

Lakeland Industry & Community Association

Maskwa Monitoring Site
Ambient Air Monitoring
Data Report
For
October 2012

Prepared By:



November 30, 2012

Lakeland Industry & Community Association Ambient Air Monitoring Maskwa

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Introduction

The following Ambient Air Monitoring report was prepared for:

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Lakeland Industry & Community Association
Box 8237
5107W – 50 Street
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T9N 2J5

Monitoring Location: Maskwa
Data Period: October 2012

The monthly ambient data report:

- Prepared by Maram Ghaleb
- Reviewed by Lily Lin

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 – October 2012

LICA MASKWA SITE						MAXIMUM VALUES							OPERATIONAL TIME (PERCENT)
						OBJECTIVES					1-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	0.39	9	28	14	9.6	106(ESE)	2.0	16,19	100.0
H2S (PPB)	10	3	0	0	0.17	3	1,16	8,8	2.2,3.1	46(NE), 78(ENE)	0.8	16	100.0
THC (PPM)	-	-	-	-	2.21	3.2	17	8	10.6	301(WNW)	2.4	VAR	100.0
NOx (PPB)	-	-	-	-	3.05	16	16,18	21,6	8.7,1.3	299(WNW), 220(SW)	7.5	16	100.0
NO (PPB)	-	-	-	-	0.44	8	13	9,10	3.7,5.4	204(SSW), 194(SSW)	2.4	13	100.0
NO ₂ (PPB)	159	-	0	-	2.61	13	16	21	8.7	299(WNW)	6.2	16	100.0
VECTOR WS (KPH)	-	-	-	-	5.73	15	16	17	-	301(WNW)	9.7	21	100.0
VECTOR WD (DEGREES)	-	-	-	-	319(NW)	-	-	-	-	-	-	-	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	70.85	93	5	VAR	VAR	VAR	88.9	5	100.0
TEMPERATURE (DEG C)	-	-	-	-	0.40	15.9	15	14	9.8	287(WNW)	9.1	1	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	941	959	3	VAR	VAR	VAR	957.3	3	100.0
PRECIPITATION (MM)	-	-	-	-	0.03	1.3	12,20	16,10	2.4,1.1	52(NE), 333(NNW)	6.5	12	100.0

NA-NOT APPLICABLE VAR-VARIOUS

General Monthly Summary

Equipment Operation

The following summary outlines the analyzer performance. Any non-conformances, problems encountered 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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on October 12th. Data was corrected using daily zero information.

Hydrogen Sulphide (PPB)

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on October 12th. Data was corrected using daily zero information.

Total Hydrocarbon (PPM)

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on October 12th. 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 issues were observed during the month. The inlet filter was changed before the monthly calibration was started on October 12th. O-ring was also replaced and the HVPS voltage and slope adjusted. IZS temperature was also adjusted. Data was corrected using daily zero information.

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

- System make / model - MetOne 50.5H Sonic, S/N: H10703

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

No operational issues were observed this month.

Hourly data for WS maximum on October 16 at hour 1 was invalidated because the reading went above the full scale.

Relative Humidity (PERCENT)

- System make / model - Met One 083

No operational issues were observed during the month.

Precipitation (MM)

- System make / model - Met One 387

No operational issues were observed during the month.

General Monthly Summary

AQM STATION – LICA – Maskwa

Barometric Pressure (MILLIBAR)

- System make / model - Met One 092

No operation issues were observed during the month.

Ambient Temperature (DEGC)

- System make / model - Met One 060

No operational issues were observed during the month.

Trailer Temperature (DEG C)

- System make / model – R&R 61

No operational issues were observed during the month.

Standard Deviation Wind Direction (DEG)

- System make / model –Met One 50.5H

No operational issues were 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 issues were observed during the month.

Trailer

The manifold was cleaned on October 12th.

Continuous Monitoring

Monthly Summaries, Graphs & Wind Roses

Sulphur Dioxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA
OCTOBER 2012
SULPHUR DIOXIDE (SO₂) hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	1	0	0	1	0	0	0	IZS	0	0	5	7	4	6	6	3	1	0	1	0	1	3	2	3	7	1.9	24	
2	2	2	1	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	24	
3	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	
4	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	
5	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	
6	0	0	IZS	0	0	0	0	0	1	2	5	2	0	0	0	0	0	0	0	0	0	0	0	0	5	0.4	24	
7	0	IZS	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
8	IZS	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	
9	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	1	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	IZS	0	0	0.0	24	
11	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	1	0.0	24	
12	0	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	IZS	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	IZS	0	0	0	0	0	0	0.0	24
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	3	IZS	0	0	0	0	0	0	0	6	0.5	24
15	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	
16	0	0	0	1	2	2	1	2	4	1	1	3	2	3	2	IZS	2	3	2	3	4	4	1	3	4	2.0	24	
17	3	2	1	1	1	1	2	1	2	2	3	2	1	0	IZS	1	0	2	2	0	0	0	0	0	3	1.2	24	
18	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	
19	0	0	0	2	6	3	3	2	1	5	2	5	IZS	4	5	4	2	2	1	0	0	0	0	0	6	2.0	24	
20	0	0	0	0	1	0	1	1	0	0	0	IZS	0	1	1	1	1	1	2	1	1	2	2	2	2	0.8	24	
21	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	
22	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	
23	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	
24	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	
25	0	0	0	0	0	0	IZS	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0.1	24	
26	0	0	0	0	0	IZS	0	0	0	0	0	2	2	2	1	0	0	0	0	0	0	0	0	0	2	0.3	24	
27	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	
28	0	0	0	IZS	0	0	0	0	0	2	2	2	6	7	9	5	0	0	0	0	0	0	0	0	9	1.4	24	
29	0	0	IZS	0	0	0	0	0	0	0	1	0	3	3	2	1	0	0	0	0	0	0	0	0	3	0.4	24	
30	0	IZS	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	3	1	0	3	0.3	24	
31	IZS	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	1	0	0	0	IZS	2	0.2	24	
HOURLY MAX	3	2	1	2	6	3	3	2	4	5	5	7	6	7	9	6	3	3	2	3	4	4	2	3				
HOURLY AVG	0.2	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.5	0.8	0.9	0.6	0.9	0.9	0.7	0.3	0.3	0.3	0.2	0.2	0.4	0.2	0.3				

STATUS FLAG CODES

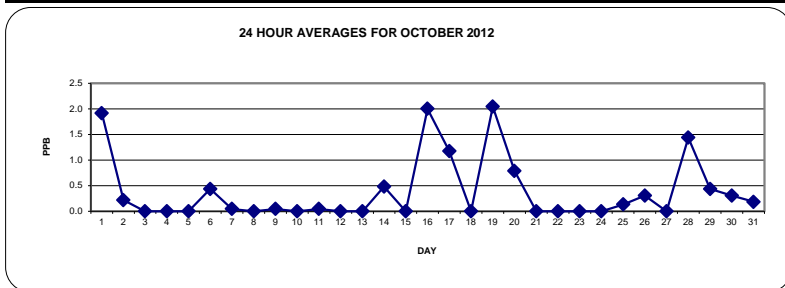
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OBJECTIVE LIMIT:

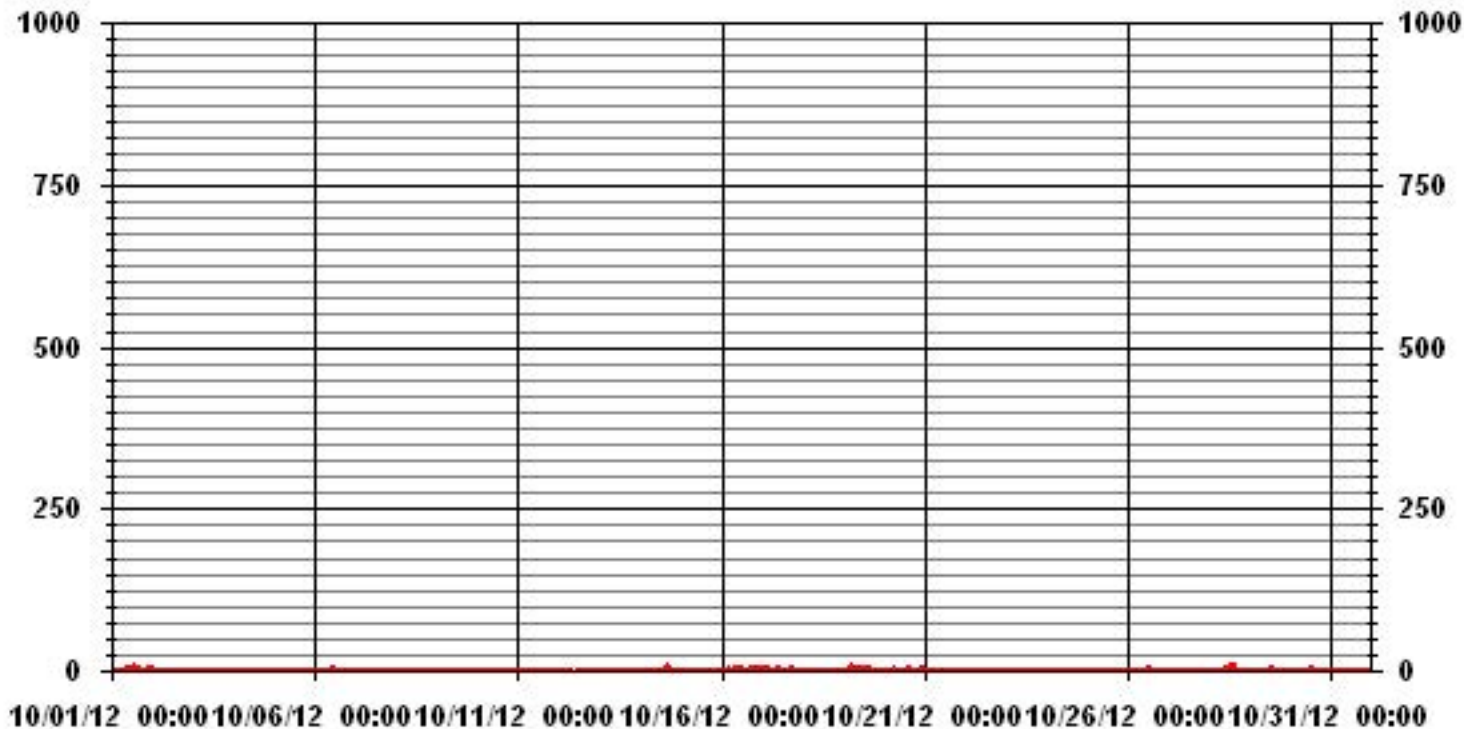
ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	48	PPB
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MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	119					
MAXIMUM 1-HR AVERAGE:	9	PPB	@ HOUR(S)	14	ON DAY(S)	28
MAXIMUM 24-HR AVERAGE:	2.0	PPB			ON DAY(S)	16,19
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	1.09		MONTHLY AVERAGE:	0.39	PPB	



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	DAILY	24-HOUR	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.			
DAY																													
1	1	1	1	2	1	0	0	IZS	1	2	13	12	12	10	12	8	1	1	1	1	1	7	7	7	13	4.4	24		
2	5	4	1	1	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.6	24	
3	0	0	0	0	0	0	IZS	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	2	0.2	24	
4	0	0	0	0	IZS	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0.1	24	
5	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	
6	0	0	IZS	1	1	1	1	1	2	5	7	3	1	1	0	0	0	0	0	0	0	1	1	1	1	7	1.2	24	
7	1	IZS	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24	
8	IZS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	0.0	24	
9	1	1	1	1	0	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	1	2.0	24	
10	1	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	
11	0	0	0	0	0	0	0	0	0	1	2	1	1	1	1	1	1	1	1	1	1	IZS	0	0	0	2	0.6	24	
12	0	0	0	0	0	0	0	0	0	C	C	C	C	0	0	0	M	M	1	IZS	0	0	0	0	0	1	0.1	22	
13	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	IZS	0	0	1	0	0	1	0.2	24
14	0	1	0	0	0	1	1	0	1	2	1	0	1	2	7	12	13	IZS	1	1	2	1	1	1	1	13	2.1	24	
15	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	IZS	0	1	1	1	1	1	1	1	1	0.7	24	
16	1	1	1	1	4	5	2	6	8	2	2	7	4	6	5	IZS	5	5	4	6	7	8	3	4	8	8	4.2	24	
17	5	3	3	3	1	3	5	4	5	4	5	5	6	3	IZS	4	0	5	4	2	2	1	1	0	6	3.2	24		
18	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	1	1	0	0	0	0	0	0	0	1	0.1	24	
19	0	0	1	7	12	7	8	4	2	9	5	7	IZS	7	8	8	5	6	2	1	1	1	1	1	12	4.5	24		
20	1	1	1	1	1	1	2	3	1	1	1	IZS	1	5	3	2	2	3	5	2	2	5	3	3	5	2.2	24		
21	1	1	1	1	1	1	0	1	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24	
22	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
23	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	
24	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	
25	0	0	0	0	0	0	IZS	0	0	0	1	1	2	1	1	1	1	0	1	0	2	2	2	0	2	2	0.7	24	
26	0	1	1	1	1	IZS	1	1	1	1	1	4	6	6	5	0	0	0	0	0	0	0	0	0	6	1.3	24		
27	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	2	0.2	24		
28	1	0	0	IZS	0	0	1	1	1	4	5	9	10	11	11	11	1	1	1	1	1	0	1	0	11	3.1	24		
29	1	1	IZS	0	1	1	0	0	0	1	6	1	9	6	5	4	1	1	1	1	1	1	0	1	9	1.9	24		
30	1	IZS	0	0	0	0	0	0	0	1	0	0	3	6	2	0	1	0	0	1	4	6	2	1	6	1.2	24		
31	IZS	1	0	0	0	1	0	1	0	0	3	4	2	1	1	0	0	0	0	5	0	0	0	0	IZS	5	0.9	24	
HOURLY MAX	5	4	3	7	12	7	8	6	8	9	13	12	12	11	12	12	13	6	5	6	7	8	7	7					
HOURLY AVG	0.7	0.6	0.4	0.7	0.9	0.8	0.8	0.8	0.9	1.4	2.0	1.9	2.1	2.3	2.1	1.8	1.1	0.9	0.8	0.8	0.9	1.2	0.8	0.8					

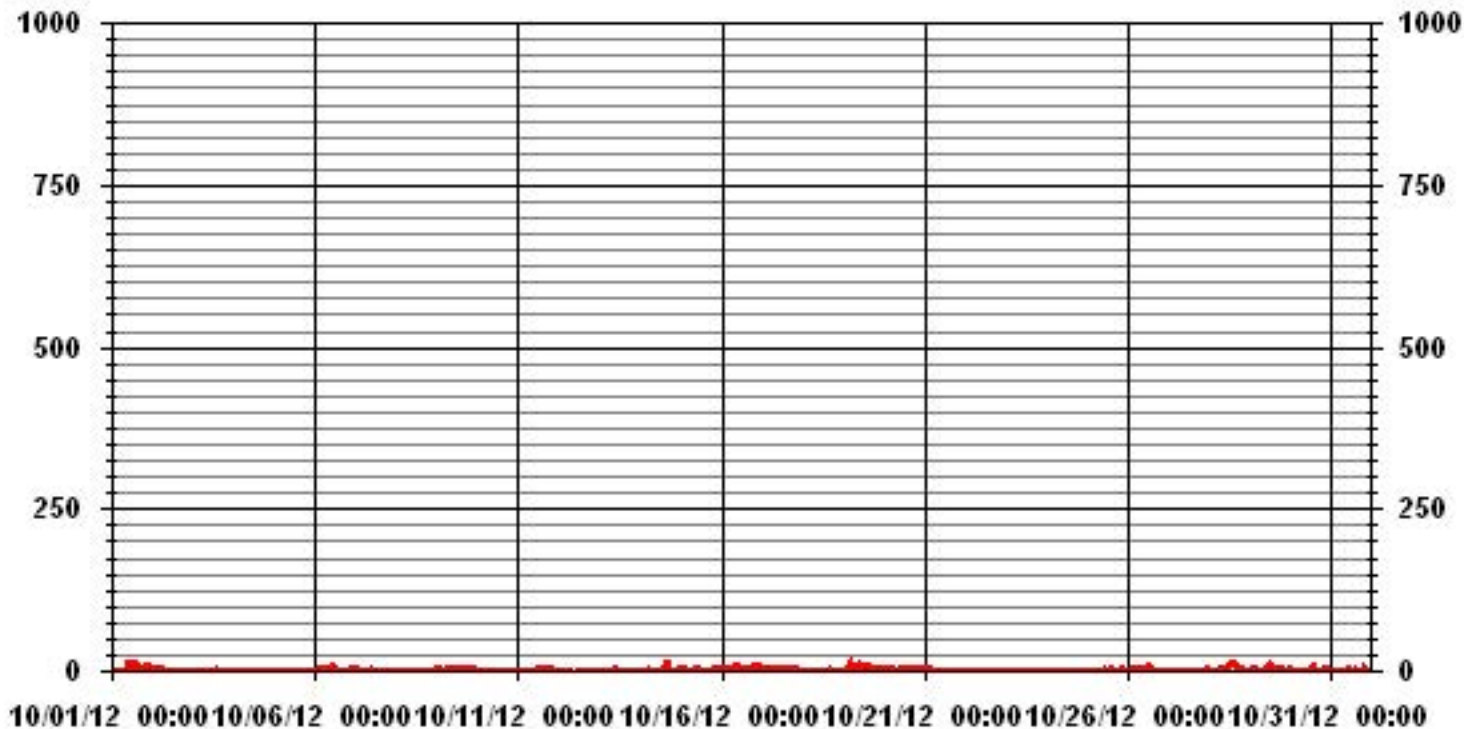
STATUS FLAG CODES

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:	309					
MAXIMUM INSTANTANEOUS VALUE:	13	PPB	@ HOUR(S)	10,15	ON DAY(S)	1,14
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	742	HRS	
MONTHLY CALIBRATION TIME:	4	HRS				
STANDARD DEVIATION:	2.21					

01 Hour Averages



— LICA30 SO2MAX PPB

LICA30
 SO2_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 30
 Site Name : LICA30
 Parameter : SO2_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	10.74	4.38	2.54	3.53	3.39	5.79	6.93	4.24	6.50	9.33	5.37	3.25	5.51	8.20	9.33	10.89	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	10.74	4.38	2.54	3.53	3.39	5.79	6.93	4.24	6.50	9.33	5.37	3.25	5.51	8.20	9.33	10.89	

Calm : .00 %

Total # Operational Hours : 707

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	76	31	18	25	24	41	49	30	46	66	38	23	39	58	66	77	707
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	76	31	18	25	24	41	49	30	46	66	38	23	39	58	66	77	

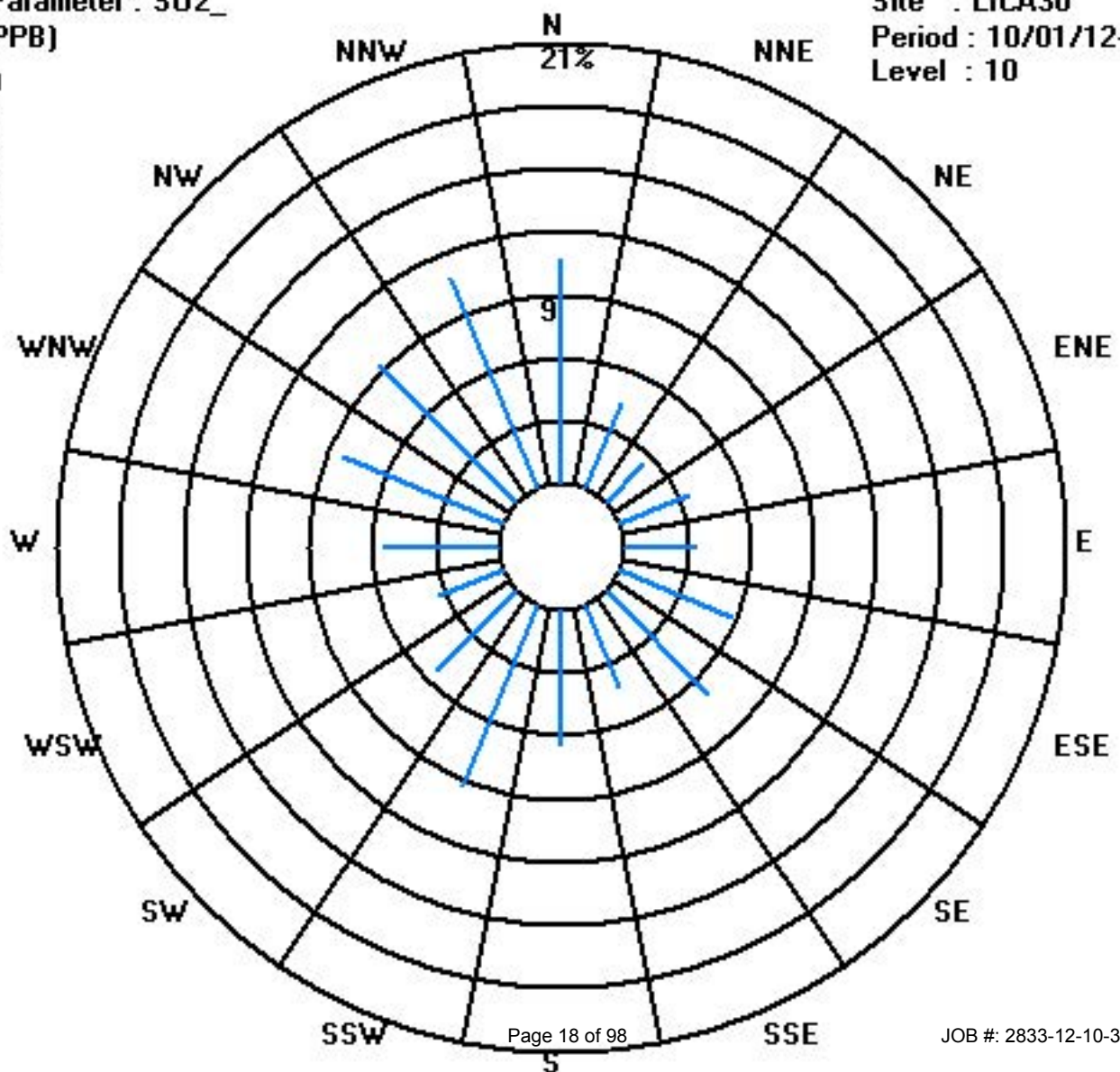
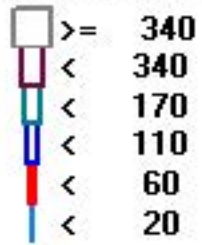
Calm : .00 %

Total # Operational Hours : 707

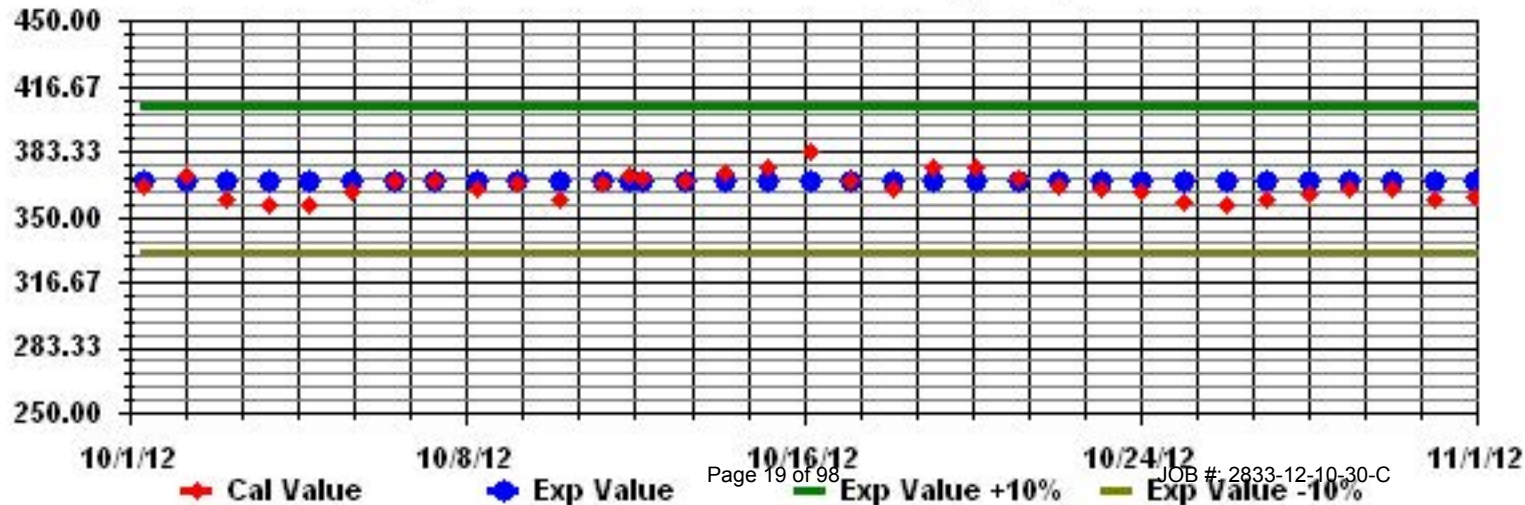
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



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



Hydrogen Sulphide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

HYDROGEN SULPHIDE (H₂S) hourly averages in ppb

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	DAILY 24-HOUR		
HOUR START	HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY	1	0	0	0	0	0	1	0	IZS	3	1	1	1	1	1	1	0	0	1	0	1	2	1	1	3	0.7	24		
2	1	1	0	0	0	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24		
3	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	
4	0	0	0	0	IZS	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
5	1	1	1	IZS	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
6	0	0	IZS	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.1	24	
7	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
8	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	
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	IZS	0	0.0	24	
10	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	1	0.1	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	0	1	0.1	24	
12	0	0	0	0	0	1	0	0	C	C	C	C	0	0	0	0	0	1	1	IZS	0	0	1	0	1	0	1	0.2	24
13	0	1	0	0	0	1	0	0	0	0	1	1	1	1	1	0	1	0	IZS	1	1	1	1	1	0	1	0.5	24	
14	1	1	1	0	0	0	0	0	0	0	0	0	0	1	2	2	1	IZS	0	0	0	0	0	0	0	2	0.4	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	1	1	1	1	1	1	0.2	24
16	1	1	1	1	0	1	1	2	3	1	1	1	1	1	1	1	IZS	0	0	0	1	0	0	0	0	3	0.8	24	
17	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	IZS	0	0	1	0	0	0	0	1	1	1	0.2	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	1	IZS	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
19	0	0	0	1	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
20	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0.4	24
21	1	1	0	0	1	1	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
22	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	0.0	24
23	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	0.0	24
24	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.0	24	
25	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	0.0	24
26	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
27	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	0.0	24
28	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	0.0	24
29	0	0	0	IZS	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
30	1	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	1	0.0	24
31	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	IZS	0	0.0	24
HOURLY MAX		1	1	1	1	1	1	1	2	3	1	1	1	1	1	2	2	1	1	1	1	1	2	1	1				
HOURLY AVG		0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2				

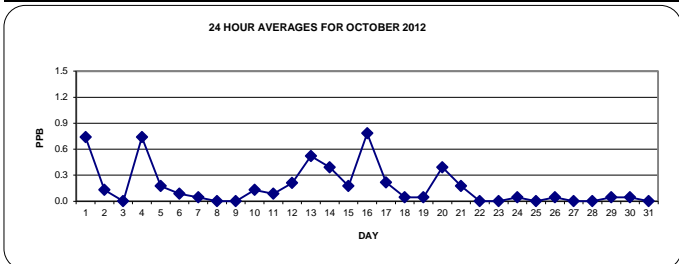
STATUS FLAG CODES

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

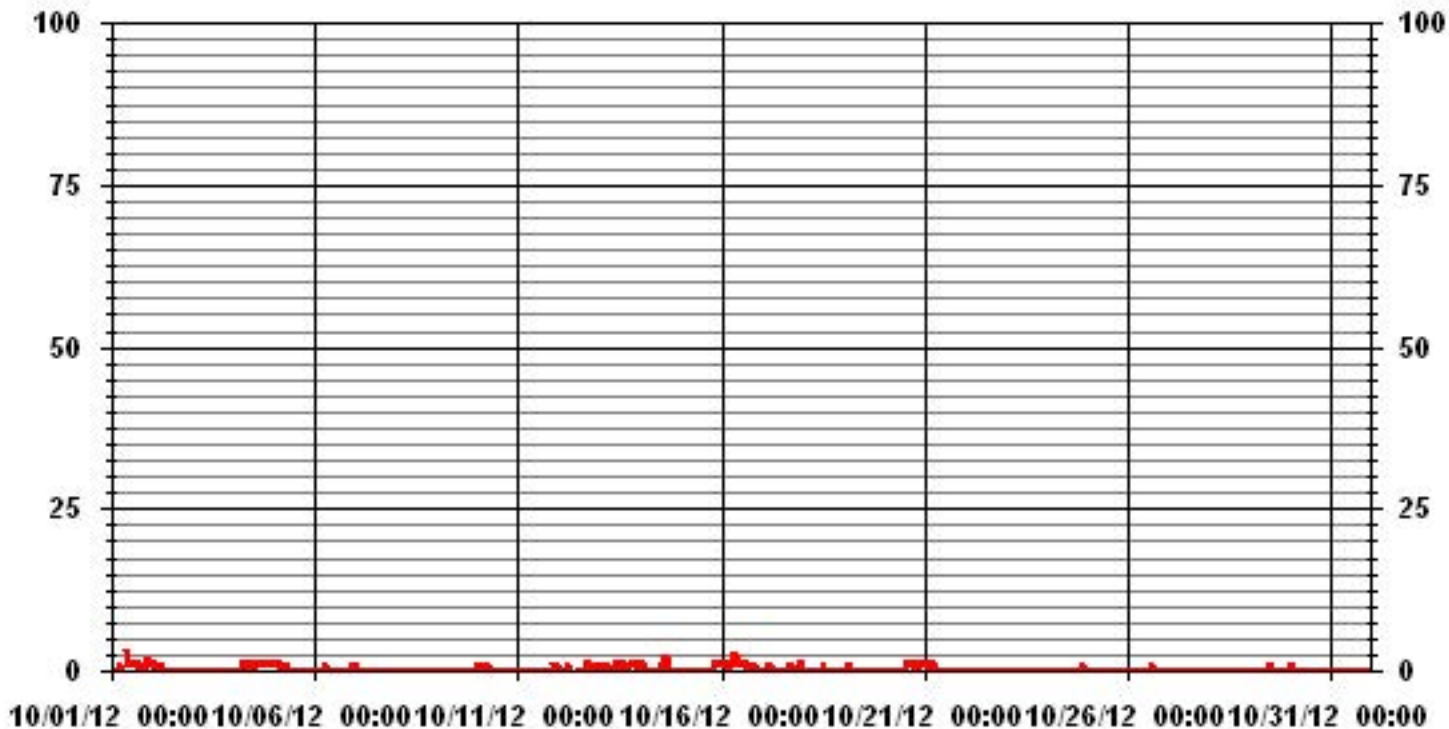
OBJECTIVE LIMIT: ALBERTA ENVIRONMENT: 1-HR 10 PPB 24-HR 3 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	112
MAXIMUM 1-HR AVERAGE:	3 PPB @ HOUR(S) 8, 8 ON DAY(S) 1, 16
MAXIMUM 24-HR AVERAGE:	0.8 PPB ON DAY(S) 16
	VAR-VARIOUS
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	744 HRS
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0.41
MONTHLY AVERAGE:	0.17 PPB



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	1	1	1	1	1	1	1	1	IZS	4	2	1	1	2	3	1	2	1	1	1	1	2	3	3	2	4	1.6	24
2	2	1	0	1	1	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24
3	0	0	0	0	0	0	IZS	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
4	0	1	1	0	IZS	1	1	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24
5	1	1	1	IZS	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	0.4	24
6	0	0	IZS	0	1	1	1	1	0	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1	0.5	24
7	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
8	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	0.0	24
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
10	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0.5	24
11	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	1	1	0.4	24
12	1	1	1	0	1	1	1	1	C	C	C	C	1	1	1	1	M	M	2	IZS	0	1	1	1	1	2	0.9	22
13	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	1	1	1	1	1	1	0.9	24
14	1	1	1	0	1	0	0	1	1	0	0	1	1	3	4	4	3	IZS	0	1	0	0	0	0	0	4	1.0	24
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	1	1	1	1	1	1	2	0.3	24	
16	2	1	1	1	1	1	2	4	4	1	1	2	1	2	2	IZS	2	0	0	2	0	0	3	2	4	1.5	24	
17	2	2	1	2	2	1	2	1	2	1	0	0	0	0	IZS	0	1	2	1	1	0	0	2	1	2	1.0	24	
18	1	1	0	0	0	1	1	1	1	1	0	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	1	0.4	24
19	0	0	1	2	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	2	0.1	24
20	0	0	0	2	0	0	0	0	0	0	0	0	IZS	1	1	1	1	1	2	1	1	1	1	1	1	2	0.7	24
21	1	1	1	1	1	1	0	0	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
22	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
23	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0.1	24
24	0	0	0	1	0	0	0	0	IZS	0	0	0	0	1	1	0	1	0	0	0	0	1	1	1	1	1	0.3	24
25	1	0	0	1	0	0	IZS	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
26	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0.1	24
27	0	1	0	1	IZS	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	0.3	24
28	1	1	1	IZS	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
29	0	0	IZS	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0.7	24
30	1	IZS	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0.2	24
31	IZS	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0.2	24
HOURLY MAX	2	2	1	2	2	1	2	4	4	2	1	2	2	3	4	4	3	2	2	2	2	3	3	3	2			
HOURLY AVG	0.6	0.5	0.4	0.6	0.4	0.4	0.4	0.6	0.7	0.4	0.2	0.3	0.4	0.6	0.5	0.5	0.5	0.4	0.3	0.4	0.3	0.4	0.6	0.5				

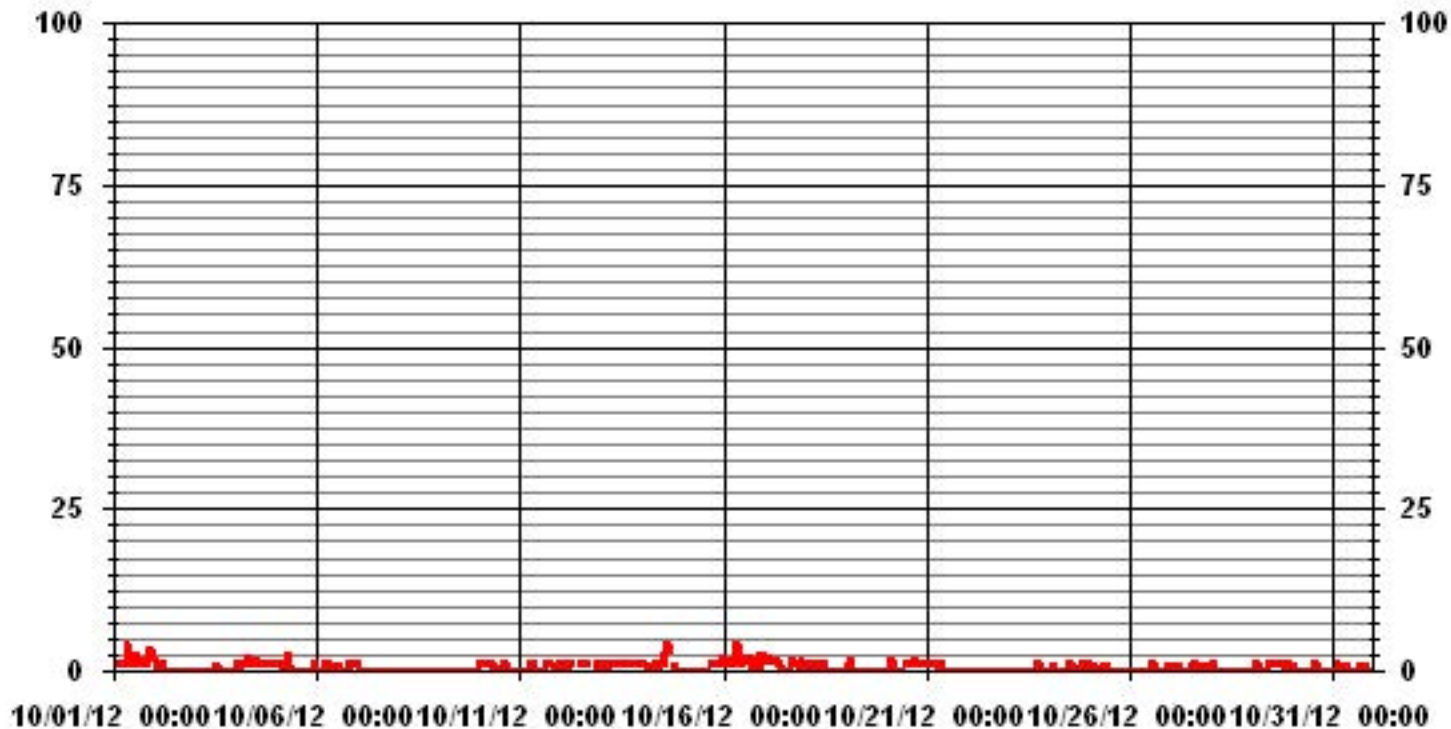
STATUS FLAG CODES

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:	265					
MAXIMUM INSTANTANEOUS VALUE:	4	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR
IZS CALIBRATION TIME:	33	HRS		OPERATIONAL TIME:	742	HRS
MONTHLY CALIBRATION TIME:	4	HRS				
STANDARD DEVIATION:	0.69					

01 Hour Averages



LICA30
H2S_ / WDR Joint Frequency Distribution (Percent)

October 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	10.74	4.38	2.40	3.39	3.39	5.79	6.93	4.24	6.50	9.33	5.37	3.25	5.51	8.20	9.33	10.89	99.71
< 10	.00	.00	.14	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.28
< 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	10.74	4.38	2.54	3.53	3.39	5.79	6.93	4.24	6.50	9.33	5.37	3.25	5.51	8.20	9.33	10.89	

Calm : .00 %

Total # Operational Hours : 707

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	76	31	17	24	24	41	49	30	46	66	38	23	39	58	66	77	705
< 10			1	1													2
< 50																	
>= 50																	
Totals	76	31	18	25	24	41	49	30	46	66	38	23	39	58	66	77	

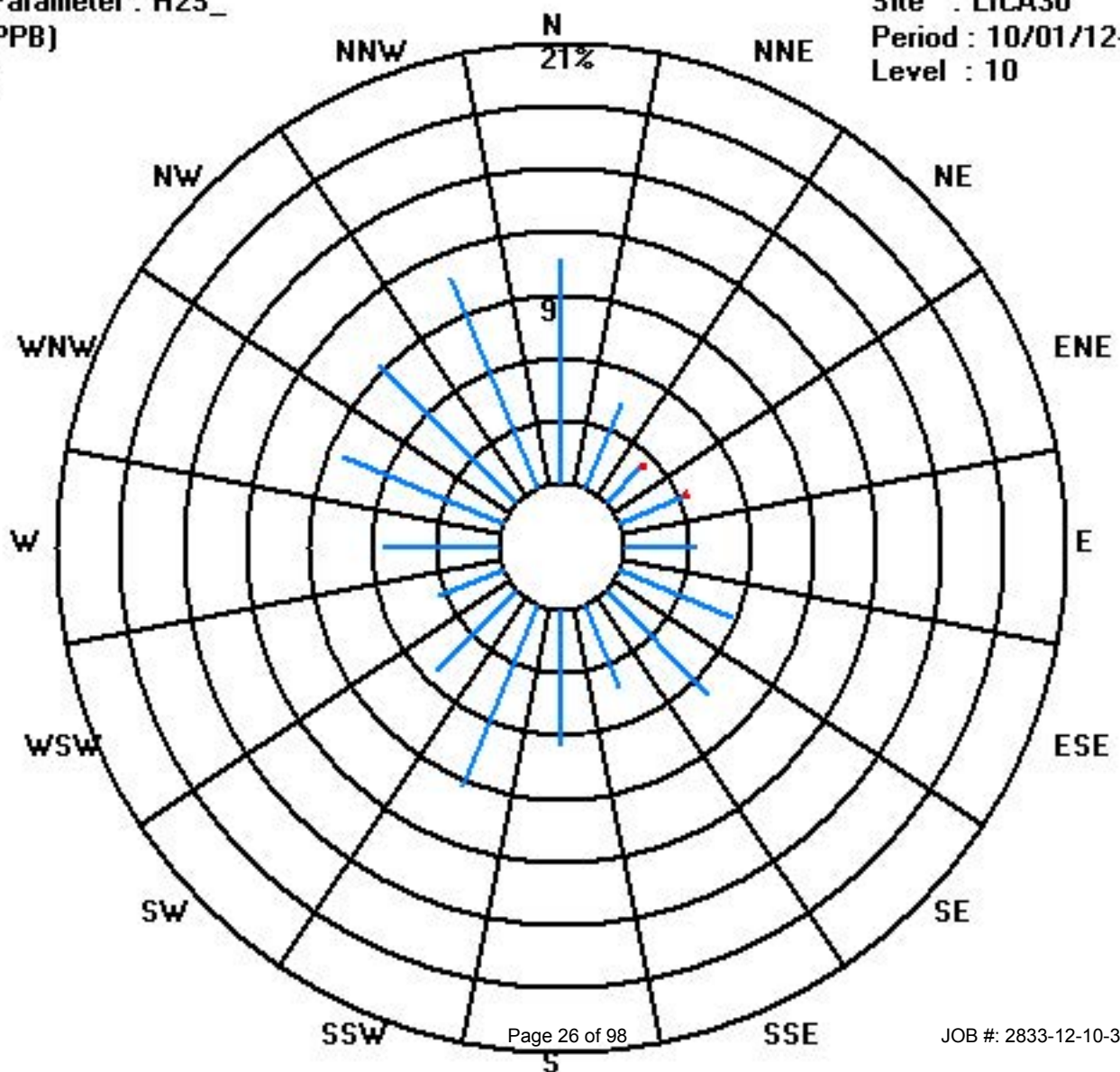
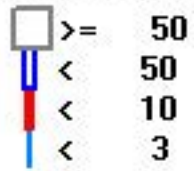
Calm : .00 %

Total # Operational Hours : 707

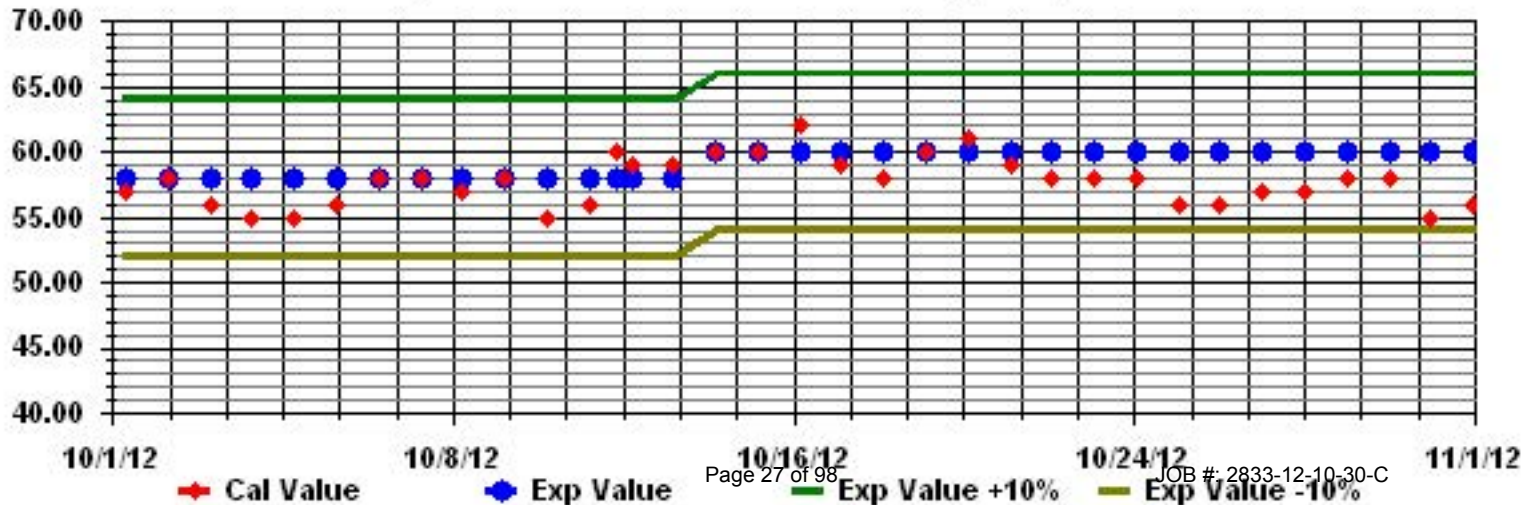
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



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



Total Hydrocarbons

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

OCTOBER 2012

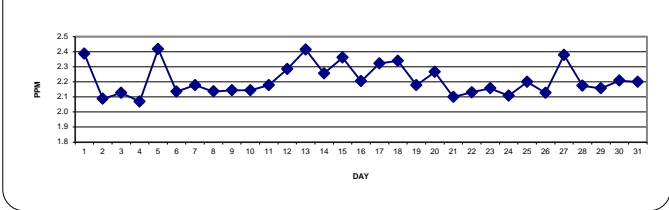
TOTAL HYDROCARBONS hourly averages in ppm

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY 24-HOUR					
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.			
1		2.3	2.7	2.5	2.5	2.6	2.7	2.7	IZS	2.8	2.5	2.4	2.5	2.4	2.5	2.5	2.4	2.3	2	2	2	2	2.4	2.1	2.1	2.1	2.8	2.4	24		
2		2.2	2.2	2	2	2	2	IZS	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	2.2	2.2	2.1	24	
3		2.2	2.2	2.2	2.2	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24		
4		2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.1	2.1	2.1	2	2.1	2	2.1	2	2	2	2	2	2	2	2	2	2	2.2	2.3	2.3	2.1	24	
5		2.6	2.4	2.4	IZS	2.2	2.2	2.5	2.7	2.4	2.2	2.3	2.3	2.3	2.5	2.6	2.5	2.5	2.5	2.4	2.4	2.5	2.5	2.4	2.3	2.7	2.4	24	24		
6		2.3	2.3	IZS	2.2	2.2	2.3	2.4	2.3	2.1	2.1	2.1	2.1	2	2	2	2	2	2	2.1	2	2	2	2.2	2.4	2.4	2.1	24	24		
7		2.3	IZS	2.6	2.4	2.3	2.3	2.6	2.6	2.3	2.3	2.2	2.1	2.1	2	2	2	2	2	2	2	2	2	2	2	2	2.6	2.2	24	24	
8		IZS	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	2.7	2.2	2.1	IZS	2.7	2.1	24	24	
9		2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2.1	2.2	2.1	24	24	
10		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	IZS	2.1	2.4	2.1	24	24		
11		2.3	2.3	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	IZS	2.3	2.3	2.3	2.2	24	24	
12		2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.4	2.4	2.3	C	C	C	C	2.3	2.3	2.3	2.3	IZS	2.1	2.1	2.1	2.1	2.1	2.5	2.3	24	24	
13		2.2	2.2	2.2	2.3	2.4	2.6	2.5	2.4	2.5	2.5	2.4	2.3	2.4	2.4	2.4	2.5	2.5	2.5	IZS	2.4	2.5	2.5	2.5	2.4	2.6	2.4	24	24		
14		2.4	2.3	2.3	2.1	2.1	2.2	2.4	2.5	2.5	2.4	2.2	2.1	2.1	2.1	2.3	2.1	IZS	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.5	2.3	24	24		
15		2.8	2.6	2.5	2.4	2.6	2.8	2.9	2.9	2.5	2.5	2.1	2	2	2.1	2.1	2.1	IZS	2	2.1	2.1	2.2	2.2	2.4	2.4	2.9	2.4	24	24		
16		2.3	2.3	2.1	2.1	2.1	2.2	2.1	2.1	2.4	2.1	2.1	2.3	2.3	2.4	2.3	IZS	2.2	2.1	2.1	2.2	2.1	2.2	2.3	2.3	2.4	2.2	24	24		
17		2.3	2.3	2.3	2.5	2.4	2.4	2.4	2.4	3.2	2.2	2.4	2.2	2.2	IZS	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.9	2.3	3.2	2.3	24	24	
18		2.2	2.2	2.2	2.4	2.7	2.6	2.6	2.7	2.8	2.4	2.4	2.3	2.2	IZS	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.8	2.3	24	24		
19		2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.1	2	2.3	2.1	2.3	IZS	2.3	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	24	24	
20		2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	IZS	2.1	2.2	2.4	2.2	2.5	2.3	2.2	2.4	2.3	2.4	2.4	2.3	2.5	2.3	24	24		
21		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	2.1	2.1	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	
22		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	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	24	24	
23		2.3	2.3	2.5	2.3	2.2	2.2	2.2	2.1	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.2	24	24	
24		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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	24	24	
25		2.2	2.2	2.2	2.2	2.2	2.2	IZS	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	24	24
26		2.2	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24	24	
27		2.1	2.2	2.3	2.2	IZS	2.2	2.2	2.2	2.4	2.7	2.7	2.6	2.5	2.6	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.5	2.5	2.7	2.4	24	24		
28		2.4	2.3	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.4	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.2	24	24	
29		2.1	2.1	IZS	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	24	24	
30		2.2	IZS	2.2	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	24	24	
31		IZS	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	IZS	2.2	2.2	2.2	24	24	
HOURLY MAX		2.8	2.7	2.6	2.5	2.7	2.8	2.9	2.9	3.2	2.7	2.7	2.6	2.5	2.6	2.6	2.5	2.5	2.5	2.4	2.4	2.7	2.5	2.9	2.5						
HOURLY AVG		2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	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

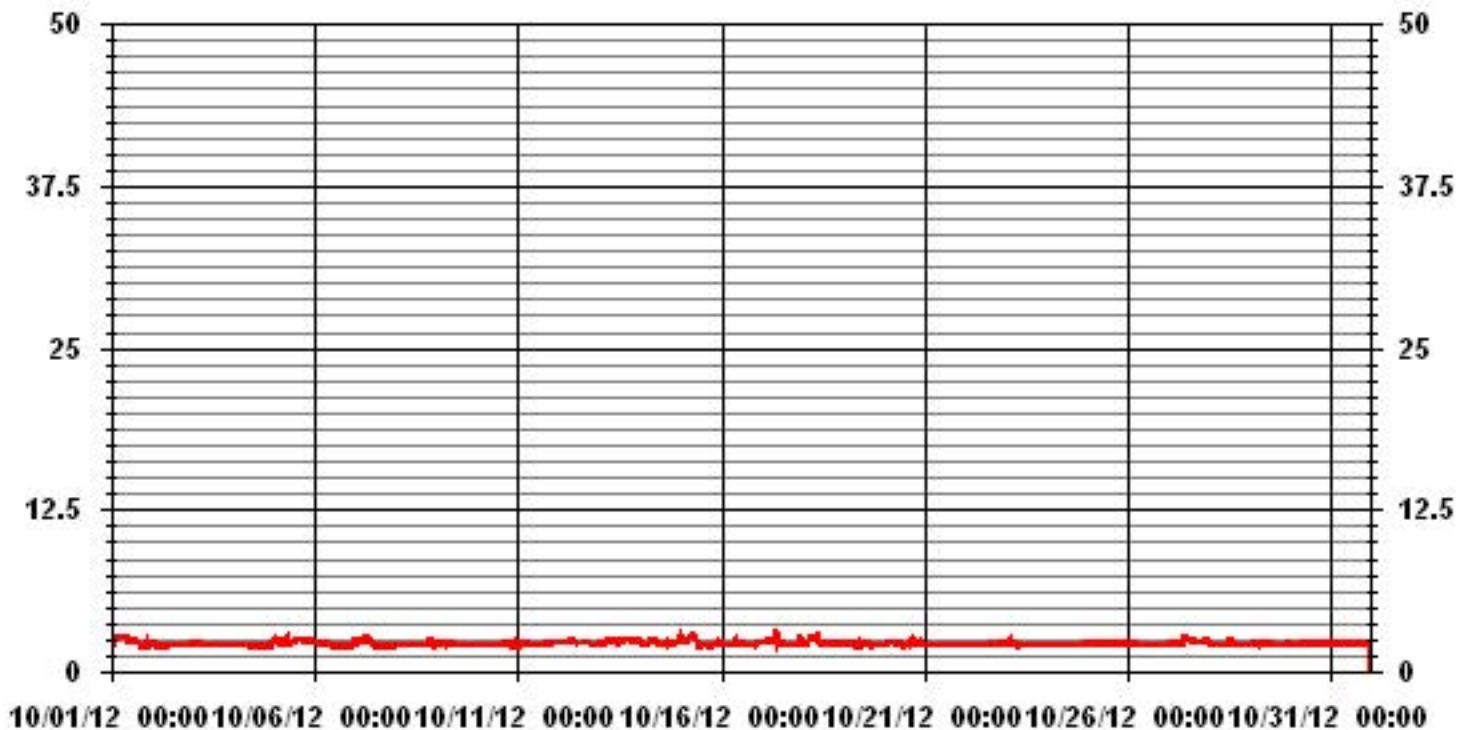
24 AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	707					
MAXIMUM 1-HR AVERAGE:	3.2	PPM	@ HOUR(S)	8	ON DAY(S)	17
MAXIMUM 24-HR AVERAGE:	2.4	PPM			ON DAY(S)	VAR
				VAR- VARIOUS		
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.16		MONTHLY AVERAGE:	2.21	PPM	

01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST																									DAILY	24-HOUR		
HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.	AVG.	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00				
DAY																												
1	2.6	2.8	2.7	2.5	2.8	2.9	2.8	IZS	3.1	2.6	2.6	2.7	2.8	2.8	2.6	2.6	2.3	2.2	2	2	2.7	3.5	3.4	3	3.5	2.7	24	
2	2.9	2.9	2	2	2	2	IZS	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	2.2	2.2	2.2	2.2	2.9	2.2	24
3	2.2	2.2	2.2	2.2	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.8	3.1	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	3.1	2.2	24
4	2.2	2.2	2.2	2.2	IZS	2.1	2.1	2.1	2.3	2.1	2.1	2.1	2.1	2.3	2.1	2	2	2.1	2	2	2	2.1	2.7	2.4	2.7	2.2	24	
5	3	2.7	2.6	IZS	2.2	2.4	2.6	3.5	2.6	2.3	2.3	2.3	2.4	2.6	2.7	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.5	2.3	3.5	2.6	24	
6	2.3	2.3	IZS	2.3	2.3	2.3	2.7	2.7	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.4	2.1	2.2	2.3	2	2	2.1	2.3	2.4	2.7	2.2	24	
7	2.4	IZS	2.7	2.6	2.4	2.5	2.7	2.7	2.4	2.4	2.3	2.2	2.1	2.2	2	2	2	2	2	2	2	2	2.1	2.1	2.7	2.3	24	
8	IZS	2.1	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	3.5	3.5	2.4	2.3	IZS	3.5	2.3	24	
9	2.4	2.2	2.4	2.4	2.2	2.2	2.2	2.3	2.2	2.6	2.3	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.4	2.1	2.2	2.2	IZS	2.3	2.6	2.2	24	
10	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	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	IZS	2.3	2.7	2.7	2.2	24	
11	2.6	2.5	2.2	2.3	2.2	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	IZS	2.3	2.3	2.3	2.6	2.2	24
12	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.9	2.8	2.6	2.3	C	C	C	C	C	C	C	C	2.4	IZS	2.1	2.1	2.1	2.1	2.9	2.4	24
13	2.2	2.2	2.3	2.4	2.5	2.6	2.5	2.6	2.5	2.6	2.6	2.6	2.3	2.4	2.4	2.5	2.6	2.5	2.5	IZS	2.5	2.5	2.6	2.6	2.5	2.6	2.5	24
14	2.5	2.3	2.4	2.2	2.1	2.4	2.5	2.6	2.6	2.5	2.3	2.2	2.1	2.2	2.3	2.6	2.6	IZS	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.6	2.4	24
15	4.2	2.9	2.6	2.5	2.7	2.9	3.1	3.1	2.7	2.9	2.2	2.1	2.1	2.3	2.2	2.2	IZS	2.1	2.1	2.2	2.2	2.4	2.6	2.4	4.2	2.6	24	
16	2.5	2.3	2.2	2.2	2.4	2.3	2.2	2.6	2.7	2.2	2.6	2.6	2.5	3.5	2.6	IZS	2.7	2.2	2.3	3	2.3	2.5	2.9	2.6	3.5	2.5	24	
17	2.9	3.1	2.8	3	2.8	2.7	2.9	3.4	6.9	2.6	3.4	2.8	2.5	2.4	IZS	2.2	2.1	4.6	2.5	2.1	2.1	2.1	4.2	3	6.9	3.0	24	
18	2.3	2.2	2.2	2.8	2.8	2.6	2.7	2.8	2.8	2.7	2.4	2.3	2.3	IZS	2.2	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.8	2.4	24	
19	2.3	2.3	2.2	2.5	2.8	2.5	2.5	2.3	2.1	2.7	2.5	2.5	IZS	2.6	2.6	2.7	2.2	2.5	2.2	2.1	2.1	2.1	2.1	2.1	2.8	2.4	24	
20	2.1	2.1	2.3	2.3	2.6	2.5	2.6	2.3	2.2	2.2	2.3	IZS	2.2	2.5	2.6	2.6	2.6	2.7	2.5	2.7	2.5	2.7	2.6	2.5	2.7	2.4	24	
21	2.2	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24	
22	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	IZS	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	2.3	2.3	2.2	24	
23	2.3	2.3	2.7	2.4	2.3	2.3	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.7	2.2	24	
24	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	24	
25	2.2	2.2	2.2	2.2	2.2	2.2	IZS	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	2.5	2.2	2.5	2.2	2.5	2.2	24
26	2.2	2.2	2.2	2.2	2.2	IZS	2.1	2.1	2.1	2.1	2.1	2.2	2.5	2.5	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.5	2.2	24	
27	2.2	2.4	2.3	2.3	IZS	2.2	2.3	2.3	2.6	2.7	2.7	2.7	2.6	2.6	2.5	2.5	2.5	2.3	2.3	2.3	2.3	2.3	2.4	2.6	2.6	2.7	2.4	24
28	2.5	2.3	2.3	IZS	2.2	2.1	2.1	2.1	2.2	2.3	2.3	2.4	2.7	2.7	2.8	2.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.8	2.3	24	
29	2.1	2.2	IZS	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.6	2.2	2.6	2.4	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.6	2.3	24	
30	2.3	IZS	2.5	2.2	2.2	2.2	2.2	2.4	2.7	2.2	2.2	2.6	2.6	3.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.5	2.7	2.2	3.2	2.4	24	
31	IZS	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.2	2.2	IZS	2.4	2.2	24	
HOURLY MAX	4	3	3	3	3	3	3	4	7	3	3	3	3	4	3	3	3	5	3	4	4	4	4	3				
HOURLY AVG	2.4	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.2	2.3	2.2	2.3	2.3	2.3	2.4	2.3				

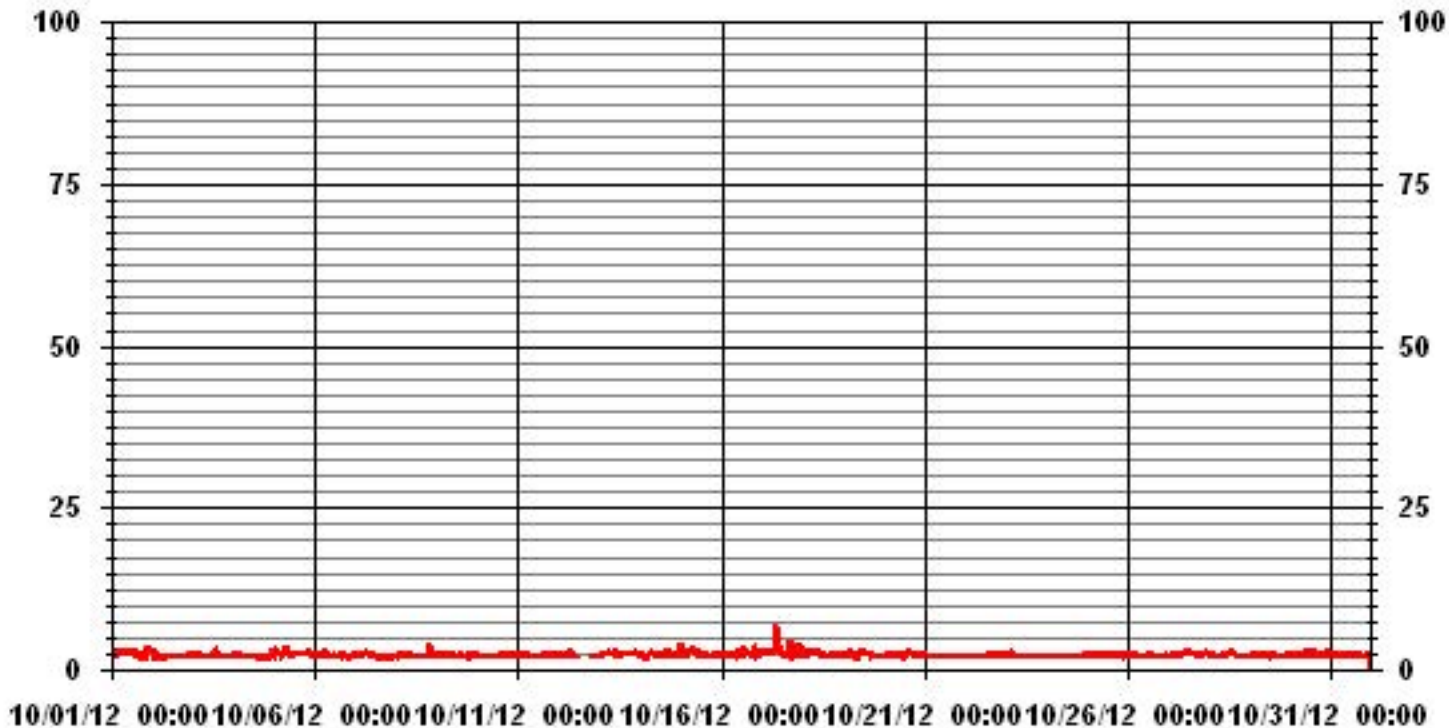
STATUS FLAG CODES

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
BB	- BELOW BACKGROUND OF 1.5 PPM		

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	704					
MAXIMUM INSTANTANEOUS VALUE:	6.9	PPM	@ HOUR(S)	8	ON DAY(S)	17
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	0.34					

01 Hour Averages



— LICA30 THCMAX PPM

LICA30
 THC / WDR Joint Frequency Distribution (Percent)

October 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	11.03	4.38	2.54	3.39	3.25	5.79	6.93	4.24	6.50	9.33	5.37	3.25	5.51	8.06	9.33	10.89	99.85
< 10.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.14
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	11.03	4.38	2.54	3.39	3.25	5.79	6.93	4.24	6.50	9.33	5.37	3.25	5.51	8.20	9.33	10.89	

Calm : .00 %

Total # Operational Hours : 707

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	78	31	18	24	23	41	49	30	46	66	38	23	39	57	66	77	706
< 10.0														1			1
< 50.0																	
>= 50.0																	
Totals	78	31	18	24	23	41	49	30	46	66	38	23	39	58	66	77	

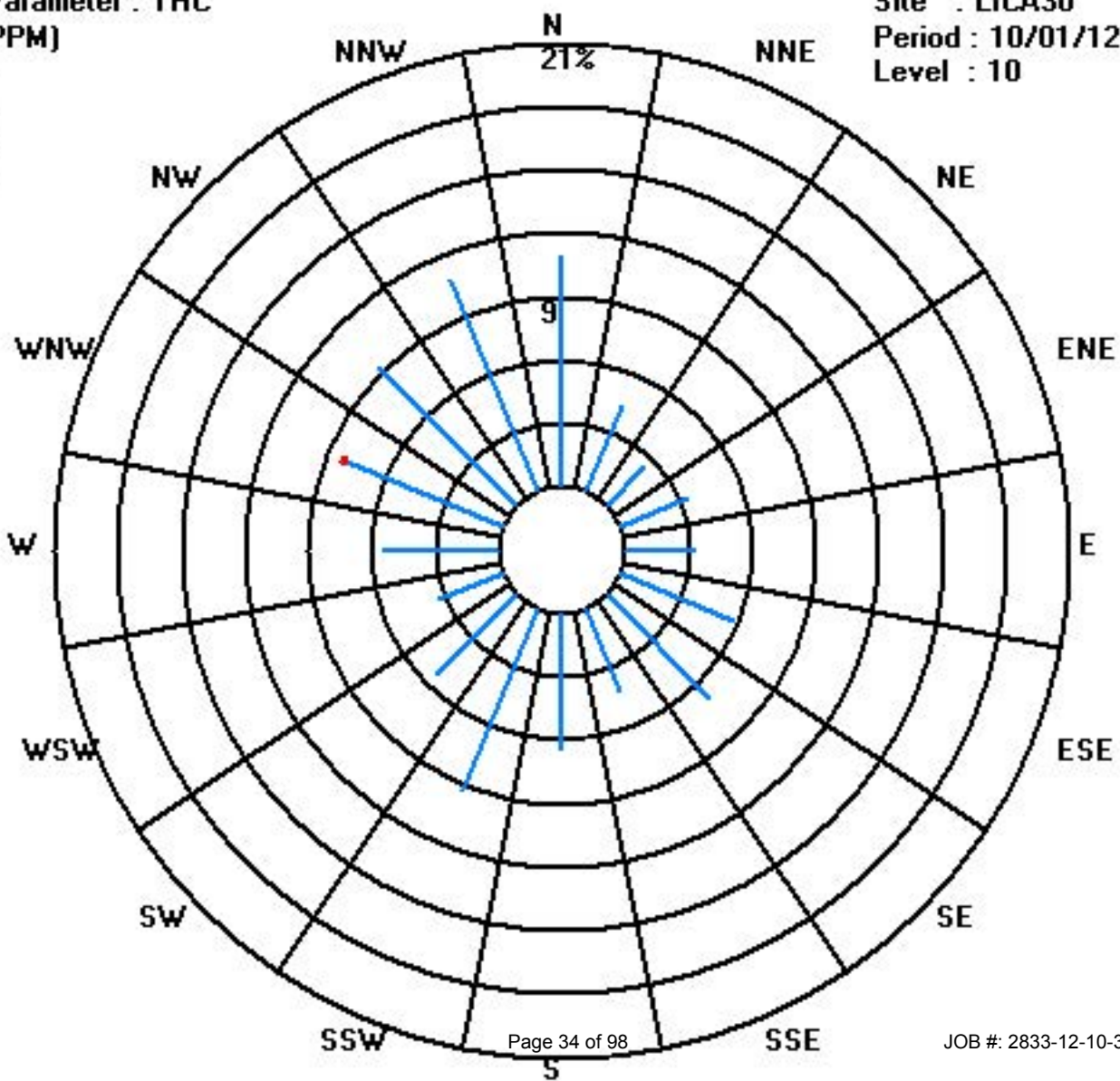
Calm : .00 %

Total # Operational Hours : 707

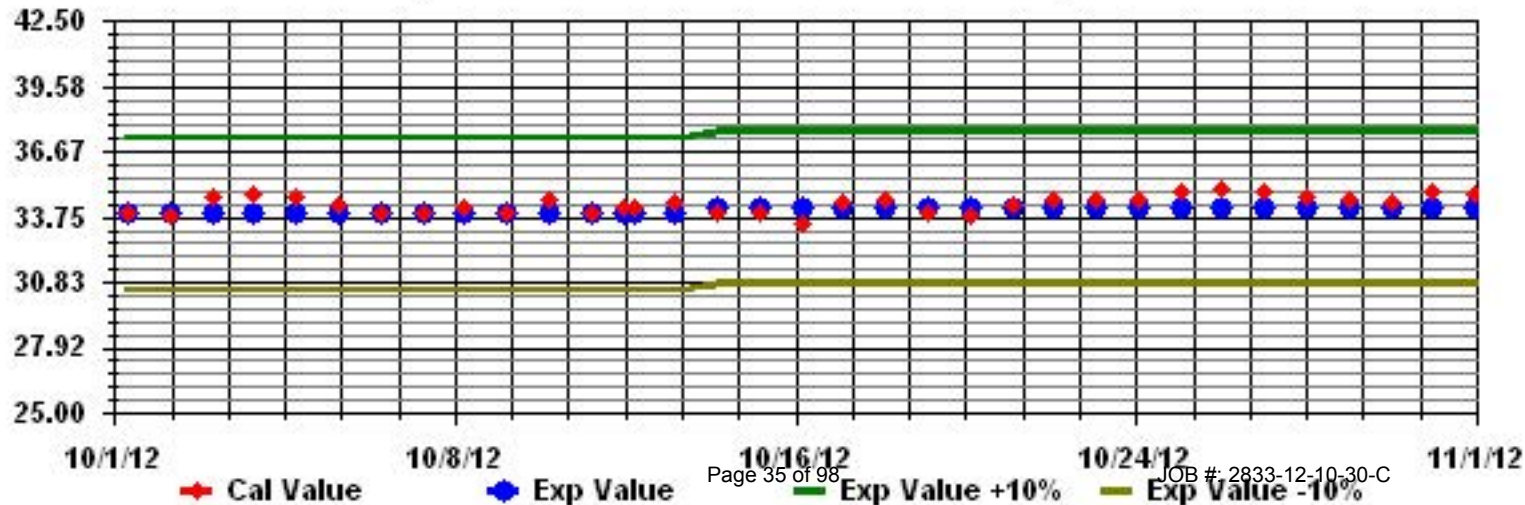
Class Limits (PPM)

Period : 10/01/12-10/31/12

Level : 10



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



Nitrogen Dioxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

NITROGEN DIOXIDE hourly averages in ppb

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	23:00	DAILY 24-HOUR	RDGS.
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	
1	6	9	7	5	6	6	5	IZS	6	4	6	9	6	8	7	6	3	2	1	1	1	11	6	8	11	5.6	24	
2	5	7	1	0	0	0	IZS	0	1	1	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1	7	1.0	24
3	1	1	1	1	1	IZS	2	1	1	1	1	1	2	3	3	2	1	1	2	2	1	1	1	0	3	1.3	24	
4	1	0	1	0	IZS	2	3	3	3	4	2	2	2	4	2	2	1	1	1	1	1	1	1	1	1	4	1.7	24
5	2	2	1	IZS	1	1	1	2	2	1	1	1	1	1	2	3	2	2	1	1	2	2	1	2	3	1.5	24	
6	2	2	IZS	3	6	10	12	9	7	5	3	3	2	1	0	0	1	1	2	2	3	1	3	5	12	3.6	24	
7	5	IZS	6	4	2	2	4	5	6	10	6	3	2	1	0	0	0	0	0	0	0	0	0	0	4	10	2.7	24
8	IZS	1	2	8	3	3	4	3	2	2	2	1	2	1	1	1	1	0	2	1	6	4	4	IZS	8	2.5	24	
9	5	8	2	2	2	2	9	10	5	7	4	2	1	2	1	1	1	1	1	1	2	0	IZS	1	10	3.0	24	
10	1	0	0	0	1	1	1	1	3	3	2	1	1	1	1	1	0	0	0	0	1	IZS	0	4	4	1.0	24	
11	6	7	5	2	3	3	3	4	1	2	1	0	0	0	0	0	1	1	1	1	1	IZS	1	1	1	7	1.9	24
12	2	1	1	2	2	3	3	3	C	C	C	C	C	C	C	C	C	C	1	IZS	1	1	1	1	3	1.7	24	
13	1	1	1	2	3	6	7	5	6	6	5	5	5	5	5	5	5	5	IZS	8	8	8	8	7	6	8	5.0	24
14	6	7	3	1	1	6	9	8	6	5	2	2	2	1	3	8	4	IZS	1	1	1	2	1	1	9	3.5	24	
15	2	4	3	3	4	7	9	9	5	4	1	0	0	0	0	0	IZS	1	2	4	4	4	3	3	9	3.1	24	
16	3	3	2	2	3	5	2	5	7	3	3	8	7	9	8	IZS	10	8	7	10	10	13	6	9	13	6.2	24	
17	10	8	9	9	8	9	9	8	9	6	5	3	2	2	IZS	2	0	3	2	1	1	0	4	2	10	4.9	24	
18	4	2	1	3	7	8	9	8	7	4	4	2	1	IZS	1	1	1	3	2	2	1	1	1	1	1	9	3.2	24
19	1	1	1	7	8	4	3	2	1	7	3	6	IZS	5	5	2	4	1	0	1	1	1	1	1	1	8	3.0	24
20	1	1	2	2	4	3	4	4	2	2	2	IZS	0	3	3	4	4	4	3	3	6	7	7	8	8	3.4	24	
21	1	3	0	0	1	0	1	1	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.3	24
22	0	0	0	0	0	1	1	1	0	IZS	2	1	2	1	2	3	2	1	1	1	1	1	1	0	3	1.0	24	
23	1	1	2	2	2	1	1	2	IZS	0	1	1	0	1	0	1	0	0	1	1	0	0	1	0	2	0.8	24	
24	0	0	0	0	0	0	0	IZS	1	1	0	0	0	0	1	1	1	2	2	3	2	2	2	1	3	0.8	24	
25	1	1	2	2	1	2	IZS	3	3	3	3	3	3	1	1	1	1	2	2	2	4	1	5	2	5	2.1	24	
26	1	2	2	2	2	IZS	2	3	3	1	2	2	3	6	4	0	0	1	1	1	2	2	2	2	6	2.0	24	
27	3	2	2	2	IZS	2	3	4	4	4	4	3	3	3	2	2	3	2	1	1	1	2	3	3	4	2.6	24	
28	2	1	1	IZS	1	0	1	2	4	6	7	6	7	7	9	7	1	2	1	1	1	1	1	0	9	3.0	24	
29	1	1	IZS	1	1	2	3	2	4	4	2	1	4	4	4	3	2	1	1	1	1	1	1	1	1	4	2.0	24
30	1	IZS	5	5	4	4	4	7	7	5	5	4	6	5	3	6	6	4	4	4	5	6	3	2	7	4.6	24	
31	IZS	1	1	0	1	2	1	2	1	0	1	2	1	2	2	2	2	1	1	2	1	1	1	IZS	2	1.3	24	
HOURLY MAX	10	9	9	9	8	10	12	10	9	10	7	9	7	9	9	8	10	8	7	10	10	13	7	9				
HOURLY AVG	2.6	2.7	2.2	2.4	2.7	3.3	4.0	4.0	3.7	3.5	2.8	2.5	2.3	2.7	2.4	2.3	1.9	1.8	1.5	1.9	2.3	2.5	2.3	2.4				

STATUS FLAG CODES

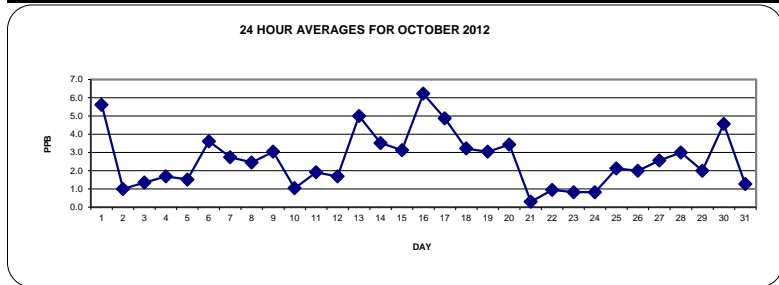
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OBJECTIVE LIMIT:

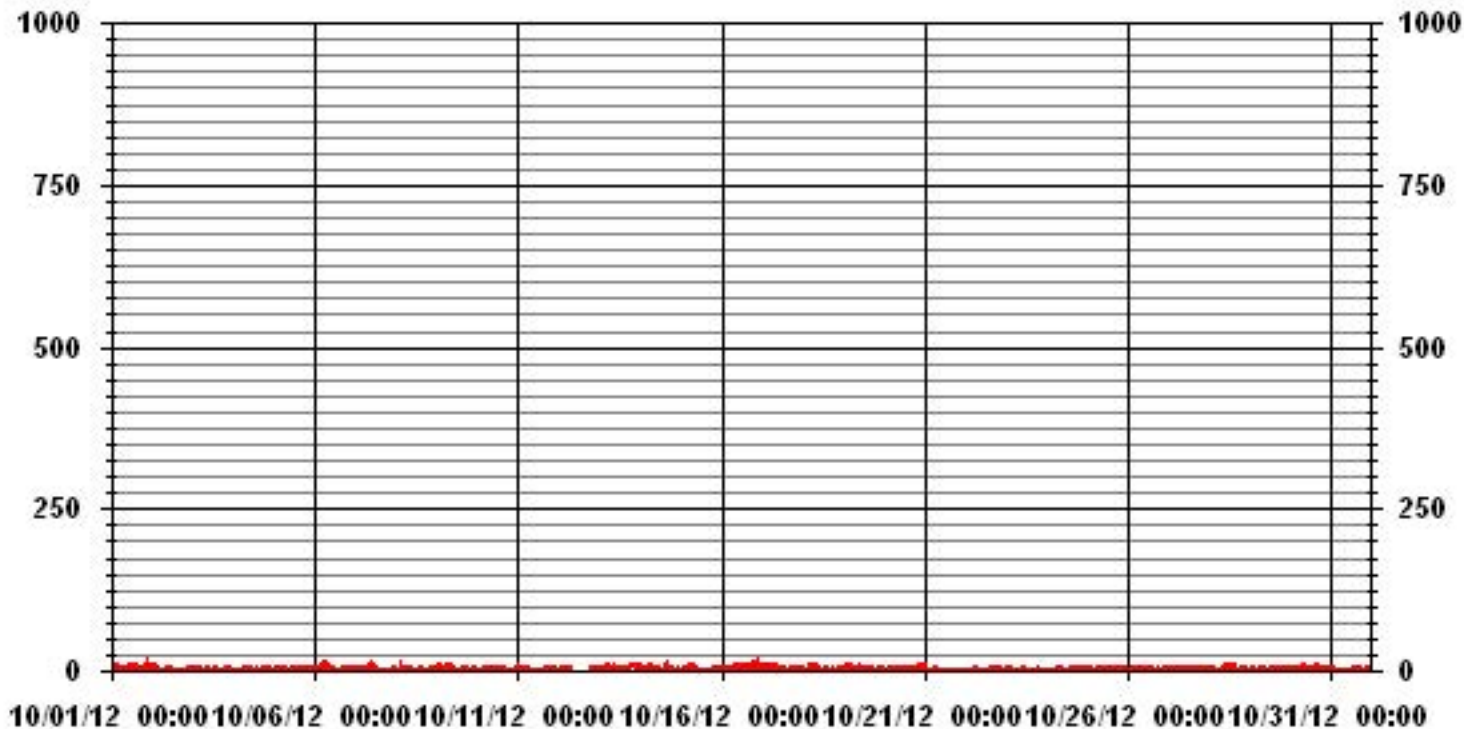
ALBERTA ENVIRONMENT: 1-HR 159 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	605					
MAXIMUM 1-HR AVERAGE:	13	PPB	@ HOUR(S)	21	ON DAY(S)	16
MAXIMUM 24-HR AVERAGE:	6.2	PPB			ON DAY(S)	16
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	10	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	2.47		MONTHLY AVERAGE:	2.61	PPB	



01 Hour Averages



— LICA30 NO2_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00				
DAY																												
1	10	11	9	7	9	12	7	IZS	6	5	9	10	11	10	10	17	3	2	2	1	8	15	15	16	17	8.9	24	
2	11	11	1	0	0	0	IZS	2	3	3	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2	11	2.5	24
3	2	2	2	2	2	IZS	2	2	2	2	1	2	5	6	5	6	2	3	4	4	2	2	2	2	6	2.8	24	
4	2	2	2	1	IZS	4	6	4	3	5	3	3	3	7	3	3	3	3	3	2	2	2	2	2	7	3.0	24	
5	4	3	3	IZS	3	2	2	3	3	2	1	2	1	2	3	4	3	4	3	3	4	3	3	3	4	2.8	24	
6	3	3	IZS	5	6	13	15	11	7	4	2	2	13	1	0	1	2	5	5	3	4	3	4	6	15	5.1	24	
7	6	IZS	6	5	2	3	5	6	7	10	9	3	3	1	1	1	0	1	0	0	1	0	1	4	10	3.3	24	
8	IZS	1	5	16	2	3	5	4	3	3	3	3	2	1	1	1	1	1	6	3	8	7	4	0	16	3.6	24	
9	5	10	2	1	2	4	24	10	5	9	8	1	1	2	1	2	0	0	1	2	1	0	IZS	3	24	4.1	24	
10	3	0	0	0	1	1	1	1	4	2	1	1	1	1	1	2	0	1	0	1	1	IZS	3	7	7	1.4	24	
11	9	9	7	5	4	5	5	7	2	3	2	1	1	1	1	1	2	2	2	2	1	IZS	1	1	9	3.2	24	
12	1	1	1	2	2	4	4	3	C	C	C	C	C	C	C	C	C	C	4	IZS	2	2	2	2	4	2.3	24	
13	1	2	2	3	5	8	9	6	7	7	6	5	5	6	6	6	7	6	IZS	8	8	10	9	8	10	6.1	24	
14	8	15	4	4	4	12	10	12	6	7	4	2	2	3	8	12	13	IZS	1	2	4	3	2	1	15	6.0	24	
15	5	5	4	3	5	9	11	11	9	6	1	1	1	1	9	1	IZS	1	2	4	3	4	3	3	11	4.4	24	
16	3	2	1	1	7	9	2	15	15	4	3	14	13	13	27	IZS	15	13	13	15	18	21	11	13	27	10.8	24	
17	15	11	12	12	13	12	14	12	14	9	6	5	6	4	IZS	4	1	7	6	4	1	2	9	4	15	8.0	24	
18	5	3	1	7	8	10	11	11	9	5	5	3	2	IZS	1	2	2	4	2	2	2	2	2	1	11	4.3	24	
19	1	1	2	11	15	9	8	4	2	10	8	9	IZS	8	8	10	6	8	3	1	1	3	2	15	5.7	24		
20	1	1	3	5	6	5	5	7	2	2	2	IZS	2	7	6	6	6	6	7	5	8	9	10	11	11	5.3	24	
21	2	5	2	1	3	1	1	1	1	1	IZS	1	2	1	1	1	1	1	1	1	1	1	1	1	5	1.4	24	
22	1	1	1	1	1	2	2	1	2	IZS	2	1	2	1	2	5	5	2	2	2	1	2	2	1	5	1.8	24	
23	1	1	3	2	2	2	2	2	IZS	1	2	1	1	2	1	2	1	1	2	2	2	1	2	1	3	1.6	24	
24	0	0	0	1	1	0	0	IZS	2	1	1	1	1	1	2	1	1	3	3	4	4	4	3	2	4	1.6	24	
25	1	2	2	2	2	2	IZS	4	3	3	3	3	10	2	2	2	1	2	3	4	8	3	10	3	10	3.3	24	
26	2	2	3	3	2	IZS	4	4	4	3	3	8	9	13	11	1	1	1	2	2	2	2	2	3	13	3.8	24	
27	3	2	2	2	IZS	3	4	5	4	4	4	3	4	3	3	3	3	2	2	2	2	2	5	4	5	3.1	24	
28	3	2	1	IZS	1	1	3	2	6	7	8	10	10	9	11	10	2	3	2	2	1	1	1	1	11	4.2	24	
29	2	2	IZS	2	2	3	4	3	4	4	5	2	7	6	6	6	2	1	1	1	1	2	2	1	7	3.0	24	
30	1	IZS	7	6	5	4	4	10	9	6	6	17	9	9	5	7	7	5	4	4	9	9	3	3	17	6.5	24	
31	IZS	2	1	1	2	3	2	2	1	1	1	2	2	2	2	3	3	2	1	7	1	1	1	IZS	7	2.0	24	
HOURLY MAX	15	15	12	16	15	13	24	15	15	10	9	17	13	13	27	17	15	13	13	15	18	21	15	16				
HOURLY AVG	3.8	3.9	3.1	3.8	4.0	5.0	5.9	5.7	5.0	4.4	3.8	4.1	4.5	4.3	4.8	4.2	3.2	3.2	3.0	3.1	3.7	3.9	4.0	3.7				

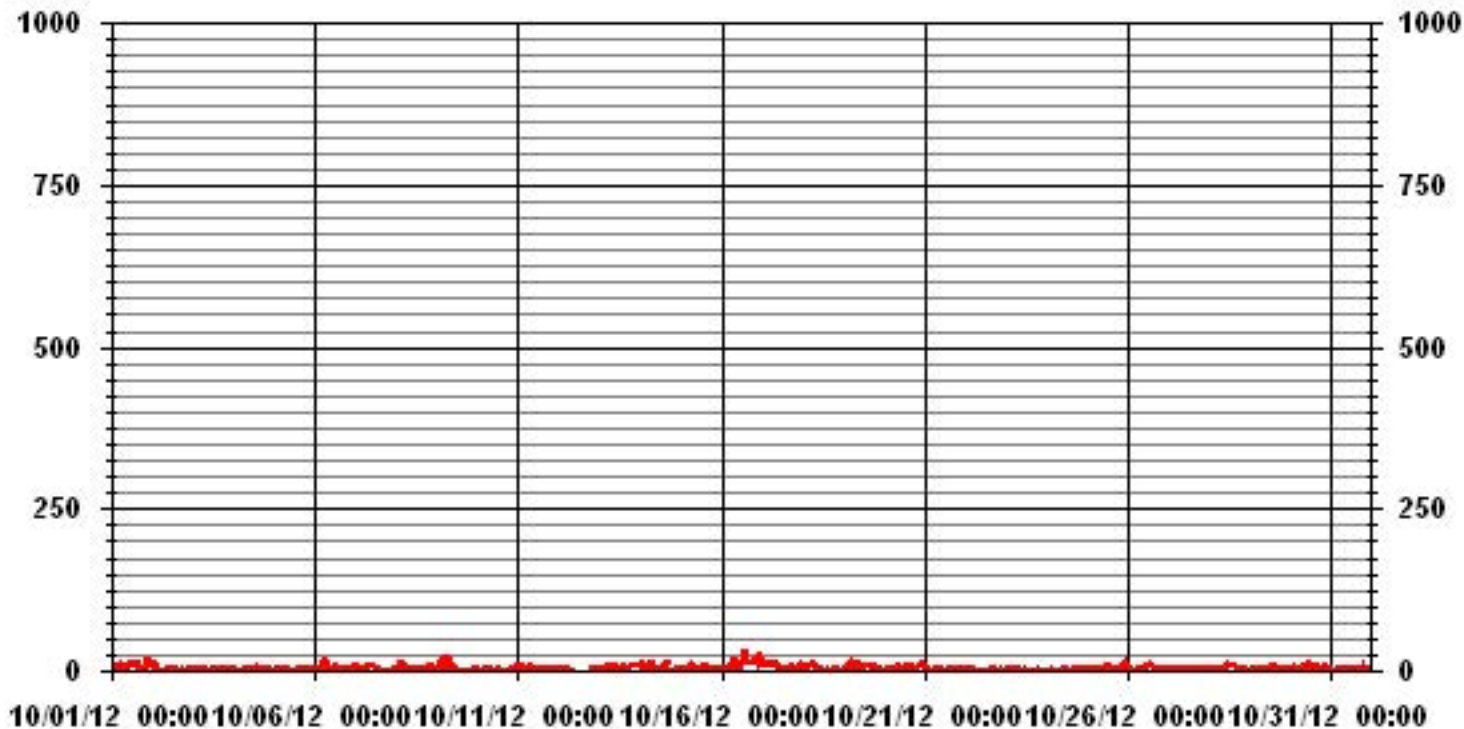
STATUS FLAG CODES

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:	680					
MAXIMUM INSTANTANEOUS VALUE:	27	PPB	@ HOUR(S)	14	ON DAY(S)	16
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	10	HRS				
STANDARD DEVIATION:	3.79					

01 Hour Averages



— LICA30 NO2MAX PPB

LICA30
NO2_ / WDR Joint Frequency Distribution (Percent)

October 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	10.84	4.42	2.13	3.28	3.28	5.84	6.99	4.27	6.56	9.41	5.42	3.28	5.56	8.27	9.41	10.98	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	10.84	4.42	2.13	3.28	3.28	5.84	6.99	4.27	6.56	9.41	5.42	3.28	5.56	8.27	9.41	10.98	

Calm : .00 %

Total # Operational Hours : 701

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	76	31	15	23	23	41	49	30	46	66	38	23	39	58	66	77	701
< 110																	
< 210																	
>= 210																	
Totals	76	31	15	23	23	41	49	30	46	66	38	23	39	58	66	77	

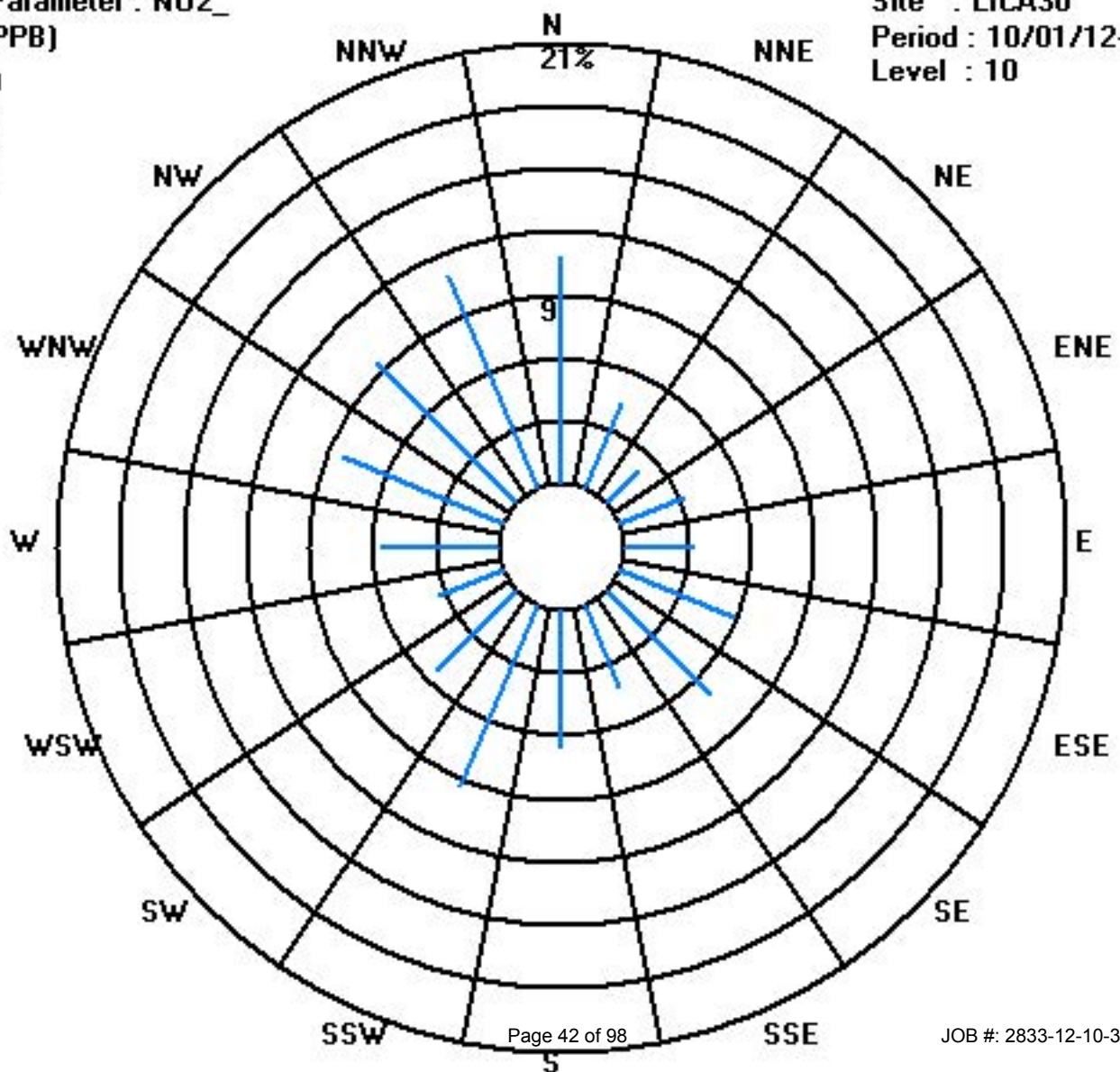
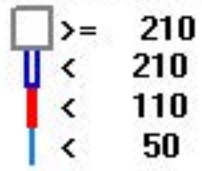
Calm : .00 %

