IZS</b>	2.2	2.3	2.3	2.4	3	3.5	3.8	2.9	24	
18		3.5	3.1	3	3	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.4	2.4	2.4	2.3	2.3	<b>IZS</b>	2.2	2.2	2.2	2.2	2.1	2.1	2.1	3.5	2.5	24	
19		2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.3	2.2	2.2	2.2	2.1	2.1	2.1	<b>IZS</b>	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.2	24	
20		2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	<b>IZS</b>	2	2	2	2	2	2	2	2	1.9	2.4	2.1	24	
21		1.9	2	2	2	2	2.1	2.1	2.1	2.1	2.2	2.2	2	<b>IZS</b>	2.3	2.3	2.2	2.3	2.2	2.3	2.2	2.1	2.1	2	2.3	2.1	2.4	24	
22		2	2	2	2	2	2.1	2	2	2.1	2.1	2.3	2.2	<b>IZS</b>	2	2	1.9	2	2	2.1	2	2.1	2	2	2	2.3	2.0	24	
23		2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	<b>IZS</b>	2	2	2	2	2	2	2	2	2.1	2	2	2	2	2.1	2.0	24
24		2	2	2.1	2.1	2.1	2.1	2.1	2	2	<b>IZS</b>	2	2	<b>C</b>	<b>C</b>	<b>C</b>	1.9	2	<b>M</b>	2.1	2.3	2	2	1.9	2.3	2.0	2.3	24	
25		1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	<b>IZS</b>	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2	2	2	2	2	2	2	2	2.0	1.9	24
26		2	2	2	2	2	2	2	2	<b>IZS</b>	2	2	2	2	2	2	2	2	2	2	2.1	2.1	2.1	2.3	2.3	2.2	2.3	2.0	24
27		2.1	2.1	2.1	2.2	2.2	2.2	2.3	<b>IZS</b>	2.5	2.5	2.4	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.6	2.6	2.3	24	
28		2.6	2.9	2.8	2.8	3	2.9	<b>IZS</b>	3	3	2.7	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.6	2.6	2.5	2.3	2.6	3.0	2.6	24
29		2.4	2.3	2.3	2.4	2.4	<b>IZS</b>	2.4	2.5	2.2	2	2	2	2	2	1.9	1.9	1.9	1.9	2	2	1.9	2	2	2	2.5	2.1	24	
HOURLY MAX		4.1	4.0	3.6	3.8	3.8	3.5	3.5	3.6	3.7	3.3	3.0	2.9	3.2	3.3	3.5	3.3	3.1	3.2	3.3	3.2	3.2	3.3	3.6	4.2				
HOURLY AVG		2.4	2.4	2.4	2.5	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4				

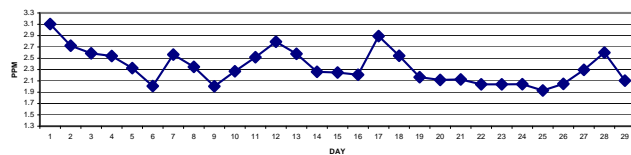
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE
BB	- BELOW BACKGROUND OF 1.5 PPM		

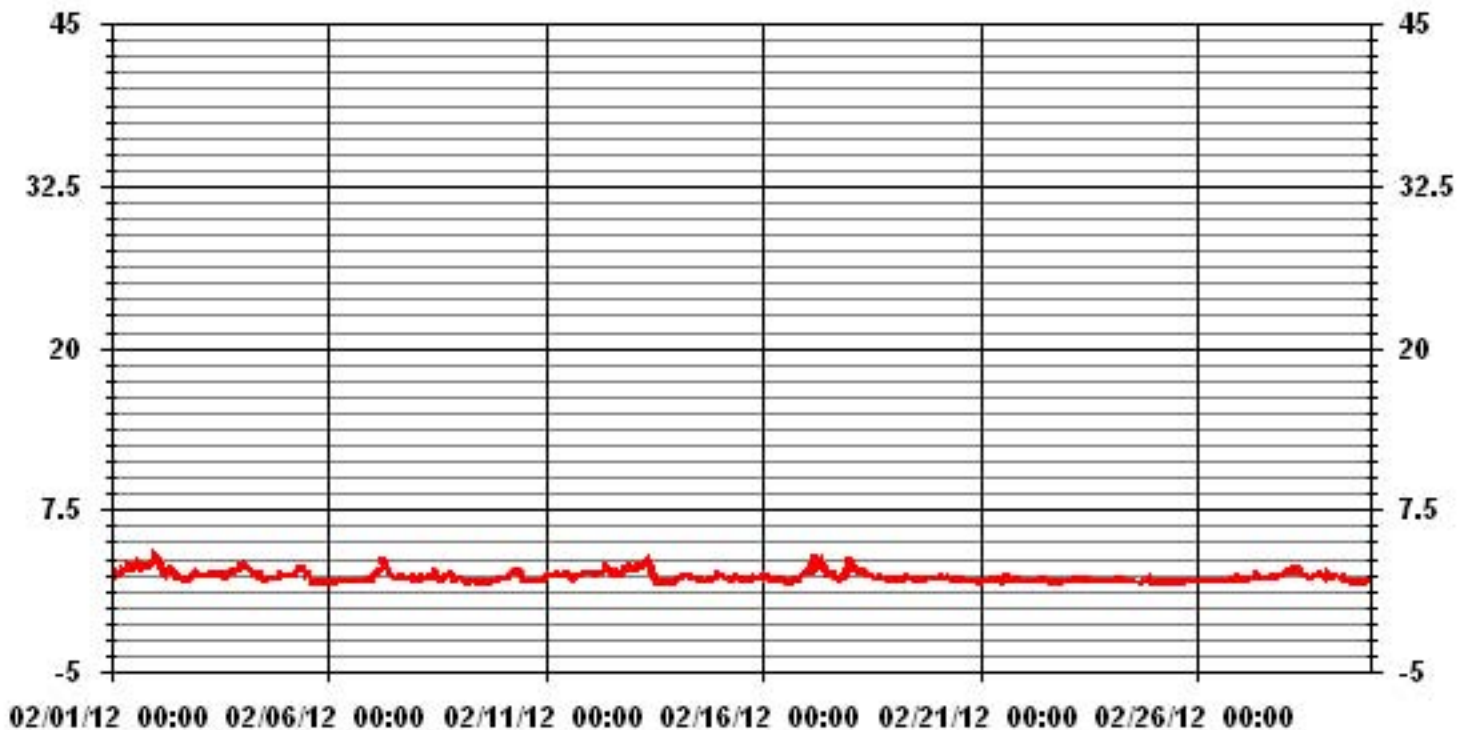
**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	662			
MAXIMUM 1-HR AVERAGE:	4.2	PPM	@ HOUR(S)	23
MAXIMUM 24-HR AVERAGE:	3.1	PPM	ON DAY(S)	1
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695
MONTHLY CALIBRATION TIME:	3	HRS	AMD OPERATION UPTIME:	99.9
STANDARD DEVIATION:	0.41		MONTHLY AVERAGE:	2.35

24 AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



— LICA    — THC    — PPM

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## TOTAL HYDROCARBONS MAX instantaneous maximum in ppr

MST																									DAILY	24-HOUR		
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	MAX.	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	2.5	2.6	3.1	2.9	2.8	3	3	3.4	3.6	3.4	IZS	3	3.4	3.5	3.6	3.5	3.4	3.7	3.7	3.5	3.4	3.4	4.2	4.6	4.6	3.4	24	
2	4.6	4.3	4.1	3.2	3.1	2.8	4	3.5	3.1	IZS	3.1	2.9	2.7	2.3	2.4	2.4	2.2	2.3	2.2	2.3	3.3	2.8	2.7	2.5	4.6	3.0	24	
3	2.5	2.5	2.5	2.5	2.5	2.6	2.8	2.8	IZS	2.6	2.5	2.6	2.6	2.6	2.7	2.6	2.9	2.7	2.9	2.8	3.6	3.1	3.4	3.3	3.6	2.8	24	
4	3.4	3.3	3.3	3.5	3.2	3.2	3.2	IZS	2.7	2.7	2.6	2.3	2.3	2.2	2.3	2.3	2.2	2.3	2.3	2.5	2.7	2.7	2.5	2.4	3.5	2.7	24	
5	2.5	2.5	2.5	2.5	2.7	3	IZS	3.1	3.1	3.2	3.2	2.7	2.8	2.7	2	1.9	2.1	2	2	2	2	2	2	2	3.2	2.5	24	
6	2.1	2.1	2	2	2	IZS	2.2	2.1	2.1	2	2	2	2	2.1	2.7	2	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.7	2.1	24	
7	3.1	3	3.7	3.3	IZS	3.8	3.9	3.5	3.6	3	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.5	2.4	2.3	2.3	2.6	2.9	2.4	3.9	2.8	24	
8	2.2	2.2	2.2	IZS	2.4	2.4	2.4	2.4	2.4	3.1	3	3.1	2.6	2.4	2.3	2.4	2.6	2.7	2.8	2.6	2.6	2.6	2.5	2.2	3.1	2.5	24	
9	2.2	2.2	IZS	2.1	2	2	2	2	3.6	2	2	2	2	2	2	2.2	2	2	2	2.1	2.4	2.2	2.3	3.6	2.2	2.4	24	
10	2.3	IZS	2.4	2.9	2.9	2.7	3.3	3.1	3.8	3.1	2.7	2.2	2.9	2.1	2.1	2.1	2.1	2.1	2.1	3.6	2.3	2.1	2.1	2.4	3.8	2.6	24	
11	IZS	2.7	2.7	2.7	2.6	2.7	2.7	2.6	2.6	2.9	2.8	2.7	2.6	2.7	2.5	2.5	2.6	2.6	3	3	3.4	2.8	2.7	IZS	3.4	2.7	24	
12	2.7	2.7	2.7	2.7	2.6	2.8	3	3	3.7	3.9	3.1	3	2.7	2.7	2.9	2.7	2.8	2.9	3.3	3.1	3.2	3.7	IZS	3.2	3.9	3.0	24	
13	3.1	3.1	3.1	3.2	3.2	3.6	4	3.8	4.1	3.6	3.3	2.7	2.7	2.2	2	2	2	2	2	2	2	2	IZS	2	4.1	2.8	24	
14	2.4	2.4	2.4	2.4	2.7	2.7	2.6	2.4	2.4	2.4	2.3	2.2	2.4	2.1	2.1	2.1	2.2	2.1	2.2	2.3	IZS	2.3	2.8	2.8	2.8	2.4	24	
15	2.6	2.5	2.5	2.4	2.3	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.2	2.1	2.2	2.2	2.2	2.3	2.7	IZS	2.3	2.3	2.4	2.6	2.7	2.3	24	
16	2.5	2.6	2.6	2.4	2.2	2.1	2.1	2.2	2.8	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.3	IZS	2.3	3.4	2.7	2.8	2.8	3.4	2.4	24	
17	3	3.3	4.3	4.4	4.2	3.6	3.8	4	3.8	3.6	3.6	2.7	2.6	2.6	2.7	2.6	2.3	IZS	2.3	2.4	2.4	2.7	4	4	4.4	3.3	24	
18	3.9	3.3	3.4	3.2	3	3	2.9	3	2.9	2.7	2.7	3.1	2.5	3.1	2.3	2.4	IZS	2.3	2.3	2.2	2.2	2.2	2.1	2.3	3.9	2.7	24	
19	2.2	2.2	2.2	2.2	2.1	3.2	2.3	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.1	IZS	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3	3.2	2.3	24	
20	2.2	2.4	2.3	2.4	2.4	2.5	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2	2	2	2.5	2.2	24	
21	2	2	2	2.1	2.1	2.4	2.4	2.2	2.3	2.3	2.3	2.2	2.2	IZS	2.4	2.4	2.3	2.7	2.2	2.4	2.4	2.1	2.1	2	2.7	2.2	24	
22	2.1	2.1	2	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.5	2.4	IZS	2.2	2	2	2.2	2.2	2.4	2	2.7	2	2	2	2.7	2.2	24	
23	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2	2	2	2	2	2	2.1	2.1	2.2	2.1	2	2	2.2	2.1	24	
24	2	2.1	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	IZS	2	C	C	C	C	C	2	M	2.4	3.1	3.6	2	2	3.6	2.3	23	
25	2.4	2	2	2	2	2	2	2	2	2	IZS	2	2	2	2	2	2	3.8	2	2	2	2	2	2	3.8	2.1	24	
26	2	2	2	2	2	2.1	2	2	IZS	2	2	2	2	2	2	2	2	2	2	2.2	2.2	2.2	2.4	2.4	2.3	2.4	2.1	24
27	2.1	2.1	2.2	2.3	2.3	2.4	2.9	IZS	2.6	2.6	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	3.5	2.9	3.5	2.4	24	
28	2.7	3.3	3.3	3.3	3.1	3.1	IZS	3.3	4.2	3.1	2.5	2.6	2.5	4.9	2.4	2.5	2.4	2.4	2.8	6.2	2.9	2.7	2.8	6.3	6.3	3.3	24	
29	2.8	2.9	2.9	3.8	2.6	IZS	3.6	3.7	2.5	2.1	2	2	2.1	2	2	2.1	2	2	2.1	2.1	2	2	2.1	2	3.8	2.4	24	
HOURLY MAX	5	4	4	4	4	4	4	4	4	4	4	3	3	5	4	4	3	4	4	6	4	4	4	6				
HOURLY AVG	2.6	2.6	2.7	2.7	2.6	2.7	2.7	2.7	2.9	2.7	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.5	2.6	2.5	2.5	2.6				

**STATUS FLAG CODES**

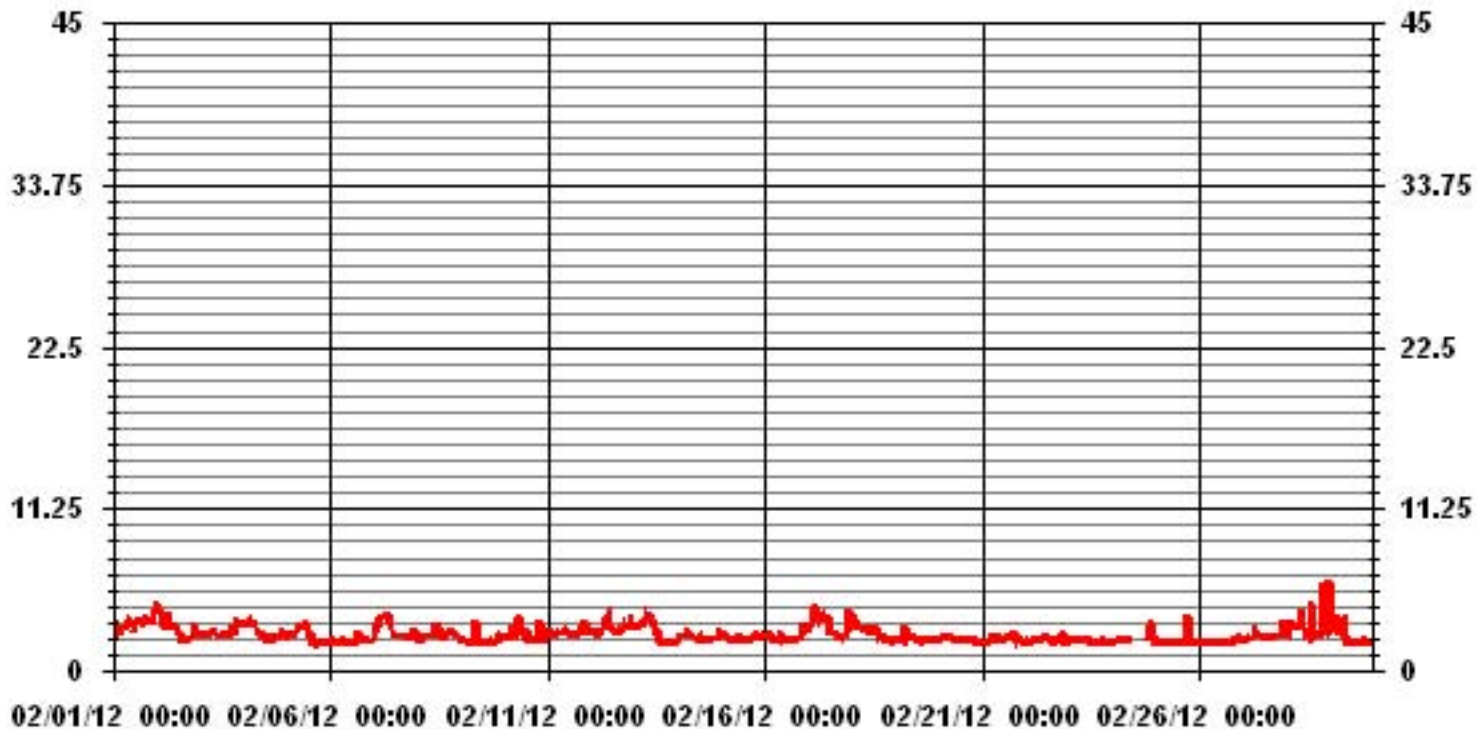
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE
BB	- BELOW BACKGROUND OF 1.5 PPM		

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	660					
MAXIMUM INSTANTANEOUS VALUE:	6.3	PPM	@ HOUR(S)	23	ON DAY(S)	28
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	695 HRS		
MONTHLY CALIBRATION TIME:	5	HRS				
STANDARD DEVIATION:	0.58					



### 01 Hour Averages



— LICA THCMAX PPM

LICA  
 THC / WD Joint Frequency Distribution (Percent)

February 2012

Distribution By % Of Samples

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

Wind Parameter : WD  
 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	3.47	5.89	5.89	4.83	7.09	3.32	7.25	2.87	3.92	4.07	14.80	10.87	3.62	3.47	4.22	3.47	89.12
< 10.0	.00	.45	.60	.75	1.05	.75	1.05	.45	.45	.30	.75	2.71	1.20	.30	.00	.00	10.87
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.47	6.34	6.49	5.58	8.15	4.07	8.30	3.32	4.38	4.38	15.55	13.59	4.83	3.77	4.22	3.47	

Calm : .00 %

Total # Operational Hours : 662

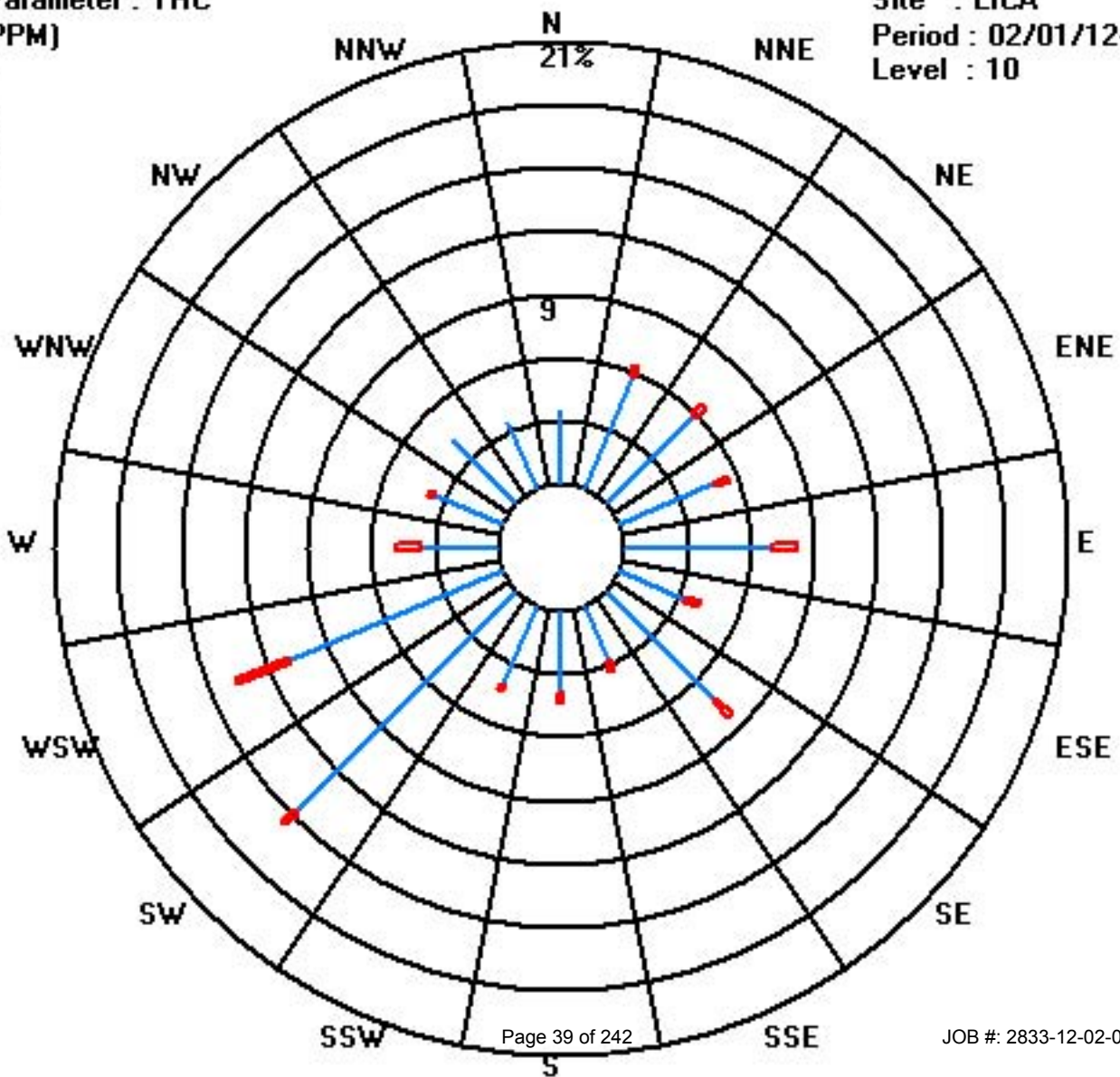
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	23	39	39	32	47	22	48	19	26	27	98	72	24	23	28	23	590
< 10.0		3	4	5	7	5	7	3	3	2	5	18	8	2			72
< 50.0																	
>= 50.0																	
Totals	23	42	43	37	54	27	55	22	29	29	103	90	32	25	28	23	

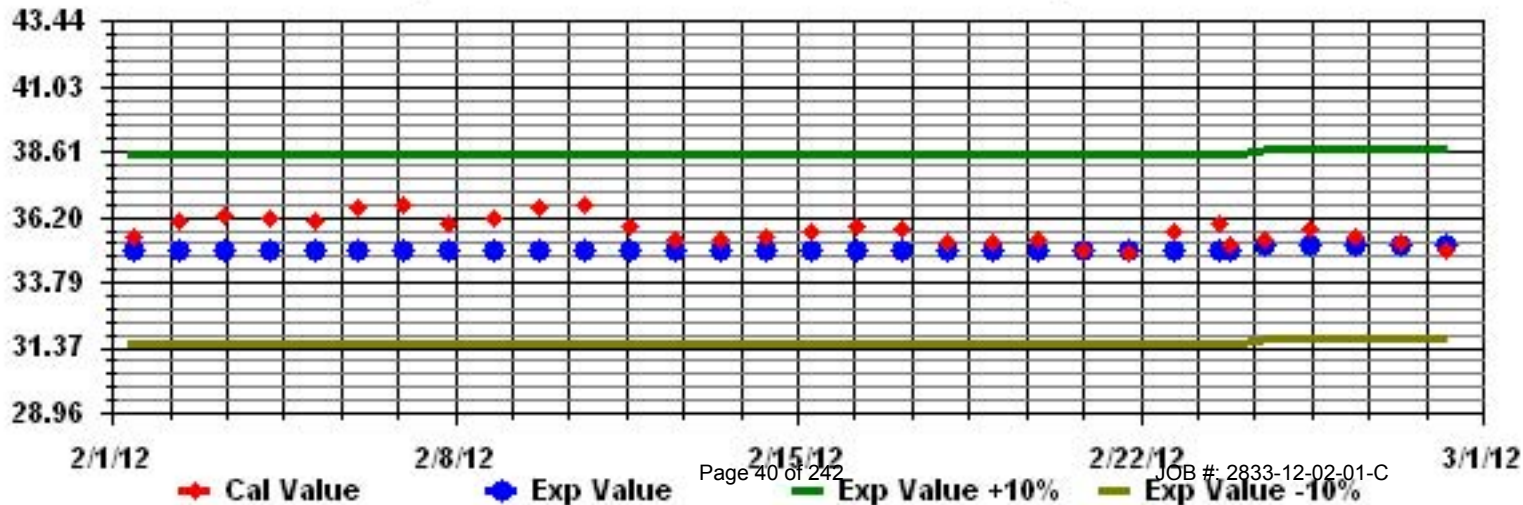
Calm : .00 %

Total # Operational Hours : 662

Class Limits (PPM)



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



# Particulate Matter 2.5

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

PARTICULATE MATTER 2.5 (PM2.5) hourly averages in ug/m<sup>3</sup>

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	23:00	DAILY	24-HOUR	RDGS.
DAY	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	MAX.	AVG.		
1	1	13	15.5	10.5	15.5	13	16.5	11.5	12	20.4	24	35	20	14.4	18.5	17.5	14	19.5	20	21.5	23.5	17.5	13.9	17.5	13.9	35.0	17.4	24	
2	2	15.5	12.4	7.5	10.9	8.4	6.5	8.4	12	8.4	7	4	5	4	7.5	9.9	8.4	9.9	10.9	9.4	8.4	8.4	5.9	2.9	4	15.5	8.2	24	
3	3	9.4	10.5	5	7.9	9.4	6	7.9	10.5	7	7.5	13.9	11.5	10.5	9.4	4.4	6	6	6	10.5	6	4.4	9.9	13.9	14.9	14.9	8.7	24	
4	4	15	13.5	13.9	17	9.4	8.4	7	7.5	7.5	11.5	7.9	4.4	6.5	2.9	4.4	5.5	3.4	7	4	1	9.9	16	9.4	9.4	17.0	8.4	24	
5	5	9.4	12.5	12.5	11.5	11.5	13	10.9	10.5	8.4	12.4	13	9	9.9	6.5	6	1	2.5	4	6	0	0	0	0.5	1.4	13.0	7.2	24	
6	6	0.5	5	0	1.4	1	0	3.4	0	5	0	1.9	1.9	1.9	0	1	3.4	2.9	1	0	5	5.5	5	1.9	4	5.5	2.2	24	
7	7	2.9	2.5	2.5	3.4	4	2.9	1.9	5.5	2.9	5.5	2.9	1.9	6.5	7.9	1	6	6	5.5	9.4	0.5	4	4.4	8.3	6	9.4	4.3	24	
8	8	2.5	5.5	3.5	1.4	6	4	6.4	2.5	3.4	4.3	10.5	4	7	8	13	10.9	12	9	15.3	7.9	15.9	5.2	6.8	2.6	15.9	7.0	24	
9	9	5	4.2	7	2.2	0.3	0	1.8	0	2.6	2.3	4.4	3.4	0.4	0.1	0	0	0.1	2.4	5	5.1	5.3	5.7	5.8	2.3	7.0	2.7	24	
10	10	7.5	0.6	6.3	5.3	4	5	7.9	6.1	6.7	3.3	6.2	1.8	1.2	0.5	0.9	2.7	1.2	4.3	9.2	8.6	5.5	4.6	5.7	5.3	9.2	4.6	24	
11	11	4.3	9.2	1.2	5	2.7	4.7	4.7	2.4	6	5	4.1	0	2.7	4.2	1.7	0	6.1	10.5	4.2	9.7	5.5	5.2	3.8	3.4	10.5	4.4	24	
12	12	2.9	2.9	3.1	4.3	1	1.3	1	3.2	5	6	2.9	2.9	5.5	10.1	10.9	11.5	9	16.1	12.3	17.7	21.5	20.8	18.8	17.2	21.5	8.7	24	
13	13	14.6	17.5	18.5	13.5	16.5	15.7	15.2	19.5	23.1	14.9	12.1	5.5	3.8	2.5	2.9	1.6	1	1.4	2.8	0	0.9	0	0	0	23.1	8.5	24	
14	14	3.4	5.9	0.6	0	0.4	N	4	4	0	1.5	3.9	2.5	2.4	4	4	1	2.8	5.1	2.9	3.4	1.9	1	4	7.5	7.5	2.9	23	
15	15	4.4	2.5	1	1	7.9	1.4	2.9	3.4	7.5	10.9	8.4	7	7.9	4.4	6.5	6.5	6	9.4	6	6.9	6.9	6	9.4	7.9	10.9	5.9	24	
16	16	10.9	5.5	3.4	3.4	0	9	5.5	2.5	3.4	7.9	2.5	0	5	2.9	4	1	5.5	0	4.4	7	7.9	3.4	6	4	10.9	4.4	24	
17	17	0.4	2.5	6	2.9	23.5	31	N	28.5	0.5	8.4	17	16	15.5	14.5	13.9	10.5	6	6.5	7	8.4	3.4	0	9.9	10.5	31.0	10.6	23	
18	18	9	8.4	8.4	9	13.9	9	10.5	6	9.4	7.5	15.5	13	16	16	13.9	10.5	13.9	11.5	10.5	6.5	5	5.5	6	4	16.0	10.0	24	
19	19	7.9	6.9	7.5	6.9	10.9	9.4	15.5	13	14.9	16.5	16	17.5	13.4	11.5	9.9	9.4	9.9	10.9	7.5	9.9	9.4	6	5	3.4	17.5	10.4	24	
20	20	3.4	8.4	4	6	5	4.4	7.5	2.9	2.9	2.5	4	7	1.9	8.4	1	2.5	5	2.9	5.5	4.4	7.9	8.4	4.4	2.9	8.4	4.7	24	
21	21	2.5	6.5	3.4	2.9	6.5	1.4	2.9	0	5	3.4	4	5.5	5.5	1	1	9.4	7.5	6.9	5	3.4	0	2.9	0	2.9	9.4	3.7	24	
22	22	0	5	0.5	0	0	1.4	4.4	0.5	2.5	0	0.5	1	1.9	6.5	5.5	1.9	N	3.4	1.9	1.9	1	0	0	5	6.5	1.9	23	
23	23	5.5	2.5	0	4.4	5	5.5	0	0	0	5	1.4	4.4	2.5	5.5	7.5	9.9	13.9	7	9	10.5	4.4	5.5	7	2.9	13.9	5.0	24	
24	24	1.4	2.9	0	1.9	0.5	3.4	6	7.9	9	5	0.5	1.4	2.9	C	0	4	4	2.5	7.5	7	4	5	5	3.4	9.0	3.7	24	
25	25	6.9	1.9	4.4	2.9	2.9	0	0	0.5	4	6	1.4	1	0	2.9	1.4	4.4	5.5	5.5	4	1.9	1	2.9	1.9	2.9	6.9	2.8	24	
26	26	3.4	4	4	1.4	2.9	1.4	5	1.4	5	2.5	1	1.9	1	0	1.9	6	0	0	2.5	2.5	1.9	2.5	7.9	7.9	2.5	24		
27	27	2.5	2.9	0	5.5	2.9	1.9	5	12.5	7.5	6.9	5	9.9	5	6.5	5	7.5	2.5	7.5	8.4	16	13	10.9	10.9	12.4	16.0	7.0	24	
28	28	14.4	12.4	8.4	13.9	12	14.9	13.9	15.5	14.4	18	12.5	11.5	14.4	13.9	12.4	11.4	13	17.5	26.4	24.5	19.9	12.5	9.9	11.5	26.4	14.5	24	
29	29	9.9	13.4	12	7.9	12	13.9	12.5	10.9	10.5	11.5	14.9	3.4	11.5	10.9	5.5	4	9.9	6.5	9.9	7	6.5	5.5	1.9	3.4	14.9	9.0	24	
HOURLY MAX		16	18	19	17	24	31	16	29	23	24	35	20	16	19	18	14	20	20	26	25	22	21	19	17				
HOURLY AVG		6.5	7.0	5.3	5.8	6.7	6.9	6.6	6.9	7.0	7.5	7.8	6.0	6.2	6.7	5.8	5.9	6.6	6.9	7.8	7.4	6.9	6.0	6.2	6.1				

STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

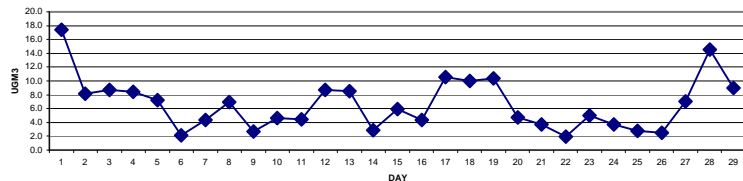
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR - ug/m<sup>3</sup> 24-HR 30 ug/m<sup>3</sup>

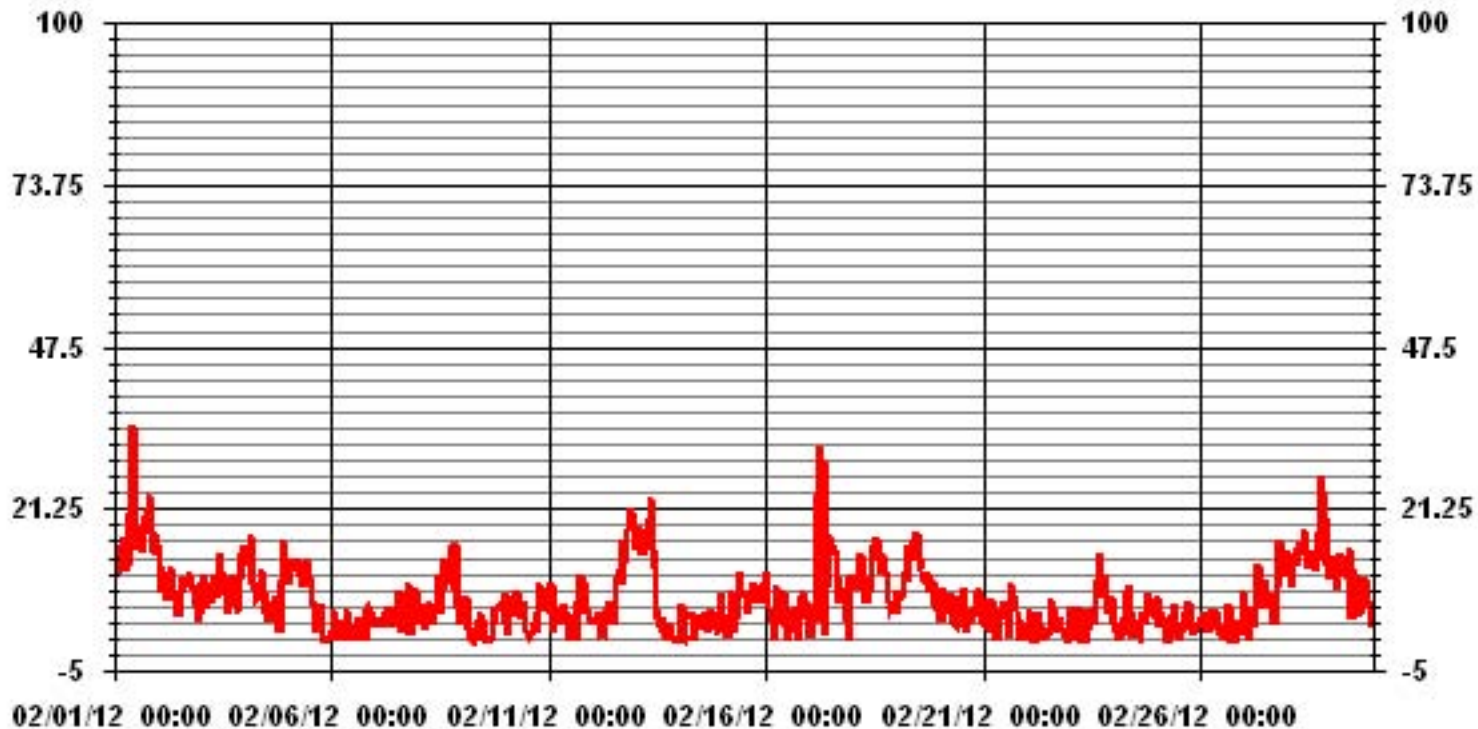
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	-	PROPOSED CANADA WIDE GUIDELINE
NUMBER OF 24-HR EXCEEDENCES:	0	
NUMBER OF NON-ZERO READINGS:	644	
MAXIMUM 1-HR AVERAGE:	35.0 UG/M <sup>3</sup>	@ HOUR(S) 10 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	17.4 UG/M <sup>3</sup>	ON DAY(S) 1
IZS CALIBRATION TIME:	0 HRS	OPERATIONAL TIME: 693 HRS
MONTHLY CALIBRATION TIME:	1 HRS	AMD OPERATION UPTIME 99.6 %
STANDARD DEVIATION	5.32	MONTHLY AVERAGE 6.60 UG/M <sup>3</sup>

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



— LICA PM2 UG/M3

LICA  
PM2 / WD Joint Frequency Distribution (Percent)

February 2012

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	
< 30.0	3.32	6.50	6.64	6.06	8.23	4.19	7.94	3.03	4.47	4.33	15.17	13.58	4.76	4.04	4.04	3.32	99.71
< 60.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.14	.00	.00	.28
< 80.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 120.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.32	6.50	6.64	6.06	8.23	4.19	7.94	3.03	4.47	4.33	15.17	13.72	4.76	4.19	4.04	3.32	

Calm : .00 %

Total # Operational Hours : 692

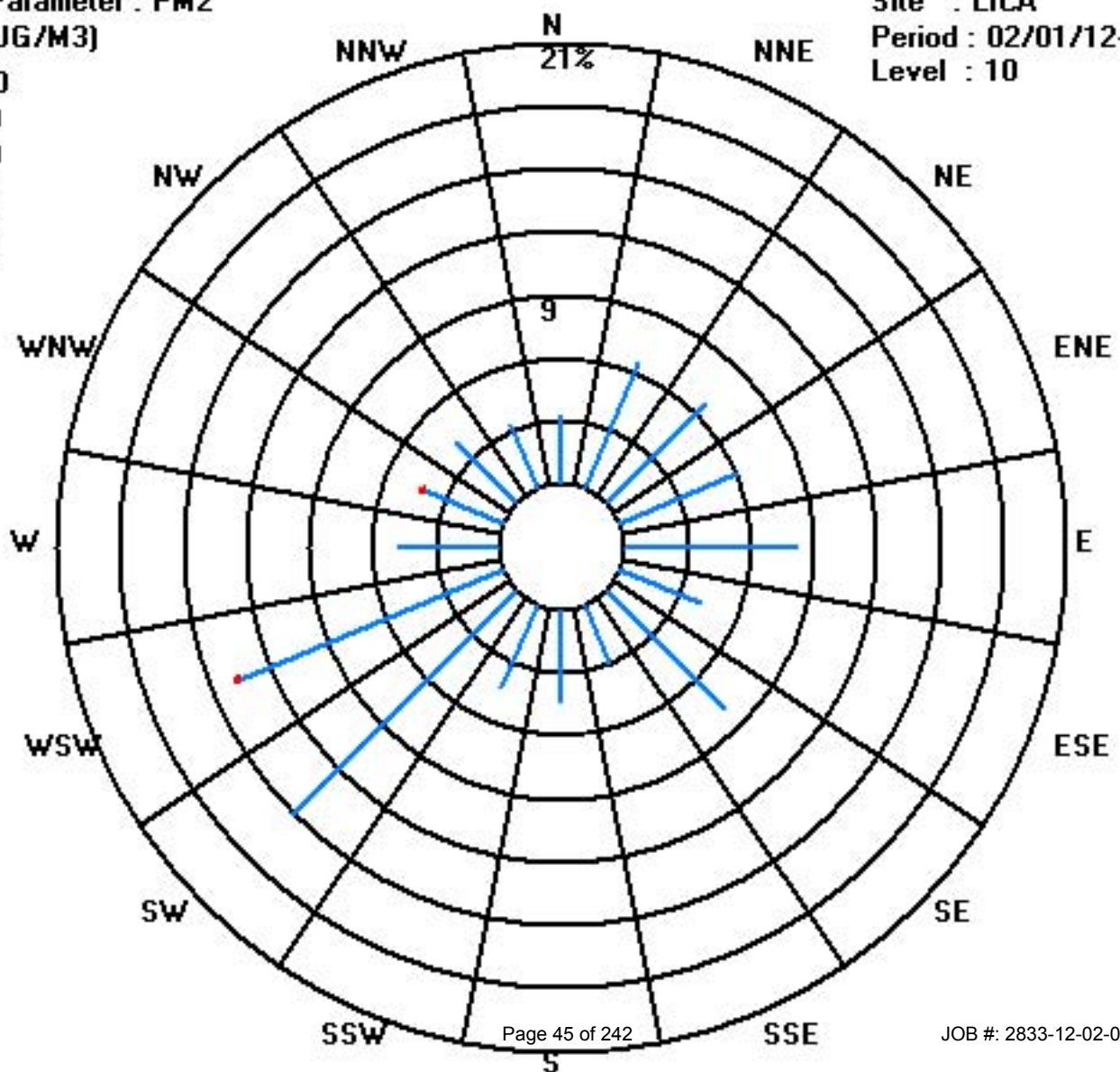
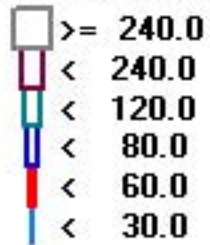
Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30.0	23	45	46	42	57	29	55	21	31	30	105	94	33	28	28	23	690
< 60.0												1		1			2
< 80.0																	
< 120.0																	
< 240.0																	
>= 240.0																	
Totals	23	45	46	42	57	29	55	21	31	30	105	95	33	29	28	23	

Calm : .00 %

Total # Operational Hours : 692





# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## NITROGEN DIOXIDE hourly averages in ppb

MST

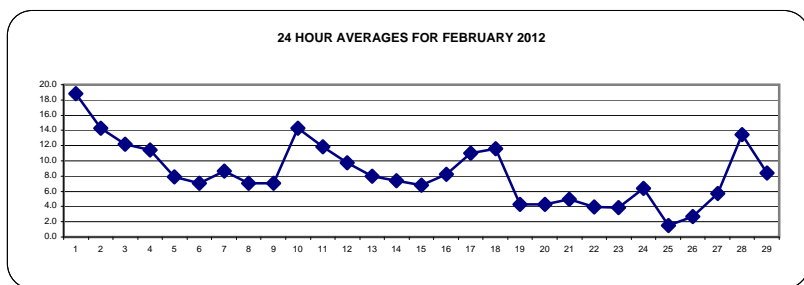
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.	
DAY																												
1	12	12	18	17	12	16	17	17	23	24	<b>IZS</b>	16	15	11	14	13	17	26	28	24	26	25	24	25	28	<b>18.8</b>	24	
2	26	24	18	15	13	10	16	<b>C</b>	19	<b>IZS</b>	14	10	8	7	8	10	14	28	25	20	10	7	7	6	28	14.3	24	
3	6	6	6	5	6	8	9	16	<b>IZS</b>	13	11	7	6	7	8	9	14	19	19	18	18	23	24	22	24	12.2	24	
4	22	19	19	20	17	16	8	<b>IZS</b>	23	23	9	4	4	5	4	4	5	7	11	9	10	9	10	23	11.4	24		
5	11	11	11	13	14	17	<b>IZS</b>	17	13	11	9	8	9	8	3	2	3	4	6	4	2	2	2	2	17	7.9	24	
6	2	3	3	2	3	<b>IZS</b>	3	4	10	3	1	2	1	2	2	2	2	3	13	22	25	22	17	15	25	7.0	24	
7	9	7	12	15	<b>IZS</b>	13	15	20	17	12	3	2	3	3	3	4	5	6	11	6	10	10	9	4	20	8.7	24	
8	3	4	4	<b>IZS</b>	3	4	5	6	5	6	7	6	4	5	5	5	8	17	20	19	14	6	3	3	20	7.0	24	
9	3	2	<b>IZS</b>	3	2	5	6	6	7	6	1	1	2	2	1	2	3	6	13	12	25	20	18	17	25	7.1	24	
10	18	<b>IZS</b>	19	22	23	20	24	25	19	12	18	6	2	2	1	2	4	11	16	18	16	16	15	19	25	14.3	24	
11	<b>IZS</b>	15	20	21	18	18	20	19	16	18	4	3	3	3	3	3	8	15	15	15	7	8	9	<b>IZS</b>	21	11.9	24	
12	11	14	17	11	5	7	11	11	6	6	5	5	4	5	6	7	9	13	14	14	14	16	<b>IZS</b>	14	17	9.8	24	
13	12	11	11	12	11	12	14	16	20	16	7	6	6	3	2	3	3	4	4	2	2	<b>IZS</b>	4	3	20	8.0	24	
14	4	7	6	7	6	7	8	10	11	10	7	5	4	3	7	5	4	6	10	11	<b>IZS</b>	12	10	10	12	7.4	24	
15	9	9	7	7	7	6	6	11	9	7	6	6	5	4	5	5	5	6	7	<b>IZS</b>	9	6	7	7	11	6.8	24	
16	10	11	7	6	4	5	7	17	14	12	6	4	5	2	2	2	3	7	<b>IZS</b>	11	13	17	13	12	17	8.3	24	
17	11	8	7	7	7	7	11	17	15	13	9	8	7	7	8	7	6	<b>IZS</b>	11	17	21	13	13	24	24	11.0	24	
18	23	22	22	24	22	22	19	20	19	11	11	4	4	5	4	4	<b>IZS</b>	<b>IZS</b>	6	4	3	5	4	4	4	24	11.6	24
19	4	4	6	6	4	3	3	4	5	5	5	5	4	5	4	<b>IZS</b>	4	3	4	4	4	4	5	4	4	6	4.3	24
20	4	5	6	6	5	6	6	5	4	3	4	3	3	4	<b>IZS</b>	3	4	5	5	5	5	4	2	2	6	4.3	24	
21	2	3	2	2	2	3	6	4	4	3	3	3	3	<b>IZS</b>	5	5	7	9	13	12	10	5	4	4	13	5.0	24	
22	5	3	4	4	4	5	5	6	10	9	6	4	<b>IZS</b>	<b>IZS</b>	3	4	2	2	2	2	2	2	2	3	10	4.0	24	
23	3	3	3	4	5	5	2	2	2	2	2	<b>IZS</b>	3	3	3	4	6	5	8	11	5	3	2	2	11	3.8	24	
24	3	3	4	3	4	5	7	8	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	1	1	6	<b>M</b>	20	22	9	3	3	22	6.4	23
25	2	2	2	2	2	2	1	2	2	<b>IZS</b>	1	1	1	1	1	1	1	1	2	2	1	1	1	2	2	1.5	24	
26	2	2	4	5	6	8	5	5	<b>IZS</b>	1	1	1	1	1	1	1	2	2	2	2	2	3	3	3	8	2.7	24	
27	2	2	2	3	3	8	10	<b>IZS</b>	8	5	4	4	4	3	4	4	5	7	8	8	9	10	10	9	10	5.7	24	
28	10	10	10	12	18	18	<b>IZS</b>	18	20	18	6	4	5	6	6	8	10	13	21	24	28	21	9	14	28	13.4	24	
29	19	13	16	12	15	<b>IZS</b>	15	17	15	6	3	3	3	3	3	4	4	5	13	12	4	3	3	2	19	8.4	24	
HOURLY MAX	26	24	22	24	23	22	24	25	23	24	18	16	15	11	14	13	17	28	28	24	28	25	24	25				
HOURLY AVG	8.9	8.4	9.5	9.5	8.6	9.5	9.6	11.7	12.2	9.8	6.0	4.9	4.4	4.2	4.3	4.4	5.6	8.6	11.1	11.8	11.4	10.1	8.3	8.8				

### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OBJECTIVE LIMIT:

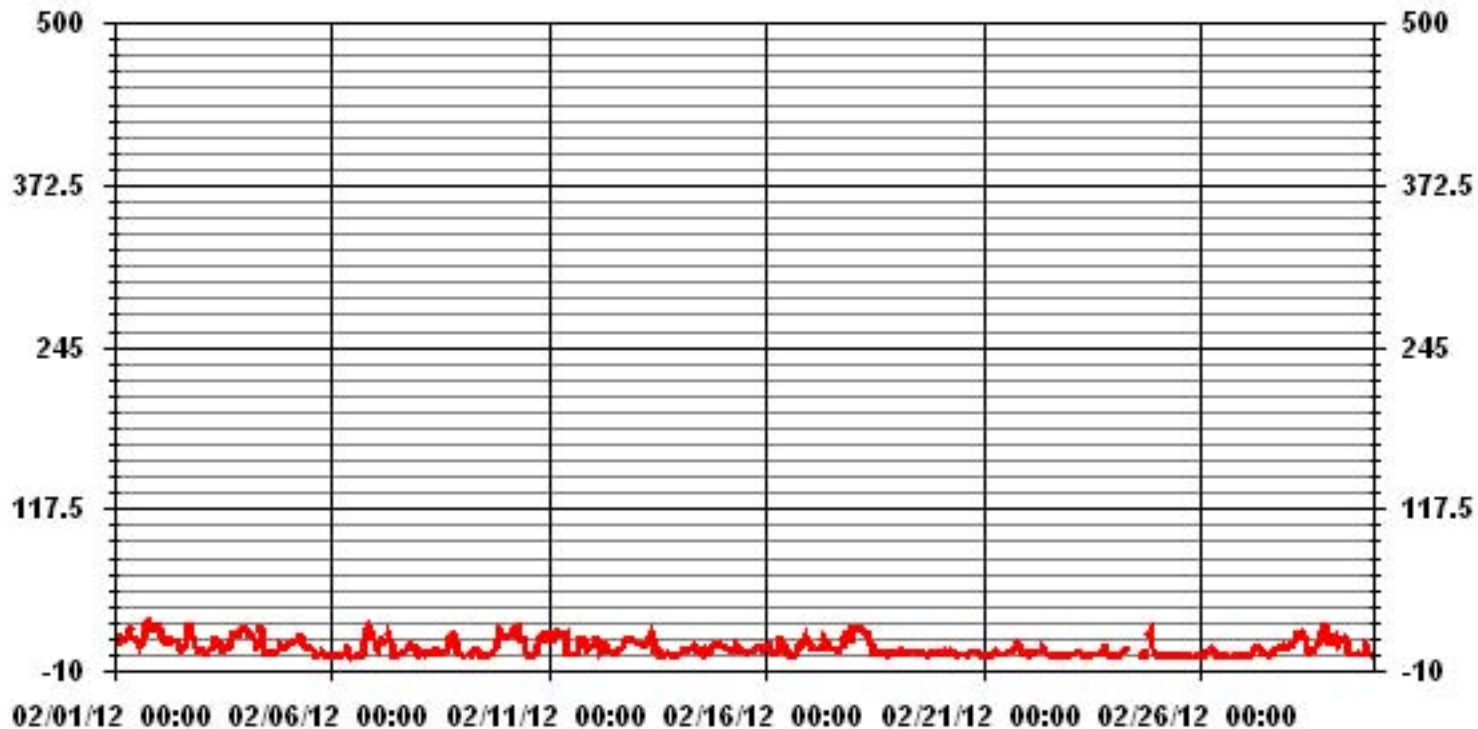
ALBERTA ENVIRONMENT: **1-HR 159 PPB**



### MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	658				
MAXIMUM 1-HR AVERAGE:	28	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	18.8	PPB			ON DAY(S)
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME	99.9	%
STANDARD DEVIATION	6.40		MONTHLY AVERAGE	8.38	PPB

### 01 Hour Averages



— LICA H02\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## 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		
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	14	18	24	25	16	19	23	20	46	42	IZS	26	25	14	40	15	20	32	32	30	28	27	28	29	46	25.8	24	
2	28	26	22	17	15	12	25	C	27	IZS	19	13	11	9	9	20	18	37	31	27	16	9	9	9	37	18.6	24	
3	7	7	10	7	10	14	17	21	IZS	26	14	11	7	8	11	32	21	30	28	24	23	27	30	25	32	17.8	24	
4	25	27	23	22	25	26	24	IZS	28	31	17	5	25	56	24	4	7	8	11	19	11	13	11	12	56	19.7	24	
5	13	12	14	17	16	24	IZS	20	16	14	11	9	10	10	4	5	3	4	8	7	3	2	2	2	24	9.8	24	
6	4	6	4	3	4	IZS	6	10	18	6	4	7	3	9	5	5	3	8	26	28	27	27	21	18	28	11.0	24	
7	13	11	20	19	IZS	23	21	25	22	21	6	3	6	4	8	5	8	9	19	10	19	15	15	9	25	13.5	24	
8	5	7	10	IZS	5	5	8	7	6	12	11	7	6	7	8	8	9	24	25	23	23	15	4	3	25	10.3	24	
9	3	3	IZS	5	3	15	9	11	18	12	8	3	3	2	3	7	9	20	21	30	30	27	22	30	11.6	24		
10	22	IZS	23	26	30	23	29	30	29	21	22	14	7	3	2	3	10	19	23	23	22	19	18	26	30	19.3	24	
11	IZS	21	27	26	24	23	26	22	25	25	18	4	4	6	5	6	12	24	24	23	13	15	19	IZS	27	17.8	24	
12	18	24	24	19	10	11	15	20	10	10	6	7	5	6	7	8	12	20	18	17	19	19	IZS	16	24	14.0	24	
13	15	12	13	15	15	16	16	21	35	25	15	9	7	5	3	4	3	6	6	3	3	IZS	6	4	35	11.2	24	
14	6	9	8	8	7	8	9	13	13	13	12	8	6	5	48	26	5	8	21	17	IZS	17	12	11	48	12.6	24	
15	10	10	9	8	8	8	10	19	11	9	9	11	7	5	7	7	8	8	8	2	IZS	12	8	8	9	19	9.1	24
16	13	13	9	8	6	8	10	26	22	15	12	6	7	4	5	3	5	18	IZS	20	25	22	22	18	26	12.9	24	
17	16	12	11	8	8	10	15	21	19	15	11	10	8	12	21	16	8	IZS	13	27	29	21	18	29	29	15.6	24	
18	28	26	28	28	24	29	23	25	25	16	22	6	5	9	8	5	IZS	8	5	5	6	6	6	5	29	15.1	24	
19	5	7	9	8	5	5	4	6	6	14	6	7	5	5	5	IZS	8	5	5	4	5	6	5	5	14	6.1	24	
20	5	7	7	7	6	7	6	6	6	4	4	4	4	5	IZS	4	5	6	7	7	8	5	4	2	8	5.5	24	
21	4	6	3	3	3	8	13	6	8	4	4	3	3	IZS	7	6	10	12	20	15	14	7	6	5	20	7.4	24	
22	8	4	7	5	5	6	6	9	14	12	11	8	IZS	5	24	2	4	3	4	2	3	2	3	3	24	6.5	24	
23	3	4	4	5	9	7	4	2	3	3	4	IZS	5	5	8	8	8	12	13	10	5	3	3	3	13	5.8	24	
24	3	4	5	4	5	6	8	9	C	C	C	C	C	C	C	2	6	15	M	23	29	14	7	5	29	9.1	23	
25	3	2	3	2	3	3	3	3	3	IZS	2	2	5	2	2	2	4	2	3	2	2	2	2	4	5	2.7	24	
26	4	4	7	6	8	14	7	7	IZS	2	3	1	2	1	2	1	2	4	3	3	3	4	4	3	14	4.1	24	
27	3	3	6	6	4	16	22	IZS	14	6	6	5	5	7	5	5	7	9	10	9	14	15	16	18	22	9.2	24	
28	14	13	11	16	23	22	IZS	22	26	35	8	6	7	7	7	11	13	19	29	37	32	28	14	18	37	18.2	24	
29	25	18	19	16	21	IZS	31	25	25	12	4	4	4	5	4	11	6	9	17	20	9	4	3	3	31	12.8	24	
HOURLY MAX	28	27	28	28	30	29	31	30	46	42	22	26	25	56	48	32	21	37	32	37	32	30	30	29				
HOURLY AVG	11.3	11.3	12.9	12.1	11.4	13.6	14.4	15.6	18.3	15.6	10.0	7.4	7.1	8.0	10.3	8.1	8.3	13.0	15.9	16.4	15.6	13.7	11.5	11.3				