Total # Operational Hours : 701

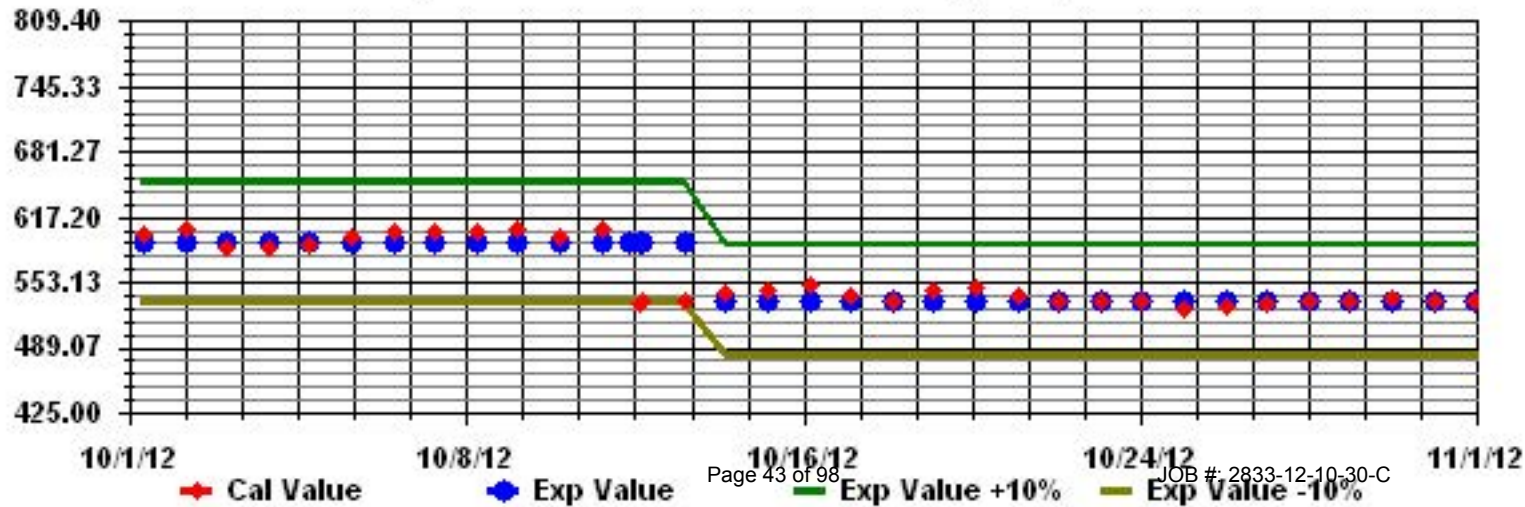
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



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



Nitric Oxide

LAKELAND INDUSTRY & COMMUNITY ASSOICATION - MASKWA

OCTOBER 2012

NITRIC OXIDE hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY 24-HOUR				
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.		
DAY																													
1	1	1	0	1	0	1	0	IZS	1	0	1	1	0	1	0	0	0	0	0	0	0	2	2	2	2	2	0.6	24	
2	0	0	0	0	0	0	IZS	0	1	1	1	0	0	1	1	1	0	1	0	0	0	0	0	0	0	1	0.3	24	
3	0	0	0	0	0	IZS	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
4	0	0	0	0	IZS	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0.1	24	
5	0	0	0	IZS	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
6	0	0	IZS	0	0	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.2	24	
7	0	IZS	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.2	24	
8	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	IZS	0	0.0	24
9	0	0	0	0	0	0	2	1	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	3	0.4	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	IZS	0	0	0.0	24	
11	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24		
12	0	0	0	0	0	0	0	0	C	C	C	C	C	C	C	C	C	C	1	IZS	0	0	0	0	0	1	0.1	24	
13	0	0	0	0	0	1	1	1	4	8	8	5	4	5	4	5	4	5	IZS	0	0	1	0	0	8	2.4	24		
14	0	0	0	0	0	0	0	1	2	3	2	0	0	0	0	1	0	IZS	0	0	0	0	0	0	0	3	0.4	24	
15	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	2	0.3	24	
16	0	0	0	0	0	0	0	0	1	0	1	4	2	2	3	IZS	2	2	2	2	2	3	1	3	4	1.3	24		
17	2	1	1	1	1	2	1	2	3	5	7	5	5	3	IZS	1	0	2	2	0	0	0	2	1	7	2.0	24		
18	0	0	0	0	0	1	7	6	6	2	2	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	7	1.1	24	
19	0	0	0	1	2	1	1	1	0	3	1	2	IZS	2	2	2	1	1	0	0	0	0	0	0	0	3	0.9	24	
20	0	0	0	0	0	0	1	1	0	0	0	IZS	1	2	4	2	2	3	3	1	1	3	2	1	4	1.2	24		
21	0	1	0	0	0	0	0	0	0	0	IZS	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24		
22	0	0	0	0	0	0	0	0	1	IZS	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	IZS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24		
24	0	0	0	0	0	0	0	IZS	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0.2	24		
25	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	
26	0	0	0	0	0	0	IZS	0	0	1	1	1	1	3	3	0	1	0	0	0	0	0	0	0	3	0.5	24		
27	0	0	0	0	IZS	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24		
28	0	0	0	IZS	0	0	0	0	0	1	0	1	2	1	1	1	0	0	0	0	0	0	0	0	2	0.3	24		
29	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	
30	0	IZS	0	0	0	0	0	0	1	1	1	1	3	3	0	0	0	0	0	0	0	0	0	0	3	0.4	24		
31	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	
HOURLY MAX	2	1	1	1	2	2	7	6	6	8	8	5	5	5	4	5	4	5	3	2	2	3	2	3					
HOURLY AVG	0.1	0.1	0.0	0.1	0.1	0.2	0.6	0.6	0.9	1.3	1.0	0.8	0.7	0.9	0.7	0.4	0.3	0.5	0.3	0.1	0.1	0.3	0.2	0.2					

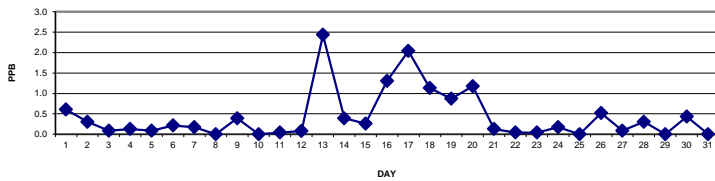
STATUS FLAG CODES

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

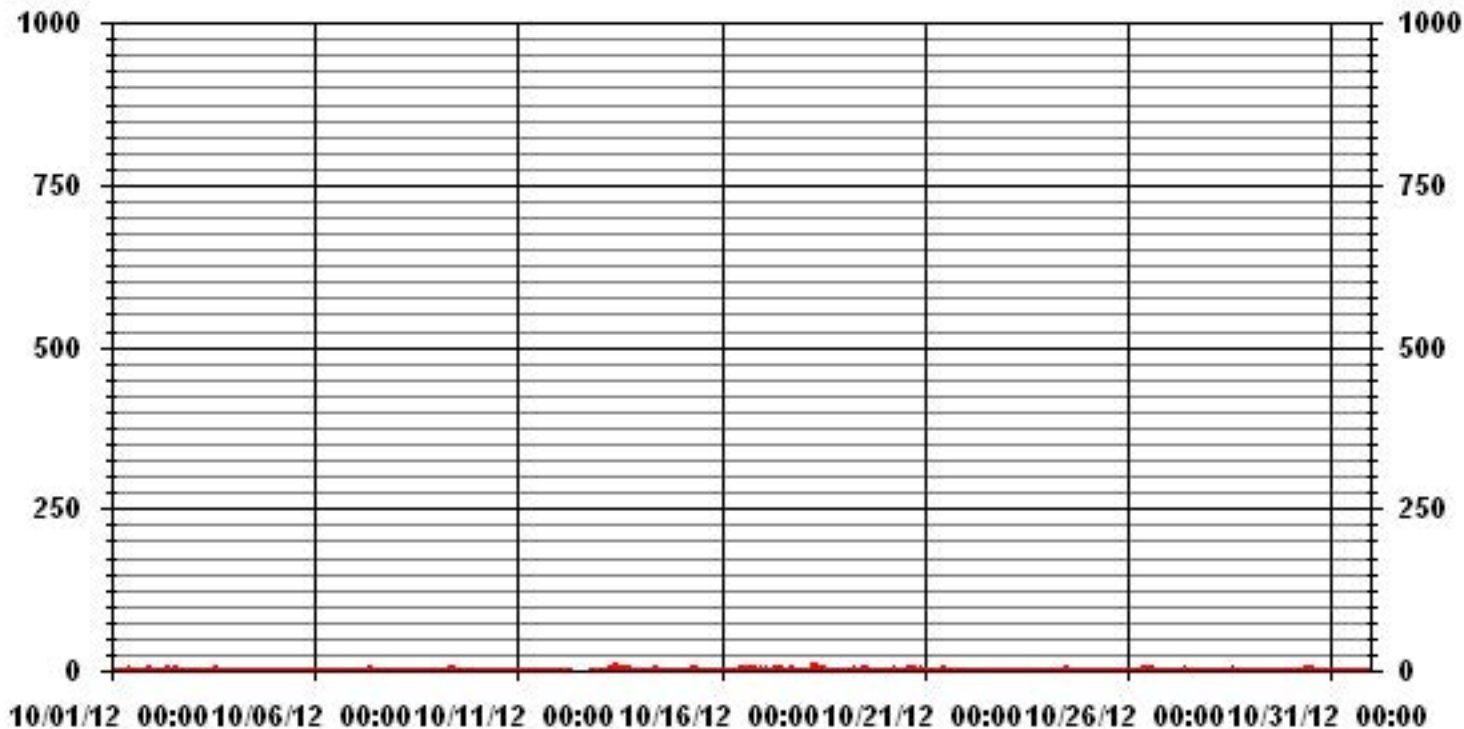
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	156					
MAXIMUM 1-HR AVERAGE:	8	PPB	@ HOUR(S)	9,10	ON DAY(S)	13
MAXIMUM 24-HR AVERAGE:	2.4	PPB			ON DAY(S)	13
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	10	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	1.08		MONTHLY AVERAGE:	0.44	PPB	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

NITRIC OXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00				
DAY																												
1	1	1	1	1	1	2	1	IZS	1	1	4	3	3	2	1	11	0	0	0	0	0	8	9	6	11	2.5	24	
2	2	2	0	0	0	0	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.9	24	
3	1	1	1	1	1	IZS	1	0	0	0	0	0	4	5	3	3	0	0	0	0	0	0	0	0	5	0.9	24	
4	0	0	0	0	IZS	1	3	1	1	2	1	1	2	4	1	1	1	0	0	0	0	0	0	0	4	0.8	24	
5	0	0	0	IZS	0	0	0	2	2	1	1	1	1	1	2	2	0	0	0	0	0	0	0	1	2	0.6	24	
6	0	0	IZS	0	0	9	10	4	5	1	0	1	11	0	0	0	0	0	0	0	0	0	0	0	11	1.8	24	
7	0	IZS	0	0	0	0	0	0	1	6	6	0	0	0	0	0	0	0	0	0	0	0	0	3	6	0.7	24	
8	IZS	1	1	1	1	2	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	IZS	2	0.5	24	
9	1	1	0	0	1	1	43	3	2	6	4	1	1	1	1	1	1	0	1	0	0	0	IZS	1	43	3.0	24	
10	1	0	0	0	0	0	0	0	3	1	1	1	0	0	1	1	0	0	0	0	0	0	IZS	1	1	3	0.5	24
11	1	0	1	1	1	1	1	4	1	1	1	1	0	1	1	0	0	0	0	0	0	IZS	1	0	0	4	0.7	24
12	1	0	0	0	0	1	0	1	C	C	C	C	C	C	C	C	C	C	C	2	IZS	1	0	0	1	2	0.5	24
13	0	0	0	1	1	3	2	3	6	9	9	7	5	7	6	5	4	10	IZS	1	1	2	1	1	10	3.7	24	
14	1	1	1	2	2	1	2	4	4	5	3	1	1	1	2	2	1	IZS	1	0	1	0	0	0	5	1.6	24	
15	0	0	0	1	1	1	1	3	5	4	1	0	0	0	2	1	IZS	0	0	1	1	1	1	0	5	1.0	24	
16	0	0	1	1	1	0	1	1	1	1	2	9	8	7	28	IZS	5	3	4	5	5	7	3	4	28	4.2	24	
17	5	3	4	3	2	5	5	4	6	10	13	11	16	7	IZS	4	1	4	4	2	1	1	4	2	16	5.1	24	
18	1	1	1	1	1	5	21	9	9	5	4	3	2	IZS	1	1	1	1	1	1	1	0	1	1	21	3.1	24	
19	1	1	1	3	4	3	4	1	1	6	4	4	IZS	4	5	5	2	3	1	1	1	1	1	1	6	2.5	24	
20	1	1	1	1	2	1	2	5	1	1	2	IZS	1	10	7	4	4	8	9	3	3	8	4	3	10	3.6	24	
21	1	2	1	1	1	1	1	1	0	1	IZS	1	3	1	1	1	1	1	1	1	1	1	1	1	3	1.1	24	
22	1	1	1	1	1	2	2	1	2	IZS	1	1	0	0	2	2	2	0	0	0	0	0	0	0	2	0.9	24	
23	0	0	0	0	0	0	0	0	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
24	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	1.0	24	
25	1	1	1	1	1	1	IZS	0	1	0	1	1	11	1	1	0	0	0	0	0	2	0	3	0	11	1.2	24	
26	0	0	0	0	0	IZS	1	1	2	2	2	4	6	9	8	1	1	1	1	1	1	1	1	1	9	1.9	24	
27	1	1	1	1	IZS	0	0	0	1	2	2	1	1	1	0	1	0	0	0	0	0	0	0	0	2	0.6	24	
28	0	0	0	IZS	0	0	0	0	1	2	2	4	4	3	3	2	0	0	0	0	0	0	0	0	4	0.9	24	
29	0	0	IZS	0	0	0	0	0	1	1	2	0	2	2	1	1	0	0	0	0	0	0	0	0	2	0.4	24	
30	0	IZS	0	0	0	1	2	2	2	3	3	20	8	12	4	1	1	0	0	0	2	3	0	0	20	2.8	24	
31	IZS	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	IZS	1	0.2	24	
HOURLY MAX	5	3	4	3	4	9	43	9	9	10	13	20	16	12	28	11	5	10	9	5	5	8	9	6				
HOURLY AVG	0.8	0.7	0.6	0.8	0.8	1.5	3.6	1.8	2.1	2.6	2.5	2.8	3.2	2.8	2.9	1.8	1.0	1.2	0.9	0.7	0.8	1.2	1.1	1.0				

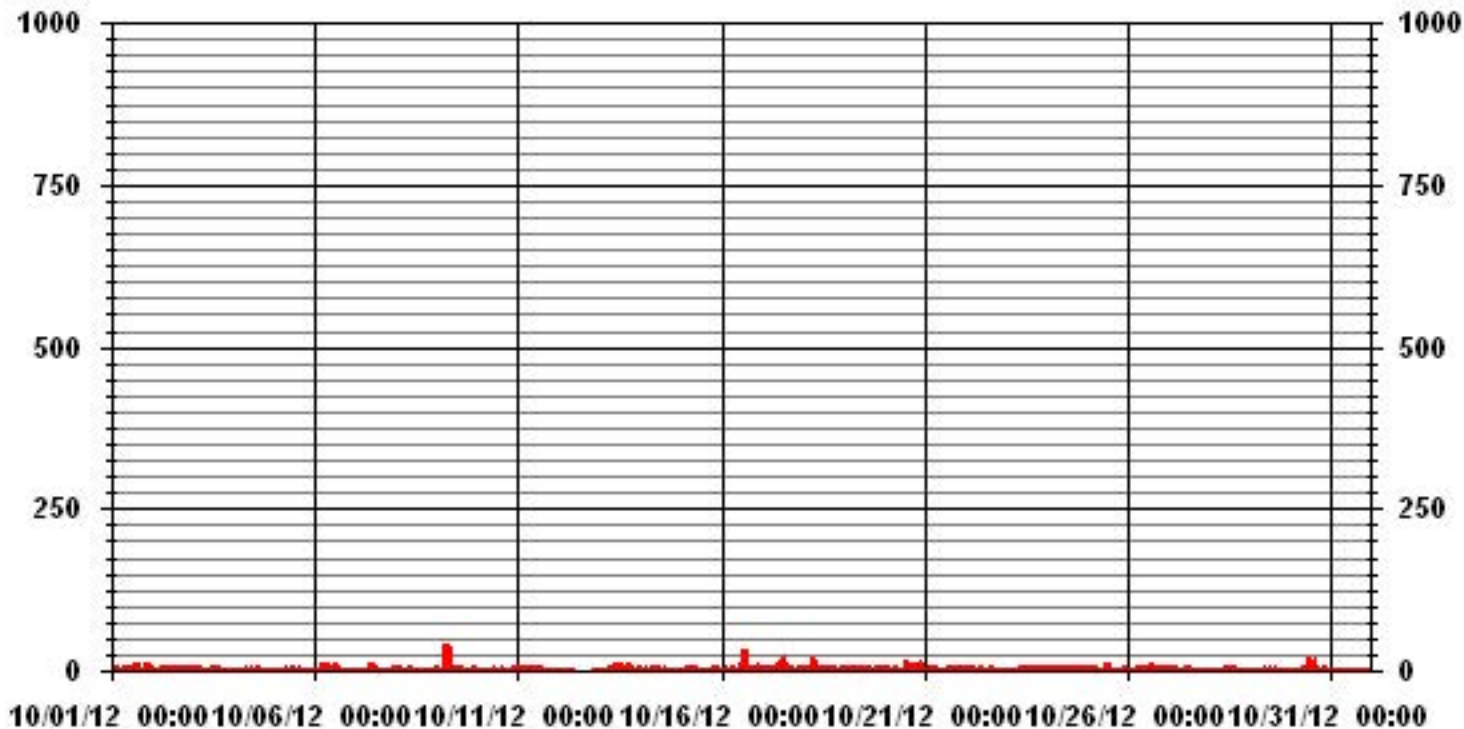
STATUS FLAG CODES

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:	450					
MAXIMUM INSTANTANEOUS VALUE:	43	PPB	@ HOUR(S)	6	ON DAY(S)	9
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	10	HRS				
STANDARD DEVIATION:	3.04					

01 Hour Averages



LICA30
NO_ / WDR Joint Frequency Distribution (Percent)

October 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	10.84	4.42	2.13	3.28	3.28	5.84	6.99	4.27	6.56	9.41	5.42	3.28	5.56	8.27	9.41	10.98	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	10.84	4.42	2.13	3.28	3.28	5.84	6.99	4.27	6.56	9.41	5.42	3.28	5.56	8.27	9.41	10.98	

Calm : .00 %

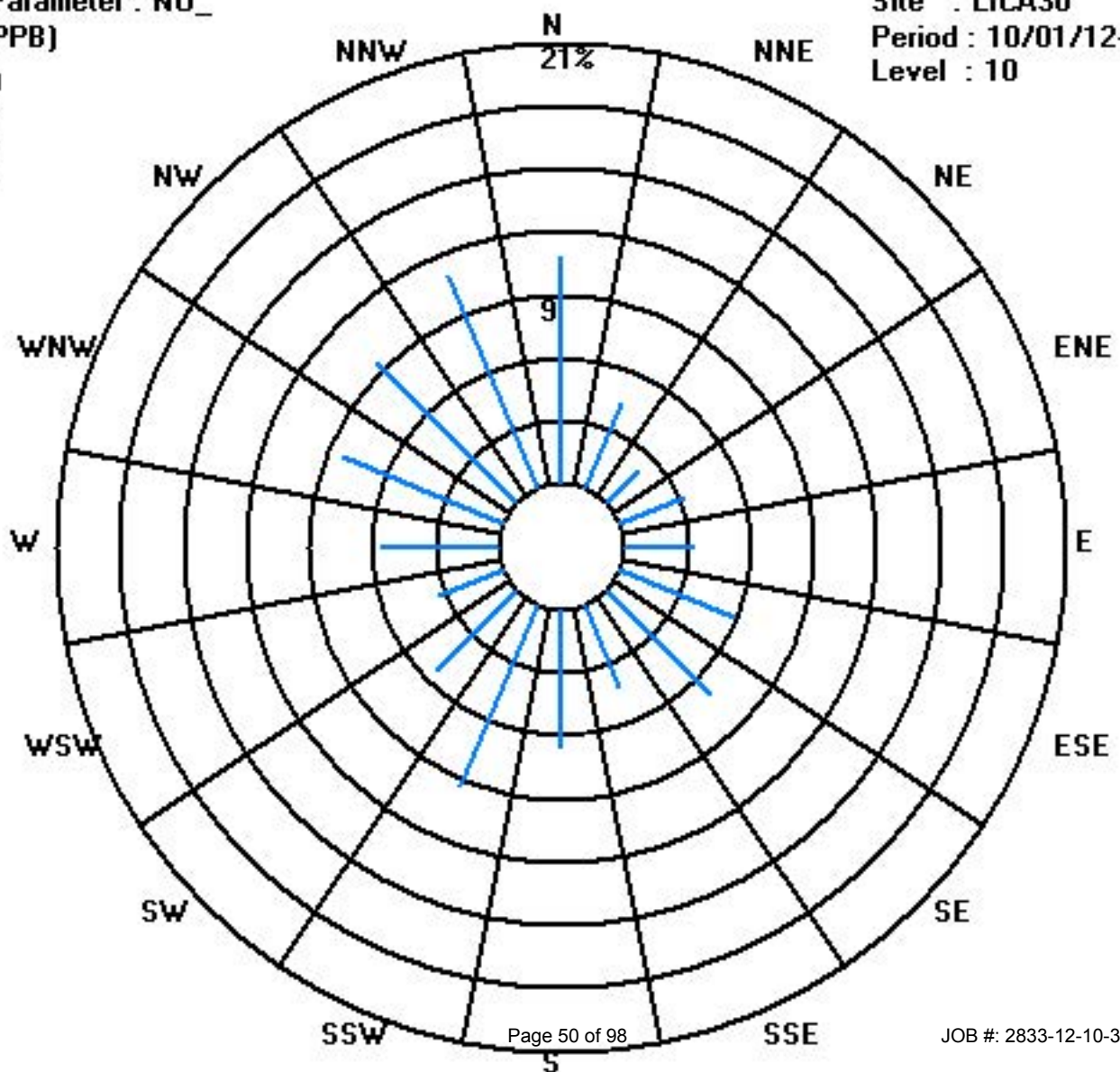
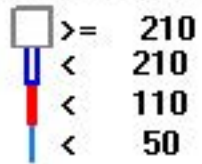
Total # Operational Hours : 701

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	76	31	15	23	23	41	49	30	46	66	38	23	39	58	66	77	701
< 110																	
< 210																	
>= 210																	
Totals	76	31	15	23	23	41	49	30	46	66	38	23	39	58	66	77	

Calm : .00 %

Total # Operational Hours : 701



Oxides of Nitrogen

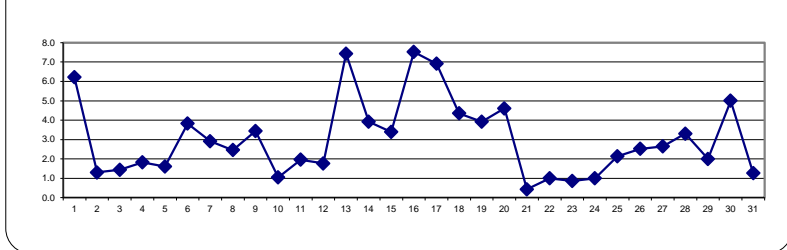
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA
OCTOBER 2012
OXIDES OF NITROGEN hourly averages in ppb

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	7	10	7	6	6	7	5	IZS	7	4	7	10	6	9	7	6	3	2	1	1	1	13	8	10	13	6.2	24	
2	5	7	1	0	0	0	IZS	0	2	2	2	1	1	1	1	0	1	1	0	1	1	1	1	1	7	1.3	24	
3	1	1	1	1	1	IZS	2	1	1	1	1	1	2	4	4	2	1	1	2	2	1	1	1	0	4	1.4	24	
4	1	0	1	0	IZS	2	3	3	3	5	2	2	2	6	2	2	1	1	1	1	1	1	1	1	6	1.8	24	
5	2	2	1	IZS	1	1	1	2	3	1	1	1	1	1	3	3	2	2	1	1	2	2	1	2	3	1.6	24	
6	2	2	IZS	3	6	11	15	9	8	5	3	3	2	1	0	0	1	1	2	2	3	1	3	5	15	3.8	24	
7	5	IZS	6	4	2	2	4	5	6	14	6	3	3	2	1	0	0	0	0	0	0	0	0	4	14	2.9	24	
8	IZS	1	2	8	3	3	4	3	2	2	2	1	2	1	1	1	1	0	2	1	6	4	4	IZS	8	2.5	24	
9	5	8	2	2	2	2	11	11	6	10	6	2	1	2	1	1	1	1	1	1	2	0	IZS	1	11	3.4	24	
10	1	0	0	0	1	1	1	1	3	3	2	1	1	1	1	1	1	0	0	0	1	IZS	0	4	4	1.0	24	
11	6	7	5	2	3	3	3	5	1	2	1	0	0	0	0	0	1	1	1	1	1	IZS	1	1	7	2.0	24	
12	2	1	1	2	2	3	3	3	C	C	C	C	C	C	C	C	C	C	2	IZS	1	1	1	1	3	1.8	24	
13	1	1	1	2	3	7	8	6	10	14	13	10	9	10	9	10	9	10	IZS	8	8	9	7	6	14	7.4	24	
14	6	7	3	1	1	6	9	9	8	8	4	2	2	1	3	9	4	IZS	1	1	1	2	1	1	9	3.9	24	
15	2	4	3	3	4	7	9	11	7	6	1	0	0	0	0	0	IZS	1	2	4	4	4	3	3	11	3.4	24	
16	3	3	2	2	3	5	2	5	8	3	4	12	9	11	11	IZS	12	10	9	12	12	16	7	12	16	7.5	24	
17	12	9	10	10	9	11	10	10	12	11	12	8	7	5	IZS	3	0	5	4	1	1	0	6	3	12	6.9	24	
18	4	2	1	3	7	9	16	14	13	6	6	3	2	IZS	1	1	1	3	2	2	1	1	1	1	16	4.3	24	
19	1	1	1	8	10	5	4	3	1	10	4	8	IZS	7	7	7	3	5	1	0	1	1	1	1	10	3.9	24	
20	1	1	2	2	4	3	5	5	2	2	2	IZS	1	5	7	6	6	7	6	4	7	10	9	9	10	4.6	24	
21	1	4	0	0	1	0	1	1	0	0	IZS	1	1	0	0	0	0	0	0	0	0	0	0	0	4	0.4	24	
22	0	0	0	0	0	1	1	1	1	1	IZS	2	1	2	1	2	3	2	1	1	1	1	1	0	3	1.0	24	
23	1	1	2	2	2	1	1	2	IZS	1	1	1	0	1	0	1	0	0	1	1	0	0	1	0	2	0.9	24	
24	0	0	0	0	0	0	0	IZS	1	1	1	1	1	1	1	1	1	2	2	3	2	2	2	1	3	1.0	24	
25	1	1	2	2	1	2	IZS	3	3	3	3	3	3	1	1	1	1	2	2	2	4	1	5	2	5	2.1	24	
26	1	2	2	2	2	IZS	2	3	4	2	3	3	4	9	7	0	1	1	1	1	2	2	2	2	9	2.5	24	
27	3	2	2	2	IZS	2	3	4	4	4	5	5	3	3	3	2	2	3	2	1	1	1	2	3	3	5	2.7	24
28	2	1	1	IZS	1	0	1	2	4	7	7	7	9	8	10	8	1	2	1	1	1	1	1	0	10	3.3	24	
29	1	1	IZS	1	1	2	3	2	4	4	2	1	4	4	4	3	2	1	1	1	1	1	1	1	4	2.0	24	
30	1	IZS	5	5	4	4	4	7	8	6	6	5	9	8	3	6	6	4	4	4	5	6	3	2	9	5.0	24	
31	IZS	1	1	0	1	2	1	2	1	0	1	2	1	2	2	2	2	1	1	2	1	1	1	IZS	2	1.3	24	
HOURLY MAX	12	10	10	10	10	11	16	14	13	14	13	12	9	11	11	10	12	10	9	12	12	16	9	12				
HOURLY AVG	2.7	2.8	2.2	2.5	2.8	3.5	4.6	4.6	4.6	4.8	3.8	3.3	3.0	3.6	3.1	2.8	2.3	2.3	1.8	2.0	2.4	2.8	2.5	2.7				

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

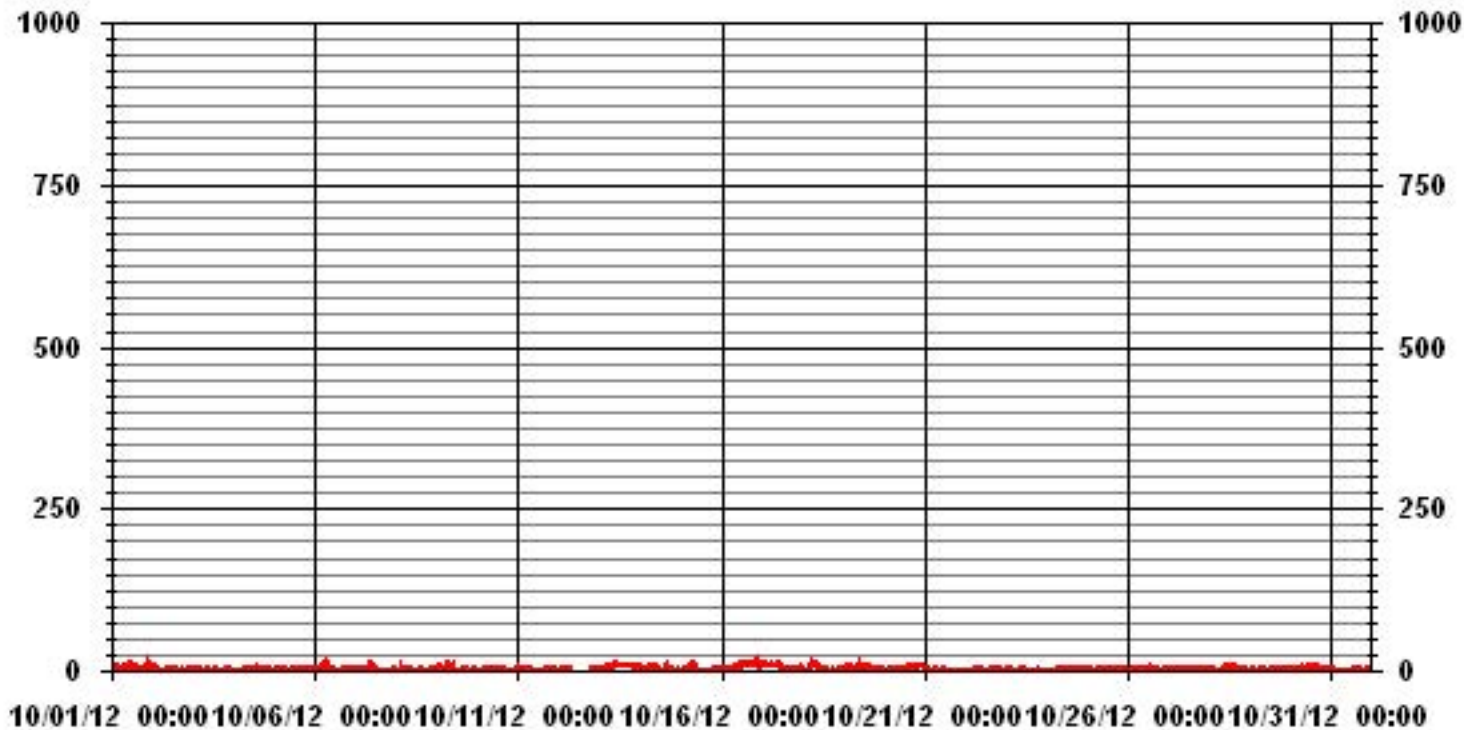
24 HOUR AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	619					
MAXIMUM 1-HR AVERAGE:	16	PPB	@ HOUR(S)	21,6	ON DAY(S)	16,18
MAXIMUM 24-HR AVERAGE:	7.5	PPB			ON DAY(S)	16
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	10	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	3.14		MONTHLY AVERAGE:	3.05	PPB	

01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	10	11	9	7	9	12	7	IZS	6	5	9	10	11	10	10	17	3	2	2	1	8	15	15	16	17	8.9	24
2	11	11	1	0	0	0	IZS	2	3	3	2	2	2	2	2	2	1	2	2	1	2	2	2	2	11	2.5	24
3	2	2	2	2	2	IZS	2	2	2	2	1	2	5	6	5	6	2	3	4	4	2	2	2	2	6	2.8	24
4	2	2	2	1	IZS	4	6	4	3	5	3	3	3	7	3	3	3	3	3	2	2	2	2	2	7	3.0	24
5	4	3	3	IZS	3	2	2	3	3	2	1	2	1	2	3	4	3	4	3	3	4	3	3	3	4	2.8	24
6	3	3	IZS	5	6	13	15	11	7	4	2	2	13	1	0	1	2	5	5	3	4	3	4	6	15	5.1	24
7	6	IZS	6	5	2	3	5	6	7	10	9	3	3	1	1	1	0	1	0	0	1	0	1	4	10	3.3	24
8	IZS	1	5	16	2	3	5	4	3	3	3	3	2	1	1	1	1	1	6	3	8	7	4	IZS	16	3.8	24
9	5	10	2	1	2	4	24	10	5	9	8	1	1	2	1	2	0	0	1	2	1	0	IZS	3	24	4.1	24
10	3	0	0	0	1	1	1	1	4	2	1	1	1	1	1	2	0	1	0	1	1	IZS	3	7	7	1.4	24
11	9	9	7	5	4	5	5	7	2	3	2	1	1	1	1	2	2	2	2	1	IZS	1	1	1	9	3.2	24
12	1	1	1	2	2	4	4	3	C	C	C	C	C	C	C	C	C	C	4	IZS	2	2	2	2	4	2.3	24
13	1	2	2	3	5	8	9	6	7	7	6	5	5	6	6	6	7	6	IZS	8	8	10	9	8	10	6.1	24
14	8	15	4	4	4	12	10	12	6	7	4	2	2	3	8	12	13	IZS	1	2	4	3	2	1	15	6.0	24
15	5	5	4	3	5	9	11	11	9	6	1	1	1	9	1	IZS	1	2	4	3	4	3	3	11	4.4	24	
16	3	2	1	1	7	9	2	15	15	4	3	14	13	13	27	IZS	15	13	13	15	18	21	11	13	27	10.8	24
17	15	11	12	12	13	12	14	12	14	9	6	5	6	4	IZS	4	1	7	6	4	1	2	9	4	15	8.0	24
18	5	3	1	7	8	10	11	11	9	5	5	3	2	IZS	1	2	2	4	2	2	2	2	2	1	11	4.3	24
19	1	1	2	11	15	9	8	4	2	10	8	9	IZS	8	8	10	6	8	3	1	1	1	3	2	15	5.7	24
20	1	1	3	5	6	5	5	7	2	2	2	IZS	2	7	6	6	6	6	7	5	8	9	10	11	11	5.3	24
21	2	5	2	1	3	1	1	1	1	1	IZS	1	2	1	1	1	1	1	1	1	1	1	1	1	5	1.4	24
22	1	1	1	1	1	2	2	1	2	IZS	2	1	2	1	2	5	5	2	2	2	1	2	2	1	5	1.8	24
23	1	1	3	2	2	2	2	2	IZS	1	2	1	1	2	1	2	1	1	2	2	2	1	2	1	3	1.6	24
24	0	0	0	1	1	0	0	IZS	2	1	1	1	1	1	2	1	1	3	3	4	4	4	3	2	4	1.6	24
25	1	2	2	2	2	2	IZS	4	3	3	3	3	10	2	2	2	1	2	3	4	8	3	10	3	10	3.3	24
26	2	2	3	3	2	IZS	4	4	4	3	3	8	9	13	11	1	1	1	2	2	2	2	2	3	13	3.8	24
27	3	2	2	2	IZS	3	4	5	4	4	4	3	4	3	3	3	3	2	2	2	2	2	5	4	5	3.1	24
28	3	2	1	IZS	1	1	3	2	6	7	8	10	10	9	11	10	2	3	2	2	1	1	1	1	11	4.2	24
29	2	2	IZS	2	2	3	4	3	4	4	5	2	7	6	6	6	2	1	1	1	1	2	2	1	7	3.0	24
30	1	IZS	7	6	5	4	4	10	9	6	6	17	9	9	5	7	7	5	4	4	9	9	3	3	17	6.5	24
31	IZS	2	1	1	2	3	2	2	1	1	1	2	2	2	2	3	3	2	1	7	1	1	1	IZS	7	2.0	24
HOURLY MAX	15	15	12	16	15	13	24	15	15	10	9	17	13	13	27	17	15	13	13	15	18	21	15	16			
HOURLY AVG	3.8	3.9	3.1	3.8	4.0	5.0	5.9	5.7	5.0	4.4	3.8	4.1	4.5	4.3	4.8	4.2	3.2	3.2	3.0	3.1	3.7	3.9	4.0	3.8			

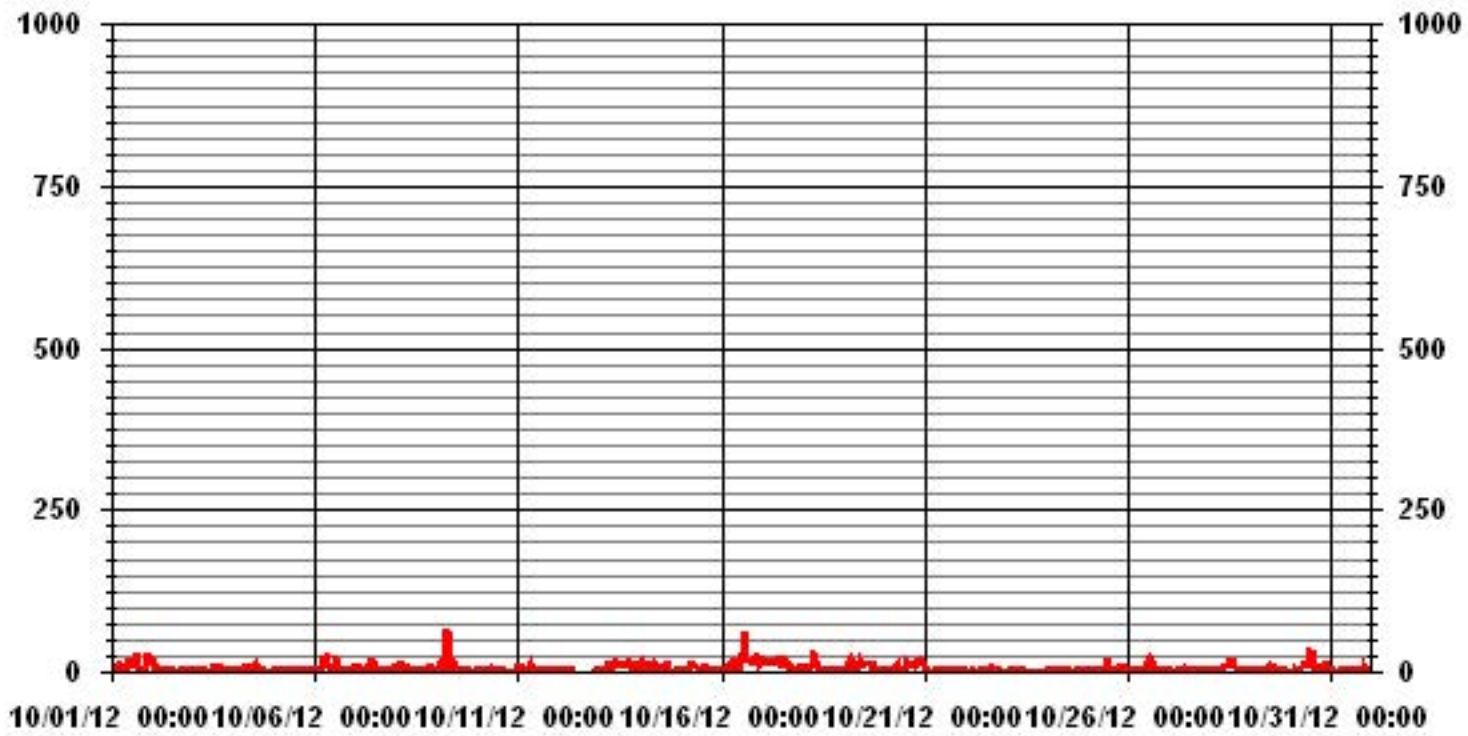
STATUS FLAG CODES

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:	680					
MAXIMUM INSTANTANEOUS VALUE:	27	PPB	@ HOUR(S)	14	ON DAY(S)	16
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	10	HRS				
STANDARD DEVIATION:	3.79					

01 Hour Averages



— LICA30 NOXMAX PPB

LICA30
NOX_ / WDR Joint Frequency Distribution (Percent)

October 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	10.84	4.42	2.13	3.28	3.28	5.84	6.99	4.27	6.56	9.41	5.42	3.28	5.56	8.27	9.41	10.98	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	10.84	4.42	2.13	3.28	3.28	5.84	6.99	4.27	6.56	9.41	5.42	3.28	5.56	8.27	9.41	10.98	

Calm : .00 %

Total # Operational Hours : 701

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	76	31	15	23	23	41	49	30	46	66	38	23	39	58	66	77	701
< 110																	
< 210																	
>= 210																	
Totals	76	31	15	23	23	41	49	30	46	66	38	23	39	58	66	77	

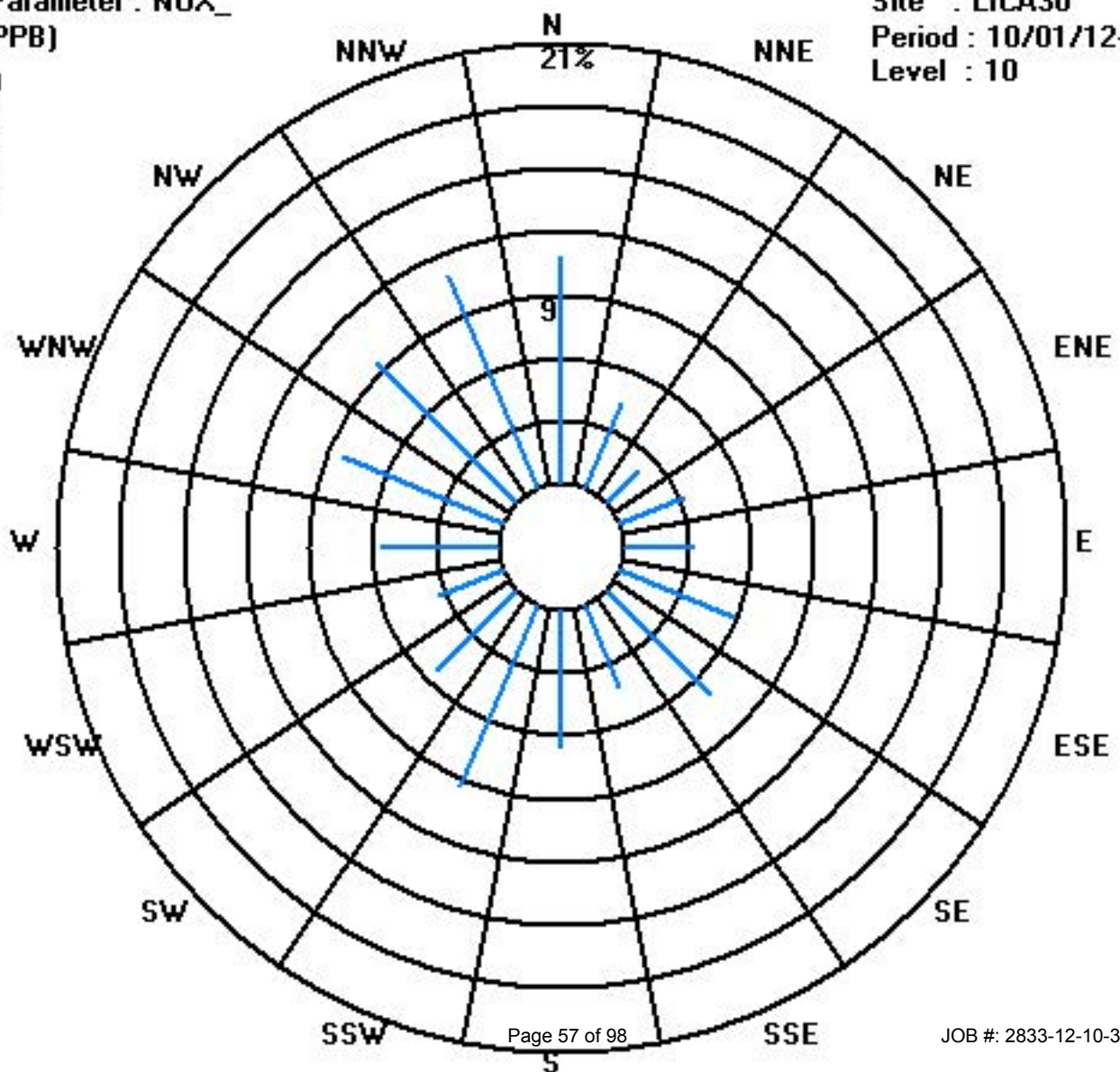
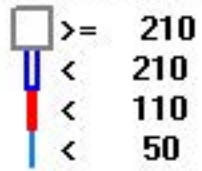
Calm : .00 %

Total # Operational Hours : 701

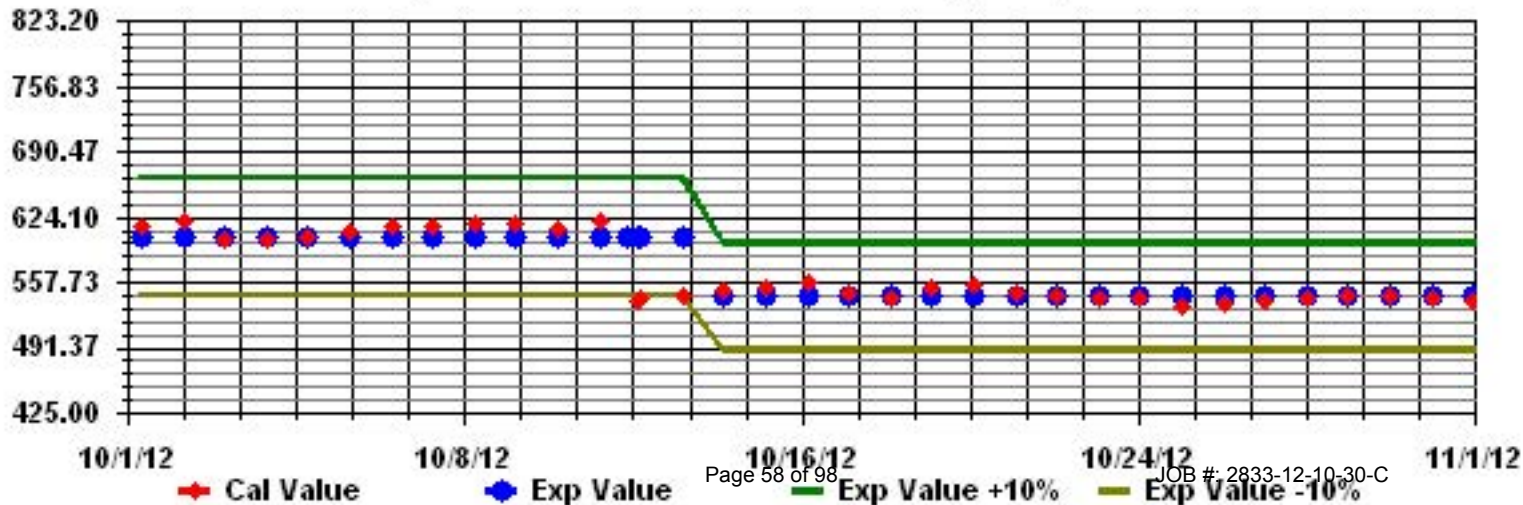
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



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



Temperature

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

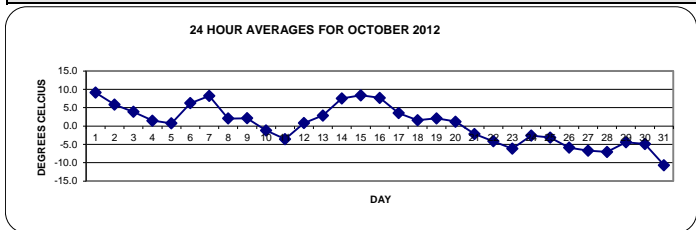
OCTOBER 2012

AMBIENT TEMPERATURE hourly averages (Degrees C)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	DAY	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00			
1	1	5.7	6.2	6.7	6.2	5.9	5.5	4.1	5.3	6.7	7.9	12.2	12	11.6	12	11.9	12.2	12.4	12.7	12.2	11.8	10.9	9.8	8.8	7.9	12.7	9.1	24
2	2	7.4	7.2	6.5	5.5	4.7	4.6	4.6	4.9	5.4	6.1	6.6	6.5	7.1	8.4	8	8.5	6.9	5.8	4.8	4.3	4.4	4	3.6	3.6	8.5	5.8	24
3	3	2.8	3.2	3.4	3.3	2.8	2.6	2.8	3.3	4.1	5	6.1	5.9	7.1	7.2	5.7	5.7	4.3	3.5	3	2.8	2.8	2.9	2.5	0.5	7.2	3.9	24
4	4	-0.1	1.2	0.4	-1	-0.2	0.4	0.3	0.9	2.2	3	4.9	4.4	3.6	5.9	7.3	6.1	4.1	2.5	1	-0.3	-1.8	-2.8	-3.4	-3.2	7.3	1.5	24
5	5	-3.4	-3.7	-3.2	-2.2	-2.1	-2.3	-2.8	-3	-2	-0.9	0.5	1.4	2	2.5	3.7	4.4	4.5	3.6	3	3.3	3.3	3.4	3.3	3.7	4.5	0.7	24
6	6	3.5	3.6	3.7	3.3	2.1	1.7	0.1	2.5	5.7	8.1	9.8	10.8	11.9	12.5	12.8	12.3	11.2	8.3	4.6	3.7	3.6	4.1	4.7	5.1	12.8	6.2	24
7	7	4.5	4.6	4.8	4.7	5.4	6.1	6.1	6	8.3	10.3	12	11.1	11.4	14.1	14.1	13.1	11.7	10.2	9.5	8.8	7.5	5.5	4.5	3.4	14.1	8.2	24
8	8	2.8	2.3	1.9	1.7	1.8	1.8	1.5	1.7	2.7	3.1	3.6	3.4	4.2	4.8	4.2	5	4.2	3.7	2.5	1.2	-0.6	-2	-3.1	-3.2	5.0	2.1	24
9	9	-1.6	-2.9	-2.5	-2.1	-2.1	-2.4	-3.5	-2.6	0.3	3.3	4.8	7.2	8.2	8.2	8.7	7.5	6.1	4.1	2.5	1.8	1.9	2.2	2.2	2.2	8.7	2.1	24
10	10	1.6	-0.3	-0.5	-0.6	-0.5	-0.8	-1.2	-1.1	-0.6	0	0.2	0.2	0.1	0.1	-0.6	-1.2	-1.5	-1.9	-2.3	-2.8	-3.1	-3.8	-4	-4.9	1.6	-1.2	24
11	11	-5	-5.8	-5.4	-7.7	-9.1	-10.1	-10.8	-9.1	-5.3	-1.9	-1.7	-0.8	-1	-0.4	-0.7	-0.9	-1.4	-1.6	-1.7	-1.6	-1.5	-1.3	-1	-0.7	-0.4	-3.6	24
12	12	-0.3	-0.2	0	0.1	0	0	0	0.4	1.4	2.4	2.9	3.2	3.2	1.9	1.1	0.9	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.3	3.2	0.8	24
13	13	0.2	0.3	0.3	0.3	0.4	0.2	0.2	0.4	0.6	1.5	2.2	2.5	3.3	4.5	5.5	6.4	6.1	4.5	3.5	4.9	4.9	5.8	5.2	6.4	2.9	2.4	24
14	14	4.8	4.5	3.8	3	2.6	2.1	1.2	1.3	4.8	6.5	9.3	11.3	12.6	12.7	12.1	11.6	11.3	11.2	10.9	9.8	9.5	8.4	7.5	6.8	12.7	7.5	24
15	15	6.4	6.2	4.9	4.9	4.3	4	4.5	5.2	8.6	11	14.2	15.3	15.5	15.6	15.9	15.5	13.3	10.3	8.5	8.1	6.1	1.8	0.4	0.3	15.9	8.4	24
16	16	1	1.3	3.7	4.6	6.8	6.5	6.4	6.8	7.4	7.9	9.8	11.6	11.4	11.9	12.4	12.2	11.4	10.1	8.5	7.7	7	6	5.6	5.7	12.4	7.7	24
17	17	5.9	5.6	4.8	4.5	4.2	4.2	4	3.7	3.7	3.9	4.1	4	4.4	4.6	4.4	4.2	3.6	3.3	2.7	2	2.1	1.5	0.1	-0.7	5.9	3.5	24
18	18	-2	-2.3	-3.4	-3.3	-2.4	-3.6	-4.8	-4	-2.1	-0.3	2.2	6	7.6	8.3	7.9	6.8	5.9	4.6	4.1	3.6	3.1	2.5	2.1	2.1	8.3	1.6	24
19	19	2.5	2.1	2.4	2.8	2.8	2.5	2.5	2.8	3.2	2.9	2.8	2.6	2.5	2.2	2.2	1.9	1.6	1.2	1.2	1.2	1.1	1	0.9	1.1	3.2	2.1	24
20	20	1.1	1.2	1.2	1.1	1.2	1.4	1.5	1.8	2	2	1.2	1.8	2.1	2	1.6	1.3	0.9	0.5	0.3	0.2	0.1	0.1	0.1	-0.1	2.1	1.2	24
21	21	-0.3	-0.4	-0.6	-0.9	-1.4	-1.7	-2	-2.3	-2.6	-2.4	-2	-2	-1.9	-1.8	-1.9	-2.2	-2.5	-2.8	-3	-3	-3.1	-3.6	-3.9	-4.1	-0.3	-2.2	24
22	22	-4.2	-4.2	-4.3	-4.4	-4.4	-4.5	-4.6	-4.5	-4.1	-3.6	-3	-2.1	-0.2	0.3	0.9	0.5	-1.6	-3.4	-5.3	-6.9	-8.3	-8.8	-9.5	-9.9	0.9	-4.2	24
23	23	-10.5	-11.5	-11.8	-11.4	-10.8	-10.7	-8.5	-6.7	-5.7	-5.2	-5	-4.5	-4.1	-3.9	-3.7	-3.9	-4.1	-4.1	-4.2	-3.9	-3.3	-3.1	-3.2	-3.4	-3.1	-6.1	24
24	24	-3.5	-3.5	-3.5	-3.5	-3.6	-3.6	-3.4	-3.4	-2.9	-2.3	-1.9	-1.5	-1	-0.9	-1.1	-1.5	-1.9	-2.2	-2.4	-2.7	-2.9	-3.2	-3.3	-3.5	-0.9	-2.6	24
25	25	-3.8	-3.8	-3.8	-3.6	-3.4	-3.3	-3.3	-3.3	-3	-2.9	-2.3	-2.4	-2.2	-2.1	-2.4	-2.6	-2.8	-3.1	-3.3	-3.5	-3.7	-3.6	-3.6	-3.6	-2.1	-3.1	24
26	26	-3.8	-4.3	-4.6	-5.4	-5.4	-6	-6.6	-6.7	-6.1	-5.1	-4.3	-3.9	-3.5	-3.2	-3	-3.7	-5.1	-7.8	-9.6	-8.3	-8.9	-9	-8.7	-8.6	-3.0	-5.9	24
27	27	-8.3	-8.2	-8.2	-7.9	-7.7	-7.3	-7.1	-7.1	-6.6	-5.3	-3.1	-2.8	-3.4	-3.8	-3.8	-4	-4.4	-5.9	-8	-9.5	-9.6	-10.9	-9.8	-9	-2.8	-6.7	24
28	28	-8.8	-8.6	-8.8	-8.3	-7.7	-7.7	-7.9	-8.1	-7.6	-7.1	-6.8	-6.5	-5.5	-5.5	-5.6	-5.7	-6.1	-6.4	-6.5	-6.7	-6.9	-7	-6.7	-6.7	-5.5	-7.1	24
29	29	-6.5	-6.6	-6.6	-6.8	-6.6	-6.6	-6.4	-6.3	-5.4	-3.8	-3.3	-3.3	-2.7	-2.8	-2.9	-3	-3.1	-3.3	-3.4	-3.5	-3.3	-3.4	-3.5	-3.5	-2.7	-4.4	24
30	30	-3.5	-3.9	-3.7	-3.8	-3.8	-3.8	-3.7	-3.5	-3.2	-2.9	-2.7	-2.4	-2.5	-2.6	-3.7	-4.5	-5.1	-5.7	-6.7	-7.2	-7.9	-9.2	-10.1	-10.8	-2.4	-4.9	24
31	31	-10.7	-10.6	-10.4	-10.6	-10.9	-11.1	-11.4	-11.5	-11.3	-10.7	-10.3	-10.2	-9.8	-9.9	-10.3	-10.6	-10.9	-11.1	-11	-10.9	-10.8	-10.6	-10.3	-10	-9.8	-10.7	24
HOURLY MAX		7.4	7.2	6.7	6.2	6.8	6.5	6.4	6.8	8.6	11.0	14.2	15.3	15.5	15.6	15.9	15.5	13.3	12.7	12.2	11.8	10.9	9.8	8.8	7.9			
HOURLY AVG		-0.8	-1.0	-1.1	-1.2	-1.2	-1.4	-1.6	-1.2	0.0	1.0	2.0	2.5	3.0	3.3	3.3	3.0	2.3	1.3	0.5	0.2	-0.2	-0.8	-1.0	-1.2			

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

MINIMUM 1-HR AVERAGE:	-11.8 °C	@ HOUR(S)	2	ON DAY(S)	23
MAXIMUM 1-HR AVERAGE:	15.9 °C	@ HOUR(S)	14	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	9.1 °C			ON DAY(S)	1
CALIBRATION TIME:	0	HRS		OPERATIONAL TIME:	744
				AMD OPERATION UPTIME:	100.0
STANDARD DEVIATION:	5.80			MONTHLY AVERAGE:	0.40 °C

01 Hour Averages



Precipitation

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

PRECIPITATION hourly averages (mm)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	DAILY	DAILY	
DAY	DAY	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	TOTAL	RDGS.	
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0.1	0.1	24	
2	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	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.1	0	0.1	0	0	0	0	0	0	0	0	0.3	0.5	24
4	4	0	0	0	0	0	0	0	0	0.1	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.6	24
5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
6	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	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.1	0.3	0.3	0.6	24	
8	8	0	0	0	0	0	0	0	0	0	0	0	0.2	0.1	0	0	0	0	0	0	0	0	0	0	0	0.2	0.3	24	
9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
10	10	0.2	1.1	1	0.7	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1	3.3	24	
11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.9	1.2	1.3	0.7	0.8	0.6	0.3	0.1	0.1	0	1.3	6.5	24	
13	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	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0.1	24	
15	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	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	17	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	24	
18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
19	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.4	0	0	0	0	0	0	0.4	0.6	24	
20	20	0	0	0	0	0	0	0	0	0	0.7	1.3	0.1	0.1	0.2	0.1	0.5	0.2	0.3	0.1	0.1	0.1	0	0	0.1	1.3	3.9	24	
21	21	0	0	0.2	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.4	24	
22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
24	24	0	0	0	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.2	24	
25	25	0	0.1	0.1	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.4	24	
26	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	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
28	28	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.3	0.6	0.6	0.3	0.1	0.4	0.2	0.4	0	0	0.6	3.0	24	
29	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.3	0	0	0	0.3	0.5	24	
30	30	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	24	
31	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
HOURLY MAX		0.2	1.1	1.0	0.7	0.3	0.1	0.1	0.0	0.1	0.7	1.3	0.2	0.5	0.5	0.9	1.2	1.3	0.7	0.8	0.6	0.3	0.4	0.3	0.1				

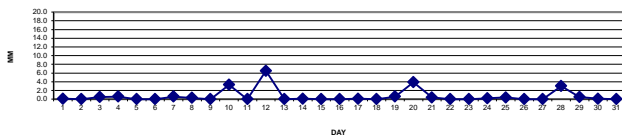
STATUS FLAG CODES

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

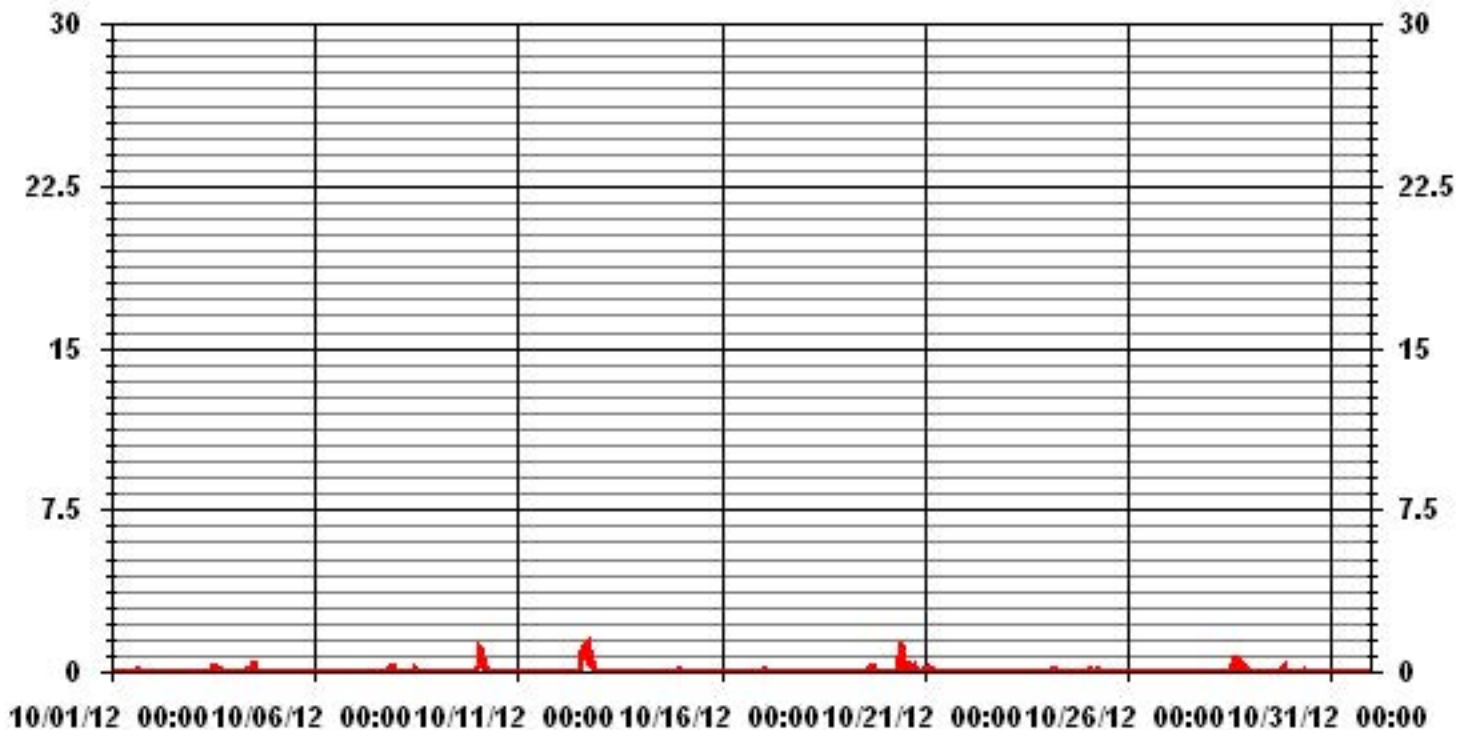
MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	1.3	MM	HOUR(S)	16,10	ON DAY(S)	12,20
MAXIMUM DAILY TOTAL	6.5	MM			ON DAY(S)	12
MONTHLY TOTAL	21.2	MM				
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	744	HRS	
STANDARD DEVIATION:	0.13		AMD OPERATION UPTIME:	100.0	%	
			MONTHLY AVERAGE:	0.03	MM	

DAILY TOTALS FOR OCTOBER 2012



01 Hour Averages



Relative Humidity

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

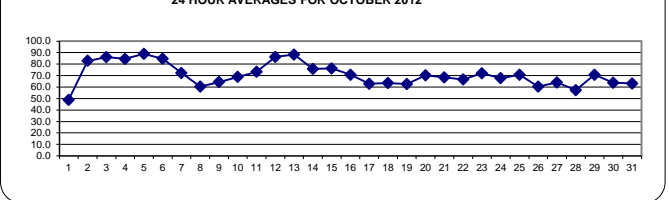
RELATIVE HUMIDITY hourly averages (%)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
DAY	HR	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
1		49	48	46	47	48	46	45	46	48	43	38	39	37	37	37	42	52	59	62	64	53	65	85	85	85	48.9	24
2		88	90	90	90	90	89	89	89	88	86	85	79	76	75	72	70	69	74	77	80	83	85	86	88	90	82.8	24
3		90	91	91	92	91	91	91	91	89	86	84	82	79	81	82	82	81	82	84	84	85	85	86	87	92	86.1	24
4		88	88	87	88	89	90	89	88	86	84	83	78	79	82	72	68	72	79	86	87	90	92	92	92	92	84.5	24
5		92	92	93	93	93	93	93	93	93	90	87	85	83	83	83	84	85	87	89	90	91	90	88	93	88.9	24	
6		88	88	88	88	87	87	87	87	85	84	82	80	78	79	80	81	82	84	85	86	86	87	87	87	88	84.7	24
7		88	88	87	88	89	88	88	87	84	78	74	60	58	54	52	54	56	62	63	64	67	68	70	69	89	72.3	24
8		68	69	73	75	75	75	76	73	63	59	49	43	39	35	34	34	44	58	63	71	77	80	81	81	60.3	24	
9		72	52	53	52	54	58	63	65	62	60	57	54	53	52	51	52	54	64	78	83	87	88	90	90	64.3	24	
10		91	91	91	90	90	90	90	90	81	67	59	52	39	34	34	35	43	45	52	64	75	82	84	83	91	68.8	24
11		85	86	87	86	83	85	88	86	71	65	58	55	51	46	43	45	51	66	77	84	88	90	91	91	91	73.3	24
12		91	91	92	91	91	91	91	91	92	92	92	87	71	64	71	69	74	84	89	91	91	91	91	91	92	86.2	24
13		91	90	91	91	92	91	90	89	88	87	86	85	87	88	86	86	87	88	88	89	88	88	87	87	92	88.3	24
14		88	86	86	87	87	88	90	90	85	77	69	71	68	64	59	54	52	62	74	76	74	74	78	80	90	75.8	24
15		82	80	81	82	80	77	76	76	69	69	67	68	68	64	60	59	70	76	83	85	88	89	89	90	90	76.2	24
16		90	90	89	88	87	87	88	85	74	69	58	50	47	41	41	42	46	57	64	71	78	83	86	87	90	70.8	24
17		85	85	87	85	85	84	84	78	68	61	50	42	37	35	34	42	47	51	54	59	61	64	65	64	87	62.8	24
18		67	70	75	79	80	85	88	89	72	59	51	49	47	47	48	48	53	57	58	59	60	63	61	60	89	63.5	24
19		61	59	58	57	58	64	78	80	63	51	49	48	49	49	49	54	58	66	72	72	74	77	79	80	80	62.7	24
20		81	82	80	78	72	75	78	81	77	73	59	53	51	45	50	54	61	66	71	77	79	79	83	82	83	70.3	24
21		85	87	88	89	87	88	88	89	83	75	64	57	51	45	43	46	47	58	67	61	57	58	58	73	89	68.5	24
22		77	76	79	79	83	84	86	84	74	65	57	52	47	46	45	47	46	50	54	61	68	74	80	85	86	66.6	24
23		87	88	88	88	87	86	87	87	89	87	78	68	56	55	54	52	51	52	55	59	63	67	70	75	89	72.0	24
24		77	80	76	76	79	80	79	79	70	62	55	51	48	46	44	45	53	61	73	78	77	77	79	80	80	67.7	24
25		83	86	85	86	88	88	88	86	82	77	65	55	48	43	42	40	47	58	68	74	79	77	77	75	88	70.7	24
26		80	78	79	77	75	76	77	74	65	61	58	45	40	39	36	36	39	37	39	41	46	78	87	87	87	60.4	24
27		88	88	86	83	81	81	78	77	70	62	56	51	47	45	44	44	49	52	54	57	59	60	60	63	88	64.0	24
28		65	69	70	71	73	73	75	78	73	62	55	50	47	39	39	40	44	47	49	52	52	51	50	49	78	57.2	24
29		51	55	71	88	88	89	89	89	88	79	73	70	64	59	52	49	55	62	67	68	70	71	73	75	89	70.6	24
30		73	74	75	75	73	71	67	64	60	54	53	54	53	51	51	49	54	57	66	65	60	76	77	80	80	63.8	24
31		80	76	74	74	73	74	77	81	75	67	57	50	47	45	43	47	54	57	58	61	60	62	62	61	81	63.1	24
HOURLY MAX		92	92	93	93	93	93	93	93	93	92	92	87	87	88	86	86	87	88	89	91	91	92	92	92			
HOURLY AVG		80.0	79.8	80.5	81.1	80.9	81.4	82.4	82.0	76.4	70.7	64.8	60.1	56.3	53.8	52.6	53.0	56.6	62.4	68.0	71.0	73.2	76.0	77.8	79.5			

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

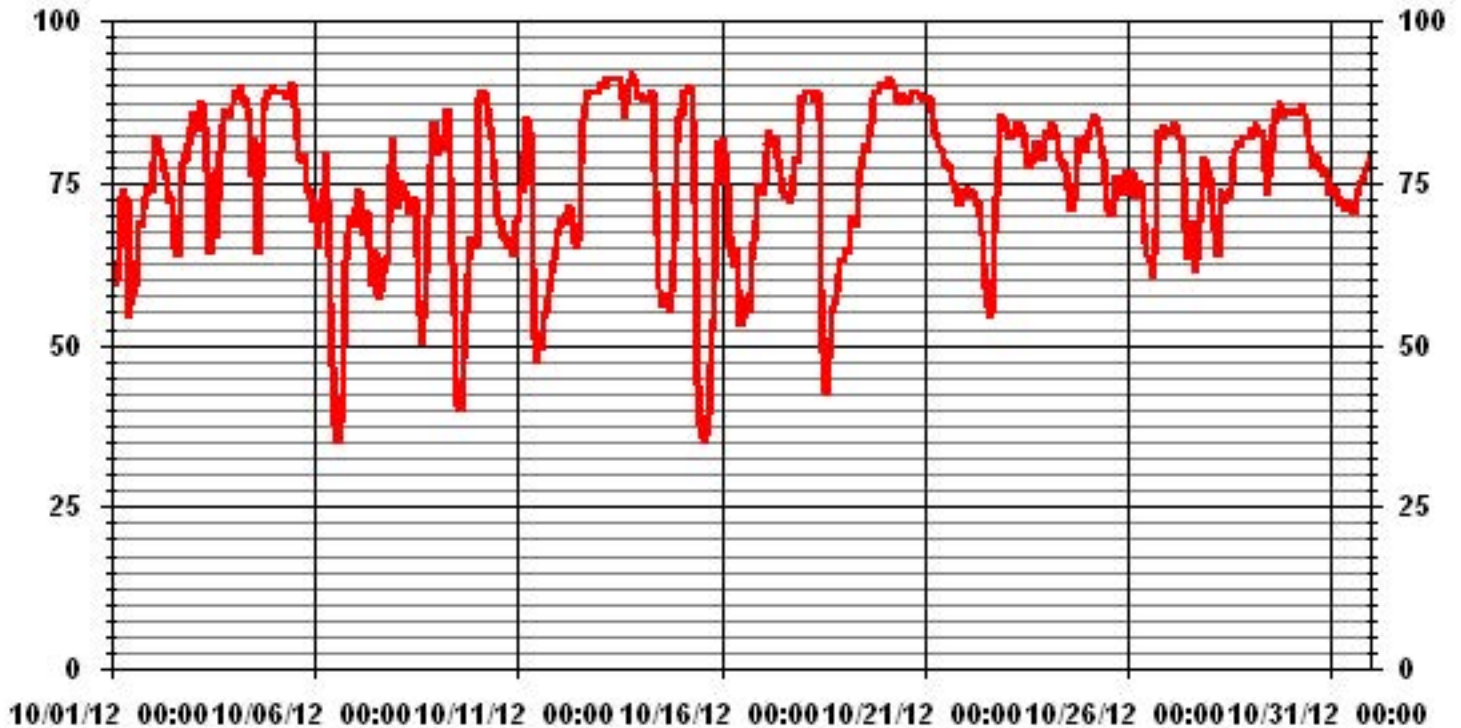
24 HOUR AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	93	%	@ HOUR(S)	VAR	ON DAY(S)	5
MAXIMUM 24-HR AVERAGE:	88.9	%			ON DAY(S)	5
					VAR-VARIOUS	
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	744	HRS	
STANDARD DEVIATION:	16.28		AMD OPERATION UPTIME:	100.0	%	
			MONTHLY AVERAGE:	70.85	%	

01 Hour Averages



Barometric Pressure

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

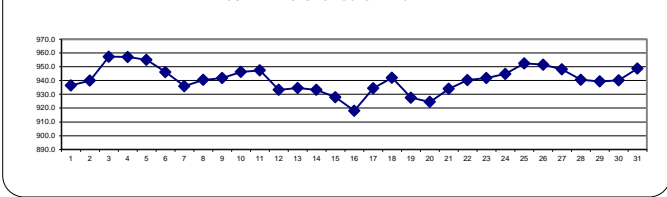
BAROMETRIC PRESSURE hourly averages (millibar)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
1	946	946	946	946	945	944	943	942	942	940	938	937	935	933	933	932	930	929	928	928	928	928	929	928	928	946	936.5	24	
2	929	930	931	931	932	933	934	935	936	937	938	939	940	941	942	944	945	946	947	948	949	950	951	951	951	951	951	951	24
3	952	953	954	954	955	956	956	957	957	958	958	959	959	959	958	959	959	959	959	959	959	959	959	959	959	959	959	959	24
4	958	958	958	958	958	958	957	957	957	958	958	958	957	957	957	957	957	957	956	956	956	956	956	956	956	958	957.1	24	
5	956	956	956	956	957	957	957	957	958	958	958	958	957	957	956	955	954	954	953	952	951	950	950	949	958	955.1	24		
6	949	948	947	947	946	946	946	947	947	948	948	948	948	947	947	946	946	945	944	943	943	942	941	949	946.1	24			
7	940	940	938	937	936	935	934	934	934	933	934	934	934	935	935	936	937	937	937	937	937	937	937	938	938	940	936.0	24	
8	939	939	939	939	939	939	939	939	940	940	940	940	940	941	941	941	942	942	942	942	943	943	943	943	943	943	943	940.5	24
9	943	943	943	943	943	943	942	943	943	943	943	943	943	942	942	941	940	940	940	940	940	940	940	940	939	943	941.9	24	
10	939	940	941	942	942	943	944	944	945	946	947	947	948	949	949	950	951	951	952	952	952	952	952	952	952	952	952	946.3	24
11	952	952	953	952	952	952	952	951	951	952	951	950	949	948	947	946	945	944	943	942	940	939	938	937	953	947.4	24		
12	937	936	935	935	935	934	934	934	933	933	933	932	933	933	932	932	932	932	932	932	933	933	931	932	937	933.3	24		
13	933	933	932	933	933	933	933	934	934	934	934	934	935	934	935	935	936	936	936	936	936	936	936	937	937	937	934.6	24	
14	937	937	937	937	937	937	937	937	937	937	937	937	936	935	934	932	931	930	930	929	928	927	927	926	927	937	933.3	24	
15	927	927	927	927	927	927	928	928	929	930	930	930	930	930	930	930	929	928	928	927	925	924	923	930	928.0	24			
16	923	921	919	918	916	915	915	914	914	914	914	915	915	916	916	917	918	919	920	921	922	922	922	923	924	924	918.0	24	
17	925	925	926	927	927	928	929	930	930	932	933	934	935	936	937	938	939	941	942	942	943	943	943	943	943	943	943	934.5	24
18	944	944	944	943	944	944	944	944	944	944	944	944	944	944	943	942	941	941	940	939	939	938	937	936	944	942.1	24		
19	936	935	934	932	932	930	929	929	928	927	927	926	926	925	925	925	925	924	925	925	924	924	924	924	924	936	927.5	24	
20	924	922	923	923	923	923	922	923	923	924	924	924	924	924	924	925	925	926	926	927	926	927	928	928	928	928	928	924.5	24
21	929	929	929	930	931	931	932	932	933	933	934	934	934	935	936	936	936	937	937	937	938	938	938	938	938	938	938	934.0	24
22	939	939	939	939	939	939	940	940	940	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	940.4	24
23	942	942	942	941	941	941	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	941	942	941.8	24	
24	941	942	942	942	942	942	942	943	943	944	944	944	944	945	945	946	947	947	948	948	948	949	949	949	949	949	944.8	24	
25	950	950	950	951	951	951	951	952	952	953	953	953	953	953	953	953	954	954	954	954	954	954	954	954	954	954	954	952.5	24
26	954	954	953	953	953	953	953	953	953	953	953	952	952	951	951	951	950	950	950	950	950	949	949	949	949	949	954	951.6	24
27	949	949	949	949	949	949	949	949	949	949	949	949	949	949	948	948	948	948	947	947	947	947	946	946	946	949	948.1	24	
28	945	945	944	944	943	943	942	942	941	940	940	939	939	938	938	938	939	939	939	939	939	939	940	940	945	940.6	24		
29	940	940	940	940	940	940	940	941	941	941	941	940	940	940	939	939	939	938	938	938	938	938	938	938	938	941	939.4	24	
30	938	938	938	937	937	937	937	938	938	938	939	939	939	939	940	941	942	943	943	943	944	945	946	946	946	946	940.2	24	
31	947	948	948	948	949	949	949	950	950	950	950	950	950	950	949	949	949	948	948	948	947	947	946	950	948.7	24			
HOURLY MAX	958	958	958	958	958	958	957	957	958	958	958	959	959	959	958	959	959	959	959	959	959	959	959	959	958				
HOURLY AVG	941	941	941	940	940	940	940	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	940				

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

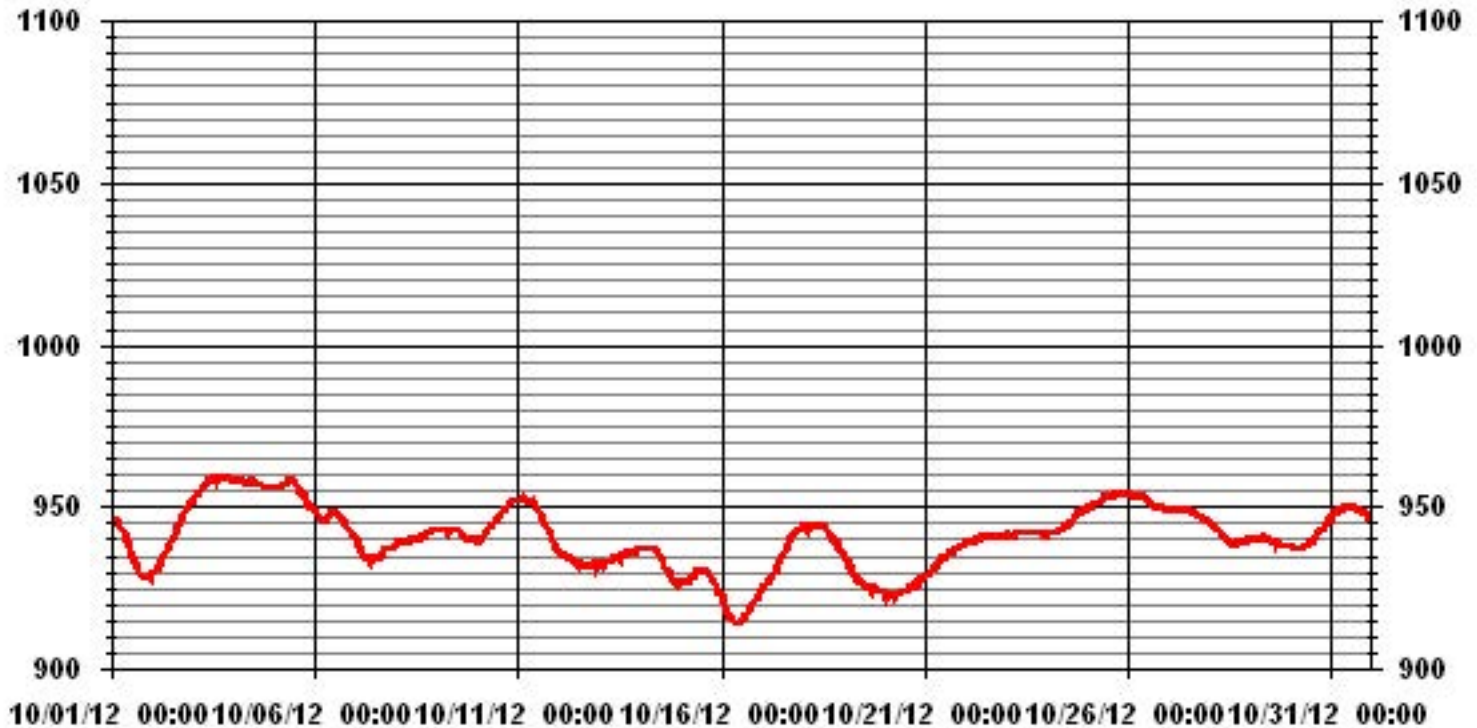
24 HOUR AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	959 MB	@ HOUR(S)	VAR	ON DAY(S)	3
MAXIMUM 24-HR AVERAGE:	957.3 MB			ON DAY(S)	3
				VAR-VARIOUS	
CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:		744 HRS	
STANDARD DEVIATION:	9.75	AMD OPERATION UPTIME:		100.0 %	
		MONTHLY AVERAGE:		941 MB	

01 Hour Averages



Vector Wind Speed

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

WIND SPEED hourly averages (km/hr)

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	4.9	3.9	3.6	3.3	4.6	2.4	1.7	2	2.2	3.3	7.8	7.3	6.8	6.5	4.8	3.4	11.9	8.9	6.4	8.2	11.3	11	9.6	8.2	11.9	1.3	24
2	6.4	6.7	7.4	9.4	10.4	9	12.3	7.6	8.3	9	10.5	9.8	10.1	10.3	11.5	12.6	12.3	10.2	12.2	11.9	10.4	8.1	7.7	6.4	12.6	9.2	24
3	5.3	5.3	4.5	5.7	4.2	3.5	5.2	3.9	4.9	6.1	6.2	6.5	4.6	5.1	2.4	6.1	2.4	1.5	2	1.8	2.2	1.5	4.1	0.9	6.5	2.5	24
4	1.4	3.2	2.4	1.7	1.5	2.3	0.4	0.6	1	3.7	4.3	4.3	3.2	2.3	1.9	4.5	5.3	1.3	3.1	1.6	0.4	1.9	0.1	1.5	5.3	1.1	24
5	0.7	1.6	1.3	1.7	2.6	1	2.2	1.2	2.2	4.1	4.7	5.8	6.9	5.7	3.8	4.2	3.7	2.8	3.8	5.8	6.1	6.3	6.2	6.5	6.9	3.4	24
6	6.2	6.3	6.8	3.8	2.9	2	2.4	4.2	4.9	6	7.5	8	8	8.4	7.8	7.6	5.7	2.5	2	1.6	4	4.5	4.8	8.4	2.9	24	
7	5.2	5	6.8	6.4	6.7	6.2	6.1	3.8	4.1	4.6	7.6	7.3	8.9	10.3	9.7	9.7	11.5	11	10.3	10.8	9.6	9.3	9.9	10.7	11.5	4.7	24
8	8.2	8	6.4	8	9.8	9.8	7.6	7	8.6	9.1	7.5	7.6	9.1	9	9.4	7.8	6.4	6	3.9	3.3	3.9	2	2.2	2.3	9.8	6.4	24
9	2.5	1.8	1.7	1.9	1.6	1.4	1.2	0.5	1	2.2	3.9	5.6	5.7	5.9	4.3	3.6	3.3	1.5	1	0.9	2.3	2.9	4.1	5.5	5.9	1.5	24
10	5.2	7.2	5.8	6.7	4.8	5.5	5.8	6.7	6.1	6.6	7.7	8.5	9.1	8.7	10.4	8.3	7.5	6.6	6.2	7.1	6.2	5.3	4.4	4.6	10.4	6.2	24
11	4.2	2.9	4.3	2	2	0.8	1.4	0.9	2.2	1	3	5.2	7.5	7.8	7.6	8.4	8.1	6.9	6.8	7	7.2	5.1	5	4.9	8.4	3.3	24
12	4.3	4.2	2.9	1.6	3.8	2.8	3	2.3	0.3	3.8	5.2	5.4	5.8	3.1	1.8	1.8	2.4	3	3	4.2	3	2.4	2.7	3.4	5.8	1.7	24
13	3.5	3.4	4.6	3.4	1.9	3.3	2.9	2.9	5.2	3.7	5.4	6.2	5.5	4.1	3.4	1.7	1.3	0.9	3.9	7.4	7.3	6.8	5	5.2	7.4	4	24
14	5.4	4.5	3.6	3.5	4.2	6.7	3.9	2.9	2.1	5.8	3.4	4.7	5.3	6.5	6.6	4.5	5.7	4.9	6.1	4.1	3.6	2.1	2.6	1	6.7	2.6	24
15	1.4	1.7	1.1	4.7	4	4	4.8	5.2	3.8	5.4	10.5	13.1	13.3	12	9.8	8.5	6.5	3.4	3.6	5.6	3.9	1.2	0.3	2	13.3	4.3	24
16	3.1	12.7	5.5	6	5	3.1	2.9	5	3.1	0.5	2.2	2.7	7.1	7.3	8.1	11.7	13.8	15	11.9	9.5	9.9	8.7	10.3	12.1	15	4	24
17	9.1	10.5	10.8	12	12.3	12	11.5	12.1	10.6	11.7	11.3	11.3	11.2	11	11.8	9.6	9.8	9.3	8.9	7	7.7	6	3.9	2.9	12.3	9.6	24
18	2.4	4	1.8	4.8	4.8	2.3	1.3	1.1	2.8	4.7	4.2	8.9	10.7	10.6	8.7	9	6.8	6.6	8.9	9.5	8.2	9	9.3	7.5	10.7	5.6	24
19	6.4	4.7	7.5	8.1	6.6	7.1	8.3	8.7	8.7	9.9	11.3	10.1	10.9	11.1	10.5	7.3	6.2	7	6.5	3.2	3.2	4.1	2.9	1.3	11.3	6.7	24
20	3.2	2.5	3.1	2.9	2	2.1	2.7	3.9	4.1	3.6	1.1	4.9	4.8	5.7	6	5.6	7	5.5	5.3	6.2	7.5	7.8	8.3	8.2	8.3	4.2	24
21	8.7	9.3	9.4	11.1	10.6	9.3	10.2	10.5	11.8	10.2	8.5	11	11.5	9.9	8.3	9.1	10	9.5	8.5	8.5	8.9	8.9	8.8	10.7	11.8	9.7	24
22	9.3	6.6	6.7	6.4	4.9	5.7	5.2	6.1	6.5	6.7	6.6	7	6.4	6.7	5.3	5	3.6	2.3	1.5	0.9	1.2	1.6	1.6	1.1	9.3	4.2	24
23	0.8	0.4	1	1.3	1.9	1.6	3.3	5.7	5	6.5	7.6	8.4	9.2	9.2	10	9.3	9.1	9.5	11.5	10.9	13.3	12.2	9.5	10.5	13.3	6.8	24
24	11.6	8.9	8.4	7.6	8.7	8.9	9.2	9.4	10.4	10.1	9.4	10.4	9.9	8.9	9.1	10.2	9.5	7.8	6.9	5.9	6.9	6.8	7	6.1	11.6	8.5	24
25	5.6	4.9	4.8	4.4	4	4.5	5.5	6.1	6.4	6.8	7.2	7.4	6.5	7.6	6.8	6.7	7	5.3	6.2	5.2	5.3	5.2	4.7	4.9	7.6	5.7	24
26	5	4.4	6.4	5.2	4.9	4.6	2.7	3.8	4.1	5.2	5.4	5.1	6	5.9	6.4	4.9	3.4	1.5	1.3	2.5	1.1	0.2	0.6	0.8	6.4	3.4	24
27	0.3	0.7	2	1.1	2	4.6	3.3	1.8	4.7	5.1	5.8	6.1	8.4	7.3	7.7	7.8	6	4.6	3.2	3.1	3.8	4	6.2	8.3	8.4	4.2	24
28	7	8.5	8	8.7	11.1	11.5	11.1	12.5	12.3	11.4	10.7	11.3	11.2	10.6	9.6	10.1	9.5	8.7	8.4	7	5.7	3	2.1	0.6	12.5	8.7	24
29	0.5	0.1	1.8	0.5	2.1	2.8	1.1	1.6	1.4	3.9	7.2	5.6	6.7	5.5	6.1	5.8	4.4	4.2	3.6	1.7	0.9	0.9	0.6	1.6	7.2	2.3	24
30	1.8	1	2	3.8	2.1	2.2	2.1	1.7	2.8	3	4.3	4.5	5.5	6.7	6.9	5.9	5.8	6.4	6.6	6.2	5.6	6.8	5.7	5.7	6.9	4.1	24
31	3.8	3	3.5	5.3	5.9	3.6	6.2	3.7	5.3	6.4	6.4	5.3	4.8	7.2	6	5.7	5.2	5.7	5.8	7.1	7	7.5	7.2	6.8	7.5	3.2	24
HOURLY MAX	11.6	12.7	10.8	12.0	12.3	12.0	12.3	12.5	12.3	11.7	11.3	13.1	13.3	12.0	11.8	12.6	13.8	15.0	12.2	11.9	13.3	12.2	10.3	12.1			
HOURLY AVG	4.6	4.8	4.7	4.9	5.0	4.7	4.8	4.7	5.1	5.8	6.6	7.3	7.8	7.6	7.2	7.0	6.8	5.8	5.8	5.7	5.7	5.2	5.1	5.1			

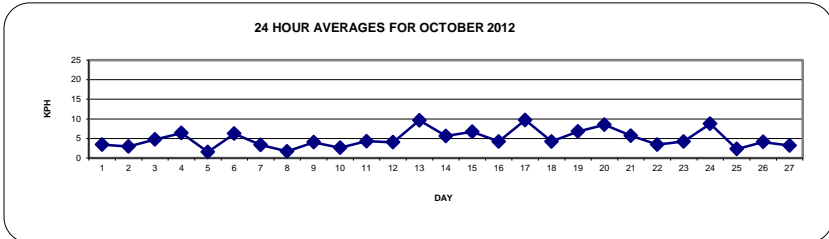
STATUS FLAG CODES

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

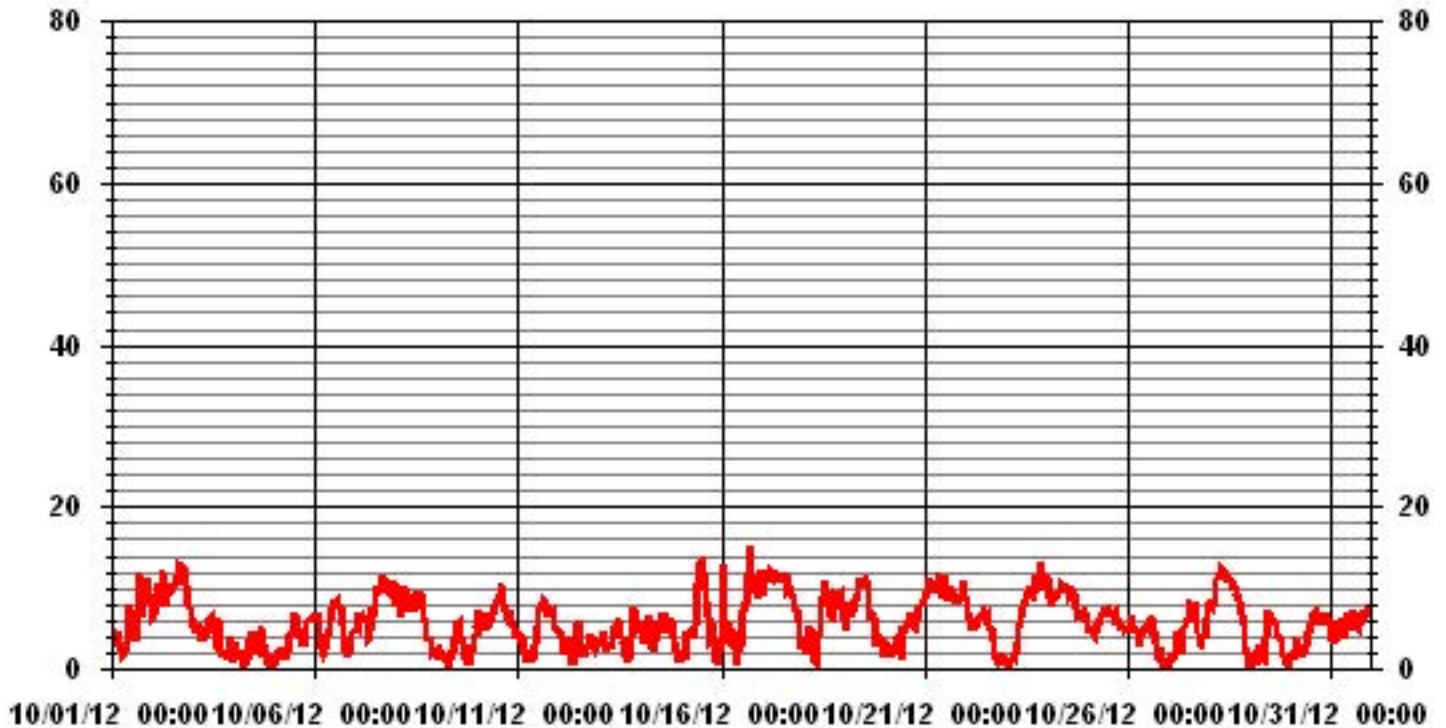
LAST CALIBRATION: December 20, 2011

MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	15.0	KPH	@ HOUR(S)	17	ON DAY(S)	16
MAXIMUM 24-HR AVERAGE:	9.7	KPH			ON DAY(S)	21
CALMS (≤ 1 KPH)	2.96	%	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	3.14		MONTHLY AVERAGE:	5.73	KPH	



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.
DAY																									
1	12.2	8.7	9.6	11.1	13.1	9.8	4.3	5.6	6.3	10.9	27.3	27.3	28.9	23.7	13.8	19.9	36.9	33.4	28.2	38.2	40	37.2	35.6	33.2	40
2	23.1	22.3	23.6	25.8	33.9	29.9	37.6	23.4	31.5	33.5	36.4	31.1	34.1	35.6	34.8	42.9	43.3	32.4	34.8	36.7	30.6	33.5	26.2	25.6	43.3
3	19.9	18.6	16.9	15.8	16.6	11.8	14.4	11.5	13.3	15.3	17.2	18.6	17.9	23.9	13.9	23.6	10	4.1	5.7	4.8	6.5	10.7	11.1	6.7	23.9
4	8.9	12.2	10.9	10.4	7.8	7.4	3.2	4.4	10.7	9.3	14.4	13.1	18.8	8.7	13.9	11.8	18.8	15.9	10.7	10	9.1	11.5	10.7	9.6	18.8
5	9.3	8.3	11.8	6.9	7.4	10.2	11.8	10.9	10.2	11.9	13.1	14.6	16.6	15.9	13.1	10.9	11.1	8.7	9.7	14	14.2	13.5	15	16.1	16.6
6	14.2	15.3	15.3	14.2	8.3	10.7	12.4	13.3	14.9	20	29.8	26.1	28.8	30.6	28.6	25.3	23.6	12.8	4.5	3.9	8.7	10.9	10.7	12.4	30.6
7	13.1	11.8	15.7	14.6	19.7	18.4	17.1	13.5	15.9	16.4	26.8	27.1	33.2	46.1	35.8	35.6	45.3	41.7	42.8	37.2	40.4	31.9	29.7	36.5	46.1
8	37.4	30	27.2	24.7	28.4	29.5	30.4	31.9	30.6	32.1	26.9	29.9	34.6	34.3	30.8	38	26.7	24.2	19.7	12.6	14.8	13.5	12	11.3	38
9	15	12	11.3	11.4	11.3	10.7	11.5	3.6	10	10	18.3	20.3	22.3	30.6	17.4	18.3	12.1	7.4	3.9	3	8.3	10.2	11.8	23.4	30.6
10	21.8	12.6	12	14.2	13.9	17.5	16.1	21	22.3	20.8	25.6	35.2	28	25.6	35.9	29.7	25.9	27.3	24.5	30.4	23.2	21.2	15.5	15.7	35.9
11	15.3	16.1	14.2	11.8	17	20.1	12.4	17	6.1	14.2	13.7	20.8	21.6	28	25.6	24.9	23.4	18.6	20.6	21.6	20.5	17.2	15.7	15.9	28
12	16.8	13.1	12.2	10.9	10	7.9	8.8	6.5	5.4	14.2	15.3	16.1	21.2	17.7	10.7	10.2	11.8	13.2	14.7	12.2	9.6	12.2	9.1	8.7	21.2
13	9.3	8.7	9.6	11.8	11.8	22.4	12.2	13.9	15.5	11.1	15.5	15.9	15.5	10.2	7.1	5	2.8	10.8	15.4	16.2	17.7	25.8	13.5	25.8	25.8
14	15.9	13.1	14.4	15.5	11.5	17.9	13.3	8.5	6.9	14.4	10.7	12.5	14.7	23.4	22.7	15.9	16.6	13.3	19.6	12.6	14.4	9.3	7.1	5.4	23.4
15	9.6	11.5	5.2	10.9	10.2	10.7	11.1	12.8	12.3	17.3	38.3	59.6	48.3	40.6	38.9	28.8	29.9	15	10.2	13.5	10.7	7.4	4.1	12.8	59.6
16	12.8	0	13.3	25.1	21.2	12.5	12.5	14.9	12.6	6.1	8.5	9.8	17.7	25.1	33.2	43.3	45.3	58.4	36.7	33.4	38	33	37	41.5	58.4
17	31.3	38.3	42.6	44.3	39.4	44.4	34.3	43.1	33.5	43.3	38.7	44.4	40	39.2	37.8	36.5	40.7	34.8	29.6	28.2	28	22.5	17.5	12.2	44.4
18	4.3	9.6	10.9	13.3	12.6	5.7	10.2	11.1	11.1	12.6	16.1	25.1	31.7	32.6	27.5	25.3	21.4	17.1	19.5	24.6	21	26	27.7	22.3	32.6
19	21.6	21.8	26.7	32.4	24.5	28.8	35.6	30.5	34.2	51.6	38.5	34.8	42.9	33	36.1	28.6	28.4	30.4	21.8	14.4	9.4	10.9	8.3	6.3	51.6
20	10.7	14.4	12.4	13.7	11.1	8.7	11.5	15	14	12.1	9.6	17	16.1	18.8	20.1	21.4	21.8	18.8	16.1	24.2	27.5	25.6	32.8	38.1	38.1
21	30.8	35.9	36.3	36.8	35.7	35	38.7	39	48.9	40.3	36.5	47.9	40.9	39.6	35.7	37.2	37.9	34.6	43.7	33.1	39.2	38.7	37.9	46.6	48.9
22	33.7	27.1	25	29.2	21.6	26.2	26.9	24.3	27.8	30.2	28.2	25.8	28.2	30.8	23.8	19.9	19.4	10.4	9.1	9.3	11.3	10	8.7	14.8	33.7
23	16.6	8.7	13.5	10.5	16.8	12.4	11.8	13.3	14.6	17	17.5	18.4	24	22.3	22.9	27.3	24.7	24.9	28.4	32.7	35.7	28.9	23.6	33.9	35.7
24	32.6	36.8	26.2	20.1	31.5	29.2	31.5	34.8	39.6	33.3	33.9	35	32.8	35.2	32.5	31.7	31.7	28.2	22.1	19.4	32.4	25.6	27.1	23	39.6
25	20.6	17.9	15.9	14.2	14.2	19.9	21.4	21	28.1	29.5	26.7	23.8	22.1	31.5	22.1	21.8	27.3	20.8	23.9	20.8	20.5	20.5	17.2	22.3	31.5
26	17.5	16.6	16.6	13.6	17.9	13.5	12.4	13.1	15.1	17	17.2	17.5	24.5	24.9	20.3	16.4	10.9	10.5	10.7	11.6	14.8	9.8	12.7	8.3	24.9
27	9.1	10.9	14.7	16.2	10	13.3	9.1	11.8	15.5	14.2	13.5	16.8	24.7	17.7	24.3	18.1	14.8	12.2	9.2	10.2	11.8	12.2	16.2	18.6	24.7
28	17.7	30.6	23	24.9	43.1	31.5	37	35.7	37.9	34.2	38.3	48	38.3	40.3	39.4	34	28.4	28.9	21.4	22.7	21.8	12.4	12.2	19.3	48
29	13.7	11.1	13.9	10.5	10.9	13.9	11.4	11.6	12.9	22.9	27.3	22.7	25.1	24.3	20.1	21.2	16.7	15	11.3	10.2	3.6	9.6	10.2	10.9	27.3
30	13.2	13.5	12.2	11.3	10	11.3	11.1	10.9	14.2	14.6	11.8	17.9	17.5	26	21.6	23.6	20.8	24	24.6	20.5	22.3	21.8	19	17.7	26
31	12.7	12	14.2	16.8	17.3	12.4	15.1	12	12.9	16.4	21.6	21	18.4	18.9	17	20.1	19.4	20.1	18	25.4	26.2	20.1	26.7	20.8	26.7
PEAK	37.4	38.3	42.6	44.3	43.1	44.4	38.7	43.1	48.9	51.6	38.7	59.6	48.3	46.1	39.4	43.3	45.3	58.4	43.7	38.2	40.4	38.7	37.9	46.6	

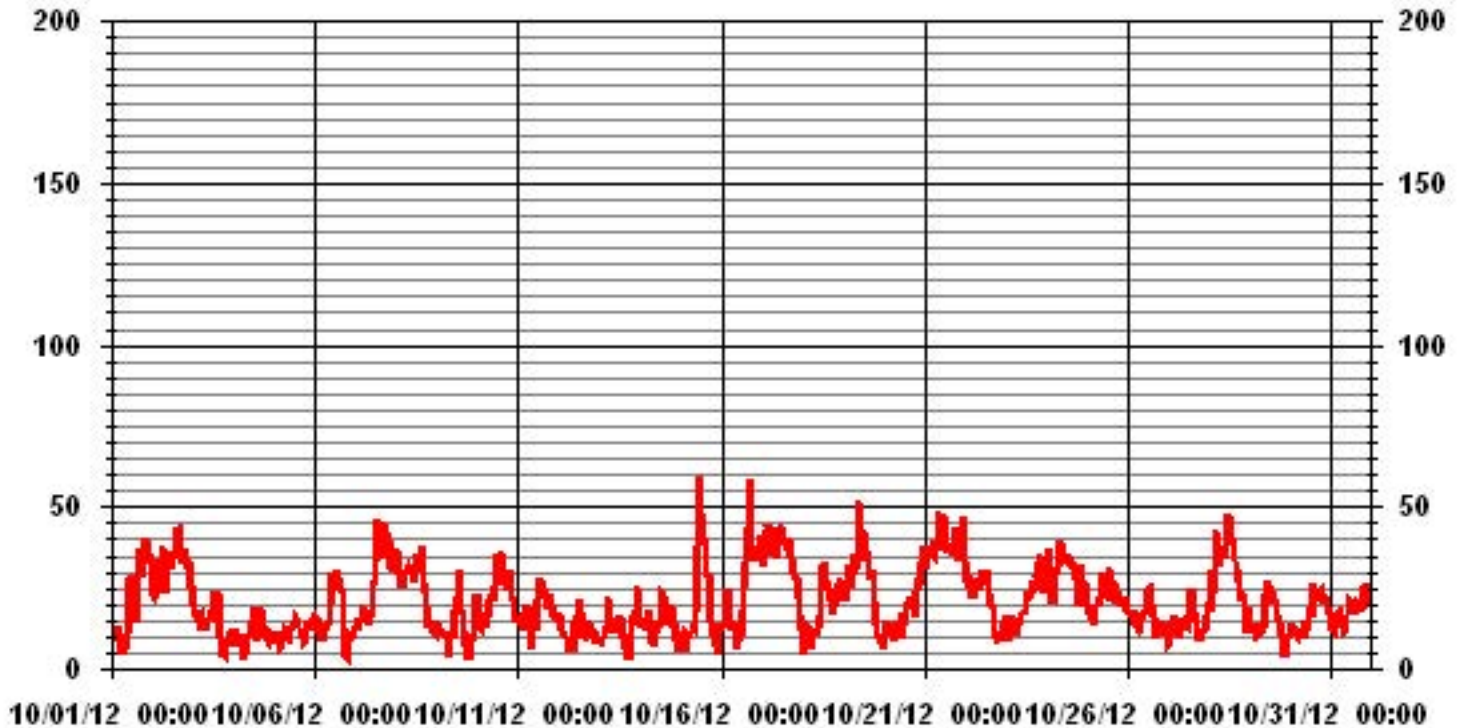
STATUS FLAG CODES

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

MAXIMUM INSTANTANEOUS READING	59.6	KPH	@ HOUR(S)	11
			ON DAY(S)	15

01 Hour Averages



LICA30
WSP / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 30
Site Name : LICA30
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	4.30	2.15	2.28	3.09	2.15	2.55	3.62	2.01	5.77	6.58	4.56	2.41	2.28	2.28	4.16	4.03	54.30
< 12.0	6.31	2.01	.53	.26	1.34	2.82	3.49	1.88	.94	2.82	.53	.94	3.09	4.56	4.83	6.72	43.14
< 20.0	.53	.26	.00	.00	.00	.26	.00	.13	.00	.00	.00	.00	.13	1.07	.13	.00	2.55
< 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	11.15	4.43	2.82	3.36	3.49	5.64	7.12	4.03	6.72	9.40	5.10	3.36	5.51	7.93	9.13	10.75	

Calm : .00 %

Total # Operational Hours : 744

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	32	16	17	23	16	19	27	15	43	49	34	18	17	17	31	30	404
< 12.0	47	15	4	2	10	21	26	14	7	21	4	7	23	34	36	50	321
< 20.0	4	2				2		1					1	8	1		19
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	83	33	21	25	26	42	53	30	50	70	38	25	41	59	68	80	

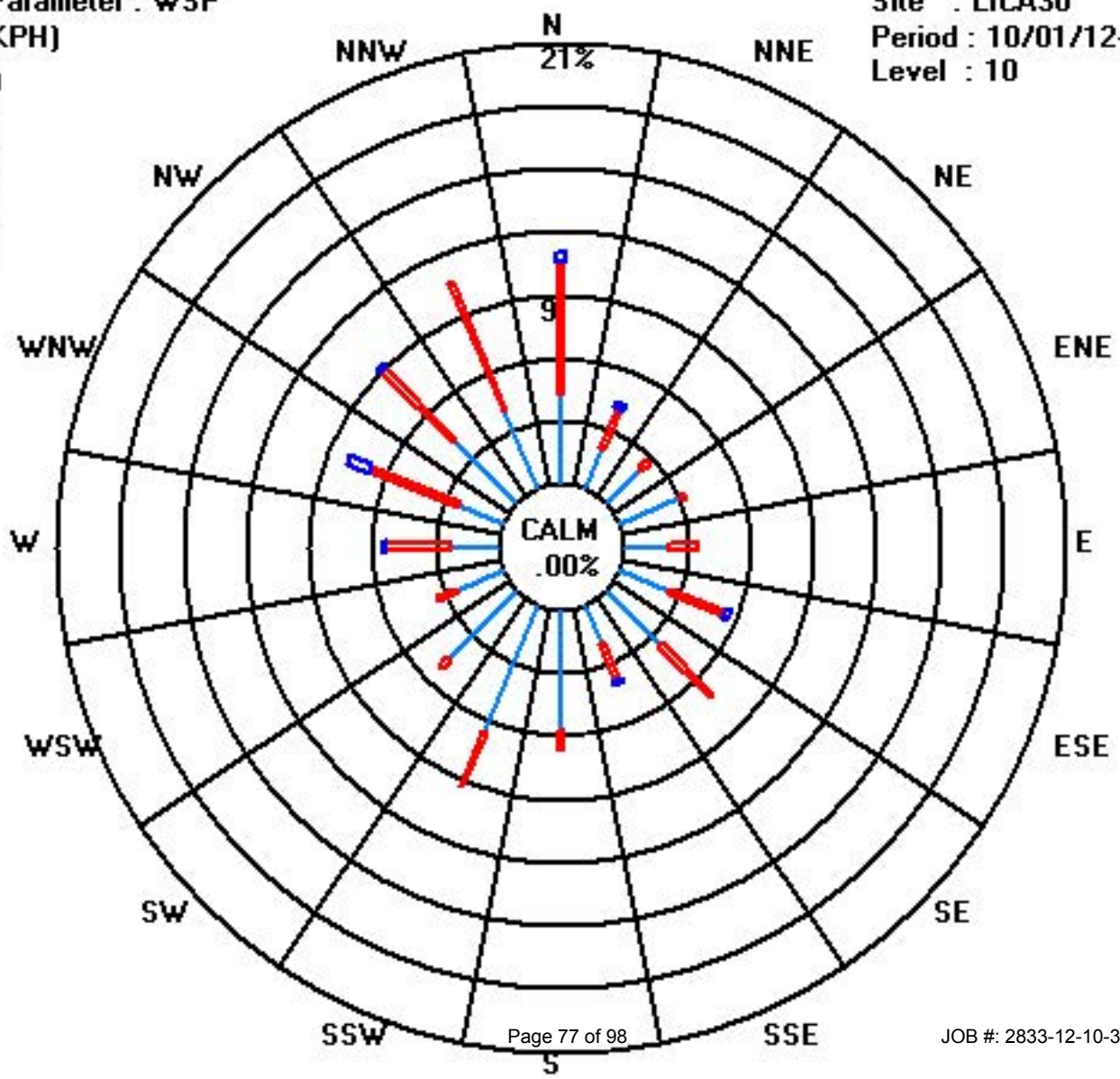
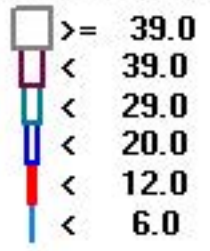
Calm : .00 %

Total # Operational Hours : 744

Class Limits (KPH)

Period : 10/01/12-10/31/12

Level : 10



Vector Wind Direction

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

WIND DIRECTION hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR	24-HOUR AVG		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	AVG.	QUADRANT	RDGS.	
DAY 1	212	216	216	206	199	187	87	92	46	58	99	106	115	95	95	128	185	222	237	273	289	303	320	313	219	SW	24	
2	289	302	353	8	8	5	11	357	342	348	3	360	359	359	360	3	4	1	5	6	3	355	352	357	358	N	24	
3	349	352	352	360	353	350	2	5	10	14	36	14	326	327	295	12	134	175	214	189	194	154	148	116	2	N	24	
4	76	163	134	106	171	185	204	98	136	158	190	206	235	23	36	59	50	164	196	172	150	114	26	200	145	SE	24	
5	201	133	229	206	187	104	80	67	187	199	202	205	201	207	218	184	160	184	173	175	179	195	198	204	190	S	24	
6	202	208	206	229	233	240	287	303	325	328	330	324	328	325	331	318	315	314	212	193	191	205	204	208	284	WNW	24	
7	204	210	204	199	188	188	198	213	260	295	311	311	315	317	329	335	344	339	334	335	331	333	359	350	312	NW	24	
8	335	340	317	299	308	304	312	318	314	312	330	338	319	343	348	347	341	341	325	316	302	262	259	258	322	NW	24	
9	265	240	261	249	240	241	247	45	66	282	297	295	282	283	316	269	278	263	259	147	49	44	33	55	294	WNW	24	
10	62	29	25	24	13	5	3	356	351	349	3	360	1	354	3	342	334	329	338	336	344	337	325	301	355	N	24	
11	309	303	309	229	237	173	108	135	34	94	177	175	179	181	165	149	157	152	149	147	138	132	132	123	159	SSE	24	
12	129	132	143	116	164	183	183	186	6	10	39	45	58	95	34	36	52	77	88	173	140	141	172	200	110	ESE	24	
13	188	188	187	207	193	243	185	231	210	204	194	201	210	219	215	259	229	220	207	205	207	214	237	221	209	SSW	24	
14	222	229	242	249	229	220	223	211	197	198	192	174	149	122	117	104	124	129	132	113	95	65	33	61	165	SSE	24	
15	265	182	241	213	221	219	217	223	225	227	286	280	284	285	287	284	271	239	214	201	198	173	30	73	256	WSW	24	
16	70	153	61	55	66	99	118	107	78	10	351	273	293	298	292	303	301	301	301	306	307	299	296	304	309	NW	24	
17	303	298	296	297	296	299	298	300	301	307	305	310	310	312	313	320	325	317	314	323	323	326	296	281	307	NW	24	
18	196	198	184	195	203	219	220	174	207	198	206	199	202	191	166	163	157	148	146	147	144	144	145	144	171	S	24	
19	133	109	122	113	97	89	84	82	75	102	96	103	109	106	107	110	120	101	128	144	156	150	185	188	107	ESE	24	
20	197	205	225	275	298	311	306	324	343	339	333	323	326	314	298	285	291	307	309	293	288	294	290	286	298	WNW	24	
21	282	287	283	285	285	281	283	282	280	279	274	275	276	270	264	275	279	278	277	279	275	268	266	273	278	278	W	24
22	279	279	278	276	260	253	254	240	241	258	244	247	252	236	238	231	262	238	196	120	73	117	146	172	252	WSW	24	
23	214	96	16	95	103	45	31	27	17	17	16	22	19	19	19	12	9	8	17	17	20	18	10	10	18	NNE	24	
24	11	4	3	2	1	2	360	1	359	351	353	352	358	352	355	356	355	338	342	344	347	337	335	332	354	N	24	
25	333	335	333	333	328	329	338	339	337	342	346	343	340	333	335	337	337	350	343	341	323	346	317	324	336	336	NNW	24
26	338	351	13	11	357	2	335	333	321	323	323	322	307	321	310	345	357	351	348	1	48	333	227	189	338	NNW	24	
27	227	137	104	225	191	170	179	180	171	196	189	205	193	204	192	192	207	196	177	168	167	154	153	150	182	S	24	
28	142	136	133	130	127	129	126	123	120	114	121	114	107	110	106	116	128	126	130	131	135	128	114	114	123	ESE	24	
29	264	20	34	294	30	77	68	91	97	73	86	71	103	96	100	118	134	126	140	170	334	306	45	9	94	E	24	
30	58	101	330	27	9	344	332	302	318	340	347	324	316	317	338	340	324	339	339	328	327	326	333	356	336	NNW	24	
31	5	11	1	354	11	9	34	17	20	35	70	71	76	138	148	137	137	144	134	127	145	135	129	124	92	E	24	
HOURLY AVG	349	352	353	360	357	350	360	357	359	351	353	360	359	359	360	356	357	351	348	344	347	355	359	357				

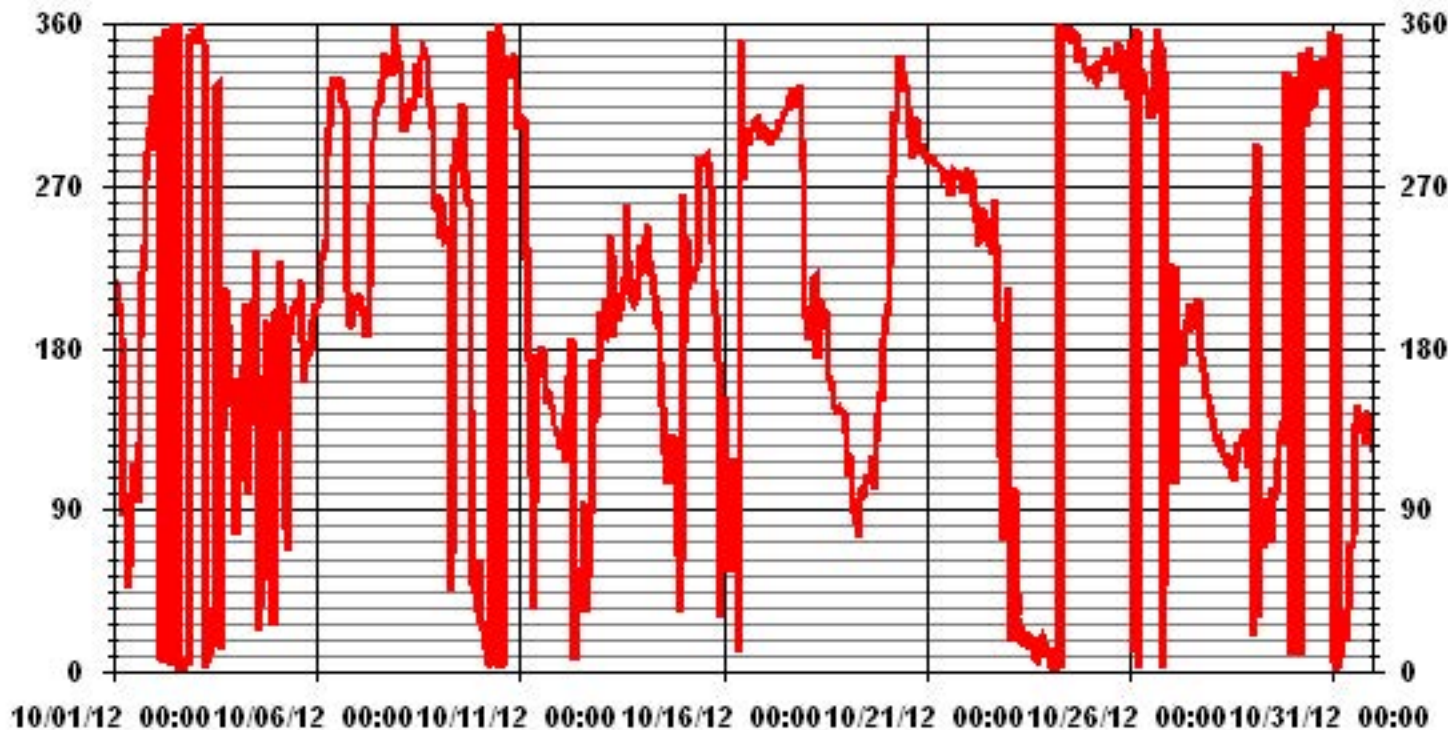
STATUS FLAG CODES

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:	744 HRS
STANDARD DEVIATION:	108.45	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	319 DEG

01 Hour Averages



Standard Deviation Wind Direction

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

OCTOBER 2012

STANDARD DEVIATION WIND DIRECTION (STDWDIR) hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00
DAY																								
1	15	16	16	28	12	29	23	24	34	27	28	30	31	30	29	53	20	28	34	33	25	27	35	33
2	29	28	29	22	22	23	21	27	31	38	26	29	27	29	26	24	24	24	23	23	23	28	27	26
3	28	29	34	26	27	33	21	26	27	25	30	30	35	37	47	31	28	45	29	22	26	22	17	74
4	31	27	21	43	53	28	50	56	34	28	31	29	51	51	60	26	19	31	18	52	41	35	58	28
5	54	46	41	47	23	39	24	55	37	28	26	27	23	28	38	27	23	19	14	17	17	17	15	15
6	16	18	17	30	25	29	34	29	33	36	35	32	33	35	36	32	34	30	22	17	37	13	14	16
7	16	19	15	15	16	21	22	24	31	32	31	31	34	35	34	34	33	32	33	32	35	34	26	29
8	35	36	35	23	26	25	30	36	31	34	35	35	35	33	32	38	35	34	33	33	22	29	34	32
9	32	47	36	32	42	39	39	62	53	44	36	36	45	38	46	41	28	36	34	44	20	18	17	20
10	27	12	14	15	19	26	21	26	28	30	25	26	27	29	25	34	36	35	36	35	32	32	33	25
11	30	38	29	30	27	55	26	41	52	63	47	48	33	26	28	25	23	23	23	21	24	32	28	23
12	26	25	27	35	18	21	19	28	65	30	28	30	27	27	16	17	27	25	30	21	26	30	25	19
13	22	23	18	26	34	38	44	41	21	29	21	22	28	33	33	32	31	38	18	14	16	17	30	18
14	20	23	28	26	20	15	18	29	25	20	37	36	34	30	26	26	25	23	23	22	32	30	30	58
15	57	51	48	16	18	16	14	17	28	27	28	30	28	28	28	30	31	28	17	12	12	62	58	31
16	23	31	17	17	34	57	48	25	47	63	44	46	23	27	26	29	27	29	29	31	31	27	24	28
17	32	28	25	23	27	27	25	25	26	29	28	32	32	33	31	34	36	32	33	36	35	36	25	28
18	20	14	40	14	18	20	40	56	39	23	27	23	22	23	23	21	20	16	17	19	21	22	21	25
19	28	27	25	30	26	26	28	31	27	28	26	26	26	26	27	30	26	28	24	38	24	21	30	64
20	31	50	36	30	41	31	37	38	32	39	70	33	35	29	25	26	25	34	30	24	25	26	27	29
21	26	25	26	25	26	27	28	29	29	32	35	32	30	36	37	33	32	30	33	29	33	35	34	32
22	32	32	30	34	37	37	38	34	36	36	37	36	37	37	38	41	33	27	56	50	34	27	29	31
23	53	69	45	22	27	34	19	14	20	19	22	18	18	18	19	21	21	19	17	22	17	17	21	20
24	19	22	22	22	30	23	26	23	24	27	30	27	26	32	32	26	27	29	33	29	32	33	31	36
25	35	34	34	32	35	36	33	30	34	35	33	33	34	34	36	32	35	31	34	32	34	32	34	36
26	34	29	18	24	25	23	36	36	37	34	31	35	35	38	34	32	21	31	42	30	43	62	61	45
27	45	57	34	52	25	21	22	60	33	21	24	26	22	21	20	19	19	15	14	15	14	15	15	16
28	20	21	20	22	22	24	25	23	24	27	29	27	29	30	30	24	26	26	22	27	26	42	39	70
29	67	49	58	45	42	26	54	37	48	34	28	26	27	28	27	23	28	23	26	37	47	40	46	26
30	30	48	34	26	36	29	31	54	30	35	32	30	33	34	32	33	33	33	35	31	32	30	33	27
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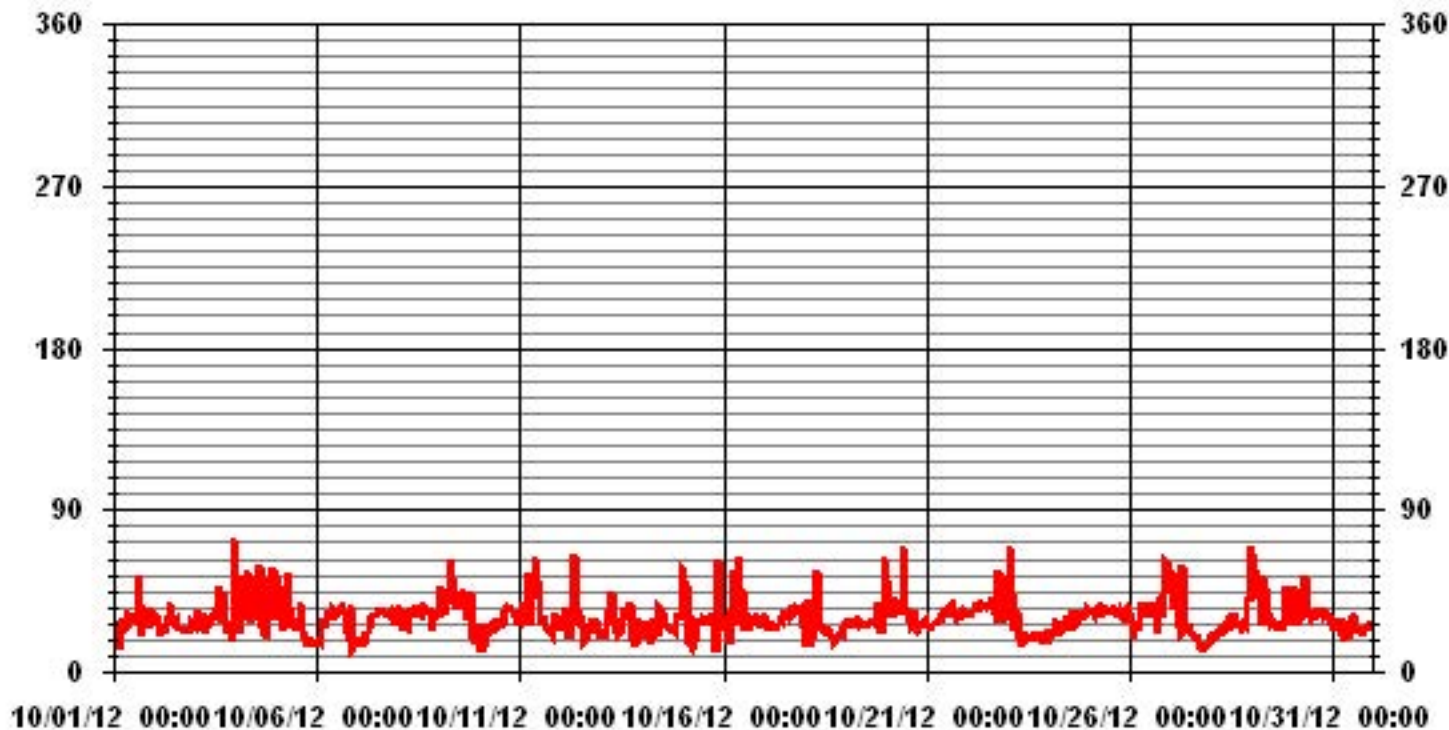
STATUS FLAG CODES

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: 744 HRS

01 Hour Averages



Calibration Reports

Sulphur Dioxide

SO2 Calibration Report

Station Information

Calibration Date	October 12, 2012	Previous Calibration	September 24, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	Cold Lake - Maskwa		
Start Time (MST)	08:15	End Time (MST)	11:52
Reason:	Monthly Calibration		
Barometric Pressure	933 mmHg	Station Temperature	23 Deg C
Cal Gas	49.6 ppm	Gas Cyl. #	LL42502
DAS Output Voltage	0 - 1 Volts	Cal Gas Expiry date	December 29, 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 ppb				
Sample Flow / Box Temp	594 ccm	29.1 Deg C	595 ccm	32.2 Deg C	
HVPS / Lamp Setting	494	2323	494	2318	
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	50.9	1.224	52.3	1.225	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4994	0	0	2	N/A
4994	0	0	1	N/A
4920	74.6	741	745	0.9944
4956	39.8	395	394	1.0029
4976	19.9	198	195	1.0132
4995	0	0	1	N/A
Sum of Least Squares				0.9972
New Correction Factor				0.9944

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	1.7		1.0
Auto Span	367.0		373.0
Sample Lines Connected			YES

Percent Change

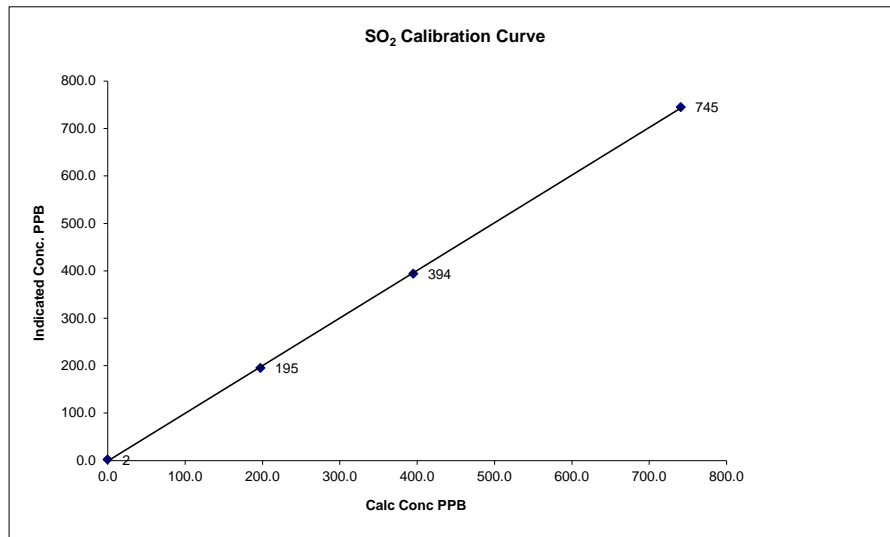
Previous Month's Calibration Correction Factor:	0.9982
Current Correction Factor Before Span Adjust:	0.9944
Percent Change:	0.4%

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

SO₂ Calibration Curve

Calibration Date	October 12, 2012
Company	Lakeland Industry & Community Association
Plant / Location	Cold Lake - Maskwa
Start Time (MST)	08:15
End Time (MST)	11:52

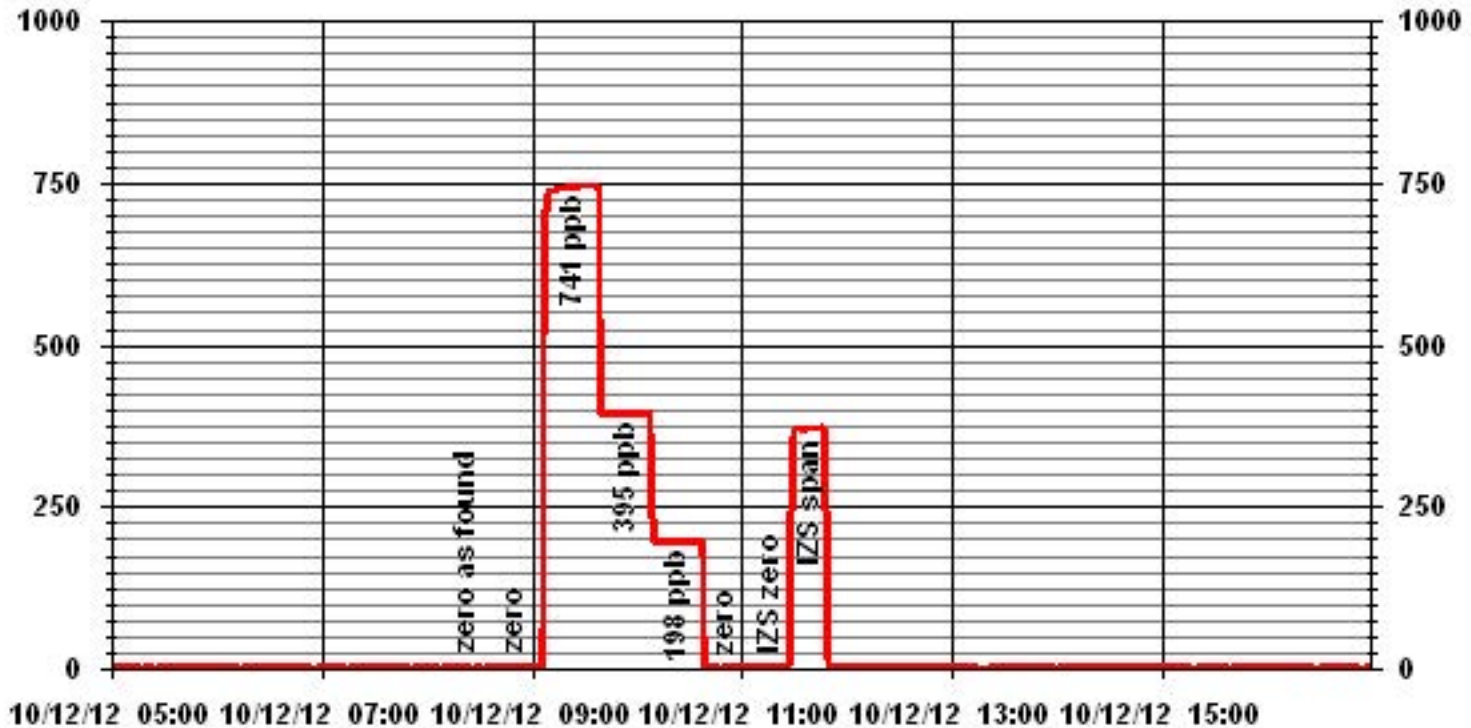
Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	2	n/a		0.999927
198	195	1.0132		1.004374
395	394	1.0029		
741	745	0.9944		-0.845645



Notes:

Calibration Performed by: Ting Xu

01 Minute Averages



Hydrogen Sulphide

H2S Calibration Report

Station Information

Calibration Date	October 12, 2012	Previous Calibration	September 24, 2012
Company	Lakelnad Industry & Community Association		
Plant / Location	Cold Lake - Maskwa		
Start Time (MST)	08:15	End Time (MST)	11:52
Reason:	Monthly Calibration		
Barometric Pressure	933 mBar	Station Temperature	23 Deg C
Cal Gas	10 ppm	Gas Cyl. #	LL42648
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 :	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:	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	470 ccm 32.7 Deg C	469 ccm 33 Deg C	
HVPS / Lamp Setting	552 2284	552 2287	
PMT / RxCell Temp	7.9 Deg C 50 Deg C	7.9 Deg C 50 Deg C	
Converter / IZS Temp	316 Deg C 45 Deg C	316 Deg C 45.0 Deg C	
Offset / Slope	36.8 0.837	36.8 0.85	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4997	0	0	0	NA
	No Zero Adj.			
4958	40.0	80	78	1.0261
4958	40.0	80	81	0.9880
4977	20.0	40	41	0.9762
4987	11.5	23	24	0.9586
4998	0	0	0	NA
Sum of Least Squares				0.9839
New Correction Factor				0.9880

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	0.2		0.3
Auto Span	56.1		59.6
Sample Lines Connected			YES

Percent Change

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	1.0261
Percent Change:	-2.5%

Notes: **NA : Not Applicable**

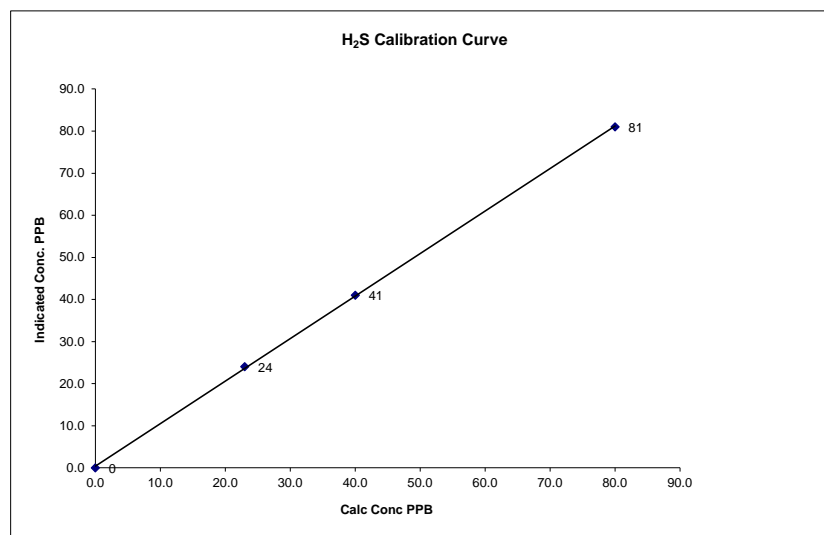
Inlet filter was replaced.

Calibration Performed by: Ting Xu

H₂S Calibration Curve

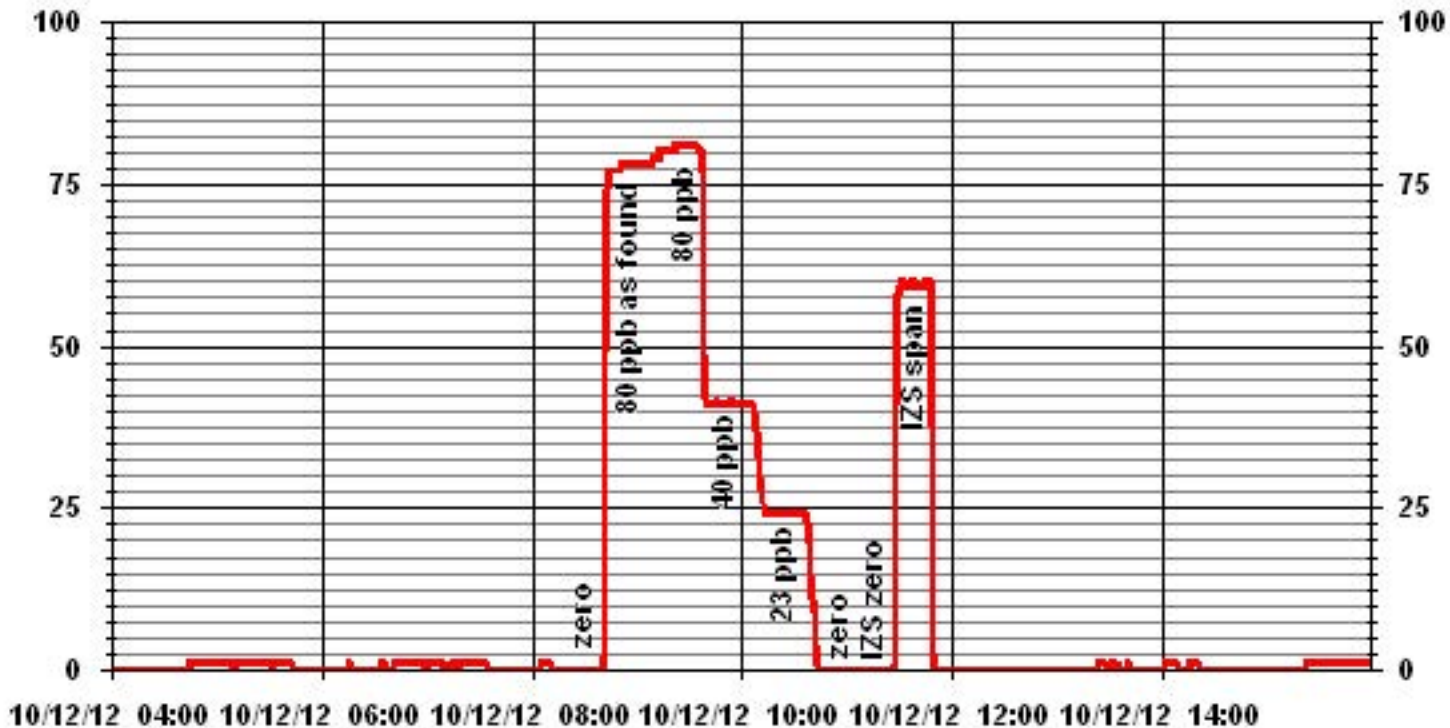
Calibration Date	October 12, 2012
Company	Lakelnad Industry & Community Association
Plant / Location	Cold Lake - Maskwa
Start Time (MST)	08:15
End Time (MST)	11:52

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999893
0	0		Intercept	(± 3% F.S.)	0.375164
23	24	0.9586			
40	41	0.9762			
80	81	0.9880			



Notes:

01 Minute Averages



Total Hydrocarbons

THC Calibration Report

Station Information			
Calibration Date:	October 12, 2012	Previous Calibration	September 24, 2012
Company:	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location:	Maskwa		
Start Time (MST)	11:30	End Time (MST)	15:07
Reason:	Monthly Calibration		
Barometric Pressure:	933 mmHg	Station Temperature:	24 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM TOTAL CH4 1161.0 PPM	C3H8 204 PPM Gas Cyl. # LL155310	Cal Gas Expiry Date: September 9, 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
2000	0.0	0.0	-0.1	NA
2000	0.0	0.0	0.0	NA
2000	74.0	41.4	41.0	1.0103
2000	74.0	41.4	41.7	0.9934
2000	37.0	21.1	21.2	0.9947
2000	20.0	11.5	11.6	0.9910
2000	0.0	0.0	0.0	NA
New Correction Factor:				0.9934

Percent Change

Previous Calibration Correction Factor:	0.9982
Current Correction Factor Before Span Adjust:	1.0103
Percent Change:	-1.2%

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	0.0	0.0
Auto Span	34.1	34.2
Sample Lines Connected	YES	

Cylinder Pressures			
Span	1400 psi	Hydrogen	1300 psi
		Zero Air	32 psi

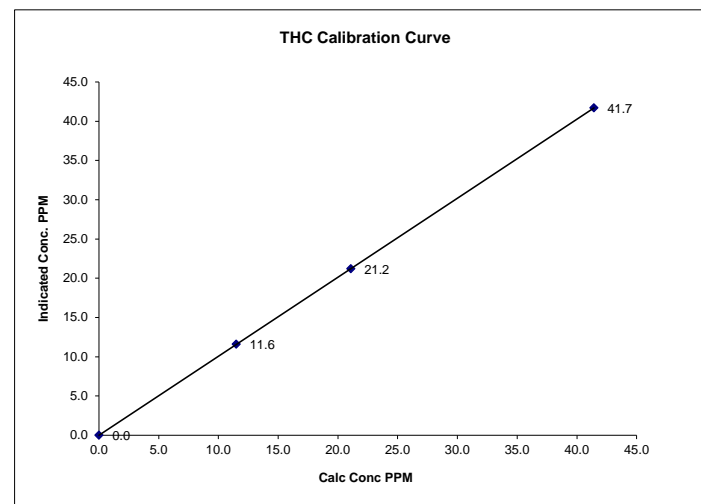
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu

THC Calibration Curve

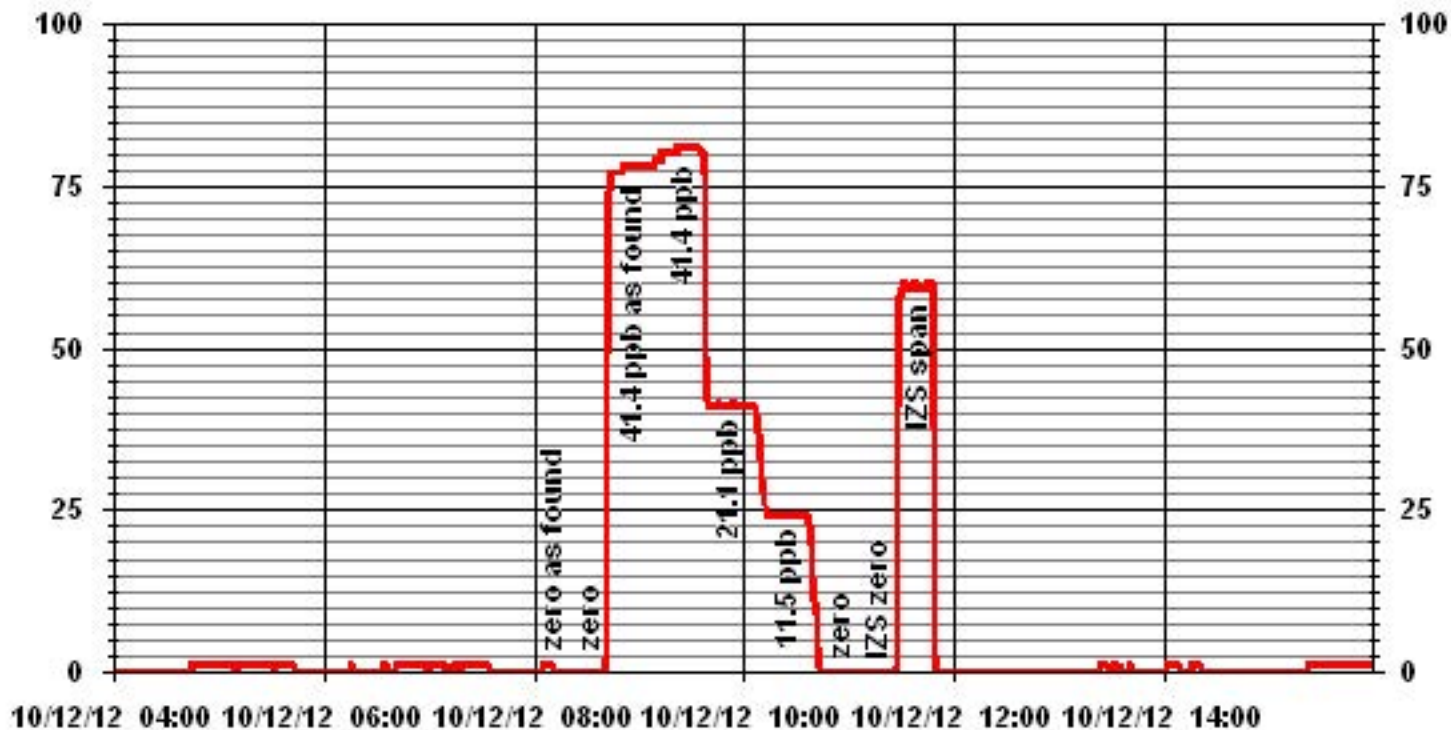
Calibration Date	October 12, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Plant / Location	Maskwa
Start Time (MST)	11:30
End Time (MST)	15:07

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient (≥ 0.995)	Slope (0.85 to 1.15)	Intercept (± 3% F.S.)
0.0	0.0	NA	0.999998	1.006359	0.00541
11.5	11.6	0.9910			
21.1	21.2	0.9947			
41.4	41.7	0.9934			



Notes:

01 Minute Averages



Nitrogen Dioxide

NOx - NO- NO2 Calibration Report

Station Information

Calibration Date	October 12, 2012	Previous Calibration	September 24, 2012
Company	LICA	Plant/Location	Maskwa
Start Time (MST)	08:15	End Time (MST)	09:42
Reason:	As Found		
Barometric Pressure	933 mBar	Station Temperature	23 Deg C
Cal Gas Concentration	NOx 50.1 ppm	NO 50.1 ppm	Cal Gas Expiry date December 29, 2013
Cal Gas Cylinder #	LL42502		
DAS Output Voltage	0 - 1 Volts	Chart Rec. Output	NA Volts

Equipment Information

Analyzer Make / Model:	TAPI 200E	S/N :	594	Method:	Chemiluminescent
Calibrator Make / Model:	Enviro-nics 6100	S/N:	4760		
DAS Make / Model:	ESC 8832	S/N :	AO 791		
Chart Recorder Make / Model:	N/A	S/N:	NA		
Flow Meter:	Enviro-nics 6100	S/N :	4760		

Analyzer Settings

Before Calibration				After Calibration			
Concentration Range	0 - 1000			ppb			
Sample Flow/Conv. Temp	458 ccm	315 Deg C		450 ccm	315 Deg C		
Ozone Flow / Vacuum	79 ccm	5.5 *Hg-A		78 ccm	5.9 *Hg-A		
HVPS / A ZERO	767 Volts	17.2 MV		751 Volts	17.7 MV		
Rx/ Temp / PMT Temp	50.0 Deg C	6.5 Deg C		50.0 Deg C	6.6 Deg C		
Box Temp / IZS Temp	28.5 Deg C	40.1 Deg C		33.3 Deg C	42.1 Deg C		
Offset	0.1 NOx	-0.7 NO		0.1 NOx	-0.1 NO		
Slope	1.238 NOx	1.235 NO		0.995 NOx	0.989 NO		
NO2 COEF / Conv Efficiency	NA NO2	0.994		NA NO2	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	0	NA	NA
4921	74.6	NA	748	748	NA	738	742	-3	1.0151	1.0096

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		
		600								
		250								
		140								

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= 1.0151	NO= 1.0096	NO2=
Average Converter Efficiency=						

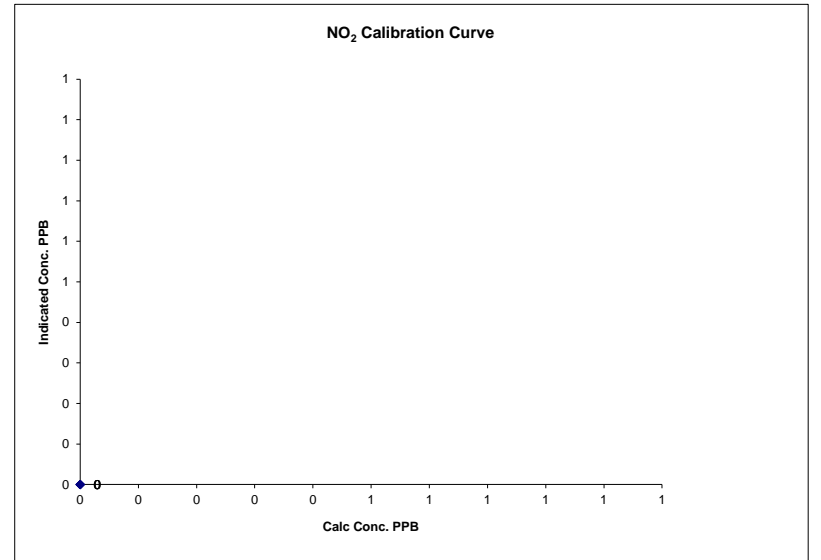
IZS Calibration Data

Before Calibration				After Calibration			
Auto Zero	1.1 NOx	0.6 NO2		NA NOx	NA NO2		
Auto Span	620 NOx	607 NO2		NA NOx	NA NO2		
Sample Lines Connected				YES			
Percent Change from Previous Calibration	NOx -1.6%	NO -1.0%	NO2 #VALUE!				
Notes	NA : Not Applicable						
Following the as found point, replaced the O-ring, sintered filter of the flow control centre, cleaned manifold, cleaned the optical filter, adjusted the HVPS voltage and slope, adjusted IZS temperature.							
Calibration Performed by:	Ting Xu						

NO2 Calibration Curve

Calibration Date	October 12, 2012	Company	LICA
Plant / Location	Maskwa	Start Time (MST)	08:15
End Time (MST)	09:42		

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	#DIV/0!
0	0	N/A	Slope (0.85 to 1.15)	#DIV/0!
0	0	#DIV/0!	Intercept (± 3% F.S.)	#DIV/0!
0	0	#DIV/0!		
0	0	#DIV/0!		



Notes:

NOx - NO- NO2 Calibration Report

Station Information

Calibration Date	October 12, 2012	Previous Calibration	September 24, 2012
Company	LICA	Plant/Location	Maskwa
Start Time (MST)	12:15	End Time (MST)	17:27
Reason:	Post-Repair Calibration		
Barometric Pressure	933 mBar	Station Temperature	25 Deg C
Cal Gas Concentration	NOx 50.1 ppm	NO 50.1 ppm	Cal Gas Expiry date December 29, 2013
Cal Gas Cylinder #	LL42502		
DAS Output Voltage	0 - 1 Volts	Chart Rec. Output	NA Volts

Equipment Information

Analyzer Make / Model:	TAPI 200E	S/N :	594	Method:	Chemiluminescent
Calibrator Make / Model:	Envionics 6100	S/N:	4760		
DAS Make / Model:	ESC 8832	S/N :	AO 791		
Chart Recorder Make / Model:	N/A	S/N:	NA		
Flow Meter:	Envionics 6100	S/N :	4760		

Analyzer Settings

Before Calibration				After Calibration			
Concentration Range	450 ccm 314 Deg C			0 - 1000 ppb			
Sample Flow/Conv. Temp	78 ccm 5.9 °Hg-A			445 ccm 316 Deg C			
Ozone Flow / Vacuum	751 Volts 17.7 MV			78 ccm 5.8 °Hg-A			
HVPS / A ZERO	50.0 Deg C 6.6 Deg C			751 Volts 16.7 MV			
Rx/ Temp / PMT Temp	33.5 Deg C 42.1 Deg C			50.0 Deg C 6.6 Deg C			
Box Temp / IZS Temp	0.1 NOx -0.1 NO			29.2 Deg C 42.2 Deg C			
Offset	0.995 NOx 0.989 NO			0.1 NOx -0.7 NO			
Slope	NA NO2 0.994			0.990 NOx 0.983 NO			
NO2 COEF / Conv Efficiency				NA NO2 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	0	NA	NA
4919	74.6	NA	748	748	NA	751	748	3	0.9979	1.0000
4957	39.8	NA	399	399	NA	398	397	2	1.0052	1.0077
4974	19.9	NA	200	200	NA	200	199	1	1.0000	1.0083
4995	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			NO2 Correction Factor	NO2 Conv Efficiency
			NOx	NO	NO2	NOx	NO	NO2		
4920	74.6	NA	748	748	NA	756	752	4	NA	NA
4920	74.6	600	748	NA	545	756	211	544	1.0018	99.82%
4920	74.6	250	748	NA	232	756	524	232	1.0000	100.00%
4920	74.6	140	748	NA	131	756	625	131	1.0000	100.00%

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= 0.998	NO= 1.002	NO2=
				NOx= 0.9979	NO= 1.0000	NO2=
				Average Converter Efficiency=		

IZS Calibration Data

Before Calibration				After Calibration			
Auto Zero	NA	NOx	NA	NO2	0.2	NOx	0.5
Auto Span	NA	NOx	NA	NO2	540	NOx	533
			Sample Lines Connected	YES			
Percent Change from Previous Calibration		NOx	0.2%	NO	0.0%	NO2	0.2%

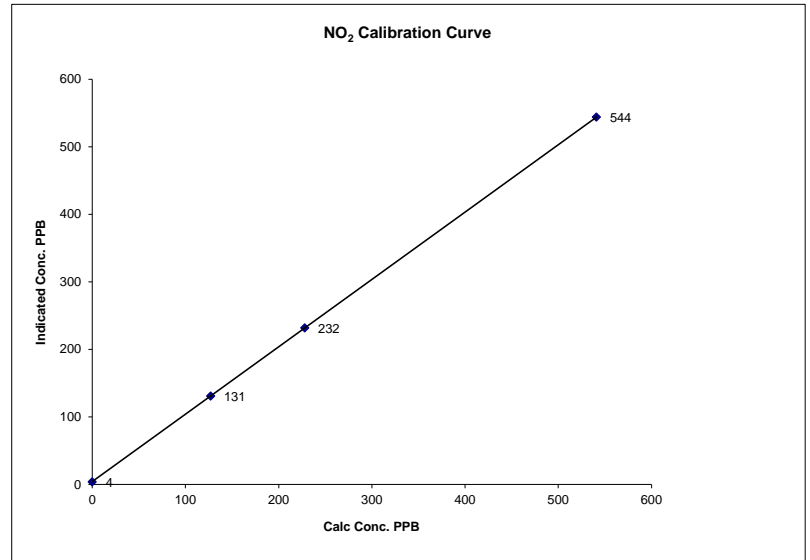
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu

NO2 Calibration Curve

Calibration Date	October 12, 2012
Company	LICA
Plant / Location	Maskwa
Start Time (MST)	12:15
End Time (MST)	17:27

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999999
0	4	N/A	Intercept	(± 3% F.S.)	0.998020
127	131	0.9695			4.19355
228	232	0.9828			
541	544	0.9945			

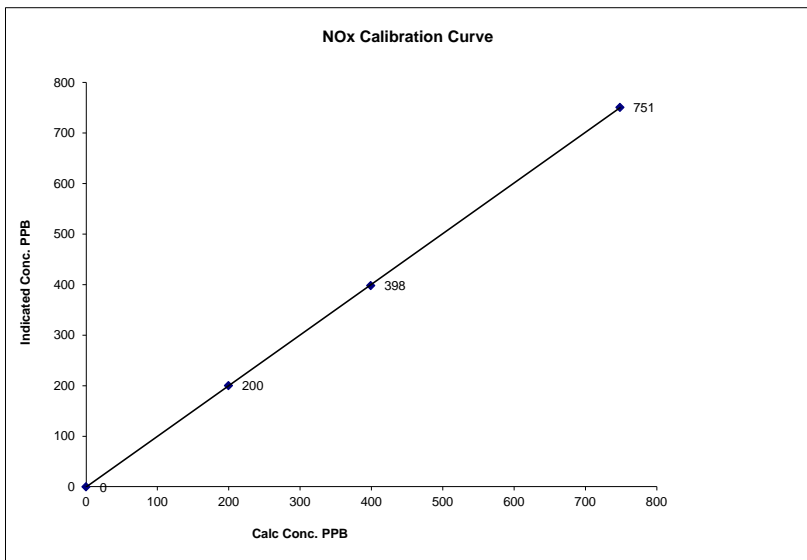


Notes:

NOx Calibration Curve

Calibration Date	October 12, 2012		
Company	LICA		
Plant / Location	Maskwa		
Start Time (MST)	12:15	End Time (MST)	17:27

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999987
0	0	N/A	Slope (0.85 to 1.15)	1.003060
200	200	0.9982	Intercept (± 3% F.S.)	-0.56636
399	398	1.0026		
748	751	0.9966		

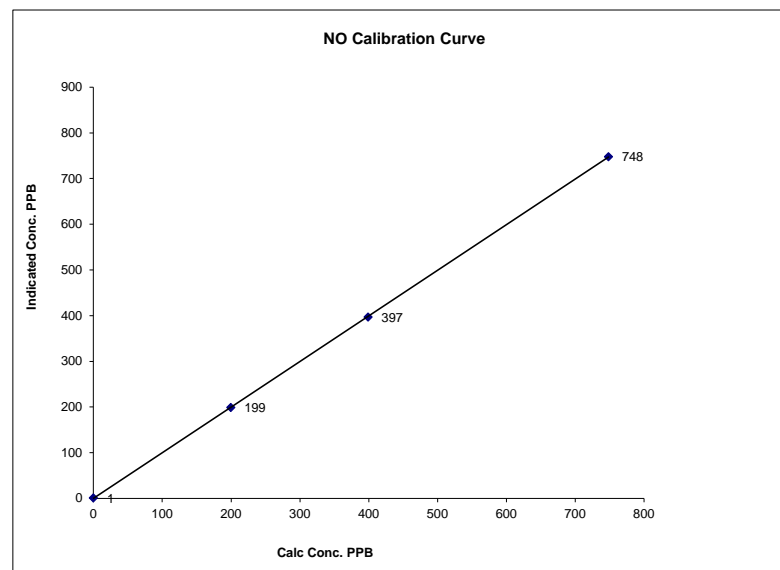


Notes:

NO Calibration Curve

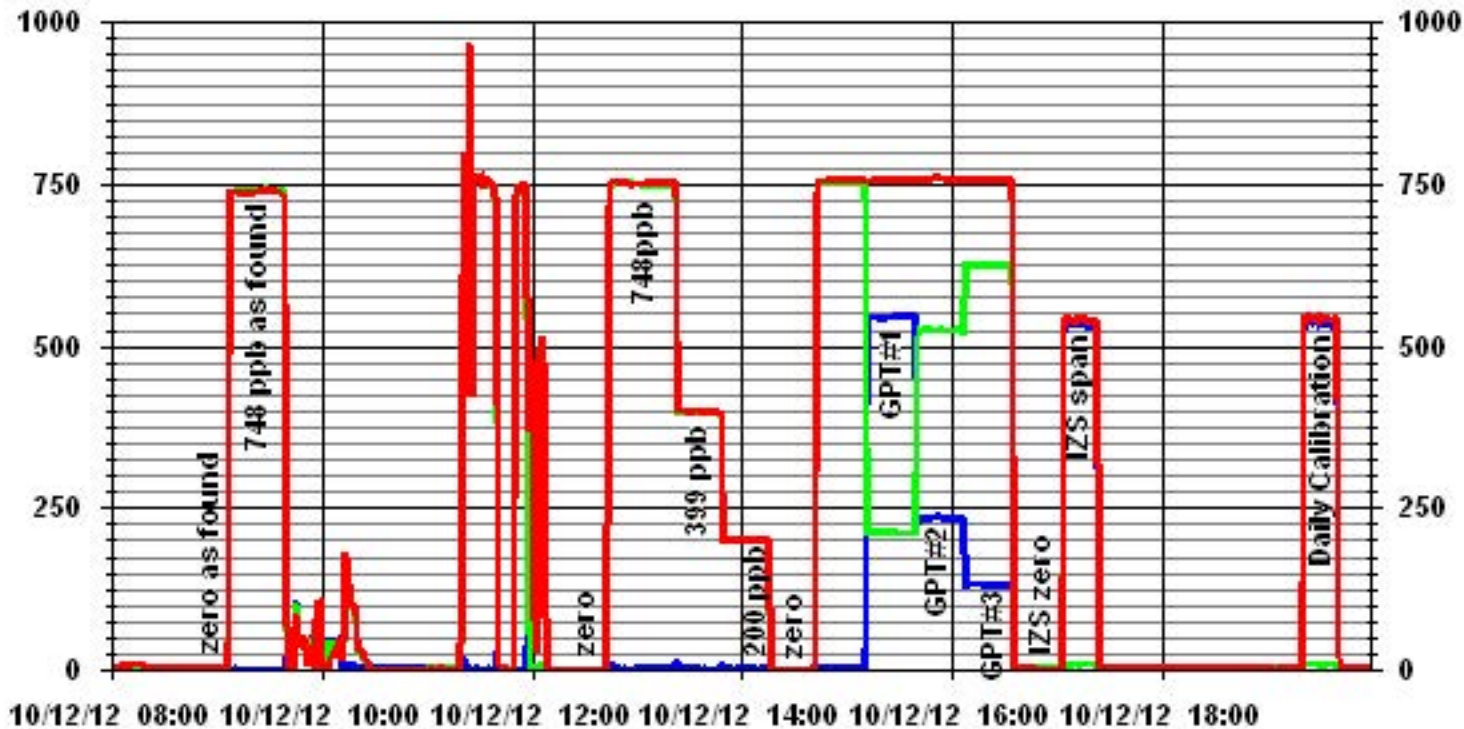
Calibration Date	October 12, 2012		
Company	LICA		
Plant / Location	Maskwa		
Start Time (MST)	12:15	End Time (MST)	17:27

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999988
0	1	N/A	Slope (0.85 to 1.15)	1.000828
200	199	1.0032	Intercept (± 3% F.S.)	-3.8803
399	397	1.0052		
748	748	1.0006		



Notes:

01 Minute Averages



Lakeland Industry & Community Association

Portable / Elk Point Airport Monitoring Site

Ambient Air Monitoring Data Report

For

October 2012

Prepared By:



November 30, 2012

Lakeland Industry & Community Association Portable / Elk Point Airport Ambient Air Monitoring

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Polycyclic Aromatic Hydrocarbons Data Summary	7	• Hydrogen Sulphid	98
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Continuous Monitoring	12	• Particulate Matter 2.5	11%
• Monthly Summaries, Graphs & Wind Roses	13	• Nitrogen Dioxide	11'
○ Sulphur Dioxide	14	• Ozone	11+
○ Hydrogen Sulphide	22	Volatile Organics Laboratory Analysis	1&&
○ Particulate Matter 2.5	30	Polycyclic Aromatic Hydrocarbons Laboratory Analysis	1, ,
○ Nitrogen Dioxide	35		
○ Nitric Oxide	43		
○ Oxides of Nitrogen	50		
○ Ozone	58		
○ Total Hydrocarbons	66		
○ Vector Wind Speed	74		
○ Vector Wind Direction	81		
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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: Portable / Elk Point Airport
Data Period: October 2012

The monthly ambient data report:

- Prepared by Maram Ghaleb
- Reviewed by Lily Lin

The 6-days 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
 – PORTABLE –
 - ELK POINT AIRPORT -

Continuous Ambient Monitoring – October 2012

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION PORTABEL / ELK POINT AIRPORT SITE						MAXIMUM VALUES							OPERATIONAL TIME (PERCENT)
											1-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 ₂ (PPB)	172	48	0	0	0.08	2	1	10	19.2	124(ESE)	0.7	1	100.0
H ₂ S (PPB)	10	3	0	0	0.08	2	16	VAR	VAR	VAR	0.7	16	100.0
THC (PPM)	-	-	-	-	2.77	12.8	22	23	5.3	291(WNW)	4.5	27	96.8
NO ₂ (PPB)	159	-	0	-	4.23	23	11	6	1.4	281(W)	8.7	27	100.0
NO (PPB)	-	-	-	-	1.94	65	22	23	5.3	291(WNW)	9.8	4	100.0
NO _x (PPB)	-	-	-	-	6.16	82	22	23	5.3	291(WNW)	16.2	4	100.0
O ₃ (PPB)	82	-	0	-	18.60	40	1	17,18	17.5, 21.1	268(W), 232(SW)	27.9	8	99.6
PM 2.5 (UG/M ³)	-	30	-	0	4.54	20	7	13	27.2	320(NW)	8.5	13	100.0
VECTOR WS (KPH)	-	-	-	-	13.39	38.4	17	3	-	302(WNW)	28.6	17	100.0
VECTOR WD (DEGREES)	-	-	-	-	310(NW)	-	-	-	-	-	-	-	100.0

VAR-VARIOUS

Volatile Organics Data Summary
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
- PORTABLE – Elk Point Airport Site

Xontech Model 910A – October 06, 2012

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

Xontech Model 910A – October 12, 2012

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

Xontech Model 910A – October 18, 2012

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

Xontech Model 910A – October 24, 2012

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

Xontech Model 910A – October 30, 2012

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

Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

- PORTABLE – Elk Point Airport Site

PUF cartridge – October 06, 2012

Maximum reading (ng/m3)	Semi-Volatile Organic
<6.055	3-Methylcholanthrene

PUF cartridge – October 12, 2012

Maximum reading (ng/m3)	Semi-Volatile Organic
<6.055	3-Methylcholanthrene

PUF cartridge – October 18, 2012

Maximum reading (ng/m3)	Semi-Volatile Organic
<6.055	3-Methylcholanthrene

PUF cartridge – October 24, 2012

Maximum reading (ng/m3)	Semi-Volatile Organic
<6.055	3-Methylcholanthrene

PUF cartridge – October 30, 2012

Maximum reading (ng/m3)	Semi-Volatile Organic
<6.055	3-Methylcholanthrene

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 – PORTABLE

Sulphur Dioxide (PPB)

- Analyzer make / model – API 100E, S/N: 467

The analyzer was working well throughout the month. The monthly calibration was performed on October 16th. The inlet filter was replaced before the monthly calibration was started. The span went below –10% of the accepted range limit on October 25th. An as found points check was performed on October 29th to verify functionality of the analyzer, it was concluded that the analyzer was functioning well and the data was kept. Data was corrected using daily zero information.

Hydrogen Sulphide (PPB)

- Analyzer make / model –API 101E, S/N: 509
- Converter - Internal

The analyzer was working well throughout the month. Following the as found points on October 16th, the exhaust pump rebuilt. Then a post-repair calibration was performed. Another calibration took place on October 29th to verify the analyzer functionality. The analyzer was functioning well. Data was corrected using daily zero information.

General Monthly Summary

AQM STATION – LICA – PORTABLE

THC (PPM)

- Analyzer make / model – TECO 51C, S/N: 04366-09739 replaced to Thermo 51C, S/N: 77021-384

The analyzer was working well throughout the month. On October 17th a removal calibration was performed and another analyzer was installed as per client's request. The new analyzer was left overnight to stabilize and the channel was put into maintenance mode until hour 13:00 on October 18th. The installation calibration was performed on October 19th. As a result of the removal and installation of the new analyzer there was a total of 24 hours of downtime. Data was corrected using daily zero information.

Nitrogen Dioxide (PPB)

- Analyzer make / model – API 200E, S/N: 593

The analyzer was working well throughout the month. The monthly calibration was performed on October 16th. The inlet filter was replaced before the monthly calibration was started. Data was corrected using daily zero information.

General Monthly Summary

AQM STATION – LICA – PORTABLE

Ozone (PPB)

- Analyzer make / model –Thermo 49i, S/N: 1002240372

The analyzer spanned high on October 3rd. An as found points check was performed on October 3rd to verify the functionality of the analyzer. The analyzer was functioning well. The pump for the daily calibration system was rebuilt following the as found points check. A daily calibration was run after. The monthly calibration was performed on October 16th and the inlet filter was replaced before the calibration was started. Data was corrected using daily zero information.

Particulate Matter 2.5 (ug/m³)

- Analyzer make / model –TEOM 1405F, S/N: 1405A207691003 replaced to TEOM 1400a, S/N: 30002

Two routine Teom audits were performed on October 16th and October 25th. A leak check was performed and the teom filter was replaced. Data was corrected using Alberta air quality guideline for PM2.5 analyzer. If the data was between 0 to –3, the data was corrected to 0. If the data was below –3, the data was invalidated. No data was invalidated this month.

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

- System make / model –RM Young 5103VK, S/N: 43708

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

No operational issues were observed during the month.

The most recent wind system calibration was done on May 15th, 2012.

General Monthly Summary

AQM STATION – LICA – PORTABLE

Datalogger

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

The manifold was cleaned on October 17th.

Air Quality Index (AQI)

No AQI report is included in this report, as the AQI value is no longer used by Alberta Environment.

Volatile Organics (VOCs)

The volatile organics were sampled from October 1st to October 31st. 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 from October 1st to October 31st. 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

Sulphur Dioxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

OCTOBER 2012

SULPHUR DIOXIDE (SO₂) hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR			
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.		
DAY																													
1	0	IZS	0	0	0	0	0	0	0	0	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0.7	24		
2	IZS	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		
3	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		
4	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		
5	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	0.1	24		
6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	IZS	0	0	0	0	1	0.0	24		
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	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	IZS	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	IZS	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	IZS	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	IZS	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	IZS	0	1	1	1	1	1	0	1	0	0	0	1	0.3	24		
14	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	1	0	1	1	1	1	1	1	1	1	1	0.4	24		
15	1	1	1	1	1	1	0	0	1	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24	
16	0	0	1	1	1	1	1	1	1	IZS	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	1	0.4	24	
17	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	
18	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	
19	0	0	0	0	1	1	IZS	0	0	0	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	IZS	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	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	
22	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	
23	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	
24	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	
25	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	0.0	24	
26	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	IZS	0	1	0.1	24
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	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	IZS	0	0	0	0	0	0.0	24	
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0.0	24	
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0.0	24	
HOURLY MAX	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
HOURLY AVG	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				

STATUS FLAG CODES

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

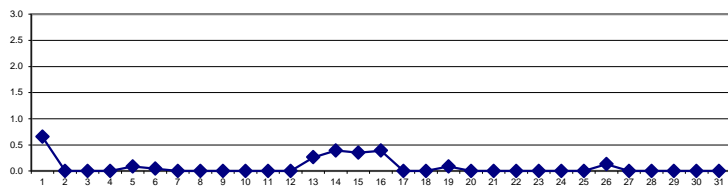
OBJECTIVE LIMIT:

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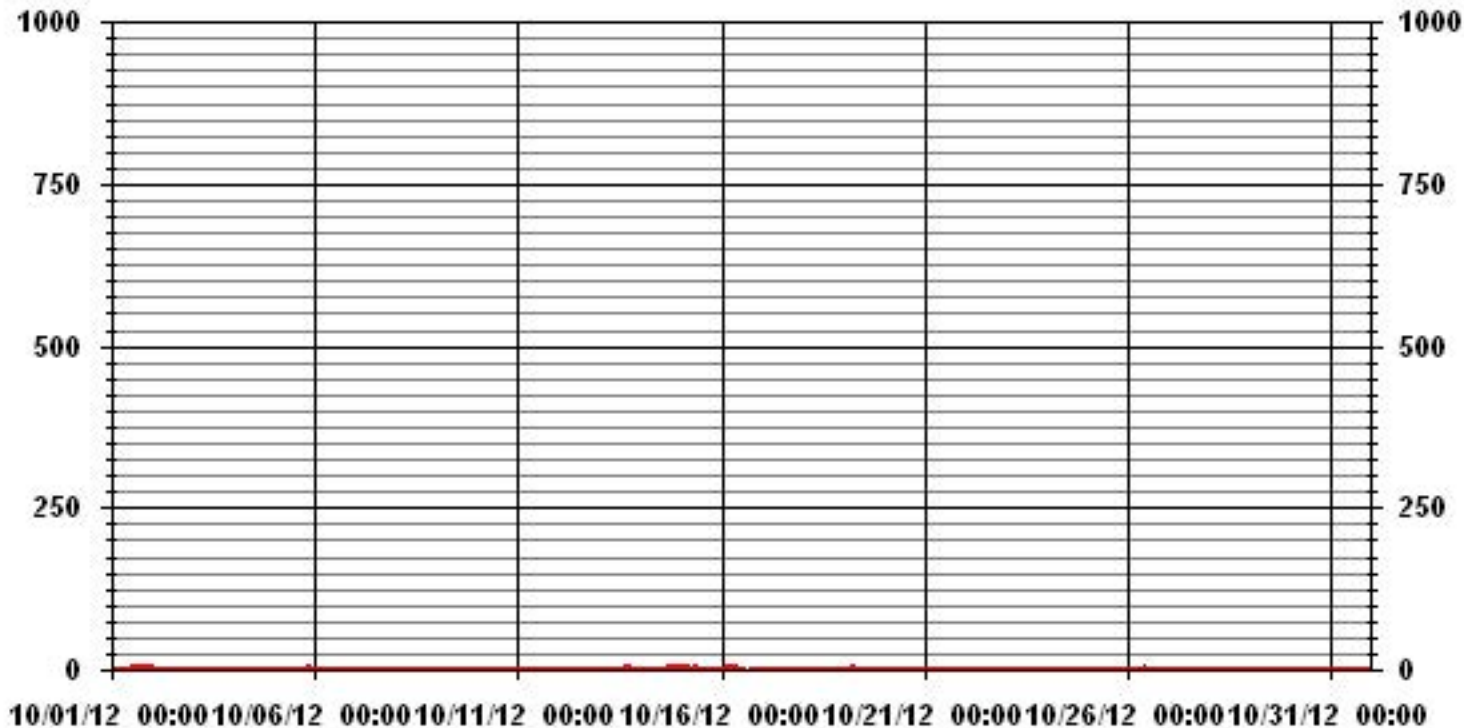
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	52
MAXIMUM 1-HR AVERAGE:	2 PPB @ HOUR(S) 10 ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	0.7 PPB ON DAY(S) 1
IZS CALIBRATION TIME:	33 HRS
OPERATIONAL TIME:	744 HRS
MONTHLY CALIBRATION TIME:	5 HRS
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0.27
MONTHLY AVERAGE:	0.08 PPB

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



— LICA35 SO2_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.			
DAY																													
1	1	IZS	1	1	1	1	1	1	1	1	3	3	2	2	2	3	2	2	2	2	2	2	2	2	2	3	1.7	24	
2	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	23	
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	IZS	1	1	0.0	24
4	1	2	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	0	0	2	1.0	24
5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	IZS	2	2	1	2	0.3	24	
6	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	IZS	0	0	0	0	2	0.9	24	
7	0	2	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	IZS	0	1	0	1	0	2	0.7	24		
8	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	
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	1	1	1	1	1	0	1	0.2	24		
10	0	0	0	0	0	0	1	1	0	1	1	0	0	1	0	IZS	2	1	1	0	0	0	1	1	2	0.5	24		
11	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	IZS	0	0	3	1	1	0	1	1	1	3	0.9	24	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	0	0	0	0	0	0	0	0	0	0	1	0.6	24	
13	0	0	0	1	1	1	1	0	0	0	0	0	0	IZS	2	2	2	2	2	2	2	1	3	1	1	3	1.0	24	
14	1	1	1	1	1	1	1	1	1	1	1	1	IZS	1	1	2	2	2	2	2	2	2	2	2	2	2	1.4	24	
15	2	2	2	2	2	2	1	2	3	IZS	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	3	1.3	24	
16	1	1	2	2	2	2	2	2	2	IZS	1	1	1	C	C	C	C	C	C	1	1	1	1	1	1	2	1.4	24	
17	1	1	3	1	1	1	0	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.4	24	
18	0	0	0	0	0	0	0	IZS	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
19	1	2	2	2	2	2	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2	24	
20	1	1	1	2	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24	
21	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	
22	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	3	0.2	24	
23	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	
24	0	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	0.9	24	
25	IZS	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	23	
26	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	IZS	0	2	1.3	24
27	0	0	0	1	1	0	0	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	IZS	1	1	1	0.7	24
28	2	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	2	1	1	1	1	IZS	0	0	2	1.0	24	
29	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	IZS	0	0	0	0	1	0.1	24	
30	0	0	1	0	1	0	1	1	0	1	0	0	0	0	1	0	0	0	0	IZS	1	1	1	1	1	1	0.5	24	
31	1	1	1	1	1	1	0	0	0	1	1	1	1	0	1	1	1	1	IZS	1	1	1	1	1	1	1	0.8	24	
HOURLY MAX	2	2	3	2	2	2	2	2	2	3	3	3	2	2	2	3	2	3	2	2	3	2	2	2	2	2			
HOURLY AVG	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.8	0.8	0.7	0.7	0.6	0.7	0.7				

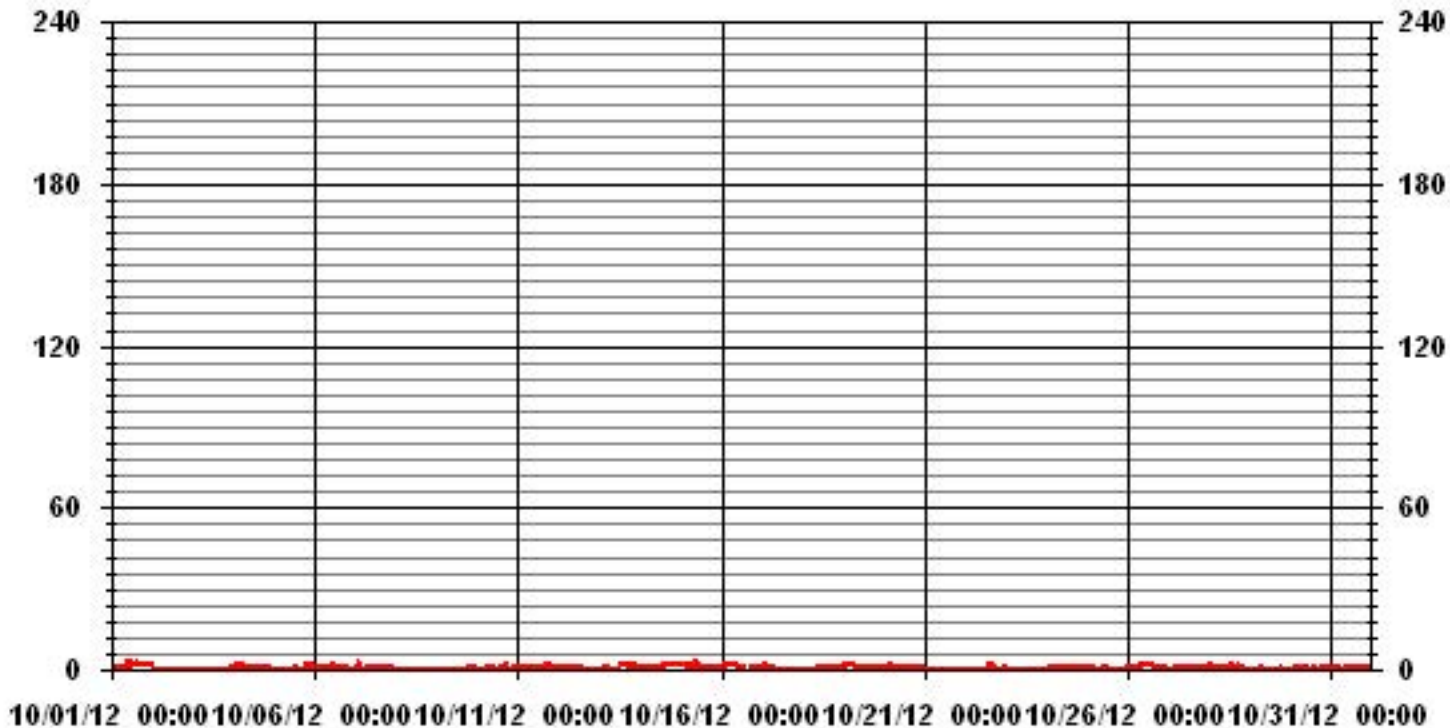
STATUS FLAG CODES

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:	395
MAXIMUM INSTANTANEOUS VALUE:	3 PPB @ HOUR(S) VAR ON DAY(S) VAR
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	0.69
OPERATIONAL TIME:	742 HRS

01 Hour Averages



LICA-ELK
 SO2_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : SO2_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	2.40	1.13	.84	2.12	4.53	11.89	7.79	2.69	2.69	2.12	2.69	6.37	9.77	10.33	19.12	13.45	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.40	1.13	.84	2.12	4.53	11.89	7.79	2.69	2.69	2.12	2.69	6.37	9.77	10.33	19.12	13.45	

Calm : .00 %

Total # Operational Hours : 706

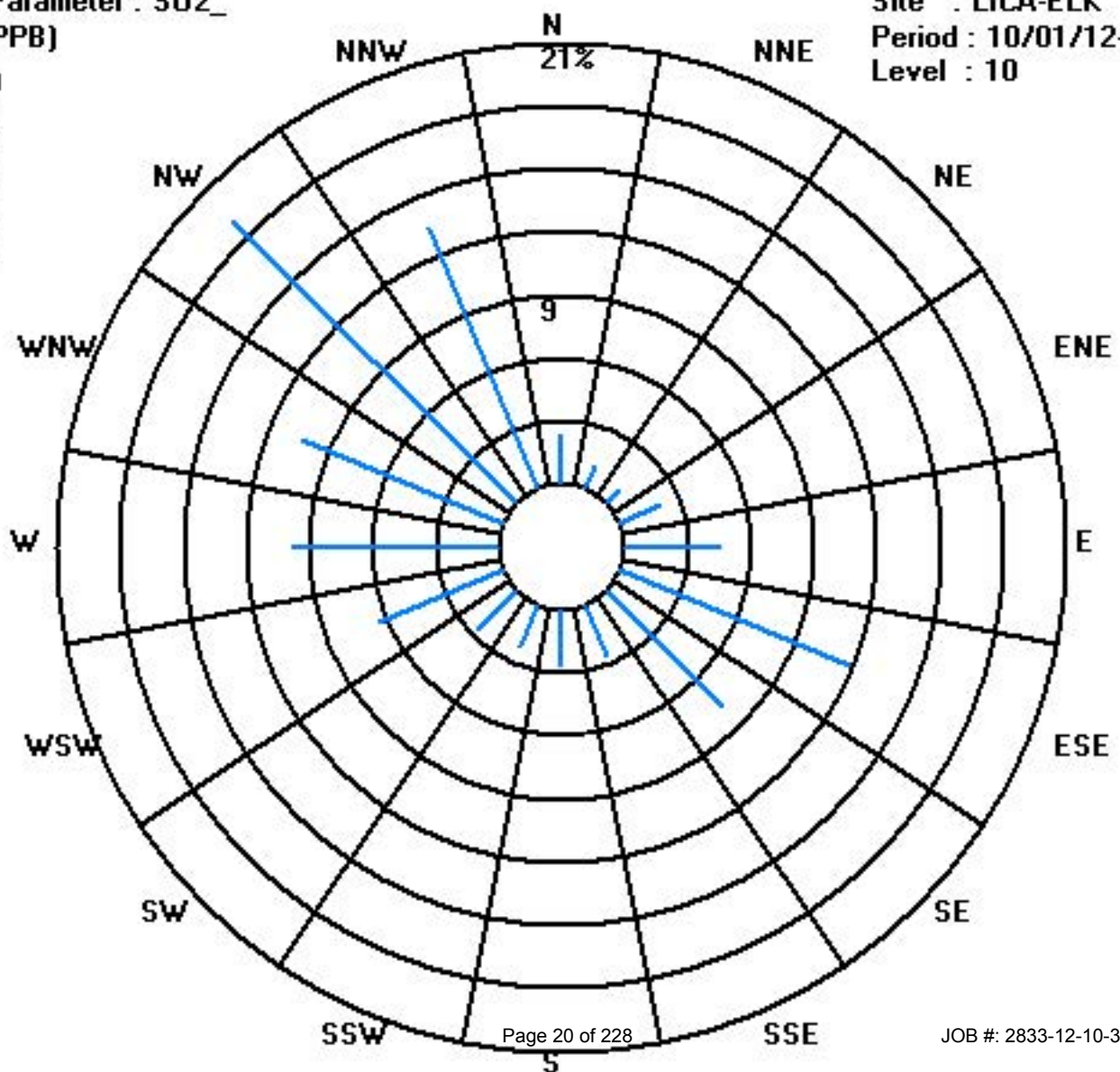
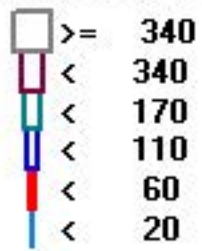
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	17	8	6	15	32	84	55	19	19	15	19	45	69	73	135	95	706
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	17	8	6	15	32	84	55	19	19	15	19	45	69	73	135	95	