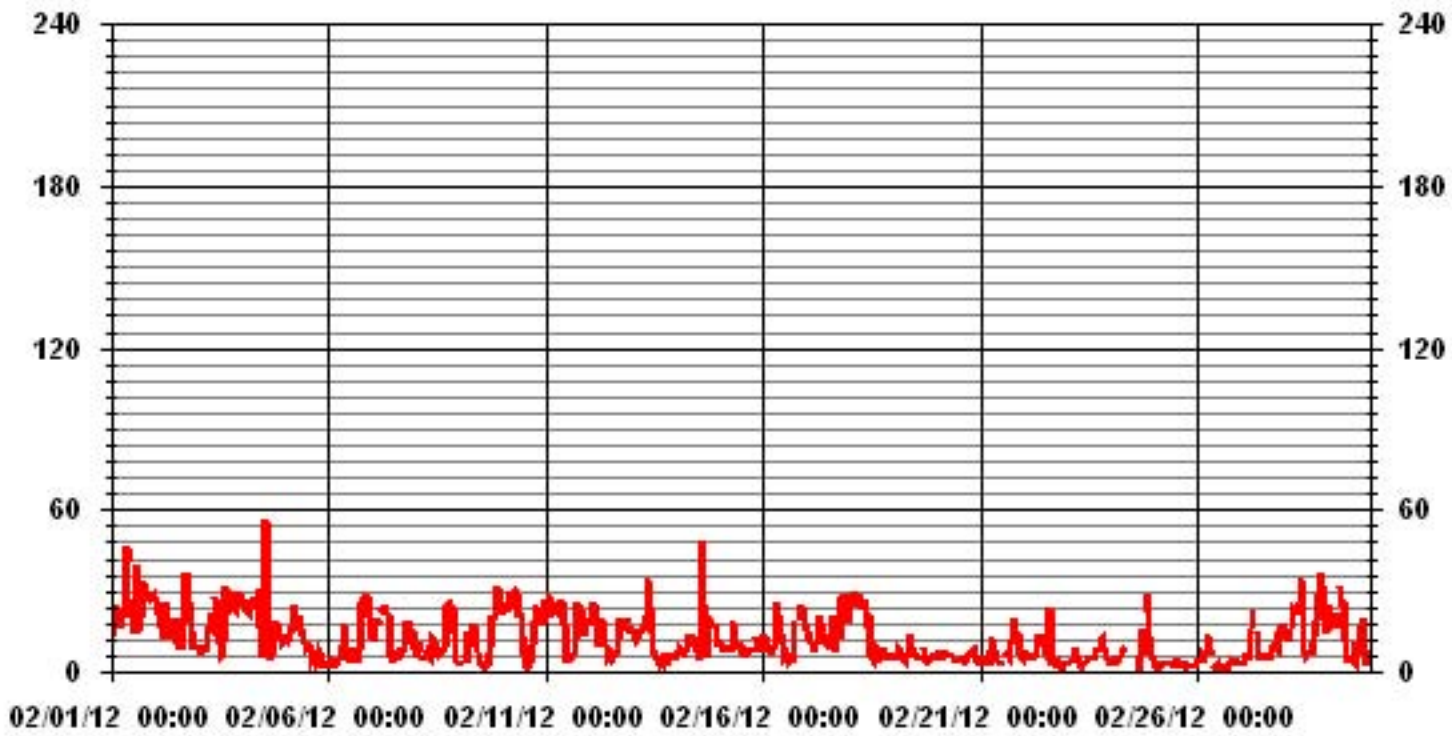
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	658					
MAXIMUM INSTANTANEOUS VALUE:	56	PPB	@ HOUR(S)	13	ON DAY(S)	4
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	8	HRS				
STANDARD DEVIATION:	8.88					

### 01 Hour Averages



— LICA NO2MAX PPB

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

February 2012

Distribution By % Of Samples

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

Wind Parameter : WD  
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	3.34	6.07	6.68	5.47	8.20	4.10	8.35	3.34	4.40	4.40	15.65	13.52	4.86	3.79	4.25	3.49	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	3.34	6.07	6.68	5.47	8.20	4.10	8.35	3.34	4.40	4.40	15.65	13.52	4.86	3.79	4.25	3.49	

Calm : .00 %

Total # Operational Hours : 658

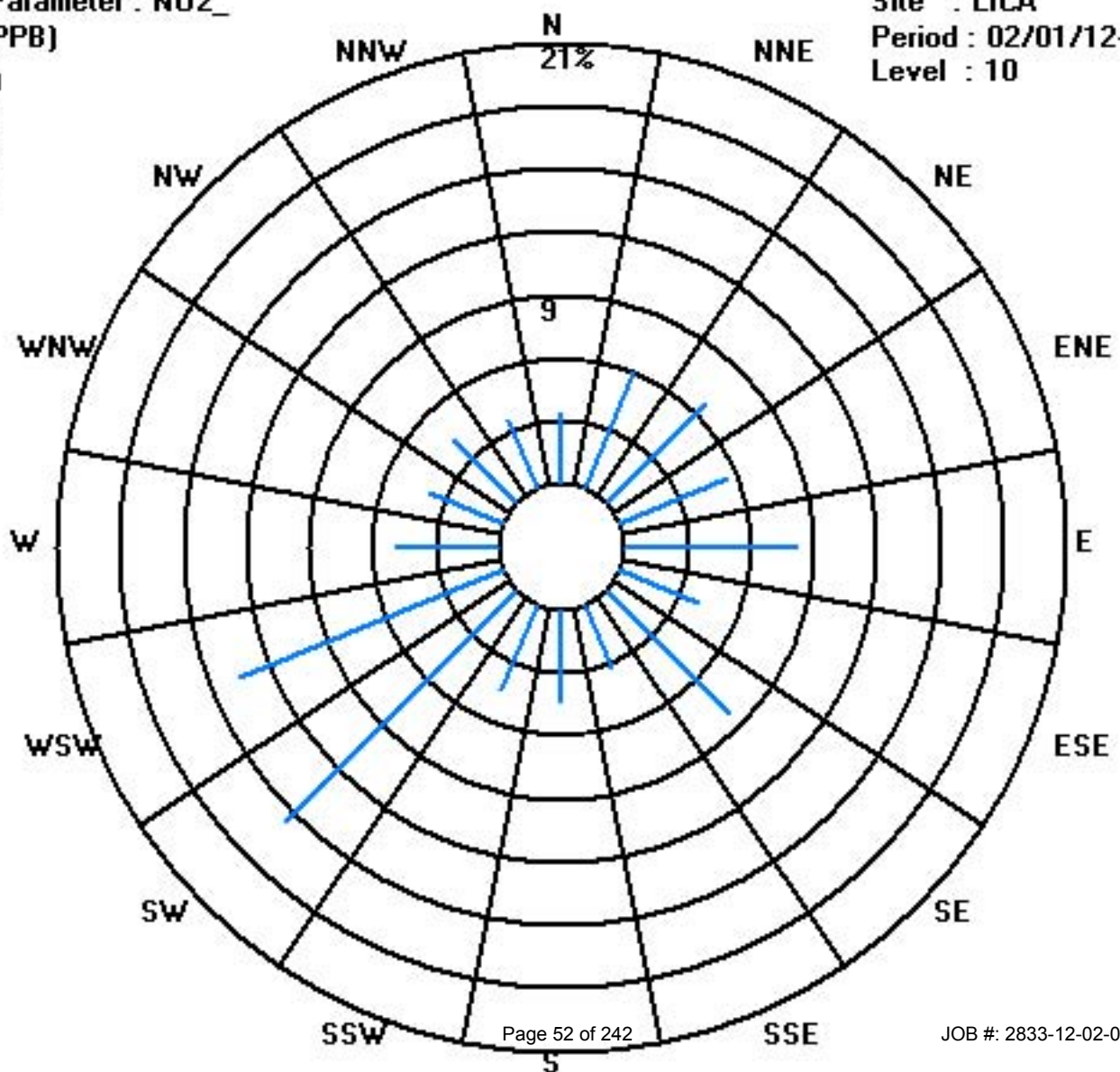
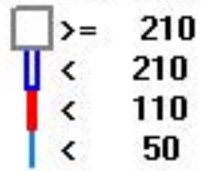
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	22	40	44	36	54	27	55	22	29	29	103	89	32	25	28	23	658
< 110																	
< 210																	
>= 210																	
Totals	22	40	44	36	54	27	55	22	29	29	103	89	32	25	28	23	

Calm : .00 %

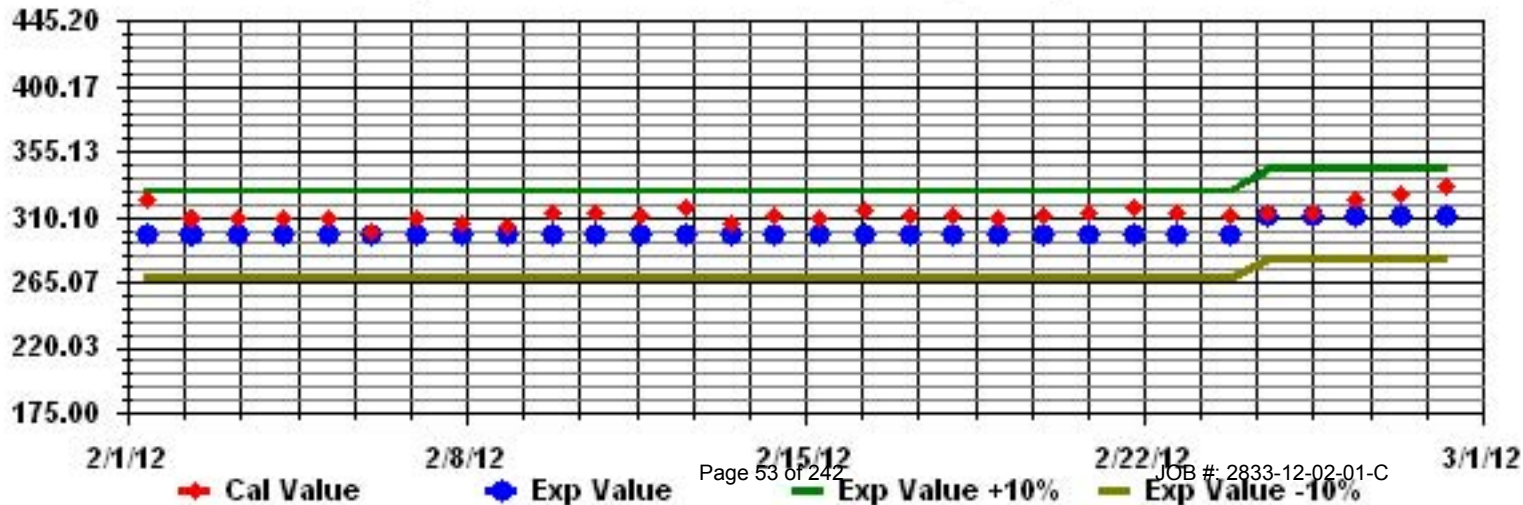
Total # Operational Hours : 658

Class Limits (PPB)





Calibration Graph for Site: LICA Parameter: H02\_ Sequence: H02 Phase: SPAN



# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

NITRIC OXIDE 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	1	1	2	2	1	8	18	28	102	77	IZS	19	12	9	10	5	3	5	10	6	4	7	5	6	102	14.8	24
2	4	3	1	1	0	0	7	C	6	IZS	8	6	5	4	2	3	2	9	5	2	0	0	0	0	9	3.1	24
3	0	0	0	0	0	0	1	5	IZS	17	8	4	4	4	3	4	2	2	2	1	2	12	19	18	19	4.7	24
4	24	16	16	17	13	6	2	IZS	15	32	9	2	3	3	3	1	0	0	0	0	0	1	0	0	32	7.1	24
5	0	0	0	0	0	5	IZS	1	6	12	8	7	7	6	1	0	0	0	0	0	0	0	0	0	12	2.3	24
6	0	0	0	0	0	IZS	0	0	2	1	1	1	0	1	1	0	0	0	1	1	1	1	0	0	2	0.5	24
7	0	0	1	1	IZS	1	2	4	9	10	2	1	2	1	1	1	1	0	0	0	0	0	0	0	10	1.6	24
8	0	0	0	IZS	0	0	0	0	1	3	5	5	3	3	3	2	2	4	5	3	2	0	0	0	5	1.8	24
9	0	0	IZS	0	1	1	1	1	2	3	1	1	1	1	1	1	1	0	0	1	3	2	0	0	3	1.0	24
10	0	IZS	1	4	4	2	12	20	24	12	20	5	1	1	1	0	1	1	0	1	0	0	0	1	24	4.8	24
11	IZS	1	2	2	1	2	4	3	8	16	3	2	2	2	2	1	2	1	2	1	1	0	0	IZS	16	2.6	24
12	1	1	1	1	0	0	0	1	2	3	4	3	3	4	4	3	2	1	1	0	1	2	IZS	1	4	1.7	24
13	0	0	0	0	1	5	12	33	69	31	5	4	4	1	0	0	0	0	0	0	0	0	IZS	0	69	7.2	24
14	0	0	0	0	0	0	0	0	2	4	3	2	2	1	9	4	1	0	0	0	IZS	0	0	0	9	1.2	24
15	0	0	0	0	0	0	0	0	1	2	3	3	2	1	1	1	1	0	0	IZS	0	0	0	0	3	0.7	24
16	1	0	0	0	0	0	0	1	3	6	3	2	2	1	0	0	0	0	IZS	0	1	1	1	1	6	1.0	24
17	1	0	0	0	0	0	2	7	13	12	6	5	4	4	3	2	1	IZS	0	1	4	1	1	9	13	3.3	24
18	23	18	18	15	10	10	10	6	14	7	8	2	2	2	2	1	IZS	0	0	0	0	0	0	0	23	6.4	24
19	0	0	1	1	0	0	0	0	0	3	1	1	1	1	1	IZS	0	0	0	0	0	0	0	0	3	0.4	24
20	0	0	0	0	0	0	0	0	0	1	1	1	1	1	IZS	0	0	0	0	0	0	0	0	0	1	0.2	24
21	0	0	0	0	0	0	0	0	1	0	1	1	1	IZS	1	1	1	1	0	0	0	0	0	0	1	0.3	24
22	0	0	0	0	0	0	0	0	1	2	2	2	IZS	1	1	0	0	0	0	0	0	0	0	0	2	0.4	24
23	0	0	0	0	0	0	0	0	0	0	1	IZS	1	1	1	1	1	0	0	0	0	0	0	0	1	0.3	24
24	0	0	0	0	0	0	0	0	C	C	C	C	C	C	C	1	0	1	M	1	2	1	0	0	2	0.4	23
25	0	0	0	0	0	0	0	0	1	IZS	1	1	1	1	1	1	1	0	1	0	1	1	0	1	1	0.5	24
26	1	1	1	1	1	1	1	1	IZS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4	24
27	0	0	0	0	0	0	1	IZS	3	3	3	3	2	2	2	2	1	1	0	0	0	0	0	0	3	1.0	24
28	0	0	0	0	4	4	IZS	12	35	35	5	4	4	5	4	5	3	2	1	5	16	7	1	0	35	6.6	24
29	2	0	0	0	1	IZS	1	4	7	2	1	1	1	1	1	1	1	0	0	1	1	0	0	7	1.1	24	
HOURLY MAX	24	18	18	17	13	10	18	33	102	77	20	19	12	9	10	5	3	9	10	6	16	12	19	18			
HOURLY AVG	2.1	1.5	1.6	1.6	1.3	1.7	2.7	4.9	12.6	11.3	4.2	3.3	2.6	2.3	2.2	1.5	1.0	1.0	1.0	0.9	1.4	1.3	1.0	1.3			

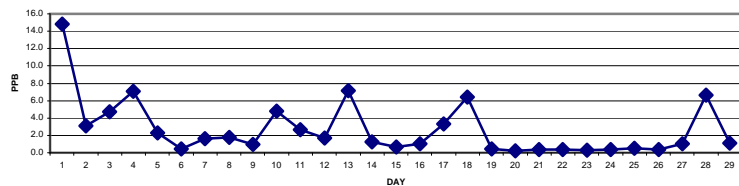
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

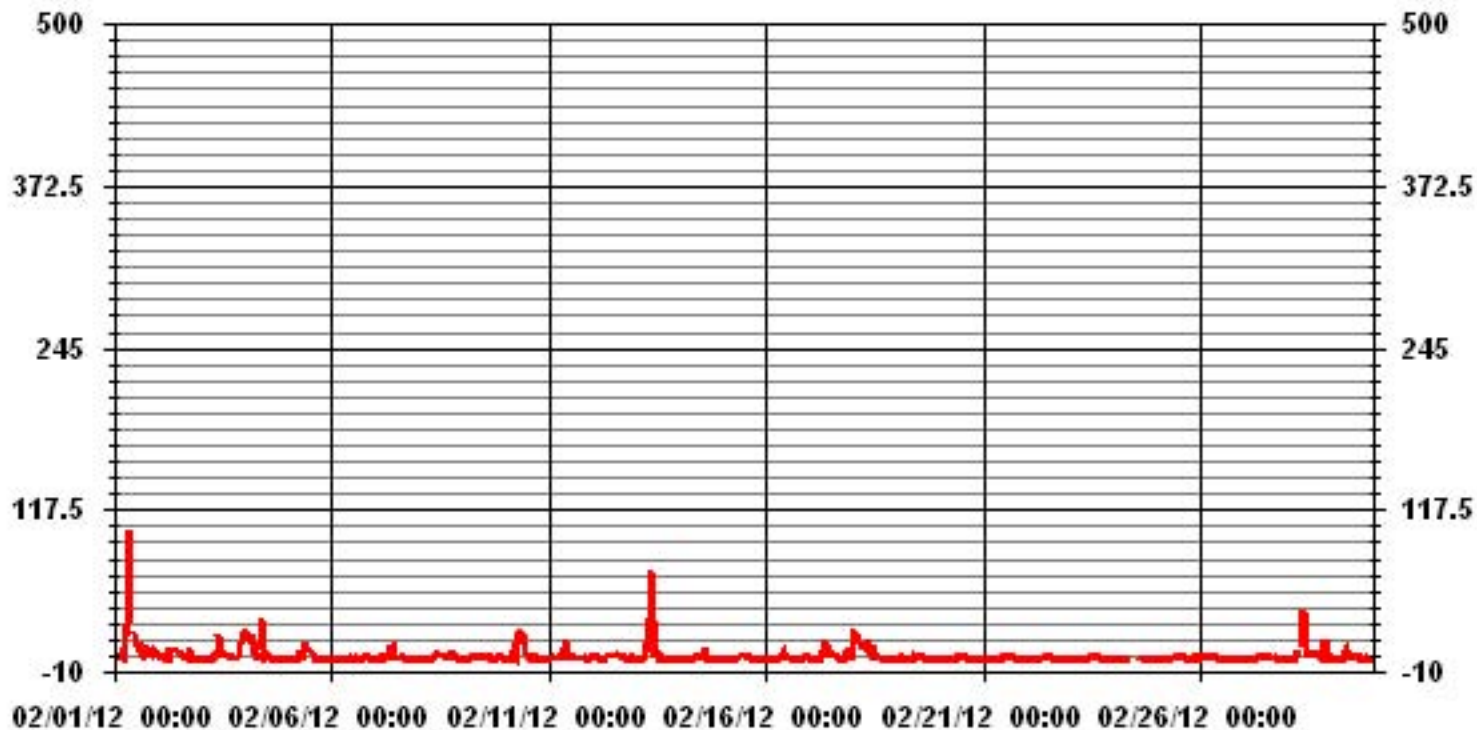
**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	366
MAXIMUM 1-HR AVERAGE:	102 PPB @ HOUR(S) 8 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	14.8 PPB ON DAY(S) 1
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	8 HRS
OPERATIONAL TIME:	695 HRS
AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION	7.26
MONTHLY AVERAGE	2.69 PPB

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



— LICA NO<sub>x</sub> PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

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.	
DAY																												
1	2	10	10	7	6	23	42	57	189	109	IZS	48	23	13	33	9	7	17	27	23	6	14	11	8	189	30.2	24	
2	6	6	4	3	3	3	30	C	15	IZS	12	8	11	5	3	11	6	19	14	6	1	0	0	0	30	7.5	24	
3	1	0	1	0	6	4	8	15	IZS	59	20	6	4	5	5	44	4	9	19	5	13	27	33	24	59	13.6	24	
4	29	32	22	22	22	31	15	IZS	28	49	22	4	20	31	40	1	3	1	0	2	2	4	1	1	49	16.6	24	
5	1	3	3	3	2	15	IZS	6	13	18	10	8	9	8	1	1	0	0	0	1	1	0	0	1	18	4.5	24	
6	1	1	1	1	1	IZS	1	2	12	6	11	4	1	12	3	3	1	4	14	3	5	3	1	2	14	4.0	24	
7	1	0	7	5	IZS	6	7	9	24	22	3	2	3	3	2	1	2	3	2	1	3	3	1	1	24	4.8	24	
8	1	2	3	IZS	1	1	0	0	2	11	10	7	7	5	6	4	5	26	23	7	11	1	1	1	26	5.9	24	
9	1	1	IZS	1	1	5	3	3	19	16	10	3	2	3	1	1	6	1	2	4	7	13	2	2	19	4.7	24	
10	2	IZS	7	10	8	7	26	31	76	26	32	14	7	3	1	1	3	7	8	13	0	1	1	4	76	12.5	24	
11	IZS	6	7	6	5	7	21	6	26	26	7	3	5	6	3	6	4	6	12	5	4	6	3	IZS	26	8.2	24	
12	6	5	3	5	3	2	2	6	8	8	4	5	4	5	5	4	5	3	5	1	6	6	IZS	3	8	4.5	24	
13	3	1	2	3	4	16	45	53	105	68	17	6	5	4	1	1	1	0	0	0	0	0	IZS	1	1	105	14.7	24
14	1	1	1	2	1	1	0	1	3	6	7	4	5	2	37	34	1	0	0	3	IZS	1	2	0	37	4.9	24	
15	1	1	1	1	1	1	1	1	4	4	5	6	5	3	3	3	1	2	1	IZS	1	1	1	1	6	2.1	24	
16	3	2	1	1	2	2	1	6	6	8	7	6	4	1	1	1	0	2	IZS	3	6	10	10	7	10	3.9	24	
17	6	1	3	0	1	4	14	17	18	18	8	7	5	7	12	11	3	IZS	1	8	18	12	4	18	18	8.5	24	
18	31	22	25	23	13	29	67	16	42	11	28	3	4	4	14	1	IZS	1	1	1	3	1	1	3	67	15.0	24	
19	1	1	1	3	1	2	1	1	1	68	2	3	1	1	1	IZS	6	4	0	0	1	1	1	1	68	4.4	24	
20	1	1	1	1	1	1	1	1	1	1	2	2	2	1	IZS	1	1	1	0	1	1	1	1	1	2	1.1	24	
21	1	1	1	1	1	3	1	3	7	1	1	1	1	IZS	3	2	1	2	3	1	2	2	1	1	7	1.8	24	
22	2	1	1	1	0	1	1	1	5	3	5	3	IZS	4	15	1	1	0	0	0	0	0	0	0	15	2.0	24	
23	0	0	0	0	1	1	0	0	1	0	4	IZS	3	1	3	10	8	5	5	0	1	1	0	0	10	1.9	24	
24	0	1	1	1	1	1	0	1	C	C	C	C	C	C	C	1	2	7	M	5	12	2	1	1	12	2.3	23	
25	1	1	1	1	1	2	1	1	1	IZS	2	2	9	2	1	1	3	1	1	1	1	1	1	2	9	1.7	24	
26	2	2	3	2	2	4	2	3	IZS	1	3	1	1	1	1	0	0	1	0	1	1	1	0	1	4	1.4	24	
27	0	1	1	1	1	4	14	IZS	6	4	4	4	4	2	5	3	8	2	1	1	1	2	3	5	14	3.3	24	
28	3	0	1	4	12	12	IZS	21	54	100	8	10	6	6	5	8	5	4	7	39	59	20	22	1	100	17.7	24	
29	5	3	6	3	8	IZS	6	16	15	6	7	2	5	2	1	11	1	3	3	14	5	1	1	1	16	5.4	24	
HOURLY MAX	31	32	25	23	22	31	67	57	189	109	32	48	23	31	40	44	8	26	27	39	59	27	33	24				
HOURLY AVG	4.0	3.8	4.2	4.0	3.9	7.0	11.5	10.7	26.2	25.0	9.3	6.4	5.8	5.2	7.6	6.3	3.1	4.7	5.5	5.3	6.1	4.8	3.7	3.3				

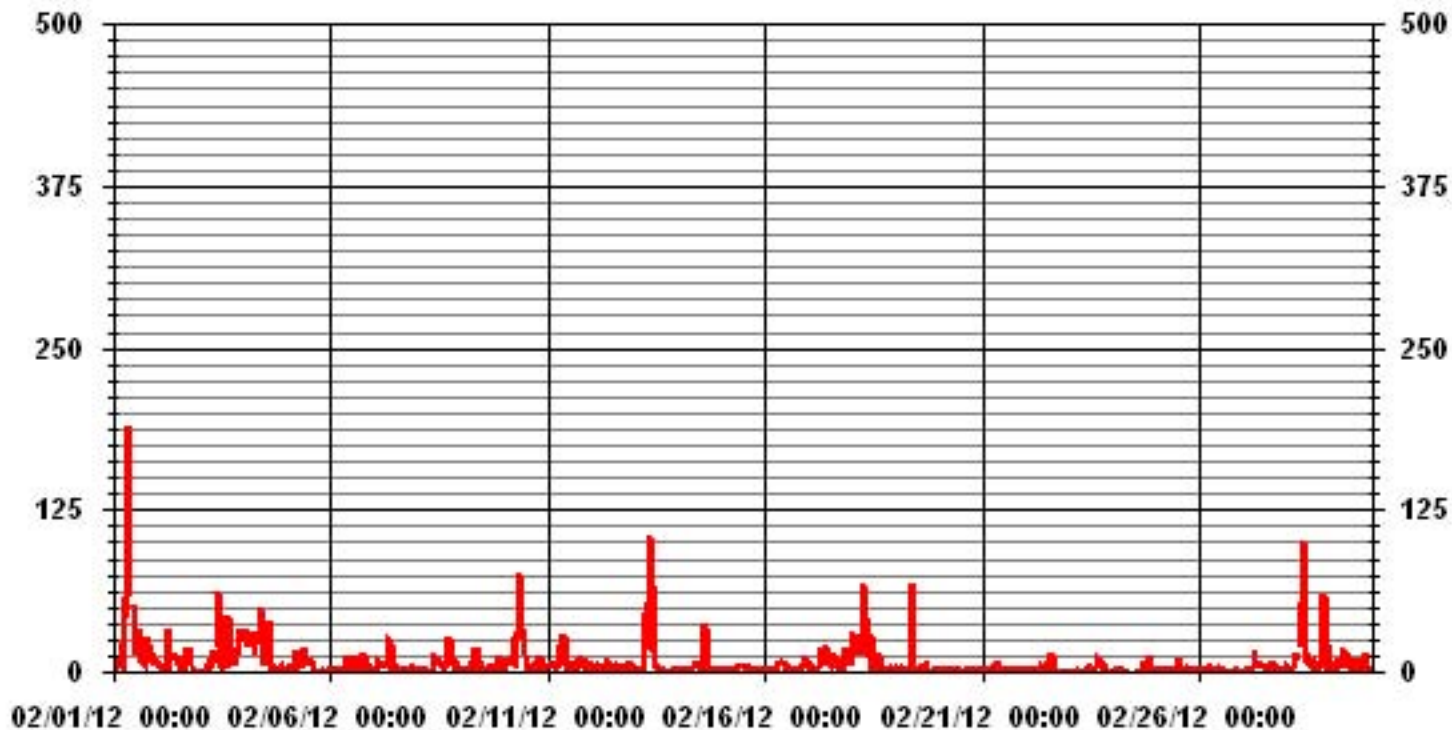
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	604					
MAXIMUM INSTANTANEOUS VALUE:	189	PPB	@ HOUR(S)	8	ON DAY(S)	1
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS	
MONTHLY CALIBRATION TIME:	8	HRS				
STANDARD DEVIATION:	14.20					

# 01 Hour Averages



— LICA    — NOMAX    — PPB

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

February 2012

Distribution By % Of Samples

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

Wind Parameter : WD  
 Instrument Height : 10 Meters

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 50	3.34	6.07	6.68	5.31	8.20	4.10	8.20	3.34	4.40	4.40	15.65	13.37	4.86	3.79	4.25	3.49	99.54	
< 110	.00	.00	.00	.15	.00	.00	.15	.00	.00	.00	.00	.15	.00	.00	.00	.00	.45	
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	3.34	6.07	6.68	5.47	8.20	4.10	8.35	3.34	4.40	4.40	15.65	13.52	4.86	3.79	4.25	3.49		

Calm : .00 %

Total # Operational Hours : 658

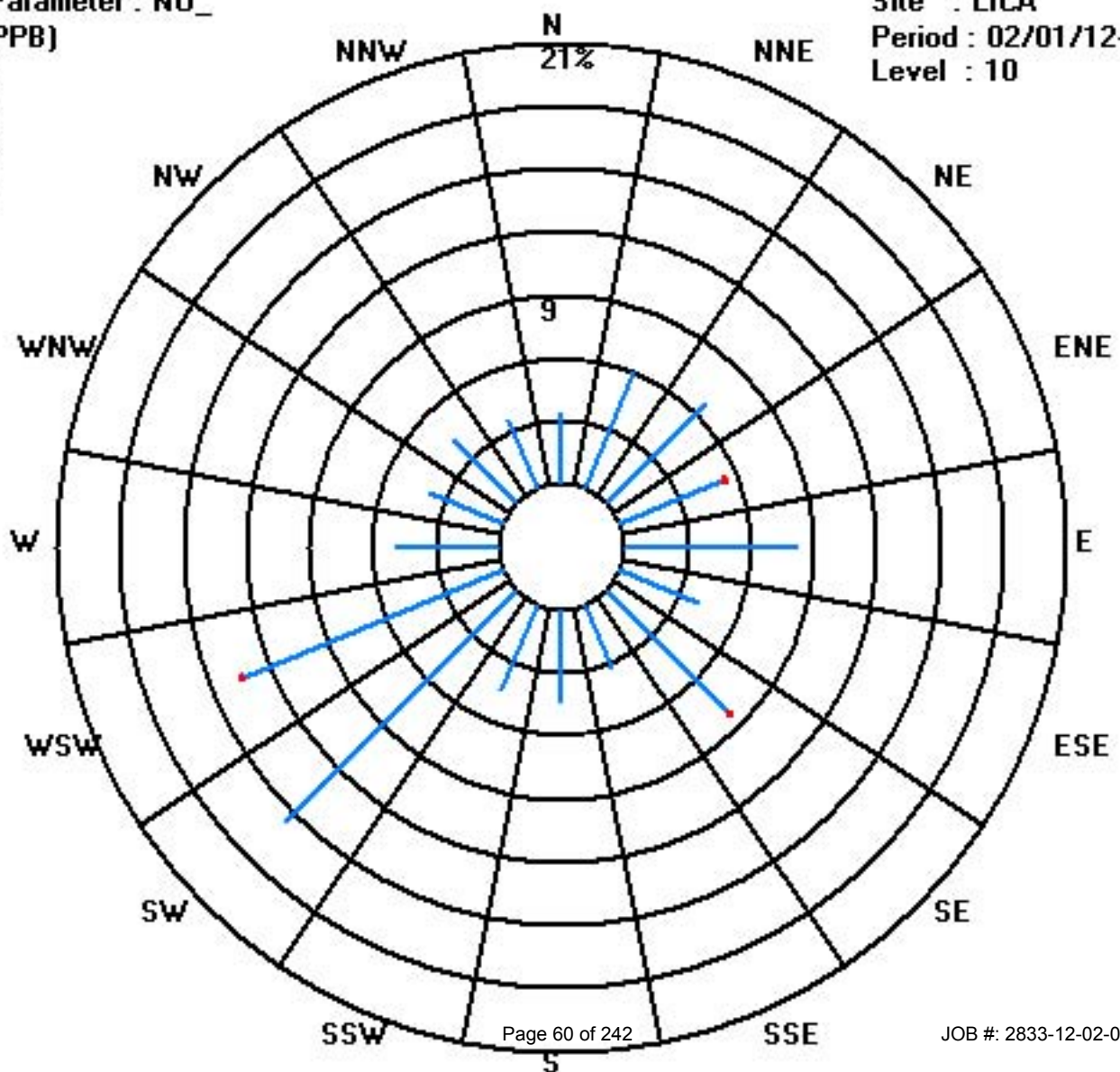
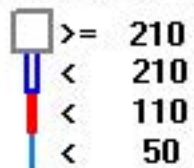
Distribution By Samples

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 50	22	40	44	35	54	27	54	22	29	29	103	88	32	25	28	23	655	
< 110				1			1					1					3	
< 210																		
>= 210																		
Totals	22	40	44	36	54	27	55	22	29	29	103	89	32	25	28	23		

Calm : .00 %

Total # Operational Hours : 658

Class Limits (PPB)





# Oxides of Nitrogen

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## OXIDES OF NITROGEN 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	12	12	20	19	13	24	35	45	124	101	IZS	36	27	20	24	18	21	31	39	30	30	31	30	31	124	33.6	24	
2	30	27	19	16	13	11	24	C	25	IZS	22	16	13	11	10	13	15	37	30	22	10	7	7	6	37	17.5	24	
3	6	6	6	5	7	8	11	22	IZS	31	19	12	10	11	11	13	16	21	21	19	20	35	43	41	43	17.1	24	
4	46	35	35	37	30	22	10	IZS	38	54	18	6	6	8	7	4	4	5	7	12	10	11	10	10	54	18.5	24	
5	11	11	11	14	14	21	IZS	18	19	22	17	15	15	13	4	3	3	4	6	4	2	2	2	2	22	10.1	24	
6	2	3	3	2	3	IZS	4	4	12	4	2	3	1	2	3	2	2	3	14	23	26	23	18	15	26	7.6	24	
7	9	7	13	16	IZS	14	17	24	26	22	5	4	5	4	4	4	5	6	11	6	10	10	9	5	26	10.3	24	
8	3	5	4	IZS	3	4	5	6	5	9	12	11	8	8	8	8	10	21	25	22	16	6	3	3	25	8.9	24	
9	3	2	IZS	3	2	6	7	7	8	8	2	2	3	2	2	2	4	7	13	13	28	21	19	17	28	7.9	24	
10	19	IZS	19	26	26	23	37	45	43	24	38	11	3	3	2	2	5	11	16	20	16	16	15	20	45	19.1	24	
11	IZS	16	22	23	19	20	24	22	24	35	7	5	4	5	4	4	10	17	16	15	8	8	9	IZS	35	14.4	24	
12	12	15	18	12	6	7	11	12	8	9	8	8	8	9	10	11	11	14	14	15	14	18	IZS	14	18	11.5	24	
13	12	11	12	13	12	18	25	49	89	46	12	10	9	5	3	3	3	4	4	2	2	IZS	4	3	89	15.3	24	
14	4	7	6	7	6	7	8	10	13	14	10	8	6	4	17	9	5	6	10	12	IZS	12	10	10	17	8.7	24	
15	9	9	8	7	7	6	6	11	11	10	9	10	7	5	6	6	6	6	7	IZS	9	7	7	7	11	7.7	24	
16	10	11	8	6	4	5	7	18	17	19	8	6	7	3	3	2	3	7	IZS	12	14	18	14	13	19	9.3	24	
17	11	8	7	7	7	7	13	24	28	25	15	13	11	11	11	9	6	IZS	11	18	25	14	14	32	32	14.2	24	
18	47	40	39	39	32	32	29	26	33	18	19	5	5	7	6	5	IZS	6	4	4	5	4	4	4	47	18.0	24	
19	4	4	6	7	4	3	3	4	5	8	6	6	5	5	5	IZS	4	4	4	4	4	5	5	4	8	4.7	24	
20	4	5	6	6	5	6	6	5	4	5	4	5	5	5	IZS	3	4	5	5	5	5	5	4	3	2	6	4.6	24
21	2	3	2	2	2	4	7	4	4	3	4	4	3	IZS	6	6	8	10	13	12	10	5	5	4	13	5.3	24	
22	5	3	4	4	4	5	5	6	11	11	9	6	IZS	4	6	2	2	2	2	2	2	2	2	3	11	4.4	24	
23	3	3	3	4	5	5	2	2	2	2	3	IZS	4	4	4	6	7	5	8	11	5	3	2	2	11	4.1	24	
24	3	3	4	3	4	5	7	8	C	C	C	C	C	C	C	2	2	7	M	20	25	10	4	3	25	6.9	23	
25	2	2	2	2	2	2	2	2	2	IZS	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1.9	24
26	3	3	5	5	6	9	5	5	IZS	2	1	1	1	1	1	1	1	2	2	2	2	3	3	3	9	2.9	24	
27	2	2	2	3	3	8	11	IZS	11	8	8	7	6	5	5	6	7	8	9	8	9	10	11	10	11	6.9	24	
28	10	10	10	13	21	22	IZS	31	55	52	11	8	10	11	11	13	13	14	22	29	43	28	10	14	55	20.0	24	
29	20	13	16	12	16	IZS	16	22	23	9	5	4	4	4	3	5	6	13	13	5	3	3	2	23	9.7	24		
HOURLY MAX	47	40	39	39	32	32	37	49	124	101	38	36	27	20	24	18	21	37	39	30	43	35	43	41				
HOURLY AVG	10.9	9.9	11.1	11.2	9.9	11.3	12.5	16.6	24.6	21.2	10.3	8.3	7.0	6.4	6.6	5.8	6.6	9.7	12.1	12.8	12.8	11.4	9.6	10.1				

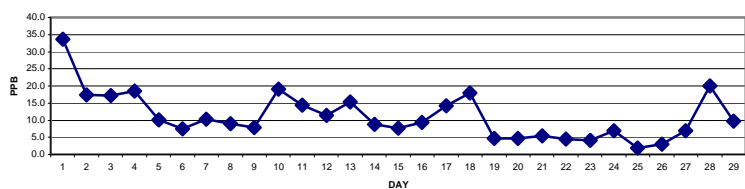
### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

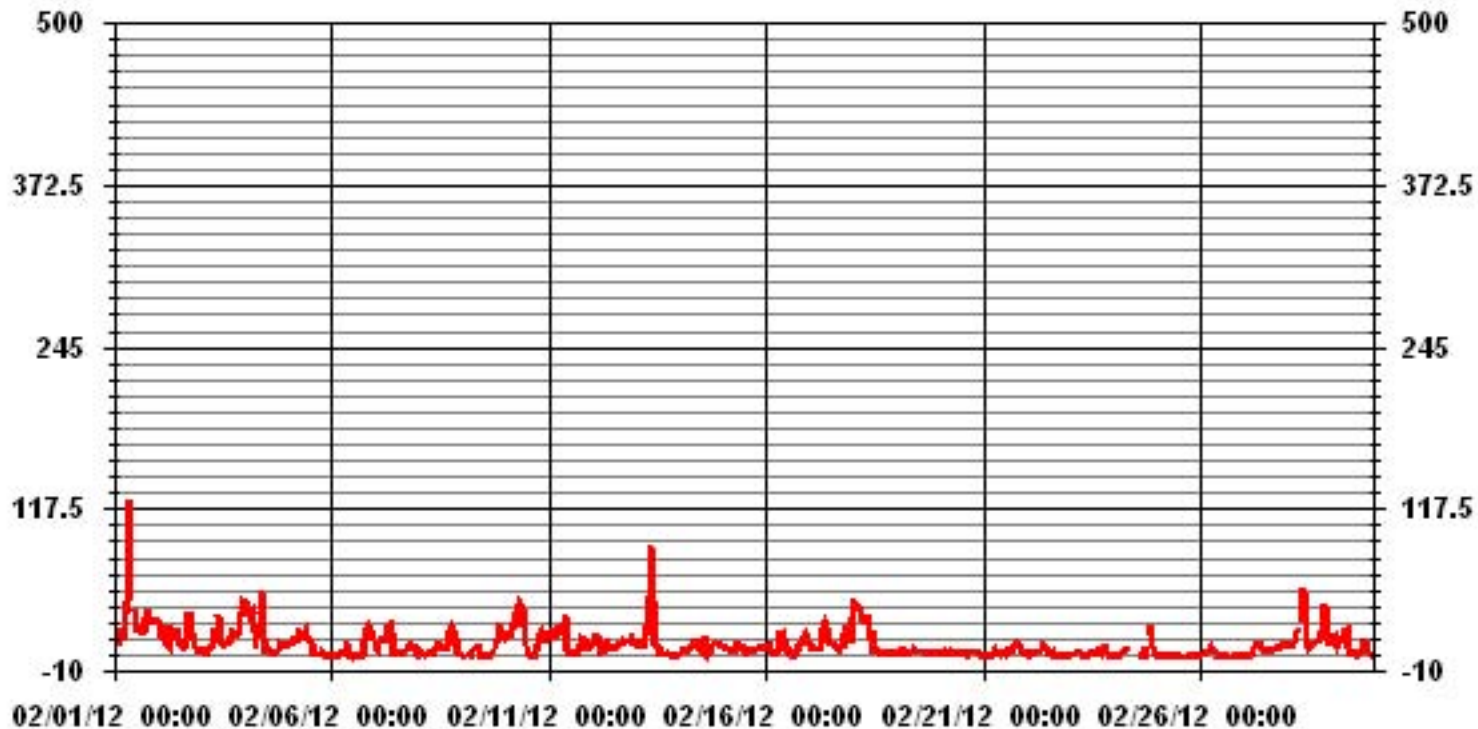
### MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	658
MAXIMUM 1-HR AVERAGE:	124 PPB @ HOUR(S) 8 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	33.6 PPB ON DAY(S) 1
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	8 HRS
OPERATIONAL TIME:	695 HRS
AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION	11.63
MONTHLY AVERAGE	11.10 PPB

24 HOUR AVERAGES FOR FEBRUARY 2012



### 01 Hour Averages



— LICA NOX\_ PPB

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## 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	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	15	28	28	30	20	40	62	74	<b>235</b>	150	<b>IZS</b>	74	48	28	68	24	26	48	56	52	34	40	35	36	<b>235</b>	54.4	24	
2	33	31	25	19	16	13	52	<b>C</b>	41	<b>IZS</b>	31	21	21	14	12	28	23	55	45	31	17	9	9	9	55	25.2	24	
3	7	7	10	7	16	16	24	33	<b>IZS</b>	85	32	17	11	13	15	68	25	35	46	28	32	53	63	46	85	30.0	24	
4	53	51	41	42	46	52	38	<b>IZS</b>	54	71	39	8	44	82	36	5	10	8	11	20	12	16	12	13	82	33.2	24	
5	14	13	16	19	16	36	<b>IZS</b>	27	27	32	20	17	19	18	5	6	4	5	9	8	4	3	3	2	36	14.0	24	
6	4	7	5	3	5	<b>IZS</b>	6	11	21	12	10	11	4	21	9	8	4	12	38	30	31	30	22	19	38	14.0	24	
7	14	11	27	24	<b>IZS</b>	30	27	31	40	43	9	5	9	5	11	6	10	10	21	11	22	17	16	9	43	17.7	24	
8	6	9	12	<b>IZS</b>	5	5	8	8	7	22	21	14	13	11	13	11	12	49	43	30	30	16	4	4	49	15.3	24	
9	4	3	<b>IZS</b>	6	4	19	11	13	33	27	18	5	5	4	4	5	9	10	22	23	37	43	29	23	43	15.5	24	
10	24	<b>IZS</b>	26	36	38	29	54	60	91	47	54	28	13	5	3	4	14	19	26	34	22	20	19	28	91	30.2	24	
11	<b>IZS</b>	26	34	31	28	29	45	27	51	51	25	6	9	10	9	12	16	26	30	28	17	15	22	<b>IZS</b>	51	24.9	24	
12	23	28	25	22	12	11	16	26	16	16	9	11	9	11	11	12	15	21	21	18	25	26	<b>IZS</b>	19	28	17.5	24	
13	17	12	15	16	19	31	58	71	130	92	31	15	11	8	4	4	4	6	6	3	3	<b>IZS</b>	6	5	130	24.7	24	
14	6	9	8	9	8	8	9	13	15	19	19	11	9	6	75	48	6	8	21	19	<b>IZS</b>	17	13	11	75	16.0	24	
15	10	10	10	8	8	8	10	20	15	13	13	17	11	8	9	9	10	9	<b>IZS</b>	13	8	9	9	20	10.7	24		
16	14	14	10	9	6	9	10	29	26	23	17	9	10	5	6	3	6	18	<b>IZS</b>	22	30	31	32	21	32	15.7	24	
17	22	13	13	8	8	13	25	37	38	33	19	17	13	19	33	27	10	<b>IZS</b>	14	33	42	32	21	45	45	23.3	24	
18	56	44	51	51	35	48	64	41	64	26	48	9	9	12	17	6	<b>IZS</b>	9	6	5	8	6	6	6	64	27.3	24	
19	5	8	10	10	6	6	5	6	6	65	7	9	6	6	6	<b>IZS</b>	13	6	5	5	6	6	6	6	65	9.3	24	
20	5	7	8	7	6	7	7	7	6	5	6	5	6	6	<b>IZS</b>	4	6	6	6	7	7	9	6	4	3	9	6.1	24
21	4	6	4	3	3	10	15	8	10	4	5	4	4	<b>IZS</b>	9	8	11	13	23	15	15	7	6	6	23	8.4	24	
22	8	5	7	6	5	7	6	10	18	15	15	11	<b>IZS</b>	7	36	2	4	3	4	3	4	2	3	3	36	8.0	24	
23	4	4	4	5	10	7	5	2	4	4	8	<b>IZS</b>	7	6	6	13	14	10	13	13	10	6	3	3	14	7.0	24	
24	3	4	6	4	6	6	8	9	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	3	8	22	<b>M</b>	28	40	16	8	6	40	11.1	23	
25	4	3	3	3	4	4	3	4	4	<b>IZS</b>	4	4	10	3	2	2	5	3	4	3	3	4	3	6	10	3.8	24	
26	6	5	8	8	9	17	8	10	<b>IZS</b>	3	4	1	3	2	2	2	2	4	4	4	4	5	4	4	17	5.2	24	
27	3	3	6	6	5	17	34	<b>IZS</b>	20	10	10	8	9	9	8	7	11	9	11	9	15	16	18	22	34	11.6	24	
28	16	13	12	19	35	31	<b>IZS</b>	40	80	135	16	11	14	13	13	19	19	21	36	72	88	47	21	19	135	34.3	24	
29	29	21	25	19	25	<b>IZS</b>	36	34	39	19	9	6	7	7	5	17	7	11	20	32	13	5	4	3	39	17.1	24	
HOURLY MAX	56	51	51	51	46	52	64	74	235	150	54	74	48	82	75	68	26	55	56	72	88	53	63	46				
HOURLY AVG	14.6	14.1	16.0	15.4	14.4	18.9	23.9	25.0	42.0	39.3	18.5	13.1	12.4	12.6	15.8	13.0	10.8	16.3	20.4	20.9	20.9	17.9	14.3	13.8				

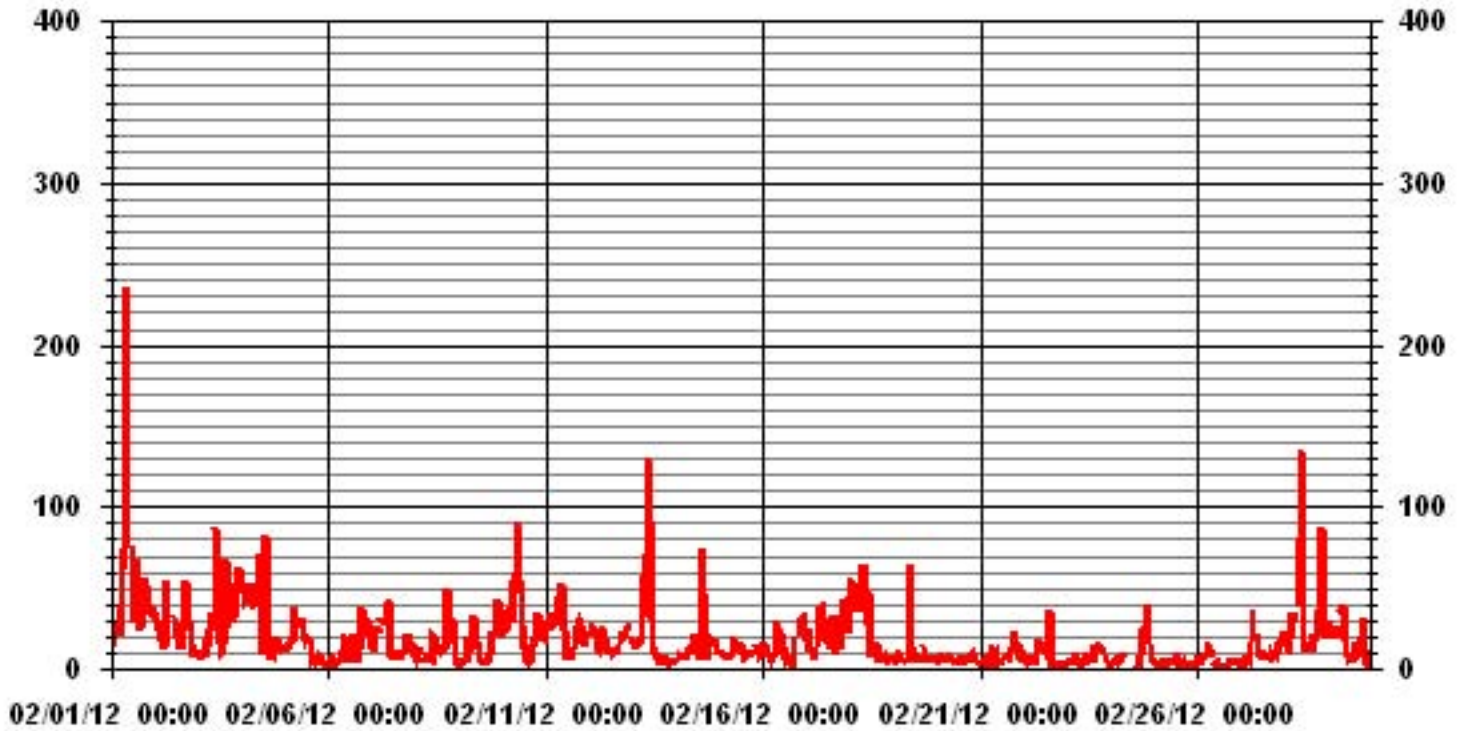
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	658				
MAXIMUM INSTANTANEOUS VALUE:	235	PPB	@ HOUR(S)	8	ON DAY(S) 1
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	695	HRS
MONTHLY CALIBRATION TIME:	8	HRS			
STANDARD DEVIATION:	19.88				

# 01 Hour Averages



— LICA NOxMAX PPB

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

February 2012

Distribution By % Of Samples

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

Wind Parameter : WD  
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	3.34	5.92	6.53	5.31	8.05	4.10	8.20	3.34	4.40	4.40	15.65	13.37	4.86	3.79	4.25	3.49	99.08
< 110	.00	.15	.15	.00	.15	.00	.15	.00	.00	.00	.00	.15	.00	.00	.00	.00	.75
< 210	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.34	6.07	6.68	5.47	8.20	4.10	8.35	3.34	4.40	4.40	15.65	13.52	4.86	3.79	4.25	3.49	

Calm : .00 %

Total # Operational Hours : 658

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	22	39	43	35	53	27	54	22	29	29	103	88	32	25	28	23	652
< 110		1	1		1		1					1					5
< 210				1													1
>= 210																	
Totals	22	40	44	36	54	27	55	22	29	29	103	89	32	25	28	23	