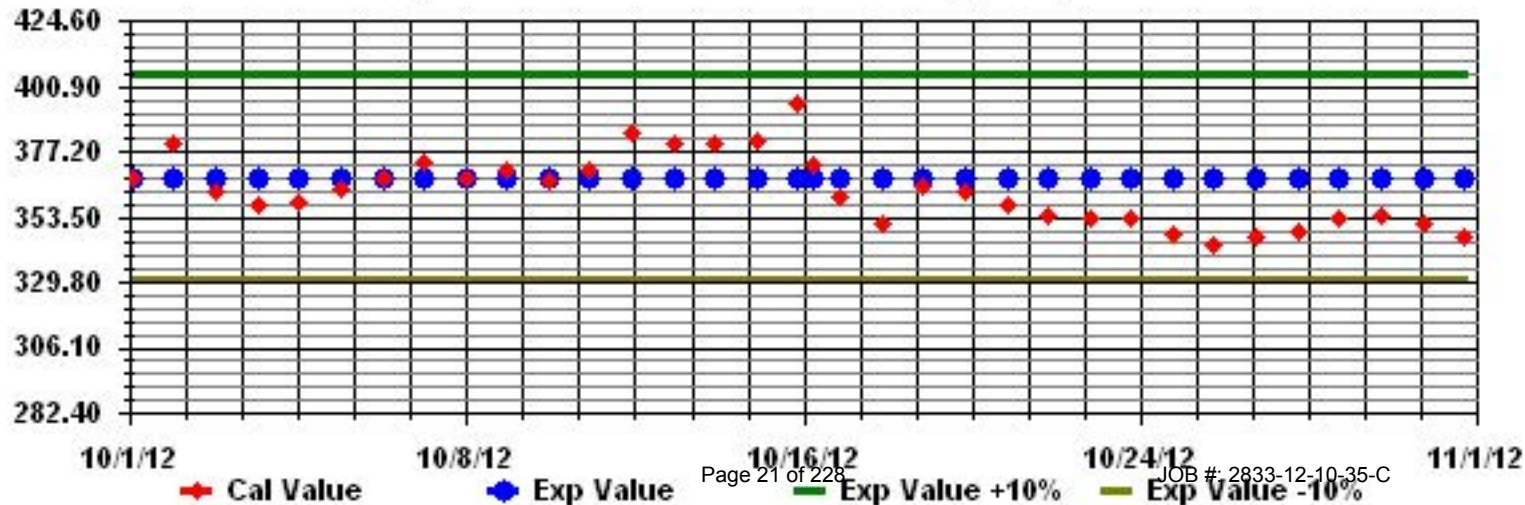
Calm : .00 %

Total # Operational Hours : 706

Class Limits (PPB)



Calibration Graph for Site: LICA35 Parameter: S02_ Sequence: S02 Phase: SPAN



Hydrogen Sulphide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE - Elk Point Airport

OCTOBER 2012

HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

DAY	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	0	IZS	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	0.6	24	
2	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
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
12	0	1	1	1	1	1	1	1	1	1	1	1	1	IZS	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	1	0.0	24
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	1	0.3	24
16	1	1	1	1	2	2	2	2	2	IZS	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	2	0.7	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
19	1	0	0	1	0	1	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
20	0	0	0	1	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
HOURLY MAX	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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

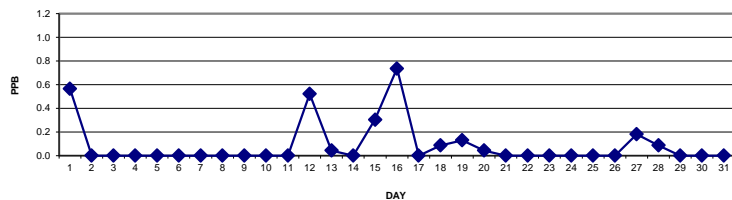
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	57	PPB
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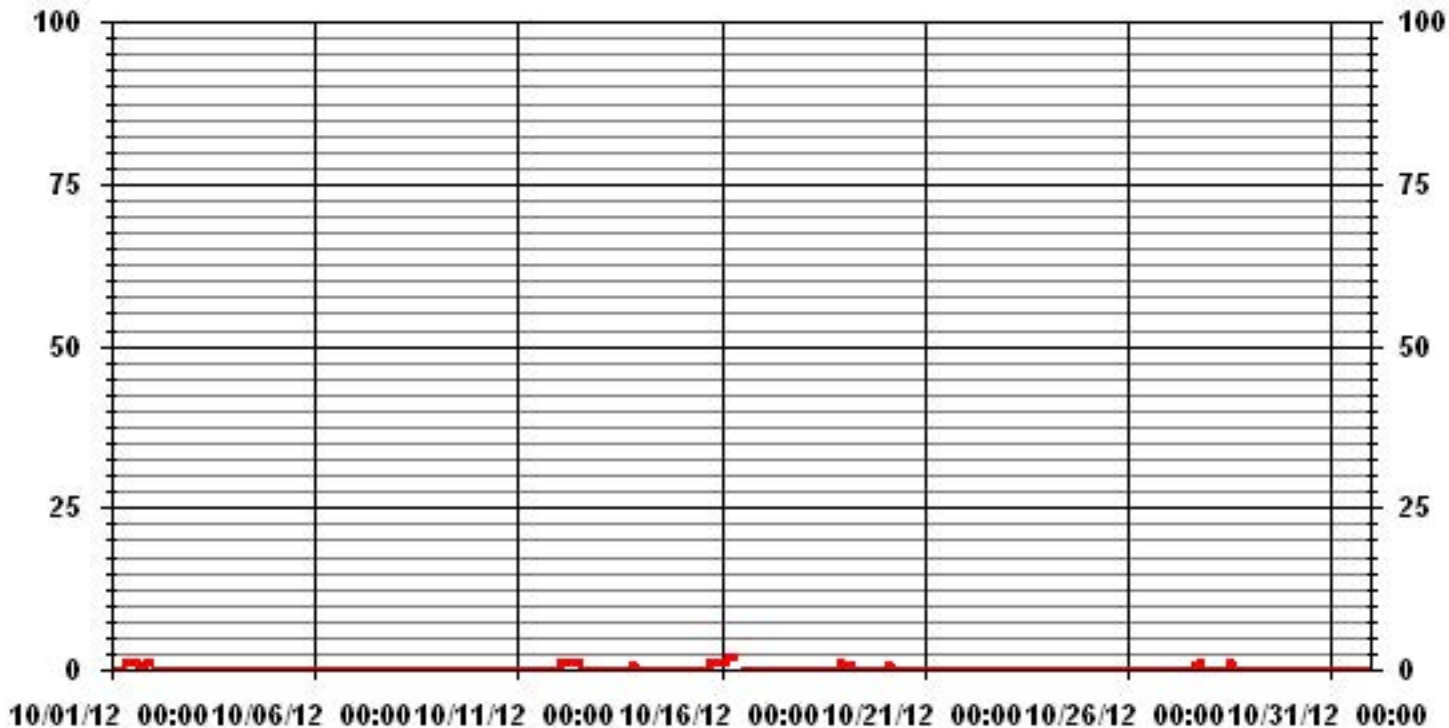
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0		
NUMBER OF 24-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	54		
MAXIMUM 1-HR AVERAGE:	2 PPB @ HOUR(S) VAR ON DAY(S) 16		
MAXIMUM 24-HR AVERAGE:	0.7 PPB VAR ON DAY(S) 16		
	VAR-VARIOUS		
IZS CALIBRATION TIME:	33 HRS	OPERATIONAL TIME:	744 HRS
MONTHLY CALIBRATION TIME:	9 HRS	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0.30	MONTHLY AVERAGE:	0.08 PPB

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST																										DAILY 24-HOUR		
HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.	AVG.	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00				
DAY																												
1	0	IZS	0	0	0	0	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0.9	24	
2	IZS	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	3	0.1	24	
3	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	
4	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	
5	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	
6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	IZS	0	0	0	0	0	1	0.2	24	
7	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	
8	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	
9	0	0	0	1	0	0	1	1	2	0	1	0	0	0	0	IZS	0	1	1	4	1	1	1	4	0.7	24		
10	1	1	1	1	1	0	1	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	1	0.3	24	
11	0	0	0	0	0	0	1	1	0	0	0	0	0	0	IZS	0	0	0	1	1	1	1	1	1	1	0.3	24	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	0	0	0	0	0	0	0	0	0	0	1	0.6	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	1	0	1	1	1	1	2	0	0	0	2	0.3	24	
14	0	0	0	0	0	0	0	1	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
15	0	0	0	0	0	0	0	0	0	0	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.6	24	
16	1	2	2	2	2	2	2	2	2	IZS	C	C	C	C	1	1	1	0	0	0	0	0	0	0	2	1.1	24	
17	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	
18	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0.1	24	
19	1	1	1	2	1	1	IZS	0	0	0	0	M	M	1	1	1	0	1	0	0	0	0	0	1	2	0.6	22	
20	1	1	1	1	1	1	IZS	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0.5	24
21	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	
22	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0	24
23	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
24	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
25	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	IZS	1	0.0	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	IZS	0	2	0.1	24	
27	0	0	0	0	0	0	0	0	0	0	0	0	C	1	1	1	1	1	1	1	1	1	IZS	0	0	1	0.4	24
28	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	IZS	0	0	0	1	0.4	24
29	0	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	IZS	0	0	0	0	0	0.0	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0.0	24
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	IZS	1	1	0	0	0	0	1	0.1	24		
HOURLY MAX	1	2	2	2	2	2	2	3	2	1	1	1	1	1	1	1	1	1	2	1	4	1	1	1				
HOURLY AVG	0.2	0.2	0.2	0.3	0.2	0.1	0.3	0.4	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.4	0.2	0.2	0.2				

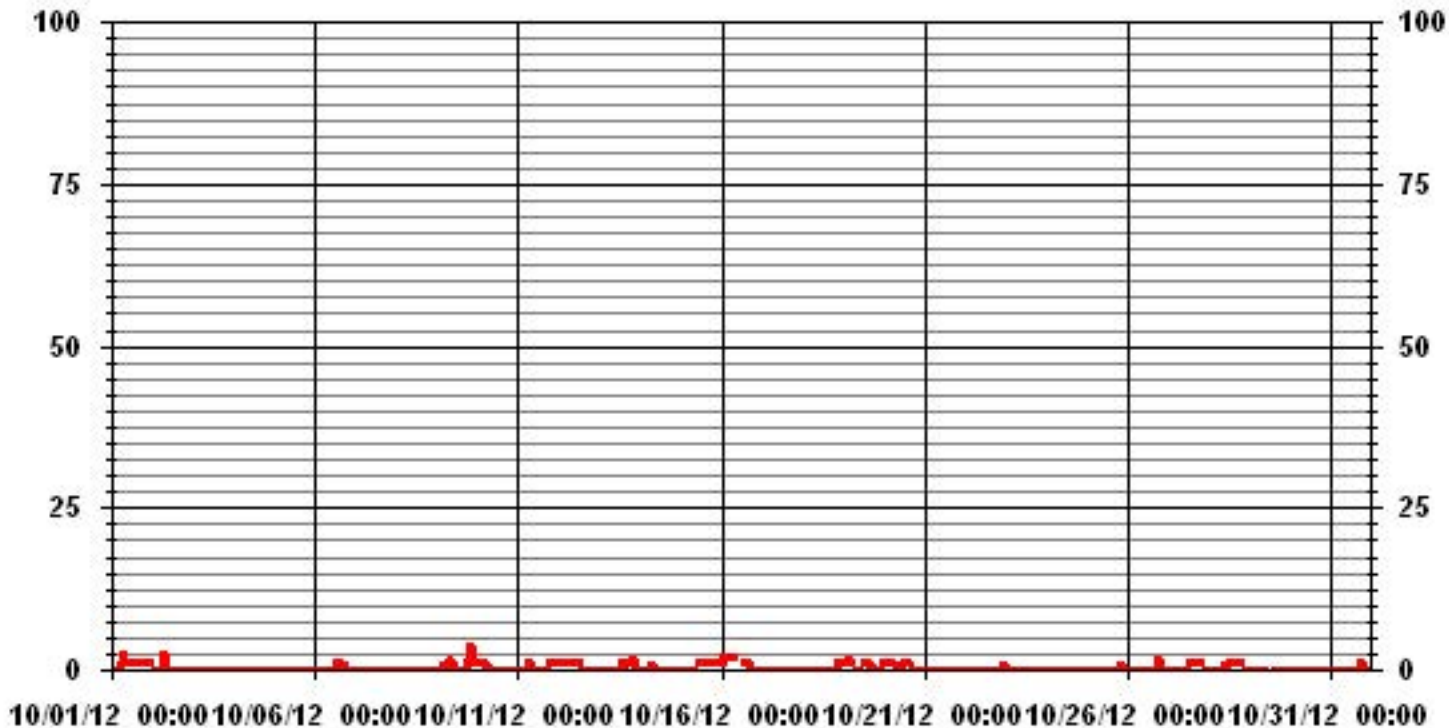
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	145					
MAXIMUM INSTANTANEOUS VALUE:	4	PPB	@ HOUR(S)	20	ON DAY(S)	9
VAR - VARIOUS						
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	742 HRS		
MONTHLY CALIBRATION TIME:	10 HRS					
STANDARD DEVIATION:	0.50					

01 Hour Averages



LICA-ELK
H2S_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : H2S_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																	
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 3	2.42	1.13	.85	2.13	4.55	11.39	7.83	2.70	2.56	2.13	2.70	6.41	9.68	10.39	19.51	13.53	100.00	
< 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	2.42	1.13	.85	2.13	4.55	11.39	7.83	2.70	2.56	2.13	2.70	6.41	9.68	10.39	19.51	13.53		

Calm : .00 %

Total # Operational Hours : 702

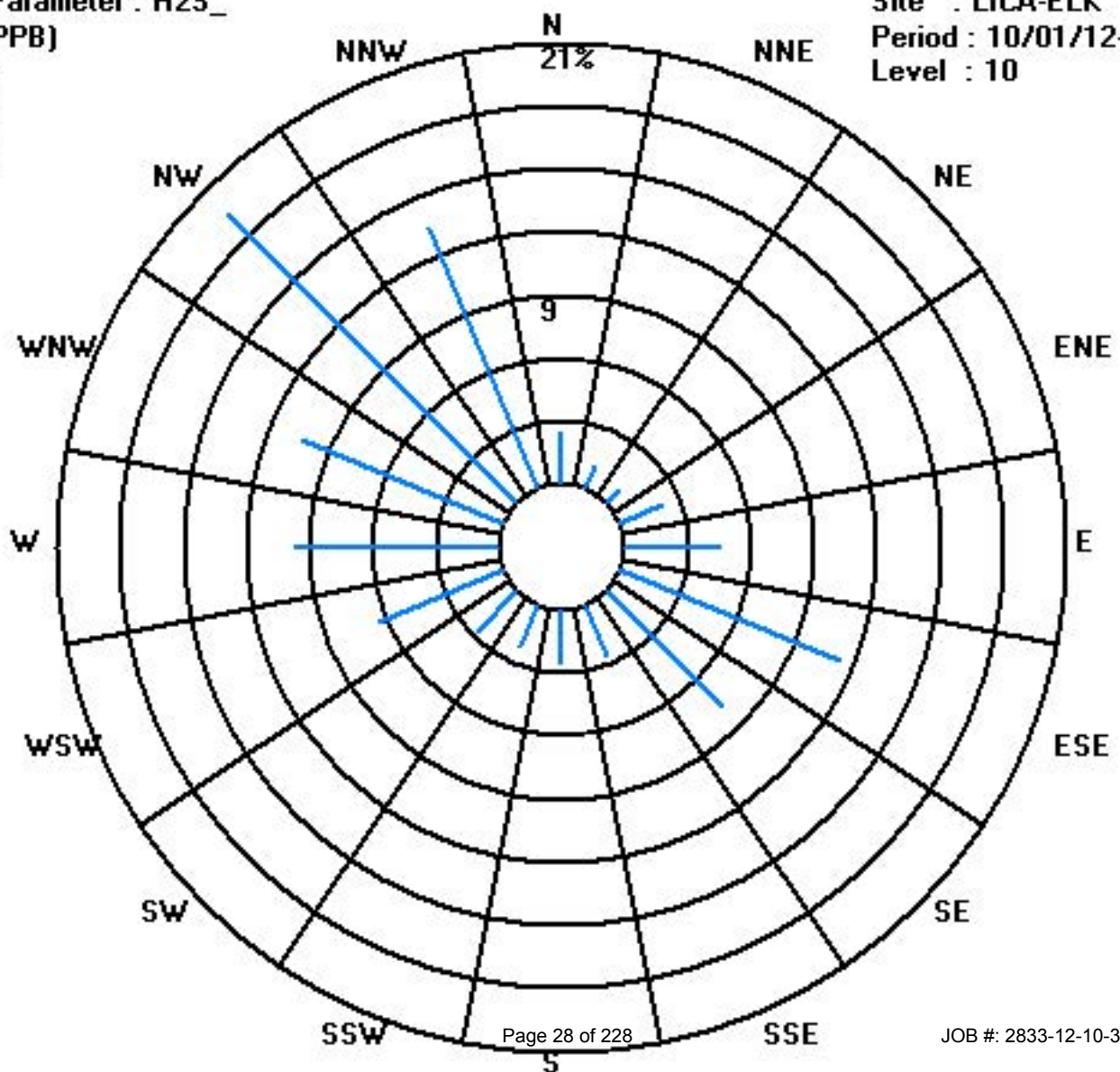
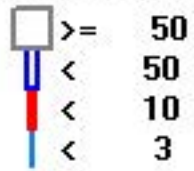
Distribution By Samples

	Direction																	
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 3	17	8	6	15	32	80	55	19	18	15	19	45	68	73	137	95	702	
< 10																		
< 50																		
>= 50																		
Totals	17	8	6	15	32	80	55	19	18	15	19	45	68	73	137	95		

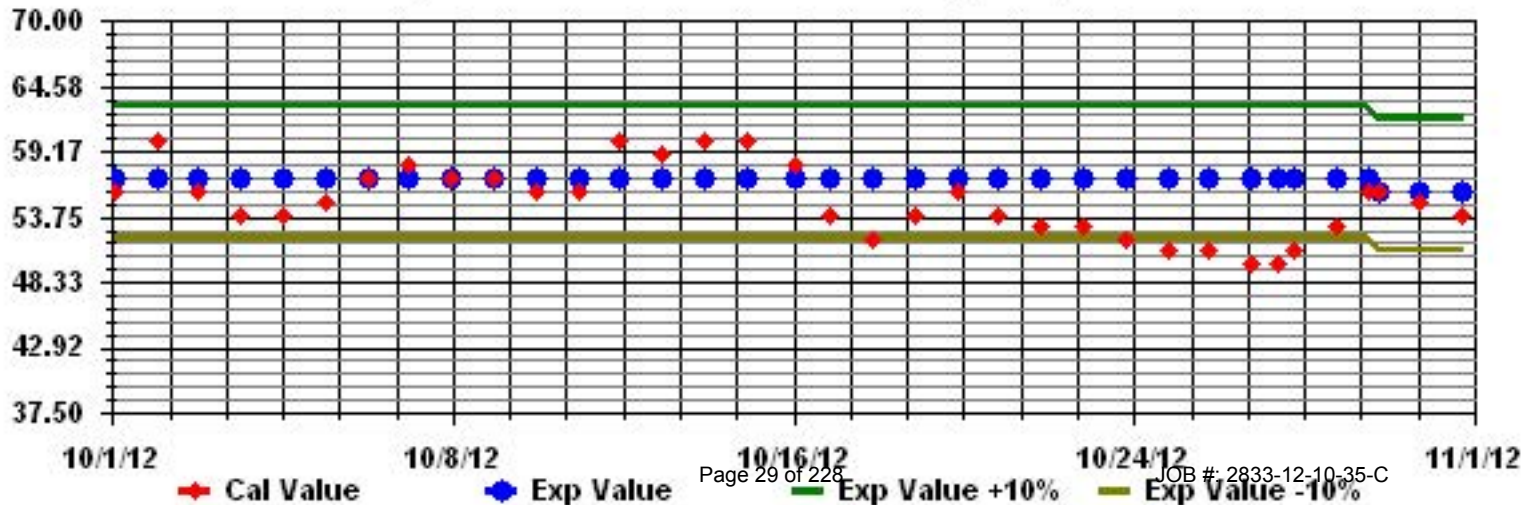
Calm : .00 %

Total # Operational Hours : 702

Class Limits (PPB)



Calibration Graph for Site: LICA35 Parameter: H2S_ Sequence: H2S Phase: SPAll



Particulate Matter 2.5

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

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

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
DAY	HR START	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
1	7	5	6	5	5	5	9	6	6	7	8	8	5	4	17	4	8	2	1	4	2	4	0	2	17	5.4	24	
2	4	4	4	0	2	1	2	7	14	14	13	14	16	13	11	11	8	8	7	6	4	4	4	3	16	7.3	24	
3	3	3	4	4	4	5	4	4	4	3	5	3	4	2	4	3	3	4	3	4	2	0	1	0	5	3.2	24	
4	3	0	1	1	2	2	4	4	6	5	6	5	0	1	3	4	4	3	3	4	2	2	1	1	6	2.8	24	
5	2	4	3	3	3	2	2	3	5	5	6	6	10	4	1	0	4	4	4	4	6	6	7	6	10	4.2	24	
6	6	6	6	6	5	6	7	9	8	8	7	7	5	4	5	5	5	4	5	7	6	4	5	5	9	5.9	24	
7	4	6	3	5	4	6	5	6	10	14	12	14	16	20	15	13	10	10	12	6	3	4	0	1	20	8.3	24	
8	0	0	3	1	1	2	3	3	4	3	6	4	0	0	1	2	3	4	3	4	3	2	2	3	6	2.4	24	
9	1	2	2	4	2	3	3	4	5	5	3	2	3	4	4	7	8	8	8	9	11	11	11	9	11	5.4	24	
10	8	5	5	4	3	4	4	6	3	4	5	3	2	3	4	5	0	3	3	2	2	1	1	1	8	3.4	24	
11	3	2	3	2	3	1	6	8	6	2	1	1	2	2	1	2	2	2	3	3	3	3	4	3	3	8	2.8	24
12	3	4	3	4	4	4	3	4	4	4	4	7	7	7	7	4	8	10	5	5	5	5	5	4	10	5.0	24	
13	4	5	6	8	11	9	10	8	8	10	12	12	11	11	11	12	9	7	8	7	13	8	2	2	13	8.5	24	
14	2	1	3	1	1	3	4	5	8	4	6	3	1	0	0	4	5	3	5	4	5	5	4	6	8	3.5	24	
15	5	6	7	6	3	6	5	5	8	6	0	0	0	1	2	2	1	3	3	1	1	5	4	3	8	3.5	24	
16	2	1	1	3	3	3	4	5	6	6	7	6	6	C	C	C	4	5	5	3	4	3	4	5	7	4.1	24	
17	5	5	5	6	5	6	6	6	5	5	4	4	4	4	5	4	5	5	4	3	3	3	3	3	6	4.5	24	
18	2	3	3	2	3	3	4	5	3	4	4	2	2	3	2	2	4	3	4	4	5	4	3	4	5	3.3	24	
19	3	2	1	2	1	3	2	3	3	4	5	5	4	5	7	7	6	8	8	7	7	6	5	6	8	4.6	24	
20	6	6	5	8	9	7	5	5	6	5	4	4	5	6	6	5	4	3	4	3	4	4	3	4	3	9	5.1	24
21	3	3	3	3	3	3	3	3	4	3	4	4	3	3	3	3	3	4	3	4	4	4	4	4	3	4	3.3	24
22	3	4	4	3	4	4	5	4	5	4	3	3	3	4	3	4	5	5	4	3	4	5	5	5	5	5	4.0	24
23	5	4	4	4	5	4	3	3	3	4	4	3	3	3	3	4	4	3	3	3	3	3	3	3	5	3.5	24	
24	3	4	4	4	4	4	4	4	4	4	4	4	5	4	4	5	4	4	4	4	4	4	4	4	5	5	4.1	24
25	6	5	4	4	5	4	4	5	4	4	C	C	1	1	2	2	3	3	3	2	2	2	2	2	6	3.2	24	
26	2	2	3	2	2	2	2	2	3	3	3	3	2	2	3	2	2	3	3	3	4	3	3	3	4	2.6	24	
27	3	3	3	3	4	7	6	5	4	3	4	3	3	4	7	6	5	5	4	6	5	4	5	2	7	4.3	24	
28	2	2	2	2	3	3	3	3	3	4	5	5	4	4	5	7	6	5	6	5	5	5	5	5	7	4.1	24	
29	5	5	5	4	6	6	6	5	5	6	7	8	6	6	7	8	8	7	5	6	6	7	6	5	8	6.0	24	
30	6	5	7	8	9	10	11	10	7	6	6	6	7	5	7	6	7	6	5	6	8	8	7	6	11	7.0	24	
31	7	6	5	5	5	5	5	5	5	5	6	5	4	5	5	6	5	5	6	7	7	6	5	6	7	5.5	24	
HOURLY MAX	8	6	7	8	11	10	11	10	14	14	13	14	16	20	17	13	10	10	12	9	13	11	11	9				
HOURLY AVG	3.8	3.6	3.8	3.8	4.0	4.3	4.6	5.0	5.5	5.3	5.5	5.1	4.6	4.5	5.2	5.0	5.0	4.8	4.6	4.5	4.6	4.4	3.8	3.7				

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

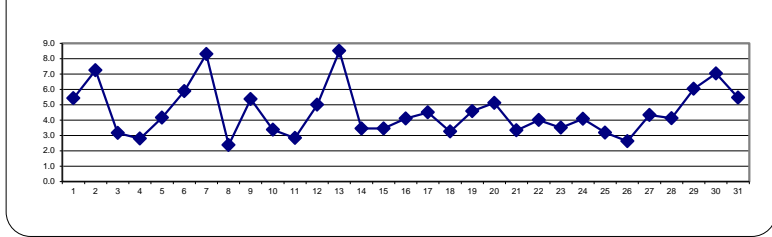
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	-	PPB	24-HR	30	PPB
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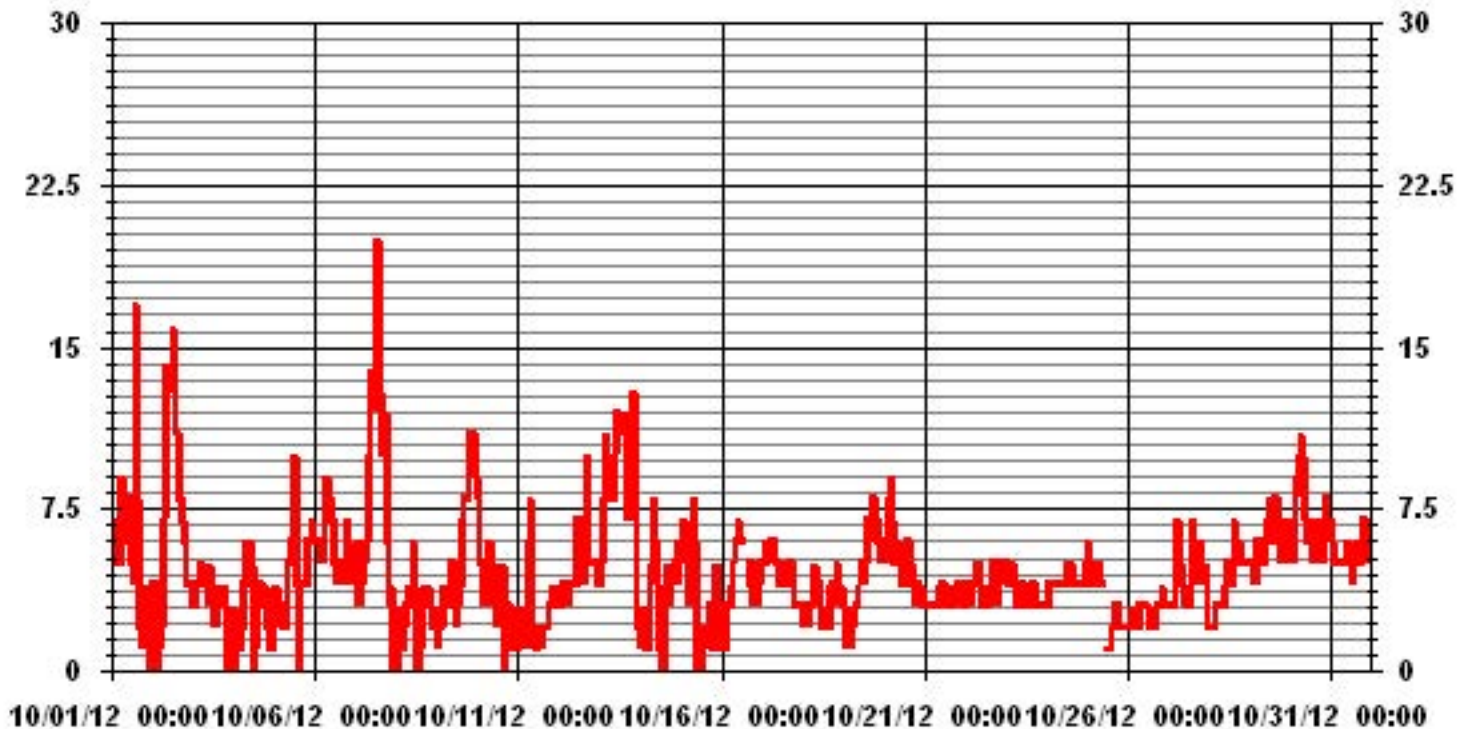
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	-		
NUMBER OF 24-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	721		
MAXIMUM 1-HR AVERAGE:	20 UG/M ³ @ HOUR(S) 13 ON DAY(S) 7		
MAXIMUM 24-HR AVERAGE:	8.5 UG/M ³ ON DAY(S) 13		
IZS CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	744 HRS
MONTHLY CALIBRATION TIME:	5 HRS	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2.61	MONTHLY AVERAGE:	4.54 UG/M ³

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LICA-ELK
 PM2 / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 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	2.30	1.35	.94	2.02	4.60	11.90	7.71	2.70	2.57	2.16	2.70	6.22	9.60	10.41	19.35	13.39	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 120	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.30	1.35	.94	2.02	4.60	11.90	7.71	2.70	2.57	2.16	2.70	6.22	9.60	10.41	19.35	13.39	

Calm : .00 %

Total # Operational Hours : 739

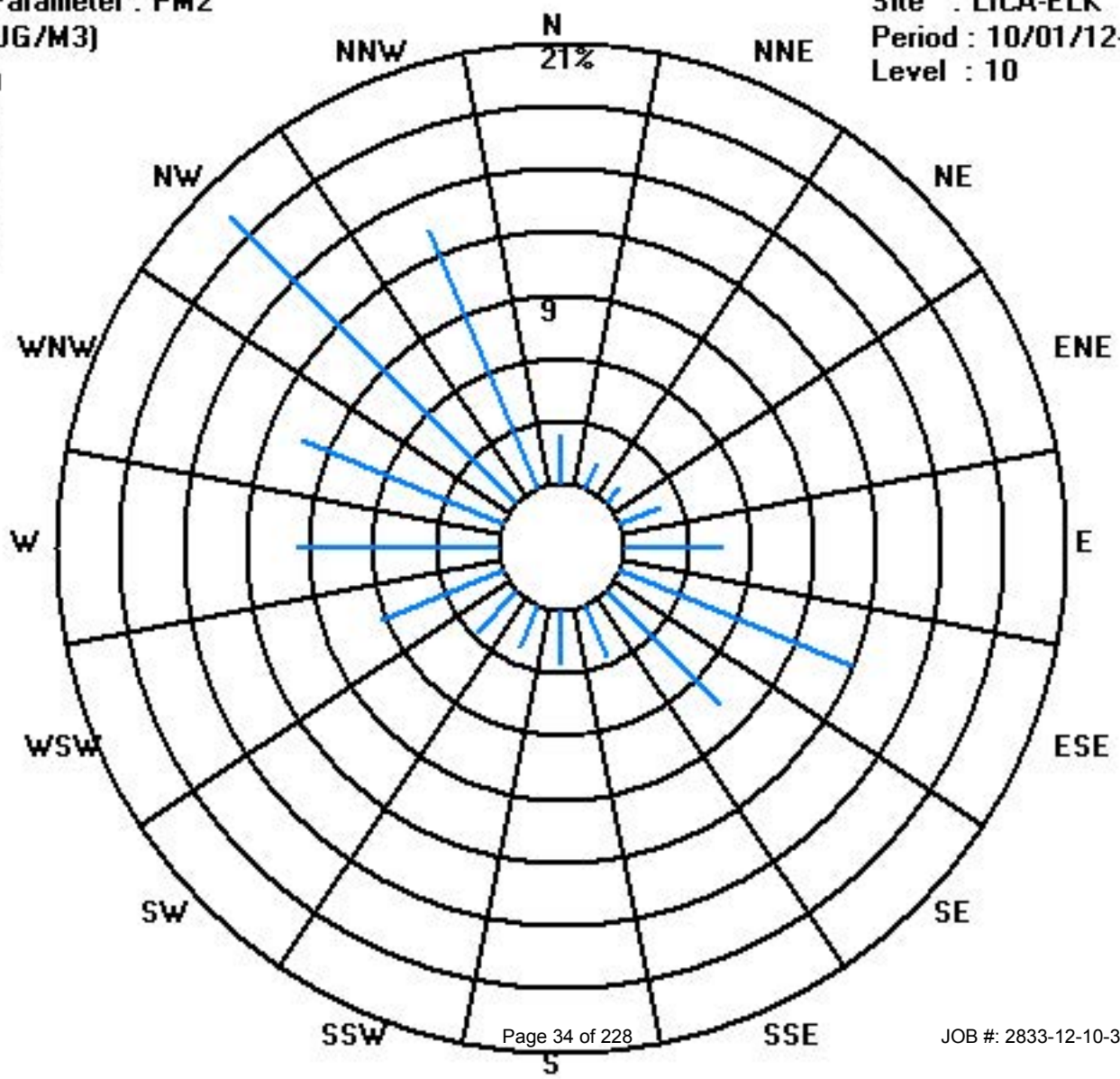
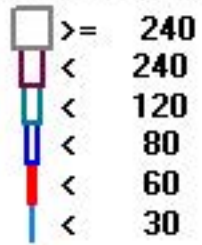
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30	17	10	7	15	34	88	57	20	19	16	20	46	71	77	143	99	739
< 60																	
< 80																	
< 120																	
< 240																	
>= 240																	
Totals	17	10	7	15	34	88	57	20	19	16	20	46	71	77	143	99	

Calm : .00 %

Total # Operational Hours : 739

Class Limits (UG/M3)



Nitrogen Dioxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

NITROGEN DIOXIDE hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.		
DAY																												
1	21	IZS	20	18	17	19	18	12	10	7	4	3	3	3	4	6	3	3	3	3	2	4	4	4	21	8.3	24	
2	IZS	4	4	1	1	0	1	1	1	1	1	1	1	1	1	3	2	0	1	1	1	1	0	IZS	4	1.3	24	
3	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	0	0	2	3	3	6	11	IZS	5	11	1.6	24	
4	10	12	11	10	10	11	11	10	7	6	4	3	2	1	1	0	1	1	5	7	8	IZS	7	9	12	6.4	24	
5	8	9	11	10	8	9	8	9	8	7	6	4	3	3	3	2	3	8	11	5	IZS	3	4	5	11	6.4	24	
6	6	3	3	6	7	8	11	7	4	2	1	1	1	1	1	0	0	5	8	IZS	12	19	19	20	20	6.3	24	
7	21	21	20	16	14	10	8	10	10	4	1	1	1	1	1	0	0	0	IZS	2	1	0	0	0	21	6.2	24	
8	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	IZS	0	0	6	5	7	6	7	1.2	24
9	7	5	4	4	5	5	16	10	9	4	3	1	0	0	0	0	IZS	0	13	17	11	2	3	4	17	5.3	24	
10	3	1	2	2	1	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	3	0.4	24	
11	1	8	7	10	10	14	23	22	17	5	1	0	0	1	IZS	1	2	2	3	2	3	2	3	3	23	6.1	24	
12	3	3	4	4	6	6	7	5	4	3	3	2	3	IZS	2	3	4	2	7	10	5	7	8	7	10	4.7	24	
13	8	6	6	9	11	11	11	6	5	4	4	4	4	IZS	6	6	5	8	12	15	16	17	13	9	3	17	8.5	24
14	9	6	7	4	6	11	11	13	12	7	5	IZS	2	1	2	2	3	6	6	6	6	4	6	7	13	6.2	24	
15	7	7	12	9	11	11	9	8	3	3	IZS	1	1	0	1	2	3	9	9	18	19	18	18	13	19	8.3	24	
16	11	11	8	4	5	6	8	6	5	IZS	C	C	C	C	C	C	1	1	1	4	3	1	0	2	11	4.5	24	
17	3	1	2	2	3	2	2	1	IZS	1	0	0	0	0	0	0	0	1	0	0	1	4	4	4	4	4	1.3	24
18	4	3	8	8	9	12	14	IZS	9	7	5	1	2	2	1	1	2	8	8	6	5	5	7	5	14	5.7	24	
19	5	4	3	3	2	3	IZS	3	3	2	1	2	2	1	2	1	2	2	6	8	7	2	2	4	8	3.0	24	
20	7	10	11	9	9	IZS	5	3	4	4	3	3	1	1	1	2	2	3	2	2	1	1	3	1	11	3.8	24	
21	1	0	1	1	IZS	1	0	0	0	0	1	1	0	1	0	0	0	2	1	1	1	3	5	2	5	1.0	24	
22	1	1	3	IZS	5	11	8	6	2	2	1	1	1	2	2	2	5	13	11	16	16	17	17	17	17	7.0	24	
23	14	13	IZS	5	6	6	5	2	2	2	1	1	0	0	0	1	2	2	2	1	2	1	1	1	14	3.0	24	
24	1	IZS	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	2	2	3	3	0.7	24	
25	IZS	2	2	1	1	1	1	1	1	1	1	1	1	0	1	0	4	3	1	0	0	0	1	IZS	4	1.1	24	
26	2	4	3	4	3	1	2	1	1	1	1	1	0	0	0	0	1	12	6	16	13	IZS	7	16	3.4	24		
27	10	12	13	17	18	19	15	14	9	6	5	2	2	1	3	3	5	6	11	9	10	IZS	6	5	19	8.7	24	
28	4	4	3	2	2	2	0	1	1	1	1	1	1	1	1	1	4	4	4	2	IZS	2	4	4	4	2.2	24	
29	3	3	3	3	4	3	4	4	4	3	2	3	3	3	3	3	4	4	3	IZS	3	2	2	2	4	3.1	24	
30	3	4	2	3	3	9	5	5	3	5	1	1	2	2	1	1	1	2	IZS	2	2	2	2	2	9	2.7	24	
31	2	1	1	1	0	1	1	2	1	0	2	2	2	2	2	4	5	IZS	5	4	5	3	3	2	5	2.2	24	
HOURLY MAX	21	21	20	18	18	19	23	22	17	7	6	4	3	6	6	6	8	13	15	18	19	19	19	20				
HOURLY AVG	6.0	5.4	5.8	5.5	5.9	6.4	6.9	5.5	4.5	2.9	2.1	1.5	1.2	1.2	1.4	1.5	2.2	3.6	5.2	5.2	5.9	5.1	5.1	5.1				

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

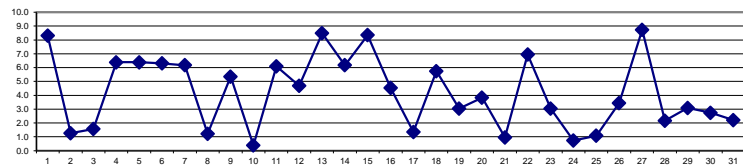
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

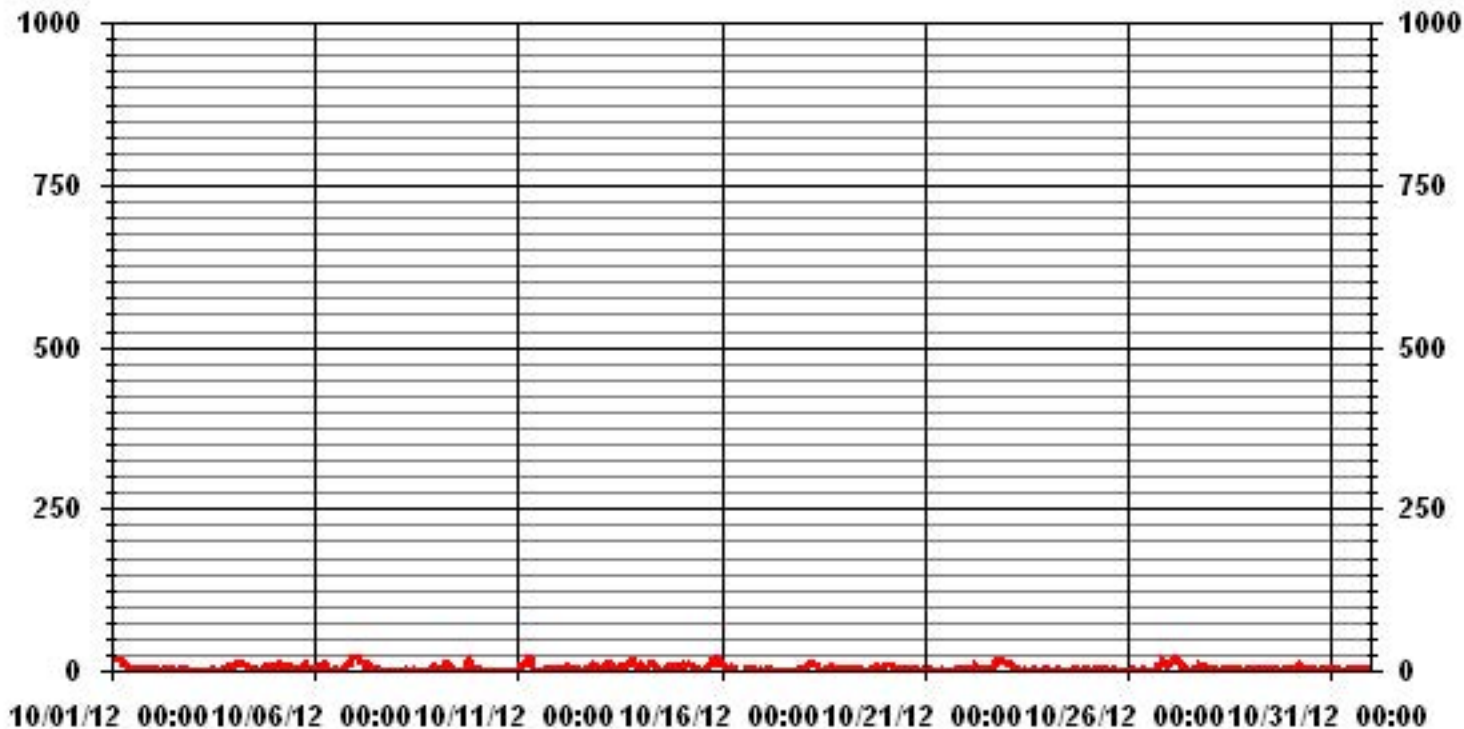
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	595					
MAXIMUM 1-HR AVERAGE:	23	PPB	@ HOUR(S)	6	ON DAY(S)	11
MAXIMUM 24-HR AVERAGE:	8.7	PPB			ON DAY(S)	27
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	4.62		MONTHLY AVERAGE:	4.23	PPB	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



— LICA35 NO2_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	28	IZS	22	19	20	22	14	12	9	5	4	4	3	8	12	5	3	4	6	3	7	9	11	28	10.9	24		
2	IZS	9	10	1	1	1	1	1	1	1	1	2	1	1	47	14	1	1	27	1	1	1	IZS	47	5.7	24		
3	1	1	1	1	1	1	2	2	2	2	2	2	2	3	4	1	2	5	5	6	11	13	IZS	7	13	3.3	24	
4	13	13	13	12	11	13	14	12	10	6	6	4	3	3	3	3	2	2	17	13	14	IZS	8	10	17	8.9	24	
5	10	11	14	11	9	9	9	10	8	8	7	5	4	3	3	3	4	19	19	6	IZS	4	6	7	19	8.2	24	
6	6	4	4	10	10	11	15	10	6	2	2	1	1	1	1	1	1	18	18	IZS	23	23	21	22	23	9.2	24	
7	22	23	23	17	16	14	11	12	13	7	2	1	1	1	1	2	1	2	IZS	7	4	1	1	1	23	8.0	24	
8	1	0	1	1	1	1	4	3	1	1	2	2	1	1	1	2	1	IZS	1	1	17	25	14	10	25	4.0	24	
9	13	7	7	9	8	8	21	16	17	6	5	3	2	2	1	1	IZS	2	25	23	21	4	5	7	25	9.3	24	
10	6	3	4	3	2	2	2	2	2	1	1	1	1	1	1	IZS	0	1	1	1	1	1	0	6	1.7	24		
11	6	16	12	20	20	16	27	26	20	13	2	2	2	2	IZS	2	3	4	5	4	4	3	4	4	27	9.4	24	
12	4	4	7	6	9	9	11	6	5	4	5	3	5	IZS	3	5	4	5	11	13	7	8	8	10	13	6.6	24	
13	10	8	10	11	12	12	12	7	6	5	5	5	IZS	7	15	6	12	16	17	16	30	16	17	4	30	11.3	24	
14	12	8	14	8	8	16	14	24	14	10	6	IZS	3	3	2	3	4	9	10	9	8	8	10	10	24	9.3	24	
15	11	11	22	14	13	16	12	12	5	4	IZS	2	2	1	1	2	5	22	20	23	32	23	22	18	32	12.7	24	
16	14	12	11	5	6	11	13	9	7	IZS	C	C	C	C	C	C	1	1	2	8	4	3	1	3	14	6.5	24	
17	3	1	3	3	3	3	2	2	IZS	2	1	2	1	1	0	1	1	1	4	1	1	10	9	7	10	2.7	24	
18	6	6	15	13	13	18	16	IZS	12	9	7	4	2	3	2	3	7	15	10	8	8	6	9	8	18	8.7	24	
19	6	5	4	4	3	4	IZS	4	3	3	3	0	0	3	3	3	4	13	11	11	4	3	7	13	4.5	22		
20	14	12	12	13	12	IZS	8	6	6	9	9	7	4	4	3	5	4	4	4	5	2	3	5	3	14	6.7	24	
21	3	2	3	3	IZS	2	1	1	2	2	2	2	2	2	1	3	3	3	4	2	3	5	6	4	6	2.7	24	
22	4	4	5	IZS	10	15	12	11	6	3	2	2	2	3	3	4	15	20	17	33	19	24	24	27	33	11.5	24	
23	16	15	IZS	13	12	12	5	4	3	3	2	2	2	1	2	2	2	2	2	2	2	1	1	1	16	4.7	24	
24	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	7	7	1.4	24	
25	IZS	3	4	2	2	1	1	2	1	1	1	1	1	1	3	1	7	6	1	1	1	1	5	IZS	7	2.1	24	
26	10	6	9	9	7	9	10	10	1	1	1	1	1	1	1	1	1	12	23	18	19	21	IZS	9	23	7.9	24	
27	12	17	17	19	20	21	20	18	11	7	6	4	3	3	6	5	8	14	15	14	13	IZS	7	6	21	11.6	24	
28	7	5	4	3	3	2	2	2	2	2	2	2	2	2	2	7	7	7	4	IZS	4	7	6	7	3.7	24		
29	3	7	4	3	8	4	4	5	5	5	4	4	4	5	6	12	6	6	4	IZS	4	4	3	3	12	4.9	24	
30	7	7	3	5	5	15	11	12	7	6	4	3	4	3	2	2	4	3	IZS	3	3	2	2	7	15	5.2	24	
31	5	2	1	1	1	1	2	3	2	2	4	3	6	4	4	6	10	IZS	6	5	5	4	3	3	10	3.6	24	
HOURLY MAX	28	23	23	20	20	21	27	26	20	13	9	7	6	7	15	47	15	22	25	33	32	25	24	27				
HOURLY AVG	8.8	7.7	8.7	8.0	8.2	8.9	9.5	8.2	6.4	4.5	3.4	2.6	2.3	2.4	2.9	4.9	4.6	7.2	9.2	9.3	9.4	8.0	7.4	7.7				

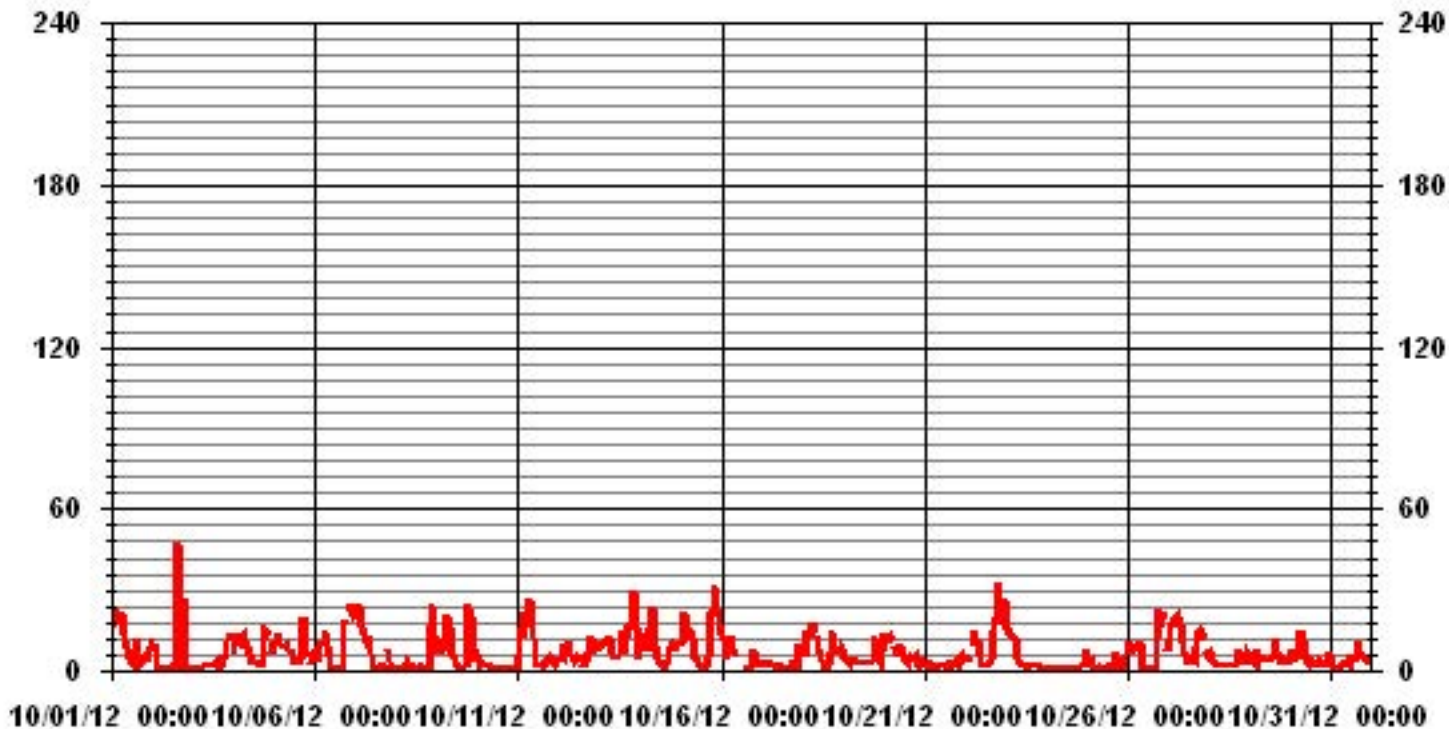
STATUS FLAG CODES

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:	699		
MAXIMUM INSTANTANEOUS VALUE:	47	PPB	@ HOUR(S) ON DAY(S)
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME: 742 HRS
MONTHLY CALIBRATION TIME:	6	HRS	
STANDARD DEVIATION:	6.39		

01 Hour Averages



LICA-ELK
 NO2_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 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	2.41	1.13	.85	2.12	4.53	11.91	7.80	2.69	2.69	2.12	2.69	6.38	9.64	10.35	19.14	13.47	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	2.41	1.13	.85	2.12	4.53	11.91	7.80	2.69	2.69	2.12	2.69	6.38	9.64	10.35	19.14	13.47	

Calm : .00 %

Total # Operational Hours : 705

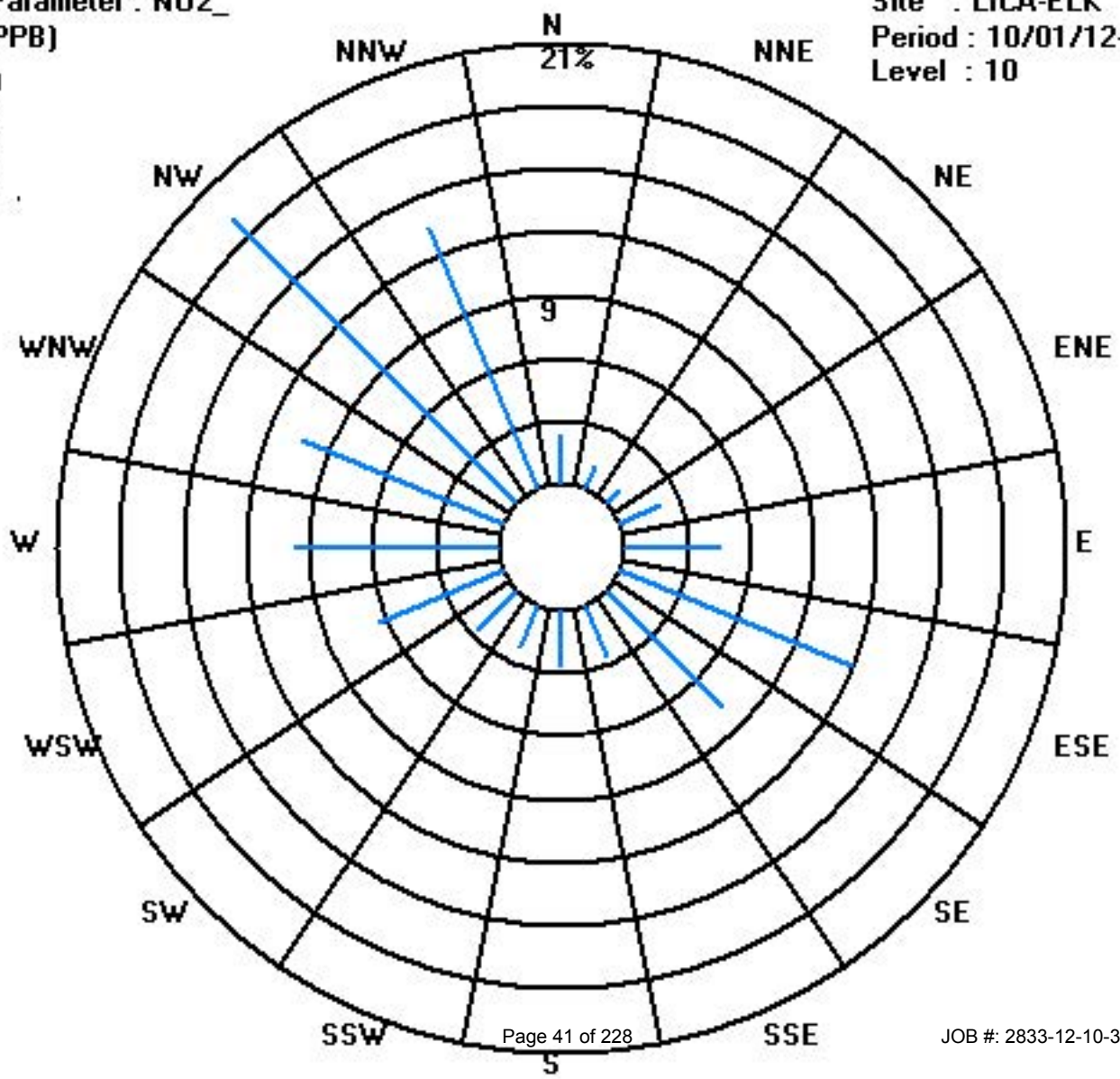
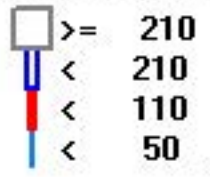
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	17	8	6	15	32	84	55	19	19	15	19	45	68	73	135	95	705
< 110																	
< 210																	
>= 210																	
Totals	17	8	6	15	32	84	55	19	19	15	19	45	68	73	135	95	

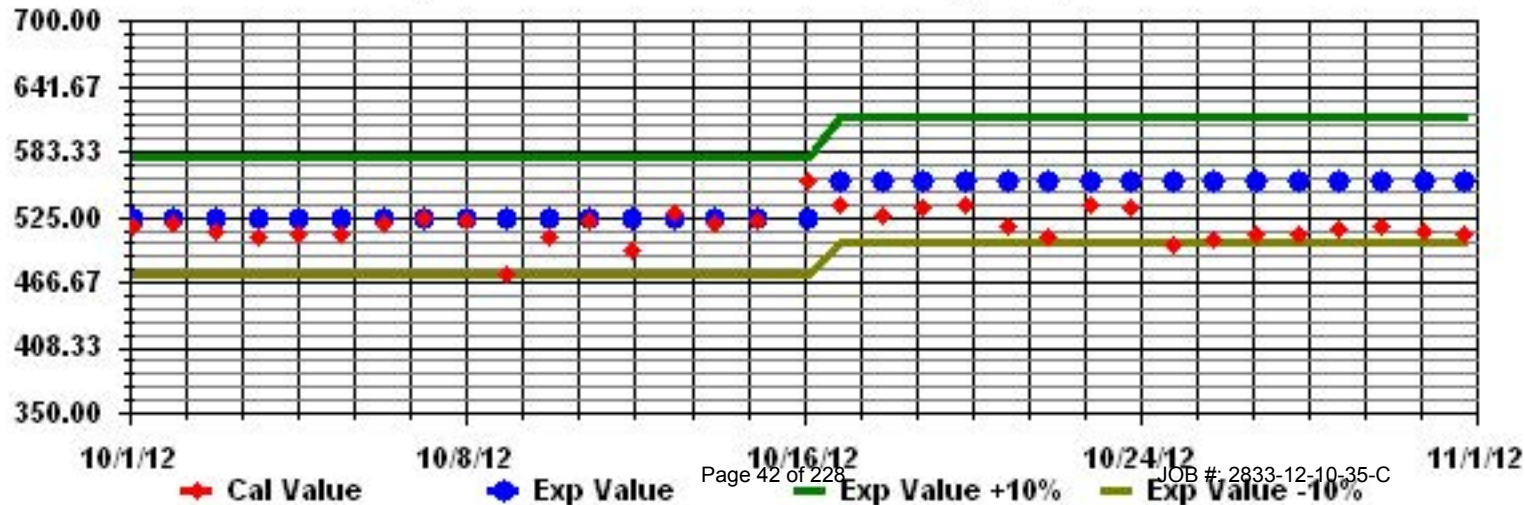
Calm : .00 %

Total # Operational Hours : 705

Class Limits (PPB)



Calibration Graph for Site: LICA35 Parameter: NO2_ Sequence: NO2 Phase: SPAN



Nitric Oxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

NITRIC OXIDE hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.		
DAY																												
1	1	IZS	0	0	1	1	4	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.6	24	
2	IZS	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	0.0	24	
3	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	3	IZS	1	3	1.2	24	
4	16	21	27	30	21	28	25	17	13	8	5	3	2	2	1	1	1	1	1	1	2	3	IZS	0	30	9.8	24	
5	1	1	1	0	0	0	0	3	4	6	4	2	2	1	0	0	0	1	1	0	IZS	0	0	0	6	1.2	24	
6	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	IZS	0	2	1	2	2	0.3	24	
7	6	5	12	1	1	1	1	3	7	2	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	12	1.7	24	
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	1	2	3	2	1	3	0.4	24	
9	1	1	1	1	1	1	8	8	6	3	3	1	1	1	1	1	IZS	1	5	3	1	0	0	1	8	2.2	24	
10	1	1	0	0	0	1	1	1	1	1	1	1	1	1	0	IZS	0	1	1	1	0	0	0	0	1	0.6	24	
11	0	2	0	1	1	2	21	35	20	5	1	1	1	1	IZS	1	0	0	1	1	0	0	0	0	35	4.1	24	
12	0	0	0	0	0	1	1	1	1	1	2	1	1	IZS	1	0	0	0	2	3	0	0	0	1	3	0.7	24	
13	1	1	2	1	1	2	2	3	5	7	7	5	IZS	5	5	4	3	7	20	15	37	2	1	0	37	5.9	24	
14	0	0	0	0	0	1	1	10	12	7	4	IZS	1	1	0	0	0	0	1	0	0	0	0	0	12	1.7	24	
15	0	2	2	0	1	1	2	3	2	2	IZS	1	1	1	0	0	0	1	1	1	4	1	2	1	4	1.3	24	
16	0	0	0	0	0	1	2	0	1	IZS	C	C	C	C	C	C	C	0	0	0	0	0	0	0	2	0.2	24	
17	0	0	0	0	0	0	0	0	IZS	1	1	2	1	0	0	1	1	0	1	0	0	3	2	2	3	0.7	24	
18	1	1	2	2	5	6	19	IZS	14	15	9	2	1	1	1	1	1	1	1	1	1	0	0	0	19	3.7	24	
19	0	0	0	0	1	1	IZS	1	1	1	2	1	1	2	1	1	0	1	1	1	1	0	0	1	2	0.8	24	
20	5	15	11	17	6	IZS	4	2	3	3	2	3	2	2	2	2	1	1	1	2	0	1	2	1	17	3.8	24	
21	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0.9	24	
22	1	1	1	IZS	1	4	3	3	2	2	1	1	2	2	2	2	2	5	5	6	6	14	20	65	65	6.6	24	
23	31	22	IZS	3	3	3	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	31	3.1	24	
24	0	IZS	1	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0.3	24	
25	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	IZS	1	0.0	24	
26	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0	2	2	2	4	3	IZS	1	4	1.3	24	
27	1	1	1	3	5	8	5	10	6	7	6	3	2	2	2	2	2	2	3	1	2	IZS	1	1	10	3.3	24	
28	1	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	1	1	0	1	0.7	24
29	0	1	0	0	0	0	0	1	1	1	1	2	3	2	3	2	1	0	0	IZS	0	1	0	0	3	0.8	24	
30	0	0	0	0	0	1	2	2	2	2	2	1	2	1	1	1	1	0	IZS	0	1	0	0	1	2	0.9	24	
31	1	0	0	0	0	0	0	0	0	1	1	1	3	2	2	2	3	IZS	0	0	0	0	0	0	3	0.7	24	
HOURLY MAX	31	22	27	30	21	28	25	35	20	15	9	5	3	5	5	4	3	7	20	15	37	14	20	65				
HOURLY AVG	2.4	2.7	2.2	2.1	1.7	2.2	3.5	3.6	3.6	2.8	2.0	1.3	1.1	1.1	1.0	0.9	0.7	0.9	1.8	1.4	2.2	1.2	1.1	2.8				

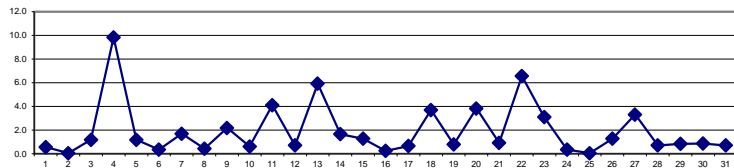
STATUS FLAG CODES

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

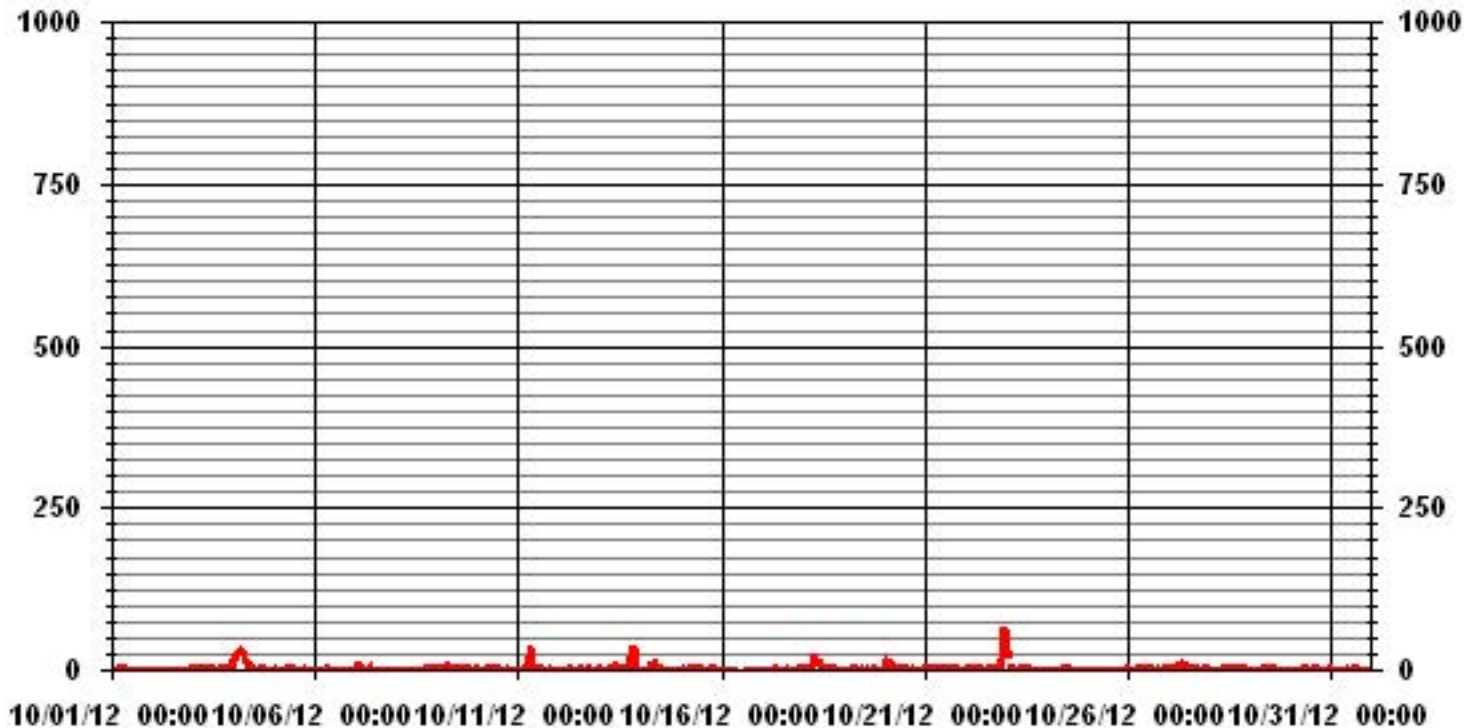
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	431					
MAXIMUM 1-HR AVERAGE:	65	PPB	@ HOUR(S)	23	ON DAY(S)	22
MAXIMUM 24-HR AVERAGE:	9.8	PPB			ON DAY(S)	4
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	4.83		MONTHLY AVERAGE:	1.94	PPB	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

NITRIC OXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	4	IZS	2	1	3	4	6	2	4	4	2	1	1	1	2	2	0	0	0	1	0	0	3	2	6	2.0	24	
2	IZS	3	5	0	0	0	0	0	0	0	0	0	0	0	3	39	0	0	1	0	0	0	0	IZS	39	2.3	24	
3	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	2	1	2	2	2	9	8	IZS	1	9	2.1	24	
4	32	33	35	43	25	45	45	24	21	10	8	4	3	3	2	2	1	1	6	5	6	IZS	4	3	45	15.7	24	
5	6	2	2	1	0	0	2	4	6	8	7	3	3	2	1	1	1	4	3	2	IZS	0	1	1	8	2.6	24	
6	0	0	0	1	0	1	6	3	3	1	0	0	0	0	0	0	0	6	2	IZS	1	10	3	9	10	2.0	24	
7	14	9	26	6	3	4	4	7	11	4	1	0	0	0	0	0	0	0	IZS	2	1	0	0	0	26	4.0	24	
8	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	IZS	1	1	10	22	6	5	22	2.1	24	
9	3	1	2	2	3	1	14	29	19	4	4	2	1	1	1	1	IZS	1	34	11	6	1	1	1	34	6.2	24	
10	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	2	1.0	24
11	1	5	2	4	4	5	47	49	30	13	2	2	2	1	IZS	1	1	1	1	2	1	1	1	1	1	49	7.7	24
12	1	1	1	1	3	3	2	2	2	2	3	1	3	IZS	1	1	1	2	7	8	1	2	1	2	8	2.2	24	
13	2	2	7	4	2	6	4	6	6	8	9	6	IZS	6	12	5	5	24	42	23	123	5	4	1	123	13.6	24	
14	1	2	1	1	1	2	3	63	15	11	6	IZS	2	2	1	1	1	1	3	1	2	2	2	0	63	5.4	24	
15	2	5	22	1	5	5	4	5	2	3	IZS	2	1	1	1	1	1	3	4	5	28	4	9	3	28	5.1	24	
16	1	1	1	1	1	2	5	2	2	IZS	C	C	C	C	C	C	0	0	0	2	1	1	0	0	5	1.2	24	
17	1	0	1	1	1	0	0	0	IZS	2	2	3	2	1	1	1	1	1	6	1	1	11	5	5	11	2.0	24	
18	2	1	4	15	16	19	25	IZS	21	19	13	3	2	2	2	1	4	4	3	3	1	1	1	1	25	7.1	24	
19	1	1	2	1	2	3	IZS	3	3	2	3	2	3	4	3	1	1	2	5	6	8	1	1	3	8	2.7	24	
20	38	27	17	33	14	IZS	12	5	8	8	8	6	4	5	4	4	2	3	3	5	1	2	4	3	38	9.4	24	
21	3	2	2	2	IZS	2	1	1	2	2	2	2	3	2	2	2	2	1	2	1	1	2	1	1	3	1.8	24	
22	1	2	3	IZS	2	7	6	5	4	3	2	2	3	3	3	2	9	34	12	48	13	37	67	115	115	16.7	24	
23	42	41	IZS	12	14	9	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	42	6.0	24	
24	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	1.1	24	
25	IZS	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	4	3	0	0	0	0	1	IZS	4	0.5	23	
26	2	3	3	6	4	4	4	4	1	2	5	2	2	1	1	2	1	4	9	8	13	14	IZS	1	14	4.2	24	
27	2	3	2	8	8	11	14	20	8	9	8	5	3	4	5	4	6	6	6	6	7	IZS	2	2	20	6.5	24	
28	2	1	1	1	1	1	2	2	1	2	1	2	2	1	1	2	3	3	2	1	IZS	1	1	1	3	1.5	24	
29	1	1	1	1	1	1	1	1	1	2	2	3	3	4	4	4	17	2	1	1	IZS	1	1	1	1	17	2.4	24
30	1	1	1	1	1	3	7	7	5	4	4	3	5	3	2	1	2	2	IZS	1	1	1	1	4	7	2.7	24	
31	3	1	1	1	1	1	1	1	1	1	3	2	12	4	3	4	7	IZS	2	1	1	0	0	0	12	2.2	24	
HOURLY MAX	42	41	35	43	25	45	47	63	30	19	13	6	12	6	12	17	39	34	42	48	123	37	67	115				
HOURLY AVG	5.8	5.2	5.0	5.0	3.9	4.7	7.3	8.3	6.0	4.3	3.5	2.1	2.3	2.0	2.1	2.2	3.3	3.9	5.5	5.2	8.3	4.5	4.2	5.9				

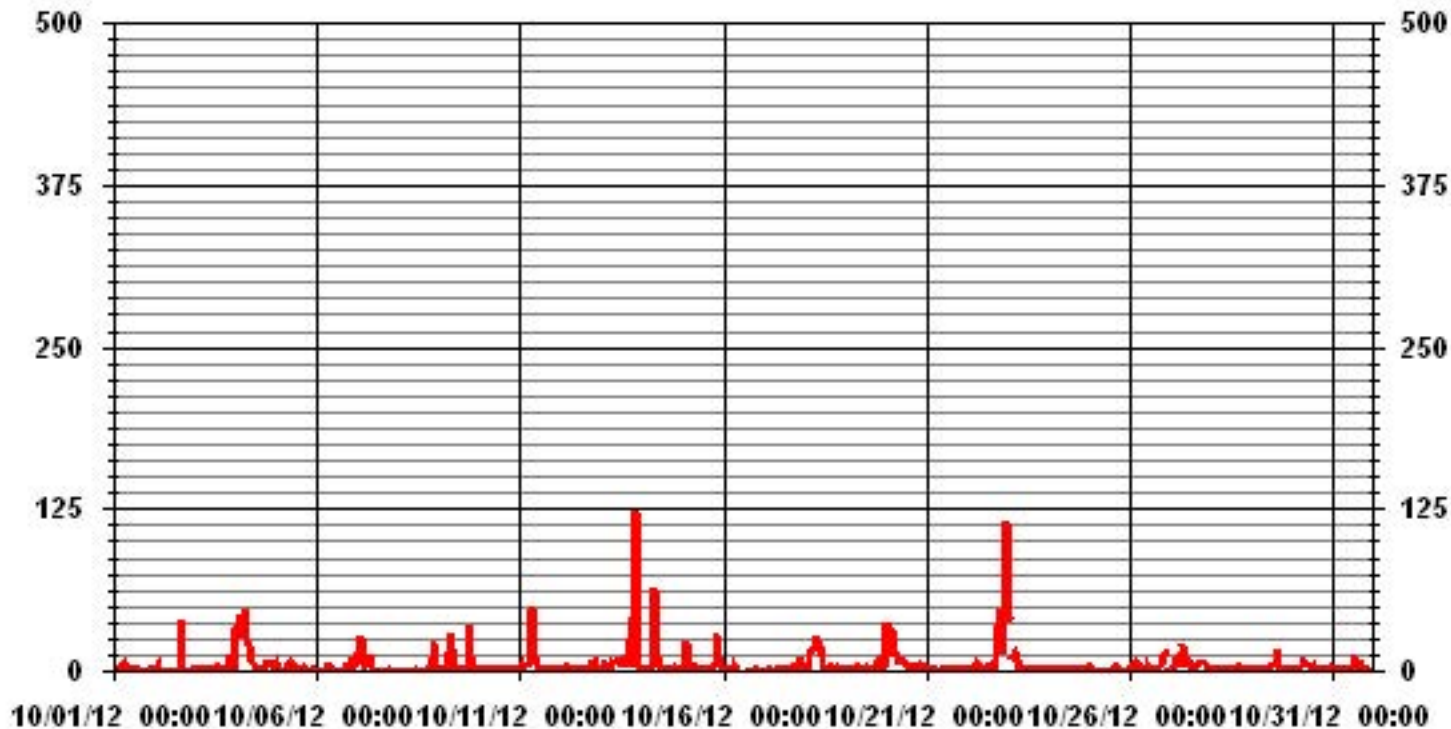
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	615					
MAXIMUM INSTANTANEOUS VALUE:	123	PPB	@ HOUR(S)	20	ON DAY(S)	13
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	743	HRS	
MONTHLY CALIBRATION TIME:	6	HRS				
STANDARD DEVIATION:	10.07					

01 Hour Averages



LICA-ELK
 NO_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : NO_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

		Direction																
	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	2.41	1.13	.85	2.12	4.53	11.91	7.80	2.69	2.69	2.12	2.69	6.38	9.64	10.21	19.14	13.47	99.85
<	110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.14
<	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.41	1.13	.85	2.12	4.53	11.91	7.80	2.69	2.69	2.12	2.69	6.38	9.64	10.35	19.14	13.47	

Calm : .00 %

Total # Operational Hours : 705

Distribution By Samples

		Direction																
	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	17	8	6	15	32	84	55	19	19	15	19	45	68	72	135	95	704
<	110														1			1
<	210																	
>=	210																	
	Totals	17	8	6	15	32	84	55	19	19	15	19	45	68	73	135	95	

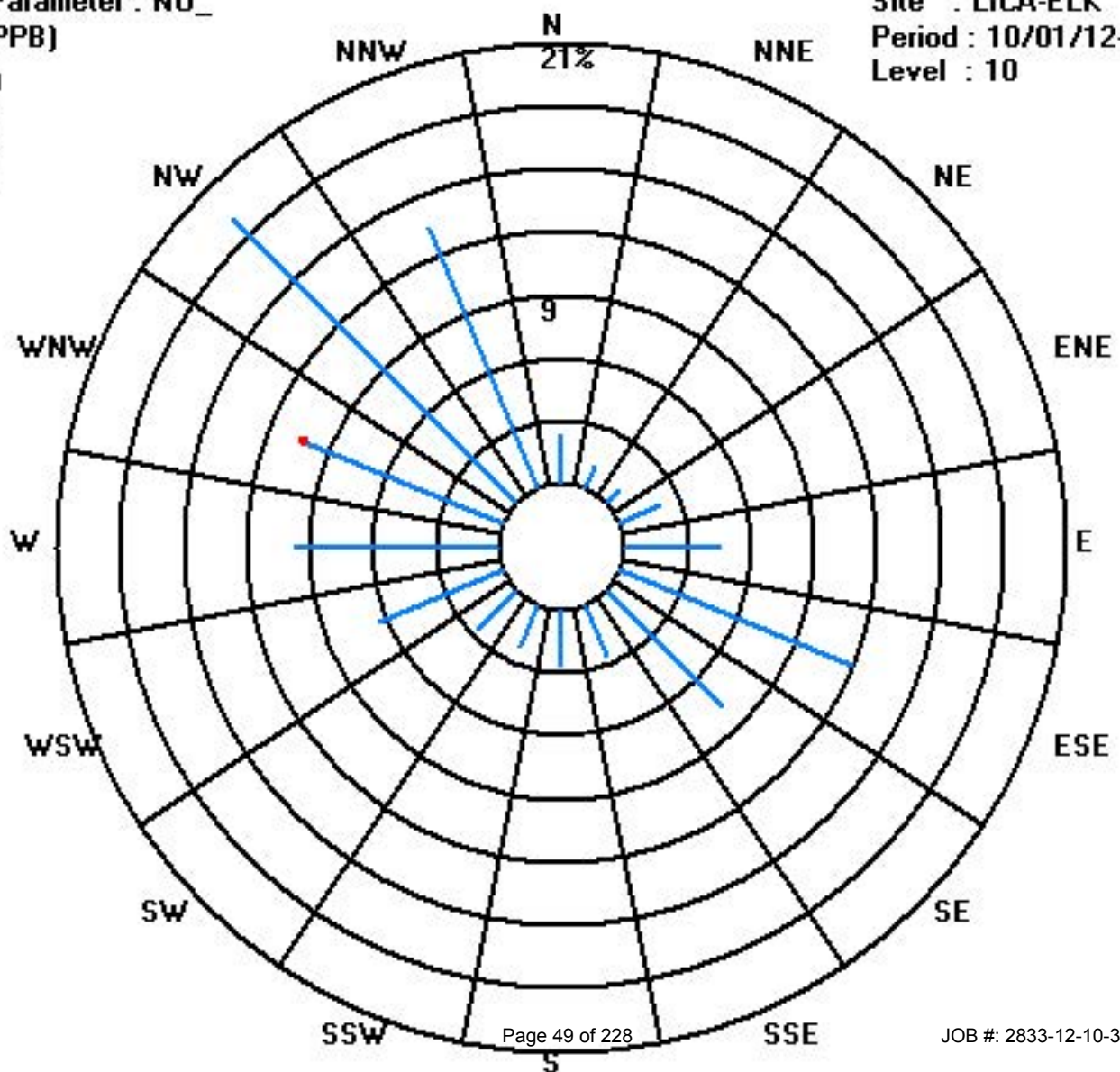
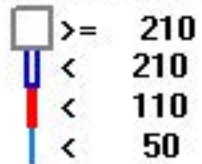
Calm : .00 %

Total # Operational Hours : 705

Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



Oxides of Nitrogen

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

OXIDES OF NITROGEN hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	
DAY																											
1	22	IZS	20	18	18	20	22	13	12	9	5	3	3	3	4	6	3	3	3	3	2	4	4	4	22	8.9	24
2	IZS	4	5	1	1	0	1	1	1	1	1	1	1	1	1	3	2	0	1	1	1	0	IZS	5	1.3	24	
3	1	1	1	1	1	1	1	1	1	1	2	2	2	2	4	1	1	3	4	4	8	14	IZS	6	14	2.7	24
4	26	33	38	40	31	39	36	27	20	14	9	6	4	3	2	1	2	2	6	8	10	IZS	7	9	40	16.2	24
5	9	10	12	10	8	9	8	12	12	13	10	6	5	4	3	2	3	9	12	5	IZS	3	4	5	13	7.6	24
6	6	3	3	6	7	8	12	8	5	2	1	1	1	1	1	0	0	5	8	IZS	12	21	20	22	22	6.7	24
7	27	26	32	17	15	11	9	13	17	6	1	1	1	1	1	0	0	0	IZS	2	1	0	0	0	32	7.9	24
8	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	IZS	1	1	8	8	9	7	9	1.7	24
9	8	6	5	5	6	6	24	18	15	7	6	2	1	1	1	1	IZS	1	18	20	12	2	3	5	24	7.5	24
10	4	2	2	2	1	1	1	1	1	1	1	1	1	1	0	0	IZS	0	1	1	1	0	0	0	4	1.0	24
11	1	10	7	11	11	16	44	57	37	10	2	1	1	2	IZS	2	2	2	4	3	3	2	3	3	57	10.2	24
12	3	3	4	4	6	7	8	6	5	4	5	3	4	IZS	3	3	4	2	9	13	5	7	8	8	13	5.4	24
13	9	7	8	10	12	13	13	9	10	11	11	9	IZS	11	11	9	11	19	35	31	54	15	10	3	54	14.4	24
14	9	6	7	4	6	12	12	23	24	14	9	IZS	3	2	2	2	3	6	7	6	6	4	6	7	24	7.8	24
15	7	9	14	9	12	12	11	11	5	5	IZS	2	2	1	1	2	3	10	10	19	23	19	20	14	23	9.6	24
16	11	11	8	4	5	7	10	6	6	IZS	C	C	C	C	C	C	1	1	1	4	3	1	0	2	11	4.8	24
17	3	1	2	2	3	2	2	1	IZS	2	1	2	1	0	0	1	1	1	1	0	1	7	6	6	7	2.0	24
18	5	4	10	10	14	18	33	IZS	23	22	14	3	3	3	2	2	3	9	9	7	6	5	7	5	33	9.4	24
19	5	4	3	3	3	4	IZS	4	4	3	3	3	3	3	3	2	2	3	7	9	8	2	2	5	9	3.8	24
20	12	25	22	26	15	IZS	9	5	7	7	5	6	3	3	3	4	3	4	3	4	1	2	5	2	26	7.7	24
21	2	1	2	2	IZS	2	1	1	1	1	2	2	1	2	1	1	1	3	2	2	2	4	5	2	5	1.9	24
22	2	2	4	IZS	6	15	11	9	4	4	2	2	3	4	4	4	7	18	16	22	22	31	37	82	82	13.5	24
23	45	35	IZS	8	9	9	5	3	3	3	2	2	1	1	1	2	2	2	2	1	2	1	1	1	45	6.1	24
24	1	IZS	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	4	4	1.1	24
25	IZS	2	2	1	1	1	1	1	1	1	1	1	1	0	1	0	5	3	1	0	0	0	1	IZS	5	1.1	24
26	3	5	4	6	4	2	3	2	2	2	2	2	1	1	1	1	0	1	14	8	20	16	IZS	8	20	4.7	24
27	11	13	14	20	23	27	20	24	15	13	11	5	4	3	5	5	7	8	14	10	12	IZS	7	6	27	12.0	24
28	5	4	3	2	2	2	1	1	2	2	2	2	2	2	2	2	5	5	5	3	IZS	3	5	4	5	2.9	24
29	3	4	3	3	4	3	4	5	5	4	3	5	6	5	6	5	5	4	3	IZS	3	3	2	2	6	3.9	24
30	3	4	2	3	3	10	7	7	5	7	3	2	4	3	2	2	2	2	IZS	2	3	2	2	3	10	3.6	24
31	3	1	1	1	0	1	1	2	1	1	3	3	5	4	4	6	8	IZS	5	4	5	3	3	2	8	2.9	24
HOURLY MAX	45	35	38	40	31	39	44	57	37	22	14	9	6	11	11	9	11	19	35	31	54	31	37	82			
HOURLY AVG	8.5	8.1	8.0	7.6	7.6	8.6	10.4	9.1	8.2	5.7	4.1	2.8	2.3	2.3	2.4	2.4	2.9	4.4	7.0	6.7	8.1	6.3	6.2	7.8			

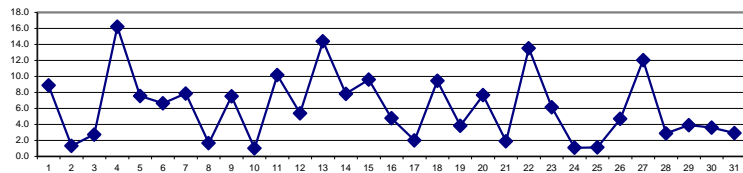
STATUS FLAG CODES

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

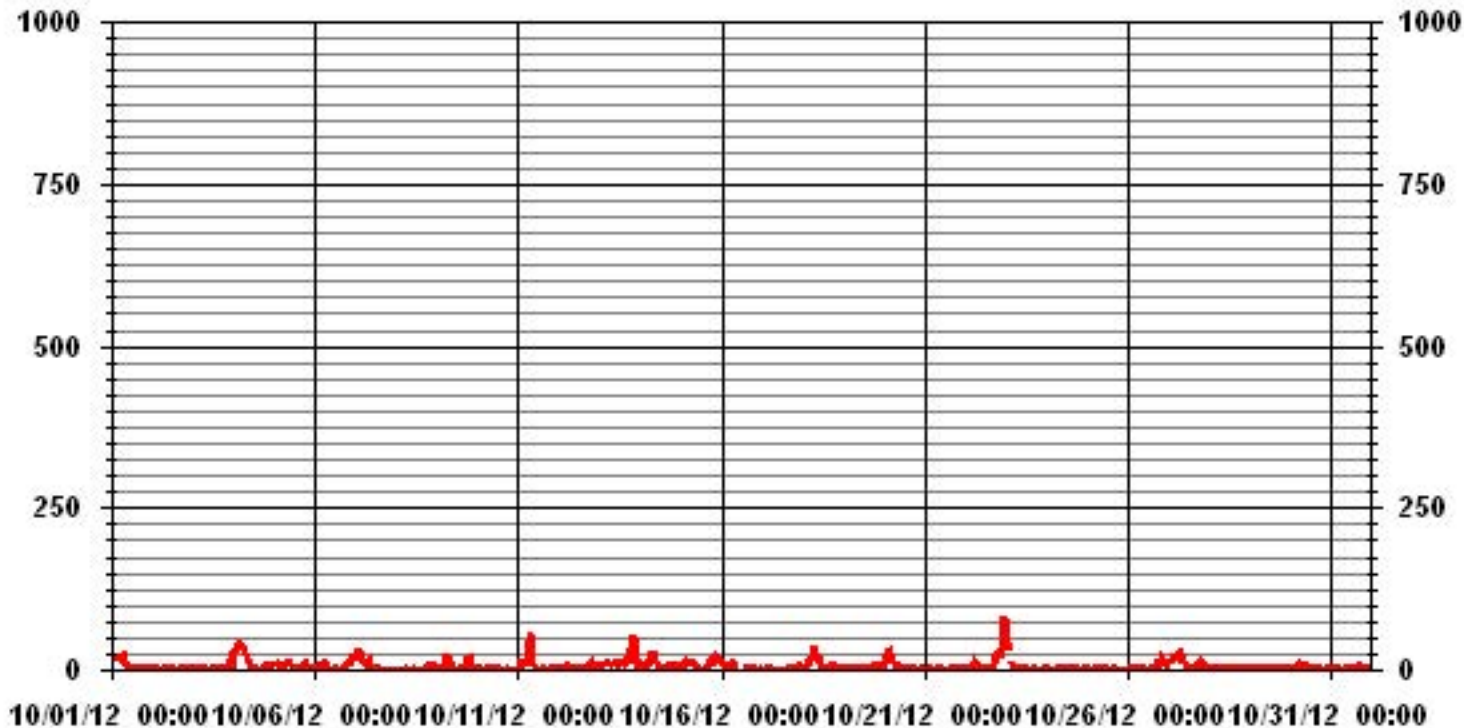
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	661					
MAXIMUM 1-HR AVERAGE:	82	PPB	@ HOUR(S)	23	ON DAY(S)	22
MAXIMUM 24-HR AVERAGE:	16.2	PPB			ON DAY(S)	4
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	8.15		MONTHLY AVERAGE:	6.16	PPB	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



— LICA35 NOX_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	32	IZS	24	20	23	24	27	16	15	12	7	6	5	4	10	14	6	3	5	7	3	8	13	12	32	12.9	24	
2	IZS	12	15	1	1	1	1	1	1	1	1	1	2	2	2	50	50	1	1	27	1	1	1	0	50	7.6	24	
3	2	1	1	1	1	2	2	2	2	2	2	3	3	5	5	3	2	6	6	6	19	19	IZS	7	19	4.4	24	
4	44	45	46	53	35	57	59	35	29	15	14	6	6	4	4	4	2	2	22	17	19	IZS	12	13	59	23.6	24	
5	17	12	17	12	9	10	11	15	14	16	15	8	6	5	5	4	5	24	22	8	IZS	4	7	8	24	11.0	24	
6	7	4	4	11	11	12	21	13	9	3	2	1	1	1	1	1	25	18	IZS	25	33	24	31	33	11.3	24		
7	35	32	47	23	17	18	15	19	24	11	3	1	1	1	2	1	3	IZS	10	6	1	1	1	1	47	11.9	24	
8	1	1	1	1	1	1	5	3	1	1	2	3	1	1	1	2	1	IZS	1	1	26	45	19	14	45	5.8	24	
9	15	7	8	11	10	9	35	44	35	10	8	5	2	2	1	2	IZS	2	52	34	25	4	6	7	52	14.5	24	
10	6	3	4	3	2	2	2	2	2	1	1	1	1	1	1	IZS	1	1	1	1	1	1	1	1	6	1.7	24	
11	7	21	13	23	24	21	73	72	50	26	4	3	3	3	IZS	IZS	3	4	5	6	5	4	4	4	73	16.6	24	
12	4	4	8	6	10	11	12	8	7	5	7	4	8	IZS	IZS	4	5	4	7	18	21	7	10	9	12	21	8.3	24
13	12	9	16	14	13	18	17	13	12	12	14	10	IZS	12	22	11	16	40	58	37	144	20	20	4	144	23.7	24	
14	13	8	15	8	9	18	16	83	27	21	11	IZS	4	4	3	4	5	10	12	10	9	10	12	10	83	14.0	24	
15	12	15	40	15	18	21	16	16	7	7	IZS	4	3	2	2	3	6	25	24	27	59	28	31	20	59	17.4	24	
16	15	13	12	6	6	13	16	11	8	IZS	C	C	C	C	C	1	2	3	12	6	4	1	3	16	7.8	18		
17	5	2	5	4	4	3	3	3	IZS	3	4	3	2	1	1	1	1	1	9	1	1	20	13	10	20	4.3	24	
18	8	7	18	26	27	36	40	IZS	32	27	20	7	4	4	3	3	11	16	13	10	8	6	10	8	40	15.0	24	
19	6	6	5	4	4	6	IZS	7	6	4	5	4	5	7	6	4	4	5	18	17	17	4	3	9	18	6.8	22	
20	49	37	27	43	24	IZS	20	10	12	16	16	13	7	9	8	9	6	6	6	10	2	5	8	5	49	15.1	24	
21	5	3	5	4	IZS	3	2	2	3	3	3	4	3	4	2	5	5	3	6	3	3	6	6	5	6	3.8	24	
22	5	5	8	IZS	12	22	17	16	9	5	4	3	4	6	5	6	23	52	28	81	32	58	88	139	139	27.3	24	
23	58	55	IZS	24	26	21	5	5	4	4	3	2	2	2	3	3	2	2	3	2	2	2	1	1	58	10.1	24	
24	1	IZS	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	2	3	11	11	1.7	24	
25	IZS	3	7	2	2	2	1	2	2	1	2	2	1	1	6	1	12	10	2	1	1	1	6	IZS	12	3.1	24	
26	11	8	11	15	11	12	13	13	2	2	2	2	3	2	2	2	1	16	31	25	32	33	IZS	10	33	11.3	24	
27	13	19	18	27	27	32	33	37	19	15	13	8	6	7	11	9	14	19	20	20	18	IZS	9	8	37	17.5	24	
28	8	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3	9	9	9	5	IZS	5	8	6	9	4.7	24	
29	3	7	4	3	9	4	5	5	6	6	5	7	7	8	10	27	7	6	4	IZS	4	4	3	3	27	6.4	24	
30	8	7	3	5	5	18	18	19	12	9	8	5	8	6	3	3	5	4	IZS	3	4	3	3	11	19	7.4	24	
31	7	2	1	1	1	1	2	3	2	2	6	4	17	7	7	10	16	IZS	9	6	7	4	4	3	17	5.3	24	
HOURLY MAX	58	55	47	53	35	57	73	83	50	27	20	13	17	12	22	50	50	52	58	81	144	58	88	139				
HOURLY AVG	14.1	12.2	12.9	12.3	11.5	13.4	16.4	16.0	11.9	8.1	6.4	4.3	4.1	4.0	4.6	6.7	7.4	10.6	14.1	14.1	16.8	11.9	11.2	12.5				