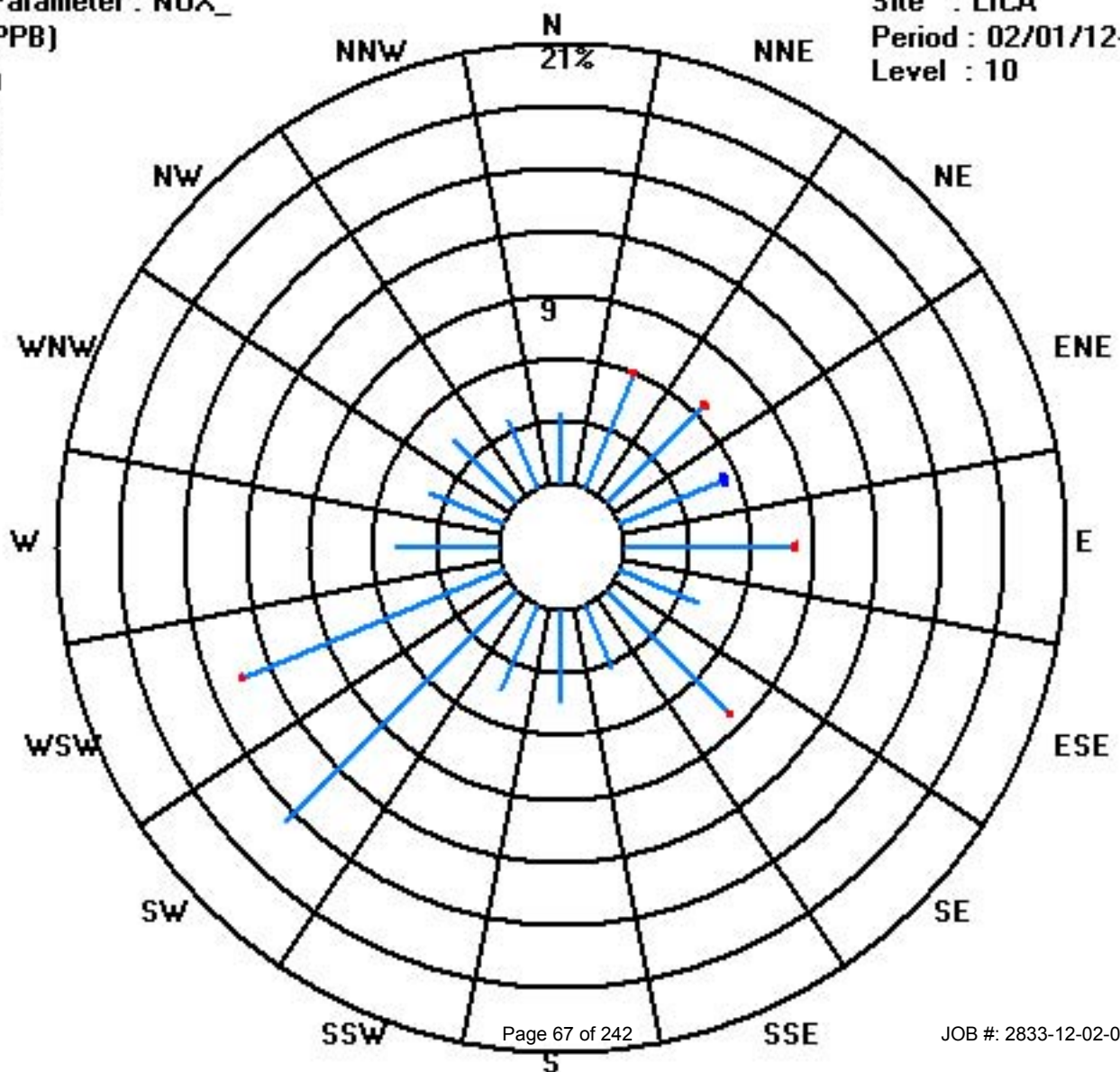
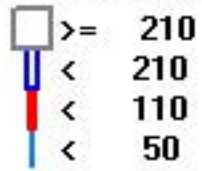
Calm : .00 %

Total # Operational Hours : 658

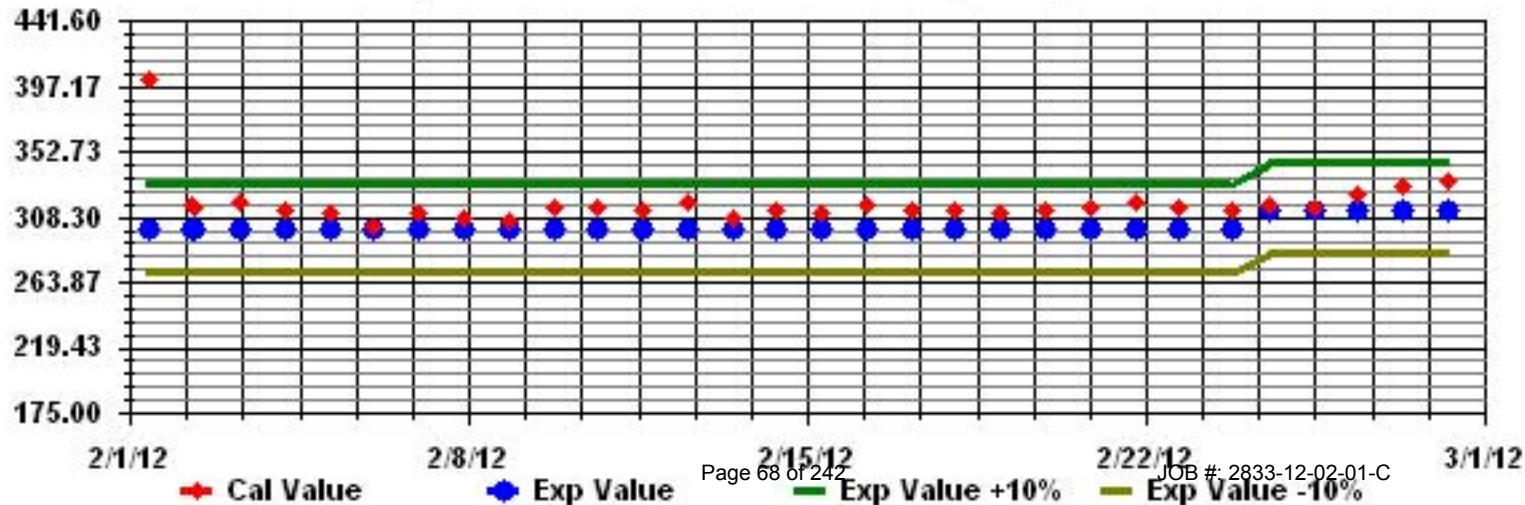
Class Limits (PPB)

Period : 02/01/12-02/29/12

Level : 10



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





# Ozone

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

OZONE (O<sub>3</sub>) 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	18	15	5	3	4	1	1	1	2	4	<b>IZS</b>	12	14	18	18	19	14	4	2	2	2	1	1	1	19	7.0	24	
2	1	1	6	11	11	12	7	5	8	<b>IZS</b>	20	21	24	25	26	25	21	6	3	6	19	25	25	25	26	14.5	24	
3	24	22	16	13	10	7	4	2	<b>IZS</b>	7	18	23	25	25	25	23	17	11	11	8	6	2	1	1	25	13.1	24	
4	1	1	1	1	2	6	17	<b>IZS</b>	4	6	18	27	30	32	31	31	30	28	23	16	21	19	17	16	32	16.4	24	
5	14	14	13	9	6	3	<b>IZS</b>	3	4	7	14	16	17	22	33	36	35	34	31	33	36	37	37	37	37	21.3	24	
6	35	32	34	34	33	<b>IZS</b>	30	31	24	32	34	34	36	36	35	35	35	34	21	10	6	6	8	8	36	27.1	24	
7	14	14	9	5	<b>IZS</b>	11	7	5	6	15	29	29	29	30	31	31	29	27	20	25	19	15	14	21	31	18.9	24	
8	25	20	21	<b>IZS</b>	19	22	21	20	21	19	19	20	21	22	22	21	18	7	3	4	11	23	27	28	28	18.9	24	
9	28	28	<b>IZS</b>	28	30	28	28	28	26	29	33	34	35	37	38	38	36	30	20	18	6	10	9	10	38	26.4	24	
10	7	<b>IZS</b>	7	3	2	4	1	1	5	14	18	31	37	37	38	39	36	28	18	14	15	12	11	9	39	16.8	24	
11	<b>IZS</b>	11	7	5	8	6	4	4	10	15	29	31	31	31	32	35	27	19	20	19	27	21	19	<b>IZS</b>	35	18.7	24	
12	15	12	9	17	21	16	10	12	18	21	24	25	26	24	24	23	22	16	13	9	8	5	<b>IZS</b>	4	26	16.3	24	
13	4	4	3	2	3	1	1	2	7	21	24	25	30	33	36	36	36	35	38	39	<b>IZS</b>	36	35	39	19.7	24		
14	34	30	29	27	27	28	27	25	24	26	30	32	34	35	34	35	35	32	26	24	<b>IZS</b>	19	23	23	35	28.7	24	
15	24	25	26	28	28	29	29	23	26	28	30	32	34	36	36	36	36	34	32	<b>IZS</b>	29	31	29	28	36	30.0	24	
16	24	23	28	30	32	31	28	15	14	18	30	32	34	38	39	40	39	33	<b>IZS</b>	20	14	10	10	8	40	25.7	24	
17	9	11	12	11	11	9	4	2	5	14	22	26	28	29	30	32	34	<b>IZS</b>	23	13	6	12	13	3	34	15.6	24	
18	1	1	1	1	1	2	2	3	8	17	23	31	32	31	33	34	<b>IZS</b>	35	36	37	36	37	38	37	38	20.7	24	
19	37	36	34	32	33	33	32	28	25	22	23	26	33	33	34	<b>IZS</b>	34	33	32	31	29	30	29	28	37	30.7	24	
20	28	27	27	27	27	25	25	27	29	30	29	30	30	30	<b>IZS</b>	32	30	29	29	28	27	31	35	39	39	29.2	24	
21	37	37	38	39	39	36	32	35	34	34	34	35	35	<b>IZS</b>	32	31	28	25	21	22	25	31	33	34	39	32.5	24	
22	32	34	35	35	35	34	36	35	32	34	37	38	<b>IZS</b>	40	40	41	40	40	39	39	38	37	34	33	<b>41</b>	<b>36.4</b>	24	
23	33	31	32	29	27	25	31	32	33	32	32	<b>IZS</b>	32	32	34	33	31	31	27	23	28	31	31	30	34	30.4	24	
24	31	30	28	29	27	25	22	20	24	30	<b>IZS</b>	33	34	34	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	11	9	26	32	34	26.6	24	
25	35	36	35	34	34	34	33	33	32	<b>IZS</b>	33	33	33	33	33	34	34	34	34	34	34	34	34	34	36	33.8	24	
26	33	33	31	30	30	28	29	29	<b>IZS</b>	32	32	32	32	33	33	33	33	32	32	32	32	31	31	30	31	33	31.4	24
27	33	32	30	26	22	17	16	<b>IZS</b>	21	26	27	28	30	31	31	31	30	28	26	26	23	17	15	15	33	25.3	24	
28	12	11	11	8	2	2	<b>IZS</b>	3	6	14	23	26	27	27	27	26	25	22	14	6	2	10	26	16	27	15.0	24	
29	13	21	16	17	10	<b>IZS</b>	13	9	19	31	35	36	37	38	40	41	41	39	30	30	37	39	37	36	<b>41</b>	28.9	24	
HOURLY MAX	37	37	38	39	39	36	36	35	34	34	37	38	37	40	40	41	41	40	39	39	39	39	38	39				
HOURLY AVG	21.5	21.1	19.4	19.1	19.1	17.6	18.1	16.0	17.1	20.9	26.6	28.5	29.8	31.0	31.9	32.3	30.6	26.9	23.0	20.6	20.8	21.5	23.4	22.3				

STATUS FLAG CODES

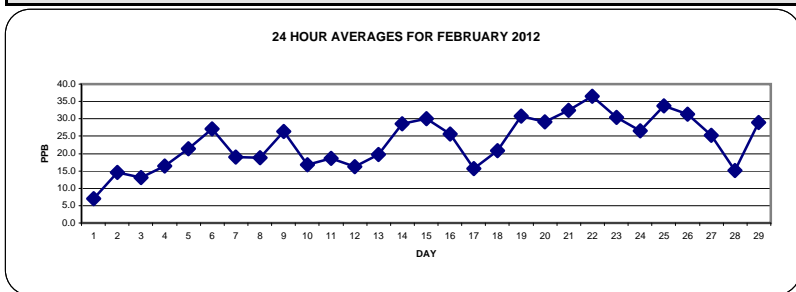
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OBJECTIVE LIMIT:

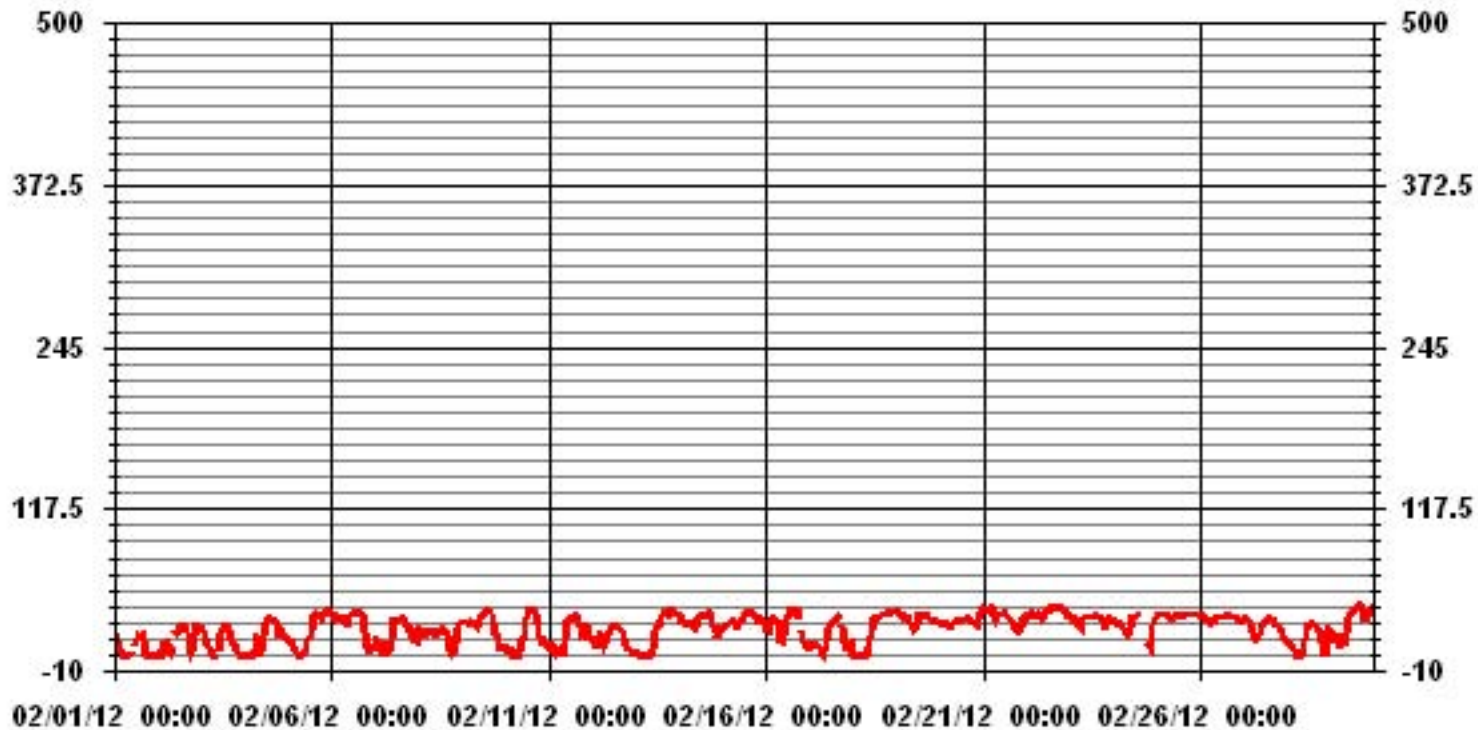
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	661				
MAXIMUM 1-HR AVERAGE:	41	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	36.4	PPB			ON DAY(S)
					VAR-VARIOUS
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	696	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME	100.0	%
STANDARD DEVIATION	11.35		MONTHLY AVERAGE	23.29	PPB



### 01 Hour Averages



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## 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	19	18	10	6	6	3	2	2	3	9	<b>IZS</b>	16	16	21	21	22	19	10	5	4	4	2	1	1	22	9.6	24	
2	2	3	12	12	15	16	15	14	10	<b>IZS</b>	25	23	27	26	28	29	24	24	8	16	25	26	27	27	29	18.9	24	
3	25	24	21	17	13	11	7	6	<b>IZS</b>	13	22	25	26	26	26	25	17	18	13	10	6	1	1	26	16.5	24		
4	2	1	3	1	9	14	23	<b>IZS</b>	5	9	25	28	32	33	33	32	31	30	28	22	23	22	20	17	33	19.3	24	
5	15	15	14	11	8	8	<b>IZS</b>	4	5	13	15	18	18	33	35	37	36	35	34	36	37	38	38	38	38	23.5	24	
6	37	34	35	35	34	<b>IZS</b>	33	34	31	33	35	35	37	37	37	37	36	36	31	17	7	9	11	11	37	29.7	24	
7	17	16	16	11	<b>IZS</b>	20	14	13	11	27	30	29	30	31	32	32	31	29	25	27	23	20	18	26	32	23.0	24	
8	27	24	24	<b>IZS</b>	23	23	22	21	22	21	22	21	22	23	23	22	20	17	6	7	17	28	28	28	28	21.3	24	
9	29	29	<b>IZS</b>	30	31	31	30	31	29	31	34	36	37	38	39	39	38	34	27	28	9	19	14	14	39	29.4	24	
10	11	<b>IZS</b>	9	7	5	7	2	2	12	16	22	36	39	38	42	42	39	32	25	19	19	16	12	15	42	20.3	24	
11	<b>IZS</b>	23	13	8	18	14	11	9	13	25	31	31	32	32	32	38	30	25	29	29	29	29	25	<b>IZS</b>	38	23.9	24	
12	21	21	24	25	25	22	17	24	21	25	25	28	27	26	24	23	23	20	17	12	12	9	<b>IZS</b>	6	28	20.7	24	
13	6	6	4	3	4	4	3	2	3	15	23	27	26	33	35	37	37	37	37	39	40	<b>IZS</b>	38	37	40	21.6	24	
14	35	31	31	28	28	29	28	27	27	28	33	33	35	36	37	36	35	35	32	27	<b>IZS</b>	23	25	25	37	30.6	24	
15	25	26	28	28	29	30	31	27	28	30	32	36	37	37	37	38	37	35	33	<b>IZS</b>	32	32	30	29	38	31.6	24	
16	26	27	30	32	33	33	<b>45</b>	24	18	27	34	34	36	41	40	42	40	38	<b>IZS</b>	31	25	13	16	11	<b>45</b>	30.3	24	
17	11	16	15	14	13	12	7	4	7	20	25	29	29	30	31	34	35	<b>IZS</b>	26	23	13	18	18	9	35	19.1	24	
18	1	1	1	2	4	5	3	4	12	21	30	32	32	32	35	35	<b>IZS</b>	36	37	38	37	38	39	38	39	22.3	24	
19	38	37	35	34	34	35	33	29	28	24	25	28	33	33	36	<b>IZS</b>	35	34	33	32	31	31	30	28	38	32.0	24	
20	28	28	28	28	27	26	26	28	30	30	30	31	31	31	<b>IZS</b>	32	32	30	30	30	30	34	40	40	40	30.4	24	
21	38	40	40	39	39	39	36	37	35	35	35	35	36	<b>IZS</b>	33	31	30	28	24	25	29	32	35	35	40	34.2	24	
22	34	36	36	36	35	36	37	37	35	37	38	39	<b>IZS</b>	41	42	42	41	41	41	40	39	38	36	34	42	37.9	24	
23	34	32	33	30	29	27	32	33	33	34	33	<b>IZS</b>	33	33	36	36	33	32	30	25	31	32	31	31	36	31.9	24	
24	32	31	30	31	29	26	23	21	28	32	<b>IZS</b>	34	35	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	15	20	30	33	35	35	28.5	24	
25	36	36	36	35	35	34	34	33	33	<b>IZS</b>	34	34	34	34	34	34	34	35	35	34	35	35	34	34	36	34.4	24	
26	34	34	33	32	31	31	31	31	<b>IZS</b>	32	33	33	33	33	34	34	33	33	33	33	33	32	32	31	33	34	32.6	24
27	34	33	32	27	23	25	22	<b>IZS</b>	24	27	28	29	31	31	32	32	31	29	27	26	25	23	21	17	34	27.3	24	
28	15	13	13	12	4	3	<b>IZS</b>	5	7	21	25	27	27	32	28	28	26	26	20	16	11	27	31	21	32	19.0	24	
29	20	26	19	22	14	<b>IZS</b>	21	18	26	34	36	38	38	40	41	42	42	41	36	36	39	39	39	37	42	32.3	24	
HOURLY MAX	38	40	40	39	39	39	45	37	35	37	38	39	39	41	42	42	42	41	41	40	40	39	40	40				
HOURLY AVG	23.3	23.6	22.3	21.3	21.4	20.9	21.8	19.3	19.9	24.8	28.9	30.2	31.0	32.6	33.4	33.8	32.3	30.3	26.9	25.0	24.4	25.0	25.8	24.2				

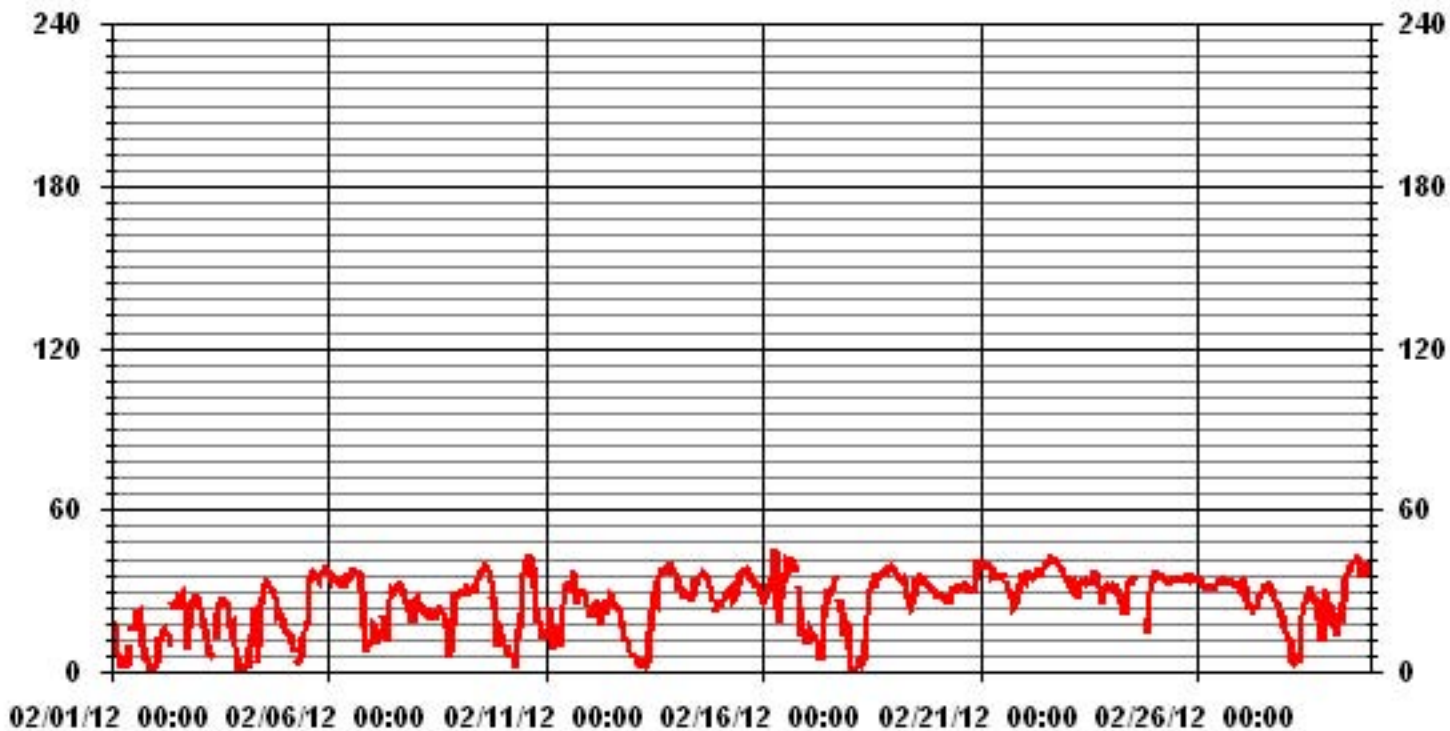
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	660				
MAXIMUM INSTANTANEOUS VALUE:	45	PPB	@ HOUR(S)	6	ON DAY(S) 16
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	696	HRS
MONTHLY CALIBRATION TIME:	6	HRS			
STANDARD DEVIATION:	10.51				

# 01 Hour Averages



— LICA O3MAX PPB

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

February 2012

Distribution By % Of Samples

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

Wind Parameter : WD  
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	3.32	6.35	6.50	5.74	8.16	4.08	8.16	3.32	4.38	4.38	15.58	13.61	4.84	3.78	4.23	3.47	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	3.32	6.35	6.50	5.74	8.16	4.08	8.16	3.32	4.38	4.38	15.58	13.61	4.84	3.78	4.23	3.47	

Calm : .00 %

Total # Operational Hours : 661

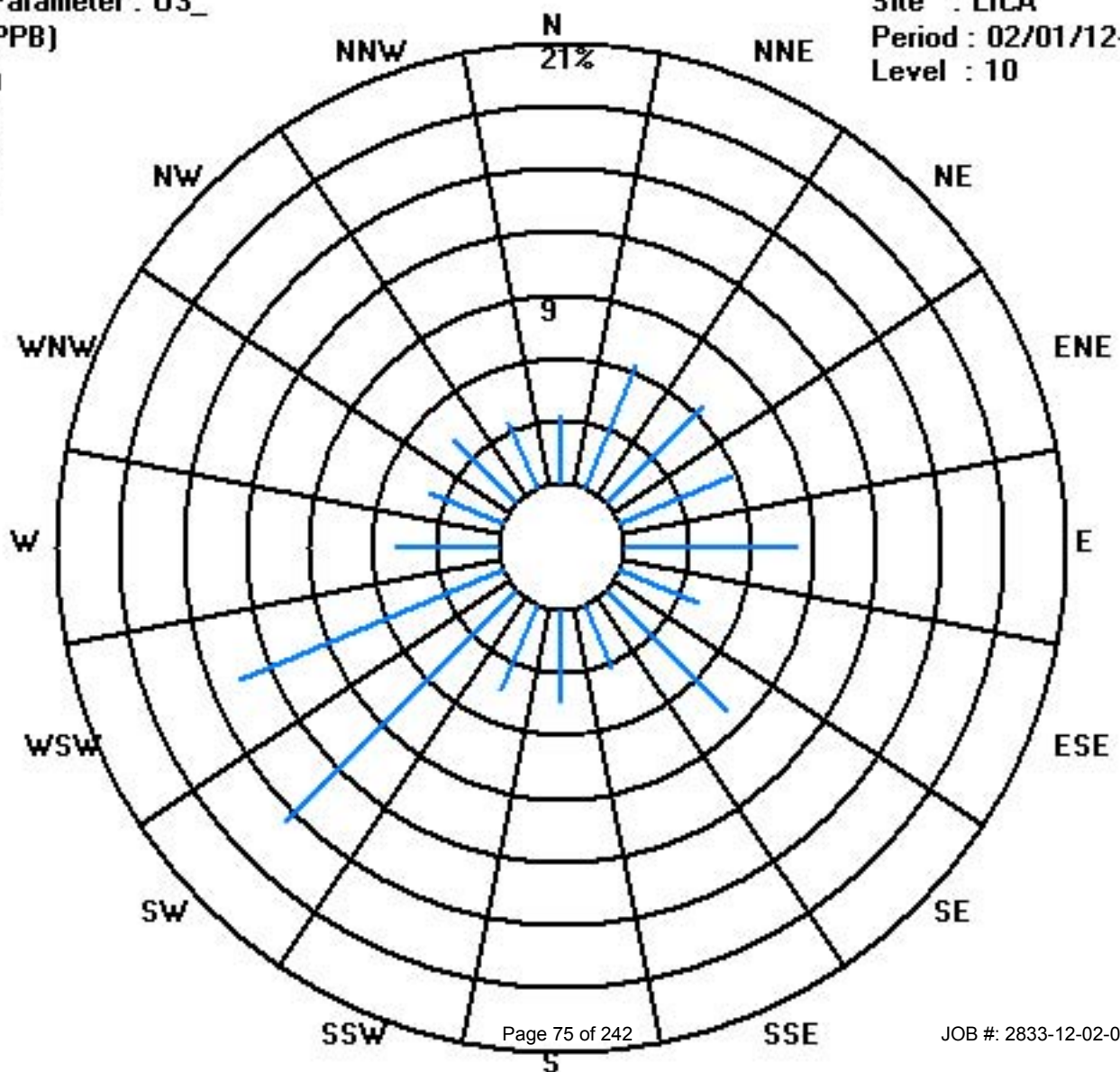
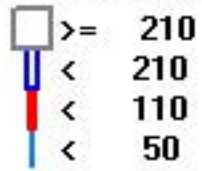
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	22	42	43	38	54	27	54	22	29	29	103	90	32	25	28	23	661
< 110																	
< 210																	
>= 210																	
Totals	22	42	43	38	54	27	54	22	29	29	103	90	32	25	28	23	

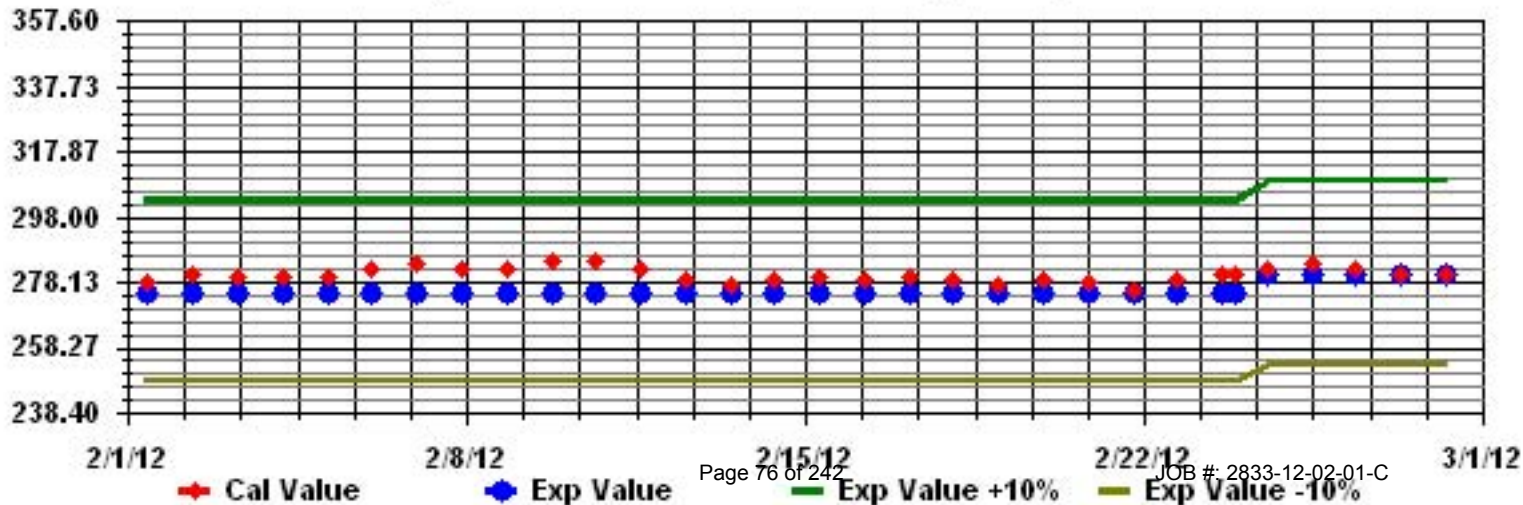
Calm : .00 %

Total # Operational Hours : 661

Class Limits (PPB)



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





# Ambient Temperature

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

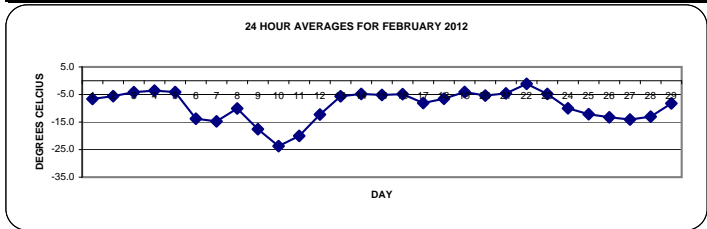
FEBRUARY 2012

AMBIENT TEMPERATURE hourly averages (Degrees C)

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	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	MAX.	AVG.	RDGS.
DAY																												
1		-4.6	-5.5	-8.1	-9.8	-11.4	-12.3	-13	-13.5	-13.5	-11.4	-7.8	-5.4	-3.7	-1.6	0.9	2.4	-2.6	-4.7	-5.1	-5.1	-4.7	-5.8	-5.5	-6.5	2.4	-6.6	24
2		-7.1	-8.7	-8.6	-8	-9.6	-10.3	-12	-12.4	-10.5	-8.2	-5.4	-3.4	-2.1	-1.7	-1.7	-1.3	-1.8	-3.4	-4.3	-4.3	-3.1	-1.9	-2.1	-2.5	-1.3	-5.6	24
3		-3.4	-4.3	-6.8	-8.5	-9.8	-10.5	-11.2	-11.3	-10.9	-7.3	-2.9	-1.4	1.4	2.9	4.7	4.7	3.3	-0.4	-1.8	-2.9	-4.4	-5.4	-6.2	-7.1	4.7	-4.1	24
4		-7.9	-8.6	-9.1	-9.5	-10.3	-8.4	-6.5	-8.2	-9.3	-5.6	-1.3	0.7	4.2	5.2	5.3	4.7	3.3	0.8	-2.4	-3.8	-3.2	-4.7	-5.7	-5.7	5.3	-3.6	24
5		-6.2	-6	-7.3	-8.6	-9.9	-10.2	-8.6	-9.9	-10.4	-7	-3.5	-0.5	0.8	3.9	4.2	3.2	2.3	0.2	-1.4	-2.6	-3.7	-4.8	-5.8	-6.9	4.2	-4.1	24
6		-8.3	-9.7	-9.8	-10.2	-11.5	-14.7	-14.4	-14.4	-15.3	-14.3	-14.1	-13.7	-12.8	-11.9	-11.6	-11.5	-11.7	-12.4	-14.3	-16.3	-18	-19	-20.1	-20.7	-8.3	-13.8	24
7		-21.3	-21.8	-22.5	-22.5	-22.5	-21.9	-22.6	-22.7	-21.9	-17.5	-13.4	-11.6	-9	-6.7	-5	-4.3	-5.1	-7	-9.7	-9.7	-11.7	-14.2	-15.7	-13.5	-4.3	-14.7	24
8		-11.2	-13.2	-13.6	-14.9	-15	-12.3	-12.7	-12.8	-11.8	-11.9	-9.7	-8.2	-6.8	-6.2	-5.9	-5.1	-6	-7.9	-9.4	-9.7	-9.3	-8.1	-9.3	-10.8	-5.1	-10.1	24
9		-11.8	-12.8	-14.1	-15.1	-16.1	-17.3	-18.4	-19.2	-19.4	-17.9	-17.1	-16.8	-16.1	-14.7	-13.6	-13.1	-13.3	-15.9	-18.9	-21.3	-22.5	-24.4	-25.5	-26.4	-11.8	-17.6	24
10		-27.4	-28	-28.8	-28.7	-29.4	-30.6	-30.6	-31.3	-30.8	-26.5	-22.3	-18.8	-17.3	-15.8	-14.7	-13.9	-14.7	-16.9	-19.8	-22	-23.8	-25.1	-25.9	-26.4	-13.9	-23.7	24
11		-27.1	-27.2	-27.1	-27.9	-28.4	-28.8	-29	-29.6	-28.6	-22.9	-18.9	-15.7	-13.2	-11.1	-9.3	-6.7	-10.3	-13.6	-14.5	-15.9	-15.1	-18.5	-20	-21	-6.7	-20.0	24
12		-20	-20	-20.4	-19.5	-19.2	-20.6	-21.6	-20.2	-18.3	-14.4	-11.8	-8.7	-5.7	-3.7	-2.1	-1.6	-1.8	-3.8	-6.2	-8.2	-10.1	-11.2	-12.3	-13.1	-1.6	-12.3	24
13		-13.8	-14.5	-15	-15.6	-15.9	-16.3	-16.5	-16.3	-14.8	-8.1	-3.5	-1.1	1.1	3.4	4.1	3.6	2.2	1.2	0.4	0.3	0.2	0.1	0.2	-0.9	4.1	-5.6	24
14		-2.6	-3.8	-5.1	-6.2	-7.3	-8.1	-8.9	-9.7	-9.4	-7.5	-5	-3.5	-2.1	-1.1	-0.7	-0.5	-1.1	-1.4	-2.8	-4.8	-5	-6.4	-5.9	-6.1	-0.5	-4.8	24
15		-6.3	-6.2	-6.1	-6.3	-7.3	-9	-10.3	-11.2	-10.5	-8.7	-6.6	-4.6	-3.2	-1.6	-1.2	-0.8	-1.4	-2.2	-2.5	-2.4	-2.3	-3.2	-4.3	-5.6	-0.8	-5.2	24
16		-6.7	-6.8	-5.5	-5	-5	-5.2	-5.1	-5.7	-6	-3.9	-2.3	-2	-0.6	-0.1	0	0.5	-0.1	-2.2	-4.9	-6.9	-8.8	-10.1	-11.5	-12.8	0.5	-4.9	24
17		-13.9	-14.5	-14	-14.3	-15.1	-15.9	-15.9	-14.9	-13.3	-9.1	-5.5	-2.6	-0.1	1	1.1	1.5	1.2	-0.9	-3.8	-5.7	-7.7	-9.3	-10.5	-11.6	1.5	-8.1	24
18		-12.7	-13.6	-14.5	-14.9	-15.4	-15.5	-16.4	-16.3	-13.5	-8.6	-5	-2.2	-1.1	-0.5	1.4	0.9	0.6	-0.5	-0.9	-1.1	-1.4	-1.4	-1.9	-2.2	1.4	-6.5	24
19		-3.1	-4.2	-5.4	-6.3	-6.5	-6.2	-6.2	-6	-5.6	-4.5	-3.8	-2.3	-1.8	-1.5	-1.7	-1.7	-2.3	-3.2	-3.5	-3.6	-3.8	-4.3	-4.9	-5.3	-1.5	-4.1	24
20		-5.7	-6.3	-6.8	-6.7	-6.4	-6.3	-6.4	-6.4	-5.9	-5.4	-4.9	-4.3	-4	-4.1	-4.4	-4.4	-4.6	-4.8	-4.8	-5	-5.2	-5.3	-4.0	-5.4	-4.0	-5.4	24
21		-5.3	-5.4	-5.6	-5.8	-6.1	-7.3	-8.9	-8.2	-7.8	-7.3	-6.2	-5.1	-4.4	-4.3	-3.4	-2.5	-1.7	-1.5	-2.4	-2.7	-2.6	-2.1	-1.6	-1.9	-1.5	-4.6	24
22		-1.8	-1.9	-2.3	-2.7	-3.3	-3.7	-4.3	-5.3	-5	-3.4	-2	0.3	1.3	2.6	3.2	2.9	1.6	1.7	0.6	-0.6	-0.7	-0.8	-1.2	-2.2	3.2	-1.1	24
23		-2.8	-3.2	-3.8	-4.1	-4.4	-4.8	-5.2	-5.5	-5.5	-5.6	-5.2	-4.9	-4.8	-4.7	-4.5	-4.3	-4.5	-4.7	-4.8	-5	-4.9	-5.5	-5.8	-6.4	-2.8	-4.8	24
24		-7	-7.7	-8.1	-8.5	-8.8	-9.2	-9.2	-9.2	-9.3	-9.8	-10.1	-10.2	-10.1	-8.9	-8.4	-8.1	-8	-9.7	-11.9	-13.5	-14.8	-13.3	-13.2	-13.2	-7.0	-10.0	24
25		-13.6	-13.6	-13.6	-13.5	-13.1	-12.8	-12.5	-12.3	-12	-11.6	-11.1	-10.4	-9.8	-9.4	-9.7	-9.9	-10.4	-11.7	-12.5	-12.9	-13.3	-13.7	-14	-14.2	-9.4	-12.2	24
26		-14.4	-14.6	-14.8	-15.1	-15.4	-15.4	-15.5	-15.5	-15.1	-14.5	-13.6	-12.7	-12.4	-11.3	-10	-9.8	-10.5	-10.9	-12	-12.3	-12.6	-12.8	-13.2	-13.7	-9.8	-13.3	24
27		-14.5	-15.6	-17.3	-19.1	-20.5	-21.4	-21.3	-21.2	-18.4	-15.2	-12.1	-10.4	-8.7	-7.7	-6.5	-6.4	-6.8	-8.4	-10.3	-11.4	-13.1	-15.8	-17.2	-18.4	-6.4	-14.1	24
28		-19.3	-20.1	-20.9	-21.1	-21.5	-21.9	-22.2	-22	-18.6	-14.3	-11.2	-9.1	-6.1	-4.4	-3.8	-3.5	-3.8	-5.7	-8	-10.4	-11.7	-11.6	-9.5	-12.1	-3.5	-13.0	24
29		-12	-11.5	-12.3	-13.5	-14.9	-15.1	-16.4	-16.3	-13.7	-10.4	-8.6	-6.3	-4.2	-2.5	-0.6	0.1	-0.7	-1.8	-3.5	-6	-5.6	-5.8	-7.4	-8.2	0.1	-8.2	24
HOURLY MAX		-1.8	-1.9	-2.3	-2.7	-3.3	-3.7	-4.3	-5.3	-5.0	-3.4	-1.3	0.7	4.2	5.2	5.3	4.7	3.3	1.7	0.6	0.3	0.2	0.1	0.2	-0.9			
HOURLY AVG		-10.8	-11.4	-12.0	-12.5	-13.1	-13.5	-13.9	-14.1	-13.3	-10.8	-8.5	-6.7	-5.2	-4.0	-3.2	-2.9	-3.7	-5.2	-6.7	-7.8	-8.4	-9.1	-9.7	-10.4			

STATUS FLAG CODES

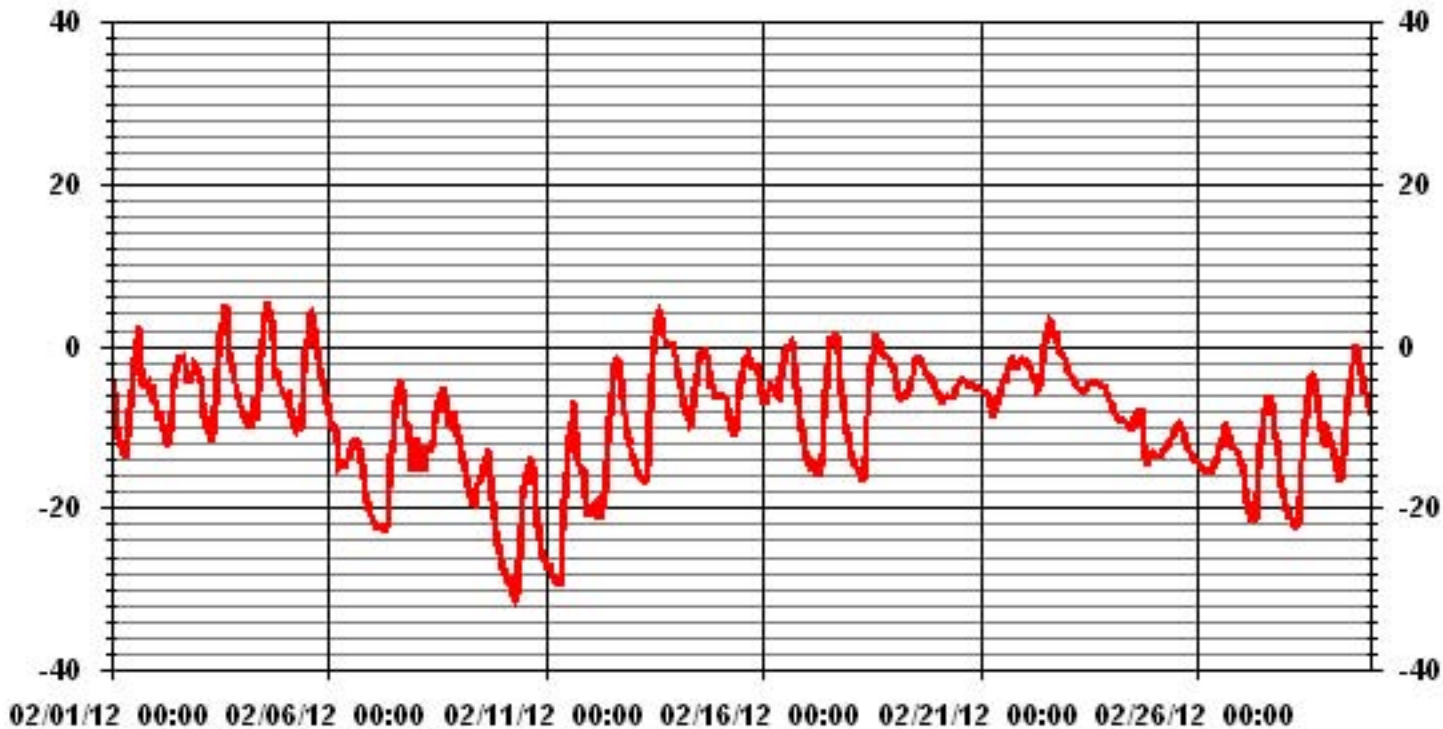
S	- OUT OF SERVICE	OD	- OUTSIDE DETECTION LIMITS
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-31.3 °C	@ HOUR(S)	7	ON DAY(S)	10
MAXIMUM 1-HR AVERAGE:	5.3 °C	@ HOUR(S)	14	ON DAY(S)	4
MAXIMUM 24-HR AVERAGE:	-1.1 °C			ON DAY(S)	22
VAR-VARIOUS					
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	696	HRS
STANDARD DEVIATION:	7.10		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	-9.03	°C

### 01 Hour Averages



# Relative Humidity

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

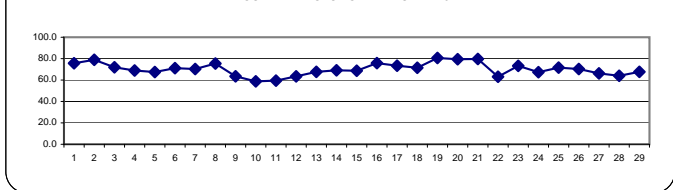
RELATIVE HUMIDITY hourly averages (%)

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	0:00	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	1	79	82	86	87	87	86	85	83	83	80	80	77	69	60	51	46	64	72	74	74	74	79	78	81	87	75.7	24	
2	83	86	87	89	90	89	87	87	88	87	81	74	70	67	67	67	70	76	79	79	76	72	72	71	90	78.9	24		
3	74	76	83	85	87	87	85	85	85	85	76	67	61	51	47	43	45	51	64	70	75	79	82	83	85	87	71.9	24	
4	85	85	85	85	85	84	81	85	86	71	60	54	42	39	38	42	47	58	68	72	71	75	78	78	86	68.9	24		
5	80	80	83	86	88	87	90	88	85	76	78	69	65	52	48	44	46	52	60	64	59	49	44	47	90	67.5	24		
6	52	59	56	58	63	73	72	72	74	69	68	69	77	75	74	73	74	76	82	82	79	78	76	76	76	71.1	24		
7	75	75	75	75	75	76	74	75	73	72	72	70	65	58	51	47	51	59	69	73	79	82	82	84	84	70.3	24		
8	80	83	84	83	82	83	83	84	83	81	76	72	67	64	63	60	64	71	77	77	76	70	72	75	84	75.4	24		
9	76	78	79	80	77	77	74	70	69	62	55	52	51	45	38	37	39	49	61	67	71	72	72	73	80	63.5	24		
10	72	72	71	72	71	69	70	70	67	66	63	49	41	36	32	28	32	43	54	61	65	67	69	71	72	58.8	24		
11	71	72	72	72	71	71	71	70	68	62	51	46	43	41	37	30	45	55	53	57	58	66	71	74	74	59.5	24		
12	72	71	74	74	72	74	74	73	68	58	52	46	44	45	44	46	48	56	60	68	72	75	78	79	79	63.5	24		
13	79	80	80	81	80	79	79	78	75	66	78	72	65	56	50	46	50	53	58	66	62	64	60	67	81	67.7	24		
14	69	69	74	80	86	89	90	89	86	77	67	60	54	52	51	49	51	55	63	68	68	73	69	69	90	69.1	24		
15	71	71	71	72	74	76	79	82	78	71	64	58	56	53	53	56	59	61	62	66	86	88	89	89	89	68.7	24		
16	86	81	78	82	86	88	88	88	86	78	72	70	64	59	56	53	55	64	73	78	82	84	85	84	88	75.8	24		
17	82	81	81	80	81	81	80	80	79	76	69	61	53	52	55	57	58	64	73	78	82	86	87	86	87	73.4	24		
18	83	83	81	82	81	82	80	81	82	77	75	67	64	61	56	58	59	64	65	65	66	66	68	69	83	71.5	24		
19	73	75	78	81	82	82	83	84	83	80	76	69	66	67	80	78	82	87	90	<b>91</b>	<b>91</b>	85	86	86	<b>91</b>	<b>80.6</b>	24		
20	87	85	86	87	87	87	88	88	84	79	76	74	70	71	73	74	73	75	76	77	78	79	78	75	88	79.5	24		
21	75	75	76	78	79	82	87	86	85	82	77	74	80	86	80	77	77	79	83	84	82	79	75	74	87	79.7	24		
22	76	73	70	69	69	69	67	69	68	65	60	54	51	49	49	53	64	54	58	62	64	64	68	69	76	63.1	24		
23	71	72	71	74	78	79	72	69	70	70	69	70	70	70	75	76	75	77	78	80	73	77	70	73	80	73.3	24		
24	74	76	75	73	75	74	73	74	73	70	66	65	62	57	52	49	48	55	65	71	75	71	72	72	76	67.4	24		
25	75	76	76	75	75	75	75	76	76	74	72	69	67	65	66	64	65	68	70	73	72	71	72	72	76	71.6	24		
26	73	74	78	78	79	78	75	75	74	71	66	62	61	58	54	53	58	64	70	73	75	79	80	79	80	70.3	24		
27	77	78	79	80	77	77	77	77	75	70	61	56	50	47	43	44	47	54	60	63	68	75	77	78	80	66.3	24		
28	77	76	76	76	76	75	75	75	71	70	64	56	48	44	43	45	45	48	56	65	69	68	65	73	77	64.0	24		
29	78	78	80	83	83	83	81	81	80	75	70	64	59	54	48	46	48	53	59	65	63	59	64	70	83	67.7	24		
HOURLY MAX		87	86	87	89	90	89	90	89	88	87	81	77	80	86	80	78	82	87	90	91	91	86	88	89				
HOURLY AVG		76.0	76.6	77.4	78.5	79.2	79.7	79.1	79.1	77.7	72.8	68.4	63.4	59.5	56.2	54.1	53.1	56.6	62.2	67.8	71.4	72.2	73.6	73.8	75.1				

STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

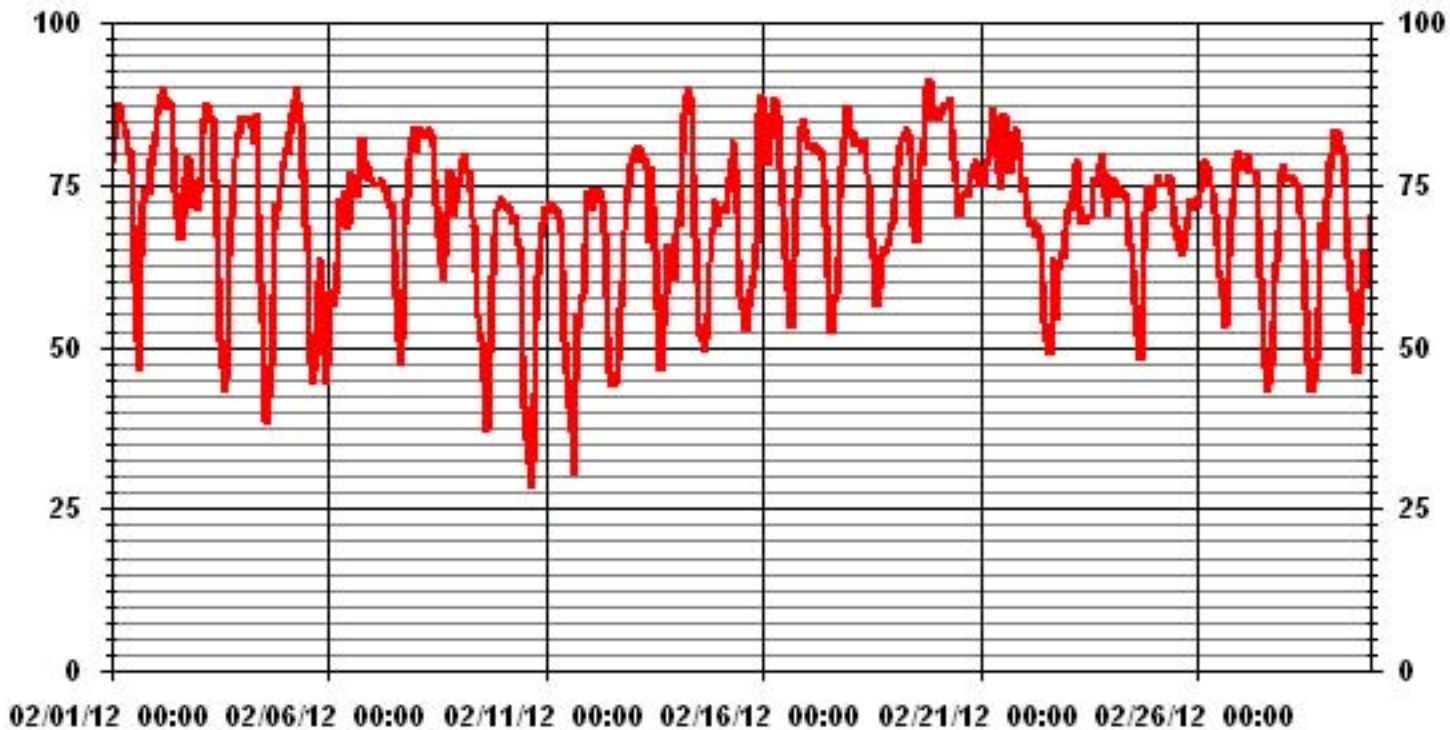
24 HOUR AVERAGES FOR FEBRUARY 2012



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	91	%	@ HOUR(S)	19, 20	ON DAY(S)	19
MAXIMUM 24-HR AVERAGE:	80.6	%			ON DAY(S)	19
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	696	HRS	
STANDARD DEVIATION:	12.26		AMD OPERATION UPTIME:	100.0	%	
			MONTHLY AVERAGE:	70.16	%	

### 01 Hour Averages



# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## VECTOR WIND SPEED (WS) hourly averages (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	24:00	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	0:00	MAX.	AVG.		
DAY																										MAX.	AVG.	RDGS.	
1		4.5	3.6	0.8	0.2	0.5	0.9	0.6	0.4	0.2	0.1	0.7	2.5	3.3	3.3	2.5	2.7	4	0.8	0.3	1.6	2.6	0.9	3	3.3	4.5	1.2	24	
2		4.2	2.4	4.8	5.8	3.7	4.5	0.4	4.4	4.7	3.6	3.2	2.7	4.2	5.9	4.1	3.2	0.6	1	1.2	1.3	1.8	2.1	2.2	1.3	5.9	2.8	24	
3		0.9	1.9	0.5	0.8	0.3	0.7	0.6	1.4	0.7	0.7	1.8	4.7	3.5	5.3	1.4	2.2	1.5	1.4	2	0.8	0.4	1	1.6	0.7	5.3	1	24	
4		1.4	1.2	1.5	0.8	1.5	1.4	3.5	1.4	1.1	1.1	3.1	5.3	4.2	5.1	4.9	4.5	3.7	2.7	2.2	3	5.5	5.7	4.5	4.7	5.7	1.9	24	
5		4.6	5.1	5.4	4.4	4.1	1.1	5.1	2.3	0.2	2	4.3	4.1	5.1	3.9	13.6	11.5	9.7	9.1	9	7.5	8.7	9	7.6	6.4	13.6	6.0	24	
6		5.5	3.3	4.7	5.1	3.3	3.7	5	4	2.3	5.7	7.4	2.7	1.8	2.4	1.6	3.2	3.6	2.2	0.6	0.3	0.3	0.5	0.1	0.3	7.4	2.9	24	
7		0.6	0.5	0.5	0.8	0.7	1	0.6	0.6	0.7	1.6	3.6	4.4	4.1	5.9	6.3	5.5	3.3	2	1.5	2.3	1.5	0.7	1.5	1.9	6.3	2.2	24	
8		2.1	1.1	1.7	1.7	1.9	2.7	3	4.7	3.8	2.9	2.4	4.1	6.8	7.1	6	5.4	3.9	0.7	0.9	1.2	3	7.4	9.9	6.4	9.9	3.8	24	
9		6.2	6.6	5.2	4.6	6.8	3.5	4.4	3.4	1.3	4	5.9	7	6.2	5.7	6.4	4.9	3.5	1.6	0.1	0.3	0.6	0.5	0.4	0.5	7.0	3.7	24	
10		0.9	0.2	1	1.8	0.7	1.2	0.5	1.4	1.9	1.3	2.5	2.8	5.3	3	2	2.2	2.7	2.5	1.3	0.4	0.2	0.7	0.5	0.4	5.3	1.6	24	
11		0.8	0.4	1.6	0.2	0.2	0.7	1.4	1	0.9	1.9	3.9	5	6.7	6	6.2	2.5	2.9	1.1	1.8	4.5	3.8	0.8	1.5	1.1	6.7	2.4	24	
12		1.3	0.7	1	1.4	1.1	0.3	0.1	1.6	2.2	2.1	3.6	4.2	5.4	5.7	6.1	5.7	5.7	2.2	1.9	1.4	0.3	0.3	0.5	0.2	6.1	2.3	24	
13		0.4	0.9	0.5	0.3	0.4	0.3	0.1	0.6	0.9	2.2	5.7	7.3	7.2	7.8	11.6	11	7.9	8.2	7	10.5	12.1	7.5	4.4	5.2	12.1	5.0	24	
14		5.2	4.8	5.3	5.5	5.2	6.3	6.4	6.1	5.4	6	7	6.7	7.9	8.3	7	7.6	8.1	3.5	2.7	4.3	3.9	3.7	4.5	4.3	8.3	5.7	24	
15		5.7	6	5.5	6.3	6.6	6.4	5.9	4.6	4.7	6	6.4	6.7	8.1	7.8	8.3	8.4	7.1	5.8	5.7	7.3	6	3.7	5.4	5.7	8.4	6.3	24	
16		6.2	5.7	6.6	6.7	4.5	4.3	2.8	2.4	1.8	1.7	3.6	1	3.5	6.4	7.5	3.8	5.3	2.5	1.9	0.7	0.8	0.5	0.2	0.4	7.5	3.4	24	
17		0.8	0.7	0.6	0.3	0.8	1.2	0.5	0.4	0.6	2.7	3.4	3.9	3.5	5	8.3	7.1	6.5	3.9	2.3	0.4	0.9	1.8	1.3	1.2	8.3	2.4	24	
18		0.8	0.8	0.9	1	1.4	1.1	0.5	0.8	1.9	1.7	3.9	6.2	5.8	6.1	7.4	8.4	10.4	9.2	7.5	7.5	8	8.2	6.3	6.8	10.4	4.7	24	
19		5.9	4.3	3.9	3.1	5.1	5.8	3.9	3	3.2	3.5	3.6	5	9.7	8.6	6.7	8.1	6.6	6.2	5.5	4.7	5.5	7.9	8.4	8.8	9.7	5.7	24	
20		7.8	8.2	8.7	7.9	7.5	7.4	6	5.1	6.4	9.3	8.9	10.5	10.6	9	10.7	11.3	8.3	6.5	2.9	2.2	2.7	3	2.8	2.9	11.3	6.9	24	
21		2.2	2.4	1.8	2.5	3.7	3.9	4.1	5.5	6.4	9.5	11.2	8.8	6.1	6.4	6.1	6.4	5.3	5.4	4.5	5.3	6.7	7.4	8.1	7.6	11.2	5.7	24	
22		5.1	7.1	7.3	6.7	5.9	6.1	7.5	6.5	6.8	5.7	8.4	5.6	7.5	6.7	5.5	12.7	8.2	13.9	11	6.6	7.9	7.9	7.4	10.9	13.9	7.7	24	
23		8.3	8.8	10.1	6	4.1	4.7	9.3	11.2	8.9	8.5	5.7	4.2	4.5	4.1	3.9	3.2	3.3	2.7	0.6	0.4	5.8	5.8	8	7.8	11.2	5.8	24	
24		6.8	4.9	3.4	3.8	3.5	3.5	3.5	4.1	6.6	6.3	8.3	8.1	8.1	6.4	5.4	3.5	2.6	2.9	0.9	0.8	2.2	4.5	9	9	9.0	4.9	24	
25		9.2	10.4	10.3	10.5	11	11.5	11.9	11.9	11.6	11.7	<b>13.9</b>	12.8	12.8	12.1	11.2	11.2	10.9	11.7	10.7	10	10.5	9.5	8.6	6.1	<b>13.9</b>	<b>10.9</b>	24	
26		5.9	5.1	3.5	3.5	2.9	3.2	3.8	3.4	4.1	4.9	4.8	5	4.2	2.4	1	1	0.8	2.3	4.6	3.7	4.3	4.8	4.7	6.1	6.1	3.8	24	
27		7.3	6.2	2.1	1.3	1.1	0.5	0.9	0.9	1.8	2.8	3.9	5	5	5.2	5.8	5.5	5.9	3.7	3.5	6.3	2.4	1.6	1.3	0.5	7.3	3.4	24	
28		0.2	0.4	1.1	0.5	0	0.3	0.3	0.1	0.5	2.1	2.7	5.2	3.1	3.9	4.5	4.4	4.6	2.5	1	0.3	0.6	3.1	3.5	2	5.2	2.0	24	
29		2.8	2.1	1.5	0.2	1.1	2.4	1	0.7	2.6	4.7	6.8	5.8	5.6	4.9	5.1	6.8	6.6	5	2.6	3.1	6	8.7	8.9	10.1	10.1	4.4	24	
HOURLY MAX		9.2	10.4	10.3	10.5	11.0	11.5	11.9	11.9	11.6	11.7	13.9	12.8	12.8	12.1	13.6	12.7	10.9	13.9	11.0	10.5	12.1	9.5	9.9	10.9				
HOURLY AVG		3.9	3.6	3.5	3.2	3.1	3.1	3.2	3.2	3.2	4.0	5.2	5.4	5.9	5.9	6.1	6.0	5.3	4.2	3.4	3.4	4.0	4.1	4.3	4.2				

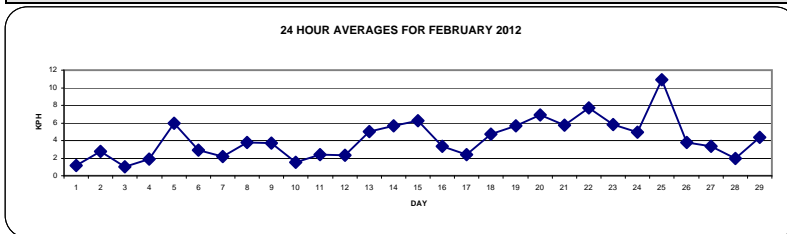
### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: December 16, 2010

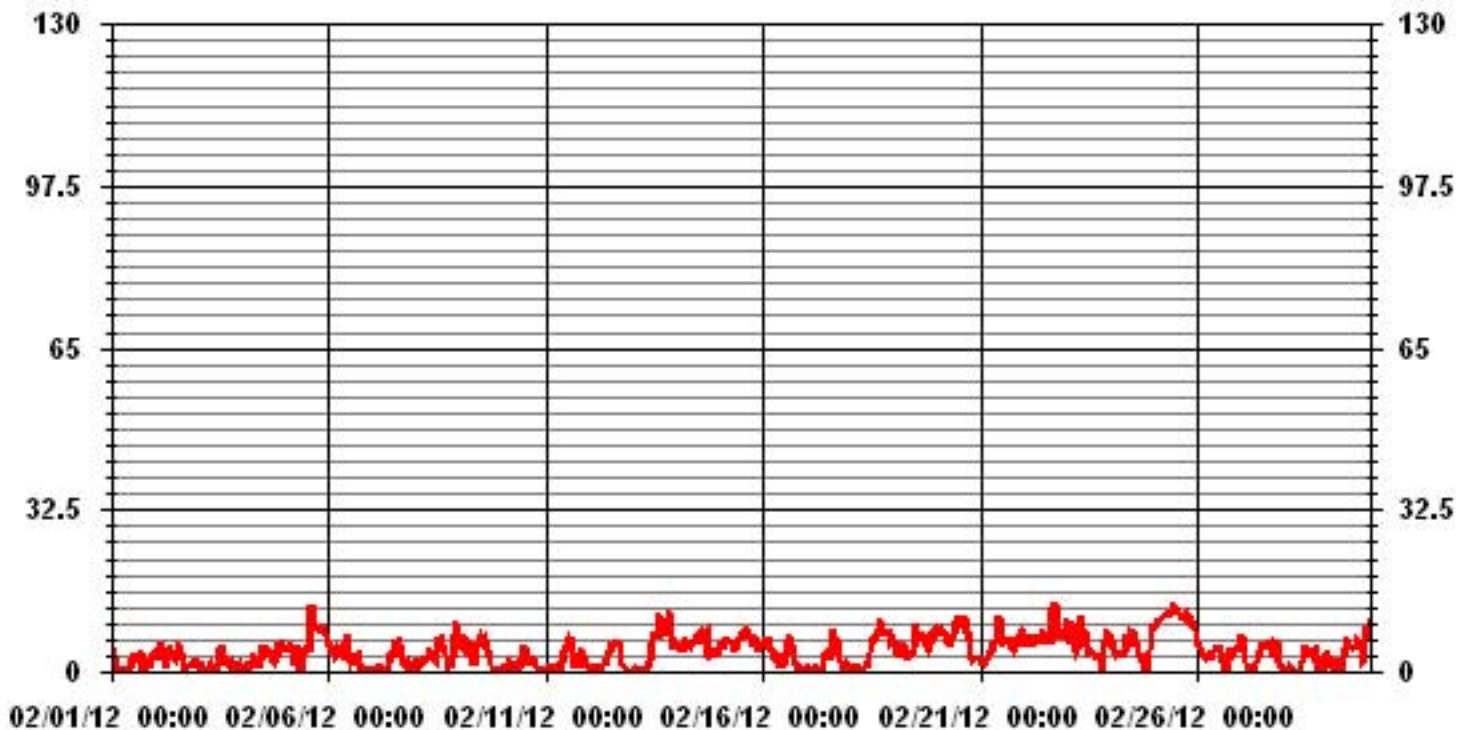
### MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	13.9	KPH	@ HOUR(S)	10	ON DAY(S)	25
MAXIMUM 24-HR AVERAGE:	10.9	KPH			ON DAY(S)	25
CALMS (≤ 0 KPH)	4.74	%	OPERATIONAL TIME:	696	HRS	
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	3.06		MONTHLY AVERAGE:	4.24	KPH	





# 01 Hour Averages



— LICA WSP KPH

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

### VECTOR WIND SPEED MAX instantaneous maximum 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	
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	0:00	MAX.
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		6.3	6.7	2.8	2	2.4	3	2	1.5	2.6	2.6	2.3	5.1	5.1	7.7	6.4	6.5	15.3	3.7	3.8	5.2	5.6	2.6	6.2	5.9	15.3	
2		6.4	4.5	7.2	8.8	5.7	5.7	4.5	11.8	9.8	6.6	6.3	6.4	7.7	12	7.1	7.5	2.8	4.1	3.8	2.8	5.9	6.7	4.5	3.9	12	
3		2.8	4.9	3.7	4	1.6	2.4	2.3	4.3	2.5	3.5	4.4	8.2	7.4	9.8	4.6	5.5	5.1	3.9	3.2	2	1.6	3	3.2	1.6	9.8	
4		2.3	2.9	3.1	2.2	4.1	3.9	6.7	3	4.7	3.6	7.3	8.6	9.1	8.6	8.9	9	6.7	5.4	4.6	7.3	7.3	7.1	5.6	5.7	9.1	
5		5.9	6.6	7.3	6.2	6.5	6.5	6.8	5.7	2.1	5.6	6.6	6.4	8.7	17.4	20.9	19.3	14.7	13.6	16.5	14.7	13.1	13.9	11.2	10.5	20.9	
6		7.5	5.5	6.7	7.6	6.4	5.4	7.2	7.1	6.2	9.8	12.4	10.1	8.4	6.7	7.5	10.3	8.8	5.9	2.1	4.6	1.6	1.6	2.4	2.3	12.4	
7		3.5	1.7	2.2	2.2	2.4	2.8	3.6	2.3	2.7	6.1	6.5	8.4	8.3	10.5	9.4	10.7	7.1	4.1	3.5	5.7	3.7	2.3	4.8	4.6	10.7	
8		4.2	2.6	3.3	3.3	3.8	5.6	4.6	8.9	6.8	7.3	6.5	8.1	12	10.4	12	8.9	8.4	3.3	2.6	4.7	6.3	13.7	15.7	14.4	15.7	
9		9.8	11.4	9	7.9	11	5.7	6.2	6.8	3.5	7.6	9	11.4	10.7	11.7	9.3	7.6	4.5	1.6	2.5	3.5	10.1	3.6	3.4	11.7	11.7	
10		5.2	3.5	3.7	3.7	3.2	4	3.1	4.6	4.3	5.3	6.5	5.4	7	6.7	7.2	5	6	5	3.2	2.3	1.9	2.5	3	4.3	7.2	
11		3.1	4.1	5.6	3.3	2.8	2.6	4.5	3.1	3.8	4.4	7.7	8.9	9.3	9	9	7.6	5.5	2.8	5.4	8.8	9.5	5.9	4	3.1	9.5	
12		3.1	2.2	2.9	4.1	4	2.3	2.2	9.4	4.8	6.6	6.2	6.5	8.2	9.5	10.9	9	9	5.2	3.4	2.9	2.2	1.8	2.1	1.3	10.9	
13		1.2	3.6	2.6	1.9	2.5	2.6	2.4	1.9	3.7	5	8.8	11.7	11.3	15.4	21.7	20.1	14.2	12.9	10.7	18.5	17.1	12.4	10.1	7.2	21.7	
14		6.9	7	7.5	8.3	7.4	9.6	8.6	8.4	7.5	9.4	11.8	11.7	13.4	15.6	11.4	11.4	11.6	6.9	6.2	6.2	5.4	5	6.9	6.8	15.6	
15		8	8.1	8.1	9.5	9.3	10.6	8.2	7.5	9.6	8.6	9.9	12.9	13.1	12.4	13.1	10.6	8.4	9.7	9.7	9.8	7.7	7.7	7.3	7.3	13.1	
16		7.4	6.9	8.6	9.3	7.4	8	5.2	4.2	3.6	4.9	8.9	6.3	7.6	10.2	11.2	10	8.1	4.2	3.8	3	3.6	3.5	2.3	2.3	11.2	
17		4	3.1	2.3	2.1	2.3	2.6	3	2.3	3.1	6.6	6.5	6.3	7.8	11.3	12.5	11.5	11.5	5.5	4.2	2.4	2.2	3.3	2.8	2.4	12.5	
18		3.2	2	2.7	2.8	3.2	3.2	2.7	2.8	2.8	3.5	9.1	12.7	9	10.1	12.9	12.2	15.4	13.1	14.3	12.2	12.6	12.3	11.3	11	15.4	
19		10.5	8.5	6.4	5.9	7.5	7.5	6	6.3	6.6	8.5	7.3	12	15	15.9	15.6	15.5	12.8	10.6	9.9	8.7	9.1	12.2	12.5	12.5	15.9	
20		11	12.3	11.3	10.8	10.3	9.5	9	8.2	11.6	15.6	13.6	16.6	20.5	15.7	15.8	16	13	10.6	6.6	4.3	5.6	4.4	6	6.9	20.5	
21		5	6.6	3.8	6.2	5.8	6.2	8.6	7.6	10	14.4	16.7	12.4	12	12.7	9.9	10.6	9.3	9	7.4	6.8	9.7	9.8	12.2	10.9	16.7	
22		7.8	11.5	12.3	10.9	8.3	9.8	11	11	9.6	12.5	12.4	9	12.1	11.1	20.4	<b>21.9</b>	14.5	20.7	18.2	11.6	16.8	13.2	12.8	20	<b>21.9</b>	
23		13.8	14.4	16.9	9.4	7.3	12.8	14.6	16.9	13.5	16.5	9.7	8.9	8.5	6.8	7.4	6.1	7.3	5.8	2.7	4.4	12.6	16.1	13.1	13.9	16.9	
24		9.9	8.4	6	7.8	5.3	5.7	5.4	6.3	10.2	9.8	11.9	11.6	12.4	12.1	9.4	7.6	6.5	5.1	2.1	2.8	3.9	8.4	13.3	14.8	14.8	
25		13.4	18	16.4	16.6	18.9	15.9	20.1	16.4	19.5	19.5	19.8	20	18.1	18	16.7	17.8	15.9	15.6	18	15.3	16.9	14.1	13.6	9.6	20.1	
26		8.5	8.3	6.8	6.3	5.2	6.6	7.5	5.6	7.4	9.7	9.2	8.7	9.2	7.9	6.6	6.3	6.3	4.5	8.7	6.9	7.6	7.9	8.1	11	11	
27		12	10.6	6.3	2.9	2.5	2.8	2.2	2.4	4.1	6.6	10.9	10.7	13.7	10.8	11.7	11	11.9	9.5	6.3	10.3	7.2	3.5	3.6	1.6	13.7	
28		2.5	2.1	3.1	2.1	2.5	2	1.8	2.7	2.4	5.2	5.3	9	6.4	7.1	6.4	7.1	7.9	5.7	2.1	2.1	1.9	7.8	6.8	3.2	9	
29		4.2	4.1	3.9	2.5	2.3	3.9	3.1	2.6	5.6	8.9	10.3	9.6	9.5	8.7	7.9	12	13.3	10.3	6.6	6.9	12.6	15.3	13.4	14.3	15.3	
PEAK		13.8	18.0	16.9	16.6	18.9	15.9	20.1	16.9	19.5	19.5	19.8	20.0	20.5	18.0	21.7	21.9	15.9	20.7	18.2	18.5	17.1	16.1	15.7	20.0		

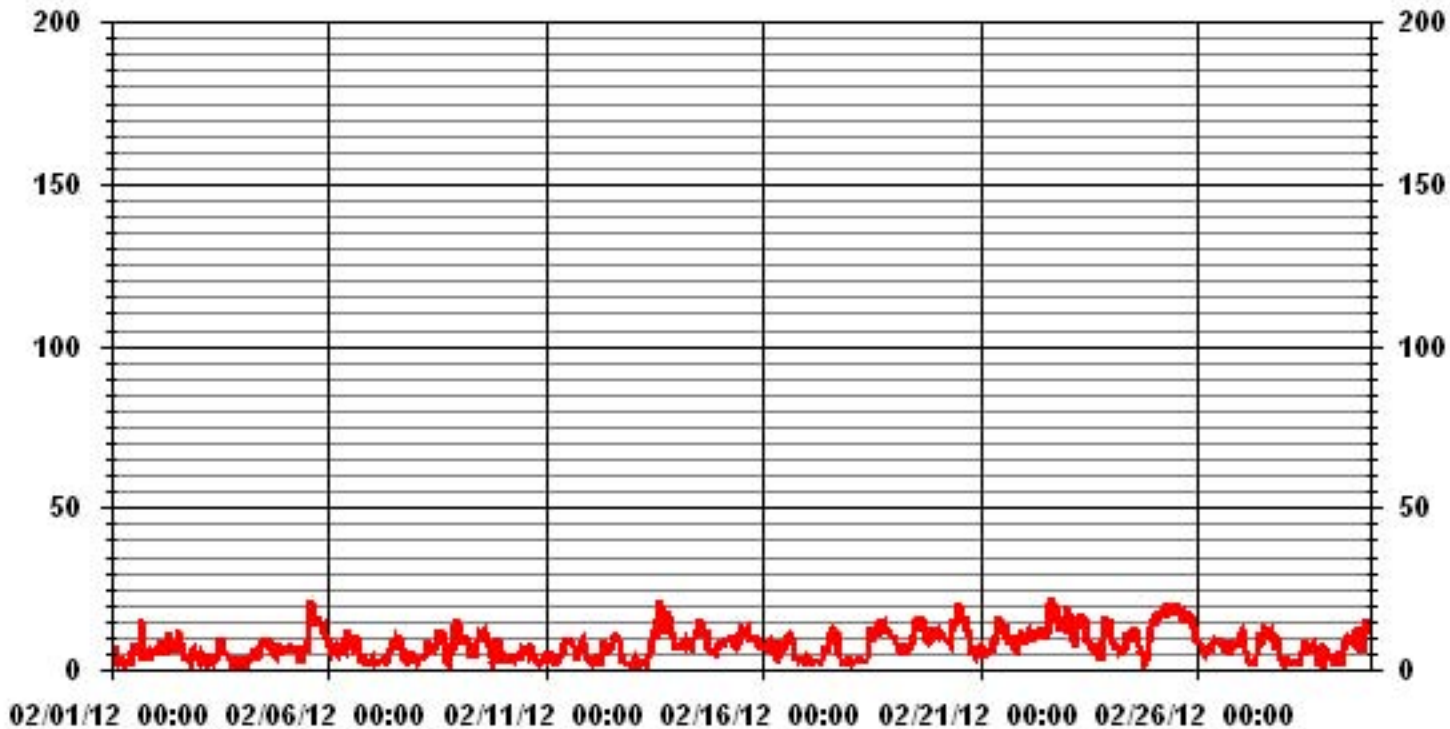
#### STATUS FLAG CODES

S - OUT OF SERVICE	IZS - IZS - DAILY ZERO/SPAN CHECK
N - INVALID DATA	M - MISSING DATA
D - INSTRUMENT DRIFT	P - POWER FAILURE
C - CALIBRATION	NA - NOT APPLICABLE

#### MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS READING	21.9	KPH	@ HOUR(S)	15
			ON DAY(S)	22

### 01 Hour Averages



LICA  
WSP / WD Joint Frequency Distribution (Percent)

February 2012

Distribution By % Of Samples

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

Wind Parameter : WD  
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	2.15	4.02	4.16	5.17	4.74	3.01	5.89	2.87	4.02	4.02	9.19	9.62	3.30	2.01	1.86	1.14	67.24
< 12.0	1.00	2.01	2.01	.43	3.16	.43	1.14	.14	.00	.14	5.89	3.87	1.14	1.43	2.01	2.01	26.86
< 20.0	.00	.00	.14	.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.28	.14	1.14
< 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	3.16	6.03	6.32	6.03	7.90	3.44	7.04	3.01	4.02	4.16	15.08	13.50	4.45	3.59	4.16	3.30	

Calm : 4.74 %

Total # Operational Hours : 696

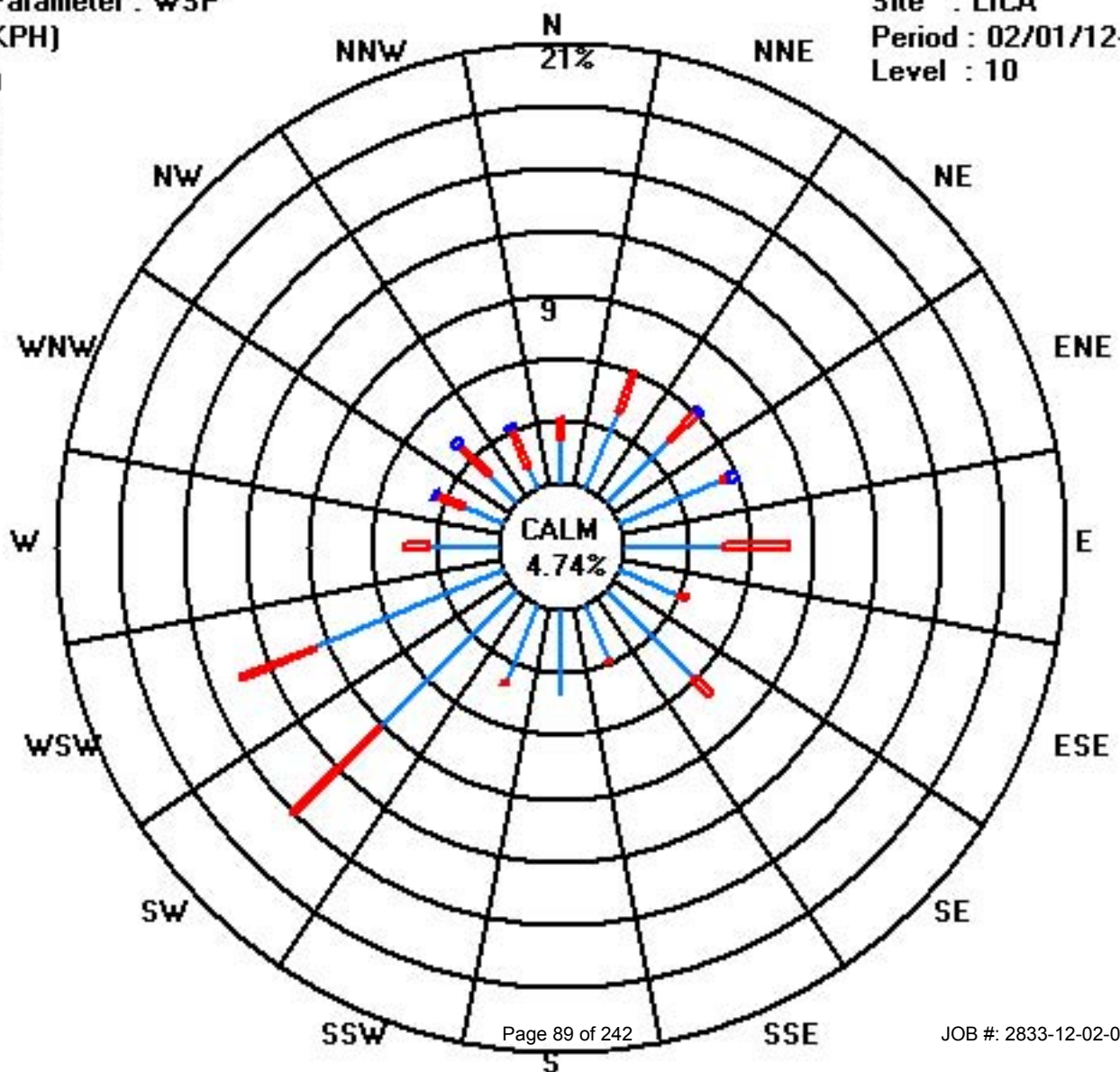
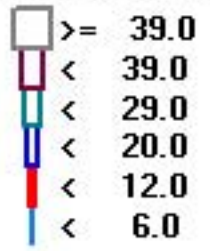
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	15	28	29	36	33	21	41	20	28	28	64	67	23	14	13	8	468
< 12.0	7	14	14	3	22	3	8	1		1	41	27	8	10	14	14	187
< 20.0			1	3										1	2	1	8
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	22	42	44	42	55	24	49	21	28	29	105	94	31	25	29	23	

Calm : 4.74 %

Total # Operational Hours : 696

Class Limits (KPH)



# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## VECTOR WIND DIRECTION (WD) 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	24-HOUR	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	AVG.	QUADRANT		
DAY																												
1	235	231	103	188	283	119	94	101	75	125	298	286	246	277	251	248	30	127	293	270	250	229	239	238	251	WSW	24	
2	253	248	233	243	233	241	184	245	244	249	251	247	244	228	212	242	268	130	225	213	146	226	191	210	235	SW	24	
3	182	222	198	196	111	158	177	225	297	263	284	248	227	241	198	190	145	123	141	200	72	96	91	212	SSW	24		
4	70	113	104	91	119	99	136	69	99	17	128	135	204	225	224	183	180	195	240	219	238	249	240	233	200	SSW	24	
5	235	238	252	252	252	262	251	231	33	253	256	230	239	313	345	341	337	350	347	355	352	347	6	336	319	NW	24	
6	312	327	356	355	12	310	345	358	32	12	35	27	126	151	78	91	94	136	79	122	146	79	292	24	14	NNE	24	
7	39	54	26	60	50	56	267	125	28	111	141	139	126	129	143	189	187	207	163	144	163	151	198	183	146	SE	24	
8	191	123	131	175	185	204	210	214	239	299	288	256	233	224	228	247	247	181	112	359	359	29	28	28	246	WSW	24	
9	27	15	22	33	42	41	46	33	15	23	352	16	56	61	47	31	28	247	113	278	77	290	305	358	31	NNE	24	
10	253	174	308	31	323	236	81	229	245	9	56	107	126	62	328	304	107	81	117	73	6	339	24	359	67	ENE	24	
11	80	19	48	86	299	23	24	0	325	46	124	132	131	127	132	138	13	69	149	127	127	177	124	119	116	ESE	24	
12	111	64	153	180	159	139	137	155	271	235	272	251	257	259	242	235	226	202	134	141	165	135	263	239	234	SW	24	
13	185	248	259	144	202	229	39	83	246	257	229	229	236	259	308	305	298	304	299	297	303	301	288	250	284	WNW	24	
14	241	235	232	235	229	230	228	228	231	238	242	237	243	233	241	249	258	270	223	246	250	239	232	226	239	WSW	24	
15	231	227	231	230	234	232	238	228	232	238	226	231	241	227	227	236	236	236	236	254	258	225	227	233	234	SW	24	
16	246	251	258	259	262	251	243	251	228	257	309	97	248	239	233	230	233	226	240	204	227	175	212	255	246	WSW	24	
17	163	182	213	270	176	245	149	162	286	262	237	238	214	214	226	224	228	233	239	196	157	138	105	73	221	SW	24	
18	72	89	75	94	77	73	63	71	62	55	79	112	96	79	92	99	92	95	109	114	91	88	95	93	94	E	24	
19	97	102	99	109	127	135	139	155	159	177	184	203	225	220	218	223	224	226	224	220	237	252	248	259	206	SSW	24	
20	262	260	255	258	266	267	275	270	288	304	298	303	305	297	302	308	313	323	347	285	273	262	265	277	288	WNW	24	
21	265	203	160	149	148	139	127	135	134	134	134	139	152	209	232	236	226	237	236	236	242	243	244	244	191	S	24	
22	230	238	237	232	225	230	236	235	222	244	255	260	229	238	249	325	308	318	305	298	320	316	342	355	275	W	24	
23	340	330	342	342	332	354	338	334	348	360	2	34	81	51	61	84	131	137	117	347	317	6	331	323	352	N	24	
24	317	322	275	300	289	318	327	321	353	22	20	31	60	60	59	53	7	132	88	69	59	90	89	88	28	NNE	24	
25	85	87	83	83	83	82	82	80	79	70	58	59	59	55	34	31	38	40	42	46	46	49	51	47	61	ENE	24	
26	52	50	56	64	74	50	61	70	65	42	19	350	15	63	93	296	238	253	221	229	223	228	223	226	42	NE	24	
27	218	220	218	167	197	173	117	104	208	200	189	170	188	159	202	172	194	178	194	219	214	144	140	134	191	S	24	
28	186	211	267	46	44	83	16	123	43	97	101	124	82	62	37	52	40	18	38	121	93	125	120	78	72	ENE	24	
29	68	47	96	297	76	71	31	33	39	31	23	43	44	55	57	96	97	99	60	15	35	28	23	27	48	NE	24	
HOURLY AVG	340	330	356	355	332	354	345	358	353	360	352	350	305	313	345	341	337	350	347	359	359	347	342	359				

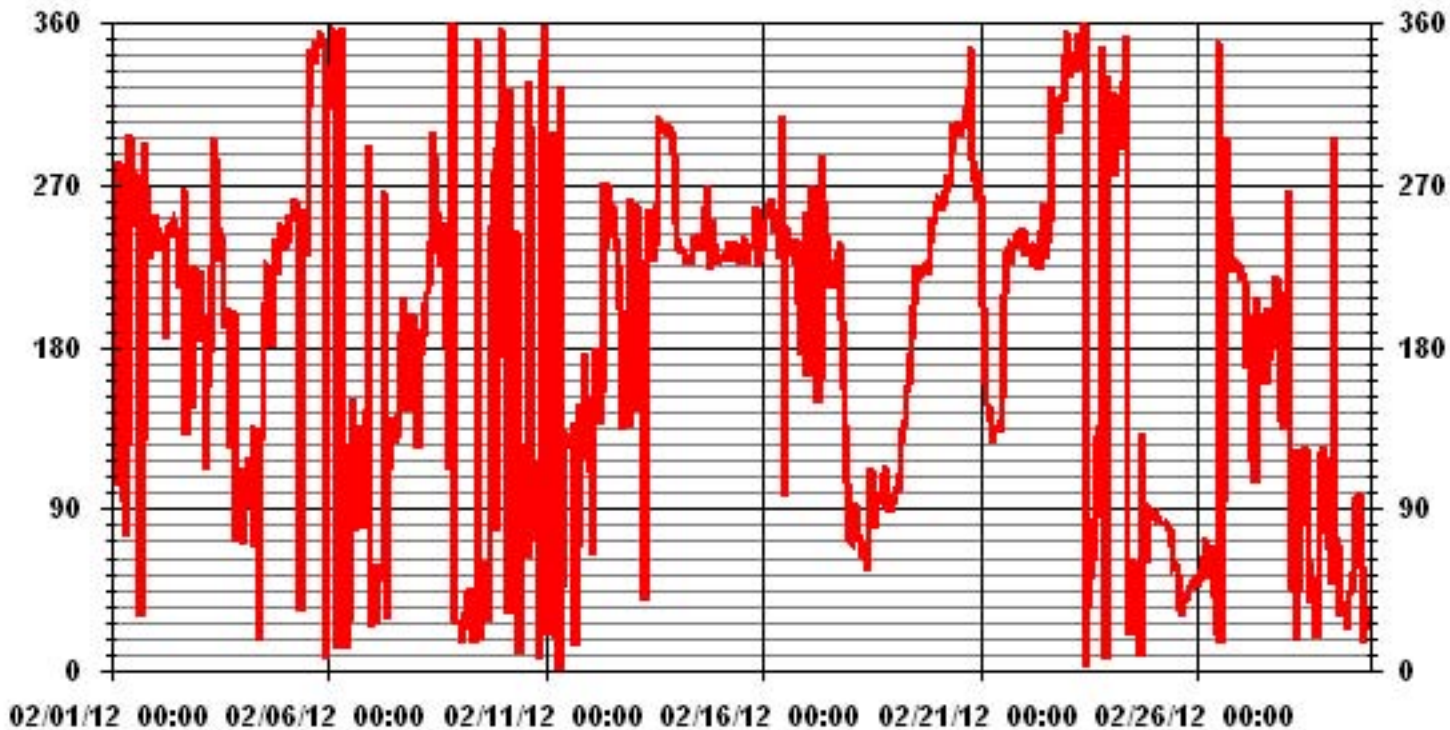
### STATUS FLAG CODES

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: December 16, 2010  
DECLINATION: 19 DEGREES FROM MAGNETIC NORTH

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	696 HRS
STANDARD DEVIATION	95.33	AMD OPERATION UPTIME	100.0 %
		MONTHLY AVERAGE	268 DEG

### 01 Hour Averages



— LICA WDR DEG



# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

FEBRUARY 2012

## STANDARD DEVIATION WIND DIRECTION (STDWDIR) 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	22	48	51	41	46	47	65	44	46	49	24	23	28	37	32	32	64	32	36	41	41	19	15	
2	11	18	12	9	16	9	44	17	11	29	29	37	22	24	26	26	47	67	32	34	51	34	40	56	
3	68	42	61	29	69	47	56	43	64	64	29	19	32	20	48	36	36	54	25	56	73	54	14	48	
4	21	30	36	43	45	47	37	37	56	49	34	21	34	27	28	33	32	38	20	38	14	9	10	13	
5	11	13	11	13	14	76	10	41	77	28	18	24	21	33	16	16	14	15	17	17	22	16	16	15	
6	9	15	15	21	20	13	14	17	45	18	20	66	57	58	48	40	37	31	49	49	47	64	73	75	
7	61	70	65	50	65	46	44	58	54	52	29	24	26	20	26	38	41	39	32	45	36	65	48	42	
8	41	54	38	42	39	46	26	19	25	25	30	29	23	22	26	20	21	48	49	33	26	24	20	22	
9	20	19	20	20	22	19	17	21	52	37	21	18	22	24	23	27	26	35	60	60	37	65	67	60	
10	62	55	54	47	64	54	64	54	45	54	38	33	20	39	51	46	41	32	32	68	71	73	73	54	
11	57	66	49	60	68	73	65	81	71	43	34	28	18	19	16	57	20	47	40	23	30	48	41	47	
12	57	64	45	53	50	75	74	41	27	44	26	24	19	21	23	22	17	23	29	31	54	68	50	53	
13	53	49	51	60	39	58	50	46	42	25	18	18	20	21	19	15	14	12	15	16	13	17	20	16	
14	13	14	13	13	13	13	13	14	14	18	18	23	22	23	20	18	16	22	32	16	9	8	14	15	
15	15	15	17	14	15	16	14	19	18	19	20	22	20	20	18	17	17	19	17	15	17	34	15	12	
16	9	10	14	15	18	13	17	15	22	43	31	53	47	27	22	34	18	14	43	49	46	58	47	48	
17	35	47	37	64	56	36	59	58	66	40	31	25	36	30	18	19	17	12	29	66	28	31	31	26	
18	49	43	55	30	23	40	60	52	18	26	19	21	21	19	24	22	18	20	24	21	18	18	21	19	
19	20	21	20	18	16	14	15	31	32	39	39	37	21	21	27	22	25	19	19	19	18	17	18	18	
20	19	17	14	16	17	17	18	19	17	15	17	16	16	21	16	15	15	15	26	27	19	18	27	26	
21	23	32	41	36	24	12	27	13	15	13	17	19	31	29	24	21	20	16	17	13	12	13	15	14	
22	16	17	18	17	15	17	19	18	15	20	18	23	18	20	25	16	19	15	13	11	13	13	16	17	
23	18	15	16	21	19	18	16	15	17	19	22	25	24	21	23	29	27	17	51	55	17	26	18	15	
24	14	16	15	17	15	17	17	13	17	24	21	20	19	25	29	33	39	13	34	45	23	21	19	18	
25	19	19	18	18	19	19	17	18	19	19	17	18	17	19	21	20	18	18	17	16	17	16	15	16	
26	15	15	19	20	22	22	21	24	22	26	31	27	36	57	77	35	36	27	18	19	18	19	17	19	
27	16	15	25	35	32	58	50	47	43	39	37	33	38	33	37	40	34	36	29	20	15	25	33	54	
28	64	57	37	42	56	62	54	43	77	26	33	22	34	30	21	21	15	23	33	52	47	46	17	24	
29	15	22	40	63	33	24	33	44	19	21	19	20	22	20	20	23	21	20	21	22	19	21	20	19	

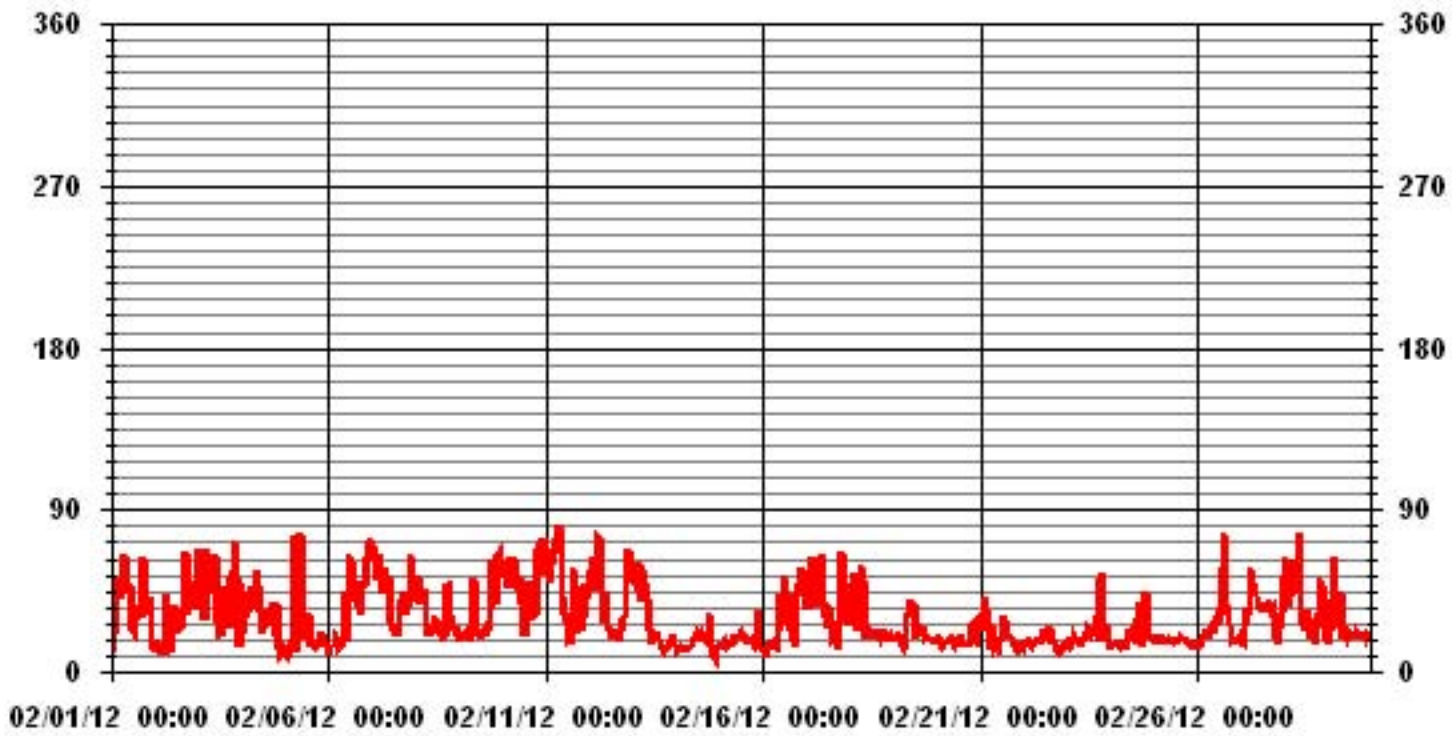
**STATUS FLAG CODES**

S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: December 16, 2010

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 696 HRS

# 01 Hour Averages

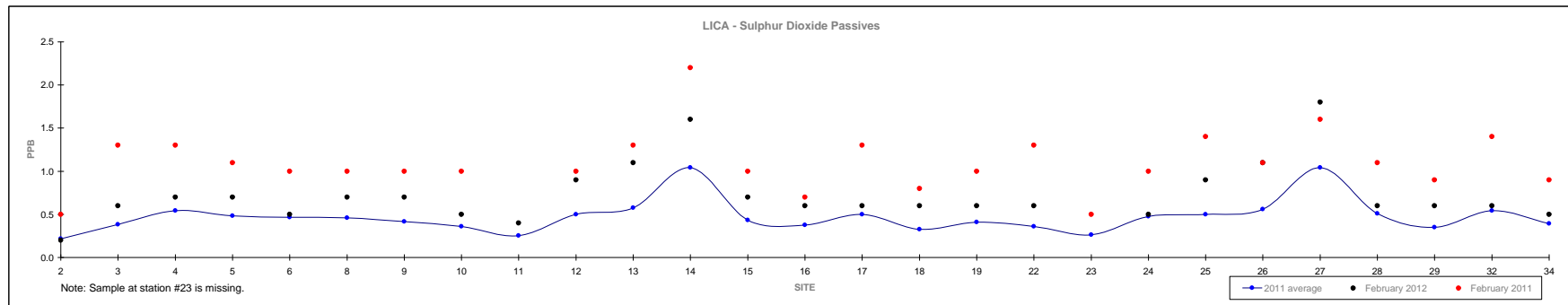


— LICA STWDIR DEG

# Non-Continuous Monitoring

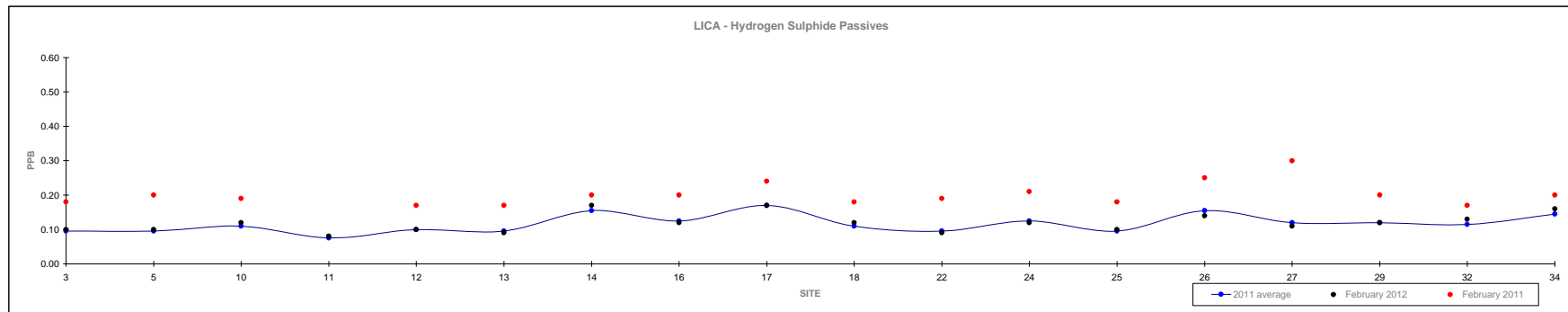
### Passive Summary Results for February 2012 Lakeland Industry & Community Association

	Sulphur Dioxide ppb																												February 2012	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	34	Reading		
Mean	0.2	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.5	0.6	1.0	0.4	0.4	0.5	0.3	0.4	0.4	0.3	0.5	0.5	0.6	1.0	0.5	0.4	0.5	0.4	0.73	-	
Minimum	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.2	0.1	0.2	#2	
Maximum	0.6	1.3	1.3	1.1	1.0	1.0	1.0	1.0	0.6	1.5	1.9	2.2	1.1	0.9	1.3	0.8	1.0	1.3	0.5	1.4	1.4	1.1	1.7	1.1	0.9	1.4	0.9	1.8	#27	



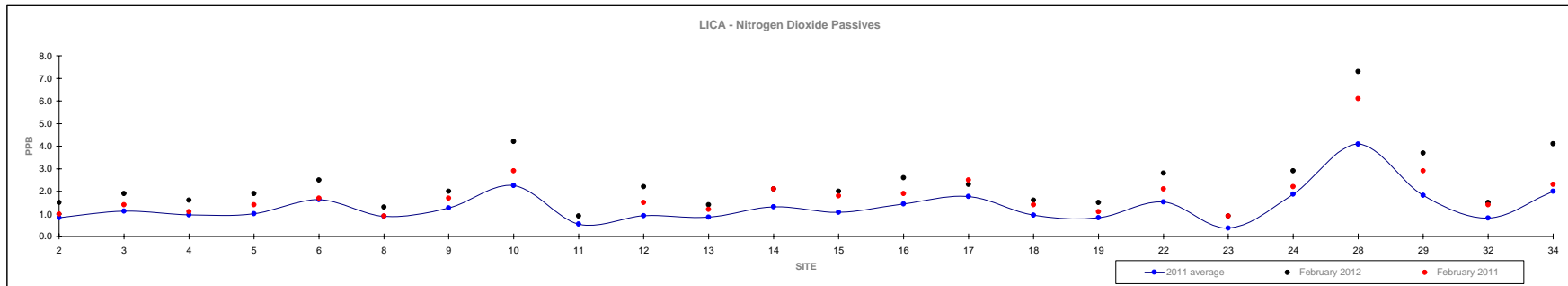
### Passive Summary Results for February 2012 Lakeland Industry & Community Association

	Hydrogen Sulphide ppb																February 2012			
	3	5	10	11	12	13	14	16	17	18	22	24	25	26	27	29	32	34	Reading	Site
Mean	0.15	0.20	0.14	0.09	0.11	0.15	0.17	0.15	0.29	0.12	0.14	0.16	0.09	0.17	0.48	0.15	0.15	0.18	0.12	-
Minimum	0.03	0.10	0.10	0.04	0.06	0.04	0.12	0.06	0.08	0.05	0.08	0.09	0.04	0.12	0.13	0.09	0.09	0.09	0.08	#11
Maximum	0.29	0.38	0.21	0.13	0.17	0.80	0.21	0.21	0.67	0.18	0.23	0.21	0.18	0.25	1.12	0.25	0.22	0.29	0.17	#17



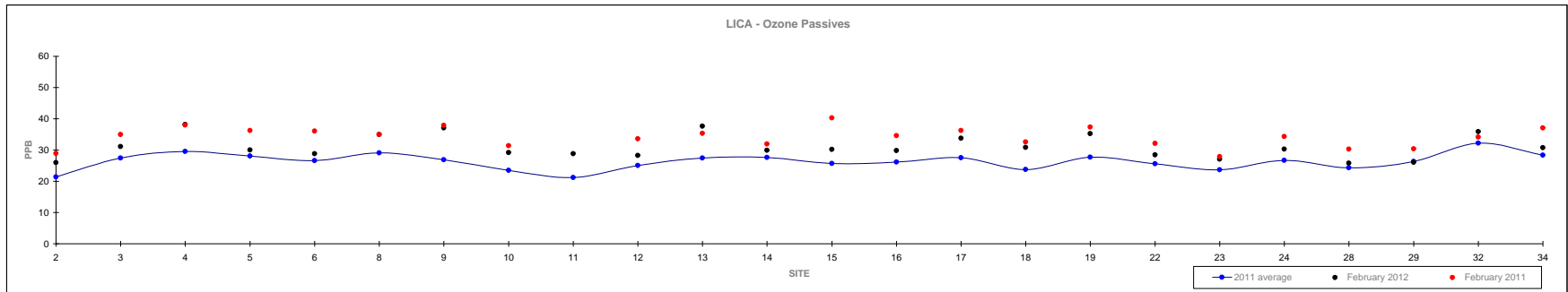
### Passive Summary Results for February 2012 Lakeland Industry & Community Association

	Nitrogen Dioxide ppb																								February 2012	
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	28	29	32	34	Reading	Site
Mean	0.8	1.1	1.0	1.0	1.6	0.9	1.3	2.3	0.5	0.9	0.9	1.3	1.1	1.4	1.8	0.9	0.8	1.5	0.4	1.9	4.1	1.8	0.8	2.0	2.4	-
Minimum	0.1	0.4	0.1	0.2	0.6	0.2	0.4	0.7	0.1	0.2	0.1	0.1	0.2	0.4	0.9	0.2	0.2	0.3	0.1	0.8	1.6	0.3	0.2	0.5	0.9	#11, #23
Maximum	2.5	2.6	2.2	2.2	3.5	2.4	3.0	5.6	1.2	2.3	2.1	3.0	2.4	3.0	3.5	2.2	2.3	3.7	1.0	3.7	11.3	4.7	2.3	6.9	7.3	#28



### Passive Summary Results for February 2012 Lakeland Industry & Community Association

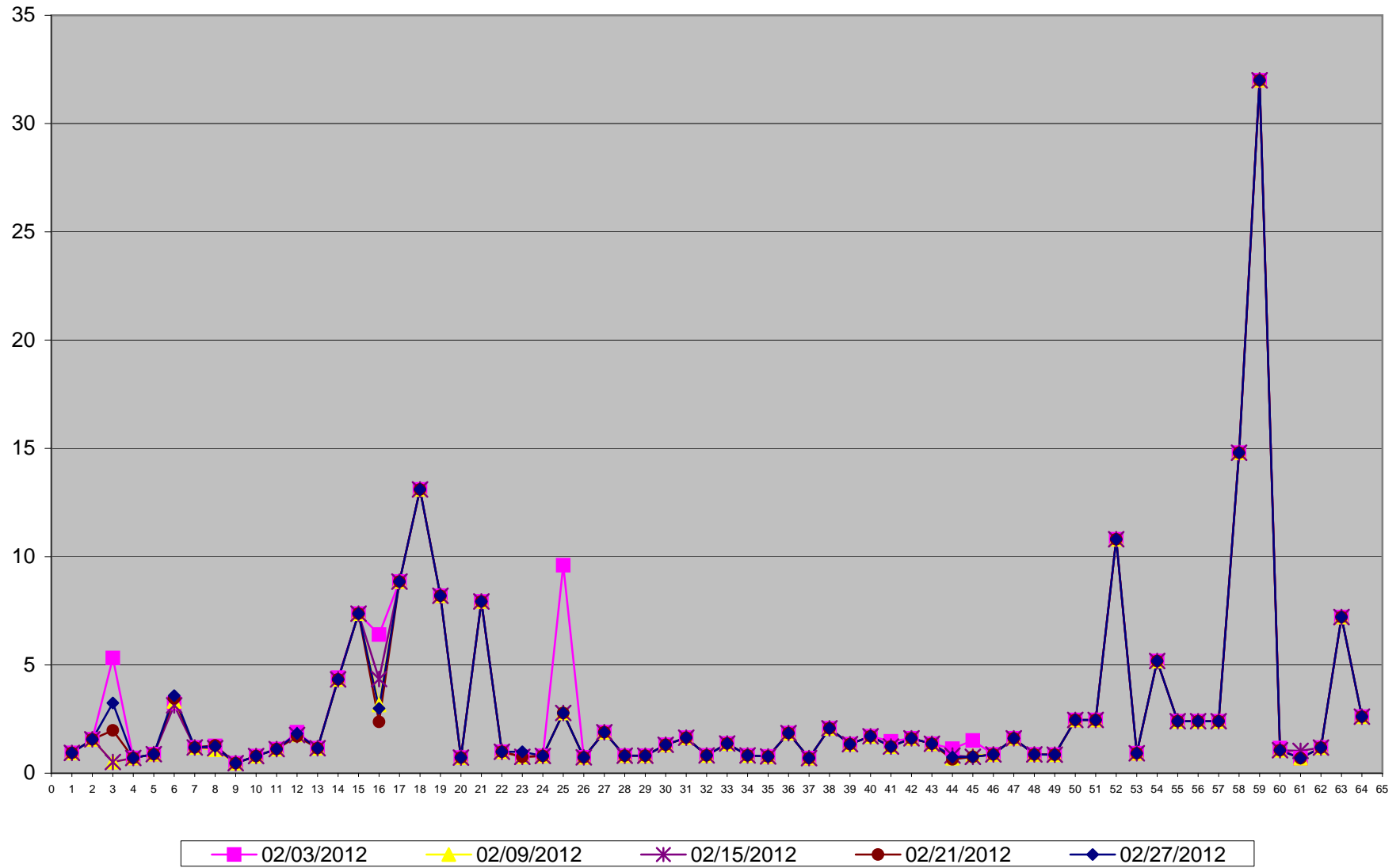
	Ozone ppb																												February 2012	
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	28	29	32	34	Reading	Site				
Mean	21.4	27.5	29.6	28.0	26.6	29.1	26.9	23.5	21.2	25.1	27.5	27.6	25.7	26.1	27.5	23.8	27.7	25.6	23.7	26.7	24.3	26.3	32.2	28.3	31.1	-				
Minimum	11.9	17.6	20.0	18.5	16.8	19.1	18.0	13.9	11.5	14.0	18.4	19.1	16.1	16.6	17.8	13.3	18.6	15.1	12.8	17.1	15.8	17.3	25.0	17.6	25.8	#28				
Maximum	33.2	39.2	39.6	44.1	40.8	42.4	38.2	33.9	30.9	34.9	38.1	39.1	40.3	37.0	40.3	35.4	40.1	37.0	32.5	35.9	34.8	36.4	42.0	42.5	38.2	#4				