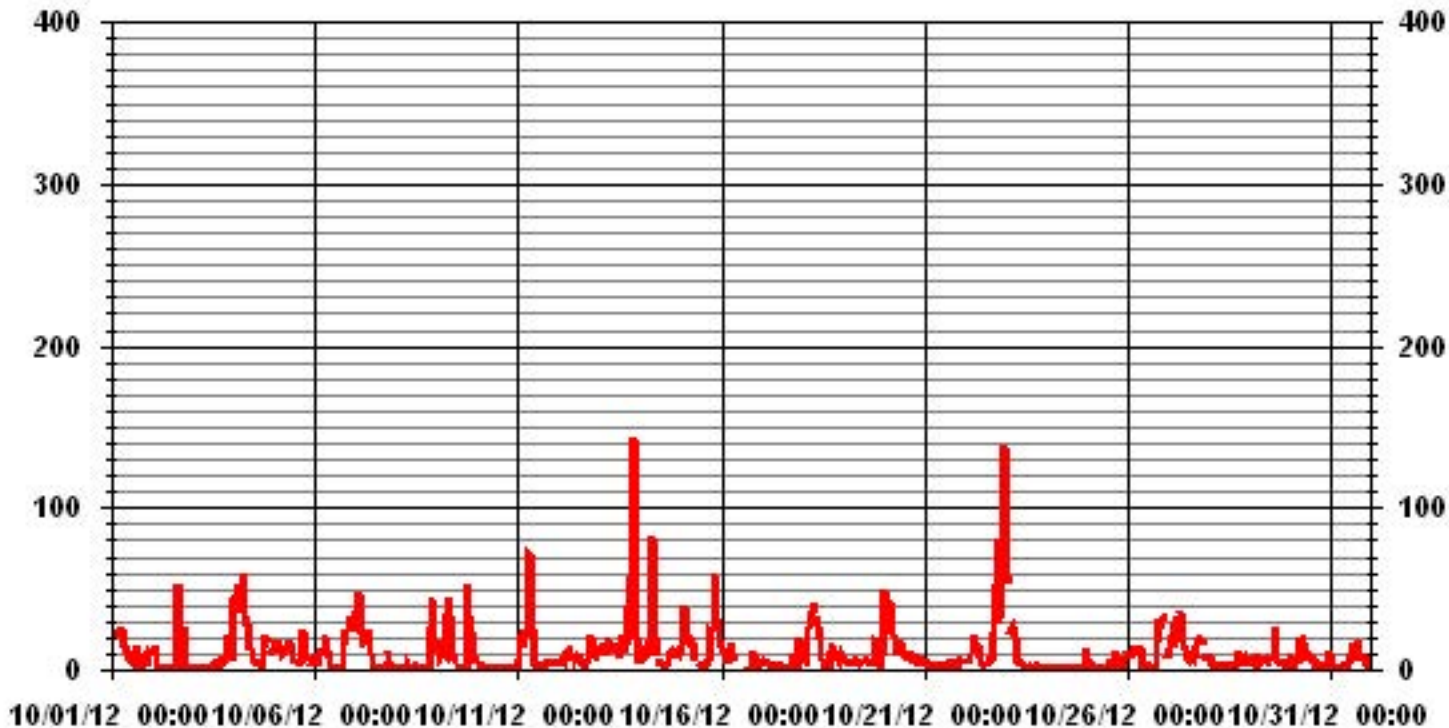
STATUS FLAG CODES

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:	705					
MAXIMUM INSTANTANEOUS VALUE:	144	PPB	@ HOUR(S)	20	ON DAY(S)	13
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	736	HRS	
MONTHLY CALIBRATION TIME:	6	HRS				
STANDARD DEVIATION:	14.28					

01 Hour Averages



LICA-ELK
 NOX_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 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	2.41	1.13	.85	2.12	4.53	11.91	7.80	2.69	2.69	2.12	2.69	6.38	9.36	10.21	19.14	13.47	99.57
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.28	.14	.00	.00	.42
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.41	1.13	.85	2.12	4.53	11.91	7.80	2.69	2.69	2.12	2.69	6.38	9.64	10.35	19.14	13.47	

Calm : .00 %

Total # Operational Hours : 705

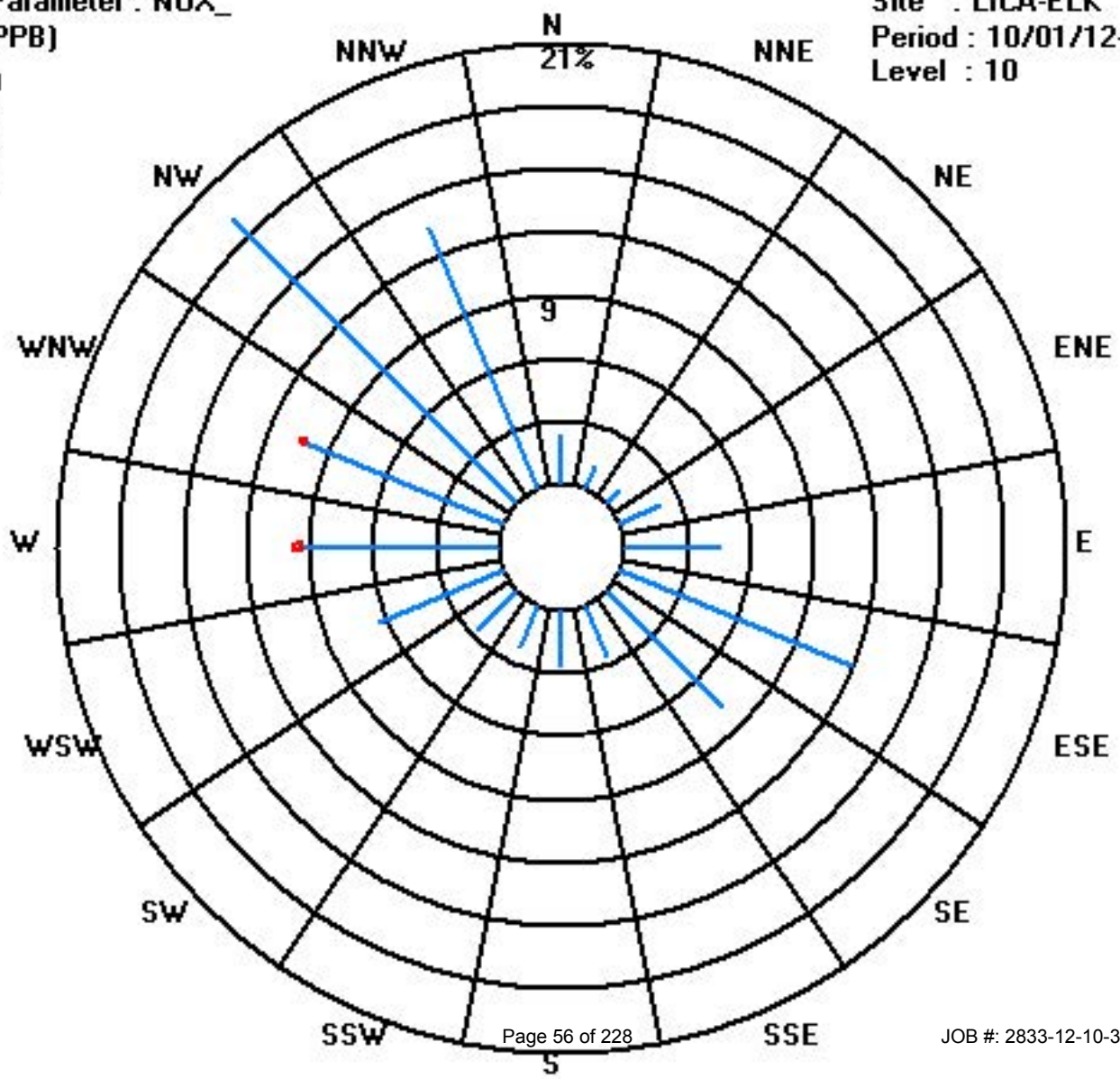
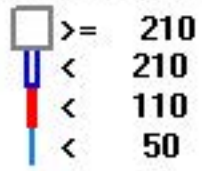
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	17	8	6	15	32	84	55	19	19	15	19	45	66	72	135	95	702
< 110													2	1			3
< 210																	
>= 210																	
Totals	17	8	6	15	32	84	55	19	19	15	19	45	68	73	135	95	

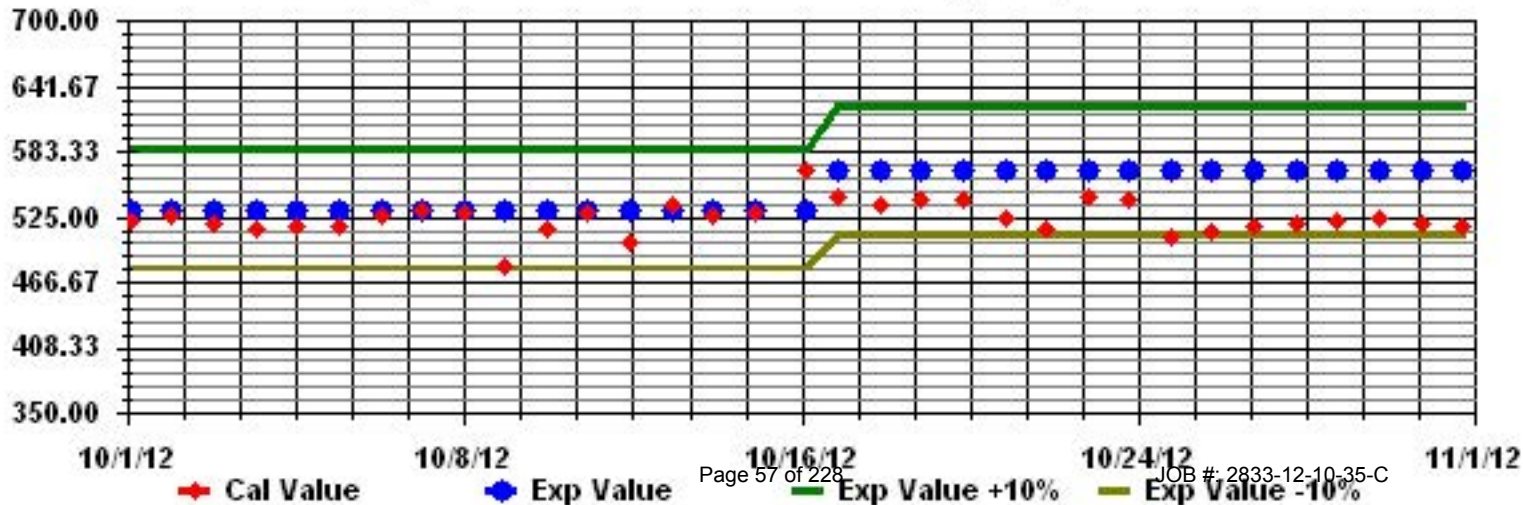
Calm : .00 %

Total # Operational Hours : 705

Class Limits (PPB)



Calibration Graph for Site: LICA35 Parameter: NOX_ Sequence: NO2 Phase: SPAN



Ozone

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

OZONE (O₃) hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	
DAY																											
1	5	IZS	6	6	5	3	3	7	12	19	27	33	32	34	31	29	40	40	39	35	30	24	22	17	40	21.7	24
2	IZS	16	15	22	23	26	27	29	31	30	30	27	25	25	26	28	26	23	20	20	23	23	20	IZS	31	24.3	24
3	16	16	16	15	16	15	C	14	14	15	14	16	17	19	19	M	C	C	16	14	9	4	IZS	6	19	14.3	23
4	1	0	0	0	0	0	1	2	4	5	8	11	17	21	25	27	25	23	15	12	10	IZS	9	6	27	9.7	24
5	2	2	4	6	8	8	9	9	10	10	13	16	18	20	24	28	29	21	17	24	IZS	25	25	23	29	15.3	24
6	24	26	26	21	19	16	11	16	20	24	28	31	33	34	36	35	34	29	25	IZS	16	8	4	3	36	22.6	24
7	1	1	1	4	3	7	8	7	9	17	23	24	23	24	26	26	27	28	IZS	22	24	28	29	28	29	17.0	24
8	29	30	27	28	29	28	27	27	28	29	29	27	30	31	32	31	32	IZS	32	31	23	22	21	19	32	27.9	24
9	17	18	19	17	16	14	4	6	13	17	20	28	29	31	32	32	IZS	27	15	10	18	27	23	20	32	19.7	24
10	21	23	22	22	23	25	25	24	24	25	24	24	23	24	25	IZS	29	30	30	31	31	31	31	32	32	26.0	24
11	28	20	20	16	16	6	1	3	10	24	28	30	30	31	IZS	30	29	27	25	25	22	20	19	20	31	20.9	24
12	20	19	17	14	13	12	9	12	14	15	15	16	16	IZS	15	14	13	13	7	3	7	6	5	4	20	12.1	24
13	2	2	2	2	3	2	1	4	4	4	7	9	IZS	8	8	11	9	3	1	1	1	5	15	27	27	5.7	24
14	20	20	19	21	16	10	10	7	8	14	18	IZS	32	38	38	35	32	27	24	22	22	21	19	16	38	21.3	24
15	12	14	8	12	7	8	9	8	13	20	IZS	33	35	38	39	39	37	29	26	14	11	10	8	11	39	19.2	24
16	14	15	21	24	23	19	16	17	18	IZS	21	24	27	31	37	36	34	31	30	29	30	31	31	30	37	25.6	24
17	29	31	32	33	32	33	31	29	IZS	C	C	C	C	13	14	14	13	12	13	14	14	9	10	10	33	20.3	24
18	10	13	9	8	7	3	1	IZS	4	5	14	29	31	32	33	35	31	23	21	22	21	22	18	19	35	17.9	24
19	20	19	19	19	18	17	IZS	17	17	18	17	M	M	18	18	17	15	10	7	9	13	11	8	20	15.5	22	
20	4	0	1	1	3	IZS	9	14	17	14	15	15	17	16	14	13	11	10	10	9	10	10	8	10	17	10.0	24
21	11	13	14	15	IZS	18	19	20	21	23	23	23	23	23	23	23	23	22	21	22	21	18	16	18	23	19.7	24
22	18	17	15	IZS	12	8	11	13	17	20	24	24	23	22	22	23	19	10	10	4	1	1	0	1	24	13.7	24
23	0	1	IZS	10	9	13	17	20	21	21	23	23	23	23	22	22	22	22	21	21	20	21	21	20	23	18.1	24
24	19	IZS	18	19	19	19	18	18	21	21	21	21	21	21	22	22	22	22	22	20	20	19	17	15	22	19.9	24
25	IZS	15	15	16	16	17	18	17	18	19	20	22	22	22	21	22	19	19	23	24	24	24	22	IZS	24	19.8	24
26	20	18	18	18	20	20	18	20	22	24	26	27	29	30	28	27	26	24	13	17	7	8	IZS	14	30	20.6	24
27	10	6	4	1	2	1	4	4	10	15	18	25	27	29	29	28	23	20	14	16	14	IZS	19	21	29	14.8	24
28	22	23	23	24	24	25	26	26	26	26	26	26	27	27	28	27	25	24	24	24	IZS	24	21	20	28	24.7	24
29	21	19	18	19	18	20	19	18	18	20	21	20	20	19	19	19	17	16	18	IZS	17	16	17	17	21	18.5	24
30	16	15	16	16	13	8	11	13	15	14	17	18	18	19	17	16	16	17	IZS	18	19	21	20	21	21	16.3	24
31	22	25	26	26	26	25	24	23	25	25	25	25	24	24	24	23	21	IZS	20	20	19	22	22	22	26	23.4	24
HOURLY MAX	29	31	32	33	32	33	31	29	31	30	30	33	35	38	39	39	40	40	39	35	31	31	31	32			
HOURLY AVG	15.0	15.1	15.0	15.2	14.6	14.2	13.3	14.8	16.1	18.4	20.5	23.1	24.7	24.9	24.9	25.3	24.2	21.7	19.4	18.3	17.0	17.7	17.3	16.5			

STATUS FLAG CODES

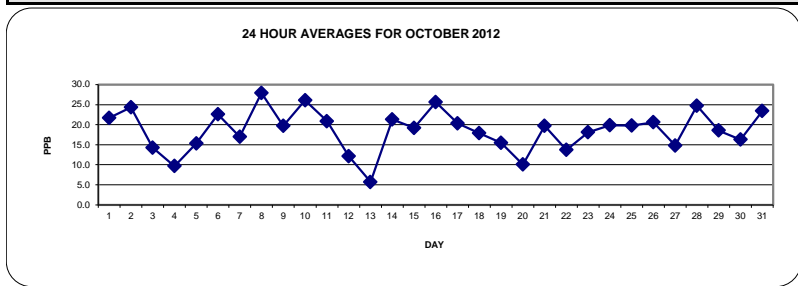
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OBJECTIVE LIMIT:

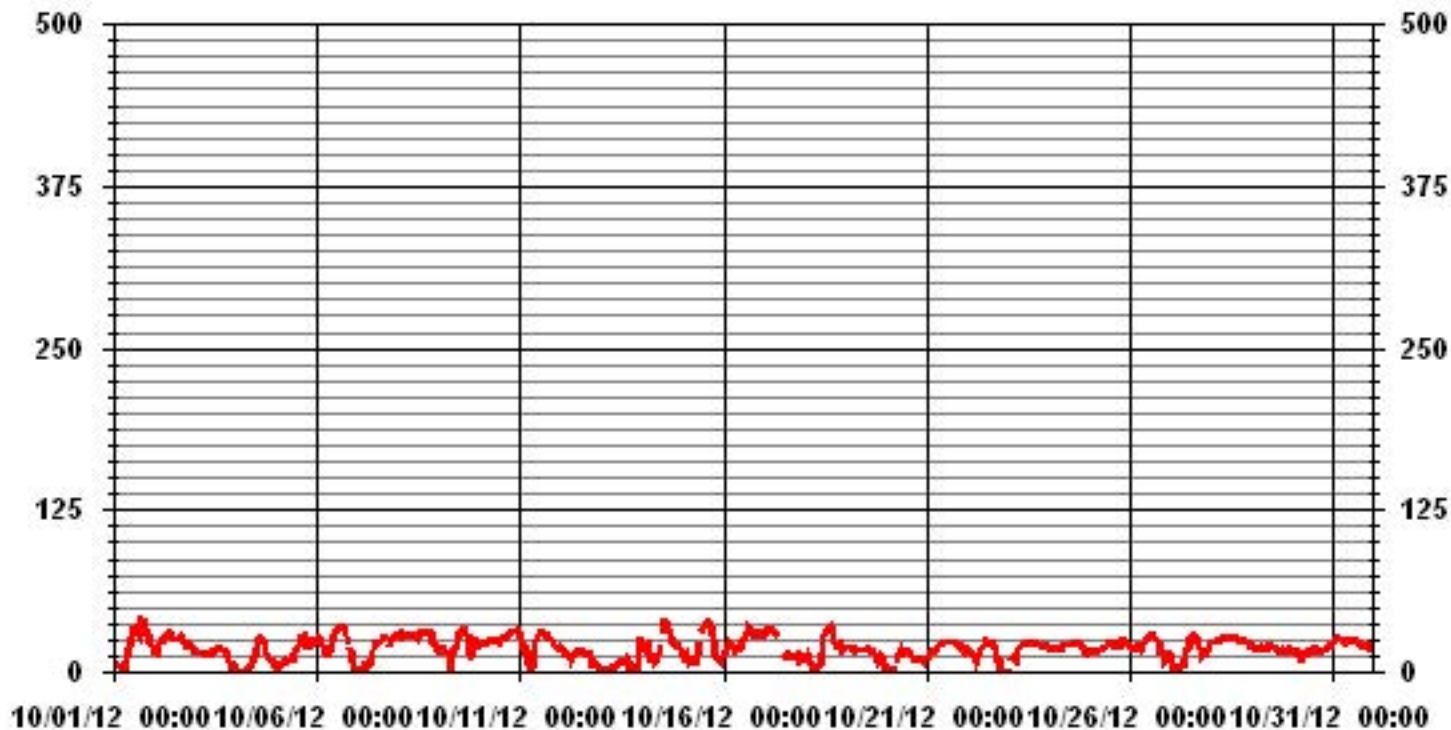
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	693				
MAXIMUM 1-HR AVERAGE:	40	PPB	@ HOUR(S)	17,18	ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	27.9	PPB			ON DAY(S) 8
					VAR-VARIOUS
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	741	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.6	%
STANDARD DEVIATION:	8.70		MONTHLY AVERAGE:	18.60	PPB



01 Hour Averages



— LICA35 O3_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

OZONE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	13	IZS	8	8	8	6	6	10	17	25	32	36	34	36	35	36	44	44	42	38	34	29	25	22	44	25.6	24
2	IZS	20	20	23	25	28	28	31	33	31	30	29	26	26	27	60	28	25	22	32	26	25	21	IZS	60	28.0	24
3	17	17	17	16	16	16	0	14	15	16	16	18	22	23	21	M	C	C	18	17	14	8	IZS	8	23	15.5	23
4	4	1	1	1	1	1	1	3	7	7	11	14	21	25	27	30	27	25	22	17	15	IZS	11	10	30	12.3	24
5	5	3	8	8	9	9	10	10	11	12	14	19	20	23	28	32	32	29	25	25	IZS	26	26	25	32	17.8	24
6	26	27	27	25	21	20	16	17	22	25	31	33	34	36	37	36	35	35	31	IZS	23	18	6	4	37	25.4	24
7	2	3	4	8	5	12	12	10	16	22	25	25	24	25	27	27	28	30	IZS	26	28	29	30	29	30	19.4	24
8	31	31	30	29	29	29	28	28	29	30	30	29	31	33	33	33	33	IZS	32	32	31	28	28	24	33	30.0	24
9	23	20	21	22	19	18	13	9	19	19	27	30	30	32	34	33	IZS	31	25	22	29	32	26	22	34	24.2	24
10	23	25	23	24	24	26	26	25	25	26	25	24	24	25	26	IZS	31	31	31	32	32	32	32	33	33	27.2	24
11	31	27	26	25	22	12	2	6	15	30	30	31	31	32	IZS	31	31	29	27	26	24	21	20	22	32	24.0	24
12	21	20	20	17	15	15	13	13	16	15	16	18	18	IZS	16	17	14	15	13	6	8	7	7	5	21	14.1	24
13	3	3	3	3	4	3	3	5	5	5	9	10	IZS	9	11	12	12	6	3	1	5	9	26	29	29	7.8	24
14	25	24	24	23	19	16	13	13	13	16	21	IZS	35	40	40	37	34	32	29	25	24	24	22	20	40	24.7	24
15	18	18	14	16	10	13	14	11	18	23	IZS	35	37	39	40	40	40	36	32	22	19	15	12	15	40	23.3	24
16	17	18	25	26	25	22	21	18	19	IZS	22	25	29	36	38	38	35	33	31	33	33	33	31	31	38	27.8	24
17	31	33	35	35	34	35	34	31	IZS	C	C	C	C	15	15	15	15	13	16	15	15	13	12	11	35	22.3	24
18	13	14	15	14	12	7	1	IZS	5	7	25	32	32	34	35	36	34	29	26	23	24	23	19	21	36	20.9	24
19	22	20	20	20	20	18	IZS	18	18	18	18	M	M	19	19	18	18	17	15	15	13	14	13	12	22	17.4	22
20	7	1	2	1	6	IZS	14	19	19	17	18	17	18	17	16	15	14	12	12	12	11	12	12	11	19	12.3	24
21	13	14	16	18	IZS	19	20	21	22	24	24	24	24	24	24	24	24	23	23	22	22	20	18	19	24	21.0	24
22	19	18	16	IZS	15	12	14	16	19	23	25	25	24	23	23	24	22	17	16	12	3	1	1	1	25	16.0	24
23	1	3	IZS	14	14	19	19	23	22	23	24	24	24	24	23	23	23	22	22	21	21	22	22	21	24	19.8	24
24	20	IZS	20	20	20	20	19	20	22	21	21	22	21	22	23	23	22	22	22	21	20	19	18	17	23	20.7	24
25	IZS	16	16	17	17	18	19	18	20	21	22	24	24	23	24	23	23	23	24	25	26	25	24	IZS	26	21.5	24
26	25	21	21	23	23	22	21	22	23	26	27	29	31	31	29	28	28	27	24	25	12	14	IZS	19	31	24.0	24
27	13	9	6	3	3	2	8	9	13	17	25	27	29	30	31	31	28	23	20	18	17	IZS	21	21	31	17.6	24
28	23	24	24	25	25	26	27	27	26	27	27	27	28	28	28	27	26	26	25	IZS	25	23	22	28	28	25.8	24
29	21	22	20	20	20	21	21	19	19	22	22	21	21	21	21	19	18	19	IZS	18	17	18	18	22	20.0	24	
30	17	17	17	17	15	15	14	15	16	17	18	19	20	20	18	17	17	18	IZS	18	20	21	21	24	24	17.9	24
31	23	26	26	27	26	26	25	24	26	26	26	25	25	25	25	25	24	IZS	21	21	21	23	23	23	27	24.4	24
HOURLY MAX	31	33	35	35	34	35	34	31	33	31	32	36	37	40	40	60	44	44	42	38	34	33	32	33			
HOURLY AVG	17.5	17.1	17.5	17.6	16.7	16.9	15.4	16.8	18.3	20.4	22.8	24.7	26.3	26.5	26.5	28.0	26.3	24.7	23.1	21.6	20.3	20.2	19.6	18.6			

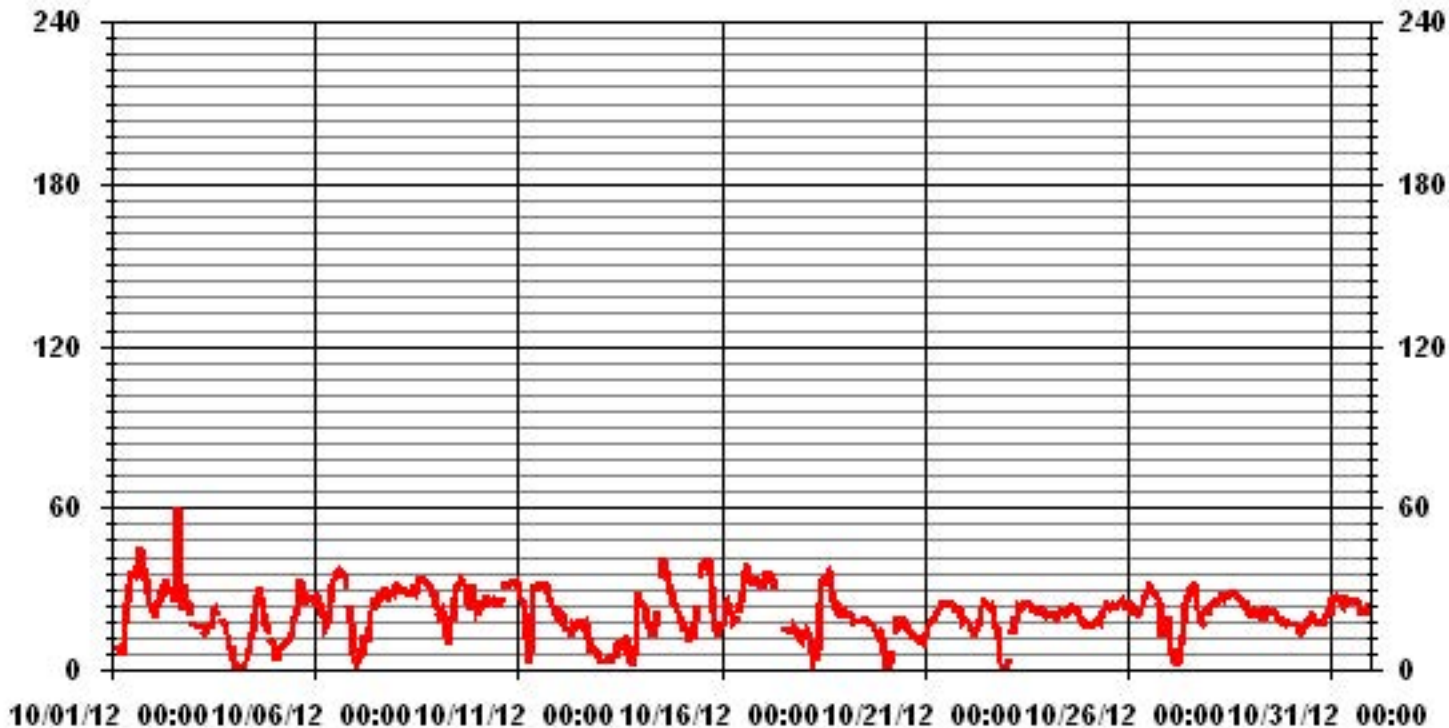
STATUS FLAG CODES

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:	701					
MAXIMUM INSTANTANEOUS VALUE:	60	PPB	@ HOUR(S)	15	ON DAY(S)	2
IZS CALIBRATION TIME:	33	HRS	OPERATIONAL TIME:	741	HRS	
MONTHLY CALIBRATION TIME:	6	HRS				
STANDARD DEVIATION:	8.68					

01 Hour Averages



LICA-ELK
 O3_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 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	2.27	1.13	.85	2.13	4.55	11.94	7.68	2.70	2.70	2.13	2.70	6.40	9.81	9.95	19.48	13.51	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	2.27	1.13	.85	2.13	4.55	11.94	7.68	2.70	2.70	2.13	2.70	6.40	9.81	9.95	19.48	13.51	

Calm : .00 %

Total # Operational Hours : 703

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	16	8	6	15	32	84	54	19	19	15	19	45	69	70	137	95	703
< 110																	
< 210																	
>= 210																	
Totals	16	8	6	15	32	84	54	19	19	15	19	45	69	70	137	95	

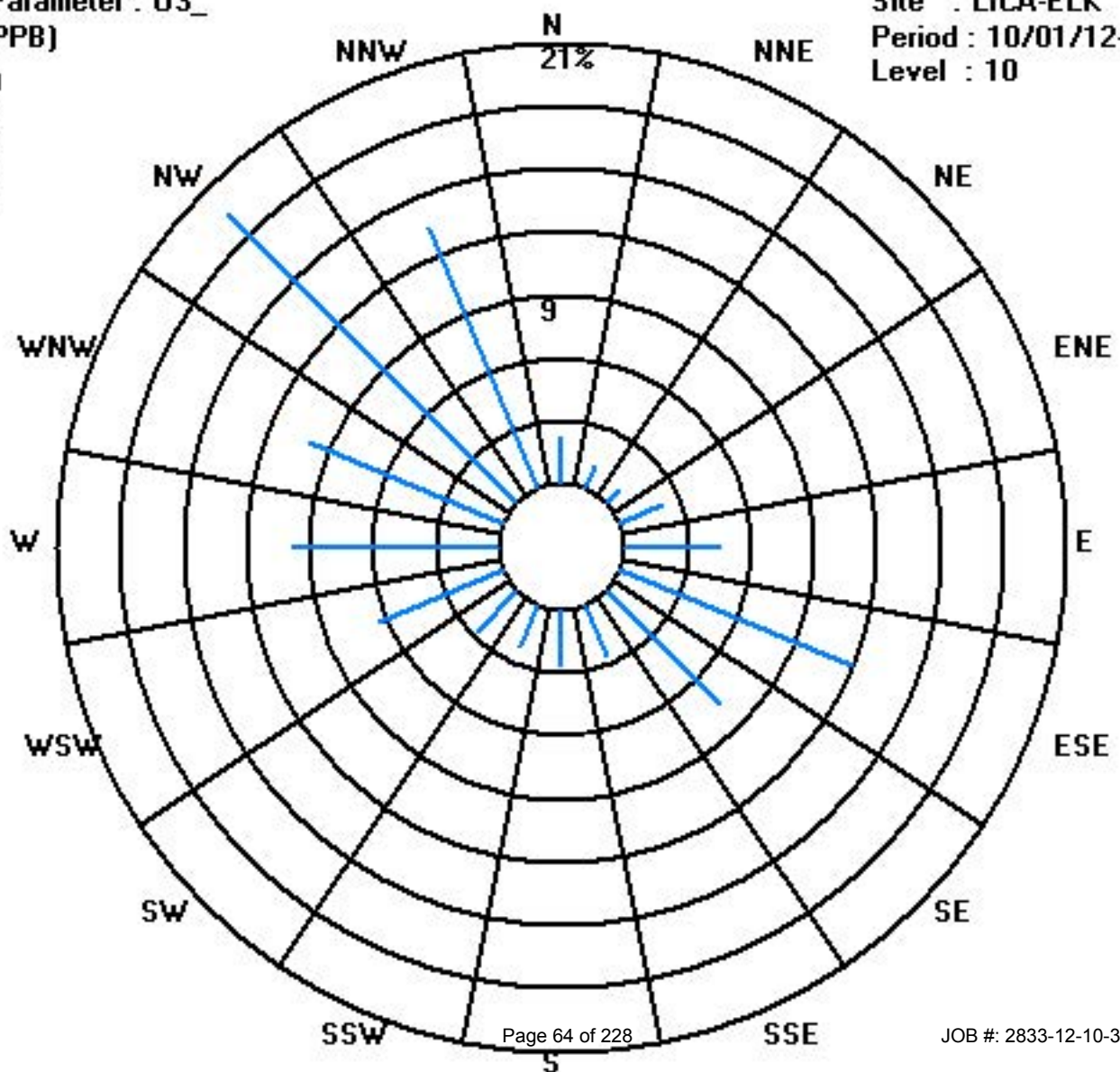
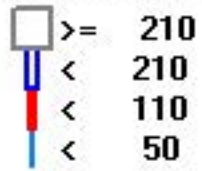
Calm : .00 %

Total # Operational Hours : 703

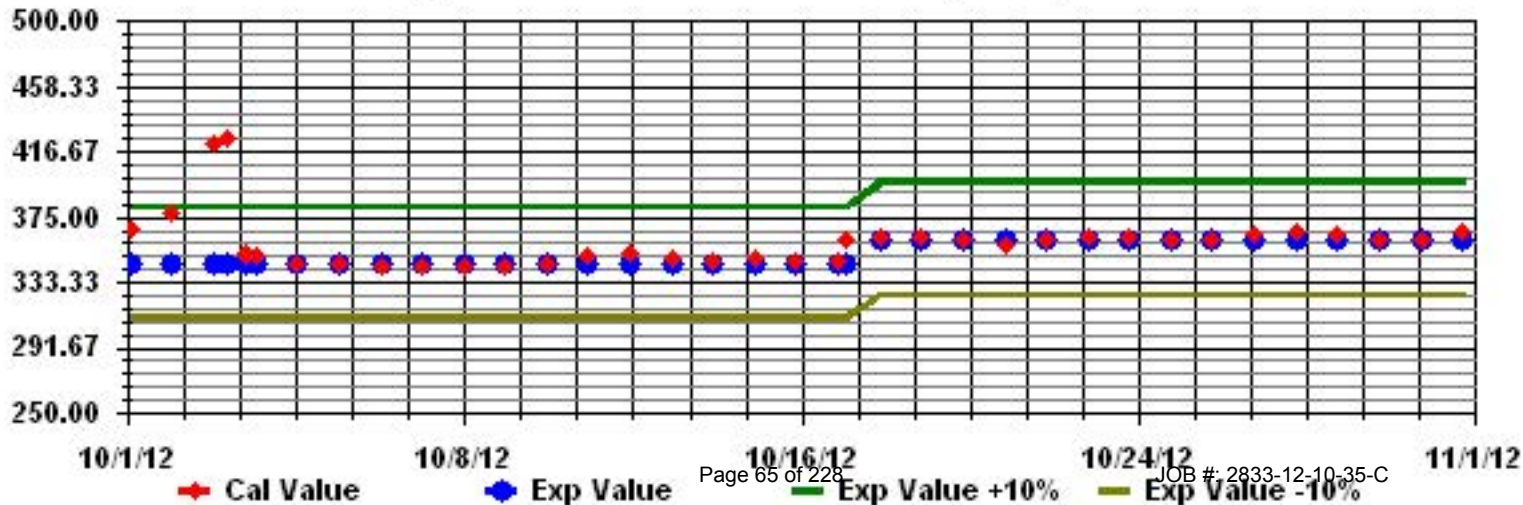
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



Calibration Graph for Site: LICA35 Parameter: 03_ Sequence: 03 Phase: SPAN



Total Hydrocarbons

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

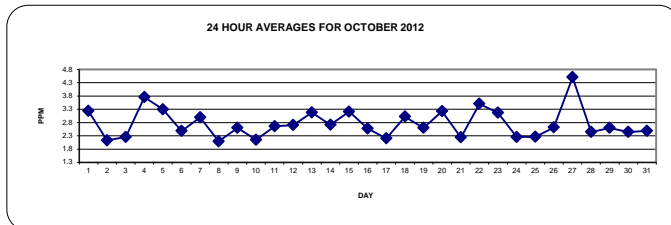
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
DAY	DAY	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
1	1	4.3	IZS	6.8	6.3	6.2	5.7	5.3	4.4	4.4	3.4	2.6	2.1	2	1.9	2	2.1	1.9	1.8	1.8	1.9	1.8	1.9	1.8	1.9	6.8	3.2	24	
2	2	IZS	2	2	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.3	IZS	2.3	2.1	24	
3	3	2	2	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	2.1	2.1	2.2	2.2	2.2	3	3.6	IZS	3	3.6	2.3	24	
4	4	4.6	5.1	6.2	5.9	5.2	5.6	6	5.3	4.5	3.4	2.9	2.6	2.4	2.1	2	2.1	2.1	2.3	2.6	2.8	IZS	3.2	3.5	6.2	3.8	24		
5	5	4	4.7	4.5	4.1	4	4.3	4.1	4.1	4.3	4.3	3.6	3.1	2.8	2.4	2.2	2.1	2	2.9	3.2	2.4	IZS	2.2	2.2	2.3	4.7	3.3	24	
6	6	2.2	2.2	2.1	2.3	2.4	2.2	2.5	2.3	2.1	2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.3	IZS	2.9	3.8	5.1	5.4	5.4	2.5	24		
7	7	6.1	5.9	6.2	5.3	5.1	3.8	3.2	3.4	3.7	2.1	1.8	1.8	1.8	1.8	1.8	1.8	1.8	IZS	1.9	1.9	1.9	2	2	6.2	3.0	24		
8	8	2	2.1	2.1	2	2.1	2.1	2.1	2.1	2.1	2.1	2	2.1	2	2	2	2	2	IZS	2	2	2.1	2.2	2.3	2.5	2.5	2.1	24	
9	9	2.7	2.5	2.5	2.7	2.8	2.6	3.8	3.8	3.2	2.3	2.3	2	2	1.9	1.9	1.9	IZS	2	2.2	3.6	3.3	2.3	2.6	2.9	3.8	2.6	24	
10	10	2.7	2.5	2.4	2.4	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	IZS	1.9	2	2	2	2	2	2	2	2	2.7	2.1	24	
11	11	1.9	2.6	2.4	2.6	2.7	3.1	3.9	5.2	4.7	3.1	2.1	1.9	1.9	1.9	IZS	2.1	2.2	2.2	2.3	2.4	2.5	2.4	2.5	2.4	5.2	2.7	24	
12	12	2.3	2.3	2.3	2.6	2.8	2.8	3.1	2.6	2.5	2.4	2.6	2.4	2.2	IZS	2.5	2.5	2.5	2.4	2.7	3.7	3.1	3	3.5	3.4	3.7	2.7	24	
13	13	3.7	4.2	3.6	2.7	2.3	2.6	2.8	3.5	3.6	3.6	2.9	2.7	IZS	2.5	2.6	2.6	2.6	3	3.5	4.2	5.2	3.4	3	2.2	5.2	3.2	24	
14	14	2.8	2.5	2.7	2.3	2.3	2.9	2.5	2.6	3.6	3.9	3.1	IZS	2.2	2.1	2.1	2.2	2.2	2.5	2.9	2.8	3.1	2.8	3.2	3.2	3.9	2.7	24	
15	15	3.3	3.8	3.7	3.2	3.4	3.5	2.6	2.5	2.3	2.1	IZS	2	2	1.9	2	2	2.1	2.3	2.4	3.7	8.9	5.2	4.6	4.3	8.9	3.2	24	
16	16	3.8	4	3.6	3	3	2.9	2.6	2.9	2.7	IZS	2.7	2.4	2.4	2.2	2	2	2.1	2.1	2	2.1	2.1	2.1	2.2	4.0	2.6	24		
17	17	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	IZS	C	C	C	M	M	M	M	M	M	M	M	M	M	M	M	M	2.3	2.2	13
18	18	M	M	M	M	M	M	M	IZS	M	M	M	M	M	M	2.1	2.1	2.3	3.1	3.4	3.7	3.9	3.3	C	3.3	3.9	3.0	11	
19	19	3.2	3.1	2.8	2.6	2.4	2.3	IZS	2.4	2.4	C	C	C	2.3	2.3	2.4	2.4	2.4	2.7	3.2	3	2.4	2.4	2.6	3.2	2.6	24		
20	20	3.7	8.7	8.8	9.2	6	IZS	2.5	2	1.8	2.3	1.9	1.9	1.9	1.9	2	2.2	2.2	2.2	2.2	2.2	2	2	2.4	2.1	9.2	3.2	24	
21	21	2	2	2.1	2.1	IZS	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.4	3	2.4	3.0	2.2	24
22	22	2.3	2.3	2.5	IZS	3.4	4.5	3.2	2.9	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4	2.4	3.3	4.6	5.6	7.6	12.8	12.8	3.5	24	
23	23	10.8	11.2	IZS	2.8	2.8	2.8	2.9	2.8	2.5	2.7	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	11.2	3.2	24	
24	24	2.2	IZS	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	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.3	24	
25	25	IZS	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.4	2.2	2.2	2.2	2.3	IZS	2.4	2.3	2.4	2.3	24
26	26	2.9	2.5	2.6	2.5	2.5	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.3	2.2	2.3	2.6	4.8	2.7	2.9	3.9	IZS	2.5	4.8	2.6	24	
27	27	2.7	3.9	5.2	6	7.2	9.1	7.8	6.3	5.1	4.5	3.5	2.1	C	2.3	2.3	2.5	3	3.5	5	5.4	5.5	IZS	3.3	2.9	9.1	4.5	24	
28	28	2.6	2.3	2.1	2.8	2.6	2.4	2.3	2.2	2.3	2.3	2.3	2.3	2.2	2.3	2.2	2.2	2.5	2.5	2.6	2.8	IZS	2.5	2.9	3	3.0	2.4	24	
29	29	2.6	2.7	3.2	2.9	2.8	2.7	2.8	3.1	3.1	C	C	C	2.3	2.2	2.2	2.1	2.4	2.7	2.2	IZS	2.5	2.8	2.4	2.2	3.2	2.6	24	
30	30	2.2	2.7	2.6	2.4	2.5	3.4	3.1	2.5	2.5	2.8	2.4	2.3	2.3	2.3	2.2	2.1	2.2	2.2	IZS	2.2	2.3	2.3	2.3	3.4	2.4	2.4	24	
31	31	2.4	2.3	2.3	2.2	2.3	2.4	2.6	2.7	2.5	2.4	2.4	2.4	2.5	2.6	2.6	2.6	2.5	IZS	2.5	2.5	2.6	2.6	2.6	2.6	2.7	2.5	24	
HOURLY MAX		10.8	11.2	8.8	9.2	7.2	9.1	7.8	6.3	5.3	4.5	3.6	3.1	2.8	2.6	2.6	2.6	3.0	3.5	5.0	5.4	8.9	5.6	7.6	12.8				
HOURLY AVG		3.2	3.4	3.3	3.2	3.1	3.1	3.0	2.9	2.7	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.6	2.7	3.0	2.8	2.9	3.1					

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
BB	- BELOW BACKGROUND OF 1.5 PPM		

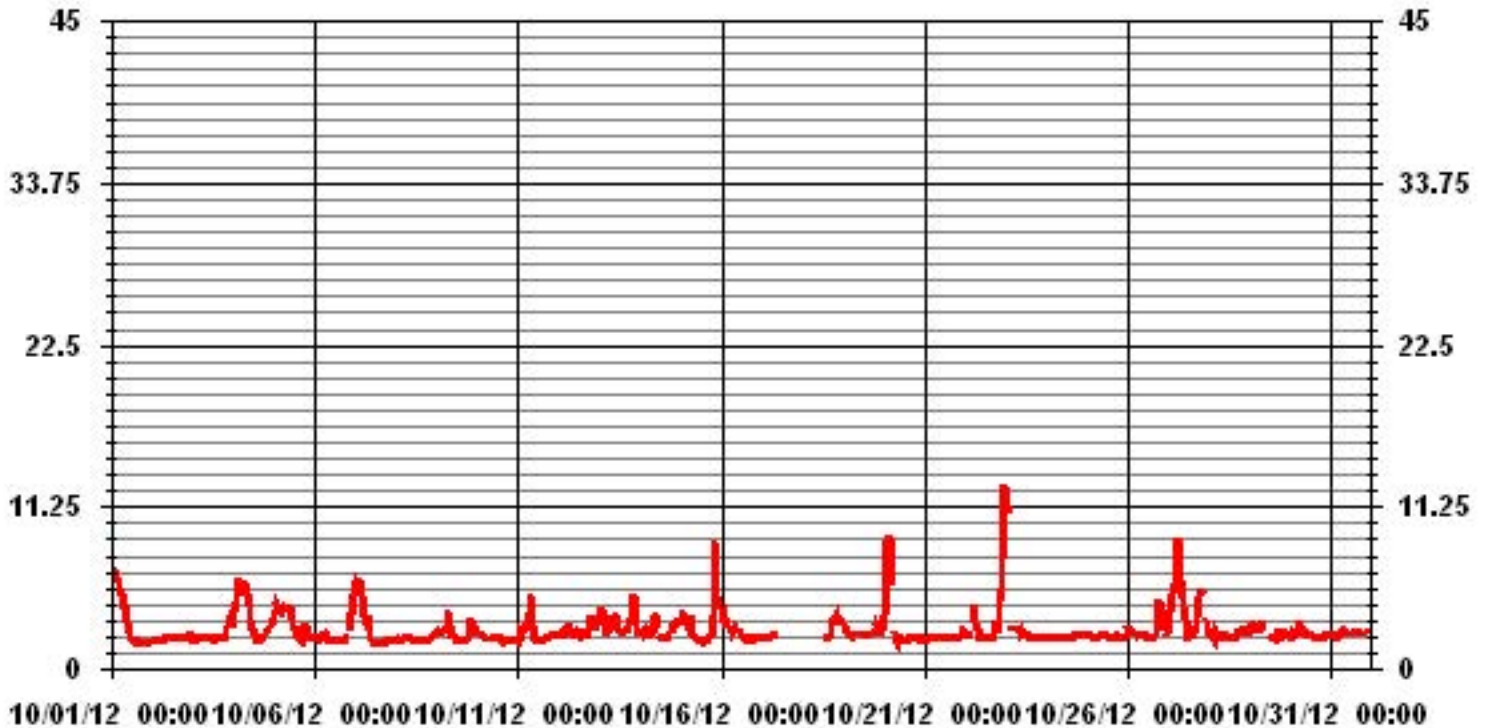
24 HOUR AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	675
MAXIMUM 1-HR AVERAGE:	12.8 PPM @ HOUR(S) 23 ON DAY(S) 22
MAXIMUM 24-HR AVERAGE:	4.5 PPM ON DAY(S) 27
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	12 HRS
STANDARD DEVIATION:	1.23
OPERATIONAL TIME:	720 HRS
AMD OPERATION UPTIME:	96.8 %
MONTHLY AVERAGE:	2.77 PPM

01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST																													
HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR			
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.	AVG.	RDGS.			
DAY																													
1	5.5	IZS	7.6	6.9	8.2	8.1	5.7	5.1	6.7	4.4	2.9	2.5	2.3	2.1	2.7	3	2.2	2	2.2	2.2	2	2.2	1.9	2.6	8.2	4.0	24		
2	IZS	2.1	2.2	2	2.1	2.1	2.1	2.1	2.1	2.3	2.1	2.1	2.2	2.2	2.2	3.8	2.4	2.2	2.3	3.2	2.3	2.3	2.5	IZS	3.8	3.8	2.3	24	
3	2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.4	2.2	2.2	2.2	2.3	2.4	2.2	2.2	2.4	2.5	3.3	3.7	4.8	IZS	3.4	4.8	2.5	24		
4	5.2	5.2	6.7	7.3	6.3	5.7	6.6	7	6.5	5.4	4.1	3.1	2.8	2.5	2.2	2.2	2.2	2.4	3.1	3.2	IZS	3.8	7.5	7.5	4.5	24			
5	4.7	5.7	5.6	4.6	4.3	4.5	4.4	4.7	4.5	4.5	4.2	3.5	3.1	2.6	2.4	2.3	2.1	5.8	4.9	2.8	IZS	2.3	2.3	2.5	5.8	3.8	24		
6	2.4	2.3	2.2	2.7	2.8	2.5	3.6	2.5	2.6	2	2.1	1.9	2.9	1.9	2	1.9	1.9	2.4	2.9	IZS	5.8	5.3	5.9	6	6	3.0	24		
7	7.5	7.3	8.5	7.3	7.6	6.1	3.9	4	5.1	2.7	1.9	1.8	1.9	1.8	1.8	1.9	1.9	1.9	IZS	2.1	2	2	2	2	8.5	3.7	24		
8	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	2.1	2.1	2.1	IZS	2	2	2.5	2.5	3	2.7	3	2.2	24		
9	3	2.7	2.9	3.3	3.7	3	7.2	4.7	5	2.5	2.4	2.2	2	2	2	2	IZS	2.1	5.4	5.5	6.7	2.5	3	3.3	7.2	3.4	24		
10	3	2.7	2.8	2.5	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	IZS	2	2.1	2.1	2.1	2.1	2.1	2	2	2	3	2.3	24		
11	2.2	3.5	2.9	3.1	3.1	3.6	5.3	10.6	6	4.1	2.5	2.3	2	2	IZS	2.3	2.5	2.6	2.6	2.7	2.9	2.7	2.6	2.7	10.6	3.3	24		
12	2.5	2.6	3.1	3.6	3.2	3.6	4.2	3.8	2.9	2.7	2.7	2.7	2.5	IZS	2.7	2.7	2.8	2.4	4.3	4.4	3.8	3.3	4	4	4.4	3.2	24		
13	4.5	4.9	4.5	2.9	2.5	3.3	3.8	5.3	4	4.1	4.7	2.9	IZS	2.6	2.8	3.3	3.5	5.7	4.4	5.6	7.9	4.8	4.3	2.4	7.9	4.1	24		
14	3.2	2.8	4	2.8	2.6	3.5	2.8	3.4	4.6	4.6	3.5	IZS	2.3	2.3	2.2	2.5	2.8	2.9	4.8	4.1	4.4	3.9	4.2	3.9	4.8	3.4	24		
15	4.5	5.5	6.3	3.8	4	4.6	3.4	3	2.7	2.3	IZS	2.2	2.1	2	2.1	2.5	3.3	2.7	8.1	54.4	8.2	6.1	6	54.4	6.2	24			
16	6.4	4.8	5.2	3.2	3.4	3.7	2.9	3.6	3	IZS	2.8	2.7	2.4	2.4	2.1	2	5.6	2.1	2.1	2.5	2.3	2.2	2.3	6.4	3.1	24			
17	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	IZS	C	C	C	M	M	M	M	M	M	M	M	M	M	34	M	M	M	34	5.9	13
18	M	M	M	M	M	M	M	IZS	M	M	M	M	M	M	2.2	2.2	2.8	3.7	3.9	4.1	4.5	3.5	C	3.7	4.5	3.4	12		
19	3.5	3.4	3	3	2.6	2.5	IZS	2.5	2.5	C	C	C	C	2.4	2.5	2.5	2.7	2.8	3.7	3.8	3.5	2.6	2.8	3.4	3.8	2.9	24		
20	8.2	11.1	11.3	11.6	9.7	IZS	3.2	2.3	2	3	2.1	2.1	2	2.1	2.4	2.5	2.6	2.7	2.6	2.8	2.3	2.3	2.6	2.5	11.6	4.2	24		
21	2.2	2.2	2.5	2.3	IZS	2.4	2.2	2.3	2.3	2.3	2.4	2.5	2.4	2.5	2.4	2.5	2.4	2.5	2.3	2.3	2.4	2.6	3.3	3	3.3	2.4	24		
22	2.4	2.4	2.6	IZS	3.9	5.8	3.4	3.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.2	2.3	6.1	5.5	5.9	5.8	12.4	21.8	15.3	21.8	5.1	24		
23	12.2	17.5	IZS	3.3	3.1	3	3	3.1	2.6	3.1	2.6	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.3	2.4	2.3	2.3	2.3	17.5	3.7	24		
24	2.3	IZS	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.5	2.4	2.7	2.7	2.3	24		
25	IZS	2.4	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.3	2.6	2.7	2.3	2.3	2.3	2.3	2.4	IZS	2.7	2.4	24		
26	4.4	2.7	3.3	2.8	3.5	2.5	2.8	2.6	2.6	2.5	2.4	2.3	2.3	2.3	6.7	2.4	2.6	5.1	6.8	3.8	3.2	5	IZS	3.4	6.8	3.4	24		
27	3.6	6.7	6.7	6.7	9.8	10.5	12	7.8	5.9	4.9	4.5	2.5	C	2.5	2.5	2.9	3.9	4.2	5.8	6	6.2	IZS	3.7	3	12	5.6	24		
28	3	2.5	2.4	3.1	2.7	2.6	2.5	2.3	2.3	2.5	2.5	2.4	2.3	2.4	2.3	2.3	2.7	2.7	3	3.3	IZS	3	3.1	3.4	3.4	2.7	24		
29	2.8	3.2	3.8	3.1	2.9	3	3.2	3.3	C	C	C	2.5	2.5	2.5	2.3	2.8	3.2	2.6	IZS	3	3.1	2.8	2.3	3.8	2.9	24			
30	2.3	3.2	3	2.7	2.7	6	5.7	2.8	2.8	2.9	2.6	2.4	2.5	2.5	2.3	2.2	2.3	2.3	IZS	2.3	2.4	2.3	2.4	2.5	6	2.8	24		
31	2.5	2.4	2.4	2.3	2.3	2.6	2.8	2.9	2.7	2.5	2.5	2.6	2.5	2.8	2.7	2.8	2.8	IZS	2.7	2.6	2.8	2.7	2.7	2.7	2.9	2.6	24		
HOURLY MAX	12.2	17.5	11.3	11.6	9.8	10.5	12.0	10.6	6.7	5.4	4.7	3.5	3.1	2.8	6.7	3.8	5.6	6.1	6.8	8.1	54.4	12.4	21.8	15.3					
HOURLY AVG	3.9	4.2	4.0	3.7	3.8	3.7	3.8	3.6	3.4	3.0	2.7	2.4	2.3	2.3	2.5	2.4	2.6	3.0	3.3	3.5	6.3	3.5	3.8	3.7					

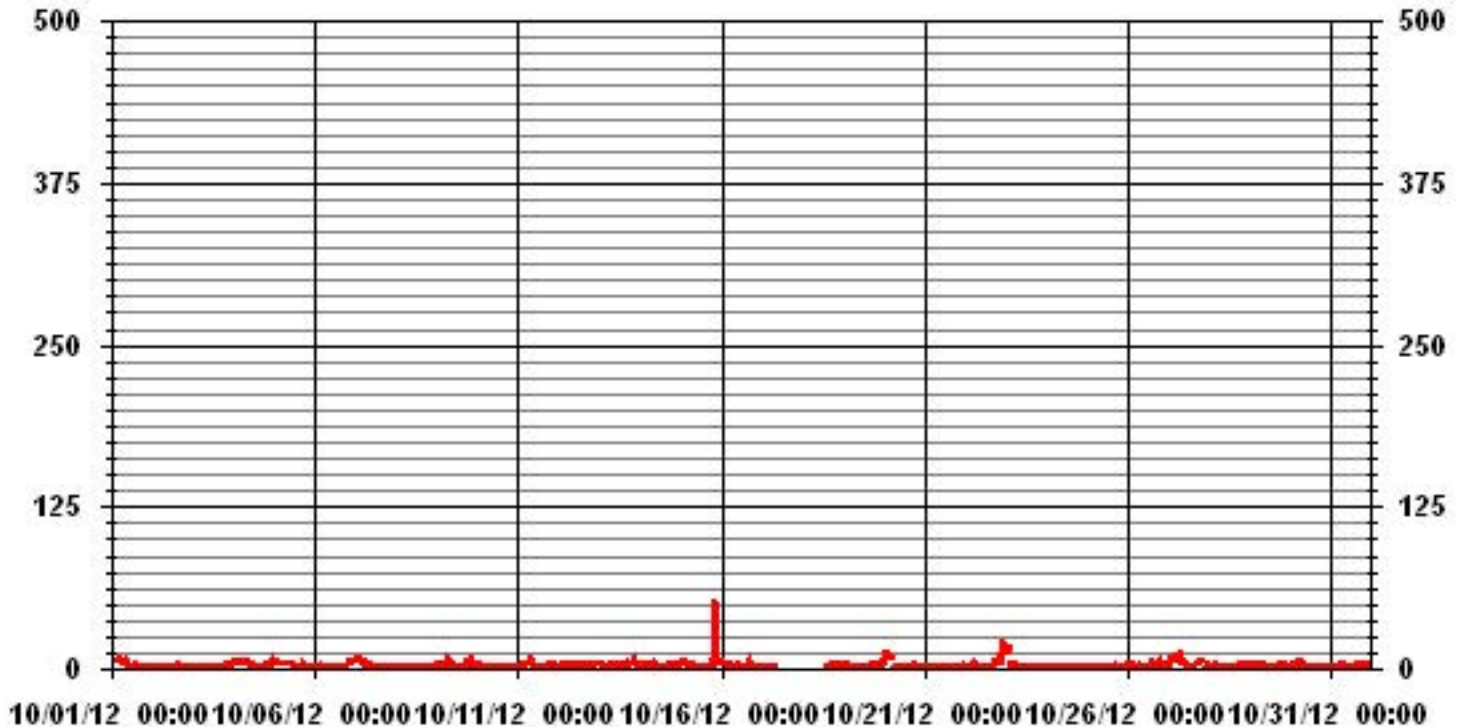
STATUS FLAG CODES

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:	674		
MAXIMUM INSTANTANEOUS VALUE:	54.4	PPB	@ HOUR(S)
			ON DAY(S)
IZS CALIBRATION TIME:	33	HRS	
MONTHLY CALIBRATION TIME:	13	HRS	
STANDARD DEVIATION:	2.99		
		OPERATIONAL TIME:	721 HRS

01 Hour Averages



LICA-ELK
 THC / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 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	1.92	1.03	.73	1.77	1.92	8.57	3.40	1.92	1.33	1.33	1.92	4.28	7.84	8.13	17.75	13.60	77.51
< 10.0	.59	.14	.14	.44	2.51	2.95	4.43	.73	.88	.88	.88	1.77	1.77	1.92	1.47	.44	22.04
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.51	1.18	.88	2.21	4.43	11.53	7.84	2.66	2.21	2.21	2.81	6.21	9.61	10.20	19.37	14.05	

Calm : .00 %

Total # Operational Hours : 676

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	13	7	5	12	13	58	23	13	9	9	13	29	53	55	120	92	524
< 10.0	4	1	1	3	17	20	30	5	6	6	6	12	12	13	10	3	149
< 50.0																	
>= 50.0																	
Totals	17	8	6	15	30	78	53	18	15	15	19	42	65	69	131	95	

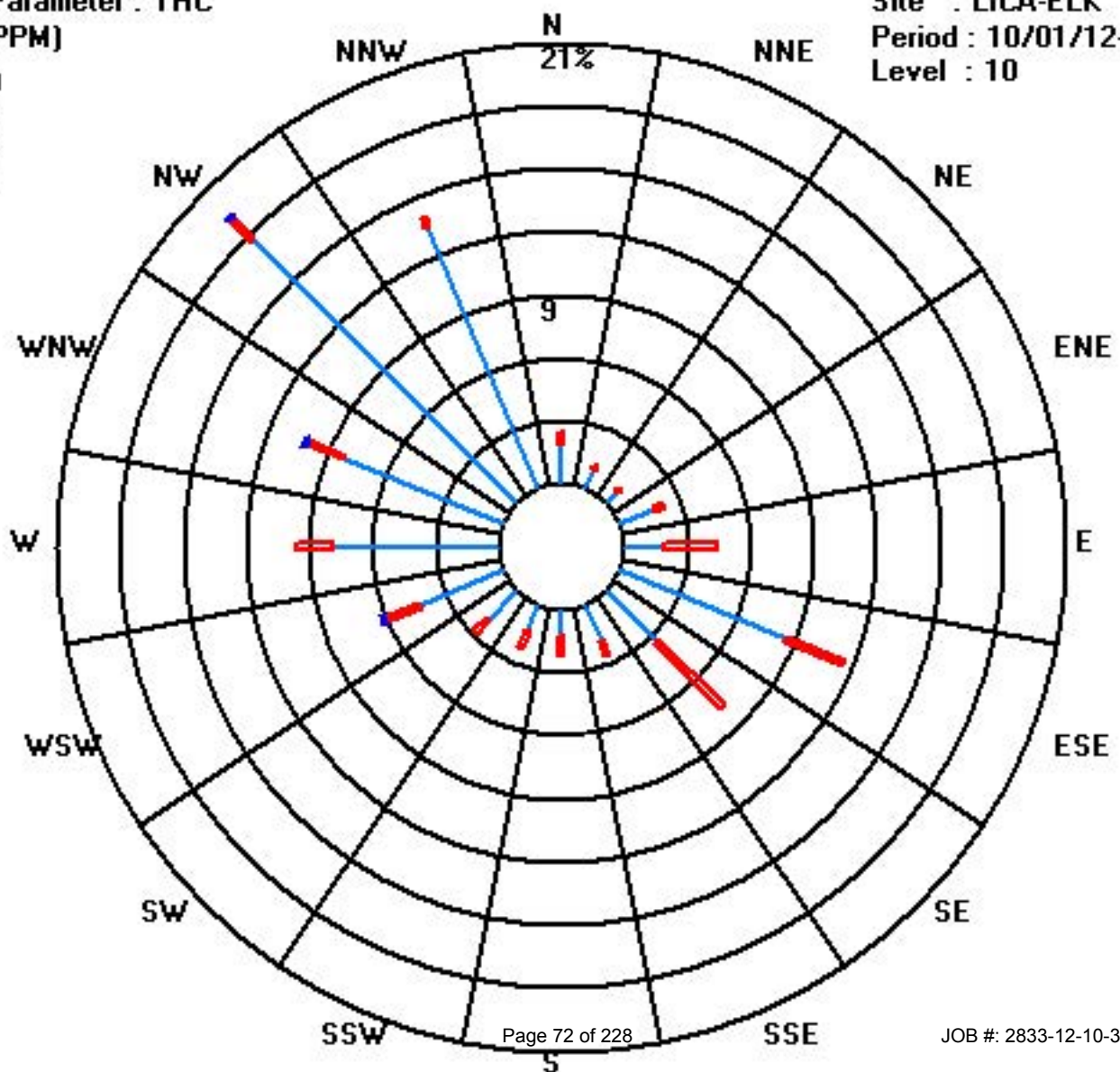
Calm : .00 %

Total # Operational Hours : 676

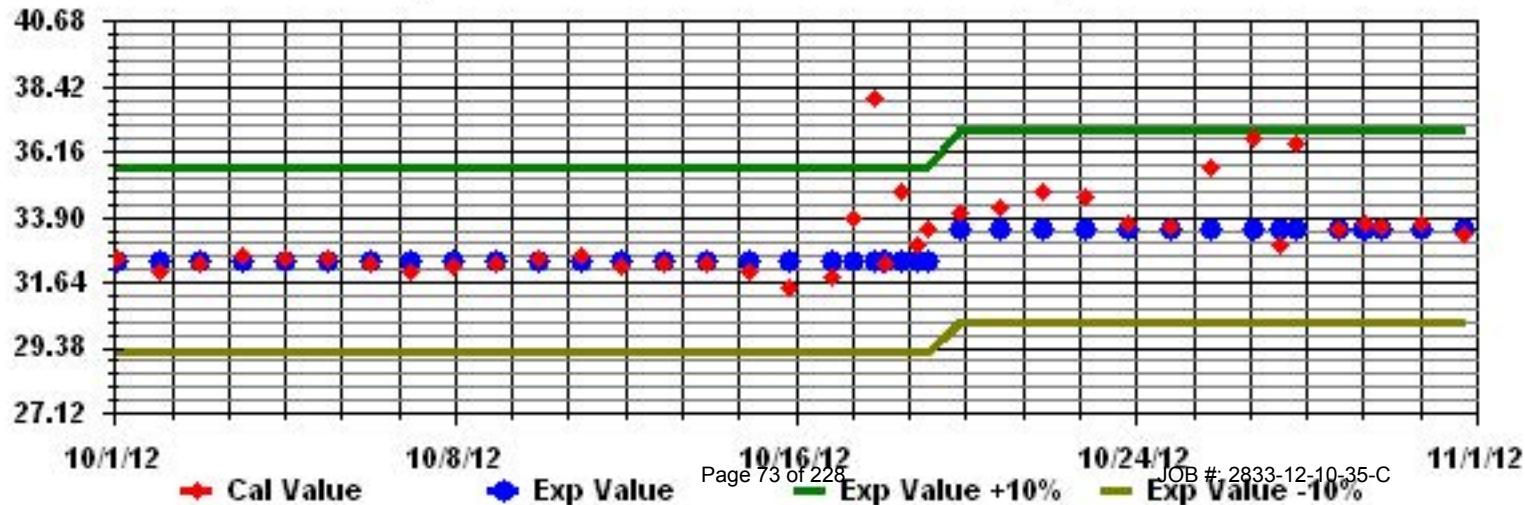
Class Limits (PPM)

Period : 10/01/12-10/31/12

Level : 10



Calibration Graph for Site: LICA35 Parameter: THC Sequence: THC Phase: SPAN



Vector Wind Speed

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

VECTOR WIND SPEED (WS) hourly averages (km/hr)

MST

DAY	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.
1	5	4.5	4.2	2	2	4.2	4.4	7.2	8.7	15.6	19.2	20.1	12.8	11.2	4.6	13.5	29.4	17.5	21.1	20.6	14.9	22.5	21.9	8.5	29.4	4.9	24
2	5.2	9.7	11.9	15.6	20.5	21.9	20.5	19.3	18.1	17.7	21.7	24.5	23.5	20.1	23	24.5	25.7	25.6	19.5	18	23.5	18.8	17.8	18.9	25.7	19.1	24
3	16	16.6	18.9	17.1	17.7	14.7	10.3	9.2	11.4	11	11.3	12.3	11.3	12	11.4	11.6	9.1	5.2	5.4	2.5	4.4	3.8	1.5	1.9	18.9	8.4	24
4	2.9	2.9	1	2.8	0.9	0.4	1.5	2.5	4.3	3.6	6.7	6.1	4.9	1	10.1	9.2	9.9	1.8	3.3	7.4	7.1	2.7	2.2	2.3	10.1	1	24
5	0.5	3.4	4.2	4.4	0.8	1.4	1.6	0.9	0.6	1.7	3.9	5.7	7.9	9.6	7.4	4.6	8.3	7	7.6	10	11.3	10.5	10.6	9.5	11.3	5.6	24
6	12.2	12.2	11.9	9.6	4.8	5.6	7.9	11.8	18.2	19.6	22.4	22.8	22	23.2	21.1	20.4	17.2	10.4	7.5	8	5.4	2.8	2.1	0.9	23.2	12.5	24
7	0.7	1.9	0.3	3.9	7.8	6.9	1.6	2.5	5	16.6	25.3	29.3	22.3	27.2	30.1	26.4	27.1	35.6	21.7	14.4	15.4	22.1	26.1	25.7	35.6	16.5	24
8	28.3	24.5	19.6	22.9	18.6	18.1	17.6	20.8	20.4	23.7	28	23.6	27.8	26.8	28.6	26.5	24.7	18.6	18.6	11.9	10.9	10.1	9.5	8.2	28.6	20.3	24
9	8.3	9.1	12.2	8	7.3	1.9	1.7	1.2	6.7	10.1	9.1	8.2	13.1	13.6	14.8	12.7	8.4	3.1	0.5	2.4	1.9	4	5.9	6.9	14.8	7.1	24
10	6.2	6.2	6.2	7.1	9.9	13.1	16.9	13.4	21.1	20.9	19.4	20	23.7	20.9	19.1	17.9	26.9	21.1	19	18.7	16.1	15.3	14.3	12.6	26.9	16.1	24
11	8.3	9.4	7	6.4	6.9	3.5	1.4	0.8	0.3	6	10.1	11.7	14.5	14.1	14.4	14.8	14.4	13.3	14.1	15.9	17.4	17	16.1	16	17.4	10.6	24
12	11.6	5.9	6.1	3.7	5.2	4.8	5.4	5.9	5.1	3.8	8.6	10.1	8.8	6.4	7.1	9.9	9.6	3.4	3	3	5.5	3.3	2.1	1.1	11.6	5.8	24
13	0.4	2.1	4.1	5	6.8	2.9	7.2	5.9	5.9	7.7	6.6	7.1	7.8	6.8	5.9	5.4	6.5	1	0.7	1.9	5.6	6.5	13.6	10.8	13.6	5.6	24
14	7.1	8.2	10.1	10.3	4.6	2.2	5.4	3	1.6	5.6	9.4	12.1	14.4	15.7	18.3	17.2	14.9	8.3	10.5	10.1	11.6	3	4.4	2.6	18.3	8.8	24
15	6.3	8	5.6	6.3	9.7	12.3	10	6.1	9.5	13.7	16.5	23.2	25.1	23.5	20.7	17.1	12.4	9.7	6.8	1.5	4.9	6.1	8.3	8.7	25.1	11.3	24
16	8.9	10.8	20.1	16.5	13.3	10.9	10.9	8.5	5.1	2.3	1.8	16.5	20.1	22.9	32.4	33.3	28.5	30.6	24.9	32.9	34.8	29.7	32	36.7	36.7	20.2	24
17	30.3	32.8	38.4	38.4	34.6	37.2	33.7	31	34	36.1	31.5	32.6	30.3	32.3	33	31.9	31.5	21.7	24.3	23.9	16.2	12.7	9.5	9.1	38.4	28.6	24
18	7.3	10.6	11.6	7.2	4	1.1	2.4	2	2.9	3.7	6.8	16	17.5	16.2	15.1	14.3	12.3	8.7	11.9	12.7	12.1	13.9	15.2	15.1	17.5	10.0	24
19	15.9	17.2	22.4	24.2	24.6	27	24.7	25.7	26.6	27.3	27.5	27.6	24.8	22.4	15	9.5	9.1	11.3	3.4	0.9	2.1	2.5	2.1	2.6	27.6	16.5	24
20	4.9	3.6	5.5	5.2	10.5	9.9	14.5	14.6	13.8	13.4	16.3	16.5	16.7	17.6	20.2	21.4	20.3	21.1	23.3	21.4	23.2	24.9	23.1	26.7	26.7	16.2	24
21	28.9	30.9	29.6	28.2	24.6	27	29.2	28.4	28.7	35.8	36.9	32.2	27.2	30.3	30.5	29.6	25.9	14.4	13.9	12.4	11.7	10.4	10.2	10.5	36.9	24.5	24
22	8.5	9.4	11.9	10.9	10.5	12.4	13	14.6	12.5	12.5	17.5	13.6	12	12.1	10.9	9.4	6.7	5.3	5.1	4.1	3.2	2.9	2.6	5.3	17.5	9.5	24
23	0.9	10.4	11.4	8.8	6.6	6.2	5.7	7.1	10.4	12.4	11.4	13.9	14.3	17.4	20.7	21.1	18.8	18.3	18.8	20.7	20.5	20.7	21.5	22.6	22.6	14.2	24
24	20.8	19.7	20.9	21.1	20.4	20.7	20.1	22.1	25	21.8	26.5	27.5	24	22.7	25.7	24.1	23.2	20.3	19	20.4	21.8	15.5	15	11.2	27.5	21.2	24
25	9.3	9.9	15.2	14.9	17.8	19.4	17	17.9	19.1	16.9	15.8	16.5	18.2	18	21.9	20.4	18.4	17.5	18.4	17.5	16.3	14.6	13.4	12.3	21.9	16.5	24
26	9.8	12.3	13.8	12.1	12	8.8	9.8	6.6	7.3	8.4	10.3	10.5	11.6	10.7	9.8	8.2	6.5	5	3.7	3.2	5.8	2.5	3.4	2.3	13.8	8.1	24
27	2.9	2.2	2.1	3.6	4.8	3.6	4.4	6.3	5.1	4.9	5.1	9.8	12.8	15.4	13.6	12	10.2	9.2	7	7.5	6.6	8.4	12.1	16.9	16.9	7.8	24
28	17.4	20.1	24.6	30.3	31.9	32.3	32.3	36.6	32.8	30.8	31.7	29.5	33.5	31	31	24.8	19.5	16.8	13.6	11.9	9.9	7.7	2.2	1.8	36.6	23.1	24
29	1.9	1.7	4.3	4	1.1	2.9	4.3	5.4	6.1	11.2	12.7	10.9	11.3	11.5	11.5	9.7	6.5	5.1	7.7	4.9	4.6	3.7	4.1	4.3	12.7	6.3	24
30	3.5	3.5	3.6	1.6	1.5	4.3	7.9	12.3	11.3	10.2	16.3	16.1	17.2	19.2	21.5	16.6	17.1	15.3	14.9	14.3	19.5	17.4	16.4	18	21.5	12.5	24
31	15.4	15.5	12.2	14.8	8.6	7.6	6.2	6.7	7.7	9	9.5	8.7	10	12.3	12.7	14.2	16.4	20.8	16.7	17.1	18.7	22.5	23	22.1	23.0	13.7	24
HOURLY MAX	30.3	32.8	38.4	38.4	34.6	37.2	33.7	36.6	34.0	36.1	36.9	32.6	33.5	32.3	33.0	33.3	31.5	35.6	24.9	32.9	34.8	29.7	32.0	36.7			
HOURLY AVG	9.9	10.8	12.0	11.8	11.3	11.1	11.3	11.5	12.4	14.0	16.0	17.3	17.5	17.6	18.1	17.2	16.6	13.6	12.4	12.0	12.4	11.6	11.7	11.4			

STATUS FLAG CODES

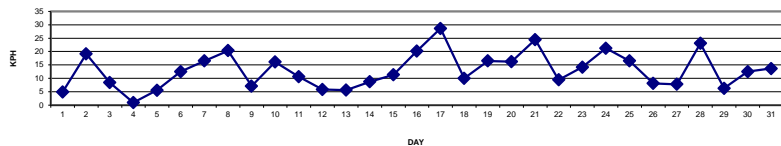
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: November 24, 2011

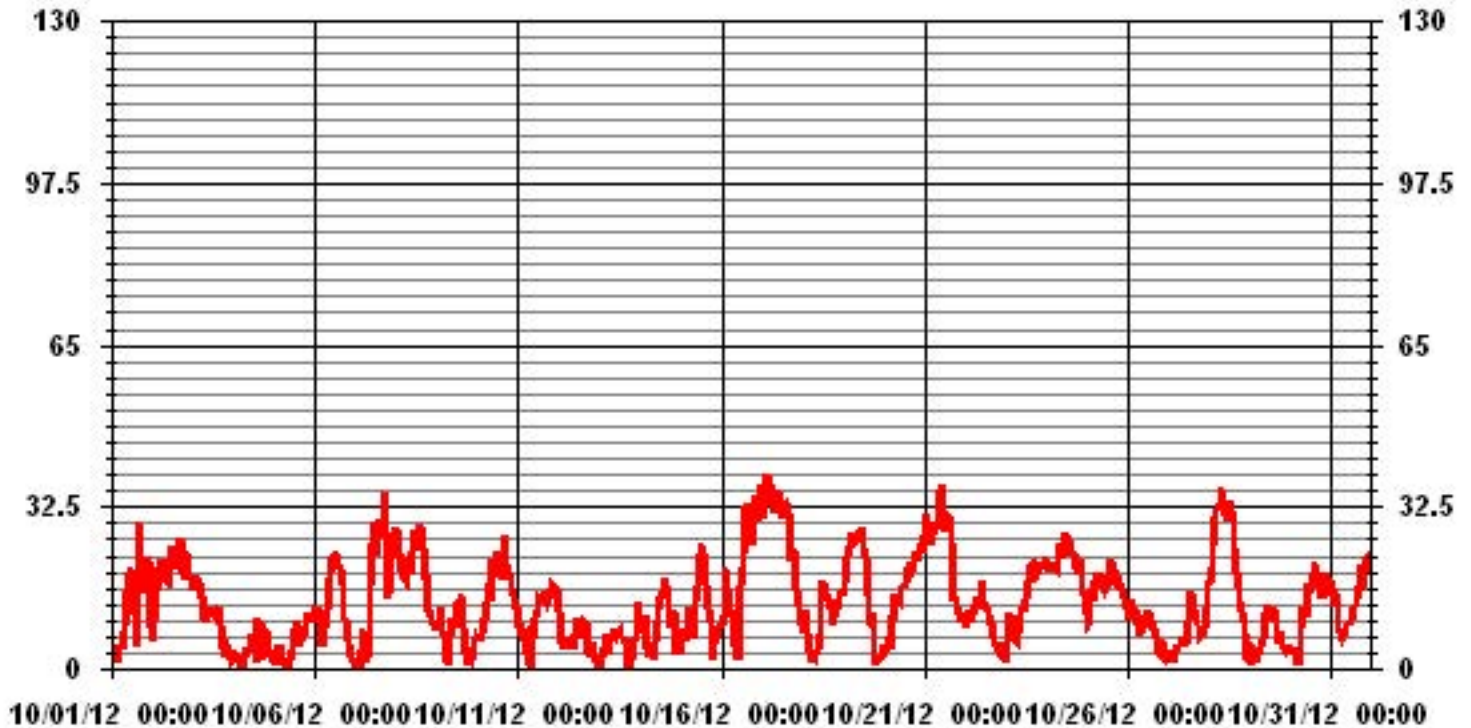
MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	38.4	KPH	@ HOUR(S)	3	ON DAY(S)	17
MAXIMUM 24-HR AVERAGE:	28.6	KPH			ON DAY(S)	17
CALMS (≤ 1 KPH)	0.27	%	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	8.80		MONTHLY AVERAGE:	13.39	KPH	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY
HOUR START	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.
HOUR END	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	
DAY																									
1	8.7	7.2	6.5	5.4	7.9	12.4	9.9	11	17.8	27.7	32.9	40.6	25.9	22.8	11.8	47.4	51.3	43.8	39.5	40.1	27.1	36.1	34.9	19.1	51.3
2	14.7	17.2	24.5	29.6	35.5	45.6	38.2	35.4	34.5	30	39.1	42.2	38.6	36.8	40.7	42.8	46.2	43.4	33.2	33.5	45.2	34.7	32.7	37.1	46.2
3	31.7	26.6	30.3	29.5	28	23.8	18.2	15.3	17.6	18.2	18.9	20.5	22.6	24.1	18.3	24.4	21.5	12.8	15.3	7.5	6.8	6.1	7	8.9	31.7
4	6.6	8.3	4	7.8	4.4	4.5	6.2	7.8	8.6	11.9	11.9	10.6	10.7	9.5	25.7	23.2	19.3	9.8	6.9	14.3	12.3	8.3	6.3	6.1	25.7
5	4.6	5.8	7.4	8	4.4	5.1	7.9	5.3	4.5	7	11.3	13.9	16.6	16.8	16.9	23.6	17.3	13	13.1	16.4	18.1	21	20.1	16.4	23.6
6	22.3	21.7	21.4	20.3	11.5	8.9	15.9	18.5	28.8	31.3	34.6	34.9	36.2	38.5	34.4	31.7	27.8	19.5	12.2	16	11.8	8.3	6.8	4.8	38.5
7	4.2	7.7	8.1	7.6	11.1	11.8	8.4	9.7	18.1	31.3	47.7	50.4	42.1	46.8	48.3	47.4	57.6	67.1	60.8	27.9	30.1	42	45.7	40.4	67.1
8	48	45.5	35	36.3	38	38.3	31.1	32.6	42.5	41	46.7	45.8	52	59.1	49.9	51.5	46.5	35.8	37.3	26.4	21.9	13.3	17.5	12.5	59.1
9	15.1	16.9	16.2	16.2	13.6	6.9	5.4	6.7	13	17.2	16.2	21.8	24.3	30.2	27	26.8	16.5	6.1	4.6	5.3	8.3	10.5	10.6	11.4	30.2
10	10.1	9.5	13.1	15.2	21.3	23.6	31.5	28	37.6	36.3	35.2	35	43.5	40.8	44.8	42.4	47.7	41.2	33.9	30.2	29.3	30.7	25.7	24.8	47.7
11	13.6	12.4	9.5	8.5	12.2	9.5	4.3	5.1	4.4	15.1	25.8	24.8	29.6	26.3	27	28.5	24.9	24.5	23.1	24.8	27.9	32	29.8	30.1	32
12	26.7	14.8	10	7.9	8	8	8.1	10.6	10.1	10	15.4	15.8	15.6	11.1	11.3	17.6	20	15.4	5.6	5.8	7.8	5.5	6.4	3.7	26.7
13	4.4	5.3	12.7	14.8	13.3	8.8	16.8	17.4	11	13.6	13.5	15.4	15	13.4	11.5	12	12.8	5.4	4.4	5.8	20.9	19.3	27.4	17.6	27.4
14	15.9	15.5	17.5	20.3	10.5	10.1	9.4	8.3	7.9	10.4	14.7	19.3	26.8	33.4	34.5	28.2	26.1	16.3	19.7	14.8	16.7	13.9	15.1	10.3	34.5
15	14.5	16.9	10.1	12.8	18.8	19.6	17.3	11	18.3	25.4	33	37.7	38.8	36.2	38.1	32.5	27.2	17.6	10.8	8.9	8.5	11.4	10.7	11.5	38.8
16	13.4	18.8	30.5	31.1	23	17.6	17.6	14.3	11.5	8.2	9.5	30.1	38.6	41.4	65.9	55.3	52.7	51.7	41.7	58.7	53.4	49.8	47.7	54.6	65.9
17	51.2	54.8	70.9	63.3	55	58.3	52.2	48.8	55.5	58.9	52	54	48.9	55.9	54.9	52.1	54.3	37.6	47.1	41.9	31	18.6	15.4	14.3	70.9
18	13	16.6	16.1	13	12.6	5.2	6.9	5.4	6.4	7.7	19.5	29.4	30.5	30.1	29.2	26	21.8	16	17.2	18.1	18.5	20.9	20.9	23.6	30.5
19	24.6	28.4	33.2	36.5	39.9	46.4	41.3	46.4	43.2	44.5	43.9	41.8	38.6	38.8	29.2	17	19.5	27.9	7.6	7.7	7.9	7.6	5.8	6.3	46.4
20	10.6	9	9.7	9.4	18	19	23.2	22.4	22.4	20.2	23.3	25.4	26.2	25.4	28.6	32.3	32.9	34.6	34.1	35.7	35.3	38	41.1	40.8	41.1
21	41.9	45.3	47.7	45.2	36.4	39.2	42.7	41.8	47.8	53	53	48.9	41.5	45.3	45.7	47.2	43.4	35	25.7	26.6	22.6	20.4	19	18	53
22	17.9	16.3	20.9	18.7	15	20.9	24.1	24	22.1	22.8	26.1	22.7	22.2	20.9	22.7	18.6	15	10	9.8	6.9	6.1	7.3	8.1	9.9	26.1
23	6.2	14.9	14.6	14.3	10.3	12.6	11.6	13.8	20.9	21.6	22	25.9	23.5	30.9	32.8	33.3	36.4	30.4	34.6	35	33.2	32.1	33.8	34.1	36.4
24	33.9	35.6	34.9	32.4	32.1	34.5	31.9	35.6	41.4	33.4	45.3	48.3	37.2	36	41.1	38.7	37.5	32.6	36.1	33.8	35.3	25.9	29.4	16.7	48.3
25	18.2	16.2	24	25	29	28.8	25.2	26.5	27.4	25.3	26.5	30.2	30.2	30.9	33.1	32	27.7	25.3	33.5	31	31	23.2	20.1	20.5	33.5
26	17.2	18.2	19.8	17.3	17.2	13.9	13.6	12.3	12.2	15	17.8	18.1	20.9	19.1	20.8	14.9	11.7	7.8	7.9	9.1	9.6	6.6	10.4	11.7	20.9
27	5.6	5.5	8.3	9.5	10.8	10	8.9	9.2	9	7.8	13.4	19.5	23.8	24.1	21.4	22.8	15.7	14.4	9.4	11.3	9.5	12.8	21.9	23.3	24.1
28	27.7	30	40.7	44.1	51.1	47.9	46.5	54.4	49	51.2	47.8	46.5	51.3	47.7	46.4	39.7	30.6	27.8	22	20.8	24.9	13.5	7.7	7.4	54.4
29	4.2	7.7	10	9.5	5	8.5	8.9	9.8	11.5	18.8	20.9	18.2	18	16	17.1	15.9	10.6	10.6	12	10.2	8.3	7.6	6.4	6.7	20.9
30	6.5	6.2	8.1	8.4	6	7.5	16	19.7	17.5	17.8	26.7	26.2	26.7	31.7	35.4	27.9	27.2	24.5	26.9	27.2	30.4	27.9	29.2	29.7	35.4
31	24.3	29.3	23.3	26.6	17.5	15.4	12.6	14.4	17.5	18.8	21.6	17.6	19.6	20.5	18.9	21.4	25.2	31.7	23.9	24.5	31.4	33.1	34.4	36.4	36.4
PEAK	51.2	54.8	70.9	63.3	55.0	58.3	52.2	54.4	55.5	58.9	53.0	54.0	52.0	59.1	65.9	55.3	57.6	67.1	60.8	58.7	53.4	49.8	47.7	54.6	

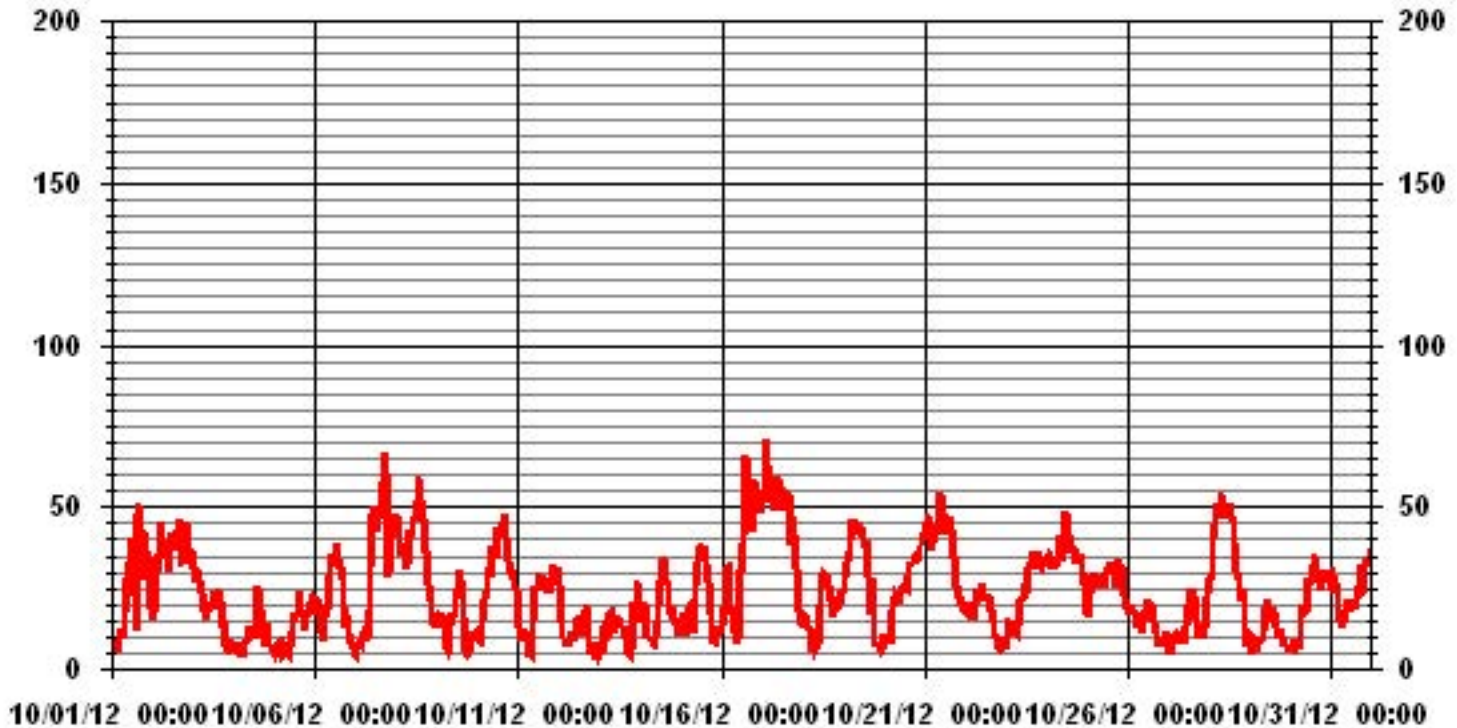
STATUS FLAG CODES

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 INSTANTANEOUS READING	70.9	KPH	@ HOUR(S)	2
			ON DAY(S)	17

01 Hour Averages



LICA-ELK
WSP / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : WSP
Units : KPH

Wind Parameter : WDR
Instrument Height : 10 Meters

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 6.0	.94	.53	.53	.94	2.28	1.88	2.55	.94	1.07	1.34	.67	2.01	2.55	2.28	2.01	1.47	24.05	
< 12.0	.80	.53	.40	1.07	2.28	3.49	2.15	.40	.53	.67	1.34	2.55	3.22	2.01	3.62	1.34	26.47	
< 20.0	.53	.26	.00	.00	.00	2.41	2.68	1.20	.94	.13	.53	1.47	1.34	2.15	6.98	4.56	25.26	
< 29.0	.00	.00	.00	.00	.00	2.55	.13	.13	.00	.00	.13	.13	1.47	1.74	5.10	6.04	17.47	
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	2.28	1.34	.94	2.01	4.56	11.82	7.66	2.68	2.55	2.15	2.68	6.18	9.54	10.34	19.75	13.44		

Calm : .00 %

Total # Operational Hours : 744

Distribution By Samples

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 6.0	7	4	4	7	17	14	19	7	8	10	5	15	19	17	15	11	179	
< 12.0	6	4	3	8	17	26	16	3	4	5	10	19	24	15	27	10	197	
< 20.0	4	2				18	20	9	7	1	4	11	10	16	52	34	188	
< 29.0						19	1	1			1	1	11	13	38	45	130	
< 39.0						11	1						7	16	15		50	
>= 39.0																		
Totals	17	10	7	15	34	88	57	20	19	16	20	46	71	77	147	100		