# Volatile Organics

Volatile Organics in ug/m3 Site: LICA - Cold Lake South



1	2,2,4-Trimethylpentane	33	1,1,2,2-Tetrachloroethane
2	Carbon Disulfide	34	cis-1,3-Dichloropropene
3	Propene	35	trans-1,3-Dichloropropene
4	Vinyl Acetate	36	1,2-Dichloropropane
5	Vinyl Bromide	37	Bromomethane
6	Dichlorodifluoromethane (FREON 12)	38	Bromoform
7	1,2-Dichlorotetrafluoroethane	39	Bromodichloromethane
8	Chloromethane	40	Dibromochloromethane
9	Vinyl Chloride	41	Heptane
10	Chloroethane	42	Trichloroethylene
11	1,3-Butadiene	43	Tetrachloroethylene
12	Trichlorofluoromethane (FREON 11)	44	Benzene
13	Trichlorotrifluoroethane	45	Toluene
14	Ethanol	46	Ethylbenzene
15	2-Propanol	47	p+m-Xylene
16	2-Propanone	48	o-Xylene
17	Methyl Ethyl Ketone (2-Butanone)	49	Styrene
18	Methyl Isobutyl Ketone	50	1,3,5-Trimethylbenzene
19	Methyl Butyl Ketone (2-Hexanone)	51	1,2,4-Trimethylbenzene
20	Methyl t-butyl ether (MTBE)	52	4-ethyltoluene
21	Ethyl Acetate	53	Chlorobenzene
22	1,1-Dichloroethylene	54	Benzyl chloride
23	cis-1,2-Dichloroethylene	55	1,3-Dichlorobenzene
24	trans-1,2-Dichloroethylene	56	1,4-Dichlorobenzene
25	Methylene Chloride (Dichloromethane)	57	1,2-Dichlorobenzene
26	Chloroform	58	1,2,4-Trichlorobenzene
27	Carbon Tetrachloride	59	Hexachlorobutadiene
28	1,1-Dichloroethane	60	Hexane
29	1,2-Dichloroethane	61	Cyclohexane
30	Ethylene Dibromide	62	Tetrahydrofuran
31	1,1,1-Trichloroethane	63	1,4-Dioxane
32	1,1,2-Trichloroethane	64	Xylene (Total)

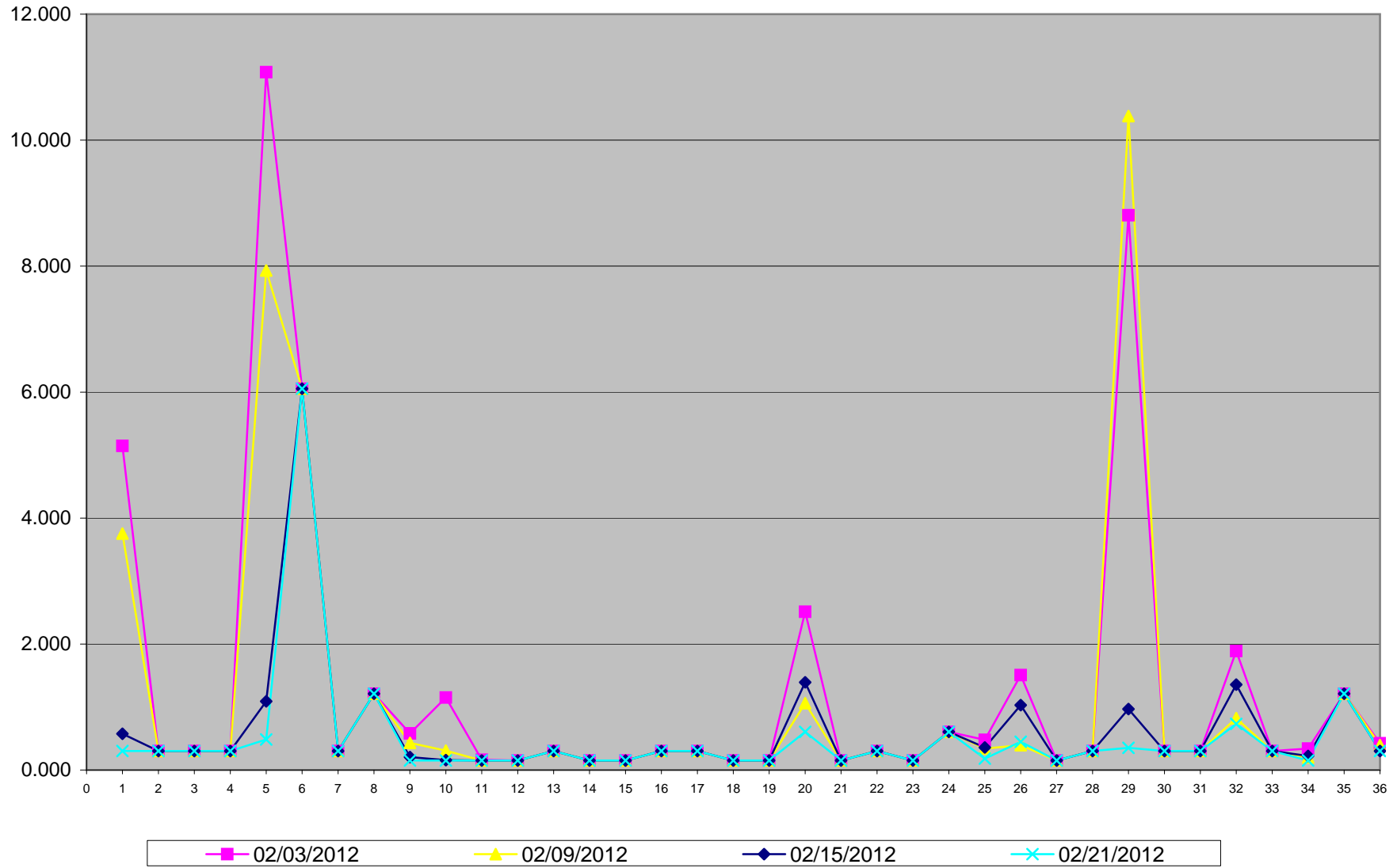
# Polycyclic Aromatic Hydrocarbons

**Polycyclic Aromatic Hydrocarbons (PAHs) Results for February 2012**  
**LICA- Cold Lake South Site**  
**Unit: ng/m3**

PAHs	02/03/2012	02/09/2012	02/15/2012	02/21/2012	02/27/2012
Sample Volume (unit: m3)	330.36	330.35	330.37	330.38	330.36
1 1-Methylnaphthalene	5.146	3.753	0.575	0.303	2.058
2 1-Methylphenanthrene	0.303	0.303	0.303	0.303	0.303
3 2-Chloronaphthalene	0.303	0.303	0.303	0.303	0.303
4 2-Methylnaphthalene	0.303	0.303	0.303	0.303	0.303
5 2-Methylphenanthrene	11.078	7.931	1.090	0.484	4.692
6 3-Methylcholanthrene	6.054	6.054	6.054	6.054	6.054
7 7,12-Dimethylbenzo(a)anthracene	0.303	0.303	0.303	0.303	0.303
8 9,10-Dimethylanthracene	1.211	1.211	1.211	1.211	1.211
9 Acenaphthene	0.581	0.430	0.206	0.151	0.339
10 Acenaphthylene	1.150	0.309	0.157	0.151	0.188
11 Anthracene	0.163	0.151	0.151	0.151	0.151
12 Benzo(a)anthracene	0.151	0.151	0.151	0.151	0.151
13 Benzo(a)fluorene	0.303	0.303	0.303	0.303	0.303
14 Benzo(a)pyrene	0.151	0.151	0.151	0.151	0.151
15 Benzo(b)fluoranthene	0.151	0.151	0.151	0.151	0.151
16 Benzo(b)fluorene	0.303	0.303	0.303	0.303	0.303
17 Benzo(e)pyrene	0.303	0.303	0.303	0.303	0.303
18 Benzo(g,h,i)perylene	0.151	0.151	0.151	0.151	0.151
19 Benzo(k)fluoranthene	0.151	0.151	0.151	0.151	0.151
20 Biphenyl	2.512	1.059	1.392	0.605	1.059
21 Chrysene	0.151	0.151	0.151	0.151	0.151
22 Coronene	0.303	0.303	0.303	0.303	0.303
23 Dibenz(a,h)anthracene	0.151	0.151	0.151	0.151	0.151
24 Dibenzo(a,e)pyrene	0.605	0.605	0.605	0.605	0.605
25 Fluoranthene	0.478	0.339	0.357	0.182	0.200
26 Fluorene	1.507	0.393	1.029	0.448	0.363
27 Indeno(1,2,3-cd)pyrene	0.151	0.151	0.151	0.151	0.151
28 m-Terphenyl	0.303	0.303	0.303	0.303	0.303
29 Naphthalene	8.808	10.382	0.969	0.351	4.268
30 o-Terphenyl	0.303	0.303	0.303	0.303	0.303
31 Perylene	0.303	0.303	0.303	0.303	0.303
32 Phenanthrene	1.889	0.823	1.356	0.733	0.642
33 p-Terphenyl	0.303	0.303	0.303	0.303	0.303
34 Pyrene	0.339	0.200	0.224	0.151	0.151
35 Quinoline	1.211	1.211	1.211	1.211	1.211
36 Tetralin	0.424	0.393	0.303	0.303	0.303

Note: - values were calculated by the formula of [reading (ug) x 1000 / sample volume (m3)].  
- Where the analytical results are less than the minimum detection limit (MDL), the MDL has been used in calculations.

PAHs in ng/m3 Site: LICA - Cold Lake South



1	1-Methylnaphthalene
2	1-Methylphenanthrene
3	2-Chloronaphthalene
4	2-Methlyanthracene
5	2-Methylnaphthalene
6	3-Methylcholanthrene
7	7,12-Dimethylbenzo(a)anthracene
8	9,10-Dimethylanthracene
9	Acenaphthene
10	Acenaphthylene
11	Anthracene
12	Benzo(a)anthracene
13	Benzo(a)fluorene
14	Benzo(a)pyrene
15	Benzo(b)fluoranthene
16	Benzo(b)fluorene
17	Benzo(e)pyrene
18	Benzo(g,h,l)perylene
19	Benzo(k)fluoranthene
20	Biphenyl
21	Chrysene
22	Coronene
23	Dibenz(a,h)anthracene
24	Dibenzo(a,e)pyrene
25	Fluoranthene
26	Fluorene
27	Indeno(1,2,3-cd)pyrene
28	m-Terphenyl
29	Naphthalene
30	o-Terphenyl
31	Perylene
32	Phenanthrene
33	p-Terphenyl
34	Pyrene
35	Quinoline
36	Tetralin

# Calibration Reports



# Sulphur Dioxide

### SO2 Calibration Report

#### Station Information

Calibration Date	February 24, 2012	Previous Calibration	January 5, 2012
Company	Lakeland Community and Industry Association		
Plant / Location	LICA 1 - Cold Lake South		
Start Time (MST)	15:29	End Time (MST)	18:58
Reason:	Monthly Calibration		
Barometric Pressure	0.936 atm	Station Temperature	23 Deg C
Cal Gas	48.3 ppm	Gas Cyl. #	LL103831
DAS Output Voltage	0 - 10 Volts	Cal Gas Expiry date	February 28, 2013
		Chart Rec. Output	NA Volts

#### Equipment Information

Analyzer Make / Model:	Thermo 43i	S/N :	806528242	Method:	Fluorescent
Converter Make / Model:	NA	S/N :	NA		
Calibrator Make / Model:	API 700	S/N :	831	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	3485		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	API 700	S/N :	831		

#### Analyzer Settings

Before Calibration			After Calibration		
Concentration Range	0 - 1000		ppb		
Sample Flow / Box Temp	448 ccm	30.4 Deg C	450 ccm	31.4	Deg C
HVPS / Lamp Setting	-632	746	-632	745	
PMT / RxCell Temp	OK Deg C	45.1 Deg C	OK Deg C	45.2	Deg C
Converter / IZS Temp	NA Deg C	45 Deg C	NA Deg C	45.0	Deg C
Offset / Slope	5.9	1.009	5.9	1.018	

#### Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4995	0	0	0	N/A
	No Zero Adj			
4953	41.4	400	396	1.0110
4953	41.4	400	400	1.0000
4976	23.3	225	227	0.9917
4987	12.9	125	127	0.9812
4995	0	0	0	N/A
Sum of Least Squares				0.9975
New Correction Factor				1.0000

#### Before Calibration

#### After Calibration

Auto Zero	0.1	0.2
Auto Span	365.0	369.0
Sample Lines Connected		YES

#### Percent Change

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	1.0110
Percent Change:	-1.1%

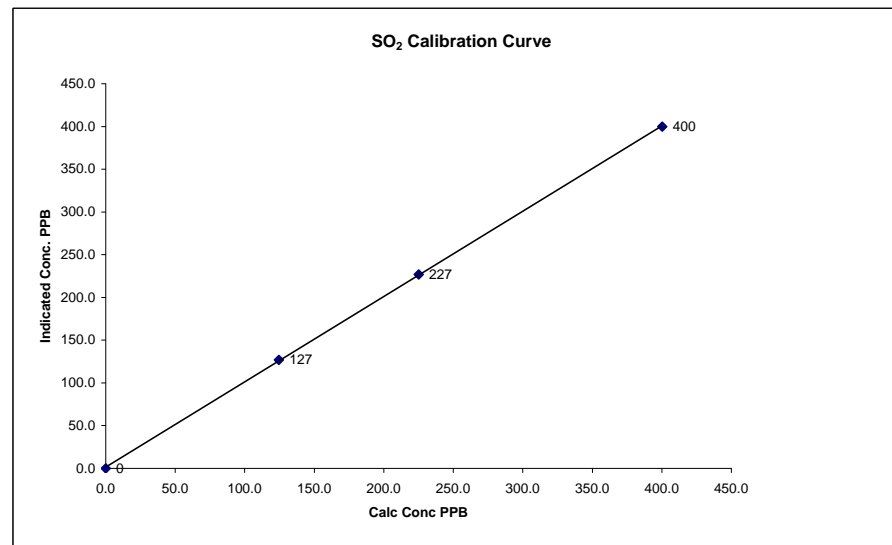
Notes: N/A : Not applicable

Calibration Performed by: Ting Xu

### SO2 Calibration Curve

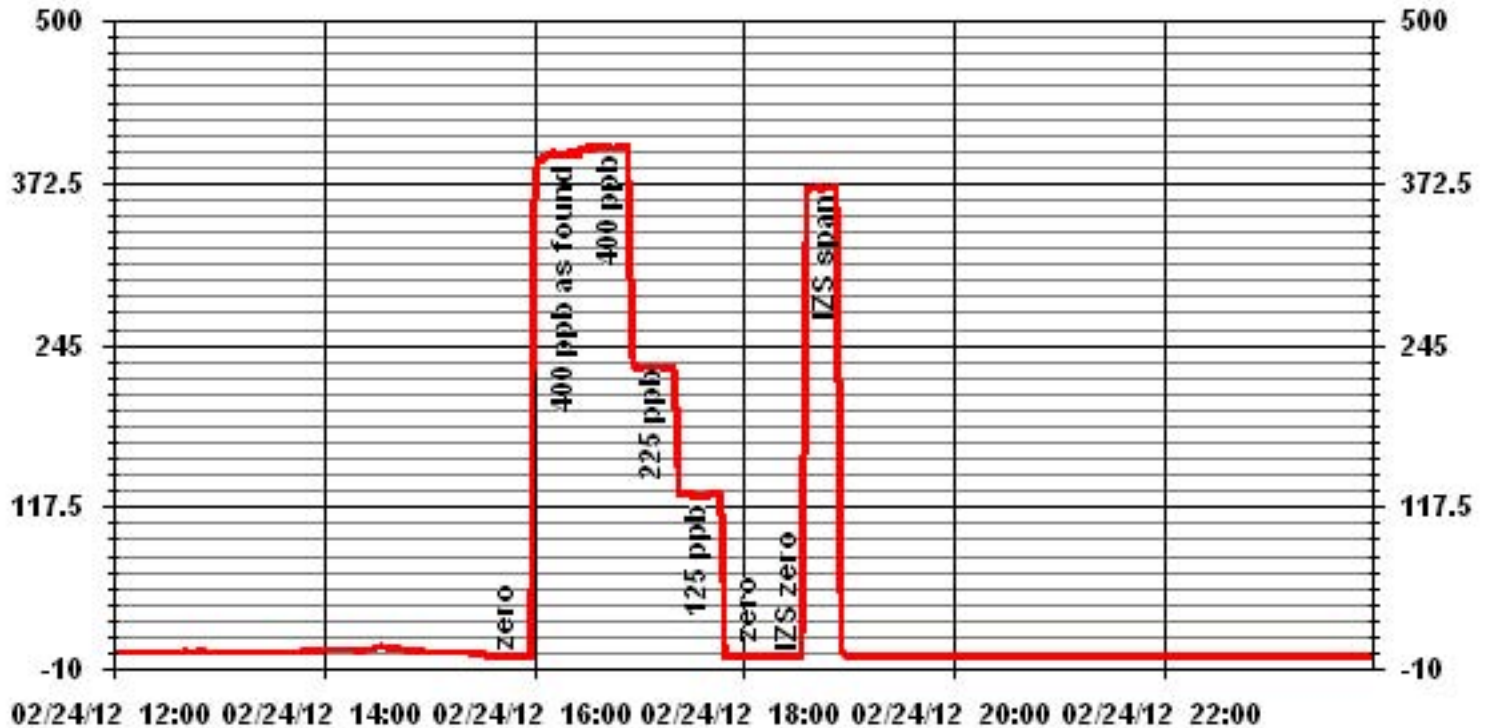
Calibration Date	February 24, 2012
Company	Lakeland Community and Industry Association
Plant / Location	LICA 1 - Cold Lake South
Start Time (MST)	15:29
End Time (MST)	18:58

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept (± 3% F.S.)	(≥ 0.995)
0	0	n/a	0.999938	0.999938
125	127	0.9812	0.998158	0.998158
225	227	0.9917	1.320901	1.320901
400	400	1.0009		



Notes:

### 01 Minute Averages



# Total Reduced Sulphur



**TRS Calibration Report**

**Station Information**

Calibration Date	February 24, 2012	Previous Calibration	January 4, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	LICA 1 - Cold Lake South		
Start Time (MST)	8:08	End Time (MST)	9:17
Reason:	Monthly Calibration		
Barometric Pressure	0.936 atm	Station Temperature	23 Deg C
Cal Gas	10.2 ppm	Gas Cyl. #	BLM00080/Cal Gas Expiry date
DAS Output Voltage	0 - 10 Volts	Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	Thermo 450i	S/N :	812728560	Method:	Fluorescent
Converter Make / Model:	CDN 101	S/N :	250		
Calibrator Make / Model:	API 700	S/N :	831	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	3485		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	API 700	S/N :	831		

**Analyzer Settings**

Before Calibration		After Calibration	
Concentration Range	0 - 100		
Sample Flow / Box Temp	350 ccm, 32.4 Deg C	356 ccm, 32.7 Deg C	
HVPS / Lamp Setting	-623.1, 749	-623.1, 751	
PMT / RxCell Temp	OK, 45.1 Deg C	OK, 45.1 Deg C	
Converter / IZS Temp	810, 45 Deg C	810, 45.0 Deg C	
Offset / Slope	13.4, 1.308	13.7, 1.334	

**Calibration Data**

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4996	0	0	0	N/A
4961	No Zero Adj. 39.2	80	81	0.9872
4976	No Span Adj. 19.6	40	40	1.0000
4985	11.2	23	23	1.0000
7995	0.0	0	0	N/A
Sum of Least Squares				0.9901
New Correction Factor				

**Before Calibration**

Auto Zero	-0.3	After Calibration	-0.3
Auto Span	63.1		68.0
Sample Lines Connected			YES

**Percent Change**

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	0.9872
Percent Change:	1.3%

Notes: **N/A : Not applicable**

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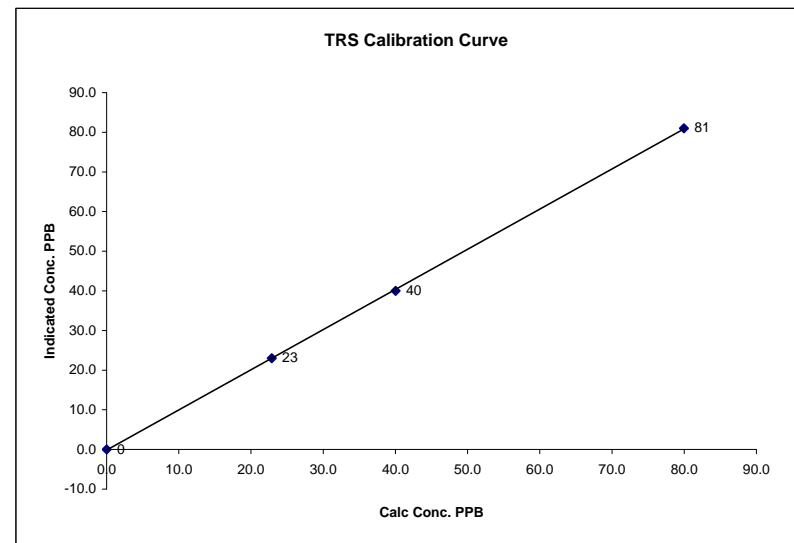
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Calibration Performed by: Ting Xu

**TRS Calibration Curve**

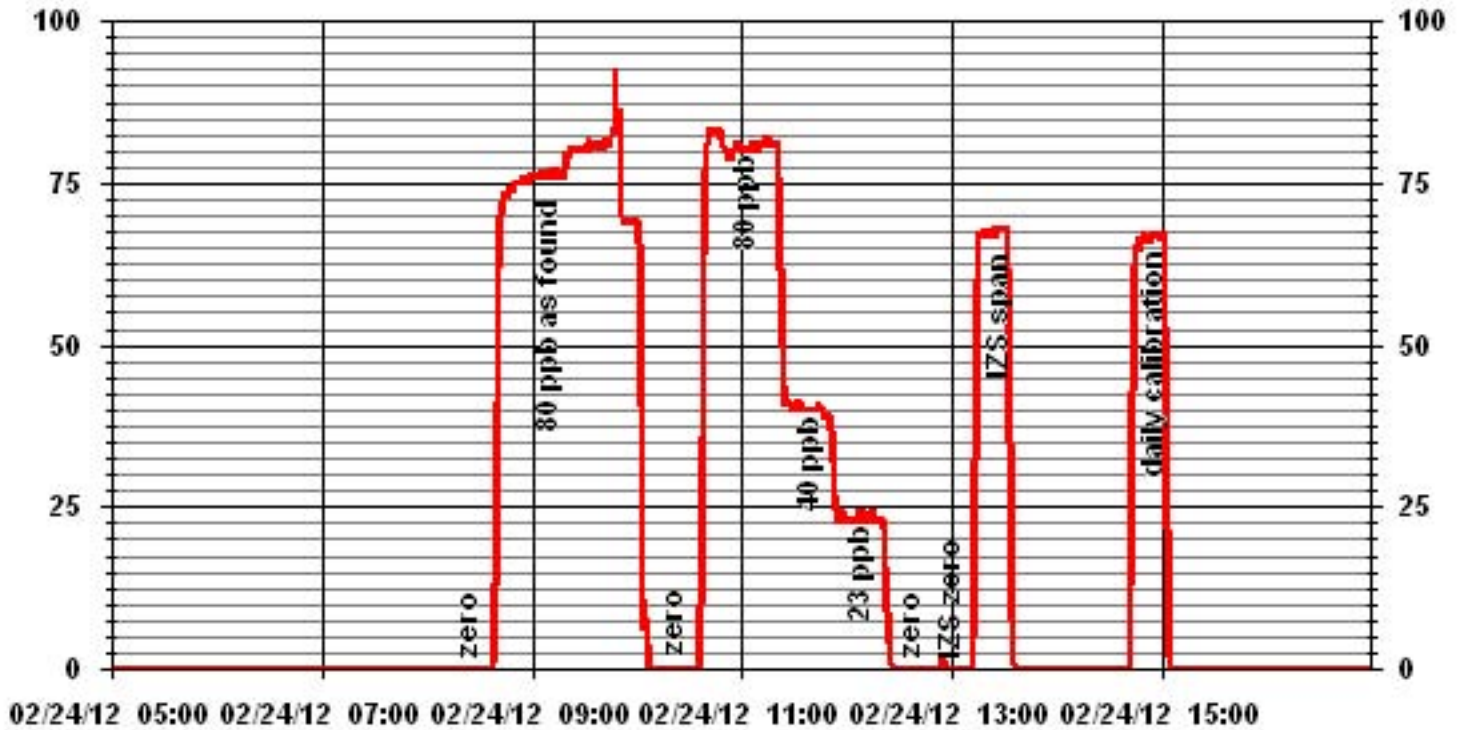
Calibration Date	February 24, 2012
Company	Lakeland Industry & Community Association
Plant / Location	LICA 1 - Cold Lake South
Start Time (MST)	8:08
End Time (MST)	9:17

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	0	n/a		0.999945
23	23	0.0000		1.012875
40	40	0.5716		-0.172154
80	81	0.4941		



Notes:

# 01 Minute Averages



# Total Hydrocarbons



**THC Calibration Report**

Station Information			
Calibration Date:	February 24, 2012	Previous Calibration	January 5, 2012
Company:	Lakeland Industry and Community Association		
Plant / Location:	LICA1/Cold Lake		
Start Time (MST)	12:56	End Time (MST)	16:13
Reason:	Monthly Calibration		
Barometric Pressure:	0.937 atm	Station Temperature:	23 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 980 PPM	C3H8 304 PPM	
	TOTAL CH4 1816.0 PPM	Gas Cyl. # LL84144	Cal Gas Expiry Date: December 3, 2013
DAS make & Model:	ESC 8832	S/N :	3485
Chart Recorder:	NA	S/N:	NA
Output Voltage Range:	0 - 10 VDC	Chart Speed:	NA mm/hr

Analyzer Information			
Make / Model	TEI 51C-LT	S/N :	427408718
Method	Flame Ionization		

Analyzer Settings				
	Before Calibration		After Calibration	
Concentration Range	0 - 50	ppm	0 - 50	ppm
Sample Pressure	6.5	psi	6.5	psi
Hydrogen Pressure	8	psi	8	psi
Air Pressure	20	psi	20	psi

Calibration Data				
Dilution Flow	Source Gas Flow	Calculated Concentration	Indicated Concentration	Correction Factor
3000	0.0	0.0	0.0	NA
	No Zero Adj.			
3000	70.0	41.4	42.3	0.9789
3000	70.0	41.4	41.6	0.9954
3000	35.0	20.9	20.7	1.0117
3000	20.0	12.0	11.9	1.0106
3000	0.0	0.0	0.0	NA
New Correction Factor:				0.9954

Percent Change	
Previous Calibration Correction Factor:	0.9930
Current Correction Factor Before Span Adjust:	0.9789
Percent Change:	1.4%

IZS Calibration Data		
	Before Calibration	After Calibration
Auto Zero	0.1	0.0
Auto Span	36.0	35.2
Sample Lines Connected	YES	

Cylinder Pressures			
Span	1350 psi	Hydrogen	500 psi
		Zero Air	32 psi

Notes: **NA : Not Applicable**

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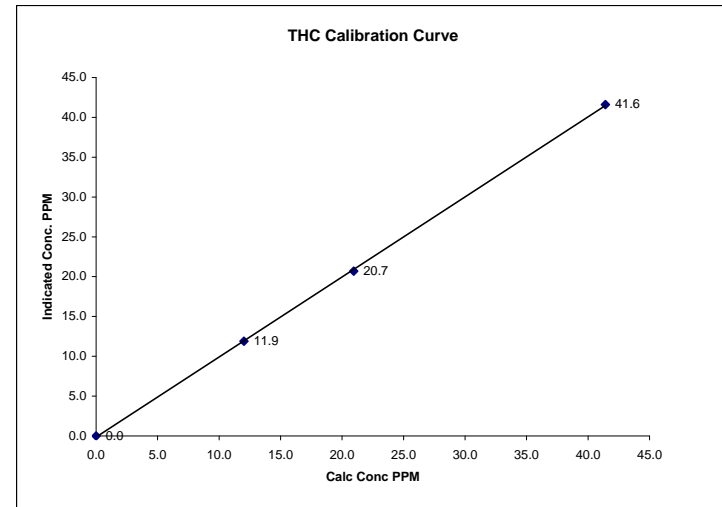
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Calibration Performed by: Ting Xu

**THC Calibration Curve**

Calibration Date	February 24, 2012		
Company	Lakeland Industry and Community Association		
Plant / Location	LICA1/Cold Lake		
Start Time (MST)	12:56	End Time (MST)	16:13

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient Slope (0.85 to 1.15)	Correlation Coefficient Intercept (±3% F.S.)
0.0	0.0	NA	0.999913	1.005095
12.0	11.9	1.0106		-0.13873
20.9	20.7	1.0117		
41.4	41.6	0.9954		



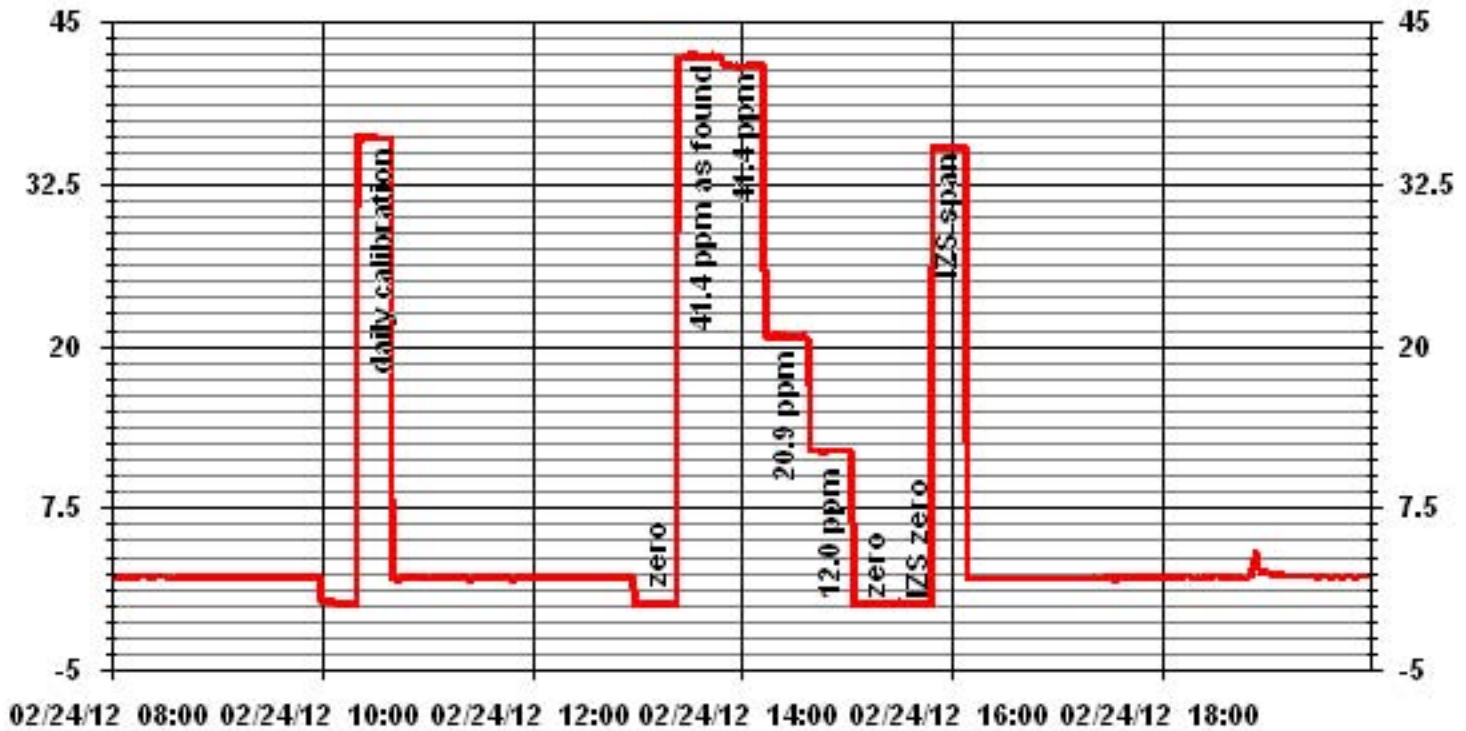
Notes:

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### 01 Minute Averages



# Particulate Matter 2.5

**TEOM 1405F Audit**

	<b><u>Station</u></b>		<b><u>Audit Transfer Standard</u></b>
Date:	February 24, 2012	Make/Model:	Streamline FTS
Station Name:	LICA 1	Serial Number:	Hi 091001
Location:	Cold Lake South	Cell s/n:	Lo 091099
Operator:	LICA	Thermometer s/n:	Station Temp Sensor

	<b><u>Sampler</u></b>		<b><u>Set-up and current Sampler readings</u></b>
Make/Model	Thermo Scientific Series 1405F	F-Main Set Pt (l/min)	3.00
Unit #	AMU 1775	F-Aux Set Pt (l/min)	13.67
Unit s/n	1405A201620804	Filter Load (%)	45.3%
Firmware Ver.	1.52	K <sub>o</sub> Factor	14578.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	-9.7
		Press (ATM)	0.936

**Conversion from mmHg or "Hg to ATM (Atmospheres)**

ATM = (mmHg) X (1.316 X 10<sup>-3</sup>)    or    ATM = ("Hg) X (3.34207 X 10<sup>-2</sup>)

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

**Audit**

<b>Status</b>			
Noise <0.10ug	0.005	Warnings	None
0.36	0.37		
<b>Temperature/Pressure</b>			
Measured Temp (± 2 °C)	-10.2	Δ °C	0.5
Measured Press (± 0.01atm)	0.934	<b>DATM</b>	0.002
<b>Flow Audit</b>			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	0.42%
Measured Main Flow (l/min)	2.99	Flow Adjusted to Measured?	Yes
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	1.27%
Measured Bypass Flow (l/min)	13.74	Flow Adjusted to Measured?	Yes
<b>Leak Check</b>		<b>Instrument Setup</b>	
Main (< 0.15 l/min)	Base=0.07 Ref=0.06	Flow Control = Active	
Aux (< 0.6 l/min)	Base=0.28 Ref=0.27	Report Conditions = Actual	
<b>K<sub>o</sub> Factor</b>			
Measured	NA		
K <sub>o</sub> Difference (± 2.5%)	NA		

**Start Time:** 13:08      **Finish Time:** 14:48

**Sample Inlet Cleaned:** Yes      **New Filters Installed:** YES  
**New Filter Loading %:** 26.1%

**Comments:**

**Auditor/s:** Ting Xu

# Nitrogen Dioxide

**NOx - NO- NO2 Calibration Report**  
**Station Information**

Calibration Date	February 24, 2012	Previous Calibration	January 4, 2012
Company	LICA	Plant/Location	Cold Lake South
Start Time (MST)	8:08	End Time (MST)	14:31
Reason:	Monthly Calibration		
Barometric Pressure	0.937 atm	Station Temperature	22 Deg C
Cal Gas Concentration	NOx 49.7 ppm	NO 49.4 ppm	Cal Gas Expiry date February 28, 2013
Cal Gas Cylinder #	LL103831	MFCF	0
DAS Output Voltage	0 - 10 Volts	Chart Rec. Output	NA Volts

**Equipment Information**

Analyzer Make / Model:	Thermo 42C	S/N :	427408716	Method:	Chemiluminescent
Calibrator Make / Model:	Envionics 6100	S/N :	4760		
DAS Make / Model:	ESC 8832	S/N :	3485		
Chart Recorder Make / Model:	NA	S/N :	NA		
Flow Meter:	Envionics 6100	S/N :	4760		

**Analyzer Settings**

Before Calibration				After Calibration			
Concentration Range	0 - 500			ppb			
Sample Flow/Conv. Temp	738 ccm	317 Deg C		739 ccm	316 Deg C		
Ozone Flow / Vacuum	OK ccm	177.7 "Hg-A		OK ccm	177 "Hg-A		
HVPS / A ZERO	-821 Volts	NA MV		-821 Volts	NA MV		
Rx/ Temp / PMT Temp	49.6 Deg C	-2.4 Deg C		49.8 Deg C	-2.5 Deg C		
Box Temp / IZS Temp	28.3 Deg C	OK Deg C		29.1 Deg C	OK Deg C		
Offset	3.8 NOx	3.5 NO		3.7 NOx	3.5 NO		
Slope	1.007 NOx	0.893 NO		1.007 NOx	0.888 NO		
NO2 COEF / Conv Efficiency	0.998 NO2	NA		0.998 NO2	NA		

**Dilution Calibration Data**

Dilution Air Flow Rate	Source Flow Rate	O3 Set Point	Calculated Concentration			Indicated Concentration			Correction Factor	
			NOx	NO	NO2	NOx	NO	NO2	NOx	NO
4995	0.0	NA	0	0	NA	0	0	0	NA	NA
	No Zero Adj									
4954	40.4	NA	402	400	NA	404	402	3	0.9951	0.9940
4954	40.4	NA	402	400	NA	402	400	3	1.0000	1.0000
4974	20.2	NA	201	200	NA	201	200	1	1.0000	1.0000
4985	10.1	NA	100	100	NA	101	100	1	0.9950	1.0000
4996	0.0	NA	0	0	NA	0	0	0	NA	NA

**Gas Phase Titration Calibration Data**

Dilution Air Flow Rate	Source Flow Rate	O3 Set Point	Calculated Concentration			Indicated Concentration			NO2 Correction Factor	NO2 Conv Efficiency
			NOx	NO	NO2	NOx	NO	NO2		
4954	40.4	NA	402	400	NA	402	399	3	NA	NA
4954	40.4	350	402	NA	328	402	74	328	1.0000	100.00%
	No NO2 Adj.									
4954	40.4	150	402	NA	143	402	259	143	1.0000	100.00%
4954	40.4	75	402	NA	73	401	329	73	1.0000	100.00%

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= $\frac{1.000}{1.0000}$	NO= $\frac{0.999}{1.0000}$	NO2= $\frac{1.000}{1.0000}$
				Average Converter Efficiency=		

Before Calibration				After Calibration			
Auto Zero	0.1 NOx	0.2 NO2		0.1 NOx	0.2 NO2		
Auto Span	315 NOx	313 NO2		314 NOx	312 NO2		
Sample Lines Connected				YES			
Percent Change from Previous Calibration				NOx 0.2%	NO 0.6%	NO2 0.0%	

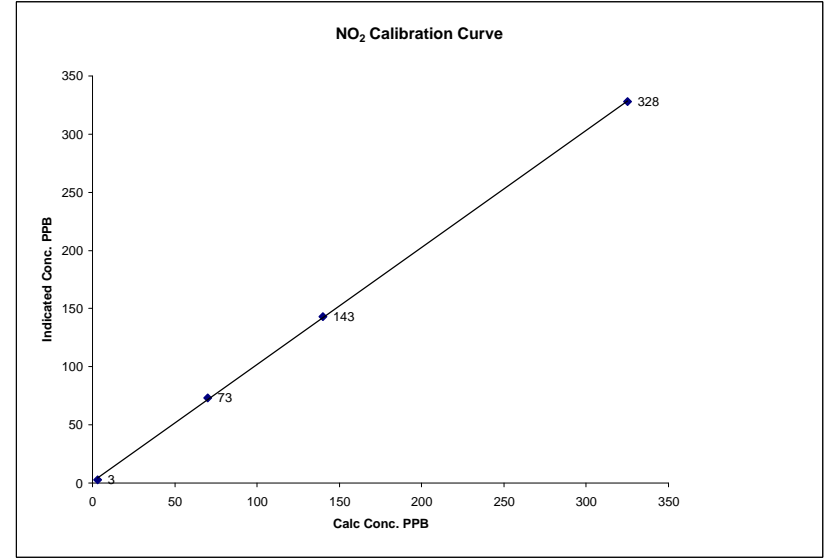
Notes: **NA : Not Applicable**  
When finished first GPT, tried to change the O3 concentration from 0.35 to 0.15, accidentally changed the NO instead. Fixed the issue and re-did the point.

Calibration Performed by: Ting Xu

**NO2 Calibration Curve**

Calibration Date	February 24, 2012	Company	LICA
Plant / Location	Cold Lake South	Start Time (MST)	8:08
End Time (MST)	14:31		

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999931
3	3	N/A	Intercept	(± 3% F.S.)	1.006828
70	73	0.9589			
140	143	0.9790			
325	328	0.9909			

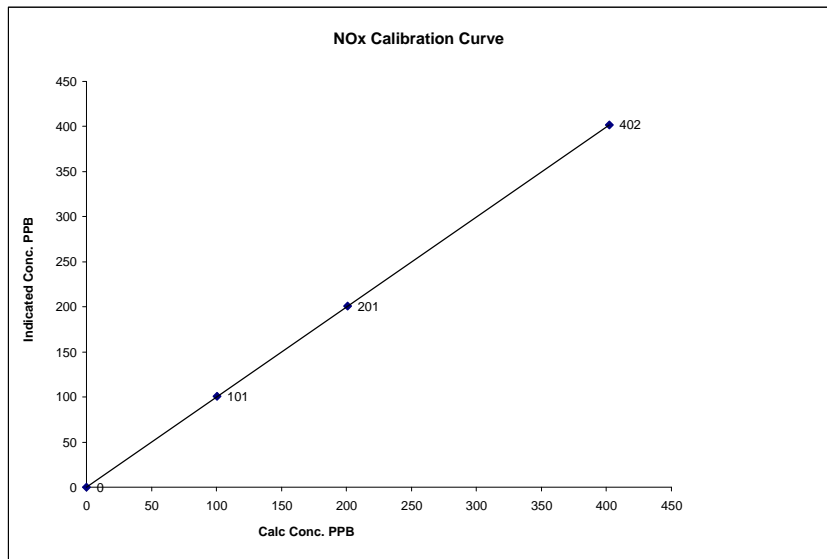


Notes:

### NOx Calibration Curve

Calibration Date	February 24, 2012	
Company	LICA	
Plant / Location	Cold Lake South	
Start Time (MST)	8:08	End Time (MST) 14:31

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999998
0	0	N/A	Intercept	(± 3% F.S.)	0.20403
100	101	0.9950			
201	201	1.0001			
402	402	1.0001			

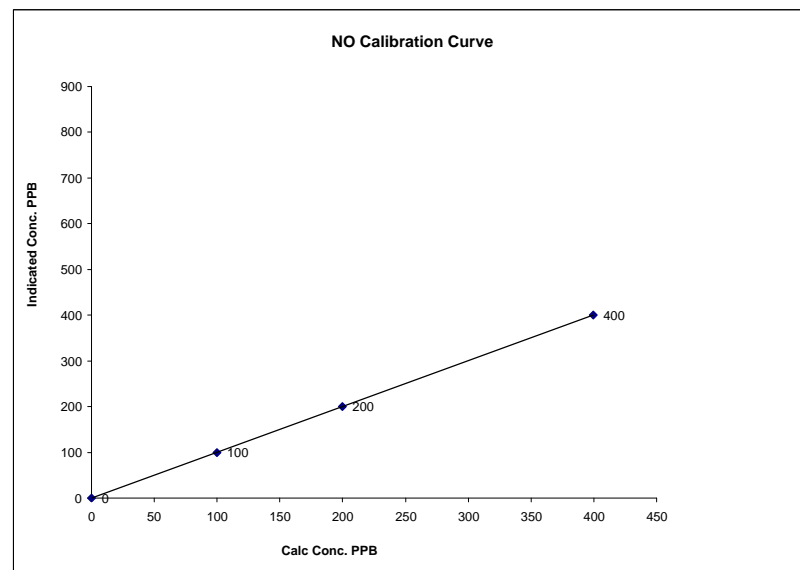


Notes:

### NO Calibration Curve

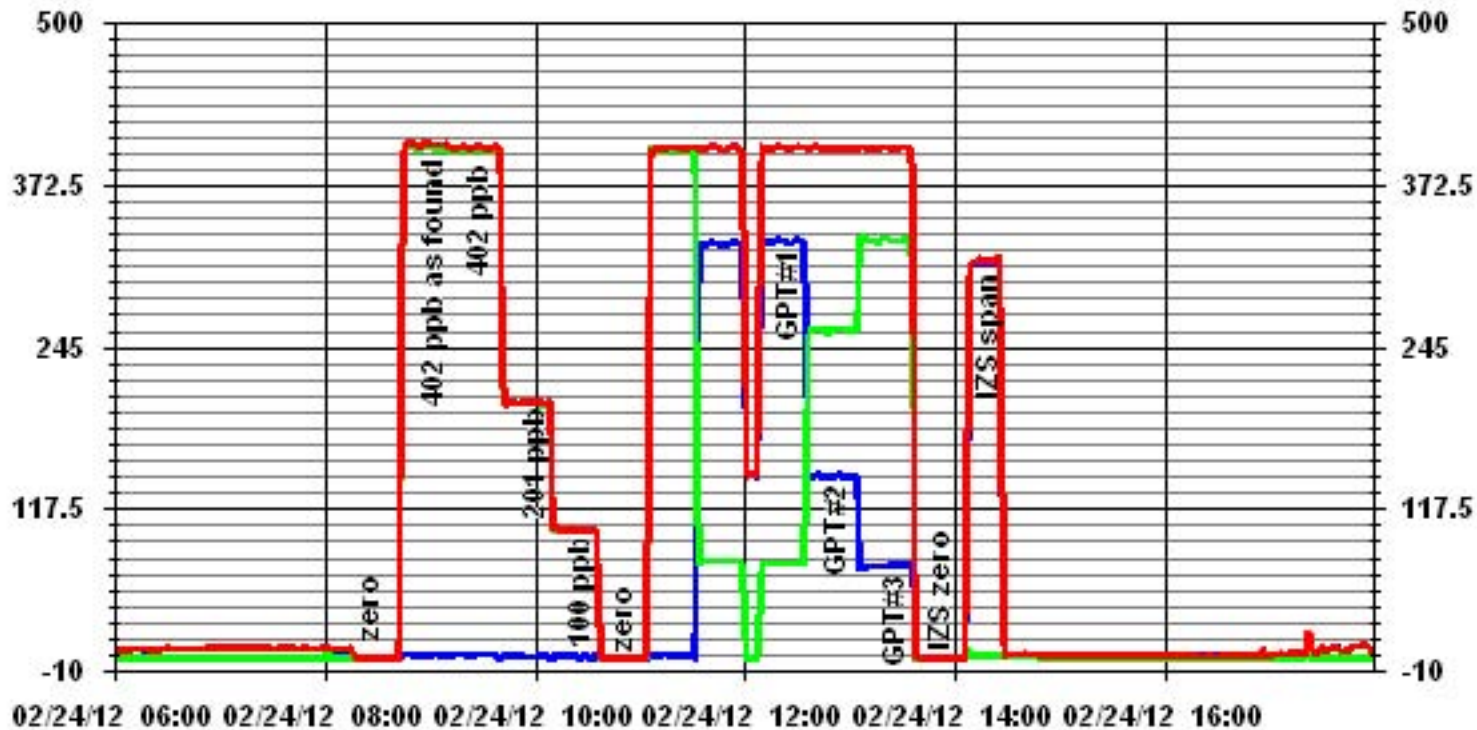
Calibration Date	February 24, 2012	
Company	LICA	
Plant / Location	Cold Lake South	
Start Time (MST)	8:08	End Time (MST) 14:31

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	1.000000
0	0	N/A	Intercept	(± 3% F.S.)	-0.0160
100	100	0.9989			
200	200	0.9990			
400	400	0.9990			



Notes:

# 01 Minute Averages



— LICA

NOX\_

PPB

— LICA

NO\_

PPB

— LICA

NO2\_

PPB



# Ozone

### O<sub>3</sub> Calibration Report

#### Station Information

Calibration Date	February 24, 2012	Previous Calibration	January 5, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	LICA 1 - Cold Lake South		
Start Time (MST)	13:50	End Time (MST)	17:15
Reason:	Monthly Calibration		
Barometric Pressure	0.937 atm	Station Temperature	23 Deg C
DAS Output Voltage	0 - 10 Volts		

#### Equipment Information

Analyzer Make / Model:	Thermo 49i	S/N :	700419951	Method:	Photometric
Calibrator Make / Model:	EnviroNics 6100	S/N :	4760	Method:	GPT
DAS Make / Model:	ESC 8832	S/N :	3485		

#### Analyzer Settings

Before Calibration		After Calibration	
Concentration Range	0 - 500 ppb		
Cell A Flow / Cell B Flow	712 LPM	753 LPM	711 LPM
O <sub>3</sub> Set Level	707 mmHg		706 mmHg
Bench Lamp	53.5 Deg C		53.5 Deg C
O <sub>3</sub> Lamp / Box Temp	67.6 Deg	28.8 Deg C	67.6 Deg C
Offset / Slope	-0.1	1.004	-0.1

#### Calibration Data

Dilution Flow Rate	Ozone Set Point	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4495	0	0	0	NA
	No Zero Adj.			
4994	350	325	324	1.0031
	No Span Adj.			
4994	150	140	140	1.0000
4994	75	70	70	1.0000
4994	0	0	0	NA
Sum of Least Squares				1.0025
New Correction Factor				1.0031

Before Calibration		After Calibration	
Auto Zero	0.2		0.3
Auto Span	281		281
Sample Lines Connected			YES
Previous Calibration Correction Factor:			0.9969
Current Correctio Factor Before Span Adjust:			1.0031
Percent Change:			-0.6%

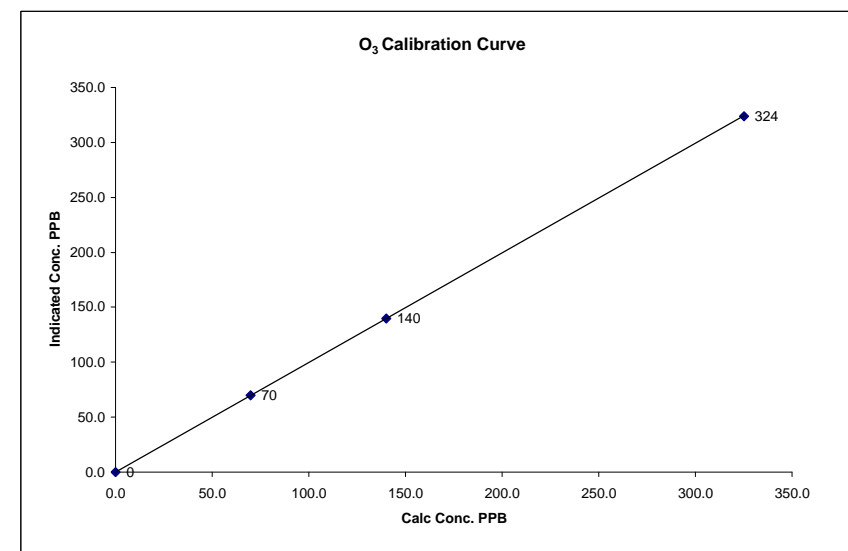
Note: NA : Not Applicable

Calibration Performed by: Ting Xu

### O<sub>3</sub> Calibration Curve

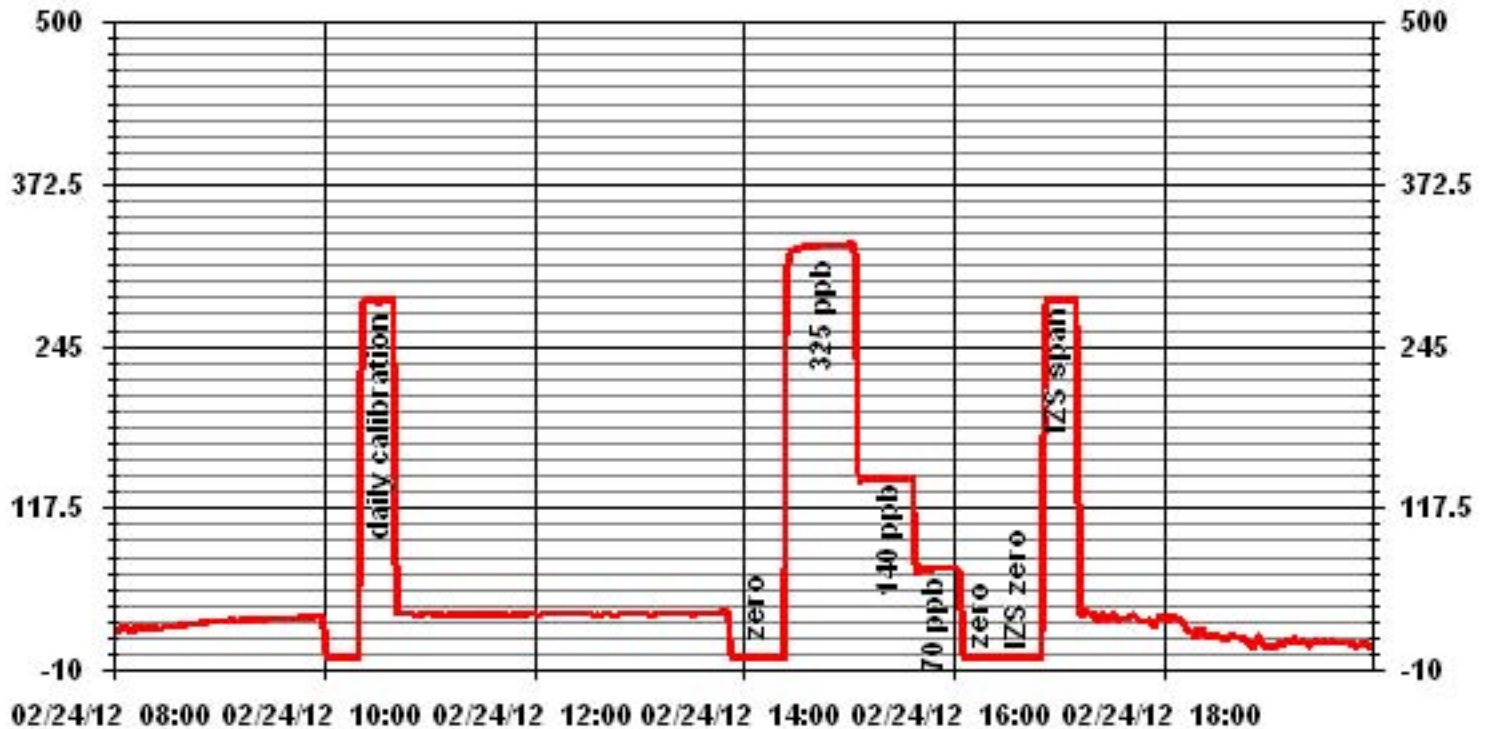
Calibration Date	February 24, 2012		
Company	Lakeland Industry & Community Association		
Plant / Location	LICA 1 - Cold Lake South		
Start Time (MST)	13:50	End Time (MST)	17:15