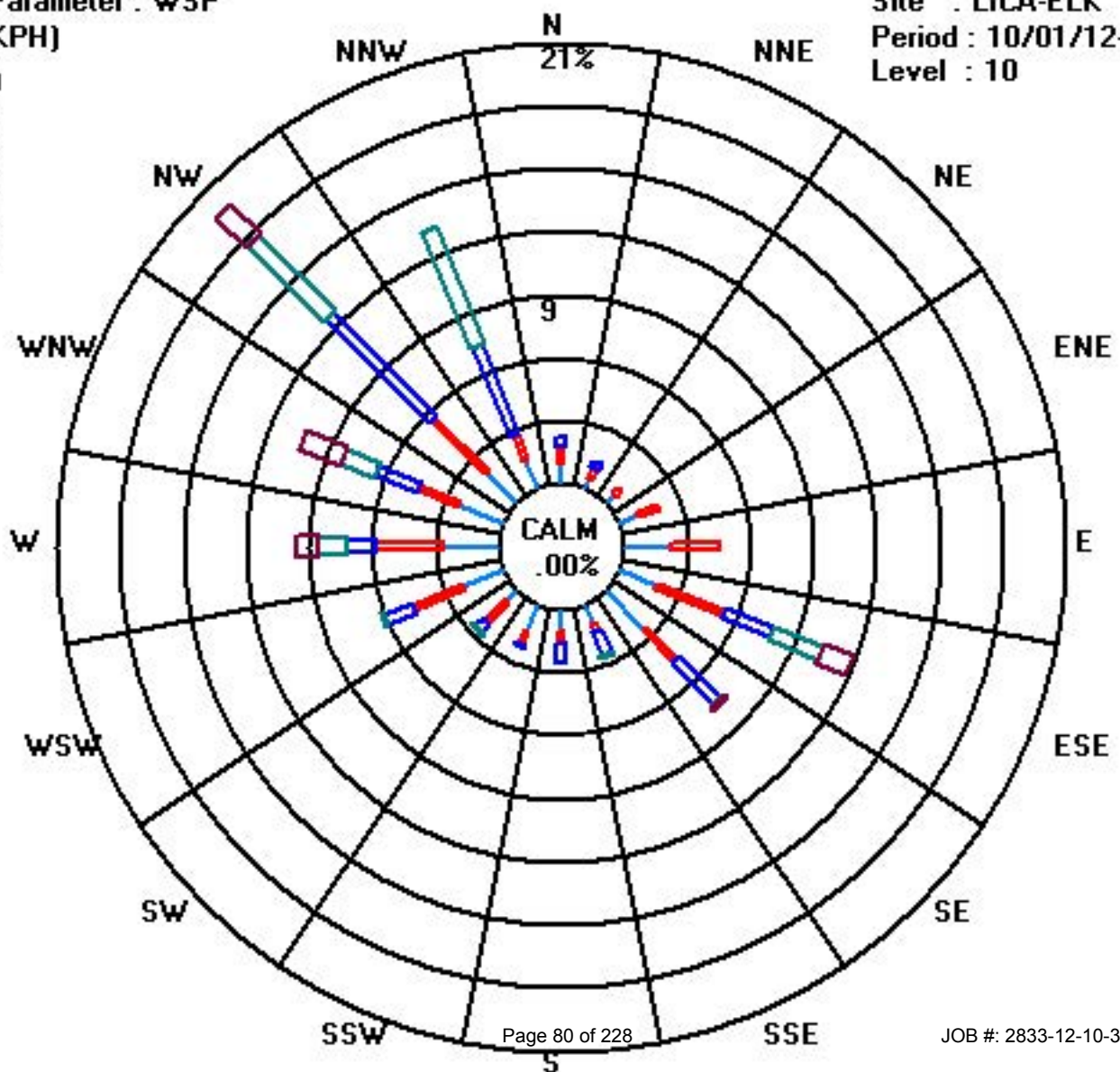
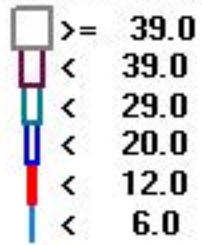
Calm : .00 %

Total # Operational Hours : 744

Class Limits (KPH)

Period : 10/01/12-10/31/12

Level : 10



Vector Wind Direction

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

VECTOR WIND DIRECTION (WD) hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR	24-HOUR AVG		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	AVG.	QUADRANT	RDGS.	
DAY																												
1	248	323	323	330	144	92	113	90	96	113	124	166	152	151	253	265	285	268	232	240	258	279	301	286	239	WSW	24	
2	290	303	305	328	337	347	341	347	343	331	327	332	341	339	342	340	335	337	336	335	347	349	341	338	337	NNW	24	
3	334	330	329	327	328	328	326	328	332	322	314	305	288	278	303	356	129	244	186	128	145	330	312	320	320	NW	24	
4	258	268	275	303	291	250	193	169	137	94	136	120	118	190	274	350	53	72	76	87	106	95	305	301	87	E	24	
5	201	139	130	88	17	44	94	164	276	147	147	133	90	117	134	244	215	188	191	206	207	209	213	227	178	S	24	
6	231	231	231	243	254	267	271	277	306	320	323	319	325	318	316	318	319	311	272	272	259	285	325	294	298	WNW	24	
7	354	310	353	80	109	105	90	314	280	299	312	320	320	320	314	311	319	333	307	317	325	329	329	321	321	NW	24	
8	334	335	312	315	317	313	307	307	315	316	310	312	315	326	318	319	323	323	332	319	308	307	293	287	317	NW	24	
9	262	259	253	260	262	277	213	261	266	276	286	295	294	303	283	285	298	329	186	142	351	357	68	73	284	WNW	24	
10	68	60	30	4	22	18	9	350	346	345	338	343	343	347	340	332	324	325	327	332	334	343	346	348	345	NNW	24	
11	318	294	307	286	265	251	281	259	173	126	141	160	150	169	157	154	141	122	124	132	135	141	144	148	151	SSE	24	
12	152	142	102	106	123	127	108	91	92	115	93	96	121	82	87	63	74	81	132	117	103	126	146	170	105	ESE	24	
13	142	148	231	262	266	160	188	189	144	140	194	220	217	220	215	205	225	217	227	335	271	235	247	247	219	SW	24	
14	281	257	246	255	273	252	267	310	103	98	98	106	139	155	147	127	125	124	123	119	129	71	118	93	141	SE	24	
15	312	297	255	263	258	256	265	266	274	260	263	282	281	279	274	267	260	246	234	197	129	96	107	95	267	W	24	
16	82	122	127	128	106	121	119	92	101	21	267	315	319	320	323	319	316	310	310	308	304	301	296	294	299	314	NW	24
17	298	295	302	302	304	298	297	295	306	303	305	303	310	319	316	315	310	311	311	314	315	291	282	274	305	WNW	24	
18	265	254	251	273	270	256	162	132	87	98	142	176	174	169	159	152	143	121	130	135	132	128	125	120	156	SSE	24	
19	118	117	115	114	113	113	113	110	115	115	114	116	116	112	115	93	81	100	262	326	301	343	360	206	113	ESE	24	
20	285	254	301	259	256	282	305	307	308	294	303	295	294	296	286	283	284	284	287	288	291	287	282	279	289	WNW	24	
21	277	278	282	282	282	276	277	277	273	277	280	286	278	281	277	278	273	261	252	256	257	258	260	254	276	276	W	24
22	257	256	249	251	246	236	236	246	250	252	280	278	253	240	231	260	252	209	202	290	300	189	251	291	251	WSW	24	
23	248	320	316	313	311	345	3	353	345	355	16	20	348	339	338	341	340	340	344	342	339	335	337	336	341	NNW	24	
24	332	330	331	334	330	330	329	328	333	330	332	329	327	328	328	329	330	326	323	323	326	315	329	307	328	NNW	24	
25	318	327	315	317	321	318	319	315	313	312	317	328	322	317	316	310	302	300	310	312	315	311	309	308	314	NW	24	
26	287	274	289	304	303	307	301	324	342	328	314	318	309	323	331	328	337	298	316	276	255	293	13	200	308	NW	24	
27	227	209	78	104	148	142	87	121	104	91	102	180	191	193	190	176	144	137	143	146	142	131	125	121	149	SSE	24	
28	119	118	116	118	119	119	119	124	119	120	119	121	122	117	122	120	114	110	117	118	121	119	121	0	119	ESE	24	
29	316	339	328	335	291	40	53	75	75	94	104	113	114	108	113	128	112	75	51	46	21	335	321	318	83	E	24	
30	309	306	333	327	299	288	306	312	312	308	317	320	310	310	319	315	314	310	313	316	315	316	316	310	314	NW	24	
31	309	326	342	336	357	11	30	46	63	68	105	109	120	119	124	133	129	119	106	105	105	104	108	105	91	W	24	
HOURLY AVG	354	339	353	336	357	347	341	353	346	355	338	343	348	347	342	350	356	340	344	342	351	357	360	348				

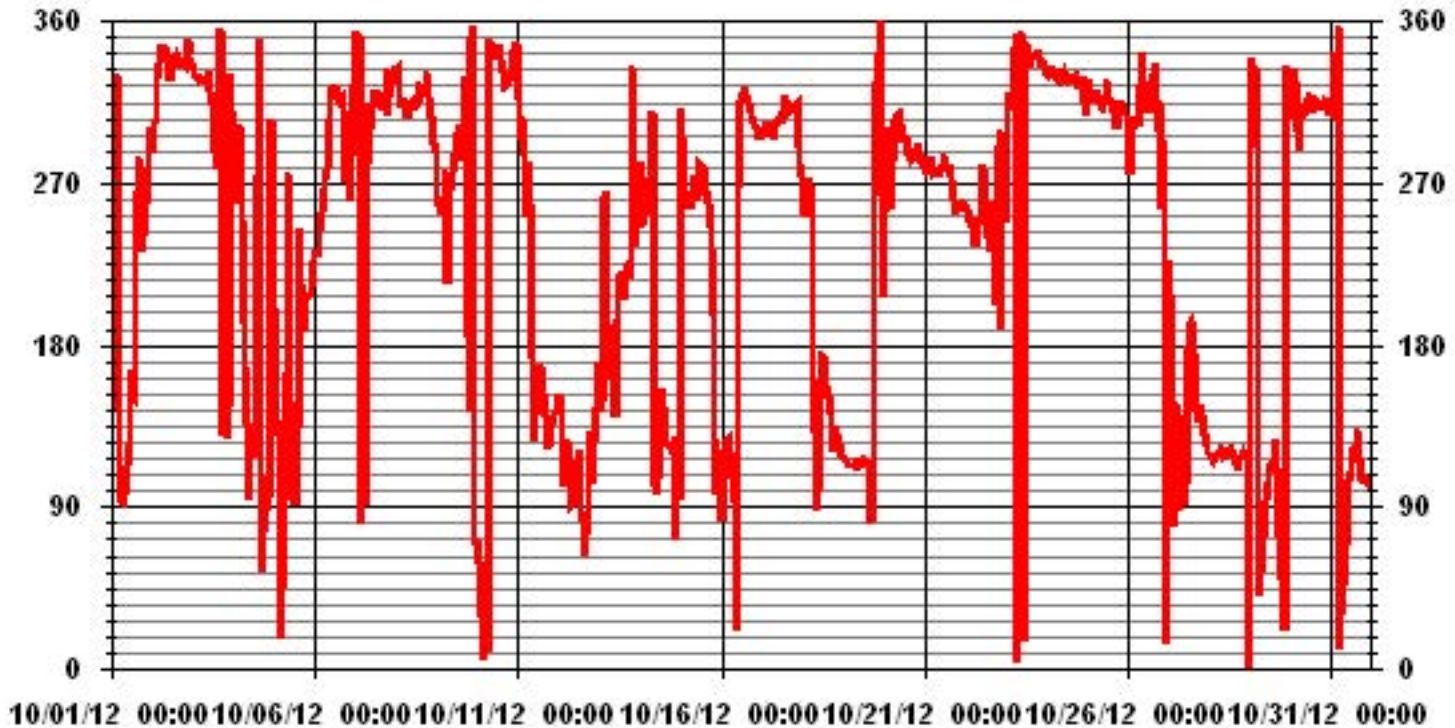
STATUS FLAG CODES

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:	November 24, 2011
DECLINATION :	19 DEGREES FROM MAGNETIC NORTH

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	744 HRS
STANDARD DEVIATION:	94.53	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	310 DEG

01 Hour Averages



Standard Deviation Wind Direction

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE - Elk Point Airport

OCTOBER 2012

STANDARD DEVIATION WIND DIRECTION (STDWDIR) hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00
DAY																								
1	13	9	12	14	26	46	37	9	11	10	10	13	14	16	21	21	8	12	13	10	11	7	7	10
2	11	10	7	8	9	12	11	13	12	11	11	10	10	9	10	10	9	9	8	9	12	12	11	10
3	9	9	8	8	8	8	8	9	9	10	9	11	15	16	11	14	17	34	25	24	12	18	30	36
4	10	11	45	30	21	18	31	49	19	39	12	16	25	58	20	18	11	56	29	11	13	42	33	23
5	25	19	11	20	38	69	60	33	37	40	30	25	26	16	34	46	10	6	8	7	7	9	10	10
6	10	11	11	13	13	8	13	7	8	8	9	10	11	10	10	9	8	6	8	8	9	18	13	28
7	37	35	35	18	11	14	64	24	17	10	10	9	8	9	9	9	8	9	9	7	9	9	9	8
8	9	8	7	7	10	9	8	7	9	10	9	10	9	11	10	10	9	8	8	9	6	4	7	6
9	10	9	5	20	12	13	36	17	13	10	14	24	18	18	12	14	8	16	42	28	58	34	15	8
10	11	10	12	14	15	13	13	11	11	12	10	12	11	12	12	10	9	9	10	9	8	11	12	13
11	8	4	5	5	6	5	16	29	47	29	20	18	14	16	13	11	7	8	8	8	11	11	11	12
12	14	18	14	13	7	9	10	14	23	24	13	11	11	14	10	11	12	52	14	18	9	14	40	16
13	38	19	11	12	14	28	12	12	12	16	17	17	15	14	15	20	13	23	24	22	9	48	9	7
14	29	10	9	13	24	40	11	26	50	16	14	13	16	15	14	10	8	17	7	5	6	40	29	50
15	32	30	12	8	18	9	20	14	9	12	13	9	9	9	11	13	10	9	4	32	15	10	7	8
16	8	7	7	17	10	15	10	9	19	47	46	14	9	9	9	9	9	8	6	7	7	6	6	7
17	6	6	7	7	6	7	7	7	8	7	7	7	8	9	8	9	7	7	7	7	8	8	6	7
18	13	6	5	8	23	14	18	30	22	31	17	14	13	13	14	13	10	6	4	6	7	6	5	5
19	6	7	7	7	8	7	8	8	8	9	9	8	10	10	11	13	9	34	19	51	36	47	35	16
20	29	16	8	17	10	9	7	7	7	6	5	5	5	5	5	6	7	6	6	6	6	6	6	6
21	6	6	7	6	7	7	6	7	8	8	8	6	10	7	8	7	7	9	10	12	12	10	10	10
22	12	9	8	10	6	7	7	9	11	9	10	13	15	15	18	14	14	8	9	11	9	16	18	18
23	24	5	4	5	6	10	18	13	10	14	17	13	10	8	9	9	10	10	11	10	9	7	7	7
24	8	8	7	7	8	8	8	7	7	8	8	8	8	8	8	7	8	8	9	8	8	8	7	7
25	6	7	8	7	8	7	7	6	6	7	10	10	11	8	8	7	5	5	6	7	8	6	6	6
26	7	5	5	5	7	5	6	12	9	10	8	10	12	16	13	12	9	8	13	24	15	19	24	47
27	12	16	51	40	18	38	19	9	20	14	20	12	12	13	11	11	10	5	4	7	6	5	7	6
28	6	7	6	7	6	7	7	7	7	8	7	7	7	7	7	7	6	7	7	7	19	12	41	18
29	23	35	24	14	52	30	15	12	13	10	8	11	9	7	8	7	8	10	10	14	12	11	8	7
30	8	10	12	25	48	16	14	9	7	11	7	9	8	8	9	9	8	8	8	8	7	8	7	7
31	7	8	10	8	11	13	13	11	16	17	17	14	15	13	10	10	8	7	6	6	7	7	7	7

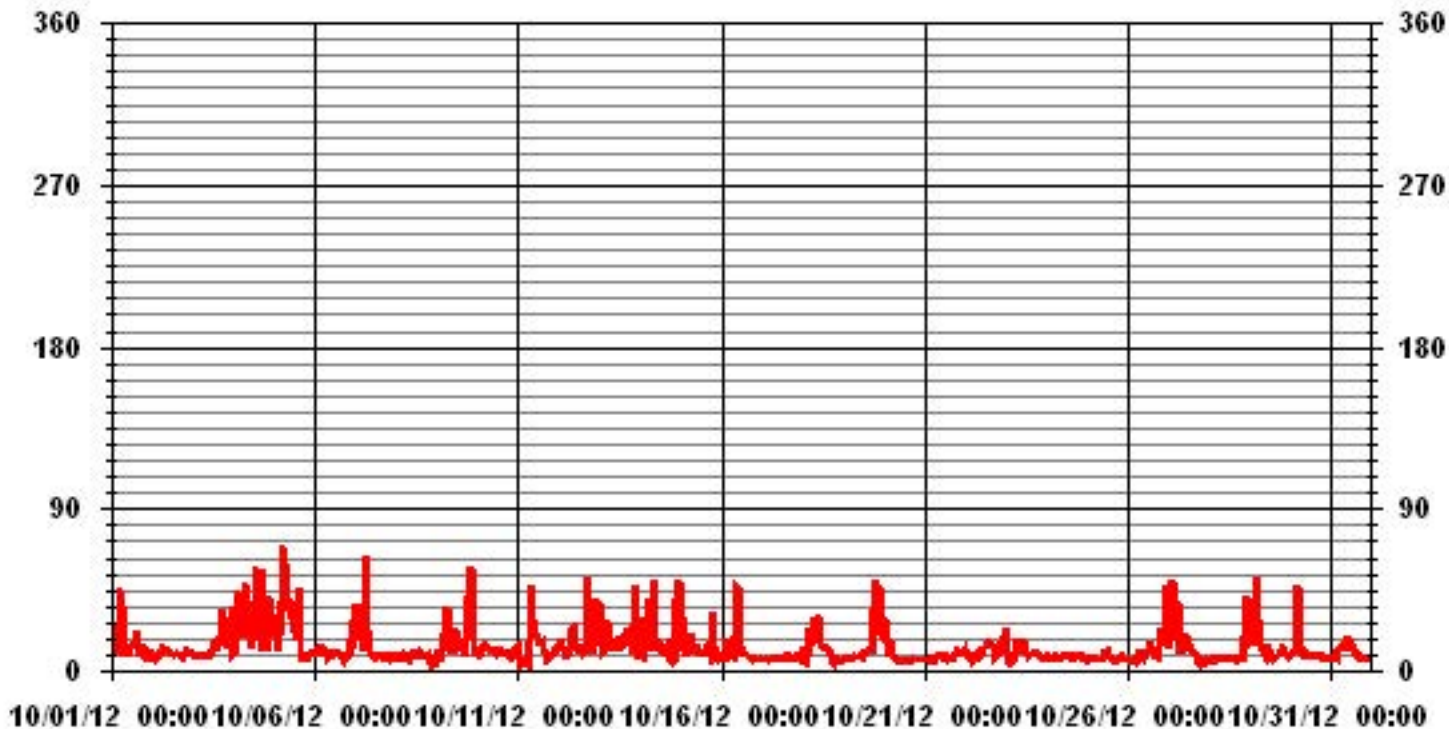
STATUS FLAG CODES

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N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: November 24, 2011

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 744 HRS

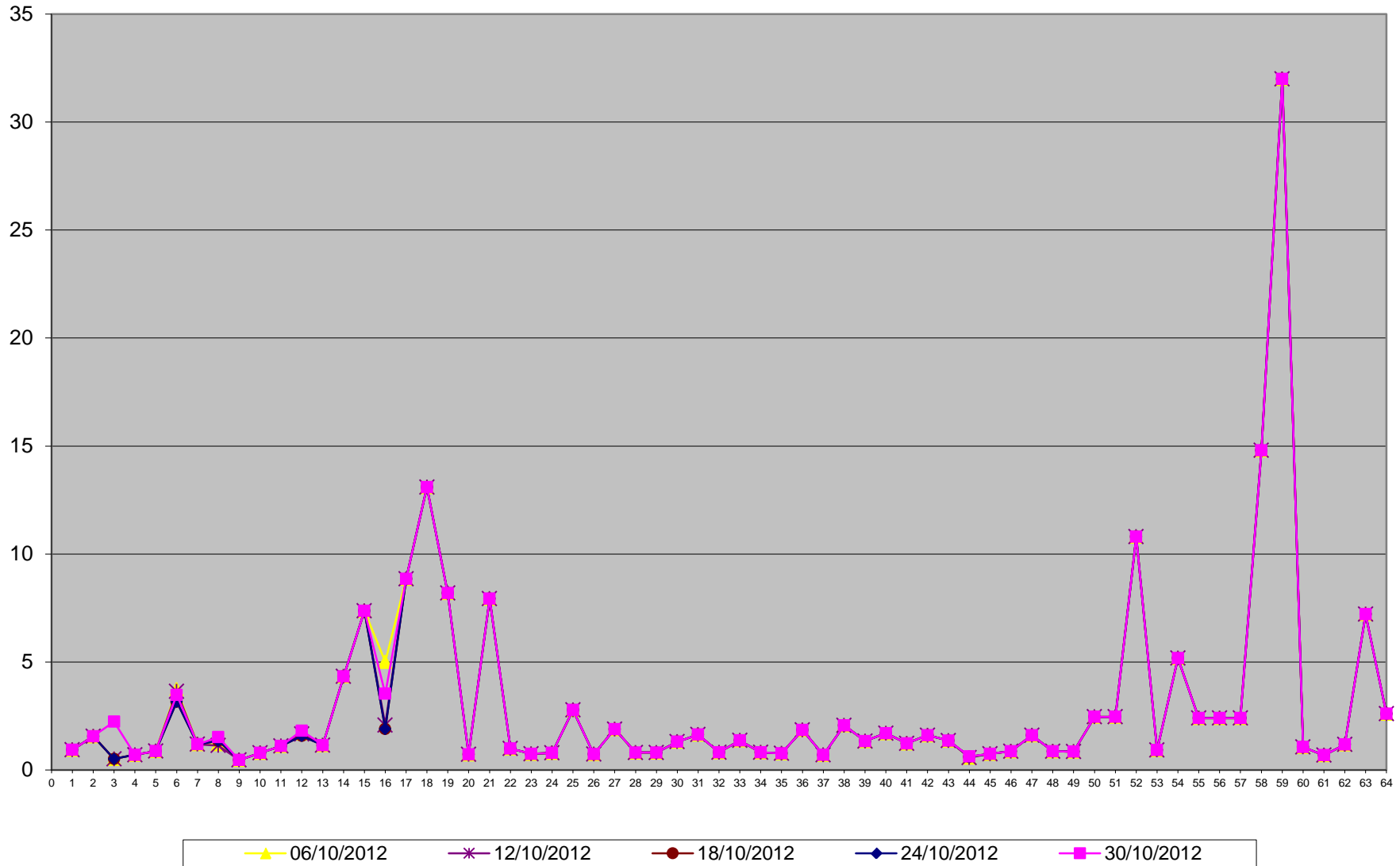
01 Hour Averages



Volatile Organics

Volatile Organics in ug/m3

Site: LICA - Portable - Elk Point Airport



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)

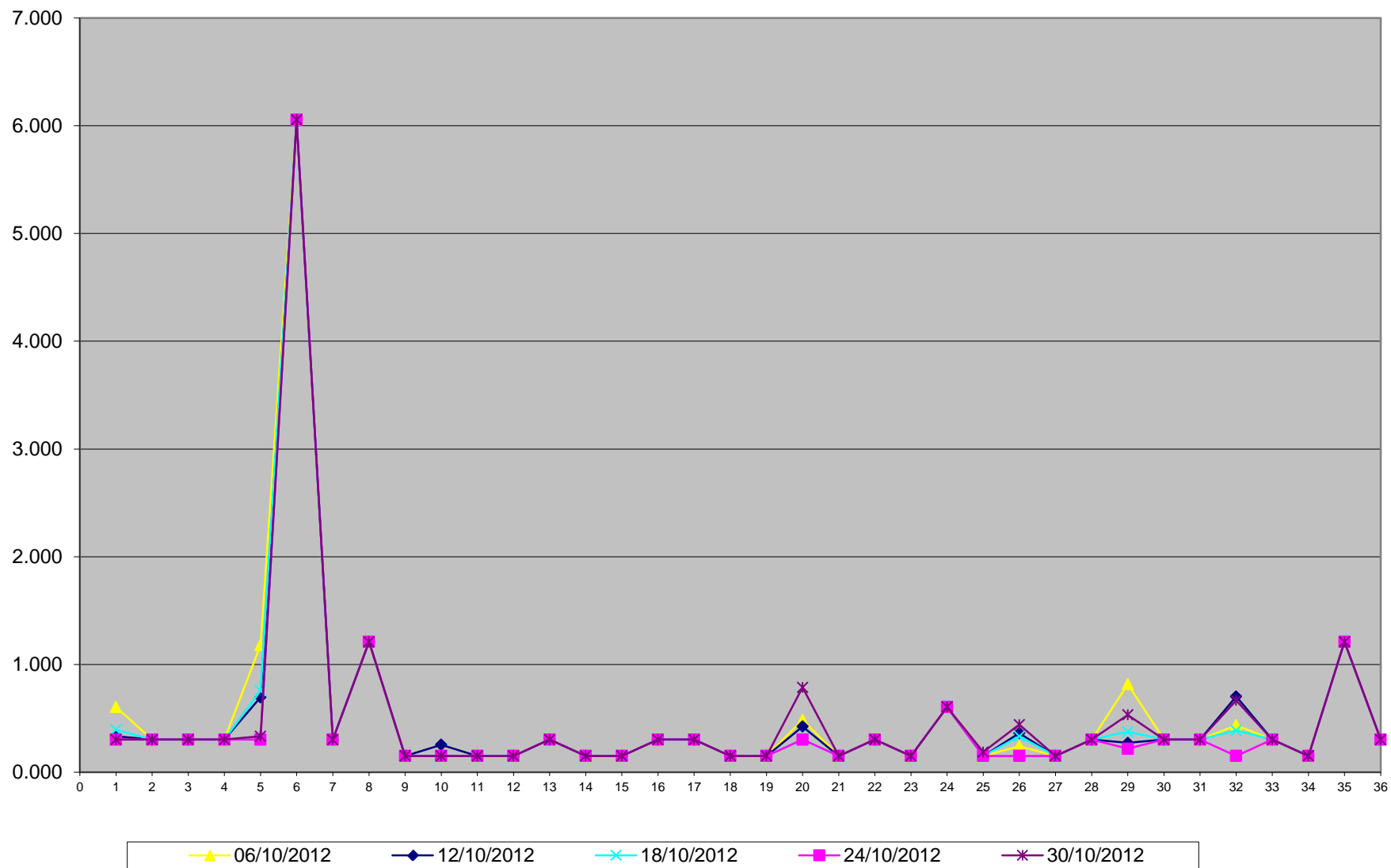
Polycyclic Aromatic Hydrocarbons

Polycyclic Aromatic Hydrocarbons (PAHs) Results for October 2012
LICA - Portable Site - Elk Point Airport
Unit: ng/m3

PAHs	06/10/2012	12/10/2012	18/10/2012	24/10/2012	30/10/2012
Sample Volume (unit: m3)	330.35	330.33	330.34	330.37	330.37
1 1-Methylnaphthalene	0.605	0.333	0.394	0.303	0.303
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-Methylantracene	0.303	0.303	0.303	0.303	0.303
5 2-Methylnaphthalene	1.181	0.696	0.757	0.303	0.333
6 3-Methylcholanthrene	6.055	6.055	6.055	6.055	6.055
7 7,12-Dimethylbenzo(a)anthracene	0.303	0.303	0.303	0.303	0.303
8 9,10-Dimethylantracene	1.211	1.211	1.211	1.211	1.211
9 Acenaphthene	0.151	0.151	0.151	0.151	0.151
10 Acenaphthylene	0.151	0.254	0.151	0.151	0.151
11 Anthracene	0.151	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	0.484	0.424	0.303	0.303	0.787
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	0.151	0.151	0.151	0.151	0.188
26 Fluorene	0.242	0.363	0.333	0.151	0.442
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	0.817	0.272	0.375	0.218	0.533
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	0.436	0.702	0.387	0.151	0.666
33 p-Terphenyl	0.303	0.303	0.303	0.303	0.303
34 Pyrene	0.151	0.151	0.151	0.151	0.151
35 Quinoline	1.211	1.211	1.211	1.211	1.211
36 Tetralin	0.303	0.303	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 - Portable - Elk Point Airport



1	1-Methylnaphthalene
2	1-Methylphenanthrene
3	2-Chloronaphthalene
4	2-Methylantracene
5	2-Methylnaphthalene
6	3-Methylcholanthrene
7	7,12-Dimethylbenzo(a)anthracene
8	9,10-Dimethylantracene
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	October 16, 2012	Previous Calibration	September 4, 2012
Company	Lakeland Community and Industry Association		
Plant / Location	Portable / Elk Poin Airport		
Start Time (MST)	13:27	End Time (MST)	17:34
Reason:	Monthly Calibration		
Barometric Pressure	27.09 inHg	Station Temperature	24 Deg C
Cal Gas	49.6 ppm	Gas Cyl. #	LL42502
DAS Output Voltage	0 - 1 Volts	Cal Gas Expiry date	December 29, 2013
		Chart Rec. Output	NA Volts

Equipment Information

Analyzer Make / Model:	API 100E	S/N :	467	Method:	Fluorescent
Converter Make / Model:	NA	S/N :	NA		
Calibrator Make / Model:	EnviroNics 6100	S/N :	831	Method:	Dilution
DAS Make / Model:	ESC 8832	S/N :	AO717		
Chart Recorder Make / Model:	NA	S/N :	NA		
Flow Meter:	EnviroNics 6100	S/N :	831		

Analyzer Settings

Before Calibration			After Calibration		
Concentration Range	0 - 1000 ppb				
Sample Flow / Box Temp	570 ccm	31.9 Deg C	567 ccm	31.7 Deg C	
HVPS / Lamp Setting	612	1682	612	1681	
PMT / RxCell Temp	8.1 Deg C	50 Deg C	8.1 Deg C	50 Deg C	
Converter / IZS Temp	NA Deg C	45 Deg C	NA Deg C	45.0 Deg C	
Offset / Slope	91.4	1.211	97.9	1.176	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4996	0	0	4	N/A
4995	0	0	0	N/A
4924	75.6	750	777	0.9653
4924	75.6	750	750	1.0000
4955	40.3	400	403	0.9929
4981	17.1	170	170	1.0000
4995	0	0	0	N/A
Sum of Least Squares				0.9984
New Correction Factor				1.0000

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	5.2		0.9
Auto Span	395.0		373.0
Sample Lines Connected			YES

Percent Change

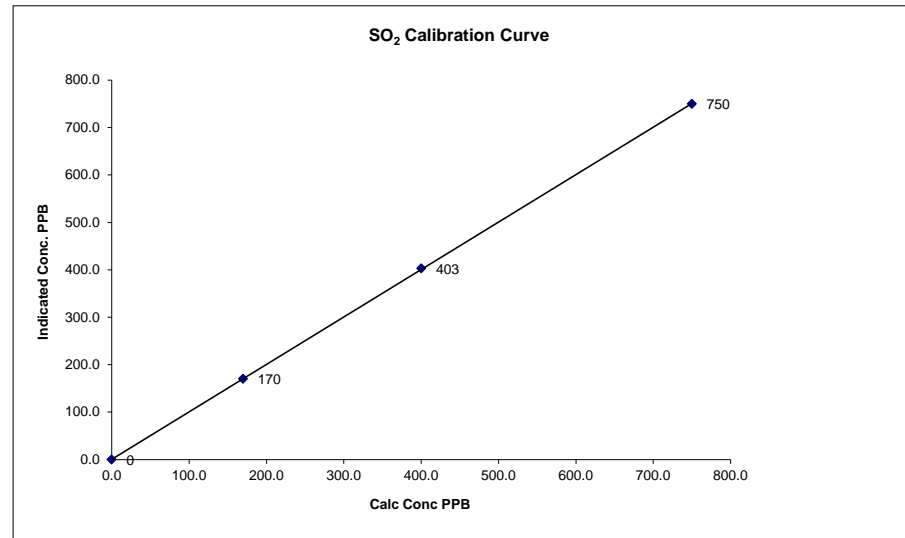
Previous Month's Calibration Correction Factor:	0.9969
Current Correction Factor Before Span Adjust:	0.9653
Percent Change:	3.3%

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

SO2 Calibration Curve

Calibration Date	October 16, 2012
Company	Lakeland Community and Industry Association
Plant / Location	Portable / Elk Poin Airport
Start Time (MST)	13:27
End Time (MST)	17:34

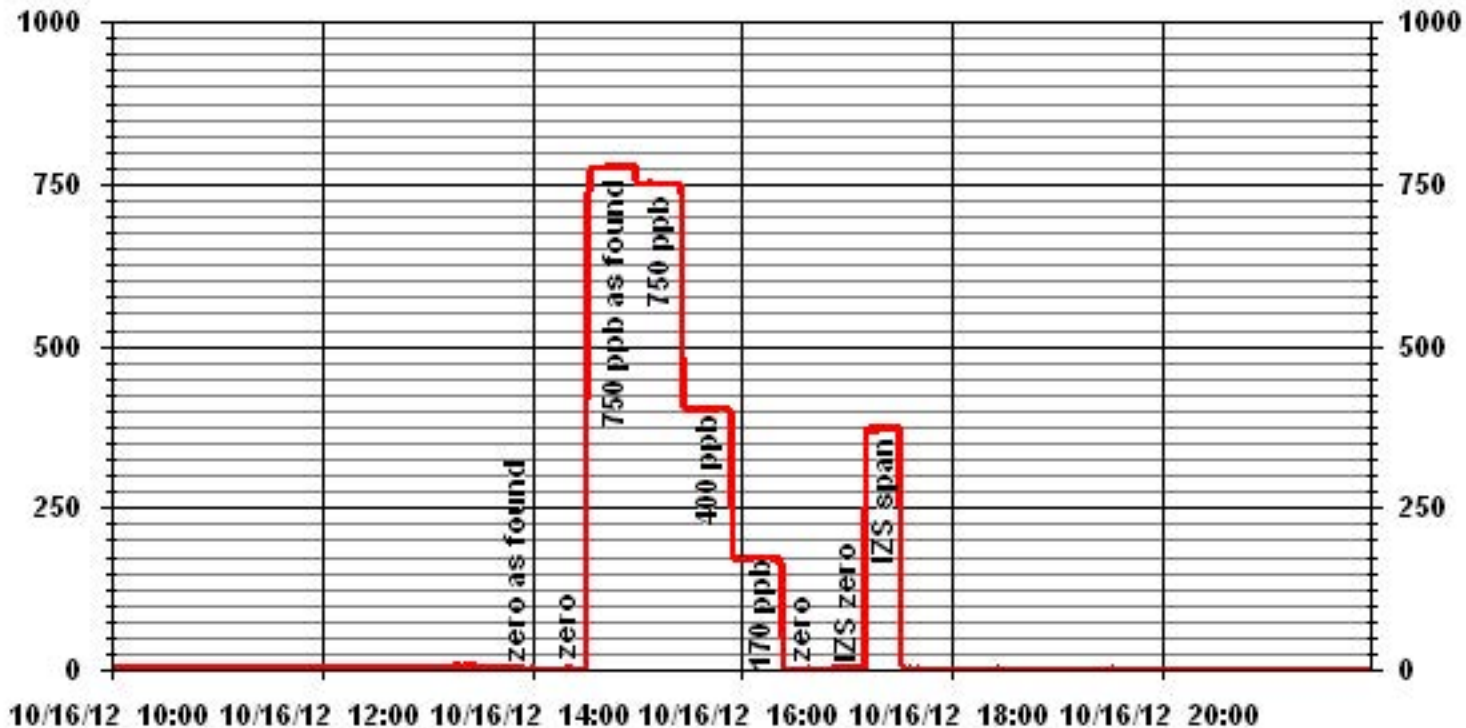
Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope Intercept	(≥ 0.995) (0.85 to 1.15) (± 3% F.S.)
0	0	n/a		0.999982
170	170	0.9982		1.000463
400	403	0.9929		0.632150
750	750	1.0000		



Notes:

Calibration Performed by: Ting Xu

01 Minute Averages



Hydrogen Sulphide

H2S Calibration Report

Station Information

Calibration Date	October 16, 2012	Previous Calibration	October 16, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	Portable/ Elk Point Airport		
Start Time (MST)	10:36	End Time (MST)	13:51
Reason:	Post-repair calibration		
Barometric Pressure	27.03	inHg	Station Temperature 24 Deg C
Cal Gas	10	ppm	Gas Cyl. # LL42648 Cal Gas Expiry date December 27, 2012
DAS Output Voltage	0 - 1	Volts	Chart Rec. Output NA Volts

Equipment Information

Analyzer Make / Model:	API 101E	S/N :	509	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 :	AO717		
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	500 ccm 31.7 Deg C	500 ccm 31.8 Deg C	
HVPS / Lamp Setting	540 1948	540 1947	
PMT / RxCell Temp	7.9 Deg C 50 Deg C	7.9 Deg C 50 Deg C	
Converter / IZS Temp	316 Deg C 45 Deg C	315 Deg C 45.0 Deg C	
Offset / Slope	90 1	90 0.965	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4995	0	0	3	NA
	No Zero Adj.			
4960	40.0	80	80	1.0000
	No Span Adj.			
4977	20.0	40	41	0.9762
4987	11.5	23	24	0.9586
4996	0	0	0	NA
Sum of Least Squares				0.9928
New Correction Factor				

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	NA		0.4
Auto Span	NA		57.5
Sample Lines Connected			YES

Percent Change

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	1.0000
Percent Change:	0.0%

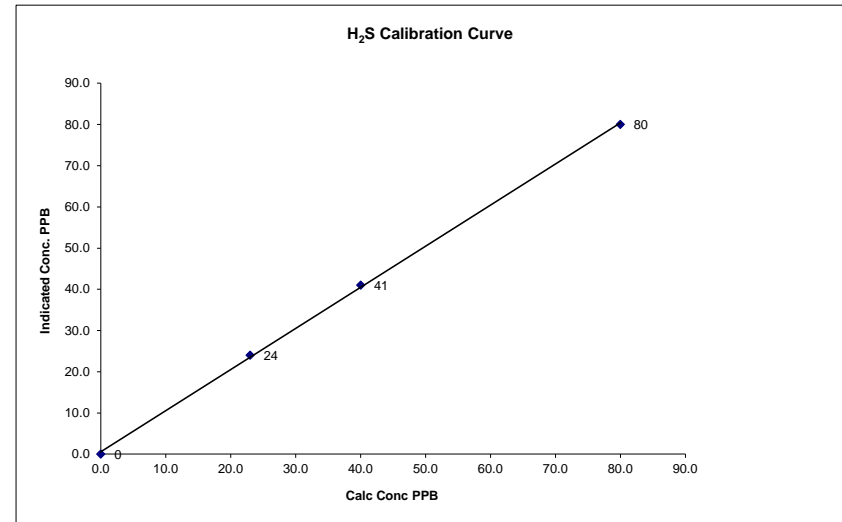
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu

H₂S Calibration Curve

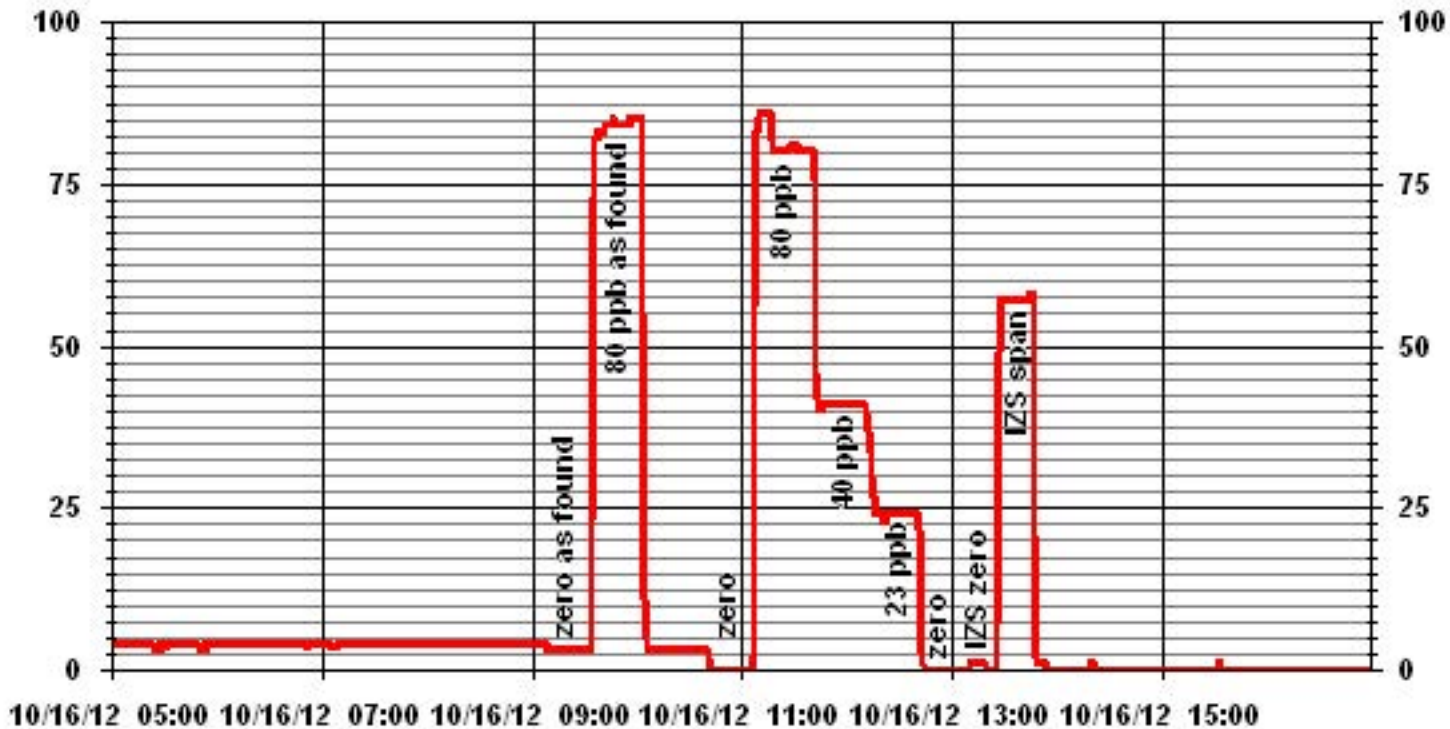
Calibration Date	October 16, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Plant / Location	Portable/ Elk Point Airport
Start Time (MST)	10:36
End Time (MST)	13:51

Calculated Conc.	Indicated Response	Correction Factor	Correlation Coefficient	(≥ 0.995)
0	0		Slope	0.999721
23	24	0.9586	Intercept	0.997513
40	41	0.9762		0.581216
80	80	1.0000		



Notes:

01 Minute Averages



H2S Calibration Report

Station Information

Calibration Date	October 29, 2012	Previous Calibration	October 16, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	Portable/ Elk Point Airport		
Start Time (MST)	10:36	End Time (MST)	13:51
Reason:	As Found		
Barometric Pressure	28.82 inHg	Station Temperature	21 Deg C
Cal Gas	10 ppm	Gas Cyl. #	LL42648
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 :	509	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 :	AO717		
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	516 ccm 30.3 Deg C	513 ccm 31.6 Deg C	
HVPS / Lamp Setting	540 1936	540 1947	
PMT / RxCell Temp	7.9 Deg C 50 Deg C	7.9 Deg C 50 Deg C	
Converter / IZS Temp	316 Deg C 45 Deg C	315 Deg C 45.0 Deg C	
Offset / Slope	96 0.965	96 1.016	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4995	0	0	3	NA
	0			
4960	40.0	80	76	1.0526
4960	40.0	80	80	1.0000
4977	20.0	40	40	1.0000
4987	11.5	23	23	1.0000
4996	0	0	-1	NA
Sum of Least Squares				1.0001
New Correction Factor				1.0000

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	-0.2	-0.5
Auto Span	53.2	56.4
Sample Lines Connected		YES

Percent Change

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	1.0526
Percent Change:	-5.0%

Notes:

NA : Not Applicable

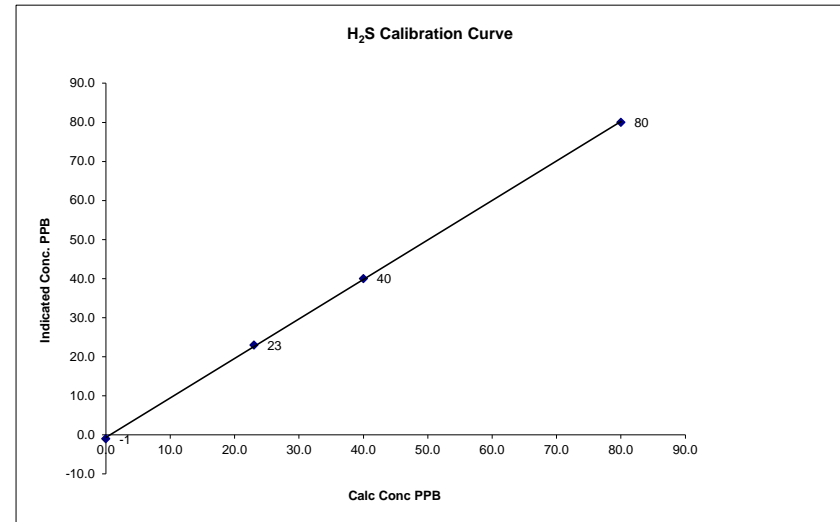
Performed the as found point to verify the analyzer functionality - good, then continued doing the calibration.

Calibration Performed by: Ting Xu

H₂S Calibration Curve

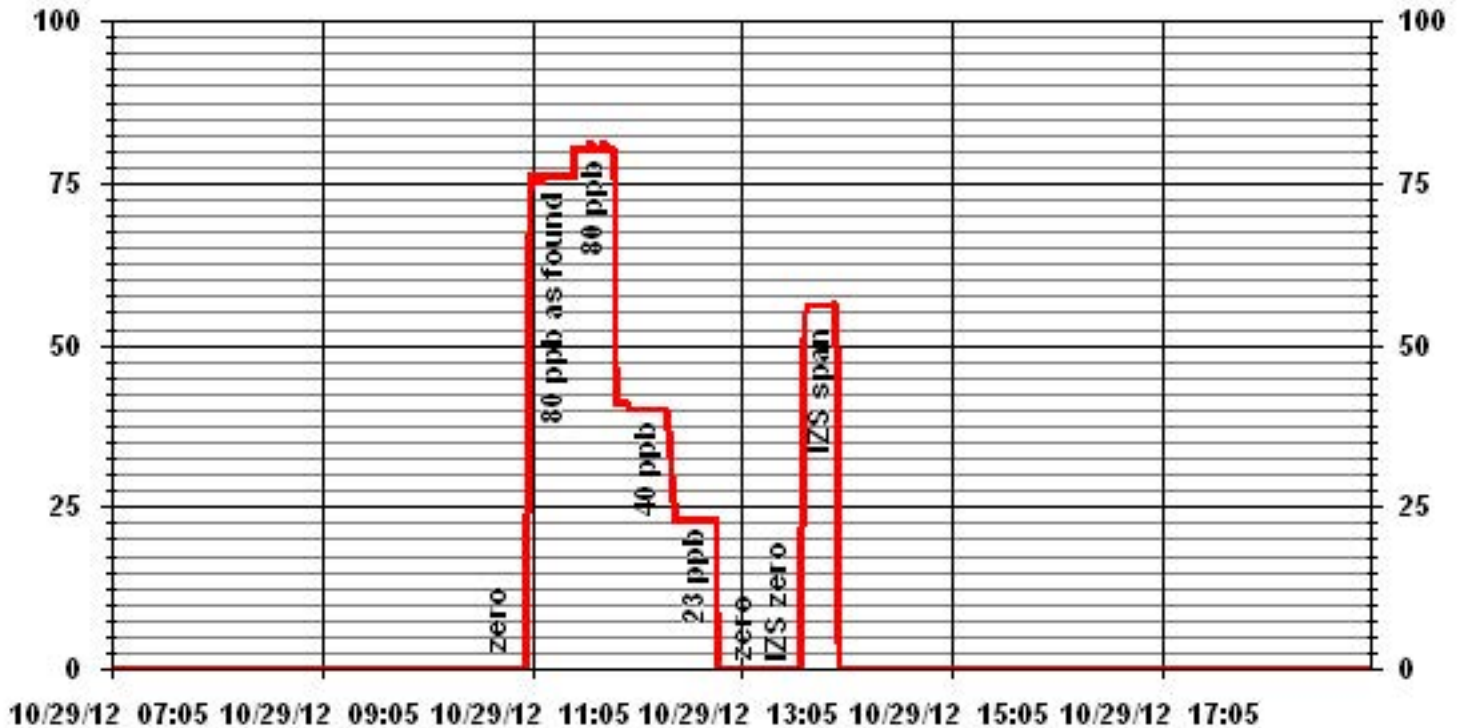
Calibration Date	October 29, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Plant / Location	Portable/ Elk Point Airport
Start Time (MST)	10:36
End Time (MST)	13:51

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999897
0	-1		Intercept	(± 3% F.S.)	-0.631795
23	23	1.0003			
40	40	1.0006			
80	80	1.0000			



Notes:

01 Minute Averages



Total Hydrocarbons

THC Calibration Report

Station Information			
Calibration Date:	October 17, 2012	Previous Calibration	September 20, 2012
Company:	Lakeland Industry and Community Association		
Plant / Location:	ELICA Portable Station / Elk Point Airport		
Start Time (MST)	09:38	End Time (MST)	11:53
Reason:	Removal Calibration		
Barometric Pressure:	27.6 inHg	Station Temperature:	21 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM	C3H8 204 PPM	
	TOTAL CH4 1161.0 PPM	Gas Cyl. # LL155310	Cal Gas Expiry Date: September 9, 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	Thermo 51C	S/N :	04366-09739	Method	Flame Ionization
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Analyzer Settings

	Before Calibration		After Calibration	
Concentration Range	0 - 50	ppm	0 - 50	ppm
Sample Pressure	6.8	psi	6.8	psi
Hydrogen Pressure	8	psi	8	psi
Air Pressure	22	psi	21	psi

Calibration Data

Dilution Flow	Source Gas Flow	Calculated Concentration	Indicated Concentration	Correction Factor
2000	0.0	0.0	-0.2	NA
	No Zero Adj.			
2000	74.0	41.4	41.6	0.9958
	No Span Adj.			
2000	37.0	21.1	20.8	1.0139
2000	20.0	11.5	11.2	1.0263
2000	0.0	0.0	-0.3	NA
New Correction Factor:				0.9958

Percent Change

Previous Calibration Correction Factor:	0.9958
Current Correction Factor Before Span Adjust:	0.9958
Percent Change:	0.0%

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	-0.2	N/A
Auto Span	31.9	N/A
Sample Lines Connected		YES

Cylinder Pressures			
Span	700 psi	Hydrogen 1300 psi	Zero Air 34 psi

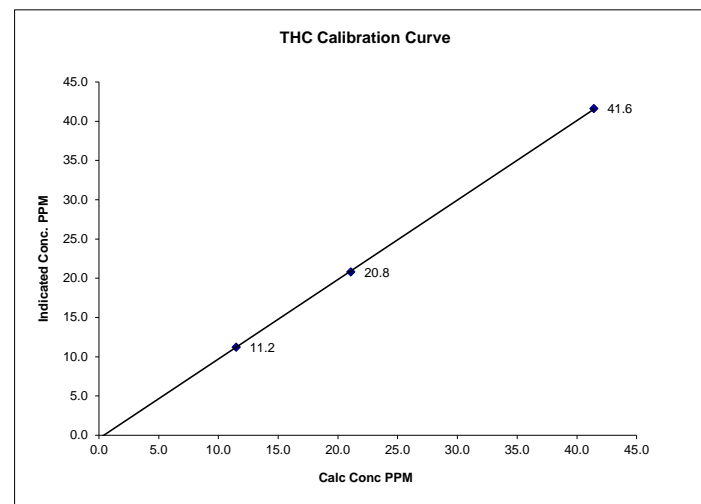
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu

THC Calibration Curve

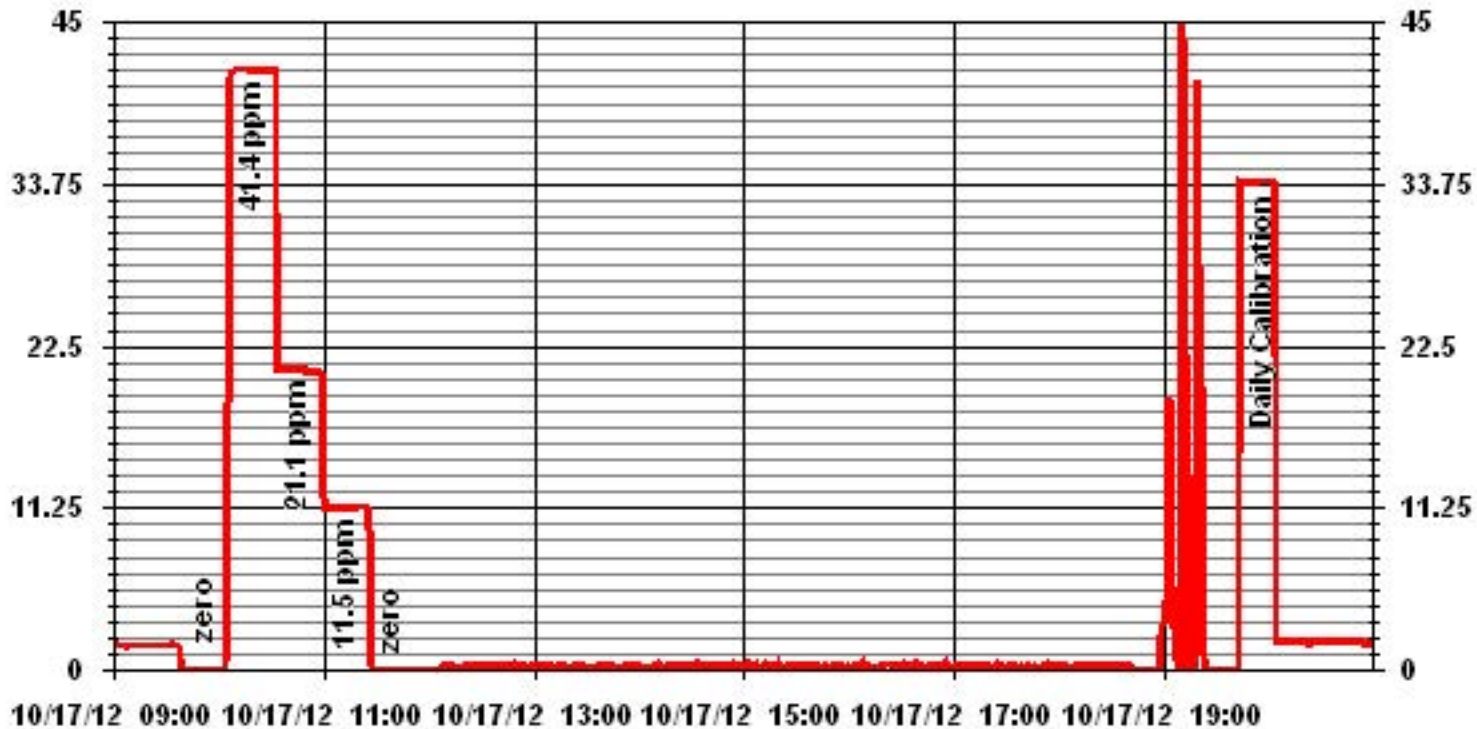
Calibration Date	October 17, 2012
Company	Lakeland Industry and Community Association
Plant / Location	ELICA Portable Station / Elk Point Airport
Start Time (MST)	09:38
End Time (MST)	11:53

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient	Slope	Intercept
0.0	-0.3	NA	(≥ 0.995) 0.999961	(0.85 to 1.15) 1.011802	(± 3% F.S.) -0.39529
11.5	11.2	1.0263			
21.1	20.8	1.0139			
41.4	41.6	0.9958			



Notes:

01 Minute Averages



THC Calibration Report

Station Information			
Calibration Date:	October 19, 2012	Previous Calibration	N/A
Company:	Lakeland Industry and Community Association		
Plant / Location:	ELICA Portable Station / Elk Point Airport		
Start Time (MST)	09:12	End Time (MST)	12:21
Reason:	Installation Calibration		
Barometric Pressure:	27.39 inHg	Station Temperature:	22 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM TOTAL CH4 1161.0 PPM	C3H8 204 PPM Gas Cyl. # LL155310	Cal Gas Expiry Date: September 9, 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	Thermo 51C	S/N :	04366-09739	Method	Flame Ionization
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Analyzer Settings

	Before Calibration		After Calibration	
Concentration Range	0 - 50	ppm	0 - 50	ppm
Sample Pressure	6.8	psi	6.8	psi
Hydrogen Pressure	8	psi	8	psi
Air Pressure	22	psi	21	psi

Calibration Data

Dilution Flow	Source Gas Flow	Calculated Concentration	Indicated Concentration	Correction Factor
2000	0.0	0.0	-0.1	NA
	No Zero Adj.			
2000	74.0	41.4	41.6	0.9958
	No Span Adj.			
2000	37.0	21.1	21.0	1.0042
2000	20.0	11.5	11.2	1.0263
2000	0.0	0.0	-0.1	NA
New Correction Factor:				0.9958

Percent Change

Previous Calibration Correction Factor:	N/A
Current Correction Factor Before Span Adjust:	0.9958
Percent Change:	#VALUE!

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	-0.2	-0.2
Auto Span	33.0	33.5
Sample Lines Connected	YES	

Cylinder Pressures			
Span	700 psi	Hydrogen 1300 psi	Zero Air 34 psi

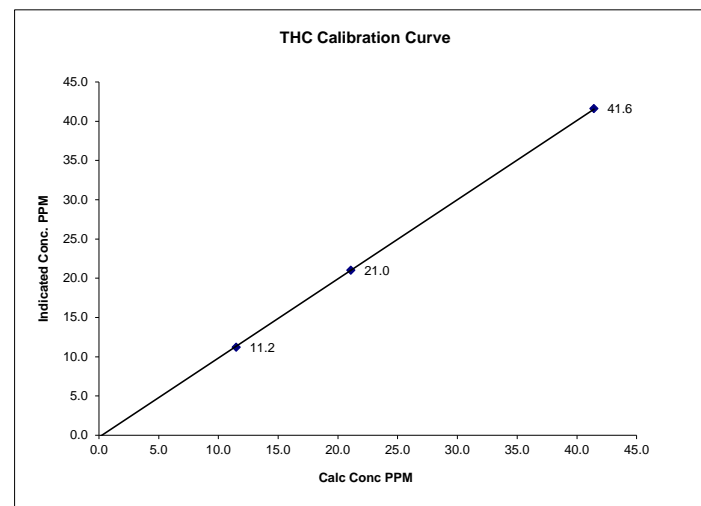
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu

THC Calibration Curve

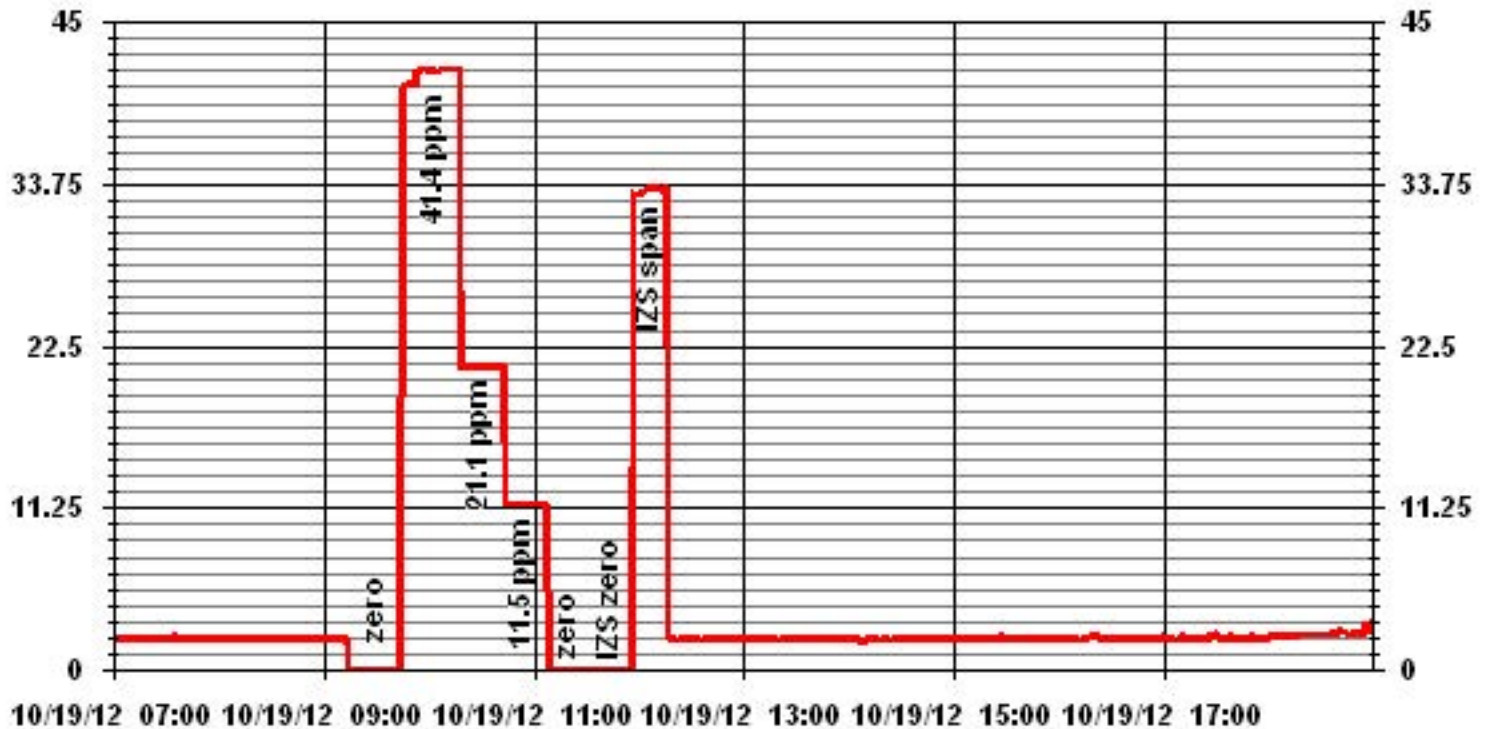
Calibration Date	October 19, 2012
Company	Lakeland Industry and Community Association
Plant / Location	ELICA Portable Station / Elk Point Airport
Start Time (MST)	09:12
End Time (MST)	12:21

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient (≥ 0.995)	Slope (0.85 to 1.15)	Intercept (± 3% F.S.)
0.0	-0.1	NA	0.999949	1.008355	-0.23152
11.5	11.2	1.0263			
21.1	21.0	1.0042			
41.4	41.6	0.9958			

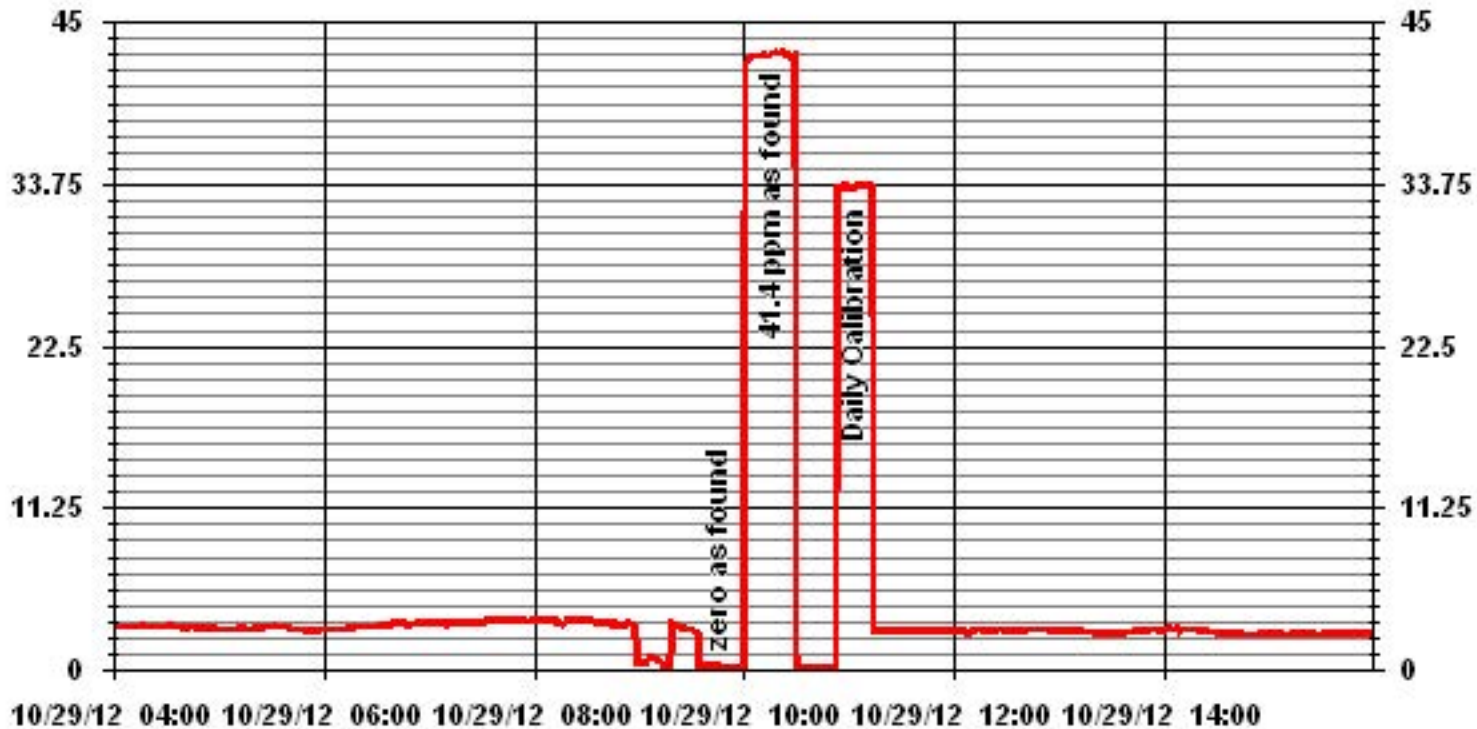


Notes:

01 Minute Averages



01 Minute Averages



Particulate Matter 2.5

TEOM Calibration

	<u>Station</u>		<u>Transfer Standard</u>
Date:	October 16, 2012	Make/Model:	Streamline FTS
Station Name:	LICA PORTABLE	Serial Number:	Lo091099, Hi 091001
Location:	ELK AIRPORT	Cell s/n:	NA
Operator:	Maxxam Analytics	Thermometer s/n:	Fisher Brand 15-021B

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
Make/Model	R&P Teom 1400a	F-Main Set Pt (l/min)	3.00
Unit #	30002	F-Aux Set Pt (l/min)	13.67
Control unit s/n	140AB228730001	Filter Load (%)	32%
Transducer s/n	1200C140189708	K _o Factor	14568
Parameter	PM 2.5	Temp (°C)	13.1
		Press (ATM)	0.898

Conversion from mmHg or "Hg to ATM (Atmospheres)

$$\text{ATM} = (\text{mmHg}) \times (1.316 \times 10^{-3}) \quad \text{or} \quad \text{ATM} = (\text{"Hg}) \times (3.34207 \times 10^{-2})$$

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

Calibration

Zero flow			
	Pump Off		Pump On (Time to reach set points)
F-Main (l/min)	0.06		(45-60 Sec) 45
F-Aux (l/min)	0.14		(45-60 Sec) 50
Temperature/Pressure			
Measured Temp (± 1 °C)	13.5	D °C	0.4
Measured Press ($\pm 1.5\%$ ATM)	0.904	D % ATM	0.7%
Flow Audit			
Indicated Main/Aux Flow (l/min)	2.99 / 13.65	D % from Set-pt	(± 2%) 0.3% / 0.1%
Total Flow = Main + Aux (l/min)	16.64		(± 2%) 0.2%
Measured Total Flow (l/min)	16.61	(± 1.0 l/min. (5.65%))	0.2%
Measured Main Flow (l/min)	2.94	(± 0.2 l/min. (6.25%))	1.7%
Leak Check			
Main (< 0.15 l/min)	0.04	Actual leakage = Pump On - Pump Off	
Aux (< 0.15 l/min)	0.19	-0.02	
		0.05	
K_o Factor			
Measured	N/A		
K _o Difference ($\pm 2.5\%$)	N/A		

Start Time:	13:13	Finish Time:	15:49
Sample Inlet Cleaned:	YES	Sample Inlet Connected:	YES
Comments:	N/A		

Calibrator/s: Ting Xu

TEOM Calibration

	<u>Station</u>		<u>Transfer Standard</u>
Date:	October 25, 2012	Make/Model:	Streamline FTS
Station Name:	LICA PORTABLE	Serial Number:	Lo091099, Hi 091001
Location:	ELK AIRPORT	Cell s/n:	NA
Operator:	Maxxam Analytics	Thermometer s/n:	Fisher Brand 15-021B

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
Make/Model	R&P Teom 1400a	F-Main Set Pt (l/min)	3.00
Unit #	30002	F-Aux Set Pt (l/min)	13.67
Control unit s/n	140AB228730001	Filter Load (%)	12%
Transducer s/n	1200C140189708	K _o Factor	14568
Parameter	PM 2.5	Temp (°C)	-2.3
		Press (ATM)	0.939

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Calibration

Zero flow				
	Pump Off		Pump On (Time to reach set points)	
F-Main (l/min)	0.06		(45-60 Sec)	46
F-Aux (l/min)	0.16		(45-60 Sec)	55
Temperature/Pressure				
Measured Temp (± 1 °C)	-2.8	D °C	-0.5	
Measured Press (± 1.5% ATM)	0.943	D % ATM	0.4%	
Flow Audit				
Indicated Main/Aux Flow (l/min)	2.96 / 13.66	D % from Set-pt	1.3% / 0.1%	
Total Flow = Main + Aux (l/min)	16.62	(± 2%)	0.3%	
Measured Total Flow (l/min)	16.73	(± 1.0 l/min. (5.65%))	-0.7%	
Measured Main Flow (l/min)	2.952	(± 0.2 l/min. (6.25%))	0.3%	
Leak Check				
Main (< 0.15 l/min)	0.04	Actual leakage = Pump On - Pump Off		
Aux (< 0.15 l/min)	0.17	-0.02		
		0.01		
K_o Factor				
Measured	N/A			
K _o Difference (± 2.5%)	N/A			

Start Time: 10:28 Finish Time: 12:07
 Sample Inlet Cleaned: **YES** Sample Inlet Connected: **YES**
 Comments: N/A

Calibrator/s: Ting Xu

Nitrogen Dioxide

NOx - NO- NO2 Calibration Report

Station Information

Calibration Date	October 16, 2012	Previous Calibration	September 5, 2012
Company	LICA	Plant/Location	Portable/Elk Point Airport
Start Time (MST)	09:06	End Time (MST)	15:25
Reason:	Monthly Calibration		
Barometric Pressure	27.05 inHg	Station Temperature	24 Deg C
Cal Gas Concentration	NOx 50.1 ppm	NO 50.1 ppm	Cal Gas Expiry date
Cal Gas Cylinder #	LL42502		December 29, 2013
DAS Output Voltage	0 - 1 Volts	Chart Rec. Output	NA Volts

Equipment Information

Analyzer Make / Model:	TAPI 200E	S/N :	593	Method:	Chemiluminescent
Calibrator Make / Model:	Enviro-nics 6100	S/N:	4760		
DAS Make / Model:	ESC 8832	S/N :	AO717		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	Enviro-nics 6100	S/N :	4760		

Analyzer Settings

Before Calibration				After Calibration			
Concentration Range	0 - 1000			ppb			
Sample Flow/Conv. Temp	454 ccm	315	Deg C	456 ccm	314	Deg C	
Ozone Flow / Vacuum	76 ccm	5.0	*Hg-A	78 ccm	5	*Hg-A	
HVPS / A ZERO	638 Volts	7.1	MV	638 Volts	6.7	MV	
Rx/ Temp / PMT Temp	50.0 Deg C	6.8	Deg C	50.0 Deg C	6.7	Deg C	
Box Temp / IZS Temp	34.9 Deg C	45.4	Deg C	31.9 Deg C	45.3	Deg C	
Offset	-0.4 NOx	-0.9	NO	-0.4 NOx	-0.9	NO	
Slope	0.993 NOx	0.989	NO	1.022 NOx	1.013	NO	
NO2 COEF / Conv Efficiency	NA	NO2	0.996	NA	NO2	0.996	

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	0	0	-1	NA	NA
No Zero Adj.										
4919	74.6	NA	748	748	NA	728	731	-3	1.0281	1.0239
4919	74.6	NA	748	748	NA	748	748	1	1.0000	1.0000
4956	39.8	NA	399	399	NA	397	396	1	1.0054	1.0079
4977	19.9	NA	200	200	NA	199	198	1	1.0026	1.0077
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		
4919	74.6	NA	748	748	NA	748	747	2	NA	NA
4919	74.6	600	748	NA	540	747	209	538	1.0019	99.63%
No Adj. Needed										
4919	74.6	250	748	NA	229	748	520	228	1.0000	99.56%
4919	74.6	140	748	NA	129	749	620	129	0.9923	100.00%

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= 1.002	NO= 1.002	NO2= 1.004
				NOx= 1.0000	NO= 1.0000	NO2= 1.0281
				Average Converter Efficiency= 99.73%		

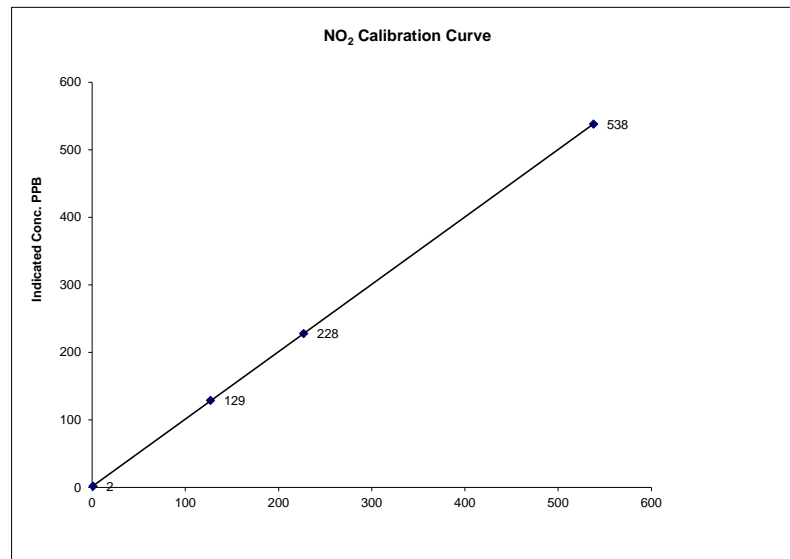
IZS Calibration Data

Before Calibration				After Calibration			
Auto Zero	-0.2 NOx	-0.4 NO2		0.2 NOx	-0.4 NO2		
Auto Span	529 NOx	522 NO2		566 NOx	557 NO2		
Sample Lines Connected: YES							
Percent Change from Previous Calibration	NOx -3.0%		NO	-2.5%		NO2	0.2%
Notes	NA : Not Applicable						
	Additional point done for Ozone cal O3 St. Pt. 420 NOx=748, NO=369, NO2=379						
Calibration Performed by: Ting Xu							

NO2 Calibration Curve

Calibration Date	October 16, 2012
Company	LICA
Plant / Location	Portable/Elk Point Airport
Start Time (MST)	09:06
End Time (MST)	15:25

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999994
1	2	N/A	Intercept	(± 3% F.S.)	1.58169
127	129	0.9845			
227	228	0.9956			
538	538	1.0000			

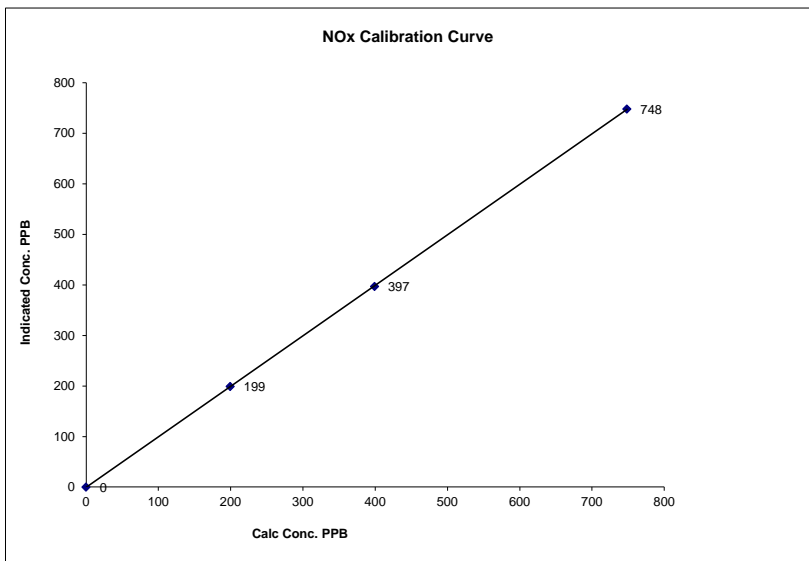


Notes:

NOx Calibration Curve

Calibration Date	October 16, 2012	
Company	LICA	
Plant / Location	Portable/Elk Point Airport	
Start Time (MST)	09:06	End Time (MST) 15:25

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999992
0	0	N/A	Slope (0.85 to 1.15)	0.999193
200	199	1.0026	Intercept (± 3% F.S.)	-0.50406
399	397	1.0054		
748	748	1.0006		

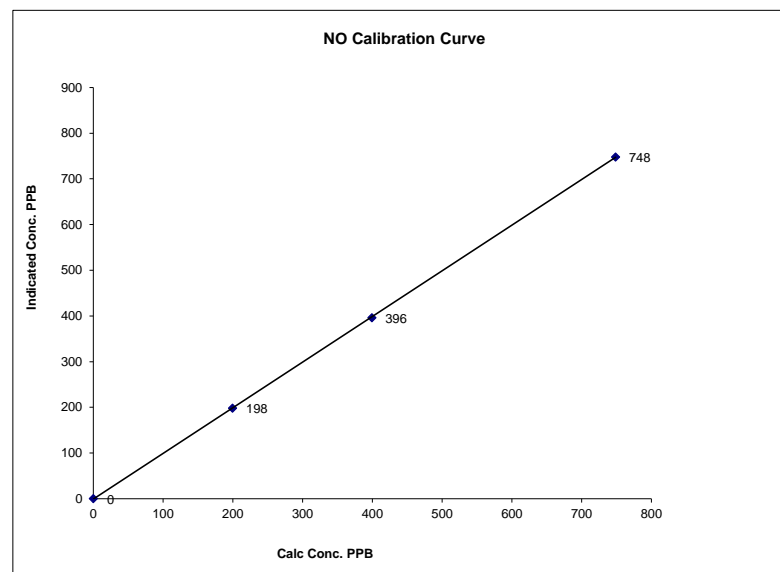


Notes:

NO Calibration Curve

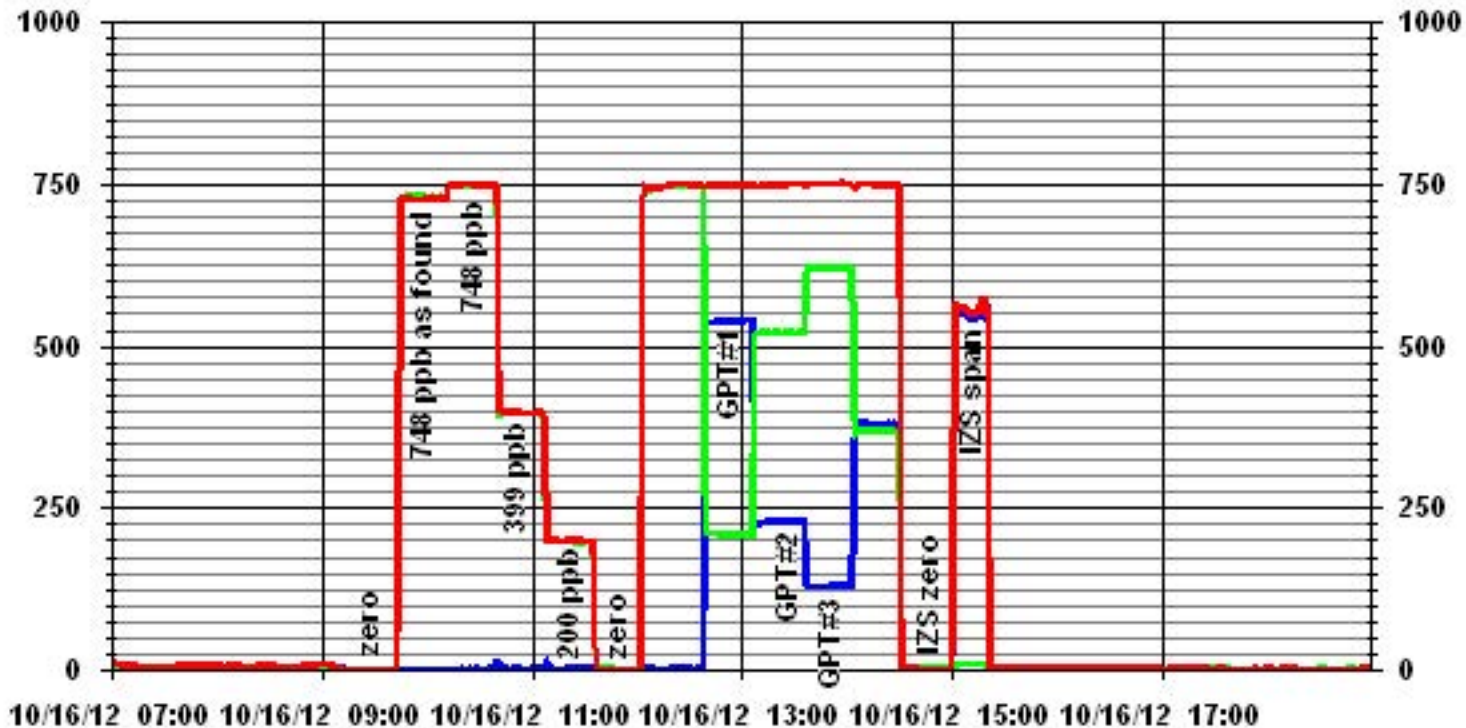
Calibration Date	October 16, 2012	
Company	LICA	
Plant / Location	Portable/Elk Point Airport	
Start Time (MST)	09:06	End Time (MST) 15:25

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999981
0	0	N/A	Slope (0.85 to 1.15)	1.002599
200	198	1.0077	Intercept (± 3% F.S.)	-6.1949
399	396	1.0079		
748	748	1.0006		



Notes:

01 Minute Averages



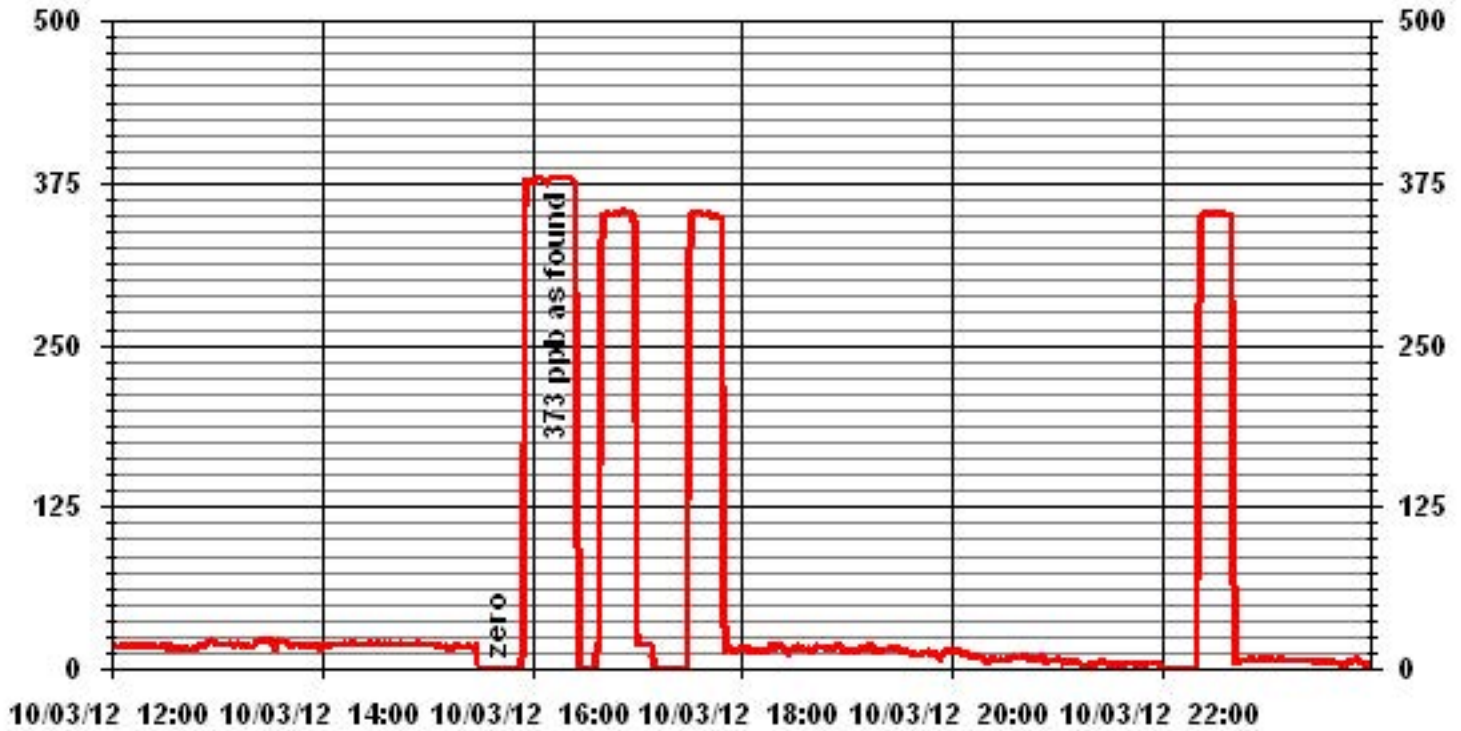
— LICA35 IIOX_ PPB

— LICA35 IIO_ PPB

— LICA35 IIO2_ PPB

Ozone

01 Minute Averages



O₃ Calibration Report

Station Information

Calibration Date	October 17, 2012	Previous Calibration	October 3, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	Portable / Elk Point Airport		
Start Time (MST)	09:14	End Time (MST)	12:53
Reason:	Monthly Calibration		
Barometric Pressure	27.59 inHg	Station Temperature	23 Deg C
DAS Output Voltage	0-10 Volts		

Equipment Information

Analyzer Make / Model:	Thermo 49i	S/N :	1002240372	Method:	Photometric
Calibrator Make / Model:	Enviroics 6100		4760	Method:	GPT
DAS Make / Model:	ESC 8832	S/N :	AO 717		

Analyzer Settings

Before Calibration		After Calibration	
Concentration Range	0 - 500 ppb		
Cell A Flow / Cell B Flow	736 ccm	743 ccm	758 ccm
Pressure	666 mmHg		699 mmHg
Bench Lamp	54 Deg C		54.1 DegC
O3 Lamp / Box Temp	68.2 Deg C	29.6 Deg C	68.2 Deg C
Offset / Slope	-0.2	0.992	-0.2

Calibration Data

Dilution Flow Rate	Ozone Set Point	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4994	0	0	0	NA
	No Zero Adj.			
4994	420	378	365	1.0356
4994	420	378	377	1.0027
4994	250	227	227	1.0000
4994	140	127	129	0.9845
4994	0	0	0	NA
Sum of Least Squares				1.0006
New Correction Factor				1.0027

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	-0.1		0.2
Auto Span	347.0		361.0
Sample Lines Connected			YES
Previous Calibration Correction Factor:			1.0000
Current Correctio Factor Before Span Adjust:			1.0356
Percent Change:			-3.4%

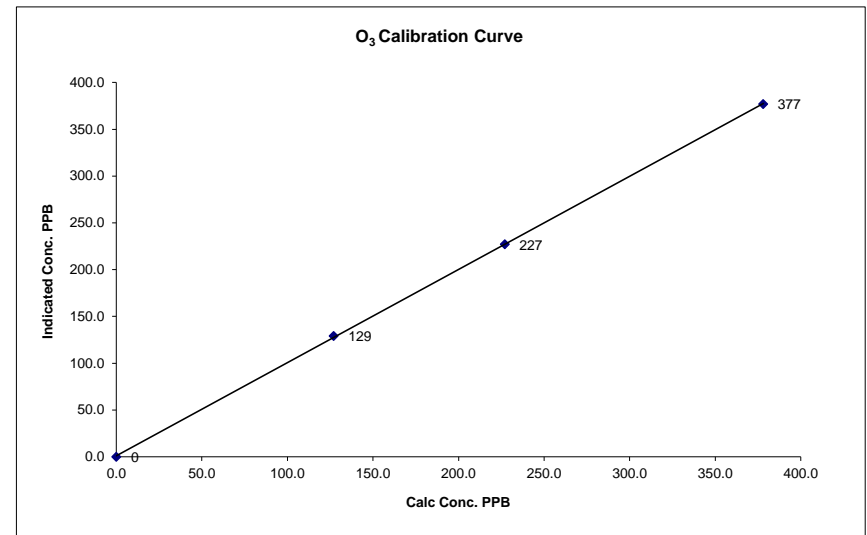
Note: NA : Not Applicable

Calibration Performed by: Ting Xu

O₃ Calibration Curve

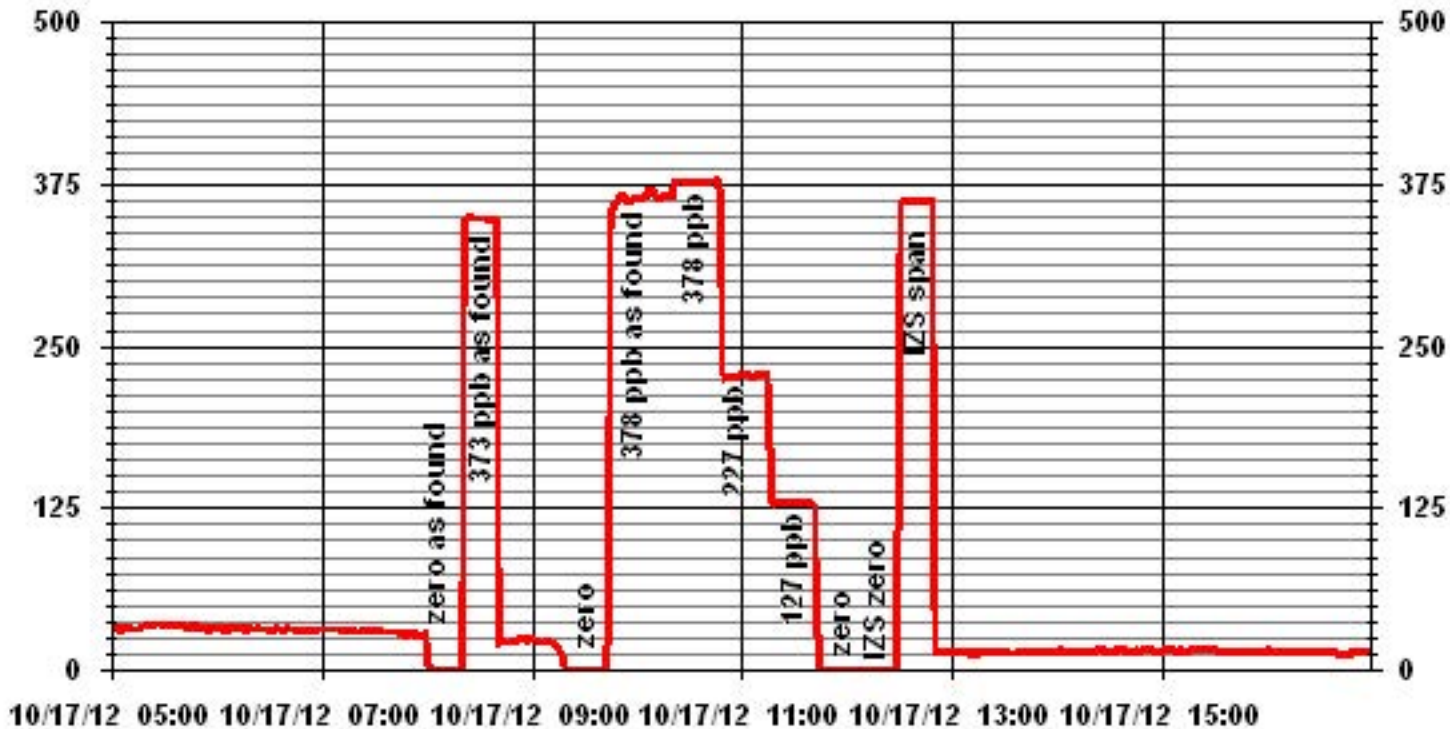
Calibration Date	October 17, 2012		
Company	Lakeland Industry & Community Association		
Plant / Location	Portable / Elk Point Airport		
Start Time (MST)	09:14	End Time (MST)	12:53

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999954
0	0	n/a	Slope (0.85 to 1.15)	0.995991
127	129	0.9845	Intercept (± 3% F.S.)	0.983567
227	227	1.0000		
378	377	1.0027		



Notes:

01 Minute Averages



Volatile Organics Laboratory Analysis

MAXXAM

Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6200
Location: Elk Point Airport Canister ID: 293
Station ID: Lica 35 (Portable) Canister Installation Date/Time: Oct 04, 12 @ 15:40 mst
Field Sample ID: LICA VOC/PORT/ Oct 06, 12 Canister Removal Date/Time: Oct 10, 12 @ 09:05 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
06-Oct-12	10/06/2012 0:00	10/07/2012 0:00	24.0000