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	0	n/a		0.999998
70	70	1.0000		0.996735
140	140	1.0000		0.186746
325	324	1.0031		



Notes:

# 01 Minute Averages



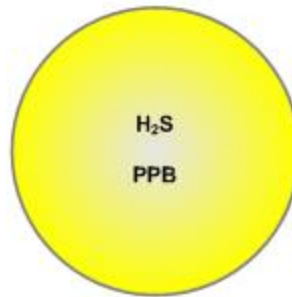
# Passive Bubble Maps

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

FEBRUARY 2012

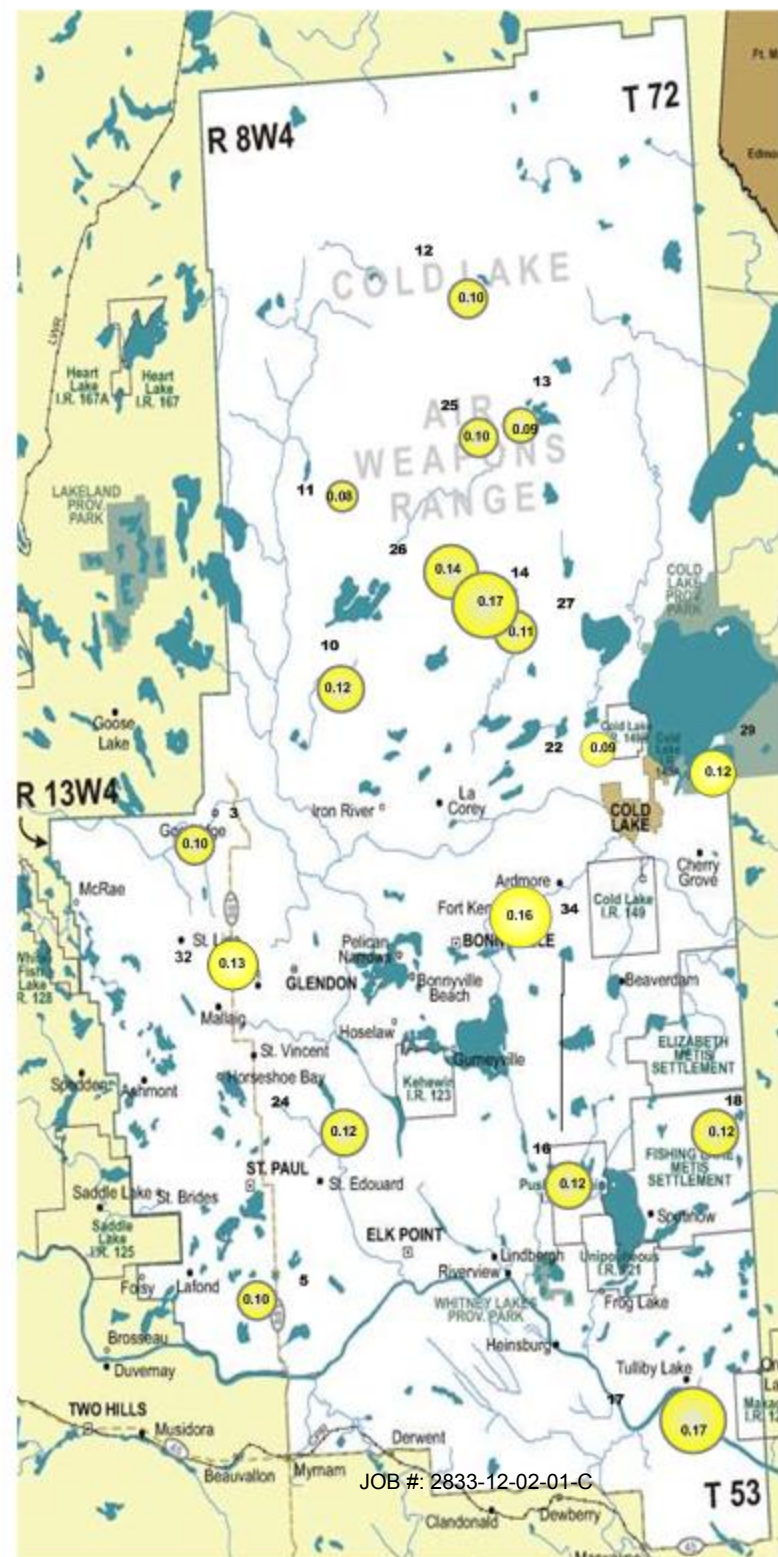
## PASSIVE STATIONS

		DUPLICATE
3 – Therien	0.10 PPB	NA
5 – Lake Eliza	0.10 PPB	NA
10 – La Corey	0.12 PPB	NA
11 – Wolf Lake	0.08 PPB	NA
12 – Foster Creek	0.10 PPB	NA
13 – Primrose	0.09 PPB	NA
14 – Maskwa	0.14 PPB	0.17 PPB
16 – Frog Lake	0.12 PPB	0.12 PPB
17 – Clear Range	0.17 PPB	NA
18 – Fishing Lake	0.12 PPB	NA
22 – Cold Lake South	0.09 PPB	NA
24 – Fort George	0.12 PPB	NA
25 – Burnt Lake	0.10 PPB	NA
26 – Mahihkan	0.14 PPB	NA
27 – Mahkeses	0.11 PPB	NA
29 – Cold Lake South 2	0.12 PPB	NA
32 – St. Lina	0.13 PPB	NA
34 – Portable	0.16 PPB	NA



## Summary

Minimum : 0.08 PPB – Wolf Lake  
 Maximum: 0.17 PPB – Mahihkan  
 Average: 0.12 PPB \*Includes Duplicates



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

FEBRUARY 2012

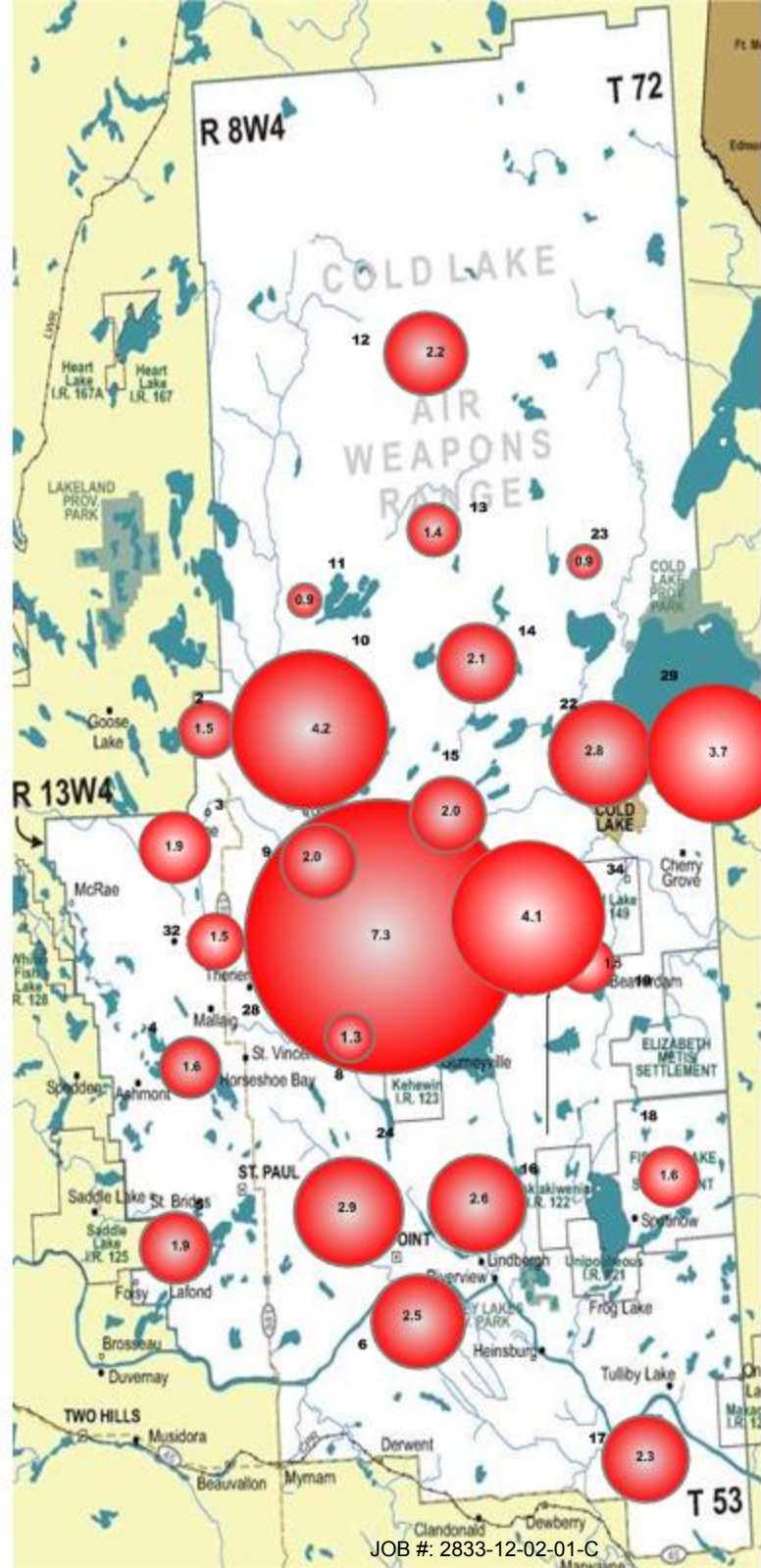
## PASSIVE STATIONS

		DUPLICATE
2 – Sand River	1.5 PPB	NA
3 – Therien	1.9 PPB	NA
4 – Flat Lake	1.6 PPB	NA
5 – Lake Eliza	1.9 PPB	NA
6 – Telegraph Creek	2.5 PPB	NA
8 – Muriel-Kehewin	1.3 PPB	NA
9 – Dupre	1.9 PPB	2.1 PPB
10 – La Corey	4.9 PPB	4.2 PPB
11 – Wolf Lake	0.9 PPB	NA
12 – Foster Creek	2.2 PPB	NA
13 – Primrose	1.4 PPB	NA
14 – Maskwa	2.1 PPB	NA
15 – Ardmore	2.0 PPB	NA
16 – Frog Lake	2.6 PPB	NA
17 – Clear Range	2.3 PPB	NA
18 – Fishing Lake	1.6 PPB	NA
19 – Beaverdam	1.5 PPB	NA
22 – Cold Lake South	2.8 PPB	NA
23 – Medley-Martineau	0.9 PPB	NA
24 – Fort George	2.9 PPB	NA
28 – Town of Bonnyville	7.3 PPB	NA
29 – Cold Lake South 2	3.7 PPB	NA
32 – St. Lina	1.5 PPB	NA
34 – Portable	4.1 PPB	NA



## Summary

Minimum : 0.9 PPB – Wolf Lake and Medley-Martineau  
 Maximum: 7.3 PPB – Town of Bonnyville  
 Average: 2.4 PPB \*Includes Duplicates

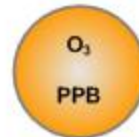


# Lakeland Industry & Community Association O<sub>3</sub> Passive Bubble Map

FEBRUARY 2012

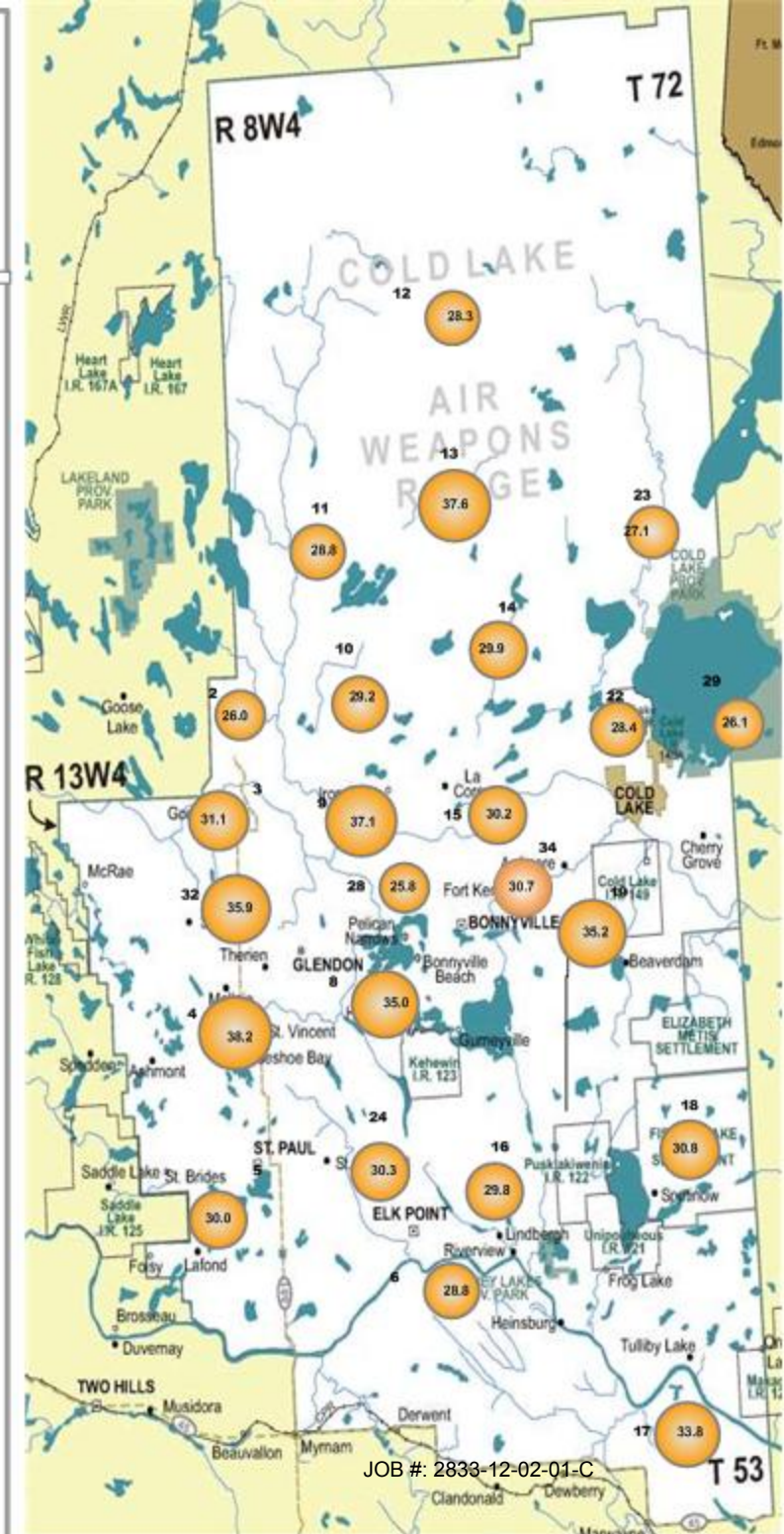
## PASSIVE STATIONS

		DUPLICATE
2 – Sand River	26.0 PPB	NA
3 – Therien	31.1 PPB	NA
4 – Flat Lake	38.2 PPB	NA
5 – Lake Eliza	30.0 PPB	NA
6 – Telegraph Creek	28.8 PPB	NA
8 – Muriel-Kehewin	35.0 PPB	NA
9 – Dupre	39.2 PPB	34.9 PPB
10 – La Corey	29.1 PPB	29.3 PPB
11 – Wolf Lake	28.8 PPB	NA
12 – Foster Creek	28.3 PPB	NA
13 – Primrose	37.6 PPB	NA
14 – Maskwa	29.9 PPB	NA
15 – Ardmore	30.2 PPB	NA
16 – Frog Lake	29.8 PPB	NA
17 – Clear Range	33.8 PPB	NA
18 – Fishing Lake	30.8 PPB	NA
19 – Beaverdam	35.2 PPB	NA
22 – Cold Lake South	28.4 PPB	NA
23 – Medley-Martineau	27.1 PPB	NA
24 – Fort George	30.3 PPB	NA
28 – Town of Bonnyville	25.8 PPB	NA
29 – Cold Lake South 2	26.1 PPB	NA
32 – St. Lina	35.9 PPB	NA
34 – Portable	30.7 PPB	NA



## Summary

Minimum : 25.8 PPB – Town of Bonnyville  
 Maximum: 38.2 PPB – Flat Lake  
 Average: 31.0 PPB \*Includes Duplicates



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

FEBRUARY 2012

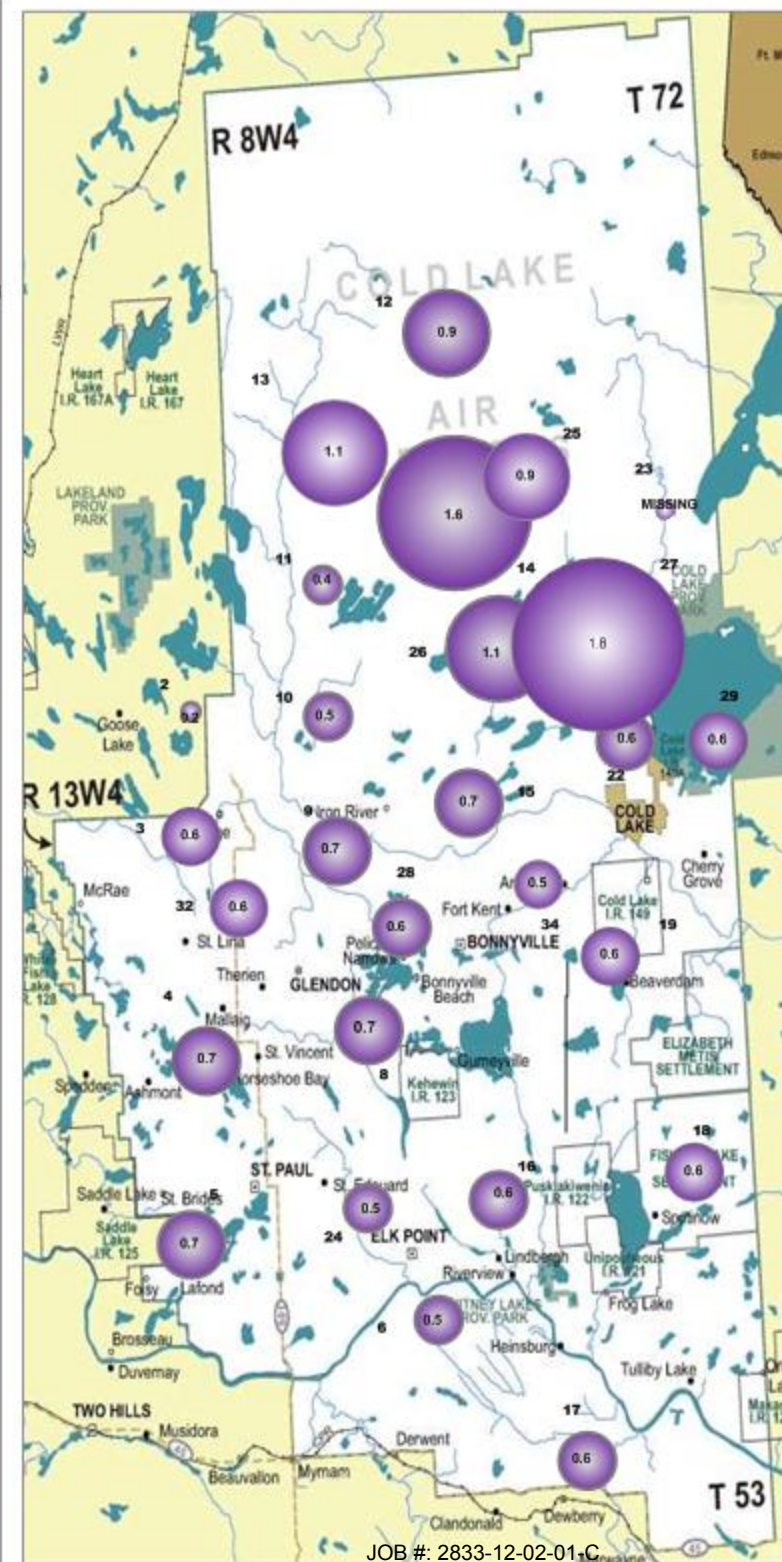
## PASSIVE STATIONS

Station Number	Location	SO <sub>2</sub> Concentration (PPB)	Duplicate
2	Sand River	0.2 PPB	NA
3	Therien	0.6 PPB	NA
4	Flat Lake	0.7 PPB	NA
5	Lake Eliza	0.7 PPB	NA
6	Telegraph Creek	0.5 PPB	NA
8	Muriel-Kehewin	0.7 PPB	NA
9	Dupre	0.7 PPB	NA
10	La Corey	0.5 PPB	NA
11	Wolf Lake	0.4 PPB	NA
12	Foster Creek	0.9 PPB	0.8 PPB
13	Primrose	1.0 PPB	1.1 PPB
14	Maskwa	1.6 PPB	1.6 PPB
15	Ardmore	0.7 PPB	NA
16	Frog Lake	0.6 PPB	NA
17	Clear Range	0.6 PPB	NA
18	Fishing Lake	0.6 PPB	NA
19	Beaverdam	0.6 PPB	NA
22	Cold Lake South	0.6 PPB	NA
23	Medley-Martineau	MISSING	NA
24	Fort George	0.5 PPB	NA
25	Burnt Lake	0.9 PPB	NA
26	Mahikan	1.1 PPB	NA
27	Mahkeses	1.8 PPB	NA
28	Town of Bonnyville	0.6 PPB	NA
29	Cold Lake South 2	0.6 PPB	NA
32	St. Lina	0.6 PPB	NA
34	Portable	0.5 PPB	NA



## Summary

Minimum : 0.2 PPB –Sand River  
 Maximum: 1.8 PPB –Mahkeses  
 Average: 0.73 PPB \*Includes Duplicates





# Passive Field Data

# Field Notes

ID	SAMPLER	START		END		NOTES
		DATE	TIME	DATE	TIME	
2	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	11:35	02/28/2012	12:00	
3	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	11:00	02/28/2012	12:59	
4	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	14:00	02/29/2012	16:10	
5	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	13:20	02/29/2012	16:50	
6	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	11:30	03/01/2012	15:32	
8	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	15:18	02/28/2012	14:27	
9	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	09:55	02/29/2012	15:19	
10	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	01/31/2012	13:00	02/29/2012	13:10	
11	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	01/31/2012	13:45	02/29/2012	12:25	
12	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	01/31/2012	15:15	02/29/2012	09:42	
13	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	1406	02/27/2012	14:46	
14	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	15:00	02/28/2012	09:40	
15	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/1201	09:02	02/28/2012	10:35	
16	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	10:00	03/01/2012	13:57	
17	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	10:05	03/01/2012	14:50	
18	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	09:15	03/01/2012	12:59	
19	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	08:15	03/01/2012	11:55	
22	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	16:45	03/01/2012	10:25	
23	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	18:22	02/27/2012	13:36	O3 sample is missing.
24	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/02/2012	12:35	02/29/2012	17:38	
25	H <sub>2</sub> S/SO <sub>2</sub>	01/31/2012	16:20	02/29/2012	10:48	
26	H <sub>2</sub> S/SO <sub>2</sub>	02/01/2012	14:38	02/27/2012	15:25	
27	H <sub>2</sub> S/SO <sub>2</sub>	02/01/2012	15:22	02/28/2012	10:02	
28	SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	10:08	02/28/2012	15:00	
29	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	16:45	03/01/2012	10:10	
32	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	01/31/2012	11:36	02/28/2012	13:22	
34	H <sub>2</sub> S/SO <sub>2</sub> /NO <sub>2</sub> /O <sub>3</sub>	02/01/2012	9:32	03/02/2012	11:45	

ID	SAMPLER	START		END		NOTES
		DATE	TIME	DATE	TIME	
Duplicate # 12	SO <sub>2</sub>	01/31/2012	15:15	02/29/2012	09:42	
Duplicate # 13	SO <sub>2</sub>	02/01/2012	14:06	02/27/2012	14:46	
Duplicate # 14	SO <sub>2</sub>	20/01/2012	15:00	02/28/2012	09:40	
Duplicate # 14	H <sub>2</sub> S	20/01/2012	15:00	02/28/2012	09:40	
Duplicate # 16	H <sub>2</sub> S	02/02/2012	18:00	03/01/2012	13:57	
Duplicate # 9	NO <sub>2</sub>	02/01/2012	09:55	02/29/2012	15:19	
Duplicate # 10	NO <sub>2</sub>	01/31/2012	13:00	02/29/2012	13:10	
Duplicate # 9	O <sub>3</sub>	02/01/2012	09:55	02/29/2012	15:19	
Duplicate # 10	O <sub>3</sub>	01/31/2012	13:00	02/29/2012	13:10	

# Passive Network Laboratory Analysis



Your Project #: 2012/01/31 - 2012/03/01  
Site Location: LICA

**Attention: MICHAEL BISAGA**

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

**Report Date: 2012/03/19**

This report supersedes all previous reports with the same Maxxam job number

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B219044**

**Received: 2012/03/07, 10:06**

Sample Matrix: Air  
# Samples Received: 33

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
H2S Passive Analysis (1)	20	2012/03/14	2012/03/16	EINDSOP-00150	Tang.Passive H2S in
NO2 Passive Analysis (1)	26	2012/03/15	2012/03/16	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	26	2012/03/13	2012/03/16	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	30	2012/03/15	2012/03/16	EINDSOP-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**

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.

Total cover pages: 1



Maxxam Job #: B219044  
 Report Date: 2012/03/19

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
 Client Project #: 2012/01/31 - 2012/03/01  
 Site Location: LICA  
 Sampler Initials: SB

**RESULTS OF CHEMICAL ANALYSES OF AIR**

Maxxam ID		CW7302	CW7303	CW7304	CW7305	CW7306		
Sampling Date		2012/02/01 11:35	2012/02/01 11:00	2012/02/02 14:00	2012/02/02 13:20	2012/02/02 11:30		
	<b>Units</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>								
Calculated H2S	ppb		0.10		0.10		0.02	5675616
Calculated NO2	ppb	1.5	1.9	1.6	1.9	2.5	0.1	5682327
Calculated O3	ppb	26.0	31.1	38.2	30.0	28.8	0.1	5672175
Calculated SO2	ppb	0.2	0.6	0.7	0.7	0.5	0.1	5682369

RDL = Reportable Detection Limit

Maxxam ID		CW7307	CW7308	CW7309	CW7310	CW7311		
Sampling Date		2012/02/02 15:18	2012/02/01 09:55	2012/01/31 13:00	2012/01/31 13:45	2012/01/31 15:15		
	<b>Units</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>								
Calculated H2S	ppb			0.12	0.08	0.10	0.02	5675616
Calculated NO2	ppb	1.3	1.9	4.2	0.9	2.2	0.1	5682327
Calculated O3	ppb	35.0	39.2	29.1	28.8	28.3	0.1	5672175
Calculated SO2	ppb	0.7	0.7	0.5	0.4	0.9	0.1	5682369

RDL = Reportable Detection Limit

Maxxam ID		CW7312	CW7313	CW7314	CW7315		
Sampling Date		2012/02/01 14:06	2012/02/01 09:02	2012/02/01 15:00	2012/02/02 10:00		
	<b>Units</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>								
Calculated H2S	ppb	0.09	0.14		0.12	0.02	5675616	
Calculated NO2	ppb	1.4	2.1	2.0	2.6	0.1	5682327	
Calculated O3	ppb	37.6	29.9	30.2	29.8	0.1	5672175	
Calculated SO2	ppb	1.0	1.6	0.7	0.6	0.1	5682369	

RDL = Reportable Detection Limit



Maxxam Job #: B219044  
 Report Date: 2012/03/19

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
 Client Project #: 2012/01/31 - 2012/03/01  
 Site Location: LICA  
 Sampler Initials: SB

**RESULTS OF CHEMICAL ANALYSES OF AIR**

Maxxam ID		CW7316	CW7317		CW7318	CW7319		
Sampling Date		2012/02/02 10:45	2012/02/02 09:15		2012/02/02 08:15	2012/02/01 16:45		
	<b>Units</b>	<b>17</b>	<b>18</b>	<b>QC Batch</b>	<b>19</b>	<b>22</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>								
Calculated H2S	ppb	0.17	0.12	5675616		0.09	0.02	5675616
Calculated NO2	ppb	2.3	1.6	5682327	1.5	2.8	0.1	5682329
Calculated O3	ppb	33.8	30.8	5672194	35.2	28.4	0.1	5672194
Calculated SO2	ppb	0.6	0.6	5682369	0.6	0.6	0.1	5682372
RDL = Reportable Detection Limit								

Maxxam ID		CW7320	CW7321	CW7322	CW7323	CW7324		
Sampling Date		2012/02/01 18:22	2012/02/02 12:35	2012/01/31 16:20	2012/02/01 14:37	2012/02/01 15:22		
	<b>Units</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>								
Calculated H2S	ppb		0.12	0.10	0.14	0.11	0.02	5675616
Calculated NO2	ppb	0.9	2.9				0.1	5682329
Calculated O3	ppb	27.1	30.3				0.1	5672194
Calculated SO2	ppb	MISSING	0.5	0.9	1.1	1.8	0.1	5682372
RDL = Reportable Detection Limit								

Maxxam ID		CW7325	CW7326	CW7327	CW7328		
Sampling Date		2012/02/01 10:05	2012/02/01 16:45	2012/01/31 11:36	2012/02/01 09:32		
	<b>Units</b>	<b>28</b>	<b>29</b>	<b>32</b>	<b>34</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>								
Calculated H2S	ppb		0.12	0.13	0.16	0.02		5675616
Calculated NO2	ppb	7.3	3.7	1.5	4.1	0.1		5682329
Calculated O3	ppb	25.8	26.1	35.9	30.7	0.1		5672194
Calculated SO2	ppb	0.6	0.6	0.6	0.5	0.1		5682372
RDL = Reportable Detection Limit								



Maxxam Job #: B219044  
 Report Date: 2012/03/19

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
 Client Project #: 2012/01/31 - 2012/03/01  
 Site Location: LICA  
 Sampler Initials: SB

**RESULTS OF CHEMICAL ANALYSES OF AIR**

Maxxam ID		CW7331	CW7332	CW7333	CW7334	CW7335		
Sampling Date		2012/02/01 09:55	2012/01/31 13:00	2012/01/31 15:15	2012/02/01 14:06	2012/02/01 15:00		
	<b>Units</b>	<b>9 DUP</b>	<b>10 DUP</b>	<b>12 DUP</b>	<b>13 DUP</b>	<b>14 DUP</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>								
Calculated H2S	ppb					0.19	0.02	5675616
Calculated NO2	ppb	2.1	4.2				0.1	5682327
Calculated O3	ppb	34.9	29.3				0.1	5672194
Calculated SO2	ppb			0.8	1.1	1.6	0.1	5682369

RDL = Reportable Detection Limit

Maxxam ID		CW7336		
Sampling Date		2012/02/02 10:00		
	<b>Units</b>	<b>16 DUP</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Passive Monitoring</b>				
Calculated H2S	ppb	0.12	0.02	5675616

RDL = Reportable Detection Limit





Maxxam Job #: B219044  
Report Date: 2012/03/19

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
Client Project #: 2012/01/31 - 2012/03/01  
Site Location: LICA  
Sampler Initials: SB

**General Comments**

Sample CW7313 (#14) for H2S returned to the Lab with broken barrier. SS  
Sample CW7320 (#23) for SO2 parameter was not returned to the lab. - DF

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



LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION  
 Attention: MICHAEL BISAGA  
 Client Project #: 2012/01/31 - 2012/03/01  
 P.O. #:  
 Site Location: LICA

Quality Assurance Report  
 Maxxam Job Number: PB219044

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5672175 OZ	Calibration Check	Calculated O3	2012/03/13		100	%	91 - 107
	Spiked Blank	Calculated O3	2012/03/13		99	%	N/A
	Method Blank	Calculated O3	2012/03/13	<0.1		ppb	
5672194 OZ	Calibration Check	Calculated O3	2012/03/13		100	%	91 - 107
	Spiked Blank	Calculated O3	2012/03/13		100	%	N/A
	Method Blank	Calculated O3	2012/03/13	<0.1		ppb	
5675616 SS6	Calibration Check	Calculated H2S	2012/03/14		99	%	80 - 120
	Spiked Blank	Calculated H2S	2012/03/14		100	%	N/A
5682327 DF4	Calibration Check	Calculated NO2	2012/03/15		99	%	76 - 118
	Spiked Blank	Calculated NO2	2012/03/15		100	%	N/A
	Method Blank	Calculated NO2	2012/03/15	<0.1		ppb	
5682329 DF4	Calibration Check	Calculated NO2	2012/03/15		100	%	76 - 118
	Spiked Blank	Calculated NO2	2012/03/15		100	%	N/A
	Method Blank	Calculated NO2	2012/03/15	<0.1		ppb	
5682369 DF4	Calibration Check	Calculated SO2	2012/03/15		100	%	95 - 105
	Spiked Blank	Calculated SO2	2012/03/15		104	%	N/A
	Method Blank	Calculated SO2	2012/03/15	<0.1		ppb	
5682372 DF4	Calibration Check	Calculated SO2	2012/03/15		99	%	95 - 105
	Spiked Blank	Calculated SO2	2012/03/15		104	%	N/A
	Method Blank	Calculated SO2	2012/03/15	<0.1		ppb	

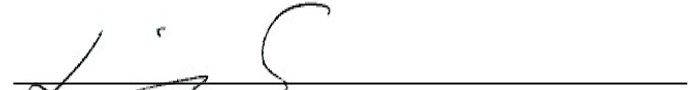
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.  
 Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.  
 Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

**Validation Signature Page**

**Maxxam Job #: B219044**

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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

=====

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.

# **Volatile Organics Laboratory Analysis**

# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6167  
Location: Cold Lake South Canister ID: 7797  
Station ID: Lica 1 Canister Installation Date/Time: Feb 1, 2012 @ 14:20 mst  
Field Sample ID: LICA VOC/ CLS /Feb 3, 2012 Canister Removal Date/Time: Feb 7, 2012 @ 12:20 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
03-Feb-12	02/03/2012 0:00	02/04/2012 0:00	24.00

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	646	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-28	24

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

Comments: System leak check prior to sampling. COC # 08797  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Technician Signiture: Theo McLaren

Your C.O.C. #: 08797

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7**Report Date: 2012/02/22****CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B220693****Received: 2012/02/13, 10:00**Sample Matrix: AIR  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	1	N/A	2012/02/16	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2012/02/16	BRL SOP-00304	EPA TO-15

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

**Encryption Key**

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763

=====  
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.

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Total cover pages: 1

Page 1 of 10

Maxxam Job #: B220693  
Report Date: 2012/02/22

**RESULTS OF ANALYSES OF AIR**

Maxxam ID		MN0316	
Sampling Date		2012/02/03 00:00	
COC Number		08797	
	<b>Units</b>	<b>LICA VOC\CLS\FEB 03, 2012 - 7797</b>	<b>QC Batch</b>

<b>Volatile Organics</b>			
Pressure on Receipt	psig	23	2769498
QC Batch = Quality Control Batch			

Maxxam Job #: B220693  
 Report Date: 2012/02/22

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MN0316				
Sampling Date		2012/02/03 00:00				
COC Number		08797				
	<b>Units</b>	<b>LICA VOC\CLS\FEB 03, 2012 - 7797</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

<b>Volatile Organics</b>						
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	2769456
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	2769456
Propene	ppbv	<3.1	3.1	<5.32	5.32	2769456
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	2769456
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	2769456
Dichlorodifluoromethane (FREON 12)	ppbv	0.65	0.20	3.23	0.989	2769456
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	2769456
Chloromethane	ppbv	0.61	0.30	1.26	0.620	2769456
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	2769456
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	2769456
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	2769456
Trichlorofluoromethane (FREON 11)	ppbv	0.34	0.20	1.89	1.12	2769456
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	2769456
Ethanol (ethyl alcohol)	ppbv	2.3	2.3	4.41	4.33	2769456
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	2769456
2-Propanone	ppbv	2.70	0.80	6.40	1.90	2769456
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	2769456
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	2769456
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	2769456
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	2769456
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	2769456
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	2769456
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	2769456
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	2769456
Methylene Chloride(Dichloromethane)	ppbv	2.76	0.80	9.60	2.78	2769456
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	2769456
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	2769456
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2769456
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2769456
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	2769456
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



Maxxam Job #: B220693  
 Report Date: 2012/02/22

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MN0316				
Sampling Date		2012/02/03 00:00				
COC Number		08797				
	<b>Units</b>	<b>LICA VOC\CLS\FEB 03, 2012 - 7797</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	2769456
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	2769456
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	2769456
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	2769456
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	2769456
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	2769456
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	2769456
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	2769456
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	2769456
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	2769456
Heptane	ppbv	0.36	0.30	1.47	1.23	2769456
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	2769456
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	2769456
Benzene	ppbv	0.35	0.18	1.13	0.575	2769456
Toluene	ppbv	0.40	0.20	1.51	0.753	2769456
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	2769456
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	2769456
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	2769456
Styrene	ppbv	<0.20	0.20	<0.852	0.852	2769456
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2769456
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2769456
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	2769456
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	2769456
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	2769456
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2769456
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2769456
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2769456
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	2769456
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	2769456
Hexane	ppbv	0.33	0.30	1.16	1.06	2769456
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	2769456
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	2769456

QC Batch = Quality Control Batch

Maxxam Job #: B220693  
 Report Date: 2012/02/22

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MN0316				
Sampling Date		2012/02/03 00:00				
COC Number		08797				
	<b>Units</b>	<b>LICA VOC\CLS\FEB 03, 2012 - 7797</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	2769456
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	2769456
<b>Surrogate Recovery (%)</b>						
Bromochloromethane	%	85		N/A	N/A	2769456
D5-Chlorobenzene	%	84		N/A	N/A	2769456
Difluorobenzene	%	91		N/A	N/A	2769456
N/A = Not Applicable QC Batch = Quality Control Batch						

Maxxam Job #: B220693  
Report Date: 2012/02/22

### Test Summary

**Maxxam ID** MN0316  
**Sample ID** LICA VOC\CLS\FEB 03, 2012 - 7797  
**Matrix** AIR

**Collected** 2012/02/03  
**Shipped**  
**Received** 2012/02/13

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	2769498	N/A	2012/02/16	SPOMENKA SMILJANIC
Volatile Organics in Air (TO-15)	GC/MS	2769456	N/A	2012/02/16	SPOMENKA SMILJANIC

Maxxam Job #: B220693  
Report Date: 2012/02/22

**GENERAL COMMENTS**

Sample MN0316-01: Increased MDL for propene due to matrix interference, on a possible positive.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

### Quality Assurance Report

Maxxam Job Number: GB220693

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2769456 S_S	Spiked Blank	Bromochloromethane	2012/02/16		99	%	60 - 140
		D5-Chlorobenzene	2012/02/16		100	%	60 - 140
		Difluorobenzene	2012/02/16		102	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/16		107	%	70 - 130
		Carbon Disulfide	2012/02/16		112	%	70 - 130
		Propene	2012/02/16		105	%	70 - 130
		Vinyl Acetate	2012/02/16		118	%	70 - 130
		Vinyl Bromide	2012/02/16		109	%	70 - 130
		Dichlorodifluoromethane (FREON 12)	2012/02/16		113	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/02/16		128	%	70 - 130
		Chloromethane	2012/02/16		113	%	70 - 130
		Vinyl Chloride	2012/02/16		113	%	70 - 130
		Chloroethane	2012/02/16		110	%	70 - 130
		1,3-Butadiene	2012/02/16		113	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/02/16		109	%	70 - 130
		Trichlorotrifluoroethane	2012/02/16		109	%	70 - 130
		Ethanol (ethyl alcohol)	2012/02/16		99	%	70 - 130
		2-propanol	2012/02/16		96	%	70 - 130
		2-Propanone	2012/02/16		124	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/02/16		101	%	70 - 130
		Methyl Isobutyl Ketone	2012/02/16		118	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/02/16		126	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/02/16		115	%	70 - 130
		Ethyl Acetate	2012/02/16		116	%	70 - 130
		1,1-Dichloroethylene	2012/02/16		112	%	70 - 130
		cis-1,2-Dichloroethylene	2012/02/16		113	%	70 - 130
		trans-1,2-Dichloroethylene	2012/02/16		110	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/02/16		102	%	70 - 130
		Chloroform	2012/02/16		109	%	70 - 130
		Carbon Tetrachloride	2012/02/16		111	%	70 - 130
		1,1-Dichloroethane	2012/02/16		109	%	70 - 130
		1,2-Dichloroethane	2012/02/16		113	%	70 - 130
		Ethylene Dibromide	2012/02/16		109	%	70 - 130
		1,1,1-Trichloroethane	2012/02/16		108	%	70 - 130
		1,1,2-Trichloroethane	2012/02/16		106	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/02/16		106	%	70 - 130
		cis-1,3-Dichloropropene	2012/02/16		115	%	70 - 130
		trans-1,3-Dichloropropene	2012/02/16		120	%	70 - 130
		1,2-Dichloropropane	2012/02/16		108	%	70 - 130
		Bromomethane	2012/02/16		111	%	70 - 130
		Bromoform	2012/02/16		115	%	70 - 130
		Bromodichloromethane	2012/02/16		109	%	70 - 130
		Dibromochloromethane	2012/02/16		112	%	70 - 130
		Heptane	2012/02/16		108	%	70 - 130
		Trichloroethylene	2012/02/16		106	%	70 - 130
		Tetrachloroethylene	2012/02/16		106	%	70 - 130
		Benzene	2012/02/16		109	%	70 - 130
		Toluene	2012/02/16		109	%	70 - 130
		Ethylbenzene	2012/02/16		110	%	70 - 130
		p+m-Xylene	2012/02/16		107	%	70 - 130
		o-Xylene	2012/02/16		106	%	70 - 130
		Styrene	2012/02/16		93	%	70 - 130
		1,3,5-Trimethylbenzene	2012/02/16		104	%	70 - 130
		1,2,4-Trimethylbenzene	2012/02/16		104	%	70 - 130
		4-ethyltoluene	2012/02/16		106	%	70 - 130

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB220693

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2769456 S_S	Spiked Blank	Chlorobenzene	2012/02/16		105	%	70 - 130
		Benzyl chloride	2012/02/16		114	%	70 - 130
		1,3-Dichlorobenzene	2012/02/16		101	%	70 - 130
		1,4-Dichlorobenzene	2012/02/16		99	%	70 - 130
		1,2-Dichlorobenzene	2012/02/16		97	%	70 - 130
		1,2,4-Trichlorobenzene	2012/02/16		94	%	70 - 130
		Hexachlorobutadiene	2012/02/16		96	%	70 - 130
		Hexane	2012/02/16		112	%	70 - 130
		Cyclohexane	2012/02/16		108	%	70 - 130
		Tetrahydrofuran	2012/02/16		117	%	70 - 130
		1,4-Dioxane	2012/02/16		124	%	70 - 130
	Method Blank	Bromochloromethane	2012/02/16		100	%	60 - 140
		D5-Chlorobenzene	2012/02/16		94	%	60 - 140
		Difluorobenzene	2012/02/16		102	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/16	<0.20		ppbv	
		Carbon Disulfide	2012/02/16	<0.50		ppbv	
		Propene	2012/02/16	<0.30		ppbv	
		Vinyl Acetate	2012/02/16	<0.20		ppbv	
		Vinyl Bromide	2012/02/16	<0.20		ppbv	
		Dichlorodifluoromethane (FREON 12)	2012/02/16	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/02/16	<0.17		ppbv	
		Chloromethane	2012/02/16	<0.30		ppbv	
		Vinyl Chloride	2012/02/16	<0.18		ppbv	
		Chloroethane	2012/02/16	<0.30		ppbv	
		1,3-Butadiene	2012/02/16	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/02/16	<0.20		ppbv	
		Trichlorotrifluoroethane	2012/02/16	<0.15		ppbv	
		Ethanol (ethyl alcohol)	2012/02/16	<2.3		ppbv	
		2-propanol	2012/02/16	<3.0		ppbv	
		2-Propanone	2012/02/16	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/02/16	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/02/16	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/02/16	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/02/16	<0.20		ppbv	
		Ethyl Acetate	2012/02/16	<2.2		ppbv	
		1,1-Dichloroethylene	2012/02/16	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/02/16	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/02/16	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/02/16	<0.80		ppbv	
		Chloroform	2012/02/16	<0.15		ppbv	
		Carbon Tetrachloride	2012/02/16	<0.30		ppbv	
		1,1-Dichloroethane	2012/02/16	<0.20		ppbv	
		1,2-Dichloroethane	2012/02/16	<0.20		ppbv	
		Ethylene Dibromide	2012/02/16	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/02/16	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/02/16	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/02/16	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/02/16	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/02/16	<0.17		ppbv	
		1,2-Dichloropropane	2012/02/16	<0.40		ppbv	
		Bromomethane	2012/02/16	<0.18		ppbv	
		Bromoform	2012/02/16	<0.20		ppbv	
		Bromodichloromethane	2012/02/16	<0.20		ppbv	
		Dibromochloromethane	2012/02/16	<0.20		ppbv	
		Heptane	2012/02/16	<0.30		ppbv	

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

### Quality Assurance Report (Continued)

Maxxam Job Number: GB220693

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2769456 S_S	Method Blank	Trichloroethylene	2012/02/16	<0.30		ppbv	
		Tetrachloroethylene	2012/02/16	<0.20		ppbv	
		Benzene	2012/02/16	<0.18		ppbv	
		Toluene	2012/02/16	<0.20		ppbv	
		Ethylbenzene	2012/02/16	<0.20		ppbv	
		p+m-Xylene	2012/02/16	<0.37		ppbv	
		o-Xylene	2012/02/16	<0.20		ppbv	
		Styrene	2012/02/16	<0.20		ppbv	
		1,3,5-Trimethylbenzene	2012/02/16	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/02/16	<0.50		ppbv	
		4-ethyltoluene	2012/02/16	<2.2		ppbv	
		Chlorobenzene	2012/02/16	<0.20		ppbv	
		Benzyl chloride	2012/02/16	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/02/16	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/02/16	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/02/16	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/02/16	<2.0		ppbv	
		Hexachlorobutadiene	2012/02/16	<3.0		ppbv	
		Hexane	2012/02/16	<0.30		ppbv	
		Cyclohexane	2012/02/16	<0.20		ppbv	
		Tetrahydrofuran	2012/02/16	<0.40		ppbv	
		1,4-Dioxane	2012/02/16	<2.0		ppbv	
		Xylene (Total)	2012/02/16	<0.60		ppbv	
	RPD - Sample/Sample Dup	Vinyl Chloride	2012/02/16	NC		%	25
		1,1-Dichloroethylene	2012/02/16	NC		%	25
		cis-1,2-Dichloroethylene	2012/02/16	NC		%	25
		trans-1,2-Dichloroethylene	2012/02/16	NC		%	25
		Trichloroethylene	2012/02/16	NC		%	25
		Tetrachloroethylene	2012/02/16	NC		%	25

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6167  
Location: Cold Lake South Canister ID: 248  
Station ID: Lica 1 Canister Installation Date/Time: Feb 7, 2012 @ 11:15 mst  
Field Sample ID: LICA VOC/ CLS /Feb 9, 2012 Canister Removal Date/Time: Feb 14, 2012 @ 12:50 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
09-Feb-12	02/09/2012 0:00	02/10/2012 0:00	24.00

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	646	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-28	23

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: System leak check prior to sampling. COC # 08613  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Technician Signiture: Ting Xu/Theo McLaren





Your C.O.C. #: 08613

**Attention: Michael Bisaga**

Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

**Report Date: 2012/02/29**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B222733**

**Received: 2012/02/16, 10:45**

Sample Matrix: AIR  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	1	N/A	2012/02/21	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2012/02/21	BRL SOP-00304	EPA TO-15

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

**Encryption Key**

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763

=====  
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.

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Total cover pages: 1

Maxxam Job #: B222733  
Report Date: 2012/02/29

**RESULTS OF ANALYSES OF AIR**

Maxxam ID		MN9782	
Sampling Date		2012/02/09	
COC Number		08613	
	<b>Units</b>	<b>LICA VOC/CLS/FEB 09, 2012 - 248</b>	<b>QC Batch</b>

<b>Volatile Organics</b>			
Pressure on Receipt	psig	22	2770245
QC Batch = Quality Control Batch			

Maxxam Job #: B222733  
 Report Date: 2012/02/29

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MN9782				
Sampling Date		2012/02/09				
COC Number		08613				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 09, 2012 - 248</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

<b>Volatiles Organics</b>						
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	2770686
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	2770686
Propene	ppbv	<0.30	0.30	<0.516	0.516	2770686
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	2770686
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	2770686
Dichlorodifluoromethane (FREON 12)	ppbv	0.67	0.20	3.31	0.989	2770686
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	2770686
Chloromethane	ppbv	0.52	0.30	1.08	0.620	2770686
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	2770686
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	2770686
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	2770686
Trichlorofluoromethane (FREON 11)	ppbv	0.32	0.20	1.77	1.12	2770686
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	2770686
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	2770686
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	2770686
2-Propanone	ppbv	1.32	0.80	3.15	1.90	2770686
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	2770686
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	2770686
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	2770686
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	2770686
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	2770686
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	2770686
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	2770686
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	2770686
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	2770686
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	2770686
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	2770686
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2770686
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2770686
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	2770686
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	2770686
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B222733  
 Report Date: 2012/02/29

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MN9782				
Sampling Date		2012/02/09				
COC Number		08613				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 09, 2012 - 248</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	2770686
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	2770686
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	2770686
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	2770686
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	2770686
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	2770686
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	2770686
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	2770686
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	2770686
Heptane	ppbv	<0.30	0.30	<1.23	1.23	2770686
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	2770686
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	2770686
Benzene	ppbv	0.22	0.18	0.693	0.575	2770686
Toluene	ppbv	0.22	0.20	0.822	0.753	2770686
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	2770686
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	2770686
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	2770686
Styrene	ppbv	<0.20	0.20	<0.852	0.852	2770686
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2770686
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2770686
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	2770686
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	2770686
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	2770686
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2770686
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2770686
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2770686
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	2770686
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	2770686
Hexane	ppbv	<0.30	0.30	<1.06	1.06	2770686
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	2770686
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	2770686
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	2770686
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	2770686
QC Batch = Quality Control Batch						

Maxxam Job #: B222733  
 Report Date: 2012/02/29

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MN9782				
Sampling Date		2012/02/09				
COC Number		08613				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 09, 2012 - 248</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

<b>Surrogate Recovery (%)</b>						
Bromochloromethane	%	84		N/A	N/A	2770686
D5-Chlorobenzene	%	97		N/A	N/A	2770686
Difluorobenzene	%	86		N/A	N/A	2770686

N/A = Not Applicable  
 QC Batch = Quality Control Batch

Maxxam Job #: B222733  
Report Date: 2012/02/29

### Test Summary

**Maxxam ID** MN9782  
**Sample ID** LICA VOC/CLS/FEB 09, 2012 - 248  
**Matrix** AIR

**Collected** 2012/02/09  
**Shipped**  
**Received** 2012/02/16

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	2770245	N/A	2012/02/21	YAO LIANG SUN
Volatile Organics in Air (TO-15)	GC/MS	2770686	N/A	2012/02/21	YAO LIANG SUN

Maxxam Job #: B222733  
Report Date: 2012/02/29

**GENERAL COMMENTS**

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB222733

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2770686 LSY	Spiked Blank	Bromochloromethane	2012/02/21		95	%	60 - 140
		D5-Chlorobenzene	2012/02/21		95	%	60 - 140
		Difluorobenzene	2012/02/21		97	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/21		97	%	70 - 130
		Carbon Disulfide	2012/02/21		96	%	70 - 130
		Propene	2012/02/21		88	%	70 - 130
		Vinyl Acetate	2012/02/21		96	%	70 - 130
		Vinyl Bromide	2012/02/21		104	%	70 - 130
		Dichlorodifluoromethane (FREON 12)	2012/02/21		96	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/02/21		108	%	70 - 130
		Chloromethane	2012/02/21		91	%	70 - 130
		Vinyl Chloride	2012/02/21		93	%	70 - 130
		Chloroethane	2012/02/21		92	%	70 - 130
		1,3-Butadiene	2012/02/21		80	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/02/21		96	%	70 - 130
		Trichlorotrifluoroethane	2012/02/21		94	%	70 - 130
		Ethanol (ethyl alcohol)	2012/02/21		75	%	70 - 130
		2-propanol	2012/02/21		90	%	70 - 130
		2-Propanone	2012/02/21		99	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/02/21		90	%	70 - 130
		Methyl Isobutyl Ketone	2012/02/21		92	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/02/21		95	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/02/21		99	%	70 - 130
		Ethyl Acetate	2012/02/21		95	%	70 - 130
		1,1-Dichloroethylene	2012/02/21		95	%	70 - 130
		cis-1,2-Dichloroethylene	2012/02/21		95	%	70 - 130
		trans-1,2-Dichloroethylene	2012/02/21		97	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/02/21		83	%	70 - 130
		Chloroform	2012/02/21		93	%	70 - 130
		Carbon Tetrachloride	2012/02/21		95	%	70 - 130
		1,1-Dichloroethane	2012/02/21		93	%	70 - 130
		1,2-Dichloroethane	2012/02/21		96	%	70 - 130
		Ethylene Dibromide	2012/02/21		93	%	70 - 130
		1,1,1-Trichloroethane	2012/02/21		94	%	70 - 130
		1,1,2-Trichloroethane	2012/02/21		92	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/02/21		87	%	70 - 130
		cis-1,3-Dichloropropene	2012/02/21		94	%	70 - 130
		trans-1,3-Dichloropropene	2012/02/21		96	%	70 - 130
		1,2-Dichloropropane	2012/02/21		91	%	70 - 130
		Bromomethane	2012/02/21		95	%	70 - 130
		Bromoform	2012/02/21		102	%	70 - 130
		Bromodichloromethane	2012/02/21		97	%	70 - 130
		Dibromochloromethane	2012/02/21		97	%	70 - 130
		Heptane	2012/02/21		95	%	70 - 130
		Trichloroethylene	2012/02/21		94	%	70 - 130
		Tetrachloroethylene	2012/02/21		97	%	70 - 130
		Benzene	2012/02/21		93	%	70 - 130
		Toluene	2012/02/21		95	%	70 - 130
		Ethylbenzene	2012/02/21		103	%	70 - 130
		p+m-Xylene	2012/02/21		100	%	70 - 130
		o-Xylene	2012/02/21		99	%	70 - 130
		Styrene	2012/02/21		85	%	70 - 130
		1,3,5-Trimethylbenzene	2012/02/21		88	%	70 - 130
		1,2,4-Trimethylbenzene	2012/02/21		84	%	70 - 130
		4-ethyltoluene	2012/02/21		94	%	70 - 130



Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB222733

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2770686 LSY	Spiked Blank	Chlorobenzene	2012/02/21		100	%	70 - 130
		Benzyl chloride	2012/02/21		78	%	70 - 130
		1,3-Dichlorobenzene	2012/02/21		83	%	70 - 130
		1,4-Dichlorobenzene	2012/02/21		81	%	70 - 130
		1,2-Dichlorobenzene	2012/02/21		79	%	70 - 130
		1,2,4-Trichlorobenzene	2012/02/21		99	%	70 - 130
		Hexachlorobutadiene	2012/02/21		113	%	70 - 130
		Hexane	2012/02/21		97	%	70 - 130
		Cyclohexane	2012/02/21		97	%	70 - 130
		Tetrahydrofuran	2012/02/21		95	%	70 - 130
		1,4-Dioxane	2012/02/21		95	%	70 - 130
	Method Blank	Xylene (Total)	2012/02/21		100	%	70 - 130
		Bromochloromethane	2012/02/21		88	%	60 - 140
		D5-Chlorobenzene	2012/02/21		91	%	60 - 140
		Difluorobenzene	2012/02/21		89	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/21	<0.20		ppbv	
		Carbon Disulfide	2012/02/21	<0.50		ppbv	
		Propene	2012/02/21	<0.30		ppbv	
		Vinyl Acetate	2012/02/21	<0.20		ppbv	
		Vinyl Bromide	2012/02/21	<0.20		ppbv	
		Dichlorodifluoromethane (FREON 12)	2012/02/21	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/02/21	<0.17		ppbv	
		Chloromethane	2012/02/21	<0.30		ppbv	
		Vinyl Chloride	2012/02/21	<0.18		ppbv	
		Chloroethane	2012/02/21	<0.30		ppbv	
		1,3-Butadiene	2012/02/21	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/02/21	<0.20		ppbv	
		Trichlorotrifluoroethane	2012/02/21	<0.15		ppbv	
		Ethanol (ethyl alcohol)	2012/02/21	<2.3		ppbv	
		2-propanol	2012/02/21	<3.0		ppbv	
		2-Propanone	2012/02/21	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/02/21	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/02/21	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/02/21	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/02/21	<0.20		ppbv	
		Ethyl Acetate	2012/02/21	<2.2		ppbv	
		1,1-Dichloroethylene	2012/02/21	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/02/21	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/02/21	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/02/21	<0.80		ppbv	
		Chloroform	2012/02/21	<0.15		ppbv	
		Carbon Tetrachloride	2012/02/21	<0.30		ppbv	
		1,1-Dichloroethane	2012/02/21	<0.20		ppbv	
		1,2-Dichloroethane	2012/02/21	<0.20		ppbv	
		Ethylene Dibromide	2012/02/21	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/02/21	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/02/21	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/02/21	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/02/21	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/02/21	<0.17		ppbv	
		1,2-Dichloropropane	2012/02/21	<0.40		ppbv	
		Bromomethane	2012/02/21	<0.18		ppbv	
		Bromoform	2012/02/21	<0.20		ppbv	
		Bromodichloromethane	2012/02/21	<0.20		ppbv	
		Dibromochloromethane	2012/02/21	<0.20		ppbv	

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

### Quality Assurance Report (Continued)

Maxxam Job Number: GB222733

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2770686 LSY	Method Blank	Heptane	2012/02/21	<0.30		ppbv	
		Trichloroethylene	2012/02/21	<0.30		ppbv	
		Tetrachloroethylene	2012/02/21	<0.20		ppbv	
		Benzene	2012/02/21	<0.18		ppbv	
		Toluene	2012/02/21	<0.20		ppbv	
		Ethylbenzene	2012/02/21	<0.20		ppbv	
		p+m-Xylene	2012/02/21	<0.37		ppbv	
		o-Xylene	2012/02/21	<0.20		ppbv	
		Styrene	2012/02/21	<0.20		ppbv	
		1,3,5-Trimethylbenzene	2012/02/21	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/02/21	<0.50		ppbv	
		4-ethyltoluene	2012/02/21	<2.2		ppbv	
		Chlorobenzene	2012/02/21	<0.20		ppbv	
		Benzyl chloride	2012/02/21	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/02/21	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/02/21	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/02/21	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/02/21	<2.0		ppbv	
		Hexachlorobutadiene	2012/02/21	<3.0		ppbv	
		Hexane	2012/02/21	<0.30		ppbv	
		Cyclohexane	2012/02/21	<0.20		ppbv	
		Tetrahydrofuran	2012/02/21	<0.40		ppbv	
		1,4-Dioxane	2012/02/21	<2.0		ppbv	
		Xylene (Total)	2012/02/21	<0.60		ppbv	

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Your C.O.C. #: 10621

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

Report Date: 2012/02/29

**CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B225735****Received: 2012/02/23, 10:10**Sample Matrix: AIR  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	1	N/A	2012/02/23	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2012/02/23	BRL SOP-00304	EPA TO-15

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

## Encryption Key

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763

=====  
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.