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	1496	25

5

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-29	22

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# 10204

Technician Signature: Ting Xu



Your C.O.C. #: 10204

Attention: Michael Bisaga

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

Report Date: 2012/10/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G0303

Received: 2012/10/16, 09:36

Sample Matrix: AIR
 # Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/10/31	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/10/26	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 or as contractually agreed 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

=====
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Total cover pages: 1

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

RESULTS OF ANALYSES OF AIR

Maxxam ID		PF4609	PF4610	
Sampling Date		2012/10/06	2012/10/06	
COC Number		10204	10204	
	Units	LICA VOC/CLS/OCT 06,12 - 263	LICA VOC/PORT/OCT 06,12 - 293	QC Batch

Volatile Organics				
Pressure on Receipt	psig	23	22	3016851

QC Batch = Quality Control Batch

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF4609			PF4610				
Sampling Date		2012/10/06			2012/10/06				
COC Number		10204			10204				
	Units	LICA VOC/CLS/OCT 06,12 - 263	ug/m3	DL (ug/m3)	LICA VOC/PORT/OCT 06,12 - 293	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics									
Dichlorodifluoromethane (FREON 12)	ppbv	0.73	3.60	0.989	0.75	0.20	3.73	0.989	3016849
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	<1.19	1.19	<0.17	0.17	<1.19	1.19	3016849
Chloromethane	ppbv	0.57	1.18	0.620	0.58	0.30	1.19	0.620	3016849
Vinyl Chloride	ppbv	<0.18	<0.460	0.460	<0.18	0.18	<0.460	0.460	3016849
Chloroethane	ppbv	<0.30	<0.792	0.792	<0.30	0.30	<0.792	0.792	3016849
1,3-Butadiene	ppbv	<0.50	<1.11	1.11	<0.50	0.50	<1.11	1.11	3016849
Trichlorofluoromethane (FREON 11)	ppbv	0.31	1.73	1.12	0.30	0.20	1.69	1.12	3016849
Ethanol (ethyl alcohol)	ppbv	<2.3	<4.33	4.33	<2.3	2.3	<4.33	4.33	3016849
Trichlorotrifluoroethane	ppbv	<0.15	<1.15	1.15	<0.15	0.15	<1.15	1.15	3016849
2-propanol	ppbv	<3.0	<7.37	7.37	<3.0	3.0	<7.37	7.37	3016849
2-Propanone	ppbv	2.37	5.63	1.90	2.11	0.80	5.01	1.90	3016849
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	<8.85	8.85	<3.0	3.0	<8.85	8.85	3016849
Methyl Isobutyl Ketone	ppbv	<3.2	<13.1	13.1	<3.2	3.2	<13.1	13.1	3016849
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	<8.19	8.19	<2.0	2.0	<8.19	8.19	3016849
Methyl t-butyl ether (MTBE)	ppbv	<0.20	<0.721	0.721	<0.20	0.20	<0.721	0.721	3016849
Ethyl Acetate	ppbv	<2.2	<7.93	7.93	<2.2	2.2	<7.93	7.93	3016849
1,1-Dichloroethylene	ppbv	<0.25	<0.991	0.991	<0.25	0.25	<0.991	0.991	3016849
cis-1,2-Dichloroethylene	ppbv	<0.19	<0.753	0.753	<0.19	0.19	<0.753	0.753	3016849
trans-1,2-Dichloroethylene	ppbv	<0.20	<0.793	0.793	<0.20	0.20	<0.793	0.793	3016849
Methylene Chloride(Dichloromethane)	ppbv	<0.80	<2.78	2.78	<0.80	0.80	<2.78	2.78	3016849
Chloroform	ppbv	<0.15	<0.732	0.732	<0.15	0.15	<0.732	0.732	3016849
Carbon Tetrachloride	ppbv	<0.30	<1.89	1.89	<0.30	0.30	<1.89	1.89	3016849
1,1-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
1,2-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
Ethylene Dibromide	ppbv	<0.17	<1.31	1.31	<0.17	0.17	<1.31	1.31	3016849
1,1,1-Trichloroethane	ppbv	<0.30	<1.64	1.64	<0.30	0.30	<1.64	1.64	3016849
1,1,2-Trichloroethane	ppbv	<0.15	<0.818	0.818	<0.15	0.15	<0.818	0.818	3016849
1,1,2,2-Tetrachloroethane	ppbv	<0.20	<1.37	1.37	<0.20	0.20	<1.37	1.37	3016849
cis-1,3-Dichloropropene	ppbv	<0.18	<0.817	0.817	<0.18	0.18	<0.817	0.817	3016849
trans-1,3-Dichloropropene	ppbv	<0.17	<0.772	0.772	<0.17	0.17	<0.772	0.772	3016849
1,2-Dichloropropane	ppbv	<0.40	<1.85	1.85	<0.40	0.40	<1.85	1.85	3016849

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF4609			PF4610				
Sampling Date		2012/10/06			2012/10/06				
COC Number		10204			10204				
	Units	LICA VOC/CLS/OCT 06,12 - 263	ug/m3	DL (ug/m3)	LICA VOC/PORT/OCT 06,12 - 293	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	<0.699	0.699	<0.18	0.18	<0.699	0.699	3016849
Bromoform	ppbv	<0.20	<2.07	2.07	<0.20	0.20	<2.07	2.07	3016849
Bromodichloromethane	ppbv	<0.20	<1.34	1.34	<0.20	0.20	<1.34	1.34	3016849
Dibromochloromethane	ppbv	<0.20	<1.70	1.70	<0.20	0.20	<1.70	1.70	3016849
Trichloroethylene	ppbv	<0.30	<1.61	1.61	<0.30	0.30	<1.61	1.61	3016849
Tetrachloroethylene	ppbv	<0.20	<1.36	1.36	<0.20	0.20	<1.36	1.36	3016849
Benzene	ppbv	<0.18	<0.575	0.575	<0.18	0.18	<0.575	0.575	3016849
Toluene	ppbv	<0.20	<0.753	0.753	<0.20	0.20	<0.753	0.753	3016849
Ethylbenzene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
p+m-Xylene	ppbv	<0.37	<1.61	1.61	<0.37	0.37	<1.61	1.61	3016849
o-Xylene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
Styrene	ppbv	<0.20	<0.852	0.852	<0.20	0.20	<0.852	0.852	3016849
4-ethyltoluene	ppbv	<2.2	<10.8	10.8	<2.2	2.2	<10.8	10.8	3016849
1,3,5-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
1,2,4-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
Chlorobenzene	ppbv	<0.20	<0.921	0.921	<0.20	0.20	<0.921	0.921	3016849
Benzyl chloride	ppbv	<1.0	<5.18	5.18	<1.0	1.0	<5.18	5.18	3016849
1,3-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,4-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2,4-Trichlorobenzene	ppbv	<2.0	<14.8	14.8	<2.0	2.0	<14.8	14.8	3016849
Hexachlorobutadiene	ppbv	<3.0	<32.0	32.0	<3.0	3.0	<32.0	32.0	3016849
Hexane	ppbv	<0.30	<1.06	1.06	<0.30	0.30	<1.06	1.06	3016849
Heptane	ppbv	<0.30	<1.23	1.23	<0.30	0.30	<1.23	1.23	3016849
Cyclohexane	ppbv	<0.20	<0.688	0.688	<0.20	0.20	<0.688	0.688	3016849
Tetrahydrofuran	ppbv	<0.40	<1.18	1.18	<0.40	0.40	<1.18	1.18	3016849
1,4-Dioxane	ppbv	<2.0	<7.21	7.21	<2.0	2.0	<7.21	7.21	3016849
Xylene (Total)	ppbv	<0.60	<2.61	2.61	<0.60	0.60	<2.61	2.61	3016849
Vinyl Bromide	ppbv	<0.20	<0.875	0.875	<0.20	0.20	<0.875	0.875	3016849
Propene	ppbv	<0.30	<0.516	0.516	<0.30	0.30	<0.516	0.516	3016849
2,2,4-Trimethylpentane	ppbv	<0.20	<0.934	0.934	<0.20	0.20	<0.934	0.934	3016849
Carbon Disulfide	ppbv	<0.50	<1.56	1.56	<0.50	0.50	<1.56	1.56	3016849
Vinyl Acetate	ppbv	<0.20	<0.704	0.704	<0.20	0.20	<0.704	0.704	3016849
QC Batch = Quality Control Batch									

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF4609			PF4610				
Sampling Date		2012/10/06			2012/10/06				
COC Number		10204			10204				
	Units	LICA VOC/CLS/OCT 06,12 - 263	ug/m3	DL (ug/m3)	LICA VOC/PORT/OCT 06,12 - 293	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)									
Bromochloromethane	%	100	N/A	N/A	93		N/A	N/A	3016849
D5-Chlorobenzene	%	96	N/A	N/A	91		N/A	N/A	3016849
Difluorobenzene	%	100	N/A	N/A	95		N/A	N/A	3016849

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

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

Test Summary

Maxxam ID PF4609
Sample ID LICA VOC/CLS/OCT 06,12 - 263
Matrix AIR

Collected 2012/10/06
Shipped
Received 2012/10/16

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam ID PF4610
Sample ID LICA VOC/PORT/OCT 06,12 - 293
Matrix AIR

Collected 2012/10/06
Shipped
Received 2012/10/16

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam Job #: B2G0303
Report Date: 2012/10/31

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: GB2G0303

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Bromochloromethane	2012/10/26		103	%	60 - 140
		D5-Chlorobenzene	2012/10/26		104	%	60 - 140
		Difluorobenzene	2012/10/26		105	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26		106	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/10/26		125	%	70 - 130
		Chloromethane	2012/10/26		110	%	70 - 130
		Vinyl Chloride	2012/10/26		108	%	70 - 130
		Chloroethane	2012/10/26		98	%	70 - 130
		1,3-Butadiene	2012/10/26		108	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/10/26		108	%	70 - 130
		Ethanol (ethyl alcohol)	2012/10/26		99	%	70 - 130
		Trichlorotrifluoroethane	2012/10/26		100	%	70 - 130
		2-propanol	2012/10/26		106	%	70 - 130
		2-Propanone	2012/10/26		102	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26		104	%	70 - 130
		Methyl Isobutyl Ketone	2012/10/26		103	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26		99	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/10/26		101	%	70 - 130
		Ethyl Acetate	2012/10/26		103	%	70 - 130
		1,1-Dichloroethylene	2012/10/26		98	%	70 - 130
		cis-1,2-Dichloroethylene	2012/10/26		100	%	70 - 130
		trans-1,2-Dichloroethylene	2012/10/26		99	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/10/26		97	%	70 - 130
		Chloroform	2012/10/26		104	%	70 - 130
		Carbon Tetrachloride	2012/10/26		109	%	70 - 130
		1,1-Dichloroethane	2012/10/26		103	%	70 - 130
		1,2-Dichloroethane	2012/10/26		104	%	70 - 130
		Ethylene Dibromide	2012/10/26		96	%	70 - 130
		1,1,1-Trichloroethane	2012/10/26		105	%	70 - 130
		1,1,2-Trichloroethane	2012/10/26		102	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/10/26		93	%	70 - 130
		cis-1,3-Dichloropropene	2012/10/26		96	%	70 - 130
		trans-1,3-Dichloropropene	2012/10/26		95	%	70 - 130
		1,2-Dichloropropane	2012/10/26		99	%	70 - 130
		Bromomethane	2012/10/26		103	%	70 - 130
		Bromoform	2012/10/26		94	%	70 - 130
		Bromodichloromethane	2012/10/26		102	%	70 - 130
		Dibromochloromethane	2012/10/26		101	%	70 - 130
		Trichloroethylene	2012/10/26		95	%	70 - 130
		Tetrachloroethylene	2012/10/26		99	%	70 - 130
		Benzene	2012/10/26		99	%	70 - 130
		Toluene	2012/10/26		100	%	70 - 130
		Ethylbenzene	2012/10/26		99	%	70 - 130
		p+m-Xylene	2012/10/26		97	%	70 - 130
		o-Xylene	2012/10/26		99	%	70 - 130
		Styrene	2012/10/26		89	%	70 - 130
		4-ethyltoluene	2012/10/26		95	%	70 - 130
		1,3,5-Trimethylbenzene	2012/10/26		96	%	70 - 130
		1,2,4-Trimethylbenzene	2012/10/26		93	%	70 - 130
		Chlorobenzene	2012/10/26		95	%	70 - 130
		Benzyl chloride	2012/10/26		73	%	70 - 130
		1,3-Dichlorobenzene	2012/10/26		85	%	70 - 130
		1,4-Dichlorobenzene	2012/10/26		77	%	70 - 130
		1,2-Dichlorobenzene	2012/10/26		82	%	70 - 130
		1,2,4-Trichlorobenzene	2012/10/26		73	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0303

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Hexachlorobutadiene	2012/10/26		92	%	70 - 130
		Hexane	2012/10/26		99	%	70 - 130
		Heptane	2012/10/26		99	%	70 - 130
		Cyclohexane	2012/10/26		97	%	70 - 130
		Tetrahydrofuran	2012/10/26		105	%	70 - 130
		1,4-Dioxane	2012/10/26		100	%	70 - 130
		Xylene (Total)	2012/10/26		98	%	70 - 130
		Vinyl Bromide	2012/10/26		95	%	70 - 130
		Propene	2012/10/26		106	%	70 - 130
		2,2,4-Trimethylpentane	2012/10/26		96	%	70 - 130
		Carbon Disulfide	2012/10/26		101	%	70 - 130
		Vinyl Acetate	2012/10/26		102	%	70 - 130
	Method Blank	Bromochloromethane	2012/10/26		92	%	60 - 140
		D5-Chlorobenzene	2012/10/26		89	%	60 - 140
		Difluorobenzene	2012/10/26		94	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/10/26	<0.17		ppbv	
		Chloromethane	2012/10/26	<0.30		ppbv	
		Vinyl Chloride	2012/10/26	<0.18		ppbv	
		Chloroethane	2012/10/26	<0.30		ppbv	
		1,3-Butadiene	2012/10/26	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/10/26	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/10/26	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/10/26	<0.15		ppbv	
		2-propanol	2012/10/26	<3.0		ppbv	
		2-Propanone	2012/10/26	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/10/26	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/10/26	<0.20		ppbv	
		Ethyl Acetate	2012/10/26	<2.2		ppbv	
		1,1-Dichloroethylene	2012/10/26	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/10/26	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/10/26	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/10/26	<0.80		ppbv	
		Chloroform	2012/10/26	<0.15		ppbv	
		Carbon Tetrachloride	2012/10/26	<0.30		ppbv	
		1,1-Dichloroethane	2012/10/26	<0.20		ppbv	
		1,2-Dichloroethane	2012/10/26	<0.20		ppbv	
		Ethylene Dibromide	2012/10/26	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/10/26	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/10/26	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/10/26	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/10/26	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/10/26	<0.17		ppbv	
		1,2-Dichloropropane	2012/10/26	<0.40		ppbv	
		Bromomethane	2012/10/26	<0.18		ppbv	
		Bromoform	2012/10/26	<0.20		ppbv	
		Bromodichloromethane	2012/10/26	<0.20		ppbv	
		Dibromochloromethane	2012/10/26	<0.20		ppbv	
		Trichloroethylene	2012/10/26	<0.30		ppbv	
		Tetrachloroethylene	2012/10/26	<0.20		ppbv	
		Benzene	2012/10/26	<0.18		ppbv	
		Toluene	2012/10/26	<0.20		ppbv	
		Ethylbenzene	2012/10/26	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0303

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Method Blank	p+m-Xylene	2012/10/26	<0.37		ppbv	
		o-Xylene	2012/10/26	<0.20		ppbv	
		Styrene	2012/10/26	<0.20		ppbv	
		4-ethyltoluene	2012/10/26	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		Chlorobenzene	2012/10/26	<0.20		ppbv	
		Benzyl chloride	2012/10/26	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/10/26	<2.0		ppbv	
		Hexachlorobutadiene	2012/10/26	<3.0		ppbv	
		Hexane	2012/10/26	<0.30		ppbv	
		Heptane	2012/10/26	<0.30		ppbv	
		Cyclohexane	2012/10/26	<0.20		ppbv	
		Tetrahydrofuran	2012/10/26	<0.40		ppbv	
		1,4-Dioxane	2012/10/26	<2.0		ppbv	
		Xylene (Total)	2012/10/26	<0.60		ppbv	
		Vinyl Bromide	2012/10/26	<0.20		ppbv	
		Propene	2012/10/26	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/10/26	<0.20		ppbv	
		Carbon Disulfide	2012/10/26	<0.50		ppbv	
		Vinyl Acetate	2012/10/26	<0.20		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.

MAXXAM

Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6200
Location: Elk Point Airport Canister ID: 251
Station ID: Lica 35 (Portable) Canister Installation Date/Time: Oct 10, 12 @ 09:35 mst
Field Sample ID: LICA VOC/PORT/ Oct 12, 12 Canister Removal Date/Time: Oct 15, 12 @ 09:08 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
12-Oct-12	10/12/2012 0:00	10/13/2012 0:00	24.0000

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	1496	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-29	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# 10248

Technician Signature: Ting Xu

Your C.O.C. #: 10248

Attention: Michael BisagaMaxxam Analytics
2608 6A Ave.
Cold Lake, AB
CANADA T9M 2C7**Report Date: 2012/10/31****CERTIFICATE OF ANALYSIS****MAXXAM JOB #: B2G0955****Received: 2012/10/17, 10:39**Sample Matrix: AIR
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/10/31	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/10/26	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 or as contractually agreed 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 #: B2G0955
 Report Date: 2012/10/31

RESULTS OF ANALYSES OF AIR

Maxxam ID		PF8346	PF8347	
Sampling Date		2012/10/12	2012/10/12	
COC Number		10248	10248	
	Units	LICA VOC\ CLS\OCT 12,12 - 279	LICA VOC\ PORT\OCT 12,12 - 251	QC Batch

Volatile Organics				
Pressure on Receipt	psig	24	23	3016851

QC Batch = Quality Control Batch

Maxxam Job #: B2G0955
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF8346			PF8347				
Sampling Date		2012/10/12			2012/10/12				
COC Number		10248			10248				
	Units	LICA VOC\ CLS\OCT 12,12 - 279	ug/m3	DL (ug/m3)	LICA VOC\ PORT\OCT 12,12 - 251	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics									
Dichlorodifluoromethane (FREON 12)	ppbv	0.75	3.68	0.989	0.74	0.20	3.64	0.989	3016849
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	<1.19	1.19	<0.17	0.17	<1.19	1.19	3016849
Chloromethane	ppbv	0.53	1.10	0.620	0.54	0.30	1.13	0.620	3016849
Vinyl Chloride	ppbv	<0.18	<0.460	0.460	<0.18	0.18	<0.460	0.460	3016849
Chloroethane	ppbv	<0.30	<0.792	0.792	<0.30	0.30	<0.792	0.792	3016849
1,3-Butadiene	ppbv	<0.50	<1.11	1.11	<0.50	0.50	<1.11	1.11	3016849
Trichlorofluoromethane (FREON 11)	ppbv	0.31	1.73	1.12	0.30	0.20	1.67	1.12	3016849
Ethanol (ethyl alcohol)	ppbv	<2.3	<4.33	4.33	<2.3	2.3	<4.33	4.33	3016849
Trichlorotrifluoroethane	ppbv	<0.15	<1.15	1.15	<0.15	0.15	<1.15	1.15	3016849
2-propanol	ppbv	<3.0	<7.37	7.37	<3.0	3.0	<7.37	7.37	3016849
2-Propanone	ppbv	1.77	4.20	1.90	0.87	0.80	2.08	1.90	3016849
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	<8.85	8.85	<3.0	3.0	<8.85	8.85	3016849
Methyl Isobutyl Ketone	ppbv	<3.2	<13.1	13.1	<3.2	3.2	<13.1	13.1	3016849
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	<8.19	8.19	<2.0	2.0	<8.19	8.19	3016849
Methyl t-butyl ether (MTBE)	ppbv	<0.20	<0.721	0.721	<0.20	0.20	<0.721	0.721	3016849
Ethyl Acetate	ppbv	<2.2	<7.93	7.93	<2.2	2.2	<7.93	7.93	3016849
1,1-Dichloroethylene	ppbv	<0.25	<0.991	0.991	<0.25	0.25	<0.991	0.991	3016849
cis-1,2-Dichloroethylene	ppbv	<0.19	<0.753	0.753	<0.19	0.19	<0.753	0.753	3016849
trans-1,2-Dichloroethylene	ppbv	<0.20	<0.793	0.793	<0.20	0.20	<0.793	0.793	3016849
Methylene Chloride(Dichloromethane)	ppbv	<0.80	<2.78	2.78	<0.80	0.80	<2.78	2.78	3016849
Chloroform	ppbv	<0.15	<0.732	0.732	<0.15	0.15	<0.732	0.732	3016849
Carbon Tetrachloride	ppbv	<0.30	<1.89	1.89	<0.30	0.30	<1.89	1.89	3016849
1,1-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
1,2-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
Ethylene Dibromide	ppbv	<0.17	<1.31	1.31	<0.17	0.17	<1.31	1.31	3016849
1,1,1-Trichloroethane	ppbv	<0.30	<1.64	1.64	<0.30	0.30	<1.64	1.64	3016849
1,1,2-Trichloroethane	ppbv	<0.15	<0.818	0.818	<0.15	0.15	<0.818	0.818	3016849
1,1,2,2-Tetrachloroethane	ppbv	<0.20	<1.37	1.37	<0.20	0.20	<1.37	1.37	3016849
cis-1,3-Dichloropropene	ppbv	<0.18	<0.817	0.817	<0.18	0.18	<0.817	0.817	3016849
trans-1,3-Dichloropropene	ppbv	<0.17	<0.772	0.772	<0.17	0.17	<0.772	0.772	3016849
1,2-Dichloropropane	ppbv	<0.40	<1.85	1.85	<0.40	0.40	<1.85	1.85	3016849

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G0955
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF8346			PF8347				
Sampling Date		2012/10/12			2012/10/12				
COC Number		10248			10248				
	Units	LICA VOC\ CLS\OCT 12,12 - 279	ug/m3	DL (ug/m3)	LICA VOC\ PORT\OCT 12,12 - 251	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	<0.699	0.699	<0.18	0.18	<0.699	0.699	3016849
Bromoform	ppbv	<0.20	<2.07	2.07	<0.20	0.20	<2.07	2.07	3016849
Bromodichloromethane	ppbv	<0.20	<1.34	1.34	<0.20	0.20	<1.34	1.34	3016849
Dibromochloromethane	ppbv	<0.20	<1.70	1.70	<0.20	0.20	<1.70	1.70	3016849
Trichloroethylene	ppbv	<0.30	<1.61	1.61	<0.30	0.30	<1.61	1.61	3016849
Tetrachloroethylene	ppbv	<0.20	<1.36	1.36	<0.20	0.20	<1.36	1.36	3016849
Benzene	ppbv	<0.18	<0.575	0.575	<0.18	0.18	<0.575	0.575	3016849
Toluene	ppbv	0.21	0.802	0.753	<0.20	0.20	<0.753	0.753	3016849
Ethylbenzene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
p+m-Xylene	ppbv	<0.37	<1.61	1.61	<0.37	0.37	<1.61	1.61	3016849
o-Xylene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
Styrene	ppbv	<0.20	<0.852	0.852	<0.20	0.20	<0.852	0.852	3016849
4-ethyltoluene	ppbv	<2.2	<10.8	10.8	<2.2	2.2	<10.8	10.8	3016849
1,3,5-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
1,2,4-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
Chlorobenzene	ppbv	<0.20	<0.921	0.921	<0.20	0.20	<0.921	0.921	3016849
Benzyl chloride	ppbv	<1.0	<5.18	5.18	<1.0	1.0	<5.18	5.18	3016849
1,3-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,4-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2,4-Trichlorobenzene	ppbv	<2.0	<14.8	14.8	<2.0	2.0	<14.8	14.8	3016849
Hexachlorobutadiene	ppbv	<3.0	<32.0	32.0	<3.0	3.0	<32.0	32.0	3016849
Hexane	ppbv	<0.30	<1.06	1.06	<0.30	0.30	<1.06	1.06	3016849
Heptane	ppbv	<0.30	<1.23	1.23	<0.30	0.30	<1.23	1.23	3016849
Cyclohexane	ppbv	<0.20	<0.688	0.688	<0.20	0.20	<0.688	0.688	3016849
Tetrahydrofuran	ppbv	<0.40	<1.18	1.18	<0.40	0.40	<1.18	1.18	3016849
1,4-Dioxane	ppbv	<2.0	<7.21	7.21	<2.0	2.0	<7.21	7.21	3016849
Xylene (Total)	ppbv	<0.60	<2.61	2.61	<0.60	0.60	<2.61	2.61	3016849
Vinyl Bromide	ppbv	<0.20	<0.875	0.875	<0.20	0.20	<0.875	0.875	3016849
Propene	ppbv	<0.30	<0.516	0.516	<0.30	0.30	<0.516	0.516	3016849
2,2,4-Trimethylpentane	ppbv	<0.20	<0.934	0.934	<0.20	0.20	<0.934	0.934	3016849
Carbon Disulfide	ppbv	<0.50	<1.56	1.56	<0.50	0.50	<1.56	1.56	3016849
Vinyl Acetate	ppbv	<0.20	<0.704	0.704	<0.20	0.20	<0.704	0.704	3016849
QC Batch = Quality Control Batch									

Maxxam Job #: B2G0955
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF8346			PF8347				
Sampling Date		2012/10/12			2012/10/12				
COC Number		10248			10248				
	Units	LICA VOC\ CLS\OCT 12,12 - 279	ug/m3	DL (ug/m3)	LICA VOC\ PORT\OCT 12,12 - 251	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)									
Bromochloromethane	%	88	N/A	N/A	86		N/A	N/A	3016849
D5-Chlorobenzene	%	86	N/A	N/A	83		N/A	N/A	3016849
Difluorobenzene	%	89	N/A	N/A	86		N/A	N/A	3016849

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

Maxxam Job #: B2G0955
 Report Date: 2012/10/31

Test Summary

Maxxam ID PF8346
Sample ID LICA VOC\CLS\OCT 12,12 - 279
Matrix AIR

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam ID PF8347
Sample ID LICA VOC\PORT\OCT 12,12 - 251
Matrix AIR

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam Job #: B2G0955
Report Date: 2012/10/31

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: GB2G0955

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Bromochloromethane	2012/10/26		103	%	60 - 140
		D5-Chlorobenzene	2012/10/26		104	%	60 - 140
		Difluorobenzene	2012/10/26		105	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26		106	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/10/26		125	%	70 - 130
		Chloromethane	2012/10/26		110	%	70 - 130
		Vinyl Chloride	2012/10/26		108	%	70 - 130
		Chloroethane	2012/10/26		98	%	70 - 130
		1,3-Butadiene	2012/10/26		108	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/10/26		108	%	70 - 130
		Ethanol (ethyl alcohol)	2012/10/26		99	%	70 - 130
		Trichlorotrifluoroethane	2012/10/26		100	%	70 - 130
		2-propanol	2012/10/26		106	%	70 - 130
		2-Propanone	2012/10/26		102	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26		104	%	70 - 130
		Methyl Isobutyl Ketone	2012/10/26		103	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26		99	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/10/26		101	%	70 - 130
		Ethyl Acetate	2012/10/26		103	%	70 - 130
		1,1-Dichloroethylene	2012/10/26		98	%	70 - 130
		cis-1,2-Dichloroethylene	2012/10/26		100	%	70 - 130
		trans-1,2-Dichloroethylene	2012/10/26		99	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/10/26		97	%	70 - 130
		Chloroform	2012/10/26		104	%	70 - 130
		Carbon Tetrachloride	2012/10/26		109	%	70 - 130
		1,1-Dichloroethane	2012/10/26		103	%	70 - 130
		1,2-Dichloroethane	2012/10/26		104	%	70 - 130
		Ethylene Dibromide	2012/10/26		96	%	70 - 130
		1,1,1-Trichloroethane	2012/10/26		105	%	70 - 130
		1,1,2-Trichloroethane	2012/10/26		102	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/10/26		93	%	70 - 130
		cis-1,3-Dichloropropene	2012/10/26		96	%	70 - 130
		trans-1,3-Dichloropropene	2012/10/26		95	%	70 - 130
		1,2-Dichloropropane	2012/10/26		99	%	70 - 130
		Bromomethane	2012/10/26		103	%	70 - 130
		Bromoform	2012/10/26		94	%	70 - 130
		Bromodichloromethane	2012/10/26		102	%	70 - 130
		Dibromochloromethane	2012/10/26		101	%	70 - 130
		Trichloroethylene	2012/10/26		95	%	70 - 130
		Tetrachloroethylene	2012/10/26		99	%	70 - 130
		Benzene	2012/10/26		99	%	70 - 130
		Toluene	2012/10/26		100	%	70 - 130
		Ethylbenzene	2012/10/26		99	%	70 - 130
		p+m-Xylene	2012/10/26		97	%	70 - 130
		o-Xylene	2012/10/26		99	%	70 - 130
		Styrene	2012/10/26		89	%	70 - 130
		4-ethyltoluene	2012/10/26		95	%	70 - 130
		1,3,5-Trimethylbenzene	2012/10/26		96	%	70 - 130
		1,2,4-Trimethylbenzene	2012/10/26		93	%	70 - 130
		Chlorobenzene	2012/10/26		95	%	70 - 130
		Benzyl chloride	2012/10/26		73	%	70 - 130
		1,3-Dichlorobenzene	2012/10/26		85	%	70 - 130
		1,4-Dichlorobenzene	2012/10/26		77	%	70 - 130
		1,2-Dichlorobenzene	2012/10/26		82	%	70 - 130
		1,2,4-Trichlorobenzene	2012/10/26		73	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0955

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Hexachlorobutadiene	2012/10/26		92	%	70 - 130
		Hexane	2012/10/26		99	%	70 - 130
		Heptane	2012/10/26		99	%	70 - 130
		Cyclohexane	2012/10/26		97	%	70 - 130
		Tetrahydrofuran	2012/10/26		105	%	70 - 130
		1,4-Dioxane	2012/10/26		100	%	70 - 130
		Xylene (Total)	2012/10/26		98	%	70 - 130
		Vinyl Bromide	2012/10/26		95	%	70 - 130
		Propene	2012/10/26		106	%	70 - 130
		2,2,4-Trimethylpentane	2012/10/26		96	%	70 - 130
		Carbon Disulfide	2012/10/26		101	%	70 - 130
		Vinyl Acetate	2012/10/26		102	%	70 - 130
	Method Blank	Bromochloromethane	2012/10/26		92	%	60 - 140
		D5-Chlorobenzene	2012/10/26		89	%	60 - 140
		Difluorobenzene	2012/10/26		94	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/10/26	<0.17		ppbv	
		Chloromethane	2012/10/26	<0.30		ppbv	
		Vinyl Chloride	2012/10/26	<0.18		ppbv	
		Chloroethane	2012/10/26	<0.30		ppbv	
		1,3-Butadiene	2012/10/26	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/10/26	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/10/26	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/10/26	<0.15		ppbv	
		2-propanol	2012/10/26	<3.0		ppbv	
		2-Propanone	2012/10/26	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/10/26	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/10/26	<0.20		ppbv	
		Ethyl Acetate	2012/10/26	<2.2		ppbv	
		1,1-Dichloroethylene	2012/10/26	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/10/26	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/10/26	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/10/26	<0.80		ppbv	
		Chloroform	2012/10/26	<0.15		ppbv	
		Carbon Tetrachloride	2012/10/26	<0.30		ppbv	
		1,1-Dichloroethane	2012/10/26	<0.20		ppbv	
		1,2-Dichloroethane	2012/10/26	<0.20		ppbv	
		Ethylene Dibromide	2012/10/26	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/10/26	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/10/26	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/10/26	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/10/26	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/10/26	<0.17		ppbv	
		1,2-Dichloropropane	2012/10/26	<0.40		ppbv	
		Bromomethane	2012/10/26	<0.18		ppbv	
		Bromoform	2012/10/26	<0.20		ppbv	
		Bromodichloromethane	2012/10/26	<0.20		ppbv	
		Dibromochloromethane	2012/10/26	<0.20		ppbv	
		Trichloroethylene	2012/10/26	<0.30		ppbv	
		Tetrachloroethylene	2012/10/26	<0.20		ppbv	
		Benzene	2012/10/26	<0.18		ppbv	
		Toluene	2012/10/26	<0.20		ppbv	
		Ethylbenzene	2012/10/26	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0955

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Method Blank	p+m-Xylene	2012/10/26	<0.37		ppbv	
		o-Xylene	2012/10/26	<0.20		ppbv	
		Styrene	2012/10/26	<0.20		ppbv	
		4-ethyltoluene	2012/10/26	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		Chlorobenzene	2012/10/26	<0.20		ppbv	
		Benzyl chloride	2012/10/26	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/10/26	<2.0		ppbv	
		Hexachlorobutadiene	2012/10/26	<3.0		ppbv	
		Hexane	2012/10/26	<0.30		ppbv	
		Heptane	2012/10/26	<0.30		ppbv	
		Cyclohexane	2012/10/26	<0.20		ppbv	
		Tetrahydrofuran	2012/10/26	<0.40		ppbv	
		1,4-Dioxane	2012/10/26	<2.0		ppbv	
		Xylene (Total)	2012/10/26	<0.60		ppbv	
		Vinyl Bromide	2012/10/26	<0.20		ppbv	
		Propene	2012/10/26	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/10/26	<0.20		ppbv	
		Carbon Disulfide	2012/10/26	<0.50		ppbv	
		Vinyl Acetate	2012/10/26	<0.20		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.

MAXXAM

Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6200
Location: Elk Point Airport Canister ID: S2244
Station ID: Lica 35 (Portable) Canister Installation Date/Time: Oct 17, 12 @ 10:40 mst
Field Sample ID: LICA VOC/PORT/ Oct 18, 12 Canister Removal Date/Time: Oct 19, 12 @ 09:21 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
18-Oct-12	10/18/2012 0:00	10/19/2012 0:00	24.0000

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	1496	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-28	22

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# 12498

Technician Signature: Ting Xu



Your C.O.C. #: 12498

Attention: Michael Bisaga

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

Report Date: 2012/11/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G5647

Received: 2012/10/24, 10:59

Sample Matrix: AIR
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/11/08	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/11/08	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 or as contractually agreed 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 #: B2G5647
 Report Date: 2012/11/14

RESULTS OF ANALYSES OF AIR

Maxxam ID		PI3792	PI3793	
Sampling Date		2012/10/18	2012/10/18	
COC Number		12498	12498	
	Units	LICA VOC/CLS/OCT 18,12	LICA VOC/PORT/OCT 18,12	QC Batch

Volatile Organics				
Pressure on Receipt	psig	23	22	3033295

QC Batch = Quality Control Batch

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3792				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/CLS/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatiles Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.63	0.20	3.12	0.989	3033431
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3033431
Chloromethane	ppbv	0.49	0.30	1.01	0.620	3033431
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3033431
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3033431
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3033431
Trichlorofluoromethane (FREON 11)	ppbv	0.32	0.20	1.79	1.12	3033431
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3033431
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3033431
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3033431
2-Propanone	ppbv	1.45	0.80	3.45	1.90	3033431
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3033431
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3033431
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3033431
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3033431
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3033431
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3033431
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3033431
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3033431
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3033431
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3033431
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3033431
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3033431
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3033431
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3033431
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3033431
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3033431
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3033431
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3033431
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3792				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/CLS/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3033431
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3033431
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3033431
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3033431
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3033431
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3033431
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3033431
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3033431
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3033431
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3033431
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3033431
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3033431
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3033431
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3033431
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3033431
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3033431
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3033431
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3033431
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3033431
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3033431
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3033431
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3033431
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3033431
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3033431
Propene	ppbv	<0.70	0.70	<1.20	1.20	3033431
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3033431
Carbon Disulfide	ppbv	0.53	0.50	1.64	1.56	3033431
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3033431
QC Batch = Quality Control Batch						

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3792				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/CLS/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	76		N/A	N/A	3033431
D5-Chlorobenzene	%	77		N/A	N/A	3033431
Difluorobenzene	%	83		N/A	N/A	3033431

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

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3793				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/PORT/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.63	0.20	3.12	0.989	3033431
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3033431
Chloromethane	ppbv	0.60	0.30	1.23	0.620	3033431
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3033431
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3033431
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3033431
Trichlorofluoromethane (FREON 11)	ppbv	0.32	0.20	1.78	1.12	3033431
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3033431
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3033431
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3033431
2-Propanone	ppbv	2.56	0.80	6.09	1.90	3033431
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3033431
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3033431
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3033431
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3033431
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3033431
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3033431
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3033431
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3033431
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3033431
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3033431
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3033431
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3033431
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3033431
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3033431
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3033431
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3033431
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3033431
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3033431

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3793				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/PORT/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3033431
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3033431
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3033431
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3033431
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3033431
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3033431
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3033431
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3033431
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3033431
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3033431
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3033431
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3033431
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3033431
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3033431
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3033431
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3033431
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3033431
Hexane	ppbv	0.55	0.30	1.95	1.06	3033431
Heptane	ppbv	0.42	0.30	1.71	1.23	3033431
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3033431
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3033431
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3033431
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3033431
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3033431
Propene	ppbv	<2.2	2.2	<3.79	3.79	3033431
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3033431
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3033431
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3033431
QC Batch = Quality Control Batch						

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3793				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/PORT/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	76		N/A	N/A	3033431
D5-Chlorobenzene	%	74		N/A	N/A	3033431
Difluorobenzene	%	83		N/A	N/A	3033431

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

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

Test Summary

Maxxam ID PI3792
Sample ID LICA VOC/CLS/OCT 18,12
Matrix AIR

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3033295	N/A	2012/11/08	Jie Wu
Volatile Organics in Air (TO-15)	GC/MS	3033431	N/A	2012/11/08	Jie Wu

Maxxam ID PI3793
Sample ID LICA VOC/PORT/OCT 18,12
Matrix AIR

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3033295	N/A	2012/11/08	Jie Wu
Volatile Organics in Air (TO-15)	GC/MS	3033431	N/A	2012/11/08	Jie Wu

Maxxam Job #: B2G5647
Report Date: 2012/11/14

GENERAL COMMENTS

Sample PI3792-01: The amount reported for acetone represents the mixture of acetone and pentane.

Increased DL for propene due to possible background.

Sample PI3793-01: The amount reported for acetone represents the mixture of acetone and pentane.

Increased DL for propene due to possible background.

Results relate only to the items tested.

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

Quality Assurance Report
 Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431 JIW	Spiked Blank	Bromochloromethane	2012/11/08		103	%	60 - 140
		D5-Chlorobenzene	2012/11/08		107	%	60 - 140
		Difluorobenzene	2012/11/08		104	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/08		93	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/11/08		104	%	70 - 130
		Chloromethane	2012/11/08		104	%	70 - 130
		Vinyl Chloride	2012/11/08		92	%	70 - 130
		Chloroethane	2012/11/08		79	%	70 - 130
		1,3-Butadiene	2012/11/08		94	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/11/08		106	%	70 - 130
		Ethanol (ethyl alcohol)	2012/11/08		92	%	70 - 130
		Trichlorotrifluoroethane	2012/11/08		87	%	70 - 130
		2-propanol	2012/11/08		97	%	70 - 130
		2-Propanone	2012/11/08		99	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/11/08		115	%	70 - 130
		Methyl Isobutyl Ketone	2012/11/08		100	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/11/08		102	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/11/08		89	%	70 - 130
		Ethyl Acetate	2012/11/08		101	%	70 - 130
		1,1-Dichloroethylene	2012/11/08		85	%	70 - 130
		cis-1,2-Dichloroethylene	2012/11/08		90	%	70 - 130
		trans-1,2-Dichloroethylene	2012/11/08		89	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/11/08		91	%	70 - 130
		Chloroform	2012/11/08		92	%	70 - 130
		Carbon Tetrachloride	2012/11/08		110	%	70 - 130
		1,1-Dichloroethane	2012/11/08		86	%	70 - 130
		1,2-Dichloroethane	2012/11/08		95	%	70 - 130
		Ethylene Dibromide	2012/11/08		96	%	70 - 130
		1,1,1-Trichloroethane	2012/11/08		102	%	70 - 130
		1,1,2-Trichloroethane	2012/11/08		97	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/11/08		94	%	70 - 130
		cis-1,3-Dichloropropene	2012/11/08		91	%	70 - 130
		trans-1,3-Dichloropropene	2012/11/08		96	%	70 - 130
		1,2-Dichloropropane	2012/11/08		92	%	70 - 130
		Bromomethane	2012/11/08		86	%	70 - 130
		Bromoform	2012/11/08		110	%	70 - 130
		Bromodichloromethane	2012/11/08		97	%	70 - 130
		Dibromochloromethane	2012/11/08		105	%	70 - 130
		Trichloroethylene	2012/11/08		102	%	70 - 130
		Tetrachloroethylene	2012/11/08		105	%	70 - 130
		Benzene	2012/11/08		90	%	70 - 130
		Toluene	2012/11/08		93	%	70 - 130
		Ethylbenzene	2012/11/08		96	%	70 - 130
		p+m-Xylene	2012/11/08		93	%	70 - 130
		o-Xylene	2012/11/08		96	%	70 - 130
		Styrene	2012/11/08		97	%	70 - 130
		4-ethyltoluene	2012/11/08		98	%	70 - 130
		1,3,5-Trimethylbenzene	2012/11/08		89	%	70 - 130
		1,2,4-Trimethylbenzene	2012/11/08		89	%	70 - 130
		Chlorobenzene	2012/11/08		101	%	70 - 130
		Benzyl chloride	2012/11/08		82	%	70 - 130
		1,3-Dichlorobenzene	2012/11/08		102	%	70 - 130
		1,4-Dichlorobenzene	2012/11/08		97	%	70 - 130
		1,2-Dichlorobenzene	2012/11/08		93	%	70 - 130
		1,2,4-Trichlorobenzene	2012/11/08		86	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431 JIW	Spiked Blank	Hexachlorobutadiene	2012/11/08		107	%	70 - 130
		Hexane	2012/11/08		92	%	70 - 130
		Heptane	2012/11/08		106	%	70 - 130
		Cyclohexane	2012/11/08		97	%	70 - 130
		Tetrahydrofuran	2012/11/08		106	%	70 - 130
		1,4-Dioxane	2012/11/08		88	%	70 - 130
		Xylene (Total)	2012/11/08		94	%	70 - 130
		Vinyl Bromide	2012/11/08		85	%	70 - 130
		Propene	2012/11/08		92	%	70 - 130
		2,2,4-Trimethylpentane	2012/11/08		94	%	70 - 130
		Carbon Disulfide	2012/11/08		89	%	70 - 130
	Method Blank	Vinyl Acetate	2012/11/08		102	%	70 - 130
		Bromochloromethane	2012/11/08		87	%	60 - 140
		D5-Chlorobenzene	2012/11/08		82	%	60 - 140
		Difluorobenzene	2012/11/08		89	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/08	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/11/08	<0.17		ppbv	
		Chloromethane	2012/11/08	<0.30		ppbv	
		Vinyl Chloride	2012/11/08	<0.18		ppbv	
		Chloroethane	2012/11/08	<0.30		ppbv	
		1,3-Butadiene	2012/11/08	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/11/08	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/11/08	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/11/08	<0.15		ppbv	
		2-propanol	2012/11/08	<3.0		ppbv	
		2-Propanone	2012/11/08	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/11/08	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/11/08	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/11/08	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/11/08	<0.20		ppbv	
		Ethyl Acetate	2012/11/08	<2.2		ppbv	
		1,1-Dichloroethylene	2012/11/08	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/11/08	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/11/08	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/11/08	<0.80		ppbv	
		Chloroform	2012/11/08	<0.15		ppbv	
		Carbon Tetrachloride	2012/11/08	<0.30		ppbv	
		1,1-Dichloroethane	2012/11/08	<0.20		ppbv	
		1,2-Dichloroethane	2012/11/08	<0.20		ppbv	
		Ethylene Dibromide	2012/11/08	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/11/08	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/11/08	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/11/08	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/11/08	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/11/08	<0.17		ppbv	
		1,2-Dichloropropane	2012/11/08	<0.40		ppbv	
		Bromomethane	2012/11/08	<0.18		ppbv	
		Bromoform	2012/11/08	<0.20		ppbv	
		Bromodichloromethane	2012/11/08	<0.20		ppbv	
		Dibromochloromethane	2012/11/08	<0.20		ppbv	
		Trichloroethylene	2012/11/08	<0.30		ppbv	
		Tetrachloroethylene	2012/11/08	<0.20		ppbv	
		Benzene	2012/11/08	<0.18		ppbv	
		Toluene	2012/11/08	<0.20		ppbv	
		Ethylbenzene	2012/11/08	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431	JIW	Method Blank					
		p+m-Xylene	2012/11/08	<0.37		ppbv	
		o-Xylene	2012/11/08	<0.20		ppbv	
		Styrene	2012/11/08	<0.20		ppbv	
		4-ethyltoluene	2012/11/08	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/11/08	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/11/08	<0.50		ppbv	
		Chlorobenzene	2012/11/08	<0.20		ppbv	
		Benzyl chloride	2012/11/08	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/11/08	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/11/08	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/11/08	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/11/08	<2.0		ppbv	
		Hexachlorobutadiene	2012/11/08	<3.0		ppbv	
		Hexane	2012/11/08	<0.30		ppbv	
		Heptane	2012/11/08	<0.30		ppbv	
		Cyclohexane	2012/11/08	<0.20		ppbv	
		Tetrahydrofuran	2012/11/08	<0.40		ppbv	
		1,4-Dioxane	2012/11/08	<2.0		ppbv	
		Xylene (Total)	2012/11/08	<0.60		ppbv	
		Vinyl Bromide	2012/11/08	<0.20		ppbv	
		Propene	2012/11/08	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/11/08	<0.20		ppbv	
		Carbon Disulfide	2012/11/08	<0.50		ppbv	
		Vinyl Acetate	2012/11/08	<0.20		ppbv	
	RPD - Sample/Sample Dup	Dichlorodifluoromethane (FREON 12)	2012/11/08	21.9		%	25
		1,2-Dichlorotetrafluoroethane	2012/11/08	NC		%	25
		Chloromethane	2012/11/08	NC		%	25
		Vinyl Chloride	2012/11/08	NC		%	25
		Chloroethane	2012/11/08	NC		%	25
		1,3-Butadiene	2012/11/08	NC		%	25
		Trichlorofluoromethane (FREON 11)	2012/11/08	NC		%	25
		Ethanol (ethyl alcohol)	2012/11/08	NC		%	25
		Trichlorotrifluoroethane	2012/11/08	NC		%	25
		2-propanol	2012/11/08	NC		%	25
		2-Propanone	2012/11/08	15.9		%	25
		Methyl Ethyl Ketone (2-Butanone)	2012/11/08	NC		%	25
		Methyl Isobutyl Ketone	2012/11/08	NC		%	25
		Methyl Butyl Ketone (2-Hexanone)	2012/11/08	NC		%	25
		Methyl t-butyl ether (MTBE)	2012/11/08	NC		%	25
		Ethyl Acetate	2012/11/08	NC		%	25
		1,1-Dichloroethylene	2012/11/08	NC		%	25
		cis-1,2-Dichloroethylene	2012/11/08	NC		%	25
		trans-1,2-Dichloroethylene	2012/11/08	NC		%	25
		Methylene Chloride(Dichloromethane)	2012/11/08	NC		%	25
		Chloroform	2012/11/08	NC		%	25
		Carbon Tetrachloride	2012/11/08	NC		%	25
		1,1-Dichloroethane	2012/11/08	NC		%	25
		1,2-Dichloroethane	2012/11/08	NC		%	25
		Ethylene Dibromide	2012/11/08	NC		%	25
		1,1,1-Trichloroethane	2012/11/08	NC		%	25
		1,1,2-Trichloroethane	2012/11/08	NC		%	25
		1,1,2,2-Tetrachloroethane	2012/11/08	NC		%	25
		cis-1,3-Dichloropropene	2012/11/08	NC		%	25

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431 JIW	RPD - Sample/Sample Dup	trans-1,3-Dichloropropene	2012/11/08	NC		%	25
		1,2-Dichloropropane	2012/11/08	NC		%	25
		Bromomethane	2012/11/08	NC		%	25
		Bromoform	2012/11/08	NC		%	25
		Bromodichloromethane	2012/11/08	NC		%	25
		Dibromochloromethane	2012/11/08	NC		%	25
		Trichloroethylene	2012/11/08	NC		%	25
		Tetrachloroethylene	2012/11/08	7.3		%	25
		Benzene	2012/11/08	NC		%	25
		Toluene	2012/11/08	15.7		%	25
		Ethylbenzene	2012/11/08	NC		%	25
		p+m-Xylene	2012/11/08	NC		%	25
		o-Xylene	2012/11/08	NC		%	25
		Styrene	2012/11/08	NC		%	25
		4-ethyltoluene	2012/11/08	NC		%	25
		1,3,5-Trimethylbenzene	2012/11/08	NC		%	25
		1,2,4-Trimethylbenzene	2012/11/08	NC		%	25
		Chlorobenzene	2012/11/08	NC		%	25
		Benzyl chloride	2012/11/08	NC		%	25
		1,3-Dichlorobenzene	2012/11/08	NC		%	25
		1,4-Dichlorobenzene	2012/11/08	NC		%	25
		1,2-Dichlorobenzene	2012/11/08	NC		%	25
		1,2,4-Trichlorobenzene	2012/11/08	NC		%	25
		Hexachlorobutadiene	2012/11/08	NC		%	25
		Hexane	2012/11/08	NC		%	25
		Heptane	2012/11/08	NC		%	25
		Cyclohexane	2012/11/08	NC		%	25
		Tetrahydrofuran	2012/11/08	NC		%	25
		1,4-Dioxane	2012/11/08	NC		%	25
		Xylene (Total)	2012/11/08	NC		%	25
		Vinyl Bromide	2012/11/08	NC		%	25
		Propene	2012/11/08	NC		%	25
		2,2,4-Trimethylpentane	2012/11/08	NC		%	25
		Carbon Disulfide	2012/11/08	NC		%	25
		Vinyl Acetate	2012/11/08	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: 6200
Location: Elk Point Airport Canister ID: 314
Station ID: Lica 35 (Portable) Canister Installation Date/Time: Oct 23, 12 @ 09:25 mst
Field Sample ID: LICA VOC/PORT/ Oct 24, 12 Canister Removal Date/Time: Oct 25, 12 @ 09:54 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
24-Oct-12	10/24/2012 0:00	10/25/2012 0:00	24.0000

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	1496	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-28	22

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# 05588

Technician Signature: Ting Xu



Your C.O.C. #: 05588

Attention: Michael Bisaga

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

Report Date: 2012/11/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G8594

Received: 2012/10/29, 09:10

Sample Matrix: AIR
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/11/13	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/11/13	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 or as contractually agreed 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 #: B2G8594
 Report Date: 2012/11/14

RESULTS OF ANALYSES OF AIR

Maxxam ID		PJ9414	PJ9415	
Sampling Date		2012/10/24	2012/10/24	
COC Number		05588	05588	
	Units	LICAVOC/CLS/OCT	LICAVOC/PORT/OCT	QC Batch
		24,12 - 7808	24,12 - 314	

Volatile Organics				
Pressure on Receipt	psig	22	22	3035014

QC Batch = Quality Control Batch

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9414				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/CLS/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 7808				

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.65	0.20	3.23	0.989	3034997
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3034997
Chloromethane	ppbv	0.67	0.30	1.38	0.620	3034997
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3034997
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3034997
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3034997
Trichlorofluoromethane (FREON 11)	ppbv	0.31	0.20	1.73	1.12	3034997
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3034997
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3034997
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3034997
2-Propanone	ppbv	0.86	0.80	2.03	1.90	3034997
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3034997
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3034997
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3034997
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3034997
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3034997
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3034997
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3034997
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3034997
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3034997
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3034997
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3034997
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3034997
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3034997
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3034997
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3034997
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3034997
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3034997
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3034997
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3034997

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9414				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/CLS/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 7808				

Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3034997
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3034997
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3034997
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3034997
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3034997
Benzene	ppbv	0.22	0.18	0.700	0.575	3034997
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3034997
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3034997
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3034997
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3034997
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3034997
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3034997
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3034997
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3034997
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3034997
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3034997
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3034997
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3034997
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3034997
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3034997
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3034997
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3034997
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3034997
Propene	ppbv	<0.30	0.30	<0.516	0.516	3034997
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3034997
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3034997
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3034997
Surrogate Recovery (%)						
Bromochloromethane	%	86		N/A	N/A	3034997

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

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9414				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/CLS/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 7808				

D5-Chlorobenzene	%	83		N/A	N/A	3034997
Difluorobenzene	%	85		N/A	N/A	3034997

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

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9415				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/PORT/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 314				

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.64	0.20	3.16	0.989	3034997
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3034997
Chloromethane	ppbv	0.65	0.30	1.35	0.620	3034997
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3034997
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3034997
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3034997
Trichlorofluoromethane (FREON 11)	ppbv	0.28	0.20	1.58	1.12	3034997
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3034997
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3034997
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3034997
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3034997
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3034997
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3034997
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3034997
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3034997
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3034997
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3034997
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3034997
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3034997
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3034997
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3034997
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3034997
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3034997
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3034997
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3034997
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3034997
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3034997
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3034997
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3034997
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3034997
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9415				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/PORT/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 314				
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3034997
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3034997
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3034997
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3034997
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3034997
Benzene	ppbv	0.19	0.18	0.609	0.575	3034997
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3034997
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3034997
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3034997
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3034997
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3034997
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3034997
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3034997
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3034997
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3034997
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3034997
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3034997
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3034997
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3034997
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3034997
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3034997
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3034997
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3034997
Propene	ppbv	<0.30	0.30	<0.516	0.516	3034997
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3034997
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3034997
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3034997
Surrogate Recovery (%)						
Bromochloromethane	%	85		N/A	N/A	3034997
N/A = Not Applicable QC Batch = Quality Control Batch						

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9415				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/PORT/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 314				

D5-Chlorobenzene	%	85		N/A	N/A	3034997
Difluorobenzene	%	85		N/A	N/A	3034997

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

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

Test Summary

Maxxam ID PJ9414
Sample ID LICAVOC/CLS/OCT 24,12 - 7808
Matrix AIR

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3035014	N/A	2012/11/13	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3034997	N/A	2012/11/13	Diane Temniuk

Maxxam ID PJ9415
Sample ID LICAVOC/PORT/OCT 24,12 - 314
Matrix AIR

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3035014	N/A	2012/11/13	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3034997	N/A	2012/11/13	Diane Temniuk

Maxxam Job #: B2G8594
Report Date: 2012/11/14

GENERAL COMMENTS

WS#3034997

1,2,4-Trichlorobenzene exceeded 40%RSD in the initial calibration. No positives were found, therefore data was accepted.

Results relate only to the items tested.

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

Quality Assurance Report

Maxxam Job Number: GB2G8594

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3034997	DVO	Spiked Blank					
		Bromochloromethane	2012/11/12		97	%	60 - 140
		D5-Chlorobenzene	2012/11/12		101	%	60 - 140
		Difluorobenzene	2012/11/12		99	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/12		100	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/11/12		115	%	70 - 130
		Chloromethane	2012/11/12		109	%	70 - 130
		Vinyl Chloride	2012/11/12		104	%	70 - 130
		Chloroethane	2012/11/12		100	%	70 - 130
		1,3-Butadiene	2012/11/12		104	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/11/12		99	%	70 - 130
		Ethanol (ethyl alcohol)	2012/11/12		112	%	70 - 130
		Trichlorotrifluoroethane	2012/11/12		96	%	70 - 130
		2-propanol	2012/11/12		109	%	70 - 130
		2-Propanone	2012/11/12		109	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/11/12		103	%	70 - 130
		Methyl Isobutyl Ketone	2012/11/12		111	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/11/12		118	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/11/12		103	%	70 - 130
		Ethyl Acetate	2012/11/12		113	%	70 - 130
		1,1-Dichloroethylene	2012/11/12		98	%	70 - 130
		cis-1,2-Dichloroethylene	2012/11/12		103	%	70 - 130
		trans-1,2-Dichloroethylene	2012/11/12		103	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/11/12		99	%	70 - 130
		Chloroform	2012/11/12		103	%	70 - 130
		Carbon Tetrachloride	2012/11/12		100	%	70 - 130
		1,1-Dichloroethane	2012/11/12		105	%	70 - 130
		1,2-Dichloroethane	2012/11/12		104	%	70 - 130
		Ethylene Dibromide	2012/11/12		100	%	70 - 130
		1,1,1-Trichloroethane	2012/11/12		96	%	70 - 130
		1,1,2-Trichloroethane	2012/11/12		102	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/11/12		102	%	70 - 130
		cis-1,3-Dichloropropene	2012/11/12		106	%	70 - 130
		trans-1,3-Dichloropropene	2012/11/12		106	%	70 - 130
		1,2-Dichloropropane	2012/11/12		105	%	70 - 130
		Bromomethane	2012/11/12		97	%	70 - 130
		Bromoform	2012/11/12		93	%	70 - 130
		Bromodichloromethane	2012/11/12		100	%	70 - 130
		Dibromochloromethane	2012/11/12		97	%	70 - 130
		Trichloroethylene	2012/11/12		94	%	70 - 130
		Tetrachloroethylene	2012/11/12		93	%	70 - 130
		Benzene	2012/11/12		101	%	70 - 130
		Toluene	2012/11/12		102	%	70 - 130
		Ethylbenzene	2012/11/12		101	%	70 - 130
		p+m-Xylene	2012/11/12		100	%	70 - 130
		o-Xylene	2012/11/12		101	%	70 - 130
		Styrene	2012/11/12		104	%	70 - 130
		4-ethyltoluene	2012/11/12		100	%	70 - 130
		1,3,5-Trimethylbenzene	2012/11/12		102	%	70 - 130
		1,2,4-Trimethylbenzene	2012/11/12		103	%	70 - 130
		Chlorobenzene	2012/11/12		99	%	70 - 130
		Benzyl chloride	2012/11/12		101	%	70 - 130
		1,3-Dichlorobenzene	2012/11/12		99	%	70 - 130
		1,4-Dichlorobenzene	2012/11/12		95	%	70 - 130
		1,2-Dichlorobenzene	2012/11/12		97	%	70 - 130
		1,2,4-Trichlorobenzene	2012/11/12		102	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G8594

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3034997	DVO	Spiked Blank	2012/11/12		93	%	70 - 130
		Hexachlorobutadiene	2012/11/12		109	%	70 - 130
		Hexane	2012/11/12		105	%	70 - 130
		Heptane	2012/11/12		103	%	70 - 130
		Cyclohexane	2012/11/12		114	%	70 - 130
		Tetrahydrofuran	2012/11/12		105	%	70 - 130
		1,4-Dioxane	2012/11/12		100	%	70 - 130
		Xylene (Total)	2012/11/12		110	%	70 - 130
		Vinyl Bromide	2012/11/12		106	%	70 - 130
		Propene	2012/11/12		102	%	70 - 130
		2,2,4-Trimethylpentane	2012/11/12		103	%	70 - 130
		Carbon Disulfide	2012/11/12		111	%	70 - 130
	Method Blank	Vinyl Acetate	2012/11/12		89	%	60 - 140
		Bromochloromethane	2012/11/12		90	%	60 - 140
		D5-Chlorobenzene	2012/11/12		93	%	60 - 140
		Difluorobenzene	2012/11/12				
		Dichlorodifluoromethane (FREON 12)	2012/11/12	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/11/12	<0.17		ppbv	
		Chloromethane	2012/11/12	<0.30		ppbv	
		Vinyl Chloride	2012/11/12	<0.18		ppbv	
		Chloroethane	2012/11/12	<0.30		ppbv	
		1,3-Butadiene	2012/11/12	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/11/12	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/11/12	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/11/12	<0.15		ppbv	
		2-propanol	2012/11/12	<3.0		ppbv	
		2-Propanone	2012/11/12	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/11/12	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/11/12	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/11/12	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/11/12	<0.20		ppbv	
		Ethyl Acetate	2012/11/12	<2.2		ppbv	
		1,1-Dichloroethylene	2012/11/12	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/11/12	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/11/12	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/11/12	<0.80		ppbv	
		Chloroform	2012/11/12	<0.15		ppbv	
		Carbon Tetrachloride	2012/11/12	<0.30		ppbv	
		1,1-Dichloroethane	2012/11/12	<0.20		ppbv	
		1,2-Dichloroethane	2012/11/12	<0.20		ppbv	
		Ethylene Dibromide	2012/11/12	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/11/12	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/11/12	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/11/12	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/11/12	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/11/12	<0.17		ppbv	
		1,2-Dichloropropane	2012/11/12	<0.40		ppbv	
		Bromomethane	2012/11/12	<0.18		ppbv	
		Bromoform	2012/11/12	<0.20		ppbv	
		Bromodichloromethane	2012/11/12	<0.20		ppbv	
		Dibromochloromethane	2012/11/12	<0.20		ppbv	
		Trichloroethylene	2012/11/12	<0.30		ppbv	
		Tetrachloroethylene	2012/11/12	<0.20		ppbv	
		Benzene	2012/11/12	<0.18		ppbv	
		Toluene	2012/11/12	<0.20		ppbv	
		Ethylbenzene	2012/11/12	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G8594

QA/QC Batch			Date Analyzed					
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	%Recovery	Units	QC Limits	
3034997	DVO	Method Blank						
		p+m-Xylene	2012/11/12	<0.37		ppbv		
		o-Xylene	2012/11/12	<0.20		ppbv		
		Styrene	2012/11/12	<0.20		ppbv		
		4-ethyltoluene	2012/11/12	<2.2		ppbv		
		1,3,5-Trimethylbenzene	2012/11/12	<0.50		ppbv		
		1,2,4-Trimethylbenzene	2012/11/12	<0.50		ppbv		
		Chlorobenzene	2012/11/12	<0.20		ppbv		
		Benzyl chloride	2012/11/12	<1.0		ppbv		
		1,3-Dichlorobenzene	2012/11/12	<0.40		ppbv		
		1,4-Dichlorobenzene	2012/11/12	<0.40		ppbv		
		1,2-Dichlorobenzene	2012/11/12	<0.40		ppbv		
		1,2,4-Trichlorobenzene	2012/11/12	<2.0		ppbv		
		Hexachlorobutadiene	2012/11/12	<3.0		ppbv		
		Hexane	2012/11/12	<0.30		ppbv		
		Heptane	2012/11/12	<0.30		ppbv		
		Cyclohexane	2012/11/12	<0.20		ppbv		
		Tetrahydrofuran	2012/11/12	<0.40		ppbv		
		1,4-Dioxane	2012/11/12	<2.0		ppbv		
		Xylene (Total)	2012/11/12	<0.60		ppbv		
		Vinyl Bromide	2012/11/12	<0.20		ppbv		
		Propene	2012/11/12	<0.30		ppbv		
		2,2,4-Trimethylpentane	2012/11/12	<0.20		ppbv		
		Carbon Disulfide	2012/11/12	<0.50		ppbv		
		Vinyl Acetate	2012/11/12	<0.20		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.

MAXXAM

Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6200
Location: Elk Point Airport Canister ID: 319
Station ID: Lica 35 (Portable) Canister Installation Date/Time: Oct 29, 12 @ 08:55 mst
Field Sample ID: LICA VOC/PORT/ Oct 30, 12 Canister Removal Date/Time: Oct 31, 12 @ 13:24 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
30-Oct-12	10/30/2012 0:00	10/31/2012 0:00	24.0000

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
10.0	1496	25

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
-29	22

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# 12644

Technician Signature: Ting Xu_____



Your C.O.C. #: 12644

Attention: Michael Bisaga

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

Report Date: 2012/11/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2H2619

Received: 2012/11/03, 11:00

Sample Matrix: AIR
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/11/14	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/11/14	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 or as contractually agreed 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 #: B2H2619
 Report Date: 2012/11/16

RESULTS OF ANALYSES OF AIR

Maxxam ID		PL9749	PL9750	
Sampling Date		2012/10/30	2012/10/30	
COC Number		12644	12644	
	Units	LICA VOC/CLS/OCT 30,12 - 298	LICA VOC/PORT/OCT 30,12 - 319	QC Batch

Volatile Organics				
Pressure on Receipt	psig	24	22	3037059

QC Batch = Quality Control Batch

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9749				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/CLS/OCT 30,12 - 298	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.65	0.20	3.23	0.989	3037095
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3037095
Chloromethane	ppbv	0.63	0.30	1.31	0.620	3037095
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3037095
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3037095
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3037095
Trichlorofluoromethane (FREON 11)	ppbv	0.30	0.20	1.69	1.12	3037095
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3037095
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3037095
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3037095
2-Propanone	ppbv	1.04	0.80	2.48	1.90	3037095
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3037095
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3037095
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3037095
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3037095
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3037095
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3037095
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3037095
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3037095
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3037095
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3037095
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3037095
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3037095
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3037095
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3037095
1,1,1,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3037095
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3037095
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3037095
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3037095
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9749				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/CLS/OCT 30,12 - 298	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3037095
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3037095
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3037095
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3037095
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3037095
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3037095
Benzene	ppbv	0.20	0.18	0.635	0.575	3037095
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3037095
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3037095
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3037095
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3037095
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3037095
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3037095
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3037095
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3037095
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3037095
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3037095
Hexane	ppbv	0.38	0.30	1.35	1.06	3037095
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3037095
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3037095
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3037095
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3037095
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3037095
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3037095
Propene	ppbv	<1.2	1.2	<2.07	2.07	3037095
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3037095
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3037095
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3037095
QC Batch = Quality Control Batch						

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9749				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/CLS/OCT 30,12 - 298	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	91		N/A	N/A	3037095
D5-Chlorobenzene	%	81		N/A	N/A	3037095
Difluorobenzene	%	92		N/A	N/A	3037095

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

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9750				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/PORT/OCT 30,12 - 319	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.70	0.20	3.48	0.989	3037095
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3037095
Chloromethane	ppbv	0.73	0.30	1.52	0.620	3037095
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3037095
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3037095
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3037095
Trichlorofluoromethane (FREON 11)	ppbv	0.32	0.20	1.82	1.12	3037095
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3037095
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3037095
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3037095
2-Propanone	ppbv	1.49	0.80	3.53	1.90	3037095
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3037095
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3037095
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3037095
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3037095
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3037095
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3037095
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3037095
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3037095
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3037095
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3037095
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3037095
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3037095
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3037095
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3037095
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3037095
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3037095
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3037095
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3037095

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9750				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/PORT/OCT 30,12 - 319	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3037095
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3037095
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3037095
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3037095
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3037095
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3037095
Benzene	ppbv	0.20	0.18	0.626	0.575	3037095
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3037095
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3037095
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3037095
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3037095
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3037095
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3037095
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3037095
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3037095
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3037095
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3037095
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3037095
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3037095
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3037095
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3037095
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3037095
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3037095
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3037095
Propene	ppbv	<1.3	1.3	<2.24	2.24	3037095
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3037095
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3037095
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3037095
QC Batch = Quality Control Batch						

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9750				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/PORT/OCT 30,12 - 319	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	90		N/A	N/A	3037095
D5-Chlorobenzene	%	87		N/A	N/A	3037095
Difluorobenzene	%	90		N/A	N/A	3037095

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

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

Test Summary

Maxxam ID PL9749
Sample ID LICA VOC/CLS/OCT 30,12 - 298
Matrix AIR

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3037059	N/A	2012/11/14	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3037095	N/A	2012/11/14	Diane Temniuk

Maxxam ID PL9750
Sample ID LICA VOC/PORT/OCT 30,12 - 319
Matrix AIR

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3037059	N/A	2012/11/14	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3037095	N/A	2012/11/14	Diane Temniuk

Maxxam Job #: B2H2619
Report Date: 2012/11/16

GENERAL COMMENTS

WS#3037095

1,2,4-Trichlorobenzene exceeded 40% RSD in initial calibration. No positives were found, therefore data was accepted.

Sample PL9749-01: DL raised for Propene due to matrix interference.

Sample PL9750-01: DL raised for Propene due to matrix interference.

Results relate only to the items tested.

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

Quality Assurance Report

Maxxam Job Number: GB2H2619

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3037095 DVO	Spiked Blank	Bromochloromethane	2012/11/14		96	%	60 - 140
		D5-Chlorobenzene	2012/11/14		98	%	60 - 140
		Difluorobenzene	2012/11/14		99	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/14		104	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/11/14		108	%	70 - 130
		Chloromethane	2012/11/14		101	%	70 - 130
		Vinyl Chloride	2012/11/14		97	%	70 - 130
		Chloroethane	2012/11/14		93	%	70 - 130
		1,3-Butadiene	2012/11/14		98	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/11/14		99	%	70 - 130
		Ethanol (ethyl alcohol)	2012/11/14		105	%	70 - 130
		Trichlorotrifluoroethane	2012/11/14		97	%	70 - 130
		2-propanol	2012/11/14		111	%	70 - 130
		2-Propanone	2012/11/14		113	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/11/14		110	%	70 - 130
		Methyl Isobutyl Ketone	2012/11/14		118	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/11/14		126	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/11/14		105	%	70 - 130
		Ethyl Acetate	2012/11/14		120	%	70 - 130
		1,1-Dichloroethylene	2012/11/14		101	%	70 - 130
		cis-1,2-Dichloroethylene	2012/11/14		108	%	70 - 130
		trans-1,2-Dichloroethylene	2012/11/14		106	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/11/14		103	%	70 - 130
		Chloroform	2012/11/14		105	%	70 - 130
		Carbon Tetrachloride	2012/11/14		100	%	70 - 130
		1,1-Dichloroethane	2012/11/14		109	%	70 - 130
		1,2-Dichloroethane	2012/11/14		107	%	70 - 130
		Ethylene Dibromide	2012/11/14		101	%	70 - 130
		1,1,1-Trichloroethane	2012/11/14		97	%	70 - 130
		1,1,2-Trichloroethane	2012/11/14		105	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/11/14		106	%	70 - 130
		cis-1,3-Dichloropropene	2012/11/14		110	%	70 - 130
		trans-1,3-Dichloropropene	2012/11/14		109	%	70 - 130
		1,2-Dichloropropane	2012/11/14		110	%	70 - 130
		Bromomethane	2012/11/14		89	%	70 - 130
		Bromoform	2012/11/14		93	%	70 - 130
		Bromodichloromethane	2012/11/14		103	%	70 - 130
		Dibromochloromethane	2012/11/14		97	%	70 - 130
		Trichloroethylene	2012/11/14		93	%	70 - 130
		Tetrachloroethylene	2012/11/14		91	%	70 - 130
		Benzene	2012/11/14		103	%	70 - 130
		Toluene	2012/11/14		104	%	70 - 130
		Ethylbenzene	2012/11/14		104	%	70 - 130
		p+m-Xylene	2012/11/14		102	%	70 - 130
		o-Xylene	2012/11/14		104	%	70 - 130
		Styrene	2012/11/14		106	%	70 - 130
		4-ethyltoluene	2012/11/14		102	%	70 - 130
		1,3,5-Trimethylbenzene	2012/11/14		105	%	70 - 130
		1,2,4-Trimethylbenzene	2012/11/14		104	%	70 - 130
		Chlorobenzene	2012/11/14		100	%	70 - 130
		Benzyl chloride	2012/11/14		104	%	70 - 130
		1,3-Dichlorobenzene	2012/11/14		98	%	70 - 130
		1,4-Dichlorobenzene	2012/11/14		96	%	70 - 130
		1,2-Dichlorobenzene	2012/11/14		96	%	70 - 130
		1,2,4-Trichlorobenzene	2012/11/14		97	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2H2619

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3037095 DVO	Spiked Blank	Hexachlorobutadiene	2012/11/14		89	%	70 - 130
		Hexane	2012/11/14		115	%	70 - 130
		Heptane	2012/11/14		112	%	70 - 130
		Cyclohexane	2012/11/14		108	%	70 - 130
		Tetrahydrofuran	2012/11/14		121	%	70 - 130
		1,4-Dioxane	2012/11/14		105	%	70 - 130
		Xylene (Total)	2012/11/14		102	%	70 - 130
		Vinyl Bromide	2012/11/14		102	%	70 - 130
		Propene	2012/11/14		117	%	70 - 130
		2,2,4-Trimethylpentane	2012/11/14		107	%	70 - 130
		Carbon Disulfide	2012/11/14		105	%	70 - 130
		Vinyl Acetate	2012/11/14		117	%	70 - 130
	Method Blank	Bromochloromethane	2012/11/14		88	%	60 - 140
		D5-Chlorobenzene	2012/11/14		87	%	60 - 140
		Difluorobenzene	2012/11/14		92	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/14	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/11/14	<0.17		ppbv	
		Chloromethane	2012/11/14	<0.30		ppbv	
		Vinyl Chloride	2012/11/14	<0.18		ppbv	
		Chloroethane	2012/11/14	<0.30		ppbv	
		1,3-Butadiene	2012/11/14	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/11/14	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/11/14	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/11/14	<0.15		ppbv	
		2-propanol	2012/11/14	<3.0		ppbv	
		2-Propanone	2012/11/14	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/11/14	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/11/14	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/11/14	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/11/14	<0.20		ppbv	
		Ethyl Acetate	2012/11/14	<2.2		ppbv	
		1,1-Dichloroethylene	2012/11/14	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/11/14	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/11/14	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/11/14	<0.80		ppbv	
		Chloroform	2012/11/14	<0.15		ppbv	
		Carbon Tetrachloride	2012/11/14	<0.30		ppbv	
		1,1-Dichloroethane	2012/11/14	<0.20		ppbv	
		1,2-Dichloroethane	2012/11/14	<0.20		ppbv	
		Ethylene Dibromide	2012/11/14	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/11/14	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/11/14	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/11/14	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/11/14	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/11/14	<0.17		ppbv	
		1,2-Dichloropropane	2012/11/14	<0.40		ppbv	
		Bromomethane	2012/11/14	<0.18		ppbv	
		Bromoform	2012/11/14	<0.20		ppbv	
		Bromodichloromethane	2012/11/14	<0.20		ppbv	
		Dibromochloromethane	2012/11/14	<0.20		ppbv	
		Trichloroethylene	2012/11/14	<0.30		ppbv	
		Tetrachloroethylene	2012/11/14	<0.20		ppbv	
		Benzene	2012/11/14	<0.18		ppbv	
		Toluene	2012/11/14	<0.20		ppbv	
		Ethylbenzene	2012/11/14	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2H2619

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3037095	DVO	Method Blank					
		p+m-Xylene	2012/11/14	<0.37		ppbv	
		o-Xylene	2012/11/14	<0.20		ppbv	
		Styrene	2012/11/14	<0.20		ppbv	
		4-ethyltoluene	2012/11/14	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/11/14	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/11/14	<0.50		ppbv	
		Chlorobenzene	2012/11/14	<0.20		ppbv	
		Benzyl chloride	2012/11/14	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/11/14	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/11/14	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/11/14	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/11/14	<2.0		ppbv	
		Hexachlorobutadiene	2012/11/14	<3.0		ppbv	
		Hexane	2012/11/14	<0.30		ppbv	
		Heptane	2012/11/14	<0.30		ppbv	
		Cyclohexane	2012/11/14	<0.20		ppbv	
		Tetrahydrofuran	2012/11/14	<0.40		ppbv	
		1,4-Dioxane	2012/11/14	<2.0		ppbv	
		Xylene (Total)	2012/11/14	<0.60		ppbv	
		Vinyl Bromide	2012/11/14	<0.20		ppbv	
		Propene	2012/11/14	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/11/14	<0.20		ppbv	
		Carbon Disulfide	2012/11/14	<0.50		ppbv	
		Vinyl Acetate	2012/11/14	<0.20		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.

Polycyclic Aromatic Hydrocarbons Laboratory Analysis

MAXXAM

Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: Elk Point Airport
Station ID: Lica 35 (Portable)
Field Sample ID: LICA PUF/PORT/Oct 06, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Oct 04, 2012 @ 16:00 mst
Removal Date/Time: Oct 10, 2012 @ 09:20 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
06-Oct-12	10/06/2012 0:00	10/07/2012 0:00	24.0000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
02-Oct-12	10-Oct-12	15-Oct-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 ³)
711	229	6.1	330.33

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 #10204

GB2C3724 Puff #2

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Oct 06, 12

Technician Signature: Ting Xu

Your C.O.C. #: 10205

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

Report Date: 2012/10/26

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2F8444****Received: 2012/10/12, 09:25**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/10/12	2012/10/19	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 #: B2F8444
 Report Date: 2012/10/26

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PE3558	PE3559		
Sampling Date		2012/10/06	2012/10/06		
COC Number		10205	10205		
	Units	LICA PUFF+QFF/CLS/OCT 06,12	LICA PUFF+QFF/PORT/OCT 06,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	0.16	0.20	0.10	2999985
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	2999985
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	2999985
2-Methylantracene	ug	<0.10	<0.10	0.10	2999985
2-Methylnaphthalene	ug	0.35	0.39	0.10	2999985
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	2999985
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	2999985
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	2999985
Acenaphthene	ug	<0.050	<0.050	0.050	2999985
Acenaphthylene	ug	<0.050	<0.050	0.050	2999985
Anthracene	ug	<0.050	<0.050	0.050	2999985
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	2999985
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	2999985
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	2999985
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	2999985
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	2999985
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	2999985
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	2999985
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	2999985
Biphenyl	ug	0.14	0.16	0.10	2999985
Chrysene	ug	<0.050	<0.050	0.050	2999985
Coronene	ug	<0.10	<0.10	0.10	2999985
Dibenzo(a,h)anthracene	ug	<0.050	<0.050	0.050	2999985
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	2999985
Fluoranthene	ug	<0.050	<0.050	0.050	2999985
Fluorene	ug	0.124	0.080	0.050	2999985
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	2999985
m-Terphenyl	ug	<0.10	<0.10	0.10	2999985
Naphthalene	ug	0.258	0.270	0.072	2999985
o-Terphenyl	ug	<0.10	<0.10	0.10	2999985
Perylene	ug	<0.10	<0.10	0.10	2999985

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2F8444
 Report Date: 2012/10/26

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PE3558	PE3559		
Sampling Date		2012/10/06	2012/10/06		
COC Number		10205	10205		
	Units	LICA PUFF+QFF/CLS/OCT 06,12	LICA PUFF+QFF/PORT/OCT 06,12	RDL	QC Batch

Phenanthrene	ug	0.218	0.144	0.050	2999985
p-Terphenyl	ug	<0.10	<0.10	0.10	2999985
Pyrene	ug	<0.050	<0.050	0.050	2999985
Quinoline	ug	<0.40	<0.40	0.40	2999985
Tetralin	ug	<0.10	<0.10	0.10	2999985
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	66	72		2999985
D10-Fluoranthene	%	88	78		2999985
D10-Fluorene (FS)	%	9.8 (1)	13 (1)		2999985
D10-Phenanthrene	%	82	74		2999985
D12-Benzo(a)anthracene	%	94	86		2999985
D12-Benzo(a)pyrene	%	86	84		2999985
D12-Benzo(b)fluoranthene	%	92	88		2999985
D12-Benzo(ghi)perylene	%	90	88		2999985
D12-Benzo(k)fluoranthene	%	88	86		2999985
D12-Chrysene	%	86	88		2999985
D12-Indeno(1,2,3-cd)pyrene	%	90	86		2999985
D12-Perylene	%	88	88		2999985
D14-Dibenzo(a,h)anthracene	%	90	84		2999985
D14-Terphenyl (FS)	%	89	81		2999985
D8-Acenaphthylene	%	68	70		2999985
D8-Naphthalene	%	60	70		2999985

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 #: B2F8444
Report Date: 2012/10/26

Test Summary

Maxxam ID PE3558
Sample ID LICA PUFF+QFF/CLS/OCT 06,12
Matrix PUF AND FILTER

Collected 2012/10/06
Shipped
Received 2012/10/12

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2999985	2012/10/12	2012/10/19	Lidija Tomic

Maxxam ID PE3559
Sample ID LICA PUFF+QFF/PORT/OCT 06,12
Matrix PUF AND FILTER

Collected 2012/10/06
Shipped
Received 2012/10/12

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2999985	2012/10/12	2012/10/19	Lidija Tomic

Maxxam Job #: B2F8444
Report Date: 2012/10/26

GENERAL COMMENTS

Quinoline, 2-Chloronaphthalene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in initial calibration. No positives found for these 3 compounds.

7,12-dimethylbenzo(a)anthracene is above 25% RSD in continuing calibration. No positives found for this compound.

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: GB2F8444

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2999985 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/10/19		74	%	50 - 150
		D10-Fluoranthene	2012/10/19		88	%	50 - 150
		D10-Phenanthrene	2012/10/19		80	%	50 - 150
		D12-Benzo(a)anthracene	2012/10/19		94	%	50 - 150
		D12-Benzo(a)pyrene	2012/10/19		90	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/10/19		90	%	50 - 150
		D12-Benzo(ghi)perylene	2012/10/19		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/10/19		86	%	50 - 150
		D12-Chrysene	2012/10/19		82	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/10/19		90	%	50 - 150
		D12-Perylene	2012/10/19		90	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/10/19		90	%	50 - 150
		D8-Acenaphthylene	2012/10/19		72	%	50 - 150
		D8-Naphthalene	2012/10/19		70	%	50 - 150
		Acenaphthene	2012/10/19		80	%	60 - 130
	RPD	Acenaphthene	2012/10/19	3.2		%	50
	Spiked Blank	Acenaphthylene	2012/10/19		77	%	60 - 130
	RPD	Acenaphthylene	2012/10/19	4.0		%	50
	Spiked Blank	Anthracene	2012/10/19		80	%	60 - 130
	RPD	Anthracene	2012/10/19	9.1		%	50
	Spiked Blank	Benzo(a)anthracene	2012/10/19		107	%	60 - 130
	RPD	Benzo(a)anthracene	2012/10/19	2.6		%	50
	Spiked Blank	Benzo(a)pyrene	2012/10/19		78	%	60 - 130
	RPD	Benzo(a)pyrene	2012/10/19	3.6		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/10/19		92	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/10/19	0		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/10/19		86	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/10/19	1.8		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/10/19		89	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/10/19	1.1		%	50
	Spiked Blank	Chrysene	2012/10/19		85	%	60 - 130
	RPD	Chrysene	2012/10/19	5.2		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/10/19		90	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/10/19	4.6		%	50
	Spiked Blank	Fluoranthene	2012/10/19		94	%	60 - 130
	RPD	Fluoranthene	2012/10/19	10.6		%	50
	Spiked Blank	Fluorene	2012/10/19		80	%	60 - 130
	RPD	Fluorene	2012/10/19	9.6		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/10/19		87	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/10/19	2.9		%	50
	Spiked Blank	Naphthalene	2012/10/19		79	%	60 - 130
	RPD	Naphthalene	2012/10/19	6.5		%	50
	Spiked Blank	Phenanthrene	2012/10/19		85	%	60 - 130
	RPD	Phenanthrene	2012/10/19	11.8		%	50
	Spiked Blank	Pyrene	2012/10/19		85	%	60 - 130
	RPD	Pyrene	2012/10/19	11.8		%	50
	Method Blank	D10-2-Methylnaphthalene	2012/10/19		72	%	50 - 150
		D10-Fluoranthene	2012/10/19		78	%	50 - 150
		D10-Phenanthrene	2012/10/19		78	%	50 - 150
		D12-Benzo(a)anthracene	2012/10/19		92	%	50 - 150
		D12-Benzo(a)pyrene	2012/10/19		84	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/10/19		92	%	50 - 150
		D12-Benzo(ghi)perylene	2012/10/19		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/10/19		90	%	50 - 150
		D12-Chrysene	2012/10/19		96	%	50 - 150

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2F8444

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2999985 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/10/19		88	%	50 - 150
		D12-Perylene	2012/10/19		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/10/19		88	%	50 - 150
		D8-Acenaphthylene	2012/10/19		68	%	50 - 150
		D8-Naphthalene	2012/10/19		68	%	50 - 150
		1-Methylnaphthalene	2012/10/19	<0.10		ug	
		1-Methylphenanthrene	2012/10/19	<0.10		ug	
		2-Chloronaphthalene	2012/10/19	<0.10		ug	
		2-Methylanthracene	2012/10/19	<0.10		ug	
		2-Methylnaphthalene	2012/10/19	<0.10		ug	
		3-Methylcholanthrene	2012/10/19	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/10/19	<0.10		ug	
		9,10-Dimethylanthracene	2012/10/19	<0.40		ug	
		Acenaphthene	2012/10/19	<0.050		ug	
		Acenaphthylene	2012/10/19	<0.050		ug	
		Anthracene	2012/10/19	<0.050		ug	
		Benzo(a)anthracene	2012/10/19	<0.050		ug	
		Benzo(a)fluorene	2012/10/19	<0.10		ug	
		Benzo(a)pyrene	2012/10/19	<0.050		ug	
		Benzo(b)fluoranthene	2012/10/19	<0.050		ug	
		Benzo(b)fluorene	2012/10/19	<0.10		ug	
		Benzo(e)pyrene	2012/10/19	<0.10		ug	
		Benzo(g,h,i)perylene	2012/10/19	<0.050		ug	
		Benzo(k)fluoranthene	2012/10/19	<0.050		ug	
		Biphenyl	2012/10/19	<0.10		ug	
		Chrysene	2012/10/19	<0.050		ug	
		Coronene	2012/10/19	<0.10		ug	
		Dibenz(a,h)anthracene	2012/10/19	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/10/19	<0.20		ug	
		Fluoranthene	2012/10/19	<0.050		ug	
		Fluorene	2012/10/19	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/10/19	<0.050		ug	
		m-Terphenyl	2012/10/19	<0.10		ug	
		Naphthalene	2012/10/19	<0.072		ug	
		o-Terphenyl	2012/10/19	<0.10		ug	
		Perylene	2012/10/19	<0.10		ug	
		Phenanthrene	2012/10/19	<0.050		ug	
		p-Terphenyl	2012/10/19	<0.10		ug	
		Pyrene	2012/10/19	<0.050		ug	
		Quinoline	2012/10/19	<0.40		ug	
		Tetralin	2012/10/19	<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: Elk Point Airport
Station ID: Lica 35 (Portable)
Field Sample ID: LICA PUF/PORT/Oct 12, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Oct 10, 2012 @ 09:45 mst
Removal Date/Time: Oct 15, 2012 @ 09:15 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
12-Oct-12	10/12/2012 0:00	10/13/2012 0:00	24.0000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
05-Oct-12	15-Oct-12	18-Oct-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 ³)
701	229	1.7	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 #10249

GB2C3728 Puff #2

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Oct 12, 12

Technician Signature: Ting Xu

Your C.O.C. #: 10249

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

Report Date: 2012/10/29

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2G1087****Received: 2012/10/17, 08:20**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	1	2012/10/22	2012/10/23	BRL SOP-00201	CARB429(ARBM1,M2)mod
PAH's in Air (CARB429mod)	1	2012/10/22	2012/10/26	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 #: B2G1087
 Report Date: 2012/10/29

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PF8855	PF8856		
Sampling Date		2012/10/12	2012/10/12		
COC Number		10249	10249		
	Units	LICA PUFF+QFF/CLS/OCT 12,12	LICA PUFF+QFF/PORT/OCT 12,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	<0.10	0.11	0.10	3009615
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3009615
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3009615
2-Methylantracene	ug	<0.10	<0.10	0.10	3009615
2-Methylnaphthalene	ug	0.12	0.23	0.10	3009615
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3009615
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3009615
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3009615
Acenaphthene	ug	<0.050	<0.050	0.050	3009615
Acenaphthylene	ug	0.214	0.084	0.050	3009615
Anthracene	ug	<0.050	<0.050	0.050	3009615
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3009615
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3009615
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3009615
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3009615
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3009615
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3009615
Benzo(g,h,i)perylene	ug	0.088	<0.050	0.050	3009615
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3009615
Biphenyl	ug	<0.10	0.14	0.10	3009615
Chrysene	ug	<0.050	<0.050	0.050	3009615
Coronene	ug	<0.10	<0.10	0.10	3009615
Dibenz(a,h)anthracene	ug	0.072	<0.050	0.050	3009615
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3009615
Fluoranthene	ug	0.186	0.050	0.050	3009615
Fluorene	ug	0.166	0.120	0.050	3009615
Indeno(1,2,3-cd)pyrene	ug	0.074	<0.050	0.050	3009615
m-Terphenyl	ug	<0.10	<0.10	0.10	3009615
Naphthalene	ug	0.104	0.090	0.072	3009615
o-Terphenyl	ug	<0.10	<0.10	0.10	3009615
Perylene	ug	<0.10	<0.10	0.10	3009615

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PF8855	PF8856		
Sampling Date		2012/10/12	2012/10/12		
COC Number		10249	10249		
	Units	LICA PUFF+QFF/CLS/OCT 12,12	LICA PUFF+QFF/PORT/OCT 12,12	RDL	QC Batch

Phenanthrene	ug	0.514	0.232	0.050	3009615
p-Terphenyl	ug	<0.10	<0.10	0.10	3009615
Pyrene	ug	0.184	<0.050	0.050	3009615
Quinoline	ug	<0.40	<0.40	0.40	3009615
Tetralin	ug	<0.10	<0.10	0.10	3009615
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	60	60		3009615
D10-Fluoranthene	%	92	88		3009615
D10-Fluorene (FS)	%	13 (1)	14 (1)		3009615
D10-Phenanthrene	%	80	80		3009615
D12-Benzo(a)anthracene	%	90	94		3009615
D12-Benzo(a)pyrene	%	88	88		3009615
D12-Benzo(b)fluoranthene	%	88	94		3009615
D12-Benzo(ghi)perylene	%	90	98		3009615
D12-Benzo(k)fluoranthene	%	84	84		3009615
D12-Chrysene	%	80	90		3009615
D12-Indeno(1,2,3-cd)pyrene	%	90	96		3009615
D12-Perylene	%	86	90		3009615
D14-Dibenzo(a,h)anthracene	%	88	98		3009615
D14-Terphenyl (FS)	%	92	90		3009615
D8-Acenaphthylene	%	62	62		3009615
D8-Naphthalene	%	56	56		3009615

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2G1087
 Report Date: 2012/10/29

Test Summary

Maxxam ID PF8855
Sample ID LICA PUFF+QFF/CLS/OCT 12,12
Matrix PUF AND FILTER

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3009615	2012/10/22	2012/10/26	Lidija Tomic

Maxxam ID PF8856
Sample ID LICA PUFF+QFF/PORT/OCT 12,12
Matrix PUF AND FILTER

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3009615	2012/10/22	2012/10/23	Lidija Tomic

Maxxam Job #: B2G1087
Report Date: 2012/10/29

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: GB2G1087

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits	
3009615 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/10/23		70	%	50 - 150	
		D10-Fluoranthene	2012/10/23		86	%	50 - 150	
		D10-Phenanthrene	2012/10/23		76	%	50 - 150	
		D12-Benzo(a)anthracene	2012/10/23		90	%	50 - 150	
		D12-Benzo(a)pyrene	2012/10/23		90	%	50 - 150	
		D12-Benzo(b)fluoranthene	2012/10/23		96	%	50 - 150	
		D12-Benzo(ghi)perylene	2012/10/23		96	%	50 - 150	
		D12-Benzo(k)fluoranthene	2012/10/23		86	%	50 - 150	
		D12-Chrysene	2012/10/23		86	%	50 - 150	
		D12-Indeno(1,2,3-cd)pyrene	2012/10/23		98	%	50 - 150	
		D12-Perylene	2012/10/23		90	%	50 - 150	
		D14-Dibenzo(a,h)anthracene	2012/10/23		98	%	50 - 150	
		D8-Acenaphthylene	2012/10/23		68	%	50 - 150	
		D8-Naphthalene	2012/10/23		68	%	50 - 150	
	RPD	Acenaphthene	2012/10/23	7.0		%	60 - 130	
	Spiked Blank	Acenaphthene	2012/10/23				50	
	RPD	Acenaphthylene	2012/10/23	7.2		%	60 - 130	
	RPD	Acenaphthylene	2012/10/23			%	50	
	Spiked Blank	Anthracene	2012/10/23				60 - 130	
	RPD	Anthracene	2012/10/23	1		%	50	
	Spiked Blank	Benzo(a)anthracene	2012/10/23				60 - 130	
	RPD	Benzo(a)anthracene	2012/10/23	1.7		106	%	50
	Spiked Blank	Benzo(a)pyrene	2012/10/23				60 - 130	
	RPD	Benzo(a)pyrene	2012/10/23	0.6		79	%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/10/23				60 - 130	
	RPD	Benzo(b)fluoranthene	2012/10/23	0.5		97	%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/10/23				60 - 130	
	RPD	Benzo(g,h,i)perylene	2012/10/23	1.1		94	%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/10/23				60 - 130	
	RPD	Benzo(k)fluoranthene	2012/10/23	0.8		89	%	50
	Spiked Blank	Chrysene	2012/10/23				60 - 130	
	RPD	Chrysene	2012/10/23	1.4		86	%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/10/23				60 - 130	
	RPD	Dibenz(a,h)anthracene	2012/10/23	0		97	%	50
	Spiked Blank	Fluoranthene	2012/10/23				60 - 130	
	RPD	Fluoranthene	2012/10/23	2.7		94	%	50
	Spiked Blank	Fluorene	2012/10/23				60 - 130	
	RPD	Fluorene	2012/10/23	5.8		75	%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/10/23				60 - 130	
	RPD	Indeno(1,2,3-cd)pyrene	2012/10/23	0.3		96	%	50
Spiked Blank	Naphthalene	2012/10/23				60 - 130		
RPD	Naphthalene	2012/10/23	5.0		79	%	50	
Spiked Blank	Phenanthrene	2012/10/23				60 - 130		
RPD	Phenanthrene	2012/10/23	0.6		81	%	50	
Spiked Blank	Pyrene	2012/10/23				60 - 130		
RPD	Pyrene	2012/10/23	1.8		83	%	50	
Method Blank	D10-2-Methylnaphthalene	2012/10/23				50 - 150		
	D10-Fluoranthene	2012/10/23				50 - 150		
	D10-Phenanthrene	2012/10/23				50 - 150		
	D12-Benzo(a)anthracene	2012/10/23				50 - 150		
	D12-Benzo(a)pyrene	2012/10/23				50 - 150		
	D12-Benzo(b)fluoranthene	2012/10/23				50 - 150		
	D12-Benzo(ghi)perylene	2012/10/23				50 - 150		
	D12-Benzo(k)fluoranthene	2012/10/23				50 - 150		
	D12-Chrysene	2012/10/23				50 - 150		

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G1087

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3009615 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/10/23		98	%	50 - 150
		D12-Perylene	2012/10/23		90	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/10/23		96	%	50 - 150
		D8-Acenaphthylene	2012/10/23		74	%	50 - 150
		D8-Naphthalene	2012/10/23		72	%	50 - 150
		1-Methylnaphthalene	2012/10/23	<0.10		ug	
		1-Methylphenanthrene	2012/10/23	<0.10		ug	
		2-Chloronaphthalene	2012/10/23	<0.10		ug	
		2-Methylanthracene	2012/10/23	<0.10		ug	
		2-Methylnaphthalene	2012/10/23	<0.10		ug	
		3-Methylcholanthrene	2012/10/23	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/10/23	<0.10		ug	
		9,10-Dimethylanthracene	2012/10/23	<0.40		ug	
		Acenaphthene	2012/10/23	<0.050		ug	
		Acenaphthylene	2012/10/23	<0.050		ug	
		Anthracene	2012/10/23	<0.050		ug	
		Benzo(a)anthracene	2012/10/23	<0.050		ug	
		Benzo(a)fluorene	2012/10/23	<0.10		ug	
		Benzo(a)pyrene	2012/10/23	<0.050		ug	
		Benzo(b)fluoranthene	2012/10/23	<0.050		ug	
		Benzo(b)fluorene	2012/10/23	<0.10		ug	
		Benzo(e)pyrene	2012/10/23	<0.10		ug	
		Benzo(g,h,i)perylene	2012/10/23	<0.050		ug	
		Benzo(k)fluoranthene	2012/10/23	<0.050		ug	
		Biphenyl	2012/10/23	<0.10		ug	
		Chrysene	2012/10/23	<0.050		ug	
		Coronene	2012/10/23	<0.10		ug	
		Dibenz(a,h)anthracene	2012/10/23	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/10/23	<0.20		ug	
		Fluoranthene	2012/10/23	<0.050		ug	
		Fluorene	2012/10/23	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/10/23	<0.050		ug	
		m-Terphenyl	2012/10/23	<0.10		ug	
		Naphthalene	2012/10/23	<0.072		ug	
		o-Terphenyl	2012/10/23	<0.10		ug	
		Perylene	2012/10/23	<0.10		ug	
		Phenanthrene	2012/10/23	<0.050		ug	
		p-Terphenyl	2012/10/23	<0.10		ug	
		Pyrene	2012/10/23	<0.050		ug	
		Quinoline	2012/10/23	<0.40		ug	
		Tetralin	2012/10/23	<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: Elk Point Airport
Station ID: Lica 35 (Portable)
Field Sample ID: LICA PUF/PORT/Oct 18, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Oct 17, 2012 @ 10:58 mst
Removal Date/Time: Oct 19, 2012 @ 09:40 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
18-Oct-12	10/18/2012 0:00	10/19/2012 0:00	24.0000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
15-Oct-12	22-Oct-12	25-Oct-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 ³)
708	229	1.4	330.34

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 #12499

GB2F1370 Puff #2

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Oct 18, 12

Technician Signature: Ting Xu

Your C.O.C. #: 12499

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

Report Date: 2012/11/09

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2G5636****Received: 2012/10/24, 09:05**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/10/25	2012/11/09	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 #: B2G5636
 Report Date: 2012/11/09

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PI3765	PI3766		
Sampling Date		2012/10/18	2012/10/18		
COC Number		12499	12499		
	Units	LICA PUFF+QFF/CLS/OCT1 8,12	LICA PUFF+QFF/PORT/OCT 18,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	<0.10	0.13	0.10	3014016
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3014016
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3014016
2-Methylantracene	ug	<0.10	<0.10	0.10	3014016
2-Methylnaphthalene	ug	0.17	0.25	0.10	3014016
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3014016
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3014016
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3014016
Acenaphthene	ug	<0.050	<0.050	0.050	3014016
Acenaphthylene	ug	<0.050	<0.050	0.050	3014016
Anthracene	ug	<0.050	<0.050	0.050	3014016
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3014016
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3014016
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3014016
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3014016
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3014016
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3014016
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	3014016
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3014016
Biphenyl	ug	0.13	<0.10	0.10	3014016
Chrysene	ug	<0.050	<0.050	0.050	3014016
Coronene	ug	<0.10	<0.10	0.10	3014016
Dibenz(a,h)anthracene	ug	<0.050	<0.050	0.050	3014016
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3014016
Fluoranthene	ug	<0.050	<0.050	0.050	3014016
Fluorene	ug	0.158	0.110	0.050	3014016
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	3014016
m-Terphenyl	ug	<0.10	<0.10	0.10	3014016
Naphthalene	ug	0.154	0.124	0.072	3014016
o-Terphenyl	ug	<0.10	<0.10	0.10	3014016
Perylene	ug	<0.10	<0.10	0.10	3014016

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PI3765	PI3766		
Sampling Date		2012/10/18	2012/10/18		
COC Number		12499	12499		
	Units	LICA PUFF+QFF/CLS/OCT1 8,12	LICA PUFF+QFF/PORT/OCT 18,12	RDL	QC Batch

Phenanthrene	ug	0.250	0.128	0.050	3014016
p-Terphenyl	ug	<0.10	<0.10	0.10	3014016
Pyrene	ug	<0.050	<0.050	0.050	3014016
Quinoline	ug	<0.40	<0.40	0.40	3014016
Tetralin	ug	<0.10	<0.10	0.10	3014016
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	80	66		3014016
D10-Fluoranthene	%	94	88		3014016
D10-Fluorene (FS)	%	17 (1)	15 (1)		3014016
D10-Phenanthrene	%	88	82		3014016
D12-Benzo(a)anthracene	%	92	90		3014016
D12-Benzo(a)pyrene	%	94	90		3014016
D12-Benzo(b)fluoranthene	%	88	86		3014016
D12-Benzo(ghi)perylene	%	96	94		3014016
D12-Benzo(k)fluoranthene	%	86	86		3014016
D12-Chrysene	%	82	80		3014016
D12-Indeno(1,2,3-cd)pyrene	%	94	94		3014016
D12-Perylene	%	92	88		3014016
D14-Dibenzo(a,h)anthracene	%	94	92		3014016
D14-Terphenyl (FS)	%	93	88		3014016
D8-Acenaphthylene	%	88	74		3014016
D8-Naphthalene	%	72	62		3014016

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2G5636
 Report Date: 2012/11/09

Test Summary

Maxxam ID PI3765
Sample ID LICA PUFF+QFF/CLS/OCT1 8,12
Matrix PUF AND FILTER

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3014016	2012/10/25	2012/11/09	Lidija Tomic

Maxxam ID PI3766
Sample ID LICA PUFF+QFF/PORT/OCT 18,12
Matrix PUF AND FILTER

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3014016	2012/10/25	2012/11/09	Lidija Tomic

Maxxam Job #: B2G5636
Report Date: 2012/11/09

GENERAL COMMENTS

9,10-Dimethylanthracene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in continuing calibration. No positives found for these 2 compounds.