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Total cover pages: 1

Page 1 of 10

Maxxam Job #: B225735  
Report Date: 2012/02/29

**RESULTS OF ANALYSES OF AIR**

Maxxam ID		MP3738	
Sampling Date		2012/02/15	
COC Number		10621	
	<b>Units</b>	<b>LICA VOC/CLS/FEB15, 12 / 111</b>	<b>QC Batch</b>

<b>Volatile Organics</b>			
Pressure on Receipt	psig	23	2772906
QC Batch = Quality Control Batch			

Maxxam Job #: B225735  
 Report Date: 2012/02/29

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MP3738				
Sampling Date		2012/02/15				
COC Number		10621				
	<b>Units</b>	<b>LICA VOC/CLS/FEB15, 12 / 111</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>
<b>Volatile Organics</b>						
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	2772932
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	2772932
Propene	ppbv	<0.30	0.30	<0.516	0.516	2772932
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	2772932
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	2772932
Dichlorodifluoromethane (FREON 12)	ppbv	0.63	0.20	3.13	0.989	2772932
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	2772932
Chloromethane	ppbv	0.56	0.30	1.15	0.620	2772932
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	2772932
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	2772932
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	2772932
Trichlorofluoromethane (FREON 11)	ppbv	0.31	0.20	1.76	1.12	2772932
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	2772932
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	2772932
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	2772932
2-Propanone	ppbv	1.83	0.80	4.35	1.90	2772932
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	2772932
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	2772932
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	2772932
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	2772932
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	2772932
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	2772932
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	2772932
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	2772932
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	2772932
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	2772932
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	2772932
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2772932
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2772932
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	2772932
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	2772932
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B225735  
 Report Date: 2012/02/29

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MP3738				
Sampling Date		2012/02/15				
COC Number		10621				
	<b>Units</b>	<b>LICA VOC/CLS/FEB15, 12 / 111</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	2772932
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	2772932
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	2772932
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	2772932
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	2772932
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	2772932
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	2772932
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	2772932
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	2772932
Heptane	ppbv	<0.30	0.30	<1.23	1.23	2772932
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	2772932
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	2772932
Benzene	ppbv	0.26	0.18	0.815	0.575	2772932
Toluene	ppbv	<0.20	0.20	<0.753	0.753	2772932
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	2772932
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	2772932
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	2772932
Styrene	ppbv	<0.20	0.20	<0.852	0.852	2772932
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2772932
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2772932
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	2772932
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	2772932
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	2772932
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2772932
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2772932
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2772932
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	2772932
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	2772932
Hexane	ppbv	<0.30	0.30	<1.06	1.06	2772932
Cyclohexane	ppbv	0.30	0.20	1.03	0.688	2772932
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	2772932
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	2772932
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	2772932
QC Batch = Quality Control Batch						

Maxxam Job #: B225735  
 Report Date: 2012/02/29

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MP3738				
Sampling Date		2012/02/15				
COC Number		10621				
	<b>Units</b>	<b>LICA VOC/CLS/FEB15, 12 / 111</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

<b>Surrogate Recovery (%)</b>						
Bromochloromethane	%	76		N/A	N/A	2772932
D5-Chlorobenzene	%	76		N/A	N/A	2772932
Difluorobenzene	%	79		N/A	N/A	2772932

N/A = Not Applicable  
 QC Batch = Quality Control Batch



Maxxam Job #: B225735  
Report Date: 2012/02/29

### Test Summary

**Maxxam ID** MP3738  
**Sample ID** LICA VOC/CLS/FEB15, 12 / 111  
**Matrix** AIR

**Collected** 2012/02/15  
**Shipped**  
**Received** 2012/02/23

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	2772906	N/A	2012/02/23	YAO LIANG SUN
Volatile Organics in Air (TO-15)	GC/MS	2772932	N/A	2012/02/23	YAO LIANG SUN

Maxxam Job #: B225735  
Report Date: 2012/02/29

**GENERAL COMMENTS**

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB225735

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2772932 LSY	Spiked Blank	Bromochloromethane	2012/02/23		122	%	60 - 140
		D5-Chlorobenzene	2012/02/23		129	%	60 - 140
		Difluorobenzene	2012/02/23		128	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/23		92	%	70 - 130
		Carbon Disulfide	2012/02/23		91	%	70 - 130
		Propene	2012/02/23		93	%	70 - 130
		Vinyl Acetate	2012/02/23		92	%	70 - 130
		Vinyl Bromide	2012/02/23		96	%	70 - 130
		Dichlorodifluoromethane (FREON 12)	2012/02/23		96	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/02/23		112	%	70 - 130
		Chloromethane	2012/02/23		96	%	70 - 130
		Vinyl Chloride	2012/02/23		98	%	70 - 130
		Chloroethane	2012/02/23		89	%	70 - 130
		1,3-Butadiene	2012/02/23		79	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/02/23		86	%	70 - 130
		Trichlorotrifluoroethane	2012/02/23		89	%	70 - 130
		Ethanol (ethyl alcohol)	2012/02/23		61 (1)	%	70 - 130
		2-propanol	2012/02/23		83	%	70 - 130
		2-Propanone	2012/02/23		81	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/02/23		84	%	70 - 130
		Methyl Isobutyl Ketone	2012/02/23		89	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/02/23		92	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/02/23		94	%	70 - 130
		Ethyl Acetate	2012/02/23		90	%	70 - 130
		1,1-Dichloroethylene	2012/02/23		88	%	70 - 130
		cis-1,2-Dichloroethylene	2012/02/23		91	%	70 - 130
		trans-1,2-Dichloroethylene	2012/02/23		91	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/02/23		77	%	70 - 130
		Chloroform	2012/02/23		88	%	70 - 130
		Carbon Tetrachloride	2012/02/23		88	%	70 - 130
		1,1-Dichloroethane	2012/02/23		87	%	70 - 130
		1,2-Dichloroethane	2012/02/23		90	%	70 - 130
		Ethylene Dibromide	2012/02/23		98	%	70 - 130
		1,1,1-Trichloroethane	2012/02/23		88	%	70 - 130
		1,1,2-Trichloroethane	2012/02/23		95	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/02/23		80	%	70 - 130
		cis-1,3-Dichloropropene	2012/02/23		92	%	70 - 130
		trans-1,3-Dichloropropene	2012/02/23		97	%	70 - 130
		1,2-Dichloropropane	2012/02/23		89	%	70 - 130
		Bromomethane	2012/02/23		94	%	70 - 130
		Bromoform	2012/02/23		94	%	70 - 130
		Bromodichloromethane	2012/02/23		92	%	70 - 130
		Dibromochloromethane	2012/02/23		100	%	70 - 130
		Heptane	2012/02/23		89	%	70 - 130
		Trichloroethylene	2012/02/23		89	%	70 - 130
		Tetrachloroethylene	2012/02/23		98	%	70 - 130
		Benzene	2012/02/23		91	%	70 - 130
		Toluene	2012/02/23		98	%	70 - 130
		Ethylbenzene	2012/02/23		94	%	70 - 130
		p+m-Xylene	2012/02/23		92	%	70 - 130
		o-Xylene	2012/02/23		92	%	70 - 130
		Styrene	2012/02/23		83	%	70 - 130
		1,3,5-Trimethylbenzene	2012/02/23		83	%	70 - 130
		1,2,4-Trimethylbenzene	2012/02/23		81	%	70 - 130
		4-ethyltoluene	2012/02/23		91	%	70 - 130

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB225735

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2772932 LSY	Spiked Blank	Chlorobenzene	2012/02/23		90	%	70 - 130
		Benzyl chloride	2012/02/23		80	%	70 - 130
		1,3-Dichlorobenzene	2012/02/23		80	%	70 - 130
		1,4-Dichlorobenzene	2012/02/23		80	%	70 - 130
		1,2-Dichlorobenzene	2012/02/23		74	%	70 - 130
		1,2,4-Trichlorobenzene	2012/02/23		79	%	70 - 130
		Hexachlorobutadiene	2012/02/23		75	%	70 - 130
		Hexane	2012/02/23		91	%	70 - 130
		Cyclohexane	2012/02/23		91	%	70 - 130
		Tetrahydrofuran	2012/02/23		90	%	70 - 130
		1,4-Dioxane	2012/02/23		85	%	70 - 130
		Xylene (Total)	2012/02/23		92	%	70 - 130
	Method Blank	Bromochloromethane	2012/02/23		97	%	60 - 140
		D5-Chlorobenzene	2012/02/23		97	%	60 - 140
		Difluorobenzene	2012/02/23		100	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/23	<0.20		ppbv	
		Carbon Disulfide	2012/02/23	<0.50		ppbv	
		Propene	2012/02/23	<0.30		ppbv	
		Vinyl Acetate	2012/02/23	<0.20		ppbv	
		Vinyl Bromide	2012/02/23	<0.20		ppbv	
		Dichlorodifluoromethane (FREON 12)	2012/02/23	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/02/23	<0.17		ppbv	
		Chloromethane	2012/02/23	<0.30		ppbv	
		Vinyl Chloride	2012/02/23	<0.18		ppbv	
		Chloroethane	2012/02/23	<0.30		ppbv	
		1,3-Butadiene	2012/02/23	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/02/23	<0.20		ppbv	
		Trichlorotrifluoroethane	2012/02/23	<0.15		ppbv	
		Ethanol (ethyl alcohol)	2012/02/23	<2.3		ppbv	
		2-propanol	2012/02/23	<3.0		ppbv	
		2-Propanone	2012/02/23	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/02/23	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/02/23	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/02/23	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/02/23	<0.20		ppbv	
		Ethyl Acetate	2012/02/23	<2.2		ppbv	
		1,1-Dichloroethylene	2012/02/23	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/02/23	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/02/23	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/02/23	<0.80		ppbv	
		Chloroform	2012/02/23	<0.15		ppbv	
		Carbon Tetrachloride	2012/02/23	<0.30		ppbv	
		1,1-Dichloroethane	2012/02/23	<0.20		ppbv	
		1,2-Dichloroethane	2012/02/23	<0.20		ppbv	
		Ethylene Dibromide	2012/02/23	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/02/23	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/02/23	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/02/23	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/02/23	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/02/23	<0.17		ppbv	
		1,2-Dichloropropane	2012/02/23	<0.40		ppbv	
		Bromomethane	2012/02/23	<0.18		ppbv	
		Bromoform	2012/02/23	<0.20		ppbv	
		Bromodichloromethane	2012/02/23	<0.20		ppbv	
		Dibromochloromethane	2012/02/23	<0.20		ppbv	

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB225735

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2772932 LSY	Method Blank	Heptane	2012/02/23	<0.30		ppbv	
		Trichloroethylene	2012/02/23	<0.30		ppbv	
		Tetrachloroethylene	2012/02/23	<0.20		ppbv	
		Benzene	2012/02/23	<0.18		ppbv	
		Toluene	2012/02/23	<0.20		ppbv	
		Ethylbenzene	2012/02/23	<0.20		ppbv	
		p+m-Xylene	2012/02/23	<0.37		ppbv	
		o-Xylene	2012/02/23	<0.20		ppbv	
		Styrene	2012/02/23	<0.20		ppbv	
		1,3,5-Trimethylbenzene	2012/02/23	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/02/23	<0.50		ppbv	
		4-ethyltoluene	2012/02/23	<2.2		ppbv	
		Chlorobenzene	2012/02/23	<0.20		ppbv	
		Benzyl chloride	2012/02/23	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/02/23	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/02/23	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/02/23	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/02/23	<2.0		ppbv	
		Hexachlorobutadiene	2012/02/23	<3.0		ppbv	
		Hexane	2012/02/23	<0.30		ppbv	
		Cyclohexane	2012/02/23	<0.20		ppbv	
		Tetrahydrofuran	2012/02/23	<0.40		ppbv	
		1,4-Dioxane	2012/02/23	<2.0		ppbv	
		Xylene (Total)	2012/02/23	<0.60		ppbv	
	RPD - Sample/Sample Dup	Trichloroethylene	2012/02/23	NC		%	25
		Tetrachloroethylene	2012/02/23	NC		%	25

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6167  
Location: Cold Lake South Canister ID: 7785  
Station ID: Lica 1 Canister Installation Date/Time: Feb 17, 2012 @ 08:35 mst  
Field Sample ID: LICA VOC/ CLS /Feb 21, 2012 Canister Removal Date/Time: Feb 22, 2012 @ 14:48 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
21-Feb-12	02/21/2012 0:00	02/22/2012 0:00	24.00

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	646	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-28	24

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

Comments: System leak check prior to sampling. COC # 08799

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Technician Signiture: Ting Xu

Your C.O.C. #: 08799

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

Report Date: 2012/03/01

**CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B227154****Received: 2012/02/25, 10:20**Sample Matrix: AIR  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	1	N/A	2012/02/27	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2012/02/27	BRL SOP-00304	EPA TO-15

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

## Encryption Key

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763

=====  
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.

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Total cover pages: 1

Page 1 of 11

Maxxam Job #: B227154  
 Report Date: 2012/03/01

**RESULTS OF ANALYSES OF AIR**

Maxxam ID		MQ1365	
Sampling Date		2012/02/21	
COC Number		08799	
	<b>Units</b>	<b>LICA VOC/CLS/FEB 21,12 / 7785</b>	<b>QC Batch</b>

<b>Volatile Organics</b>			
Pressure on Receipt	psig	23	2776314

QC Batch = Quality Control Batch



Maxxam Job #: B227154  
 Report Date: 2012/03/01

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MQ1365				
Sampling Date		2012/02/21				
COC Number		08799				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 21,12 / 7785</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

<b>Volatiles Organics</b>						
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	2776313
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	2776313
Propene	ppbv	<1.2	1.2	<1.98	1.98	2776313
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	2776313
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	2776313
Dichlorodifluoromethane (FREON 12)	ppbv	0.70	0.20	3.46	0.989	2776313
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	2776313
Chloromethane	ppbv	0.62	0.30	1.28	0.620	2776313
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	2776313
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	2776313
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	2776313
Trichlorofluoromethane (FREON 11)	ppbv	0.30	0.20	1.70	1.12	2776313
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	2776313
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	2776313
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	2776313
2-Propanone	ppbv	1.00	0.80	2.37	1.90	2776313
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	2776313
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	2776313
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	2776313
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	2776313
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	2776313
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	2776313
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	2776313
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	2776313
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	2776313
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	2776313
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	2776313
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2776313
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2776313
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	2776313
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	2776313
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B227154  
 Report Date: 2012/03/01

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MQ1365				
Sampling Date		2012/02/21				
COC Number		08799				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 21,12 / 7785</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	2776313
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	2776313
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	2776313
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	2776313
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	2776313
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	2776313
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	2776313
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	2776313
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	2776313
Heptane	ppbv	<0.30	0.30	<1.23	1.23	2776313
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	2776313
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	2776313
Benzene	ppbv	0.20	0.18	0.636	0.575	2776313
Toluene	ppbv	<0.20	0.20	<0.753	0.753	2776313
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	2776313
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	2776313
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	2776313
Styrene	ppbv	<0.20	0.20	<0.852	0.852	2776313
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2776313
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2776313
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	2776313
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	2776313
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	2776313
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2776313
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2776313
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2776313
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	2776313
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	2776313
Hexane	ppbv	<0.30	0.30	<1.06	1.06	2776313
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	2776313
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	2776313
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	2776313
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	2776313
QC Batch = Quality Control Batch						

Maxxam Job #: B227154  
 Report Date: 2012/03/01

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MQ1365				
Sampling Date		2012/02/21				
COC Number		08799				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 21,12 / 7785</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

<b>Surrogate Recovery (%)</b>						
Bromochloromethane	%	72		N/A	N/A	2776313
D5-Chlorobenzene	%	72		N/A	N/A	2776313
Difluorobenzene	%	75		N/A	N/A	2776313
N/A = Not Applicable QC Batch = Quality Control Batch						

Maxxam Job #: B227154  
Report Date: 2012/03/01

### Test Summary

**Maxxam ID** MQ1365  
**Sample ID** LICA VOC/CLS/FEB 21,12 / 7785  
**Matrix** AIR

**Collected** 2012/02/21  
**Shipped**  
**Received** 2012/02/25

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	2776314	N/A	2012/02/27	DIANE TEMNIUK
Volatile Organics in Air (TO-15)	GC/MS	2776313	N/A	2012/02/27	DIANE TEMNIUK

Maxxam Job #: B227154  
Report Date: 2012/03/01

**GENERAL COMMENTS**

Sample MQ1365-01: Increase MDL for propene due to matrix interference, on a possible positive.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB227154

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2776313 DVO	Spiked Blank	Bromochloromethane	2012/02/27		96	%	60 - 140
		D5-Chlorobenzene	2012/02/27		98	%	60 - 140
		Difluorobenzene	2012/02/27		99	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/27		96	%	70 - 130
		Carbon Disulfide	2012/02/27		84	%	70 - 130
		Propene	2012/02/27		92	%	70 - 130
		Vinyl Acetate	2012/02/27		96	%	70 - 130
		Vinyl Bromide	2012/02/27		95	%	70 - 130
		Dichlorodifluoromethane (FREON 12)	2012/02/27		96	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/02/27		106	%	70 - 130
		Chloromethane	2012/02/27		101	%	70 - 130
		Vinyl Chloride	2012/02/27		93	%	70 - 130
		Chloroethane	2012/02/27		88	%	70 - 130
		1,3-Butadiene	2012/02/27		98	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/02/27		89	%	70 - 130
		Trichlorotrifluoroethane	2012/02/27		92	%	70 - 130
		Ethanol (ethyl alcohol)	2012/02/27		83	%	70 - 130
		2-propanol	2012/02/27		91	%	70 - 130
		2-Propanone	2012/02/27		100	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/02/27		85	%	70 - 130
		Methyl Isobutyl Ketone	2012/02/27		96	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/02/27		95	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/02/27		77	%	70 - 130
		Ethyl Acetate	2012/02/27		98	%	70 - 130
		1,1-Dichloroethylene	2012/02/27		90	%	70 - 130
		cis-1,2-Dichloroethylene	2012/02/27		90	%	70 - 130
		trans-1,2-Dichloroethylene	2012/02/27		93	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/02/27		90	%	70 - 130
		Chloroform	2012/02/27		88	%	70 - 130
		Carbon Tetrachloride	2012/02/27		90	%	70 - 130
		1,1-Dichloroethane	2012/02/27		88	%	70 - 130
		1,2-Dichloroethane	2012/02/27		90	%	70 - 130
		Ethylene Dibromide	2012/02/27		91	%	70 - 130
		1,1,1-Trichloroethane	2012/02/27		86	%	70 - 130
		1,1,2-Trichloroethane	2012/02/27		89	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/02/27		88	%	70 - 130
		cis-1,3-Dichloropropene	2012/02/27		87	%	70 - 130
		trans-1,3-Dichloropropene	2012/02/27		86	%	70 - 130
		1,2-Dichloropropane	2012/02/27		90	%	70 - 130
		Bromomethane	2012/02/27		93	%	70 - 130
		Bromoform	2012/02/27		100	%	70 - 130
		Bromodichloromethane	2012/02/27		95	%	70 - 130
		Dibromochloromethane	2012/02/27		99	%	70 - 130
		Heptane	2012/02/27		101	%	70 - 130
		Trichloroethylene	2012/02/27		90	%	70 - 130
		Tetrachloroethylene	2012/02/27		91	%	70 - 130
		Benzene	2012/02/27		87	%	70 - 130
		Toluene	2012/02/27		86	%	70 - 130
		Ethylbenzene	2012/02/27		85	%	70 - 130
		p+m-Xylene	2012/02/27		82	%	70 - 130
		o-Xylene	2012/02/27		84	%	70 - 130
		Styrene	2012/02/27		74	%	70 - 130
		1,3,5-Trimethylbenzene	2012/02/27		83	%	70 - 130
		1,2,4-Trimethylbenzene	2012/02/27		83	%	70 - 130
		4-ethyltoluene	2012/02/27		95	%	70 - 130

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB227154

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2776313 DVO	Spiked Blank	Chlorobenzene	2012/02/27		85	%	70 - 130
		Benzyl chloride	2012/02/27		80	%	70 - 130
		1,3-Dichlorobenzene	2012/02/27		86	%	70 - 130
		1,4-Dichlorobenzene	2012/02/27		85	%	70 - 130
		1,2-Dichlorobenzene	2012/02/27		86	%	70 - 130
		1,2,4-Trichlorobenzene	2012/02/27		75	%	70 - 130
		Hexachlorobutadiene	2012/02/27		86	%	70 - 130
		Hexane	2012/02/27		90	%	70 - 130
		Cyclohexane	2012/02/27		93	%	70 - 130
		Tetrahydrofuran	2012/02/27		98	%	70 - 130
		1,4-Dioxane	2012/02/27		84	%	70 - 130
	Method Blank	Bromochloromethane	2012/02/27		80	%	60 - 140
		D5-Chlorobenzene	2012/02/27		77	%	60 - 140
		Difluorobenzene	2012/02/27		81	%	60 - 140
		2,2,4-Trimethylpentane	2012/02/27	<0.20		ppbv	
		Carbon Disulfide	2012/02/27	<0.50		ppbv	
		Propene	2012/02/27	<0.30		ppbv	
		Vinyl Acetate	2012/02/27	<0.20		ppbv	
		Vinyl Bromide	2012/02/27	<0.20		ppbv	
		Dichlorodifluoromethane (FREON 12)	2012/02/27	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/02/27	<0.17		ppbv	
		Chloromethane	2012/02/27	<0.30		ppbv	
		Vinyl Chloride	2012/02/27	<0.18		ppbv	
		Chloroethane	2012/02/27	<0.30		ppbv	
		1,3-Butadiene	2012/02/27	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/02/27	<0.20		ppbv	
		Trichlorotrifluoroethane	2012/02/27	<0.15		ppbv	
		Ethanol (ethyl alcohol)	2012/02/27	<2.3		ppbv	
		2-propanol	2012/02/27	<3.0		ppbv	
		2-Propanone	2012/02/27	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/02/27	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/02/27	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/02/27	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/02/27	<0.20		ppbv	
		Ethyl Acetate	2012/02/27	<2.2		ppbv	
		1,1-Dichloroethylene	2012/02/27	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/02/27	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/02/27	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/02/27	<0.80		ppbv	
		Chloroform	2012/02/27	<0.15		ppbv	
		Carbon Tetrachloride	2012/02/27	<0.30		ppbv	
		1,1-Dichloroethane	2012/02/27	<0.20		ppbv	
		1,2-Dichloroethane	2012/02/27	<0.20		ppbv	
		Ethylene Dibromide	2012/02/27	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/02/27	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/02/27	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/02/27	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/02/27	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/02/27	<0.17		ppbv	
		1,2-Dichloropropane	2012/02/27	<0.40		ppbv	
		Bromomethane	2012/02/27	<0.18		ppbv	
		Bromoform	2012/02/27	<0.20		ppbv	
		Bromodichloromethane	2012/02/27	<0.20		ppbv	
		Dibromochloromethane	2012/02/27	<0.20		ppbv	
		Heptane	2012/02/27	<0.30		ppbv	

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB227154

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2776313 DVO	Method Blank	Trichloroethylene	2012/02/27	<0.30		ppbv	
		Tetrachloroethylene	2012/02/27	<0.20		ppbv	
		Benzene	2012/02/27	<0.18		ppbv	
		Toluene	2012/02/27	<0.20		ppbv	
		Ethylbenzene	2012/02/27	<0.20		ppbv	
		p+m-Xylene	2012/02/27	<0.37		ppbv	
		o-Xylene	2012/02/27	<0.20		ppbv	
		Styrene	2012/02/27	<0.20		ppbv	
		1,3,5-Trimethylbenzene	2012/02/27	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/02/27	<0.50		ppbv	
		4-ethyltoluene	2012/02/27	<2.2		ppbv	
		Chlorobenzene	2012/02/27	<0.20		ppbv	
		Benzyl chloride	2012/02/27	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/02/27	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/02/27	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/02/27	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/02/27	<2.0		ppbv	
		Hexachlorobutadiene	2012/02/27	<3.0		ppbv	
		Hexane	2012/02/27	<0.30		ppbv	
		Cyclohexane	2012/02/27	<0.20		ppbv	
		Tetrahydrofuran	2012/02/27	<0.40		ppbv	
		1,4-Dioxane	2012/02/27	<2.0		ppbv	
		Xylene (Total)	2012/02/27	<0.60		ppbv	
	RPD - Sample/Sample Dup	2,2,4-Trimethylpentane	2012/02/27	NC		%	25
		Carbon Disulfide	2012/02/27	NC		%	25
		Propene	2012/02/27	NC		%	25
		Vinyl Acetate	2012/02/27	NC		%	25
		Vinyl Bromide	2012/02/27	NC		%	25
		Dichlorodifluoromethane (FREON 12)	2012/02/27	NC		%	25
		1,2-Dichlorotetrafluoroethane	2012/02/27	NC		%	25
		Chloromethane	2012/02/27	NC		%	25
		Vinyl Chloride	2012/02/27	NC		%	25
		Chloroethane	2012/02/27	NC		%	25
		1,3-Butadiene	2012/02/27	NC		%	25
		Trichlorofluoromethane (FREON 11)	2012/02/27	2.8		%	25
		Trichlorotrifluoroethane	2012/02/27	NC		%	25
		Ethanol (ethyl alcohol)	2012/02/27	1.3		%	25
		2-propanol	2012/02/27	NC		%	25
		2-Propanone	2012/02/27	NC		%	25
		Methyl Ethyl Ketone (2-Butanone)	2012/02/27	NC		%	25
		Methyl Isobutyl Ketone	2012/02/27	NC		%	25
		Methyl Butyl Ketone (2-Hexanone)	2012/02/27	NC		%	25
		Methyl t-butyl ether (MTBE)	2012/02/27	NC		%	25
		Ethyl Acetate	2012/02/27	NC		%	25
		1,1-Dichloroethylene	2012/02/27	NC		%	25
		cis-1,2-Dichloroethylene	2012/02/27	NC		%	25
		trans-1,2-Dichloroethylene	2012/02/27	NC		%	25
		Methylene Chloride(Dichloromethane)	2012/02/27	NC		%	25
		Chloroform	2012/02/27	NC		%	25
		Carbon Tetrachloride	2012/02/27	NC		%	25
		1,1-Dichloroethane	2012/02/27	NC		%	25
		1,2-Dichloroethane	2012/02/27	NC		%	25
		Ethylene Dibromide	2012/02/27	NC		%	25



Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB227154

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2776313 DVO	RPD - Sample/Sample Dup	1,1,1-Trichloroethane	2012/02/27	NC		%	25
		1,1,2-Trichloroethane	2012/02/27	NC		%	25
		1,1,2,2-Tetrachloroethane	2012/02/27	NC		%	25
		cis-1,3-Dichloropropene	2012/02/27	NC		%	25
		trans-1,3-Dichloropropene	2012/02/27	NC		%	25
		1,2-Dichloropropane	2012/02/27	NC		%	25
		Bromomethane	2012/02/27	NC		%	25
		Bromoform	2012/02/27	NC		%	25
		Bromodichloromethane	2012/02/27	NC		%	25
		Dibromochloromethane	2012/02/27	NC		%	25
		Heptane	2012/02/27	NC		%	25
		Trichloroethylene	2012/02/27	0.6		%	25
		Tetrachloroethylene	2012/02/27	NC		%	25
		Benzene	2012/02/27	NC		%	25
		Toluene	2012/02/27	1.5		%	25
		Ethylbenzene	2012/02/27	NC		%	25
		p+m-Xylene	2012/02/27	NC		%	25
		o-Xylene	2012/02/27	NC		%	25
		Styrene	2012/02/27	NC		%	25
		1,3,5-Trimethylbenzene	2012/02/27	NC		%	25
		1,2,4-Trimethylbenzene	2012/02/27	NC		%	25
		4-ethyltoluene	2012/02/27	NC		%	25
		Chlorobenzene	2012/02/27	NC		%	25
		Benzyl chloride	2012/02/27	NC		%	25
		1,3-Dichlorobenzene	2012/02/27	NC		%	25
		1,4-Dichlorobenzene	2012/02/27	NC		%	25
		1,2-Dichlorobenzene	2012/02/27	NC		%	25
		1,2,4-Trichlorobenzene	2012/02/27	NC		%	25
		Hexachlorobutadiene	2012/02/27	NC		%	25
		Hexane	2012/02/27	NC		%	25
		Cyclohexane	2012/02/27	NC		%	25
		Tetrahydrofuran	2012/02/27	NC		%	25
		1,4-Dioxane	2012/02/27	NC		%	25
		Xylene (Total)	2012/02/27	NC		%	25

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6167  
Location: Cold Lake South Canister ID: 315  
Station ID: Lica 1 Canister Installation Date/Time: Feb 24 , 2012 @ 16:42 mst  
Field Sample ID: LICA VOC/ CLS /Feb 27, 2012 Canister Removal Date/Time: Mar 01 , 2012 @ 08:44 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
27-Feb-12	02/27/2012 0:00	02/28/2012 0:00	24.00

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	646	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-28	24

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

Comments: System leak check prior to sampling. COC # 08615

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Technician Signiture: Ting Xu

Your C.O.C. #: 08615

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7**Report Date: 2012/03/09****CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B230796****Received: 2012/03/03, 10:30**Sample Matrix: AIR  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	1	N/A	2012/03/06	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	1	N/A	2012/03/06	BRL SOP-00304	EPA TO-15

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

**Encryption Key**

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763

=====  
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.

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Total cover pages: 1

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Maxxam Job #: B230796  
 Report Date: 2012/03/09

**RESULTS OF ANALYSES OF AIR**

Maxxam ID		MS0455	
Sampling Date		2012/02/27 00:00	
COC Number		08615	
	<b>Units</b>	<b>LICA VOC/CLS/FEB 27,12</b>	<b>QC Batch</b>

<b>Volatile Organics</b>			
Pressure on Receipt	psig	22	2783244
QC Batch = Quality Control Batch			

Maxxam Job #: B230796  
 Report Date: 2012/03/09

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MS0455				
Sampling Date		2012/02/27 00:00				
COC Number		08615				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 27,12</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

<b>Volatile Organics</b>						
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	2783239
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	2783239
Propene	ppbv	<1.9	1.9	<3.24	3.24	2783239
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	2783239
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	2783239
Dichlorodifluoromethane (FREON 12)	ppbv	0.72	0.20	3.58	0.989	2783239
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	2783239
Chloromethane	ppbv	0.60	0.30	1.24	0.620	2783239
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	2783239
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	2783239
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	2783239
Trichlorofluoromethane (FREON 11)	ppbv	0.33	0.20	1.83	1.12	2783239
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	2783239
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	2783239
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	2783239
2-Propanone	ppbv	1.26	0.80	2.99	1.90	2783239
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	2783239
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	2783239
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	2783239
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	2783239
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	2783239
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	2783239
cis-1,2-Dichloroethylene	ppbv	0.25	0.19	0.990	0.753	2783239
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	2783239
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	2783239
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	2783239
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	2783239
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2783239
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	2783239
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	2783239
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B230796  
 Report Date: 2012/03/09

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MS0455				
Sampling Date		2012/02/27 00:00				
COC Number		08615				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 27,12</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>

1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	2783239
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	2783239
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	2783239
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	2783239
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	2783239
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	2783239
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	2783239
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	2783239
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	2783239
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	2783239
Heptane	ppbv	<0.30	0.30	<1.23	1.23	2783239
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	2783239
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	2783239
Benzene	ppbv	0.23	0.18	0.743	0.575	2783239
Toluene	ppbv	<0.20	0.20	<0.753	0.753	2783239
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	2783239
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	2783239
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	2783239
Styrene	ppbv	<0.20	0.20	<0.852	0.852	2783239
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2783239
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	2783239
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	2783239
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	2783239
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	2783239
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2783239
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2783239
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	2783239
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	2783239
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	2783239
Hexane	ppbv	<0.30	0.30	<1.06	1.06	2783239
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	2783239
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	2783239

QC Batch = Quality Control Batch

Maxxam Job #: B230796  
 Report Date: 2012/03/09

**VOLATILE ORGANICS BY GC/MS (AIR)**

Maxxam ID		MS0455				
Sampling Date		2012/02/27 00:00				
COC Number		08615				
	<b>Units</b>	<b>LICA VOC/CLS/FEB 27,12</b>	<b>RDL</b>	<b>ug/m3</b>	<b>DL (ug/m3)</b>	<b>QC Batch</b>
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	2783239
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	2783239
<b>Surrogate Recovery (%)</b>						
Bromochloromethane	%	83		N/A	N/A	2783239
D5-Chlorobenzene	%	80		N/A	N/A	2783239
Difluorobenzene	%	85		N/A	N/A	2783239
N/A = Not Applicable QC Batch = Quality Control Batch						

Maxxam Job #: B230796  
 Report Date: 2012/03/09

### Test Summary

**Maxxam ID** MS0455  
**Sample ID** LICA VOC/CLS/FEB 27,12  
**Matrix** AIR

**Collected** 2012/02/27  
**Shipped**  
**Received** 2012/03/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	2783244	N/A	2012/03/06	MELANIE MABINI
Volatile Organics in Air (TO-15)	GC/MS	2783239	N/A	2012/03/06	MELANIE MABINI

**Maxxam ID** MS0455 Dup  
**Sample ID** LICA VOC/CLS/FEB 27,12  
**Matrix** AIR

**Collected** 2012/02/27  
**Shipped**  
**Received** 2012/03/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organics in Air (TO-15)	GC/MS	2783239	N/A	2012/03/06	MELANIE MABINI



Maxxam Job #: B230796  
Report Date: 2012/03/09

**GENERAL COMMENTS**

Sample MS0455-01: Increase MDL for propene due to matrix interference on a possible positive.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

### Quality Assurance Report

Maxxam Job Number: GB230796

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2783239 MM2	Spiked Blank	Bromochloromethane	2012/03/06		99	%	60 - 140
		D5-Chlorobenzene	2012/03/06		102	%	60 - 140
		Difluorobenzene	2012/03/06		102	%	60 - 140
		2,2,4-Trimethylpentane	2012/03/06		109	%	70 - 130
		Carbon Disulfide	2012/03/06		92	%	70 - 130
		Propene	2012/03/06		113	%	70 - 130
		Vinyl Acetate	2012/03/06		119	%	70 - 130
		Vinyl Bromide	2012/03/06		104	%	70 - 130
		Dichlorodifluoromethane (FREON 12)	2012/03/06		112	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/03/06		120	%	70 - 130
		Chloromethane	2012/03/06		124	%	70 - 130
		Vinyl Chloride	2012/03/06		106	%	70 - 130
		Chloroethane	2012/03/06		99	%	70 - 130
		1,3-Butadiene	2012/03/06		115	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/03/06		103	%	70 - 130
		Trichlorotrifluoroethane	2012/03/06		100	%	70 - 130
		Ethanol (ethyl alcohol)	2012/03/06		109	%	70 - 130
		2-propanol	2012/03/06		110	%	70 - 130
		2-Propanone	2012/03/06		121	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/03/06		99	%	70 - 130
		Methyl Isobutyl Ketone	2012/03/06		119	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/03/06		117	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/03/06		94	%	70 - 130
		Ethyl Acetate	2012/03/06		119	%	70 - 130
		1,1-Dichloroethylene	2012/03/06		103	%	70 - 130
		cis-1,2-Dichloroethylene	2012/03/06		102	%	70 - 130
		trans-1,2-Dichloroethylene	2012/03/06		104	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/03/06		107	%	70 - 130
		Chloroform	2012/03/06		99	%	70 - 130
		Carbon Tetrachloride	2012/03/06		106	%	70 - 130
		1,1-Dichloroethane	2012/03/06		99	%	70 - 130
		1,2-Dichloroethane	2012/03/06		106	%	70 - 130
		Ethylene Dibromide	2012/03/06		103	%	70 - 130
		1,1,1-Trichloroethane	2012/03/06		101	%	70 - 130
		1,1,2-Trichloroethane	2012/03/06		100	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/03/06		100	%	70 - 130
		cis-1,3-Dichloropropene	2012/03/06		99	%	70 - 130
		trans-1,3-Dichloropropene	2012/03/06		101	%	70 - 130
		1,2-Dichloropropane	2012/03/06		102	%	70 - 130
		Bromomethane	2012/03/06		103	%	70 - 130
		Bromoform	2012/03/06		115	%	70 - 130
		Bromodichloromethane	2012/03/06		110	%	70 - 130
		Dibromochloromethane	2012/03/06		115	%	70 - 130
		Heptane	2012/03/06		124	%	70 - 130
		Trichloroethylene	2012/03/06		99	%	70 - 130
		Tetrachloroethylene	2012/03/06		101	%	70 - 130
		Benzene	2012/03/06		97	%	70 - 130
		Toluene	2012/03/06		97	%	70 - 130
		Ethylbenzene	2012/03/06		94	%	70 - 130
		p+m-Xylene	2012/03/06		91	%	70 - 130
		o-Xylene	2012/03/06		96	%	70 - 130
		Styrene	2012/03/06		82	%	70 - 130
		1,3,5-Trimethylbenzene	2012/03/06		94	%	70 - 130
		1,2,4-Trimethylbenzene	2012/03/06		95	%	70 - 130
		4-ethyltoluene	2012/03/06		107	%	70 - 130

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB230796

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2783239 MM2	Spiked Blank	Chlorobenzene	2012/03/06		93	%	70 - 130
		Benzyl chloride	2012/03/06		96	%	70 - 130
		1,3-Dichlorobenzene	2012/03/06		98	%	70 - 130
		1,4-Dichlorobenzene	2012/03/06		97	%	70 - 130
		1,2-Dichlorobenzene	2012/03/06		98	%	70 - 130
		1,2,4-Trichlorobenzene	2012/03/06		94	%	70 - 130
		Hexachlorobutadiene	2012/03/06		107	%	70 - 130
		Hexane	2012/03/06		100	%	70 - 130
		Cyclohexane	2012/03/06		107	%	70 - 130
		Tetrahydrofuran	2012/03/06		119	%	70 - 130
		1,4-Dioxane	2012/03/06		94	%	70 - 130
	Method Blank	Bromochloromethane	2012/03/06		84	%	60 - 140
		D5-Chlorobenzene	2012/03/06		81	%	60 - 140
		Difluorobenzene	2012/03/06		88	%	60 - 140
		2,2,4-Trimethylpentane	2012/03/06	<0.20		ppbv	
		Carbon Disulfide	2012/03/06	<0.50		ppbv	
		Propene	2012/03/06	<0.30		ppbv	
		Vinyl Acetate	2012/03/06	<0.20		ppbv	
		Vinyl Bromide	2012/03/06	<0.20		ppbv	
		Dichlorodifluoromethane (FREON 12)	2012/03/06	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/03/06	<0.17		ppbv	
		Chloromethane	2012/03/06	<0.30		ppbv	
		Vinyl Chloride	2012/03/06	<0.18		ppbv	
		Chloroethane	2012/03/06	<0.30		ppbv	
		1,3-Butadiene	2012/03/06	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/03/06	<0.20		ppbv	
		Trichlorotrifluoroethane	2012/03/06	<0.15		ppbv	
		Ethanol (ethyl alcohol)	2012/03/06	<2.3		ppbv	
		2-propanol	2012/03/06	<3.0		ppbv	
		2-Propanone	2012/03/06	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/03/06	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/03/06	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/03/06	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/03/06	<0.20		ppbv	
		Ethyl Acetate	2012/03/06	<2.2		ppbv	
		1,1-Dichloroethylene	2012/03/06	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/03/06	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/03/06	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/03/06	<0.80		ppbv	
		Chloroform	2012/03/06	<0.15		ppbv	
		Carbon Tetrachloride	2012/03/06	<0.30		ppbv	
		1,1-Dichloroethane	2012/03/06	<0.20		ppbv	
		1,2-Dichloroethane	2012/03/06	<0.20		ppbv	
		Ethylene Dibromide	2012/03/06	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/03/06	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/03/06	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/03/06	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/03/06	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/03/06	<0.17		ppbv	
		1,2-Dichloropropane	2012/03/06	<0.40		ppbv	
		Bromomethane	2012/03/06	<0.18		ppbv	
		Bromoform	2012/03/06	<0.20		ppbv	
		Bromodichloromethane	2012/03/06	<0.20		ppbv	
		Dibromochloromethane	2012/03/06	<0.20		ppbv	
		Heptane	2012/03/06	<0.30		ppbv	

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB230796

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2783239	MM2	Method Blank					
		Trichloroethylene	2012/03/06	<0.30		ppbv	
		Tetrachloroethylene	2012/03/06	<0.20		ppbv	
		Benzene	2012/03/06	<0.18		ppbv	
		Toluene	2012/03/06	<0.20		ppbv	
		Ethylbenzene	2012/03/06	<0.20		ppbv	
		p+m-Xylene	2012/03/06	<0.37		ppbv	
		o-Xylene	2012/03/06	<0.20		ppbv	
		Styrene	2012/03/06	<0.20		ppbv	
		1,3,5-Trimethylbenzene	2012/03/06	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/03/06	<0.50		ppbv	
		4-ethyltoluene	2012/03/06	<2.2		ppbv	
		Chlorobenzene	2012/03/06	<0.20		ppbv	
		Benzyl chloride	2012/03/06	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/03/06	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/03/06	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/03/06	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/03/06	<2.0		ppbv	
		Hexachlorobutadiene	2012/03/06	<3.0		ppbv	
		Hexane	2012/03/06	<0.30		ppbv	
		Cyclohexane	2012/03/06	<0.20		ppbv	
		Tetrahydrofuran	2012/03/06	<0.40		ppbv	
		1,4-Dioxane	2012/03/06	<2.0		ppbv	
		Xylene (Total)	2012/03/06	<0.60		ppbv	
	RPD - Sample/Sample Dup	2,2,4-Trimethylpentane	2012/03/06	NC		%	25
		Carbon Disulfide	2012/03/06	NC		%	25
		Propene	2012/03/06	NC		%	25
		Vinyl Acetate	2012/03/06	NC		%	25
		Vinyl Bromide	2012/03/06	NC		%	25
		Dichlorodifluoromethane (FREON 12)	2012/03/06	NC		%	25
		1,2-Dichlorotetrafluoroethane	2012/03/06	NC		%	25
		Chloromethane	2012/03/06	NC		%	25
		Vinyl Chloride	2012/03/06	NC		%	25
		Chloroethane	2012/03/06	NC		%	25
		1,3-Butadiene	2012/03/06	NC		%	25
		Trichlorofluoromethane (FREON 11)	2012/03/06	NC		%	25
		Trichlorotrifluoroethane	2012/03/06	NC		%	25
		Ethanol (ethyl alcohol)	2012/03/06	NC		%	25
		2-propanol	2012/03/06	NC		%	25
		2-Propanone	2012/03/06	NC		%	25
		Methyl Ethyl Ketone (2-Butanone)	2012/03/06	NC		%	25
		Methyl Isobutyl Ketone	2012/03/06	NC		%	25
		Methyl Butyl Ketone (2-Hexanone)	2012/03/06	NC		%	25
		Methyl t-butyl ether (MTBE)	2012/03/06	NC		%	25
		Ethyl Acetate	2012/03/06	NC		%	25
		1,1-Dichloroethylene	2012/03/06	NC		%	25
		cis-1,2-Dichloroethylene	2012/03/06	NC		%	25
		trans-1,2-Dichloroethylene	2012/03/06	NC		%	25
		Methylene Chloride(Dichloromethane)	2012/03/06	NC		%	25
		Chloroform	2012/03/06	NC		%	25
		Carbon Tetrachloride	2012/03/06	NC		%	25
		1,1-Dichloroethane	2012/03/06	NC		%	25
		1,2-Dichloroethane	2012/03/06	NC		%	25
		Ethylene Dibromide	2012/03/06	NC		%	25

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB230796

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2783239 MM2	RPD - Sample/Sample Dup	1,1,1-Trichloroethane	2012/03/06	NC		%	25
		1,1,2-Trichloroethane	2012/03/06	NC		%	25
		1,1,2,2-Tetrachloroethane	2012/03/06	NC		%	25
		cis-1,3-Dichloropropene	2012/03/06	NC		%	25
		trans-1,3-Dichloropropene	2012/03/06	NC		%	25
		1,2-Dichloropropane	2012/03/06	NC		%	25
		Bromomethane	2012/03/06	NC		%	25
		Bromoform	2012/03/06	NC		%	25
		Bromodichloromethane	2012/03/06	NC		%	25
		Dibromochloromethane	2012/03/06	NC		%	25
		Heptane	2012/03/06	NC		%	25
		Trichloroethylene	2012/03/06	NC		%	25
		Tetrachloroethylene	2012/03/06	NC		%	25
		Benzene	2012/03/06	NC		%	25
		Toluene	2012/03/06	NC		%	25
		Ethylbenzene	2012/03/06	NC		%	25
		p+m-Xylene	2012/03/06	NC		%	25
		o-Xylene	2012/03/06	NC		%	25
		Styrene	2012/03/06	NC		%	25
		1,3,5-Trimethylbenzene	2012/03/06	NC		%	25
		1,2,4-Trimethylbenzene	2012/03/06	NC		%	25
		4-ethyltoluene	2012/03/06	NC		%	25
		Chlorobenzene	2012/03/06	NC		%	25
		Benzyl chloride	2012/03/06	NC		%	25
		1,3-Dichlorobenzene	2012/03/06	NC		%	25
		1,4-Dichlorobenzene	2012/03/06	NC		%	25
		1,2-Dichlorobenzene	2012/03/06	NC		%	25
		1,2,4-Trichlorobenzene	2012/03/06	NC		%	25
		Hexachlorobutadiene	2012/03/06	NC		%	25
		Hexane	2012/03/06	NC		%	25
		Cyclohexane	2012/03/06	NC		%	25
		Tetrahydrofuran	2012/03/06	NC		%	25
		1,4-Dioxane	2012/03/06	NC		%	25
		Xylene (Total)	2012/03/06	NC		%	25

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

# **Polycyclic Aromatic Hydrocarbons Laboratory Analysis**

# MAXXAM

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

Client: Lica  
 Location: Cold Lake South  
 Station ID: Lica1  
 Field Sample ID: LICA PUF/CLS/Feb 3, 2012

Puf+ s/n: 100-1020  
 Motor s/n: 1138  
 Installation Date/Time: Feb 1, 2012 @ 14:40 mst  
 Removal Date/Time: Feb 7, 2012 @ 11:15 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
03-Feb-12	02/03/2012 0:00	02/04/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
01-Feb-12	07-Feb-12	13-Feb-12	????

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure(mmHg)	AverageFlow (Qstd slpm)	Average Temperature ( C)	Volume (Vstd m <sup>3</sup> )
720	229	-2.3	330.36

**Time set correctly prior to sampling? YES**  
**Timer set correctly prior to sampling? YES**  
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 08798

GB1K1656 PUFF # 1

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Feb 3, 2012

Technician Signiture: Theo McLaren

Your C.O.C. #: na

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

Report Date: 2012/02/16

**CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B219547****Received: 2012/02/09, 09:50**

Sample Matrix: PUF AND FILTER

# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	1	2012/02/10	2012/02/15	BRL SOP-00201	CARB429(ARBM1,M2)mod

## Encryption Key

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763

=====

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Total cover pages: 1

Page 1 of 7



**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MM4943		
Sampling Date		2012/02/03		
COC Number		na		
	<b>Units</b>	<b>LICA PUFF+QFF/CLS/FEB 3, 2012</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Semivolatile Organics</b>				
1-Methylnaphthalene	ug	1.70	0.10	2761032
1-Methylphenanthrene	ug	<0.10	0.10	2761032
2-Chloronaphthalene	ug	<0.10	0.10	2761032
2-Methylantracene	ug	<0.10	0.10	2761032
2-Methylnaphthalene	ug	3.66	0.10	2761032
3-Methylcholanthrene	ug	<2.0	2.0	2761032
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	0.10	2761032
9,10-Dimethylantracene	ug	<0.40	0.40	2761032
Acenaphthene	ug	0.192	0.050	2761032
Acenaphthylene	ug	0.380	0.050	2761032
Anthracene	ug	0.054	0.050	2761032
Benzo(a)anthracene	ug	<0.050	0.050	2761032
Benzo(a)fluorene	ug	<0.10	0.10	2761032
Benzo(a)pyrene	ug	<0.050	0.050	2761032
Benzo(b)fluoranthene	ug	<0.050	0.050	2761032
Benzo(b)fluorene	ug	<0.10	0.10	2761032
Benzo(e)pyrene	ug	<0.10	0.10	2761032
Benzo(g,h,i)perylene	ug	<0.050	0.050	2761032
Benzo(k)fluoranthene	ug	<0.050	0.050	2761032
Biphenyl	ug	0.83	0.10	2761032
Chrysene	ug	<0.050	0.050	2761032
Coronene	ug	<0.10	0.10	2761032
Dibenz(a,h)anthracene	ug	<0.050	0.050	2761032
Dibenzo(a,e)pyrene	ug	<0.20	0.20	2761032
Fluoranthene	ug	0.158	0.050	2761032
Fluorene	ug	0.498	0.050	2761032
Indeno(1,2,3-cd)pyrene	ug	<0.050	0.050	2761032
m-Terphenyl	ug	<0.10	0.10	2761032
Naphthalene	ug	2.91	0.072	2761032
o-Terphenyl	ug	<0.10	0.10	2761032
Perylene	ug	<0.10	0.10	2761032

RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch

Maxxam Job #: B219547  
 Report Date: 2012/02/16

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MM4943		
Sampling Date		2012/02/03		
COC Number		na		
	<b>Units</b>	<b>LICA PUFF+QFF/CLS/FEB 3, 2012</b>	<b>RDL</b>	<b>QC Batch</b>

Phenanthrene	ug	0.624	0.050	2761032
p-Terphenyl	ug	<0.10	0.10	2761032
Pyrene	ug	0.112	0.050	2761032
Quinoline	ug	<0.40	0.40	2761032
Tetralin	ug	0.14	0.10	2761032
<b>Surrogate Recovery (%)</b>				
D10-2-Methylnaphthalene	%	76		2761032
D10-Fluoranthene	%	98		2761032
D10-Fluorene (FS)	%	33 (1)		2761032
D10-Phenanthrene	%	92		2761032
D12-Benzo(a)anthracene	%	92		2761032
D12-Benzo(a)pyrene	%	92		2761032
D12-Benzo(b)fluoranthene	%	88		2761032
D12-Benzo(ghi)perylene	%	92		2761032
D12-Benzo(k)fluoranthene	%	84		2761032
D12-Chrysene	%	84		2761032
D12-Indeno(1,2,3-cd)pyrene	%	88		2761032
D12-Perylene	%	88		2761032
D14-Dibenzo(a,h)anthracene	%	90		2761032
D14-Terphenyl (FS)	%	94		2761032
D8-Acenaphthylene	%	86		2761032
D8-Naphthalene	%	72		2761032

QC Batch = Quality Control Batch  
 ( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B219547  
Report Date: 2012/02/16

### Test Summary

**Maxxam ID** MM4943  
**Sample ID** LICA PUFF+QFF/CLS/FEB 3, 2012  
**Matrix** PUF AND FILTER

**Collected** 2012/02/03  
**Shipped**  
**Received** 2012/02/09

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2761032	2012/02/10	2012/02/15	JIE WU

Maxxam Job #: B219547  
Report Date: 2012/02/16

#### GENERAL COMMENTS

PAHMS-F

9,10-Dimethylanthracene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in initial and continuing calibrations. No positives found for these 2 compounds.

Not calibrated for benzo(b)anthracene, picene, dibenzo(a,c)anthracene and triphenylene. An estimated mdl for each of these compounds is 0.1ug.

Since dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene and triphenylene with chrysene each would have a value below estimated mdl.

Benzo(b)anthracene elutes after benzo(a)anthracene and chrysene. Picene elutes after dibenz(a,h)anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MM4943-01: Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB219547

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2761032 JIW	Spiked Blank	D10-2-Methylnaphthalene	2012/02/14		78	%	50 - 150
		D10-Fluoranthene	2012/02/14		96	%	50 - 150
		D10-Phenanthrene	2012/02/14		90	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/14		88	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/14		94	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/14		86	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/14		94	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/14		86	%	50 - 150
		D12-Chrysene	2012/02/14		82	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/02/14		92	%	50 - 150
		D12-Perylene	2012/02/14		90	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/14		92	%	50 - 150
		D8-Acenaphthylene	2012/02/14		84	%	50 - 150
		D8-Naphthalene	2012/02/14		76	%	50 - 150
		Acenaphthene	2012/02/14		78	%	60 - 130
	RPD	Acenaphthene	2012/02/14	1.3		%	50
	Spiked Blank	Acenaphthylene	2012/02/14		78	%	60 - 130
	RPD	Acenaphthylene	2012/02/14	1.6		%	50
	Spiked Blank	Anthracene	2012/02/14		78	%	60 - 130
	RPD	Anthracene	2012/02/14	4.6		%	50
	Spiked Blank	Benzo(a)anthracene	2012/02/14		74	%	60 - 130
	RPD	Benzo(a)anthracene	2012/02/14	1.3		%	50
	Spiked Blank	Benzo(a)pyrene	2012/02/14		70	%	60 - 130
	RPD	Benzo(a)pyrene	2012/02/14	0		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/02/14		76	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/02/14	5.4		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/02/14		80	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/02/14	3.8		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/02/14		80	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/02/14	4.0		%	50
	Spiked Blank	Chrysene	2012/02/14		74	%	60 - 130
	RPD	Chrysene	2012/02/14	4.0		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/02/14		76	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/02/14	3.7		%	50
	Spiked Blank	Fluoranthene	2012/02/14		87	%	60 - 130
	RPD	Fluoranthene	2012/02/14	7.7		%	50
	Spiked Blank	Fluorene	2012/02/14		78	%	60 - 130
	RPD	Fluorene	2012/02/14	1.9		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/02/14		80	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/02/14	4.5		%	50
	Spiked Blank	Naphthalene	2012/02/14		69	%	60 - 130
	RPD	Naphthalene	2012/02/14	4.6		%	50
	Spiked Blank	Phenanthrene	2012/02/14		79	%	60 - 130
	RPD	Phenanthrene	2012/02/14	5.2		%	50
	Spiked Blank	Pyrene	2012/02/14		87	%	60 - 130
	RPD	Pyrene	2012/02/14	7.8		%	50
	Method Blank	D10-2-Methylnaphthalene	2012/02/15		80	%	50 - 150
		D10-Fluoranthene	2012/02/15		88	%	50 - 150
		D10-Phenanthrene	2012/02/15		84	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/15		88	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/15		90	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/15		84	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/15		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/15		84	%	50 - 150
		D12-Chrysene	2012/02/15		82	%	50 - 150

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB219547

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2761032 JIW	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/02/15		84	%	50 - 150
		D12-Perylene	2012/02/15		86	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/15		86	%	50 - 150
		D8-Acenaphthylene	2012/02/15		84	%	50 - 150
		D8-Naphthalene	2012/02/15		78	%	50 - 150
		1-Methylnaphthalene	2012/02/15	<0.10		ug	
		1-Methylphenanthrene	2012/02/15	<0.10		ug	
		2-Chloronaphthalene	2012/02/15	<0.10		ug	
		2-Methylanthracene	2012/02/15	<0.10		ug	
		2-Methylnaphthalene	2012/02/15	<0.10		ug	
		3-Methylcholanthrene	2012/02/15	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/02/15	<0.10		ug	
		9,10-Dimethylanthracene	2012/02/15	<0.40		ug	
		Acenaphthene	2012/02/15	<0.050		ug	
		Acenaphthylene	2012/02/15	<0.050		ug	
		Anthracene	2012/02/15	<0.050		ug	
		Benzo(a)anthracene	2012/02/15	<0.050		ug	
		Benzo(a)fluorene	2012/02/15	<0.10		ug	
		Benzo(a)pyrene	2012/02/15	<0.050		ug	
		Benzo(b)fluoranthene	2012/02/15	<0.050		ug	
		Benzo(b)fluorene	2012/02/15	<0.10		ug	
		Benzo(e)pyrene	2012/02/15	<0.10		ug	
		Benzo(g,h,i)perylene	2012/02/15	<0.050		ug	
		Benzo(k)fluoranthene	2012/02/15	<0.050		ug	
		Biphenyl	2012/02/15	<0.10		ug	
		Chrysene	2012/02/15	<0.050		ug	
		Coronene	2012/02/15	<0.10		ug	
		Dibenz(a,h)anthracene	2012/02/15	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/02/15	<0.20		ug	
		Fluoranthene	2012/02/15	<0.050		ug	
		Fluorene	2012/02/15	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/02/15	<0.050		ug	
		m-Terphenyl	2012/02/15	<0.10		ug	
		Naphthalene	2012/02/15	<0.072		ug	
		o-Terphenyl	2012/02/15	<0.10		ug	
		Perylene	2012/02/15	<0.10		ug	
		Phenanthrene	2012/02/15	<0.050		ug	
		p-Terphenyl	2012/02/15	<0.10		ug	
		Pyrene	2012/02/15	<0.050		ug	
		Quinoline	2012/02/15	<0.40		ug	
		Tetralin	2012/02/15	<0.10		ug	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

# MAXXAM

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

Client: Lica  
Location: Cold Lake South  
Station ID: Lica1  
Field Sample ID: LICA PUF/CLS/Feb 09, 2012

Puf+ s/n: 100-1020  
Motor s/n: 1138  
Installation Date/Time: Feb 07, 2012 @ 11:30 mst  
Removal Date/Time: Feb 09, 2012 @ 11:30 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
09-Feb-12	02/09/2012 0:00	02/10/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
10-Jan-12	14-Feb-12	23-Jan-12	????

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure(mmHg)	AverageFlow (Qstd slpm)	Average Temperature ( C)	Volume (Vstd m <sup>3</sup> )
726	229	-16.4	330.35

**Time set correctly prior to sampling? YES**  
**Timer set correctly prior to sampling? YES**  
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 08614

GB1K1664 PUFF # 1

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Feb 09, 2012

Technician Signiture: Ting Xu

Your C.O.C. #: 08614

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

Report Date: 2012/02/22

**CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B222708****Received: 2012/02/16, 09:10**

Sample Matrix: PUF AND FILTER

# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	1	2012/02/16	2012/02/21	BRL SOP-00201	CARB429(ARBM1,M2)mod

## Encryption Key

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763=====  
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.

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Total cover pages: 1

Page 1 of 7



Maxxam Job #: B222708  
 Report Date: 2012/02/22

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MN9675		
Sampling Date		2012/02/09		
COC Number		08614		
	<b>Units</b>	<b>LICA</b>	<b>RDL</b>	<b>QC Batch</b>
		<b>PUFF/QFF/CLS/FEB9,2012</b>		

<b>Semivolatile Organics</b>				
1-Methylnaphthalene	ug	1.24	0.10	2766444
1-Methylphenanthrene	ug	<0.10	0.10	2766444
2-Chloronaphthalene	ug	<0.10	0.10	2766444
2-Methylantracene	ug	<0.10	0.10	2766444
2-Methylnaphthalene	ug	2.62	0.10	2766444
3-Methylcholanthrene	ug	<2.0	2.0	2766444
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	0.10	2766444
9,10-Dimethylantracene	ug	<0.40	0.40	2766444
Acenaphthene	ug	0.142	0.050	2766444
Acenaphthylene	ug	0.102	0.050	2766444
Anthracene	ug	<0.050	0.050	2766444
Benzo(a)anthracene	ug	<0.050	0.050	2766444
Benzo(a)fluorene	ug	<0.10	0.10	2766444
Benzo(a)pyrene	ug	<0.050	0.050	2766444
Benzo(b)fluoranthene	ug	<0.050	0.050	2766444
Benzo(b)fluorene	ug	<0.10	0.10	2766444
Benzo(e)pyrene	ug	<0.10	0.10	2766444
Benzo(g,h,i)perylene	ug	<0.050	0.050	2766444
Benzo(k)fluoranthene	ug	<0.050	0.050	2766444
Biphenyl	ug	0.35	0.10	2766444
Chrysene	ug	<0.050	0.050	2766444
Coronene	ug	<0.10	0.10	2766444
Dibenz(a,h)anthracene	ug	<0.050	0.050	2766444
Dibenzo(a,e)pyrene	ug	<0.20	0.20	2766444
Fluoranthene	ug	0.112	0.050	2766444
Fluorene	ug	0.130	0.050	2766444
Indeno(1,2,3-cd)pyrene	ug	<0.050	0.050	2766444
m-Terphenyl	ug	<0.10	0.10	2766444
Naphthalene	ug	3.43	0.072	2766444
o-Terphenyl	ug	<0.10	0.10	2766444
Perylene	ug	<0.10	0.10	2766444
Phenanthrene	ug	0.272	0.050	2766444

 RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch

Maxxam Job #: B222708  
 Report Date: 2012/02/22

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MN9675		
Sampling Date		2012/02/09		
COC Number		08614		
	<b>Units</b>	<b>LICA</b>	<b>RDL</b>	<b>QC Batch</b>
		<b>PUFF/QFF/CLS/FEB9,2012</b>		

p-Terphenyl	ug	<0.10	0.10	2766444
Pyrene	ug	0.066	0.050	2766444
Quinoline	ug	<0.40	0.40	2766444
Tetralin	ug	0.13	0.10	2766444
<b>Surrogate Recovery (%)</b>				
D10-2-Methylnaphthalene	%	72		2766444
D10-Fluoranthene	%	98		2766444
D10-Fluorene (FS)	%	75		2766444
D10-Phenanthrene	%	90		2766444
D12-Benzo(a)anthracene	%	92		2766444
D12-Benzo(a)pyrene	%	94		2766444
D12-Benzo(b)fluoranthene	%	90		2766444
D12-Benzo(ghi)perylene	%	96		2766444
D12-Benzo(k)fluoranthene	%	82		2766444
D12-Chrysene	%	82		2766444
D12-Indeno(1,2,3-cd)pyrene	%	92		2766444
D12-Perylene	%	90		2766444
D14-Dibenzo(a,h)anthracene	%	94		2766444
D14-Terphenyl (FS)	%	96		2766444
D8-Acenaphthylene	%	86		2766444
D8-Naphthalene	%	68		2766444

QC Batch = Quality Control Batch

Maxxam Job #: B222708  
Report Date: 2012/02/22

### Test Summary

**Maxxam ID** MN9675  
**Sample ID** LICA PUFF/QFF/CLS/FEB9,2012  
**Matrix** PUF AND FILTER

**Collected** 2012/02/09  
**Shipped**  
**Received** 2012/02/16

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2766444	2012/02/16	2012/02/21	JIE WU

Maxxam Job #: B222708  
Report Date: 2012/02/22

#### GENERAL COMMENTS

PAHMS-F

9,10-Dimethylanthracene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in initial calibration. No positives found for these 2 compounds.

3-Methylcholanthrene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in continuing calibration.

Not calibrated for benzo(b)anthracene, picene, dibenzo(a,c)anthracene and triphenylene. An estimated mdl for each of these compounds is 0.1ug.

Since dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene and triphenylene with chrysene each would have a value below estimated mdl.

Benzo(b)anthracene elutes after benzo(a)anthracene and chrysene. Picene elutes after dibenz(a,h)anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB222708

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2766444 JIW	Spiked Blank	D10-2-Methylnaphthalene	2012/02/21		80	%	50 - 150
		D10-Fluoranthene	2012/02/21		94	%	50 - 150
		D10-Phenanthrene	2012/02/21		88	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/21		88	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/21		94	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/21		86	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/21		92	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/21		88	%	50 - 150
		D12-Chrysene	2012/02/21		80	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/02/21		90	%	50 - 150
		D12-Perylene	2012/02/21		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/21		90	%	50 - 150
		D8-Acenaphthylene	2012/02/21		86	%	50 - 150
		D8-Naphthalene	2012/02/21		78	%	50 - 150
		Acenaphthene	2012/02/21		77	%	60 - 130
	RPD	Acenaphthene	2012/02/21	3.3		%	50
	Spiked Blank	Acenaphthylene	2012/02/21		78	%	60 - 130
	RPD	Acenaphthylene	2012/02/21	3.6		%	50
	Spiked Blank	Anthracene	2012/02/21		76	%	60 - 130
	RPD	Anthracene	2012/02/21	3.7		%	50
	Spiked Blank	Benzo(a)anthracene	2012/02/21		73	%	60 - 130
	RPD	Benzo(a)anthracene	2012/02/21	1.0		%	50
	Spiked Blank	Benzo(a)pyrene	2012/02/21		68	%	60 - 130
	RPD	Benzo(a)pyrene	2012/02/21	0.7		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/02/21		75	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/02/21	2.0		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/02/21		78	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/02/21	0.3		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/02/21		82	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/02/21	1.2		%	50
	Spiked Blank	Chrysene	2012/02/21		75	%	60 - 130
	RPD	Chrysene	2012/02/21	1.0		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/02/21		73	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/02/21	2.0		%	50
	Spiked Blank	Fluoranthene	2012/02/21		83	%	60 - 130
	RPD	Fluoranthene	2012/02/21	1.2		%	50
	Spiked Blank	Fluorene	2012/02/21		77	%	60 - 130
	RPD	Fluorene	2012/02/21	4.0		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/02/21		77	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/02/21	1		%	50
	Spiked Blank	Naphthalene	2012/02/21		70	%	60 - 130
	RPD	Naphthalene	2012/02/21	6.3		%	50
	Spiked Blank	Phenanthrene	2012/02/21		76	%	60 - 130
	RPD	Phenanthrene	2012/02/21	4.4		%	50
	Spiked Blank	Pyrene	2012/02/21		83	%	60 - 130
	RPD	Pyrene	2012/02/21	1.8		%	50
	Method Blank	D10-2-Methylnaphthalene	2012/02/21		82	%	50 - 150
		D10-Fluoranthene	2012/02/21		92	%	50 - 150
		D10-Phenanthrene	2012/02/21		86	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/21		86	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/21		92	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/21		90	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/21		94	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/21		86	%	50 - 150
		D12-Chrysene	2012/02/21		84	%	50 - 150

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB222708

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2766444 JIW	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/02/21		88	%	50 - 150
		D12-Perylene	2012/02/21		92	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/21		88	%	50 - 150
		D8-Acenaphthylene	2012/02/21		90	%	50 - 150
		D8-Naphthalene	2012/02/21		82	%	50 - 150
		1-Methylnaphthalene	2012/02/21	<0.10		ug	
		1-Methylphenanthrene	2012/02/21	<0.10		ug	
		2-Chloronaphthalene	2012/02/21	<0.10		ug	
		2-Methylantracene	2012/02/21	<0.10		ug	
		2-Methylnaphthalene	2012/02/21	<0.10		ug	
		3-Methylcholanthrene	2012/02/21	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/02/21	<0.10		ug	
		9,10-Dimethylantracene	2012/02/21	<0.40		ug	
		Acenaphthene	2012/02/21	<0.050		ug	
		Acenaphthylene	2012/02/21	<0.050		ug	
		Anthracene	2012/02/21	<0.050		ug	
		Benzo(a)anthracene	2012/02/21	<0.050		ug	
		Benzo(a)fluorene	2012/02/21	<0.10		ug	
		Benzo(a)pyrene	2012/02/21	<0.050		ug	
		Benzo(b)fluoranthene	2012/02/21	<0.050		ug	
		Benzo(b)fluorene	2012/02/21	<0.10		ug	
		Benzo(e)pyrene	2012/02/21	<0.10		ug	
		Benzo(g,h,i)perylene	2012/02/21	<0.050		ug	
		Benzo(k)fluoranthene	2012/02/21	<0.050		ug	
		Biphenyl	2012/02/21	<0.10		ug	
		Chrysene	2012/02/21	<0.050		ug	
		Coronene	2012/02/21	<0.10		ug	
		Dibenz(a,h)anthracene	2012/02/21	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/02/21	<0.20		ug	
		Fluoranthene	2012/02/21	<0.050		ug	
		Fluorene	2012/02/21	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/02/21	<0.050		ug	
		m-Terphenyl	2012/02/21	<0.10		ug	
		Naphthalene	2012/02/21	<0.072		ug	
		o-Terphenyl	2012/02/21	<0.10		ug	
		Perylene	2012/02/21	<0.10		ug	
		Phenanthrene	2012/02/21	<0.050		ug	
		p-Terphenyl	2012/02/21	<0.10		ug	
		Pyrene	2012/02/21	<0.050		ug	
		Quinoline	2012/02/21	<0.40		ug	
		Tetralin	2012/02/21	<0.10		ug	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

# MAXXAM

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

Client: Lica  
Location: Cold Lake South  
Station ID: Lica1  
Field Sample ID: LICA PUF/CLS/Feb 15, 2012

Puf+ s/n: 100-1020  
Motor s/n: 1138  
Installation Date/Time: Feb 14, 2012 @ 9:50 mst  
Removal Date/Time: Feb 17, 2012 @ 8:40 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
15-Feb-12	02/15/2012 0:00	02/16/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
13-Feb-12	17-Feb-12	20-Feb-12	????

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure(mmHg)	AverageFlow (Qstd slpm)	Average Temperature ( C)	Volume (Vstd m <sup>3</sup> )
711	229	-3.6	330.37

**Time set correctly prior to sampling? YES**  
**Timer set correctly prior to sampling? YES**  
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10622

GB1K1668 PUFF # 1

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Feb 15, 2012

Technician Signiture: Ting Xu/Theo McLaren

Your C.O.C. #: 10622

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

Report Date: 2012/02/29

**CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B225747****Received: 2012/02/23, 09:03**

Sample Matrix: PUF AND FILTER

# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	1	2012/02/23	2012/02/27	BRL SOP-00201	CARB429(ARBM1,M2)mod

## Encryption Key

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763=====  
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.

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Total cover pages: 1

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Maxxam Job #: B225747  
 Report Date: 2012/02/29

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MP3771		
Sampling Date		2012/02/15		
COC Number		10622		
	<b>Units</b>	<b>LICA</b>	<b>RDL</b>	<b>QC Batch</b>
		<b>PUFF/QFF/CLS/FEB15/12</b>		

<b>Semivolatile Organics</b>				
1-Methylnaphthalene	ug	0.19	0.10	2771931
1-Methylphenanthrene	ug	<0.10	0.10	2771931
2-Chloronaphthalene	ug	<0.10	0.10	2771931
2-Methylanthracene	ug	<0.10	0.10	2771931
2-Methylnaphthalene	ug	0.36	0.10	2771931
3-Methylcholanthrene	ug	<2.0	2.0	2771931
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	0.10	2771931
9,10-Dimethylanthracene	ug	<0.40	0.40	2771931
Acenaphthene	ug	0.068	0.050	2771931
Acenaphthylene	ug	0.052	0.050	2771931
Anthracene	ug	<0.050	0.050	2771931
Benzo(a)anthracene	ug	<0.050	0.050	2771931
Benzo(a)fluorene	ug	<0.10	0.10	2771931
Benzo(a)pyrene	ug	<0.050	0.050	2771931
Benzo(b)fluoranthene	ug	<0.050	0.050	2771931
Benzo(b)fluorene	ug	<0.10	0.10	2771931
Benzo(e)pyrene	ug	<0.10	0.10	2771931
Benzo(g,h,i)perylene	ug	<0.050	0.050	2771931
Benzo(k)fluoranthene	ug	<0.050	0.050	2771931
Biphenyl	ug	0.46	0.10	2771931
Chrysene	ug	<0.050	0.050	2771931
Coronene	ug	<0.10	0.10	2771931
Dibenz(a,h)anthracene	ug	<0.050	0.050	2771931
Dibenzo(a,e)pyrene	ug	<0.20	0.20	2771931
Fluoranthene	ug	0.118	0.050	2771931
Fluorene	ug	0.340	0.050	2771931
Indeno(1,2,3-cd)pyrene	ug	<0.050	0.050	2771931
m-Terphenyl	ug	<0.10	0.10	2771931
Naphthalene	ug	0.320	0.072	2771931
o-Terphenyl	ug	<0.10	0.10	2771931
Perylene	ug	<0.10	0.10	2771931
Phenanthrene	ug	0.448	0.050	2771931
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B225747  
 Report Date: 2012/02/29

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MP3771		
Sampling Date		2012/02/15		
COC Number		10622		
	<b>Units</b>	<b>LICA</b>	<b>RDL</b>	<b>QC Batch</b>
		<b>PUFF/QFF/CLS/FEB15/12</b>		

p-Terphenyl	ug	<0.10	0.10	2771931
Pyrene	ug	0.074	0.050	2771931
Quinoline	ug	<0.40	0.40	2771931
Tetralin	ug	<0.10	0.10	2771931
<b>Surrogate Recovery (%)</b>				
D10-2-Methylnaphthalene	%	76		2771931
D10-Fluoranthene	%	94		2771931
D10-Fluorene (FS)	%	43 (1)		2771931
D10-Phenanthrene	%	88		2771931
D12-Benzo(a)anthracene	%	90		2771931
D12-Benzo(a)pyrene	%	88		2771931
D12-Benzo(b)fluoranthene	%	86		2771931
D12-Benzo(ghi)perylene	%	90		2771931
D12-Benzo(k)fluoranthene	%	86		2771931
D12-Chrysene	%	84		2771931
D12-Indeno(1,2,3-cd)pyrene	%	86		2771931
D12-Perylene	%	88		2771931
D14-Dibenzo(a,h)anthracene	%	88		2771931
D14-Terphenyl (FS)	%	89		2771931
D8-Acenaphthylene	%	82		2771931
D8-Naphthalene	%	74		2771931

QC Batch = Quality Control Batch  
 ( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B225747  
Report Date: 2012/02/29

### Test Summary

**Maxxam ID** MP3771  
**Sample ID** LICA PUFF/QFF/CLS/FEB15/12  
**Matrix** PUF AND FILTER

**Collected** 2012/02/15  
**Shipped**  
**Received** 2012/02/23

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2771931	2012/02/23	2012/02/27	WENDY ZHAO

Maxxam Job #: B225747  
Report Date: 2012/02/29

#### GENERAL COMMENTS

PAHMS-F

Samples received pass holding time according to tracking sheet

9,10-Dimethylanthracene and 7,12-Dimethylbenzo(a)anthracene are above 25% RSD in initial calibration. No positives found for these 2 compounds.

Not calibrated for Benzo(b)Anthracene, Picene, Dibenzo(a,c) anthracene or Triphenylene. An estimated mdl for each of these compounds is 0.1ug

Since Dibenzo(a,c) anthracene co-elutes with Dibenzo(a,h) anthracene and Triphenylene with Chrysene each would have a value below estimated mdl.

Benzo(b)Anthracene elutes after Benzo(a)Anthracene and Chrysene. Picene elutes after Dibenzo(a,h) anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MP3771-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB225747

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2771931 WZ	Spiked Blank	D10-2-Methylnaphthalene	2012/02/27		82	%	50 - 150
		D10-Fluoranthene	2012/02/27		92	%	50 - 150
		D10-Phenanthrene	2012/02/27		86	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/27		84	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/27		86	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/27		86	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/27		90	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/27		86	%	50 - 150
		D12-Chrysene	2012/02/27		88	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/02/27		86	%	50 - 150
		D12-Perylene	2012/02/27		86	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/27		84	%	50 - 150
		D8-Acenaphthylene	2012/02/27		86	%	50 - 150
		D8-Naphthalene	2012/02/27		82	%	50 - 150
		Acenaphthene	2012/02/27		80	%	60 - 130
	RPD	Acenaphthene	2012/02/27	1.2		%	50
	Spiked Blank	Acenaphthylene	2012/02/27		79	%	60 - 130
	RPD	Acenaphthylene	2012/02/27	2.2		%	50
	Spiked Blank	Anthracene	2012/02/27		74	%	60 - 130
	RPD	Anthracene	2012/02/27	2.7		%	50
	Spiked Blank	Benzo(a)anthracene	2012/02/27		73	%	60 - 130
	RPD	Benzo(a)anthracene	2012/02/27	0.3		%	50
	Spiked Blank	Benzo(a)pyrene	2012/02/27		66	%	60 - 130
	RPD	Benzo(a)pyrene	2012/02/27	2.7		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/02/27		75	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/02/27	2.0		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/02/27		76	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/02/27	0.7		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/02/27		83	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/02/27	2.4		%	50
	Spiked Blank	Chrysene	2012/02/27		79	%	60 - 130
	RPD	Chrysene	2012/02/27	0.3		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/02/27		73	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/02/27	1.0		%	50
	Spiked Blank	Fluoranthene	2012/02/27		83	%	60 - 130
	RPD	Fluoranthene	2012/02/27	2.4		%	50
	Spiked Blank	Fluorene	2012/02/27		78	%	60 - 130
	RPD	Fluorene	2012/02/27	2.2		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/02/27		75	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/02/27	0.3		%	50
	Spiked Blank	Naphthalene	2012/02/27		76	%	60 - 130
	RPD	Naphthalene	2012/02/27	2.0		%	50
	Spiked Blank	Phenanthrene	2012/02/27		75	%	60 - 130
	RPD	Phenanthrene	2012/02/27	2.6		%	50
	Spiked Blank	Pyrene	2012/02/27		83	%	60 - 130
	RPD	Pyrene	2012/02/27	0.9		%	50
	Method Blank	D10-2-Methylnaphthalene	2012/02/27		84	%	50 - 150
		D10-Fluoranthene	2012/02/27		90	%	50 - 150
		D10-Phenanthrene	2012/02/27		82	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/27		78	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/27		84	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/27		84	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/27		90	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/27		86	%	50 - 150
		D12-Chrysene	2012/02/27		88	%	50 - 150

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB225747

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2771931 WZ	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/02/27		82	%	50 - 150
		D12-Perylene	2012/02/27		86	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/27		80	%	50 - 150
		D8-Acenaphthylene	2012/02/27		90	%	50 - 150
		D8-Naphthalene	2012/02/27		84	%	50 - 150
		1-Methylnaphthalene	2012/02/27	<0.10		ug	
		1-Methylphenanthrene	2012/02/27	<0.10		ug	
		2-Chloronaphthalene	2012/02/27	<0.10		ug	
		2-Methylantracene	2012/02/27	<0.10		ug	
		2-Methylnaphthalene	2012/02/27	<0.10		ug	
		3-Methylcholanthrene	2012/02/27	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/02/27	<0.10		ug	
		9,10-Dimethylantracene	2012/02/27	<0.40		ug	
		Acenaphthene	2012/02/27	<0.050		ug	
		Acenaphthylene	2012/02/27	<0.050		ug	
		Anthracene	2012/02/27	<0.050		ug	
		Benzo(a)anthracene	2012/02/27	<0.050		ug	
		Benzo(a)fluorene	2012/02/27	<0.10		ug	
		Benzo(a)pyrene	2012/02/27	<0.050		ug	
		Benzo(b)fluoranthene	2012/02/27	<0.050		ug	
		Benzo(b)fluorene	2012/02/27	<0.10		ug	
		Benzo(e)pyrene	2012/02/27	<0.10		ug	
		Benzo(g,h,i)perylene	2012/02/27	<0.050		ug	
		Benzo(k)fluoranthene	2012/02/27	<0.050		ug	
		Biphenyl	2012/02/27	<0.10		ug	
		Chrysene	2012/02/27	<0.050		ug	
		Coronene	2012/02/27	<0.10		ug	
		Dibenz(a,h)anthracene	2012/02/27	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/02/27	<0.20		ug	
		Fluoranthene	2012/02/27	<0.050		ug	
		Fluorene	2012/02/27	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/02/27	<0.050		ug	
		m-Terphenyl	2012/02/27	<0.10		ug	
		Naphthalene	2012/02/27	<0.072		ug	
		o-Terphenyl	2012/02/27	<0.10		ug	
		Perylene	2012/02/27	<0.10		ug	
		Phenanthrene	2012/02/27	<0.050		ug	
		p-Terphenyl	2012/02/27	<0.10		ug	
		Pyrene	2012/02/27	<0.050		ug	
		Quinoline	2012/02/27	<0.40		ug	
		Tetralin	2012/02/27	<0.10		ug	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

# MAXXAM

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

Client: Lica  
 Location: Cold Lake South  
 Station ID: Lica1  
 Field Sample ID: LICA PUF/CLS/Feb 21, 2012

Puf+ s/n: 100-1020  
 Motor s/n: 1138  
 Installation Date/Time: Feb 17, 2012 @ 08:55 mst  
 Removal Date/Time: Feb 22, 2012 @ 15:08 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
21-Feb-12	02/21/2012 0:00	02/22/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
15-Feb-12	23-Feb-12	27-Feb-12	????

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure(mmHg)	AverageFlow (Qstd slpm)	Average Temperature ( C)	Volume (Vstd m <sup>3</sup> )
702	229	-3.2	330.38

**Time set correctly prior to sampling? YES**  
**Timer set correctly prior to sampling? YES**  
**Sampling data saved to memory card after sampling? YES**

Comments: COC#  
GB1K1670 PUFF # 1  
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Feb 21, 2012

Technician Signiture: Ting Xu

Your C.O.C. #: 10623

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

Report Date: 2012/03/02

**CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B227172****Received: 2012/02/25, 09:05**

Sample Matrix: PUF AND FILTER

# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	1	2012/02/27	2012/02/29	BRL SOP-00201	CARB429(ARBM1,M2)mod

## Encryption Key

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763=====  
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Total cover pages: 1

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Maxxam Job #: B227172  
 Report Date: 2012/03/02

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MQ1547		
Sampling Date		2012/02/21		
COC Number		10623		
	<b>Units</b>	<b>LICA PUFF+QFF/CLS/FEB 21,12</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Semivolatile Organics</b>				
1-Methylnaphthalene	ug	<0.10	0.10	2774677
1-Methylphenanthrene	ug	<0.10	0.10	2774677
2-Chloronaphthalene	ug	<0.10	0.10	2774677
2-Methylantracene	ug	<0.10	0.10	2774677
2-Methylnaphthalene	ug	0.16	0.10	2774677
3-Methylcholanthrene	ug	<2.0	2.0	2774677
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	0.10	2774677
9,10-Dimethylantracene	ug	<0.40	0.40	2774677
Acenaphthene	ug	<0.050	0.050	2774677
Acenaphthylene	ug	<0.050	0.050	2774677
Anthracene	ug	<0.050	0.050	2774677
Benzo(a)anthracene	ug	<0.050	0.050	2774677
Benzo(a)fluorene	ug	<0.10	0.10	2774677
Benzo(a)pyrene	ug	<0.050	0.050	2774677
Benzo(b)fluoranthene	ug	<0.050	0.050	2774677
Benzo(b)fluorene	ug	<0.10	0.10	2774677
Benzo(e)pyrene	ug	<0.10	0.10	2774677
Benzo(g,h,i)perylene	ug	<0.050	0.050	2774677
Benzo(k)fluoranthene	ug	<0.050	0.050	2774677
Biphenyl	ug	0.20	0.10	2774677
Chrysene	ug	<0.050	0.050	2774677
Coronene	ug	<0.10	0.10	2774677
Dibenz(a,h)anthracene	ug	<0.050	0.050	2774677
Dibenzo(a,e)pyrene	ug	<0.20	0.20	2774677
Fluoranthene	ug	0.060	0.050	2774677
Fluorene	ug	0.148	0.050	2774677
Indeno(1,2,3-cd)pyrene	ug	<0.050	0.050	2774677
m-Terphenyl	ug	<0.10	0.10	2774677
Naphthalene	ug	0.116	0.072	2774677
o-Terphenyl	ug	<0.10	0.10	2774677
Perylene	ug	<0.10	0.10	2774677

 RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch

Maxxam Job #: B227172  
 Report Date: 2012/03/02

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MQ1547		
Sampling Date		2012/02/21		
COC Number		10623		
	<b>Units</b>	<b>LICA PUFF+QFF/CLS/FEB 21,12</b>	<b>RDL</b>	<b>QC Batch</b>

Phenanthrene	ug	0.242	0.050	2774677
p-Terphenyl	ug	<0.10	0.10	2774677
Pyrene	ug	<0.050	0.050	2774677
Quinoline	ug	<0.40	0.40	2774677
Tetralin	ug	<0.10	0.10	2774677
<b>Surrogate Recovery (%)</b>				
D10-2-Methylnaphthalene	%	76		2774677
D10-Fluoranthene	%	98		2774677
D10-Fluorene (FS)	%	30 (1)		2774677
D10-Phenanthrene	%	92		2774677
D12-Benzo(a)anthracene	%	88		2774677
D12-Benzo(a)pyrene	%	92		2774677
D12-Benzo(b)fluoranthene	%	90		2774677
D12-Benzo(ghi)perylene	%	94		2774677
D12-Benzo(k)fluoranthene	%	86		2774677
D12-Chrysene	%	84		2774677
D12-Indeno(1,2,3-cd)pyrene	%	88		2774677
D12-Perylene	%	90		2774677
D14-Dibenzo(a,h)anthracene	%	90		2774677
D14-Terphenyl (FS)	%	94		2774677
D8-Acenaphthylene	%	84		2774677
D8-Naphthalene	%	72		2774677

QC Batch = Quality Control Batch  
 ( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B227172  
Report Date: 2012/03/02

### Test Summary

**Maxxam ID** MQ1547  
**Sample ID** LICA PUFF+QFF/CLS/FEB 21,12  
**Matrix** PUF AND FILTER

**Collected** 2012/02/21  
**Shipped**  
**Received** 2012/02/25

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2774677	2012/02/27	2012/02/29	JIE WU

Maxxam Job #: B227172  
Report Date: 2012/03/02

#### GENERAL COMMENTS

PAHMS-F

9,10-Dimethylanthracene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in initial calibration. No positives found for these 2 compounds.

7,12-dimethylbenzo(a)anthracene is above 25% RSD in continuing calibrations.

Not calibrated for benzo(b)anthracene, picene, dibenzo(a,c)anthracene and triphenylene. An estimated mdl for each of these compounds is 0.1ug.

Since dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene and triphenylene with chrysene each would have a value below estimated mdl.

Benzo(b)anthracene elutes after benzo(a)anthracene and chrysene. Picene elutes after dibenz(a,h)anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MQ1547-01: Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB227172

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2774677 JIW	Spiked Blank	D10-2-Methylnaphthalene	2012/02/29		82	%	50 - 150
		D10-Fluoranthene	2012/02/29		82	%	50 - 150
		D10-Phenanthrene	2012/02/29		78	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/29		80	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/29		86	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/29		84	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/29		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/29		82	%	50 - 150
		D12-Chrysene	2012/02/29		82	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/02/29		84	%	50 - 150
		D12-Perylene	2012/02/29		82	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/29		84	%	50 - 150
		D8-Acenaphthylene	2012/02/29		84	%	50 - 150
		D8-Naphthalene	2012/02/29		82	%	50 - 150
		Acenaphthene	2012/02/29		78	%	60 - 130
	RPD	Acenaphthene	2012/02/29	1.6		%	50
	Spiked Blank	Acenaphthylene	2012/02/29		76	%	60 - 130
	RPD	Acenaphthylene	2012/02/29	2.9		%	50
	Spiked Blank	Anthracene	2012/02/29		67	%	60 - 130
	RPD	Anthracene	2012/02/29	8.3		%	50
	Spiked Blank	Benzo(a)anthracene	2012/02/29		68	%	60 - 130
	RPD	Benzo(a)anthracene	2012/02/29	8.5		%	50
	Spiked Blank	Benzo(a)pyrene	2012/02/29		65	%	60 - 130
	RPD	Benzo(a)pyrene	2012/02/29	9.2		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/02/29		70	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/02/29	6.2		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/02/29		75	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/02/29	5.2		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/02/29		79	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/02/29	8.2		%	50
	Spiked Blank	Chrysene	2012/02/29		73	%	60 - 130
	RPD	Chrysene	2012/02/29	7.9		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/02/29		70	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/02/29	7.6		%	50
	Spiked Blank	Fluoranthene	2012/02/29		75	%	60 - 130
	RPD	Fluoranthene	2012/02/29	9.5		%	50
	Spiked Blank	Fluorene	2012/02/29		74	%	60 - 130
	RPD	Fluorene	2012/02/29	4.0		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/02/29		73	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/02/29	6.3		%	50
	Spiked Blank	Naphthalene	2012/02/29		75	%	60 - 130
	RPD	Naphthalene	2012/02/29	2.0		%	50
	Spiked Blank	Phenanthrene	2012/02/29		68	%	60 - 130
	RPD	Phenanthrene	2012/02/29	6.1		%	50
	Spiked Blank	Pyrene	2012/02/29		75	%	60 - 130
	RPD	Pyrene	2012/02/29	9.9		%	50
	Method Blank	D10-2-Methylnaphthalene	2012/02/29		74	%	50 - 150
		D10-Fluoranthene	2012/02/29		94	%	50 - 150
		D10-Phenanthrene	2012/02/29		82	%	50 - 150
		D12-Benzo(a)anthracene	2012/02/29		84	%	50 - 150
		D12-Benzo(a)pyrene	2012/02/29		94	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/02/29		88	%	50 - 150
		D12-Benzo(ghi)perylene	2012/02/29		94	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/02/29		88	%	50 - 150
		D12-Chrysene	2012/02/29		84	%	50 - 150

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB227172

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2774677 JIW	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/02/29		90	%	50 - 150
		D12-Perylene	2012/02/29		92	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/02/29		90	%	50 - 150
		D8-Acenaphthylene	2012/02/29		84	%	50 - 150
		D8-Naphthalene	2012/02/29		68	%	50 - 150
		1-Methylnaphthalene	2012/02/29	<0.10		ug	
		1-Methylphenanthrene	2012/02/29	<0.10		ug	
		2-Chloronaphthalene	2012/02/29	<0.10		ug	
		2-Methylantracene	2012/02/29	<0.10		ug	
		2-Methylnaphthalene	2012/02/29	<0.10		ug	
		3-Methylcholanthrene	2012/02/29	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/02/29	<0.10		ug	
		9,10-Dimethylantracene	2012/02/29	<0.40		ug	
		Acenaphthene	2012/02/29	<0.050		ug	
		Acenaphthylene	2012/02/29	<0.050		ug	
		Anthracene	2012/02/29	<0.050		ug	
		Benzo(a)anthracene	2012/02/29	<0.050		ug	
		Benzo(a)fluorene	2012/02/29	<0.10		ug	
		Benzo(a)pyrene	2012/02/29	<0.050		ug	
		Benzo(b)fluoranthene	2012/02/29	<0.050		ug	
		Benzo(b)fluorene	2012/02/29	<0.10		ug	
		Benzo(e)pyrene	2012/02/29	<0.10		ug	
		Benzo(g,h,i)perylene	2012/02/29	<0.050		ug	
		Benzo(k)fluoranthene	2012/02/29	<0.050		ug	
		Biphenyl	2012/02/29	<0.10		ug	
		Chrysene	2012/02/29	<0.050		ug	
		Coronene	2012/02/29	<0.10		ug	
		Dibenz(a,h)anthracene	2012/02/29	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/02/29	<0.20		ug	
		Fluoranthene	2012/02/29	<0.050		ug	
		Fluorene	2012/02/29	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/02/29	<0.050		ug	
		m-Terphenyl	2012/02/29	<0.10		ug	
		Naphthalene	2012/02/29	<0.072		ug	
		o-Terphenyl	2012/02/29	<0.10		ug	
		Perylene	2012/02/29	<0.10		ug	
		Phenanthrene	2012/02/29	<0.050		ug	
		p-Terphenyl	2012/02/29	<0.10		ug	
		Pyrene	2012/02/29	<0.050		ug	
		Quinoline	2012/02/29	<0.40		ug	
		Tetralin	2012/02/29	<0.10		ug	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

# MAXXAM

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

Client: Lica  
Location: Cold Lake South  
Station ID: Lica1  
Field Sample ID: LICA PUF/CLS/Feb 27, 2012

Puf+ s/n: 100-1020  
Motor s/n: 1138  
Installation Date/Time: Feb 24, 2012 @ 16:10 mst  
Removal Date/Time: Mar 01, 2012 @ 9:05 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
27-Feb-12	02/27/2012 0:00	02/28/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
22-Feb-12	01-Mar-12	06-Mar-12	????

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

Sampling Data			
Average Pressure(mmHg)	AverageFlow (Qstd slpm)	Average Temperature ( C)	Volume (Vstd m <sup>3</sup> )
714	229	-12.6	330.36

**Time set correctly prior to sampling? YES**  
**Timer set correctly prior to sampling? YES**  
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 08764

GB1K1673 PUFF # 1

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Feb 27, 2012

Technician Signiture: Ting Xu

Your C.O.C. #: 08764

**Attention: Michael Bisaga**Maxxam Analytics  
2608 6A Ave.  
Cold Lake, AB  
CANADA T9M 2C7

Report Date: 2012/03/12

**CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B230777****Received: 2012/03/03, 10:30**

Sample Matrix: PUF AND FILTER

# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	1	2012/03/07	2012/03/08	BRL SOP-00201	CARB429(ARBM1,M2)mod

## Encryption Key

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

THERESA STEPHENSON, Project Manager  
Email: TStephenson@maxxam.ca  
Phone# (905) 817-5763

=====

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Total cover pages: 1

Page 1 of 7



Maxxam Job #: B230777  
 Report Date: 2012/03/12

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MS0370		
Sampling Date		2012/02/27		
COC Number		08764		
	<b>Units</b>	<b>LICA PUFF+QFF/CLS/FEB 27,12</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Semivolatile Organics</b>				
1-Methylnaphthalene	ug	0.68	0.10	2782610
1-Methylphenanthrene	ug	<0.10	0.10	2782610
2-Chloronaphthalene	ug	<0.10	0.10	2782610
2-Methylantracene	ug	<0.10	0.10	2782610
2-Methylnaphthalene	ug	1.55	0.10	2782610
3-Methylcholanthrene	ug	<2.0	2.0	2782610
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	0.10	2782610
9,10-Dimethylantracene	ug	<0.40	0.40	2782610
Acenaphthene	ug	0.112	0.050	2782610
Acenaphthylene	ug	0.062	0.050	2782610
Anthracene	ug	<0.050	0.050	2782610
Benzo(a)anthracene	ug	<0.050	0.050	2782610
Benzo(a)fluorene	ug	<0.10	0.10	2782610
Benzo(a)pyrene	ug	<0.050	0.050	2782610
Benzo(b)fluoranthene	ug	<0.050	0.050	2782610
Benzo(b)fluorene	ug	<0.10	0.10	2782610
Benzo(e)pyrene	ug	<0.10	0.10	2782610
Benzo(g,h,i)perylene	ug	<0.050	0.050	2782610
Benzo(k)fluoranthene	ug	<0.050	0.050	2782610
Biphenyl	ug	0.35	0.10	2782610
Chrysene	ug	<0.050	0.050	2782610
Coronene	ug	<0.10	0.10	2782610
Dibenz(a,h)anthracene	ug	<0.050	0.050	2782610
Dibenzo(a,e)pyrene	ug	<0.20	0.20	2782610
Fluoranthene	ug	0.066	0.050	2782610
Fluorene	ug	0.120	0.050	2782610
Indeno(1,2,3-cd)pyrene	ug	<0.050	0.050	2782610
m-Terphenyl	ug	<0.10	0.10	2782610
Naphthalene	ug	1.41	0.072	2782610
o-Terphenyl	ug	<0.10	0.10	2782610
Perylene	ug	<0.10	0.10	2782610

 RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch

Maxxam Job #: B230777  
 Report Date: 2012/03/12

**SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)**

Maxxam ID		MS0370		
Sampling Date		2012/02/27		
COC Number		08764		
	<b>Units</b>	<b>LICA PUFF+QFF/CLS/FEB 27,12</b>	<b>RDL</b>	<b>QC Batch</b>

Phenanthrene	ug	0.212	0.050	2782610
p-Terphenyl	ug	<0.10	0.10	2782610
Pyrene	ug	<0.050	0.050	2782610
Quinoline	ug	<0.40	0.40	2782610
Tetralin	ug	<0.10	0.10	2782610
<b>Surrogate Recovery (%)</b>				
D10-2-Methylnaphthalene	%	74		2782610
D10-Fluoranthene	%	84		2782610
D10-Fluorene (FS)	%	57		2782610
D10-Phenanthrene	%	82		2782610
D12-Benzo(a)anthracene	%	90		2782610
D12-Benzo(a)pyrene	%	88		2782610
D12-Benzo(b)fluoranthene	%	84		2782610
D12-Benzo(ghi)perylene	%	86		2782610
D12-Benzo(k)fluoranthene	%	84		2782610
D12-Chrysene	%	82		2782610
D12-Indeno(1,2,3-cd)pyrene	%	82		2782610
D12-Perylene	%	86		2782610
D14-Dibenzo(a,h)anthracene	%	84		2782610
D14-Terphenyl (FS)	%	79		2782610
D8-Acenaphthylene	%	82		2782610
D8-Naphthalene	%	72		2782610

QC Batch = Quality Control Batch

Maxxam Job #: B230777  
Report Date: 2012/03/12

### Test Summary

**Maxxam ID** MS0370  
**Sample ID** LICA PUFF+QFF/CLS/FEB 27,12  
**Matrix** PUF AND FILTER

**Collected** 2012/02/27  
**Shipped**  
**Received** 2012/03/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2782610	2012/03/07	2012/03/08	JIE WU

Maxxam Job #: B230777  
Report Date: 2012/03/12

#### GENERAL COMMENTS

PAHMS-F

9,10-Dimethylanthracene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in initial calibration. No positives found for these 2 compounds.

Not calibrated for benzo(b)anthracene, picene, dibenzo(a,c)anthracene and triphenylene. An estimated mdl for each of these compounds is 0.1ug.

Since dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene and triphenylene with chrysene each would have a value below estimated mdl.

Benzo(b)anthracene elutes after benzo(a)anthracene and chrysene. Picene elutes after dibenz(a,h)anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Area response criteria of d12-benzo(e)pyrene internal standard was high in Spike.

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

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

Quality Assurance Report  
 Maxxam Job Number: GB230777

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2782610 JIW	Spiked Blank	D10-2-Methylnaphthalene	2012/03/08		76	%	50 - 150
		D10-Fluoranthene	2012/03/08		90	%	50 - 150
		D10-Phenanthrene	2012/03/08		84	%	50 - 150
		D12-Benzo(a)anthracene	2012/03/08		94	%	50 - 150
		D12-Benzo(a)pyrene	2012/03/08		92	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/03/08		88	%	50 - 150
		D12-Benzo(ghi)perylene	2012/03/08		92	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/03/08		86	%	50 - 150
		D12-Chrysene	2012/03/08		84	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/03/08		90	%	50 - 150
		D12-Perylene	2012/03/08		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/03/08		90	%	50 - 150
		D8-Acenaphthylene	2012/03/08		82	%	50 - 150
		D8-Naphthalene	2012/03/08		76	%	50 - 150
		Acenaphthene	2012/03/08		70	%	60 - 130
	RPD	Acenaphthene	2012/03/08	4.9		%	50
	Spiked Blank	Acenaphthylene	2012/03/08		76	%	60 - 130
	RPD	Acenaphthylene	2012/03/08	4.8		%	50
	Spiked Blank	Anthracene	2012/03/08		71	%	60 - 130
	RPD	Anthracene	2012/03/08	2.8		%	50
	Spiked Blank	Benzo(a)anthracene	2012/03/08		78	%	60 - 130
	RPD	Benzo(a)anthracene	2012/03/08	2.9		%	50
	Spiked Blank	Benzo(a)pyrene	2012/03/08		68	%	60 - 130
	RPD	Benzo(a)pyrene	2012/03/08	1.8		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/03/08		75	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/03/08	2.6		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/03/08		78	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/03/08	6.3		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/03/08		81	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/03/08	3.8		%	50
	Spiked Blank	Chrysene	2012/03/08		77	%	60 - 130
	RPD	Chrysene	2012/03/08	0		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/03/08		76	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/03/08	10.7		%	50
	Spiked Blank	Fluoranthene	2012/03/08		83	%	60 - 130
	RPD	Fluoranthene	2012/03/08	6.6		%	50
	Spiked Blank	Fluorene	2012/03/08		72	%	60 - 130
	RPD	Fluorene	2012/03/08	2.8		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/03/08		76	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/03/08	8.2		%	50
Spiked Blank	Naphthalene	2012/03/08		72	%	60 - 130	
RPD	Naphthalene	2012/03/08	1.4		%	50	
Spiked Blank	Phenanthrene	2012/03/08		74	%	60 - 130	
RPD	Phenanthrene	2012/03/08	0.7		%	50	
Spiked Blank	Pyrene	2012/03/08		82	%	60 - 130	
RPD	Pyrene	2012/03/08	7.3		%	50	
Method Blank	D10-2-Methylnaphthalene	2012/03/08		78	%	50 - 150	
	D10-Fluoranthene	2012/03/08		90	%	50 - 150	
	D10-Phenanthrene	2012/03/08		84	%	50 - 150	
	D12-Benzo(a)anthracene	2012/03/08		94	%	50 - 150	
	D12-Benzo(a)pyrene	2012/03/08		90	%	50 - 150	
	D12-Benzo(b)fluoranthene	2012/03/08		86	%	50 - 150	
	D12-Benzo(ghi)perylene	2012/03/08		86	%	50 - 150	
	D12-Benzo(k)fluoranthene	2012/03/08		84	%	50 - 150	
	D12-Chrysene	2012/03/08		82	%	50 - 150	

Maxxam Analytics  
 Attention: Michael Bisaga  
 Client Project #:  
 P.O. #:  
 Site Location:

## Quality Assurance Report (Continued)

Maxxam Job Number: GB230777

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2782610 JIW	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/03/08		84	%	50 - 150
		D12-Perylene	2012/03/08		86	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/03/08		86	%	50 - 150
		D8-Acenaphthylene	2012/03/08		88	%	50 - 150
		D8-Naphthalene	2012/03/08		80	%	50 - 150
		1-Methylnaphthalene	2012/03/08	<0.10		ug	
		1-Methylphenanthrene	2012/03/08	<0.10		ug	
		2-Chloronaphthalene	2012/03/08	<0.10		ug	
		2-Methylanthracene	2012/03/08	<0.10		ug	
		2-Methylnaphthalene	2012/03/08	<0.10		ug	
		3-Methylcholanthrene	2012/03/08	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/03/08	<0.10		ug	
		9,10-Dimethylanthracene	2012/03/08	<0.40		ug	
		Acenaphthene	2012/03/08	<0.050		ug	
		Acenaphthylene	2012/03/08	<0.050		ug	
		Anthracene	2012/03/08	<0.050		ug	
		Benzo(a)anthracene	2012/03/08	<0.050		ug	
		Benzo(a)fluorene	2012/03/08	<0.10		ug	
		Benzo(a)pyrene	2012/03/08	<0.050		ug	
		Benzo(b)fluoranthene	2012/03/08	<0.050		ug	
		Benzo(b)fluorene	2012/03/08	<0.10		ug	
		Benzo(e)pyrene	2012/03/08	<0.10		ug	
		Benzo(g,h,i)perylene	2012/03/08	<0.050		ug	
		Benzo(k)fluoranthene	2012/03/08	<0.050		ug	
		Biphenyl	2012/03/08	<0.10		ug	
		Chrysene	2012/03/08	<0.050		ug	
		Coronene	2012/03/08	<0.10		ug	
		Dibenz(a,h)anthracene	2012/03/08	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/03/08	<0.20		ug	
		Fluoranthene	2012/03/08	<0.050		ug	
		Fluorene	2012/03/08	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/03/08	<0.050		ug	
		m-Terphenyl	2012/03/08	<0.10		ug	
		Naphthalene	2012/03/08	<0.072		ug	
		o-Terphenyl	2012/03/08	<0.10		ug	
		Perylene	2012/03/08	<0.10		ug	
		Phenanthrene	2012/03/08	<0.050		ug	
		p-Terphenyl	2012/03/08	<0.10		ug	
		Pyrene	2012/03/08	<0.050		ug	
		Quinoline	2012/03/08	<0.40		ug	
		Tetralin	2012/03/08	<0.10		ug	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.  
 Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.  
 Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.  
 Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.