Results relate only to the items tested.

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

Quality Assurance Report
 Maxxam Job Number: GB2G5636

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3014016 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/11/09		82	%	50 - 150
		D10-Fluoranthene	2012/11/09		86	%	50 - 150
		D10-Phenanthrene	2012/11/09		82	%	50 - 150
		D12-Benzo(a)anthracene	2012/11/09		78	%	50 - 150
		D12-Benzo(a)pyrene	2012/11/09		96	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/11/09		88	%	50 - 150
		D12-Benzo(ghi)perylene	2012/11/09		122	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/11/09		88	%	50 - 150
		D12-Chrysene	2012/11/09		72	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/11/09		120	%	50 - 150
		D12-Perylene	2012/11/09		94	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/09		124	%	50 - 150
		RPD	D8-Acenaphthylene	2012/11/09		78	%
	D8-Naphthalene		2012/11/09		78	%	50 - 150
	RPD	Acenaphthene	2012/11/09		85	%	60 - 130
		Acenaphthene	2012/11/09	0.6		%	50
	Spiked Blank	Acenaphthylene	2012/11/09		80	%	60 - 130
		Acenaphthylene	2012/11/09	4.3		%	50
	Spiked Blank	Anthracene	2012/11/09		85	%	60 - 130
		Anthracene	2012/11/09	2.6		%	50
	Spiked Blank	Benzo(a)anthracene	2012/11/09		88	%	60 - 130
		Benzo(a)anthracene	2012/11/09	12.8		%	50
	Spiked Blank	Benzo(a)pyrene	2012/11/09		89	%	60 - 130
		Benzo(a)pyrene	2012/11/09	0.3		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/11/09		87	%	60 - 130
		Benzo(b)fluoranthene	2012/11/09	1.4		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/11/09		125	%	60 - 130
		Benzo(g,h,i)perylene	2012/11/09	28.8		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/11/09		93	%	60 - 130
		Benzo(k)fluoranthene	2012/11/09	4.1		%	50
	Spiked Blank	Chrysene	2012/11/09		75	%	60 - 130
		Chrysene	2012/11/09	11.4		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/11/09		131 (1)	%	60 - 130
		Dibenz(a,h)anthracene	2012/11/09	31.4		%	50
	Spiked Blank	Fluoranthene	2012/11/09		91	%	60 - 130
		Fluoranthene	2012/11/09	4.6		%	50
	Spiked Blank	Fluorene	2012/11/09		85	%	60 - 130
		Fluorene	2012/11/09	2.6		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/11/09		128	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2012/11/09	28.4		%	50
Spiked Blank	Naphthalene	2012/11/09		91	%	60 - 130	
	Naphthalene	2012/11/09	9.2		%	50	
Spiked Blank	Phenanthrene	2012/11/09		88	%	60 - 130	
	Phenanthrene	2012/11/09	2.5		%	50	
Spiked Blank	Pyrene	2012/11/09		85	%	60 - 130	
	Pyrene	2012/11/09	5.4		%	50	
Method Blank	D10-2-Methylnaphthalene	2012/11/09		76	%	50 - 150	
	D10-Fluoranthene	2012/11/09		92	%	50 - 150	
	D10-Phenanthrene	2012/11/09		82	%	50 - 150	
	D12-Benzo(a)anthracene	2012/11/09		86	%	50 - 150	
	D12-Benzo(a)pyrene	2012/11/09		92	%	50 - 150	
	D12-Benzo(b)fluoranthene	2012/11/09		84	%	50 - 150	
	D12-Benzo(ghi)perylene	2012/11/09		94	%	50 - 150	
	D12-Benzo(k)fluoranthene	2012/11/09		82	%	50 - 150	
	D12-Chrysene	2012/11/09		74	%	50 - 150	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5636

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3014016 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/11/09		92	%	50 - 150
		D12-Perylene	2012/11/09		90	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/09		92	%	50 - 150
		D8-Acenaphthylene	2012/11/09		80	%	50 - 150
		D8-Naphthalene	2012/11/09		70	%	50 - 150
		1-Methylnaphthalene	2012/11/09	<0.10		ug	
		1-Methylphenanthrene	2012/11/09	<0.10		ug	
		2-Chloronaphthalene	2012/11/09	<0.10		ug	
		2-Methylantracene	2012/11/09	<0.10		ug	
		2-Methylnaphthalene	2012/11/09	<0.10		ug	
		3-Methylcholanthrene	2012/11/09	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/11/09	<0.10		ug	
		9,10-Dimethylanthracene	2012/11/09	<0.40		ug	
		Acenaphthene	2012/11/09	<0.050		ug	
		Acenaphthylene	2012/11/09	<0.050		ug	
		Anthracene	2012/11/09	<0.050		ug	
		Benzo(a)anthracene	2012/11/09	<0.050		ug	
		Benzo(a)fluorene	2012/11/09	<0.10		ug	
		Benzo(a)pyrene	2012/11/09	<0.050		ug	
		Benzo(b)fluoranthene	2012/11/09	<0.050		ug	
		Benzo(b)fluorene	2012/11/09	<0.10		ug	
		Benzo(e)pyrene	2012/11/09	<0.10		ug	
		Benzo(g,h,i)perylene	2012/11/09	<0.050		ug	
		Benzo(k)fluoranthene	2012/11/09	<0.050		ug	
		Biphenyl	2012/11/09	<0.10		ug	
		Chrysene	2012/11/09	<0.050		ug	
		Coronene	2012/11/09	<0.10		ug	
		Dibenz(a,h)anthracene	2012/11/09	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/11/09	<0.20		ug	
		Fluoranthene	2012/11/09	<0.050		ug	
		Fluorene	2012/11/09	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/11/09	<0.050		ug	
		m-Terphenyl	2012/11/09	<0.10		ug	
		Naphthalene	2012/11/09	0.072, RDL=0.072		ug	
		o-Terphenyl	2012/11/09	<0.10		ug	
		Perylene	2012/11/09	<0.10		ug	
		Phenanthrene	2012/11/09	<0.050		ug	
		p-Terphenyl	2012/11/09	<0.10		ug	
		Pyrene	2012/11/09	<0.050		ug	
		Quinoline	2012/11/09	<0.40		ug	
		Tetralin	2012/11/09	<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.

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

MAXXAM

Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: Elk Point Airport
Station ID: Lica 35 (Portable)
Field Sample ID: LICA PUF/PORT/Oct 24, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Oct 23, 2012 @ 09:50 mst
Removal Date/Time: Oct 25, 2012 @ 09:59 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
24-Oct-12	10/24/2012 0:00	10/25/2012 0:00	24.0000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
19-Oct-12	25-Oct-12	31-Oct-12	????

Set Flow Rate (slpm): 230

Date of Last Calibration: 25-Sep-11

Sampling Data			
Average Pressure(mmHg)	AverageFlow (Qstd slpm)	Average Temperature (C)	Volume (Vstd m ³)
711	229	-2.7	330.34

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 #05589

GB2F1371 Puff #2

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Oct 24, 12

Technician Signature: Ting Xu

Your C.O.C. #: 05589

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

Report Date: 2012/11/08

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2G8601****Received: 2012/10/29, 08:55**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/10/31	2012/11/07	BRL SOP-00201	CARB429(ARBM1,M2)mod

Encryption Key

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

Marinela Sim,
Email: MSim@maxxam.ca
Phone# (905) 817-5700

=====

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Total cover pages: 1

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Maxxam Job #: B2G8601
 Report Date: 2012/11/08

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PJ9438	PJ9439		
Sampling Date		2012/10/24	2012/10/24		
COC Number		05589	05589		
	Units	LICA PUFF+QFF/CLS/OCT 24,12	LICA PUFF+QFF/PORT/OCT 24,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	<0.10	<0.10	0.10	3020466
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3020466
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3020466
2-Methylantracene	ug	<0.10	<0.10	0.10	3020466
2-Methylnaphthalene	ug	0.20	<0.10	0.10	3020466
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3020466
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3020466
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3020466
Acenaphthene	ug	<0.050	<0.050	0.050	3020466
Acenaphthylene	ug	<0.050	<0.050	0.050	3020466
Anthracene	ug	<0.050	<0.050	0.050	3020466
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3020466
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3020466
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3020466
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3020466
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3020466
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3020466
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	3020466
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3020466
Biphenyl	ug	<0.10	<0.10	0.10	3020466
Chrysene	ug	<0.050	<0.050	0.050	3020466
Coronene	ug	<0.10	<0.10	0.10	3020466
Dibenz(a,h)anthracene	ug	<0.050	<0.050	0.050	3020466
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3020466
Fluoranthene	ug	<0.050	<0.050	0.050	3020466
Fluorene	ug	0.074	<0.050	0.050	3020466
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	3020466
m-Terphenyl	ug	<0.10	<0.10	0.10	3020466
Naphthalene	ug	0.104	<0.072	0.072	3020466
o-Terphenyl	ug	<0.10	<0.10	0.10	3020466
Perylene	ug	<0.10	<0.10	0.10	3020466

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G8601
 Report Date: 2012/11/08

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PJ9438	PJ9439		
Sampling Date		2012/10/24	2012/10/24		
COC Number		05589	05589		
	Units	LICA PUFF+QFF/CLS/OCT 24,12	LICA PUFF+QFF/PORT/OCT 24,12	RDL	QC Batch

Phenanthrene	ug	0.128	0.050	0.050	3020466
p-Terphenyl	ug	<0.10	<0.10	0.10	3020466
Pyrene	ug	<0.050	<0.050	0.050	3020466
Quinoline	ug	<0.40	<0.40	0.40	3020466
Tetralin	ug	<0.10	<0.10	0.10	3020466
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	76	64		3020466
D10-Fluoranthene	%	90	92		3020466
D10-Fluorene (FS)	%	32 (1)	27 (1)		3020466
D10-Phenanthrene	%	84	82		3020466
D12-Benzo(a)anthracene	%	88	90		3020466
D12-Benzo(a)pyrene	%	88	92		3020466
D12-Benzo(b)fluoranthene	%	88	90		3020466
D12-Benzo(ghi)perylene	%	88	90		3020466
D12-Benzo(k)fluoranthene	%	86	86		3020466
D12-Chrysene	%	84	84		3020466
D12-Indeno(1,2,3-cd)pyrene	%	88	90		3020466
D12-Perylene	%	86	90		3020466
D14-Dibenzo(a,h)anthracene	%	88	90		3020466
D14-Terphenyl (FS)	%	92	96		3020466
D8-Acenaphthylene	%	76	68		3020466
D8-Naphthalene	%	70	58		3020466

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2G8601
 Report Date: 2012/11/08

Test Summary

Maxxam ID PJ9438
Sample ID LICA PUFF+QFF/CLS/OCT 24,12
Matrix PUF AND FILTER

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3020466	2012/10/31	2012/11/07	Lidija Tomic

Maxxam ID PJ9439
Sample ID LICA PUFF+QFF/PORT/OCT 24,12
Matrix PUF AND FILTER

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3020466	2012/10/31	2012/11/07	Lidija Tomic

Maxxam Job #: B2G8601
Report Date: 2012/11/08

GENERAL COMMENTS

9,10-Dimethylanthracene, 7,12-dimethylbenzo(a)anthracene, Dibenzo (a,e) pyrene and Coronen are above 25% RSD in initial calibration. No positives found for these 4 compounds.

Results relate only to the items tested.

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

Quality Assurance Report
 Maxxam Job Number: GB2G8601

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3020466 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/11/07		76	%	50 - 150
		D10-Fluoranthene	2012/11/07		88	%	50 - 150
		D10-Phenanthrene	2012/11/07		82	%	50 - 150
		D12-Benzo(a)anthracene	2012/11/07		88	%	50 - 150
		D12-Benzo(a)pyrene	2012/11/07		90	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/11/07		88	%	50 - 150
		D12-Benzo(ghi)perylene	2012/11/07		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/11/07		86	%	50 - 150
		D12-Chrysene	2012/11/07		86	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/11/07		88	%	50 - 150
		D12-Perylene	2012/11/07		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/07		88	%	50 - 150
		D8-Acenaphthylene	2012/11/07		76	%	50 - 150
		D8-Naphthalene	2012/11/07		72	%	50 - 150
		RPD	Acenaphthene	2012/11/07		82	%
	RPD	Acenaphthene	2012/11/07	0.6		%	50
	Spiked Blank	Acenaphthylene	2012/11/07		80	%	60 - 130
	RPD	Acenaphthylene	2012/11/07	1.9		%	50
	Spiked Blank	Anthracene	2012/11/07		85	%	60 - 130
	RPD	Anthracene	2012/11/07	5.4		%	50
	Spiked Blank	Benzo(a)anthracene	2012/11/07		99	%	60 - 130
	RPD	Benzo(a)anthracene	2012/11/07	0.8		%	50
	Spiked Blank	Benzo(a)pyrene	2012/11/07		78	%	60 - 130
	RPD	Benzo(a)pyrene	2012/11/07	0.3		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/11/07		85	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/11/07	0.3		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/11/07		79	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/11/07	7.0		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/11/07		92	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/11/07	0.3		%	50
	Spiked Blank	Chrysene	2012/11/07		87	%	60 - 130
	RPD	Chrysene	2012/11/07	0.9		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/11/07		76	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/11/07	8.5		%	50
	Spiked Blank	Fluoranthene	2012/11/07		92	%	60 - 130
	RPD	Fluoranthene	2012/11/07	1.1		%	50
	Spiked Blank	Fluorene	2012/11/07		83	%	60 - 130
	RPD	Fluorene	2012/11/07	0.3		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/11/07		79	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/11/07	6.7		%	50
	Spiked Blank	Naphthalene	2012/11/07		79	%	60 - 130
	RPD	Naphthalene	2012/11/07	2.5		%	50
	Spiked Blank	Phenanthrene	2012/11/07		88	%	60 - 130
	RPD	Phenanthrene	2012/11/07	2.0		%	50
	Spiked Blank	Pyrene	2012/11/07		87	%	60 - 130
RPD	Pyrene	2012/11/07	0.6		%	50	
Method Blank	D10-2-Methylnaphthalene	2012/11/07		76	%	50 - 150	
	D10-Fluoranthene	2012/11/07		84	%	50 - 150	
	D10-Phenanthrene	2012/11/07		80	%	50 - 150	
	D12-Benzo(a)anthracene	2012/11/07		84	%	50 - 150	
	D12-Benzo(a)pyrene	2012/11/07		88	%	50 - 150	
	D12-Benzo(b)fluoranthene	2012/11/07		88	%	50 - 150	
	D12-Benzo(ghi)perylene	2012/11/07		86	%	50 - 150	
	D12-Benzo(k)fluoranthene	2012/11/07		84	%	50 - 150	
	D12-Chrysene	2012/11/07		84	%	50 - 150	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G8601

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3020466 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/11/07		86	%	50 - 150
		D12-Perylene	2012/11/07		86	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/07		84	%	50 - 150
		D8-Acenaphthylene	2012/11/07		72	%	50 - 150
		D8-Naphthalene	2012/11/07		72	%	50 - 150
		1-Methylnaphthalene	2012/11/07	<0.10		ug	
		1-Methylphenanthrene	2012/11/07	<0.10		ug	
		2-Chloronaphthalene	2012/11/07	<0.10		ug	
		2-Methylanthracene	2012/11/07	<0.10		ug	
		2-Methylnaphthalene	2012/11/07	<0.10		ug	
		3-Methylcholanthrene	2012/11/07	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/11/07	<0.10		ug	
		9,10-Dimethylanthracene	2012/11/07	<0.40		ug	
		Acenaphthene	2012/11/07	<0.050		ug	
		Acenaphthylene	2012/11/07	<0.050		ug	
		Anthracene	2012/11/07	<0.050		ug	
		Benzo(a)anthracene	2012/11/07	<0.050		ug	
		Benzo(a)fluorene	2012/11/07	<0.10		ug	
		Benzo(a)pyrene	2012/11/07	<0.050		ug	
		Benzo(b)fluoranthene	2012/11/07	<0.050		ug	
		Benzo(b)fluorene	2012/11/07	<0.10		ug	
		Benzo(e)pyrene	2012/11/07	<0.10		ug	
		Benzo(g,h,i)perylene	2012/11/07	<0.050		ug	
		Benzo(k)fluoranthene	2012/11/07	<0.050		ug	
		Biphenyl	2012/11/07	<0.10		ug	
		Chrysene	2012/11/07	<0.050		ug	
		Coronene	2012/11/07	<0.10		ug	
		Dibenz(a,h)anthracene	2012/11/07	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/11/07	<0.20		ug	
		Fluoranthene	2012/11/07	<0.050		ug	
		Fluorene	2012/11/07	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/11/07	<0.050		ug	
		m-Terphenyl	2012/11/07	<0.10		ug	
		Naphthalene	2012/11/07	<0.072		ug	
		o-Terphenyl	2012/11/07	<0.10		ug	
		Perylene	2012/11/07	<0.10		ug	
		Phenanthrene	2012/11/07	<0.050		ug	
		p-Terphenyl	2012/11/07	<0.10		ug	
		Pyrene	2012/11/07	<0.050		ug	
		Quinoline	2012/11/07	<0.40		ug	
		Tetralin	2012/11/07	<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: Elk Point Airport
Station ID: Lica 35 (Portable)
Field Sample ID: LICA PUF/PORT/Oct 30, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Oct 29, 2012 @ 09:15 mst
Removal Date/Time: Oct 31, 2012 @ 13:30 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
30-Oct-12	10/30/2012 0:00	10/31/2012 0:00	24.0000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
24-Oct-12	01-Nov-12	06-Nov-12	????

Set Flow Rate (slpm): 230

Date of Last Calibration: 25-Sep-11

Sampling Data			
Average Pressure(mmHg)	AverageFlow (Qstd slpm)	Average Temperature (C)	Volume (Vstd m ³)
708	229	-4.6	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 #12645

GB2F1372 Puff #2

Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Oct 30, 12

Technician Signature: Ting Xu

Your C.O.C. #: 12645

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

Report Date: 2012/11/13

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2H2611****Received: 2012/11/03, 10:30**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/11/06	2012/11/12	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 #: B2H2611
 Report Date: 2012/11/13

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PL9729	PL9730		
Sampling Date		2012/10/30	2012/10/30		
COC Number		12645	12645		
	Units	LICA PUFF+QFF/CLS/OCT 30,12	LICA PUFF+QFF/PORT/OCT 30,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	0.12	<0.10	0.10	3027336
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3027336
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3027336
2-Methylantracene	ug	<0.10	<0.10	0.10	3027336
2-Methylnaphthalene	ug	0.24	0.11	0.10	3027336
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3027336
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3027336
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3027336
Acenaphthene	ug	<0.050	<0.050	0.050	3027336
Acenaphthylene	ug	<0.050	<0.050	0.050	3027336
Anthracene	ug	<0.050	<0.050	0.050	3027336
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3027336
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3027336
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3027336
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3027336
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3027336
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3027336
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	3027336
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3027336
Biphenyl	ug	0.17	0.26	0.10	3027336
Chrysene	ug	<0.050	<0.050	0.050	3027336
Coronene	ug	<0.10	<0.10	0.10	3027336
Dibenz(a,h)anthracene	ug	<0.050	<0.050	0.050	3027336
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3027336
Fluoranthene	ug	0.060	0.062	0.050	3027336
Fluorene	ug	0.158	0.146	0.050	3027336
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	3027336
m-Terphenyl	ug	<0.10	<0.10	0.10	3027336
Naphthalene	ug	0.206	0.176	0.072	3027336
o-Terphenyl	ug	<0.10	<0.10	0.10	3027336
Perylene	ug	<0.10	<0.10	0.10	3027336

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PL9729	PL9730		
Sampling Date		2012/10/30	2012/10/30		
COC Number		12645	12645		
	Units	LICA PUFF+QFF/CLS/OCT 30,12	LICA PUFF+QFF/PORT/OCT 30,12	RDL	QC Batch

Phenanthrene	ug	0.238	0.220	0.050	3027336
p-Terphenyl	ug	<0.10	<0.10	0.10	3027336
Pyrene	ug	0.050	<0.050	0.050	3027336
Quinoline	ug	<0.40	<0.40	0.40	3027336
Tetralin	ug	<0.10	<0.10	0.10	3027336
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	72	74		3027336
D10-Fluoranthene	%	98	80		3027336
D10-Fluorene (FS)	%	43 (1)	34 (1)		3027336
D10-Phenanthrene	%	88	78		3027336
D12-Benzo(a)anthracene	%	98	96		3027336
D12-Benzo(a)pyrene	%	90	84		3027336
D12-Benzo(b)fluoranthene	%	92	92		3027336
D12-Benzo(ghi)perylene	%	88	84		3027336
D12-Benzo(k)fluoranthene	%	88	84		3027336
D12-Chrysene	%	86	90		3027336
D12-Indeno(1,2,3-cd)pyrene	%	86	80		3027336
D12-Perylene	%	92	84		3027336
D14-Dibenzo(a,h)anthracene	%	88	80		3027336
D14-Terphenyl (FS)	%	98	78		3027336
D8-Acenaphthylene	%	78	72		3027336
D8-Naphthalene	%	66	70		3027336

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2H2611
 Report Date: 2012/11/13

Test Summary

Maxxam ID PL9729
Sample ID LICA PUFF+QFF/CLS/OCT 30,12
Matrix PUF AND FILTER

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3027336	2012/11/06	2012/11/12	Lidija Tomic

Maxxam ID PL9730
Sample ID LICA PUFF+QFF/PORT/OCT 30,12
Matrix PUF AND FILTER

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3027336	2012/11/06	2012/11/12	Lidija Tomic

Maxxam Job #: B2H2611
Report Date: 2012/11/13

GENERAL COMMENTS

9,10-Dimethylanthracene, 7,12-dimethylbenzo(a)anthracene Benzo (g,h,i)perylene Anthranthene are above 25% RSD in initial calibration.

Results relate only to the items tested.

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

Quality Assurance Report

Maxxam Job Number: GB2H2611

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3027336 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/11/12		76	%	50 - 150
		D10-Fluoranthene	2012/11/12		84	%	50 - 150
		D10-Phenanthrene	2012/11/12		80	%	50 - 150
		D12-Benzo(a)anthracene	2012/11/12		106	%	50 - 150
		D12-Benzo(a)pyrene	2012/11/12		88	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/11/12		92	%	50 - 150
		D12-Benzo(ghi)perylene	2012/11/12		84	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/11/12		88	%	50 - 150
		D12-Chrysene	2012/11/12		94	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/11/12		82	%	50 - 150
		D12-Perylene	2012/11/12		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/12		82	%	50 - 150
		RPD	D8-Acenaphthylene	2012/11/12		70	%
	D8-Naphthalene		2012/11/12		70	%	50 - 150
	Spiked Blank	Acenaphthene	2012/11/12		78	%	60 - 130
		Acenaphthene	2012/11/12	4.4		%	50
	RPD	Acenaphthylene	2012/11/12		71	%	60 - 130
		Acenaphthylene	2012/11/12	7.1		%	50
	Spiked Blank	Anthracene	2012/11/12		76	%	60 - 130
		Anthracene	2012/11/12	5.1		%	50
	Spiked Blank	Benzo(a)anthracene	2012/11/12		104	%	60 - 130
		Benzo(a)anthracene	2012/11/12	12.2		%	50
	Spiked Blank	Benzo(a)pyrene	2012/11/12		70	%	60 - 130
		Benzo(a)pyrene	2012/11/12	0.4		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/11/12		87	%	60 - 130
		Benzo(b)fluoranthene	2012/11/12	0.3		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/11/12		65	%	60 - 130
		Benzo(g,h,i)perylene	2012/11/12	0.4		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/11/12		88	%	60 - 130
		Benzo(k)fluoranthene	2012/11/12	9.0		%	50
	Spiked Blank	Chrysene	2012/11/12		93	%	60 - 130
		Chrysene	2012/11/12	8.1		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/11/12		69	%	60 - 130
		Dibenz(a,h)anthracene	2012/11/12	2.6		%	50
	Spiked Blank	Fluoranthene	2012/11/12		86	%	60 - 130
		Fluoranthene	2012/11/12	0.3		%	50
	Spiked Blank	Fluorene	2012/11/12		79	%	60 - 130
		Fluorene	2012/11/12	4.7		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/11/12		65	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2012/11/12	2.4		%	50
Spiked Blank	Naphthalene	2012/11/12		75	%	60 - 130	
	Naphthalene	2012/11/12	3.0		%	50	
Spiked Blank	Phenanthrene	2012/11/12		80	%	60 - 130	
	Phenanthrene	2012/11/12	2.5		%	50	
Spiked Blank	Pyrene	2012/11/12		81	%	60 - 130	
	Pyrene	2012/11/12	0.3		%	50	
Method Blank	D10-2-Methylnaphthalene	2012/11/12		78	%	50 - 150	
	D10-Fluoranthene	2012/11/12		84	%	50 - 150	
	D10-Phenanthrene	2012/11/12		82	%	50 - 150	
	D12-Benzo(a)anthracene	2012/11/12		92	%	50 - 150	
	D12-Benzo(a)pyrene	2012/11/12		88	%	50 - 150	
	D12-Benzo(b)fluoranthene	2012/11/12		90	%	50 - 150	
	D12-Benzo(ghi)perylene	2012/11/12		82	%	50 - 150	
	D12-Benzo(k)fluoranthene	2012/11/12		84	%	50 - 150	
	D12-Chrysene	2012/11/12		84	%	50 - 150	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2H2611

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3027336 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/11/12		80	%	50 - 150
		D12-Perylene	2012/11/12		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/12		80	%	50 - 150
		D8-Acenaphthylene	2012/11/12		76	%	50 - 150
		D8-Naphthalene	2012/11/12		72	%	50 - 150
		1-Methylnaphthalene	2012/11/12	<0.10		ug	
		1-Methylphenanthrene	2012/11/12	<0.10		ug	
		2-Chloronaphthalene	2012/11/12	<0.10		ug	
		2-Methylanthracene	2012/11/12	<0.10		ug	
		2-Methylnaphthalene	2012/11/12	<0.10		ug	
		3-Methylcholanthrene	2012/11/12	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/11/12	<0.10		ug	
		9,10-Dimethylanthracene	2012/11/12	<0.40		ug	
		Acenaphthene	2012/11/12	<0.050		ug	
		Acenaphthylene	2012/11/12	<0.050		ug	
		Anthracene	2012/11/12	<0.050		ug	
		Benzo(a)anthracene	2012/11/12	<0.050		ug	
		Benzo(a)fluorene	2012/11/12	<0.10		ug	
		Benzo(a)pyrene	2012/11/12	<0.050		ug	
		Benzo(b)fluoranthene	2012/11/12	<0.050		ug	
		Benzo(b)fluorene	2012/11/12	<0.10		ug	
		Benzo(e)pyrene	2012/11/12	<0.10		ug	
		Benzo(g,h,i)perylene	2012/11/12	0.060, RDL=0.050		ug	
		Benzo(k)fluoranthene	2012/11/12	<0.050		ug	
		Biphenyl	2012/11/12	<0.10		ug	
		Chrysene	2012/11/12	<0.050		ug	
		Coronene	2012/11/12	<0.10		ug	
		Dibenz(a,h)anthracene	2012/11/12	0.052, RDL=0.050		ug	
		Dibenzo(a,e)pyrene	2012/11/12	<0.20		ug	
		Fluoranthene	2012/11/12	<0.050		ug	
		Fluorene	2012/11/12	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/11/12	0.054, RDL=0.050		ug	
		m-Terphenyl	2012/11/12	<0.10		ug	
		Naphthalene	2012/11/12	<0.072		ug	
		o-Terphenyl	2012/11/12	<0.10		ug	
		Perylene	2012/11/12	<0.10		ug	
		Phenanthrene	2012/11/12	<0.050		ug	
		p-Terphenyl	2012/11/12	<0.10		ug	
		Pyrene	2012/11/12	<0.050		ug	
		Quinoline	2012/11/12	<0.40		ug	
		Tetralin	2012/11/12	<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.

Lakeland Industry & Community Association

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

Prepared By:



November 30, 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: October 2012

The monthly ambient data report:

- Prepared by Maram Ghaleb
- Reviewed by Lily Lin

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 – October 2012

LICA ST. LINA SITE						MAXIMUM VALUES							OPERATIONAL TIME (PERCENT)			
						OBJECTIVES					EXCEEDENCES					1-HOUR
PARAMETER	1-HR		24-HR		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY				
	SO ₂ (PPB)	172	48	0									0	0.18	2	1,16
H ₂ S (PPB)	10	3	0	0	0.51	3	16	VAR	VAR	VAR	1.8	16	99.1			
THC (PPM)	-	-	-	-	2.10	3.5	16	8	2.5	102(E)	2.5	16	99.1			
OZONE (PPB)	82	-	0	-	22.6	41	15	VAR	VAR	VAR	30.2	8	99.1			
NO _x (PPB)	-	-	-	-	1.72	17	13	5	3.9	213(SSW)	7.8	13	99.1			
NO (PPB)	-	-	-	-	0.36	6	13	5	3.9	213(SSW)	2.2	13	99.1			
NO ₂ (PPB)	159	-	0	-	1.36	12	13	3	3.9	256(WSW)	5.6	13	99.1			
PM _{2.5} (ug/m3)	-	30	-	0	3.08	22	7	12	23.2	329(NNW)	7.9	7	95.3			
TEMPERATURE (DEGREE C)	-	-	-	-	0.80	16.7	15	14	16.4	287(WNW)	10.3	15	99.3			
BP (MILLIBAR)	-	-	-	-	925	943	3	VAR	VAR	VAR	941.3	3	99.3			
RH (%)	-	-	-	-	71.20	91	13	VAR	VAR	VAR	88.1	20	99.3			
PRECIPITATION (MM)	-	-	-	-	0.02	1.1	12	13	3	54(NE)	6.1	12	99.2			
VECTOR WS (KPH)	-	-	-	-	11.80	27.2	16	14	-	318(NW)	19.6	17	99.2			
VECTOR WD (DEGREES)	-	-	-	-	306(NW)	-	-	-	-	-	-	-	99.2			

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 October 3rd. A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month. 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 October 2nd. A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month. Data was corrected using daily zero information.

Ozone (PPB)

Analyzer make / model Thermo 49C, S/N: 49C-54926-302

The analyzer was working well throughout the month. On October 4th a removal calibration of the analyzer (49C) was performed and the new analyzer was installed (49I) and left to stabilize over night. On October 5th the installation calibration was performed. The zero reading was not stable and the calibration was aborted and 49I analyzer was removed and 49C was re-installed. A three-points calibration was performed on October 5th. The inlet filter was changed before the calibration was started.

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month. Data was corrected using daily zero information.

General Monthly Summary

AQM STATION – LICA – St. Lina

Total Hydrocarbon (PPM)

Analyzer make / model – Thermo 51C-LT, S/N: 77021-384 replaced to Thermo 51C-LT, S/N: 04366-09739

The analyzer was working well throughout the month. Following the as found points check on October 2nd, the sample pump was rebuilt. The analyzer was left to stabilize overnight. The post-repair calibration was performed on October 3rd. On October 17th the Thermo 51C-LT, S/N: 77021-384, THC analyzer was removed following a removal calibration as per client's request. A Thermo 51C-LT, S/N: 04366-09739, analyzer was installed following an installation calibration on October 18th. The hydrogen cylinder was replaced on October 30th.

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month. 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 October 2nd.

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month. Data was corrected using daily zero information.

General Monthly Summary

AQM STATION – LICA – St. Lina"

"

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 October 18th. Both the Teom and FDMS filters were changed on October 18th. 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. Twenty-nine hourly data were invalidated as the data were below –3 ug/m3. A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month. "

Temperature (Degree C)

Analyzer make / model – Met One 060

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month.

"

Barometric Pressure (Millibar)

Analyzer make / model - Met One 092

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month.

Relative Humidity (%)

Analyzer make / model - Met One 083

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month.

Precipitation (MM)

Analyzer make / model - Met One 387

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month.

General Monthly Summary

AQM STATION – LICA – St. Lina

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

System make / model –MetOne 50.5H Sonic, S/N: H12635

A total of six hours of data were invalidated on October 22nd and 23rd due to a power failure this month.

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

The manifold was cleaned on October 5th.

Air Quality Index (AQI)

No AQI report is included in this report, as the AQI value is no longer used by Alberta Environment.

Continuous Monitoring

Monthly Summaries, Graphs & Wind Roses

Sulphur Dioxide

NCMGNCPF 'PF WVT[' 'EQ O WPK['CUQEKVIQP/'UVONPC

OCTOBER 2012

UWNRJ WT'FIQZHF'G*UQ4+ hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	
DAY 1	0	0	0	1	1	1	0	0	0	KU	1	4	1	4	1	0	0	0	0	0	0	0	0	0	4	0.4	24
DAY 2	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 3	0	0	0	0	0	0	0	KU	0	0	E	E	E	E	1	1	0	0	0	0	0	0	0	0	1	0.1	24
DAY 4	0	0	0	0	0	0	KU	0	0	0	0	1	E	E	E	1	1	1	1	1	1	0	1	0	1	0.4	24
DAY 5	1	0	0	0	0	KU	0	0	0	0	E	E	E	1	1	0	1	0	0	0	0	0	0	0	1	0.2	23
DAY 6	0	0	0	0	KU	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24
DAY 7	0	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
DAY 8	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 9	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 10	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	0	0.0	24
DAY 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	KU	0	1	0.2	24
DAY 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	0	0	0	0.0	24
DAY 13	0	0	0	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	KU	0	0	1	0.5	24
DAY 14	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	KU	1	1	1	1	0.5	24
DAY 15	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	KU	0	1	1	1	1	1	0.7	24
DAY 16	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	KU	0	0	0	0	0	0	4	2.0	24
DAY 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0.0	24
DAY 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0.0	24
DAY 19	0	0	0	0	1	1	1	1	1	1	1	1	1	1	KU	0	0	0	0	0	0	0	0	0	1	0.4	24
DAY 20	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 21	0	0	0	0	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 22	0	0	0	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	R	0.0	23
DAY 23	R	R	R	R	R	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	19
DAY 24	0	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 25	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 26	0	0	0	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 27	0	0	0	0	0	0	KU	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0.4	24
DAY 28	1	1	1	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
DAY 29	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 30	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
DAY 31	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0.3	24
HOURLY MAX	1	1	1	1	1	1	1	1	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1		
HOURLY AVG	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1		

UVCVWUHNCI 'EQFGU

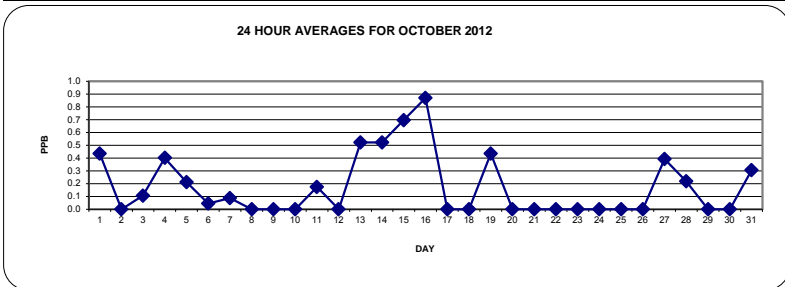
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

QDLGEVKG'NIO K<

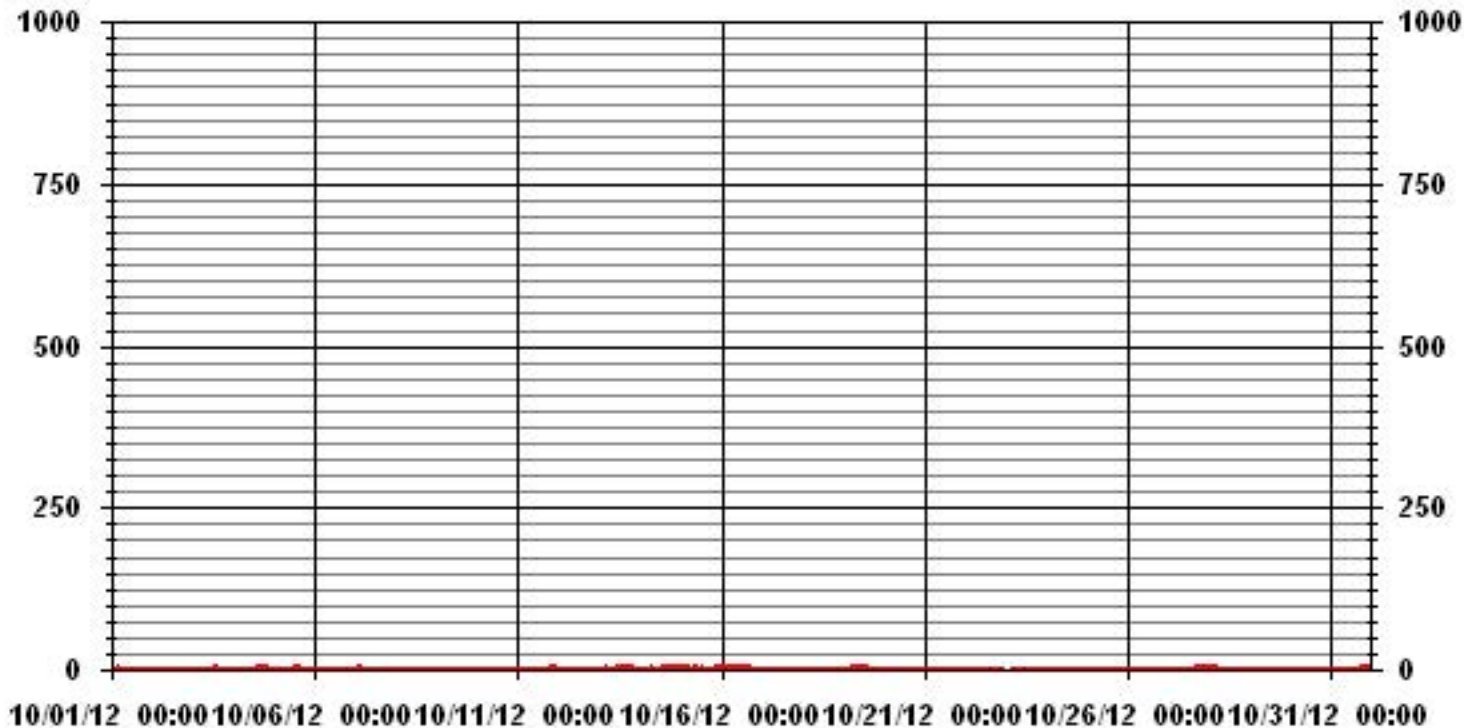
CNDGTVC'GPXK'QPO GPV<	1-HR	172	PPB	24-HR	48	PPB
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OQPVN['UWO OCTI

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	117
MAXIMUM 1-HR AVERAGE:	2 PPB @ HOUR(S) VAR ON DAY(S) 1,16
MAXIMUM 24-HR AVERAGE:	0.9 PPB ON DAY(S) 16
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	10 HRS
STANDARD DEVIATION:	0.40
OPERATIONAL TIME:	737 HRS
AMD OPERATION UPTIME:	99.1 %
MONTHLY AVERAGE:	0.18 PPB



01 Hour Averages



NCMGNCPF'PF WVT['('EQO O WPK['CUUQEKVKQP'/'ST. LINA

OCTOBER 2012

UWNRJ WT'FKZHF'G'O CZ instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.		
DAY																												
1	1	1	1	1	1	2	1	1	1	K U'	4	4	3	3	2	1	1	1	1	1	1	1	1	1	4	1.5	24	
2	1	1	1	1	1	1	1	1	K U'	1	2	1	1	1	1	0	0	0	0	0	0	0	0	1	2	0.7	24	
3	0	0	0	0	0	0	0	K U'	1	1	E	E	E	E	E	2	1	1	1	1	1	1	1	1	2	0.7	24	
4	1	1	1	1	1	1	K U'	0	1	1	1	97	E	E	E	2	2	2	2	2	1	1	1	1	97	4.9	24	
5	1	1	1	1	1	K U'	0	0	0	1	E	E	E	2	2	E	E	1	1	1	1	1	1	1	2	0.9	24	
6	1	1	1	1	K U'	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24	
7	1	2	2	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	24	
8	0	1	K U'	0	1	1	1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24	
9	0	K U'	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0	0	1	1	1	1	1	1	1	0.5	24	
10	K U'	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	K U'	1	0.5	24
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	K U'	1	2	1.2	24
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	K U'	1	1	1.0	24
13	1	1	1	2	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	K U'	1	1	2	1.5	24
14	1	1	1	1	1	1	1	2	2	2	1	1	2	1	1	2	2	2	2	K U'	2	2	2	2	2	2	1.5	24
15	2	2	1	1	1	1	1	2	2	1	2	2	1	1	1	1	1	1	K U'	1	2	2	2	2	2	2	1.5	24
16	2	2	2	2	2	2	2	2	3	2	3	3	2	2	2	2	2	K U'	1	1	1	1	1	1	3	1.9	24	
17	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	K U'	0	1	0	0	0	0	0	0	1	0.1	24
18	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	K U'	1	1	1	1	1	1	1	1	1	1	0.7	24
19	1	1	1	1	1	1	1	2	2	2	2	2	2	2	K U'	1	1	1	1	1	1	1	1	0	1	2	1.3	24
20	1	1	0	1	1	1	1	1	0	0	1	1	1	K U'	1	1	1	1	1	1	1	1	0	0	0	1	0.7	24
21	0	0	0	0	0	0	0	0	0	0	0	0	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	24
22	1	1	0	0	1	0	1	0	1	1	1	K U'	0	1	0	1	1	0	0	0	0	0	0	R	1	0.5	23	
23	R	R	R	R	R	2	1	0	1	0	K U'	1	1	1	1	1	1	1	1	1	1	1	0	1	2	0.9	19	
24	1	1	1	1	1	1	1	1	0	K U'	1	1	1	1	0	0	1	1	1	2	1	1	0	0	2	0.8	24	
25	1	1	1	0	0	0	0	0	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24	
26	1	1	1	1	1	1	1	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
27	1	1	1	1	1	1	K U'	1	1	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1.4	24	
28	2	2	2	2	2	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2	24	
29	1	1	1	1	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
30	1	1	1	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
31	0	0	K U'	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1.2	24	
HOURLY MAX	2	2	2	2	2	2	2	2	3	2	4	75	3	3	2	2	2	2	2	2	2	2	2	2	2			
HOURLY AVG	0.9	1.0	0.9	0.8	0.9	0.9	0.8	0.9	0.9	1.0	1.2	3.7	1.1	1.2	1.0	1.0	1.0	0.9	1.1	1.0	1.0	0.9	0.9	1.0				

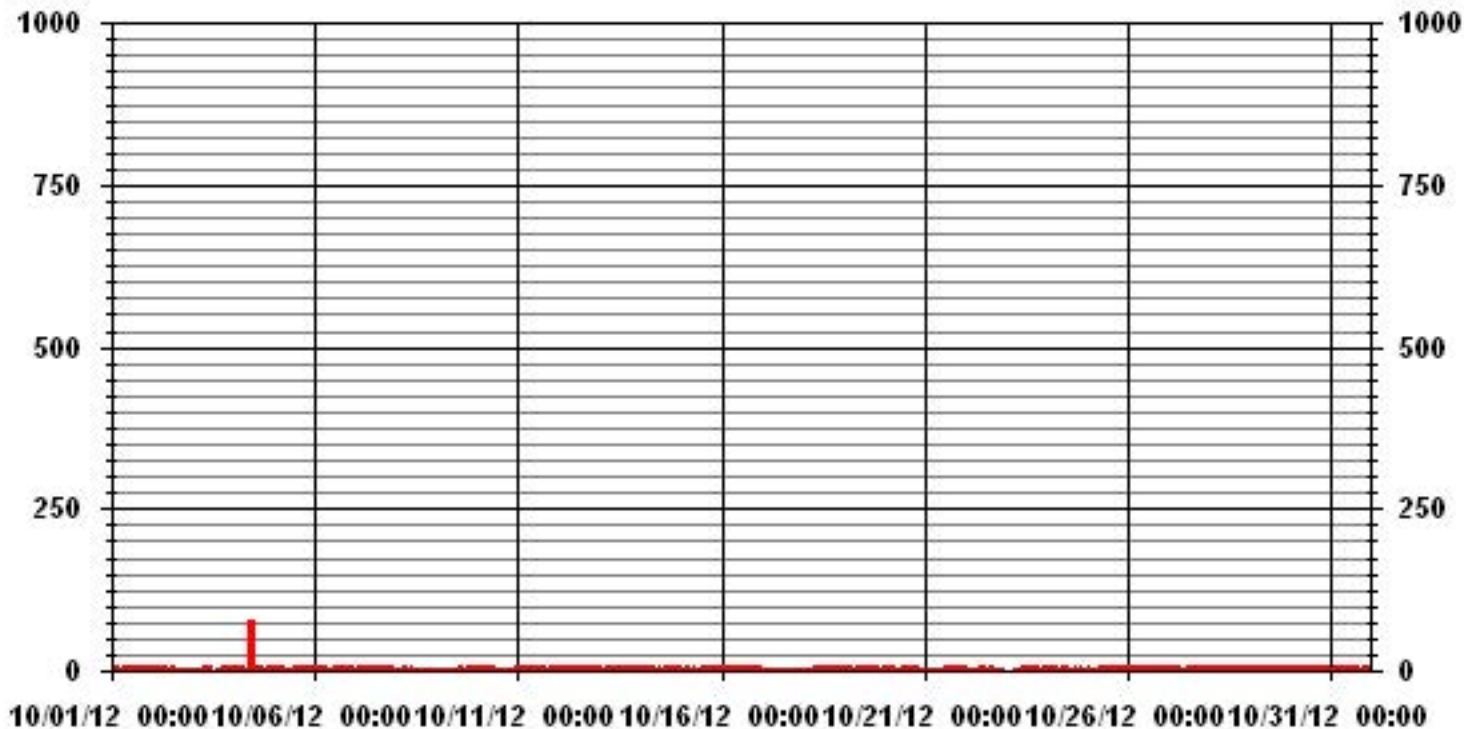
UVCVWUHNCI 'EQFGU

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

O QPVJ N['UWO OCT[

NUMBER OF NON-ZERO READINGS:	562
MAXIMUM INSTANTANEOUS VALUE:	75 PPB @ HOUR(S) ON DAY(S) 4
IZS CALIBRATION TIME:	0 HRS
MONTHLY CALIBRATION TIME:	13 HRS
OPERATIONAL TIME:	738 HRS
STANDARD DEVIATION:	2.88

01 Hour Averages



LICA31
SO2_ / WDR Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

Logger Id : 31
Site Name : LICA31
Parameter : SO2_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	8.33	4.59	2.29	3.01	2.72	4.45	7.18	5.74	4.16	7.32	5.74	4.74	5.45	8.90	11.78	13.50	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	8.33	4.59	2.29	3.01	2.72	4.45	7.18	5.74	4.16	7.32	5.74	4.74	5.45	8.90	11.78	13.50	

Calm : .00 %

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
< 20	58	32	16	21	19	31	50	40	29	51	40	33	38	62	82	94	696
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	58	32	16	21	19	31	50	40	29	51	40	33	38	62	82	94	

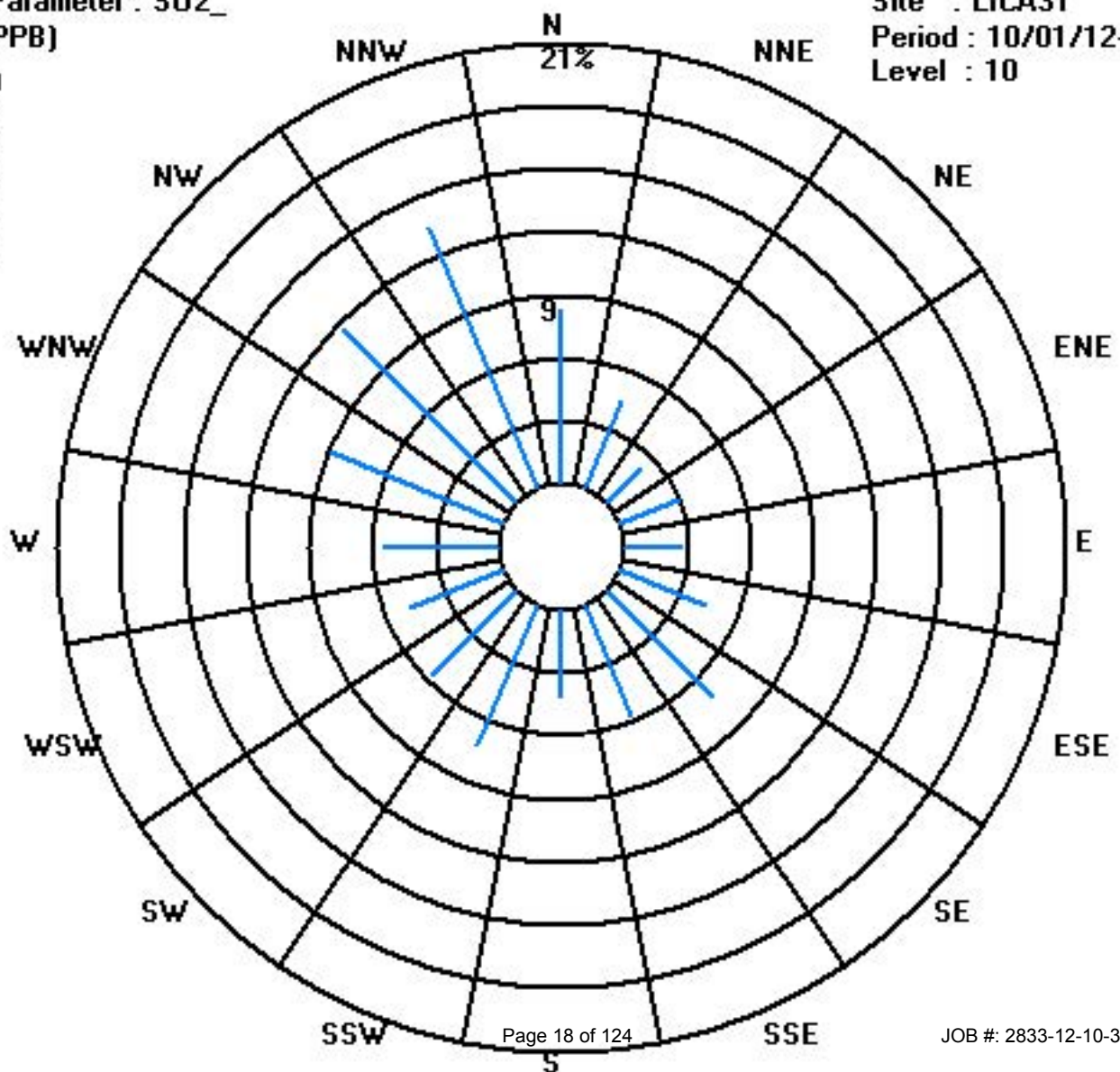
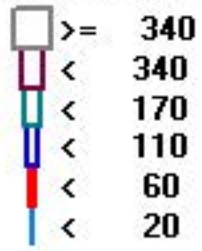
Calm : .00 %

Total # Operational Hours : 696

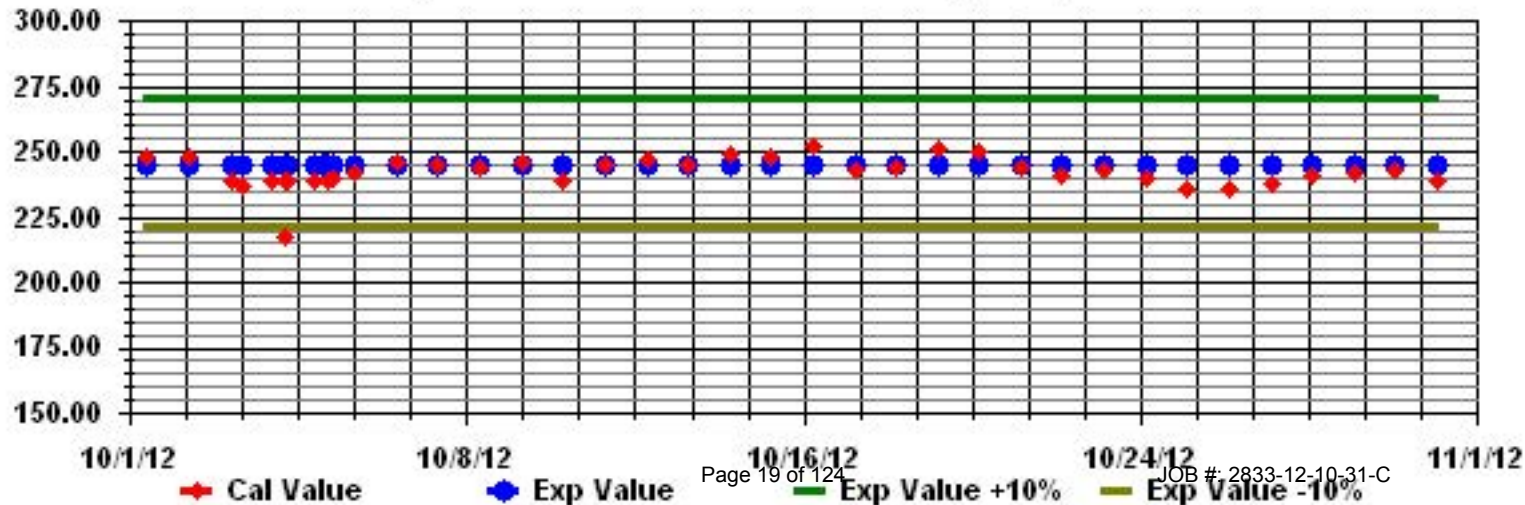
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



Calibration Graph for Site: LICA31 Parameter: S02_ Sequence: S02 Phase: SPAN



Hydrogen Sulphide

NCMGNCPF'PFWUVT[('EQO WPKW' 'CUQEKVKQP')UV0NRC

OCTOBER 2012

J] FTQI GP'UWNRJ FFG'J,U+ hourly averages in ppb

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY 24-HOUR			
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
1		0	1	0	0	0	0	1	0	1	KU	1	1	1	2	1	1	2	2	2	2	1	1	2	2	2	1.0	24	
2		1	1	2	1	1	2	1	1	KU	0	0	0	0	E	E	E	E	E	0	0	0	0	0	0	0	2	0.6	24
3		0	0	0	0	0	0	0	KU	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	KU	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0.0	24
5		0	0	0	1	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0.3	23
6		1	1	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
7		0	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
8		1	0	KU	0	1	1	1	0	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.4	24
9		0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	1	1	0.3	24
10		KU	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	1	0.1	24
11		0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	KU	0	2	0.9	24	
12		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	0	0	0	0.0	24	
13		0	1	0	1	1	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	KU	1	1	1	1	1	0.4	24
14		1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1	KU	1	1	1	1	2	1.1	24
15		1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	1	0	KU	2	2	1	2	2	2	2	1.0	24
16		2	2	2	2	3	2	3	3	3	3	3	3	2	2	3	2	2	KU	0	0	0	0	0	0	0	5	3.0	24
17		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	1	1	1	0	1	0	0	1	0.2	24	
18		1	1	1	0	0	0	1	0	1	1	0	1	0	1	1	KU	1	1	1	1	1	1	1	1	1	1	0.7	24
19		1	1	1	1	1	2	2	2	2	2	2	2	2	2	KU	1	1	1	1	1	1	1	1	1	1	2	1.4	24
20		1	1	1	1	1	1	1	1	1	1	1	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
21		0	0	0	0	0	0	0	0	0	0	0	0	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	24
22		1	1	1	1	1	1	1	0	1	1	1	KU	1	1	1	1	1	1	1	1	1	0	0	R	1	0.8	23	
23		R	R	R	R	R	1	0	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	19
24		0	0	0	0	0	0	0	0	0	KU	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	KU	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	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24
27		1	1	1	1	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
28		0	1	1	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
29		1	1	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
30		0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
31		0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0	24	
HOURLY MAX		2	2	2	2	3	2	3	3	3	3	3	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2		
HOURLY AVG		0.4	0.6	0.6	0.6	0.5	0.6	0.6	0.4	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.4	0.5	0.5	0.5	0.5	0.6				

UVCVWUHNCI 'EQFGU

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

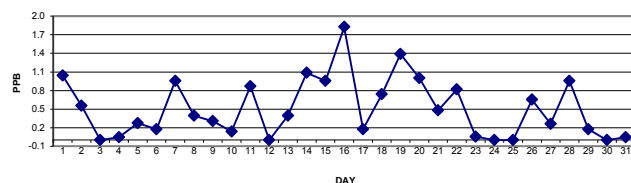
QDLGEVK'G'NIO N<

CNDGTVC'GP'XK'QPO GPV<	1-HR	10	PPB	24-HR	3	PPB
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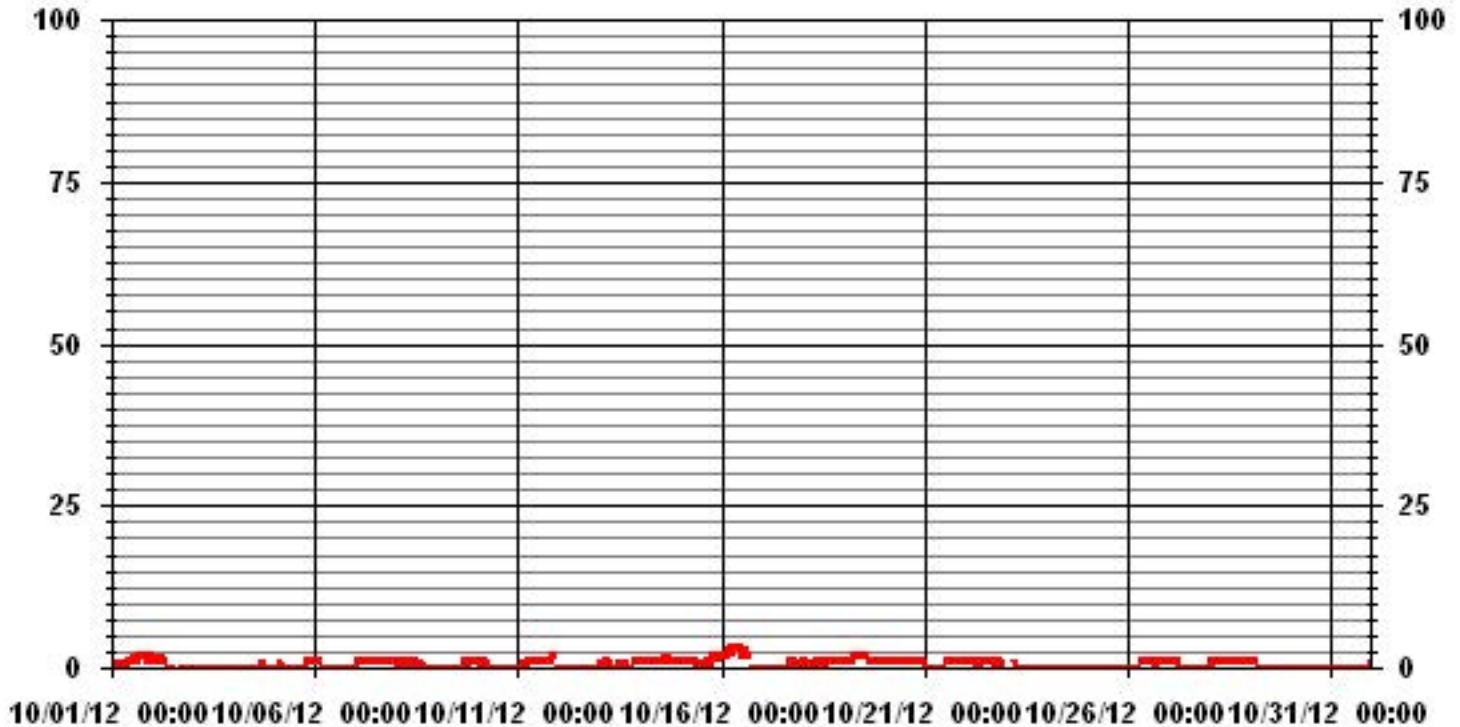
OQPVJ NI 'UWO OCTI

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	307					
MAXIMUM 1-HR AVERAGE:	3	PPB	@ HOUR(S)	VAR	ON DAY(S)	16
MAXIMUM 24-HR AVERAGE:	1.8	PPB			ON DAY(S)	16
				VAR-VARIOUS		
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	737	HRS	
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	99.1	%	
STANDARD DEVIATION:	0.65		MONTHLY AVERAGE:	0.51	PPB	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



NCMGNCPF'PF WVT['('EQO O WPK['CUUQEKVKQP 'ST.LINA

OCTOBER 2012

J [FTQI GP'UWNRJ F'G'O CZ''''''kpucpvcpgw'b czlo wo 'p'trd

MST

DAY	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	DAILY MAX.	24-HOUR AVG.	RDGS.
1	1	1	2	1	1	1	2	1	1	KU	2	2	2	3	2	1	3	2	2	2	1	2	3	2	3	1.7	24	
2	2	2	3	2	2	3	2	1	KU	0	1	1	0	E	E	E	E	0	0	0	0	1	0	0	3	1.1	24	
3	0	0	0	0	0	0	0	KU	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
4	1	0	1	1	1	0	KU	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0.8	24	
5	1	1	1	1	0	KU	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0.8	23	
6	1	1	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.3	24	
7	1	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
8	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1.0	24	
9	1	KU	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24	
10	KU	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	1	0.4	24
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	KU	0	2	1.3	24
12	0	0	0	0	0	0	0	1	0	1	1	1	1	2	1	1	1	1	1	0	1	0	1	KU	1	2	0.7	24
13	1	1	1	1	1	2	1	1	1	1	1	1	0	0	1	1	1	0	0	0	KU	1	1	1	2	0.8	24	
14	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	KU	1	1	1	2	1.3	24	
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	KU	2	2	2	2	2	2	1.2	24	
16	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	KU	1	0	0	0	0	0	3	2.2	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	1	1	1	1	1	1	1	1	0.3	24	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	KU	1	1	1	1	1	1	1	1	1	1.0	24	
19	1	2	2	2	2	2	2	2	2	2	2	2	2	2	KU	1	1	1	1	1	1	1	1	1	1	2	1.6	24
20	1	1	1	1	1	1	1	1	1	1	1	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1.0	24	
21	1	1	1	1	1	1	0	1	0	0	0	0	KU	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24	
22	1	1	1	1	1	3	3	1	1	1	1	1	KU	1	1	1	1	1	1	1	1	1	1	R	3	1.2	23	
23	R	R	R	R	R	7	0	0	1	0	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1.1	19
24	1	1	1	1	1	1	1	1	1	KU	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0.7	24
25	0	0	0	0	0	0	0	0	0	KU	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	KU	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	1	2	0.8	24
27	1	1	1	2	1	1	KU	0	0	0	0	0	1	1	0	0	0	1	1	1	1	1	1	1	0	2	0.7	24
28	1	1	1	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
29	1	1	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24
30	0	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
31	0	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	1	1	1	0.4	24
HOURLY MAX	2	2	3	3	3	5	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	3	2			
HOURLY AVG	0.8	0.8	1.0	1.0	0.9	1.0	0.8	0.8	0.8	0.7	0.8	0.8	0.8	0.9	0.8	0.8	0.9	0.9	0.8	0.7	0.8	0.9	0.8	0.8				

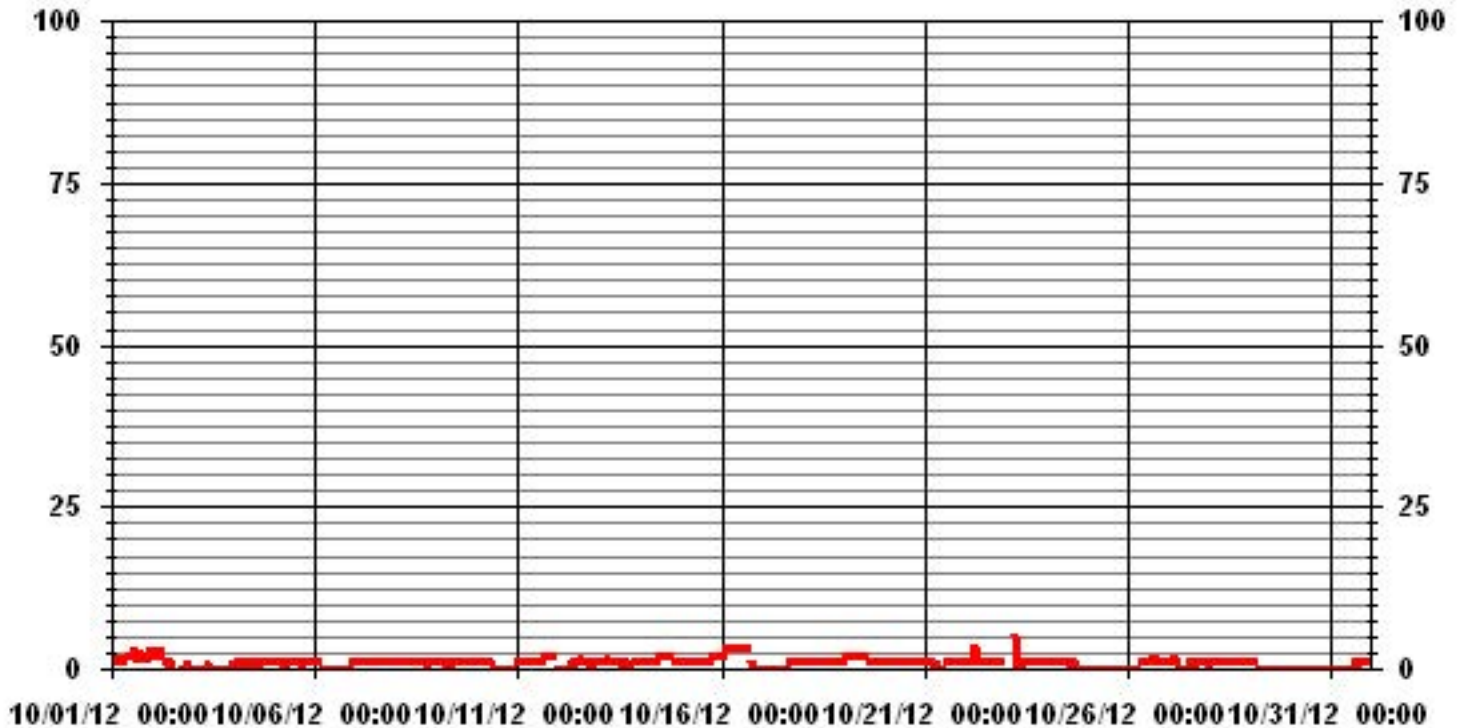
UVCVWUHNCI 'EQFGU

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

O QP VJ N['UWO OCT[

NUMBER OF NON-ZERO READINGS:	484
MAXIMUM INSTANTANEOUS VALUE:	5 PPB @ HOUR(S) 5 ON DAY(S) 23
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	737 HRS
STANDARD DEVIATION:	0.72

01 Hour Averages



LICA31
H2S_ / WDR Joint Frequency Distribution (Percent)

October 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	7.85	4.42	2.28	2.85	2.71	4.14	7.00	5.71	4.14	7.57	5.85	4.85	5.28	9.00	11.57	13.57	98.85
< 10	.00	.00	.00	.14	.00	.28	.14	.00	.00	.00	.00	.00	.14	.00	.42	.00	1.14
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	7.85	4.42	2.28	3.00	2.71	4.42	7.14	5.71	4.14	7.57	5.85	4.85	5.42	9.00	12.00	13.57	

Calm : .00 %

Total # Operational Hours : 700

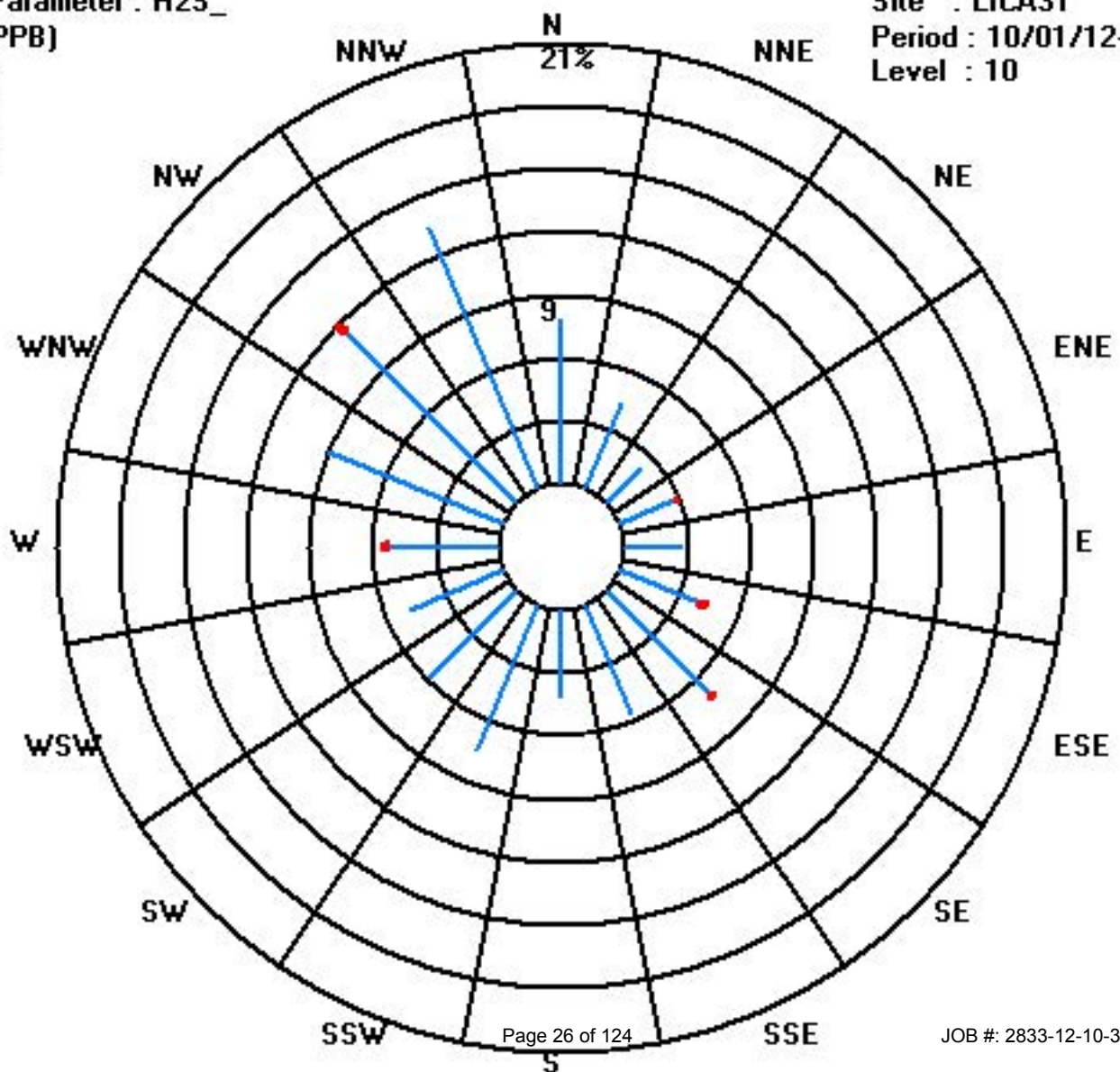
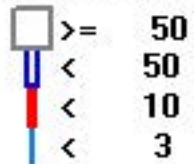
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	55	31	16	20	19	29	49	40	29	53	41	34	37	63	81	95	692
< 10				1		2	1						1		3		8
< 50																	
>= 50																	
Totals	55	31	16	21	19	31	50	40	29	53	41	34	38	63	84	95	

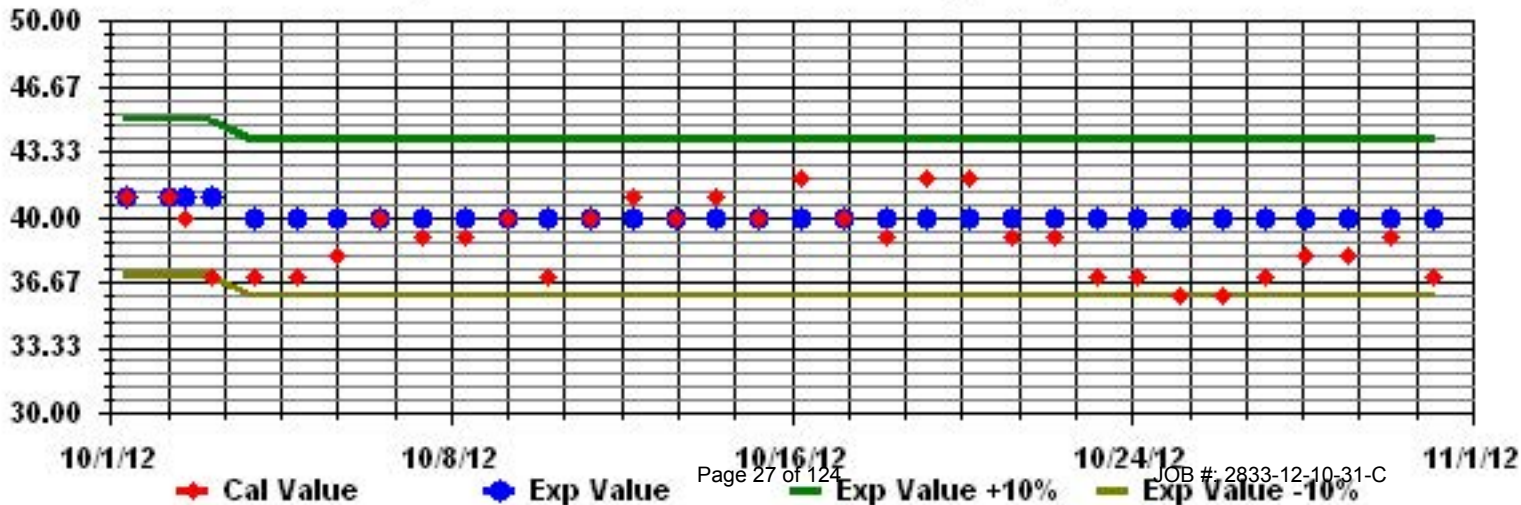
Calm : .00 %

Total # Operational Hours : 700

Class Limits (PPB)



Calibration Graph for Site: LICA31 Parameter: H2S_ Sequence: H2S Phase: SPAll



Total Hydrocarbons

NCMGNCPF 'K'FWVT[' 'EQO O WPK['CUQEKCVRQP 'UVNKP C

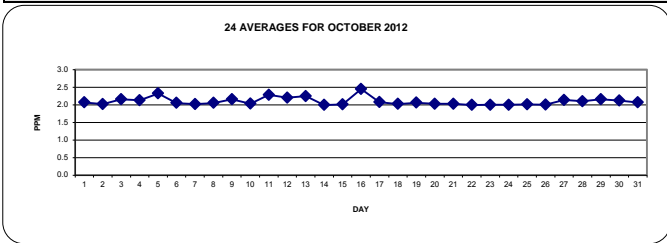
OCTOBER 2012

VQVCN'J [FTQECTDQPU hourly averages in ppm

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY	24-HOUR	RDGS.
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.		
1		2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.1	2.3	K U	2.4	2.3	2.2	2	2	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.4	2.1	24
2		1.9	2	1.9	1.9	1.9	1.9	1.9	1.9	K U	2.1	2.1	2.2	E	E	E	E	E	E	E	2.1	2.1	2.1	2.1	2.2	2.2	2.0	24	
3		2.2	2.2	2.2	2.2	2.2	2.2	2.2	K U	2.2	2.2	2.2	E	E	E	E	2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	24	
4		2.2	2.2	2.3	2.3	2.3	2.3	K U	2.2	2.2	2.1	2.1	2	2	2	2	2	2	2	2	2	2.1	2.3	2.2	2.2	2.3	2.1	24	
5		2.6	2.7	2.9	2.8	2.7	K U	2.5	2.5	2.6	2.7	2.6	2.4	2.2	2	1.9	O	2	2	2	2	2	2	2	2	2.9	2.3	23	
6		2	2	2	2	K U	2.2	2.3	2.2	2.2	2.1	2.1	2	2	2	2	2	2	2.1	2	2	2	2	2	2	2.3	2.1	24	
7		2.1	2.1	2	K U	2.1	2.1	2.1	2.2	2.1	2	2	2	2	1.9	1.9	1.9	1.9	2	2	2	2	2	2	2	2.2	2.0	24	
8		2	2	K U	2	2	2.1	2.1	2.1	2.1	2.1	2	2	2	2	2	2	2	2.1	2	2.1	2.1	2.1	2.2	2.1	2.2	2.1	24	
9		2.2	K U	2.1	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.3	2.2	2.3	2.2	24	
10		K U	2	2.3	2.3	2.1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	K U	2.3	2.0	24
11		2.8	2.8	3.1	2.6	2.4	2.5	2.3	2.1	2.1	2	2	2	2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	K U	2.1	3.1	2.3	24
12		2	2	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.4	2.3	2.4	2.4	2.4	2.4	K U	2.4	2.6	2.6	2.2	24	
13		2.7	2.6	2.4	2.3	2.4	2.5	2.3	2.2	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	K U	1.9	1.9	1.9	2.7	2.2	24
14		1.9	1.9	2	1.9	2	1.9	2	2.1	2	1.9	1.9	1.8	1.8	1.9	1.9	1.9	1.9	2	2	K U	2.2	2.3	2.3	2.4	2.4	2.0	24	
15		2.1	2.1	2.2	2.3	2.2	2.1	2.1	2.2	2.1	2	2	2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	K U	1.9	1.9	1.9	1.9	1.9	2.3	2.0	24
16		2	2.4	2.5	3	3.3	3.3	3.2	3.3	50	3.3	3	2.3	1.9	1.8	1.8	2	1.9	K U	1.9	2	2	2	2	2	50	40	24	
17		2.1	2	2	2	2	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.2	E	E	E	E	E	2	2	2	2	2	2	2.3	2.1	24	
18		2	2	2.1	2	2	2	2	2.1	2.1	2.1	2	1.9	1.9	1.9	2	K U	E	E	2	2	2.1	2.1	2.1	2.1	2.1	2.0	24	
19		2.2	2.3	2.2	2.3	2.2	2.1	2.1	2.1	2	2	2	2	2	1.9	K U	2	2	2	2	2	2	2	2	2	2	2.3	2.1	24
20		2	2.1	2.1	2.1	2.1	2.1	2	2	2.1	2	2	2	2	2	K U	2	2	2	2	2	2	2	2	2	2	2.1	2.0	24
21		2	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	K U	1.9	2	2	2	2	2	2	2	2	2	2	2	2.1	2.0	24
22		2	2	2	2	2	2	2	2.1	2.1	2.1	2.1	K U	1.9	1.9	1.9	1.9	1.9	2	2	2	2	2	2	2	R	2.1	2.0	23
23		R	R	R	R	R	2	2	2	2.1	2	K U	2.1	2	1.9	2	2	2	2	2	2	2	1.9	2	2	2	2.1	2.0	19
24		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	2.0	2.0	24
25		2	2	2	2	2	2	2	2	K U	1.9	1.9	2	2	2	2	2	2	2	2	2	2.1	2	2	2	2.3	2.3	2.0	24
26		2	2.1	2	2	2	2.4	2	K U	1.9	2	2	2	1.9	1.9	1.9	2	2	2.1	2.1	2.1	1.9	2	1.9	1.9	2.4	2.0	24	
27		2	2.1	2	2	2	2	K U	2.2	2.2	2.1	2.1	2.1	2	2	2	2	2	2.1	2.1	2.3	2.3	2.4	2.6	2.5	2.6	2.1	24	
28		2.4	2.3	2.2	2.2	2.2	K U	2	2	2	2	2	2	2	2	2	2	2	2	2	2.1	2.1	2.1	2.3	2.2	2.4	2.1	24	
29		2.2	2.1	2.2	2.1	K U	2.1	2.5	2.8	2.6	2.5	2.3	2.1	2.1	2	2	2	2	2	2	2	2	2	2	2	2.8	2.2	24	
30		2.1	2.2	2.1	K U	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	E	2	2	2	2	2	2	2.3	2.1	24	
31		2	2	K U	2	2	2	2	2.1	2.2	2.1	2	2	2	2	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24	
HOURLY MAX		2.8	2.8	3.1	3.0	3.3	3.3	3.2	3.3	3.5	3.3	3.0	2.4	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.4	2.4	2.4	2.6	2.6				
HOURLY AVG		2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.1		

UVCVWUHNCI 'EQFGU

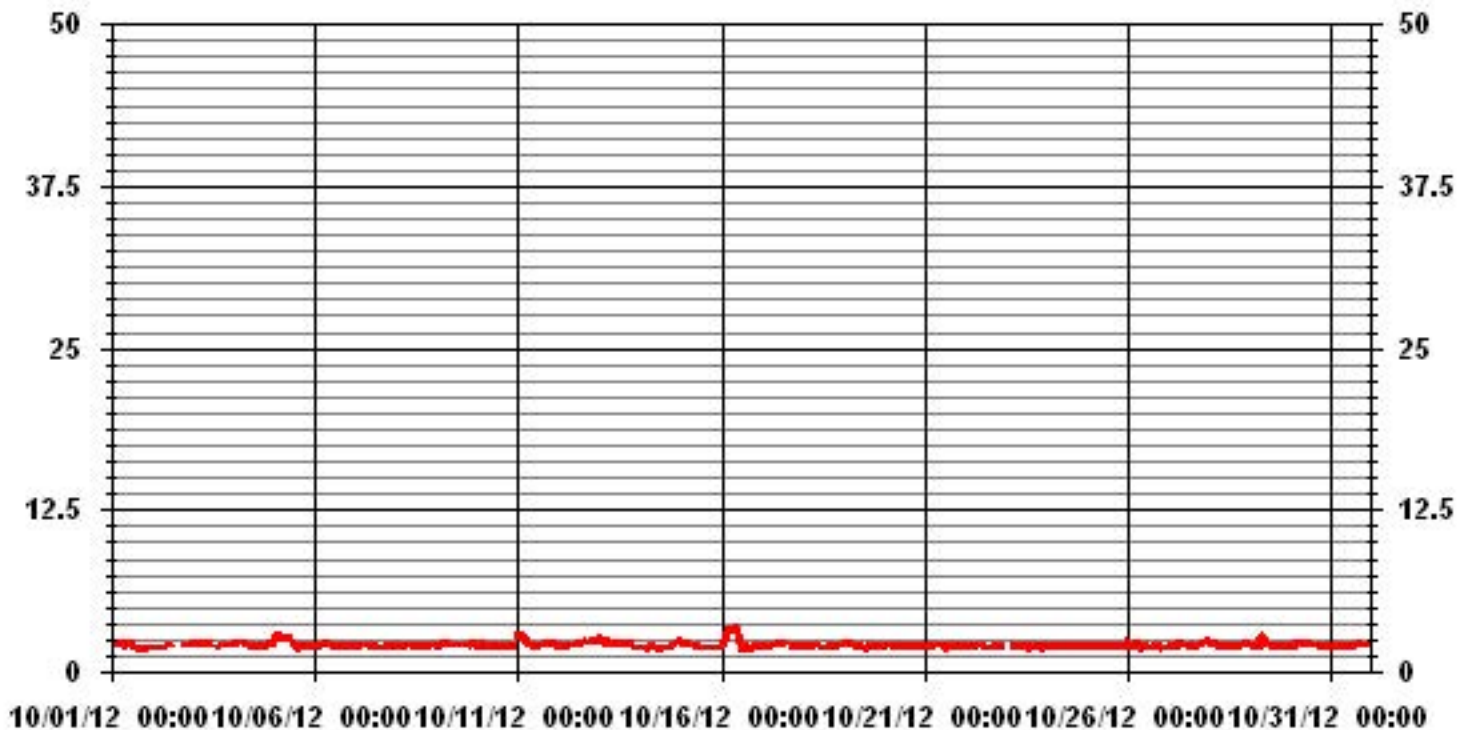
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



OQPVI N 'UWO OCTI

NUMBER OF NON-ZERO READINGS:	688
MAXIMUM 1-HR AVERAGE:	3.5 PPM @ HOUR(S) 8 ON DAY(S) 16
MAXIMUM 24-HR AVERAGE:	2.5 PPM ON DAY(S) 16
	VAR- VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	18 HRS
STANDARD DEVIATION:	0.21
OPERATIONAL TIME:	737 HRS
AMD OPERATION UPTIME:	99.1 %
MONTHLY AVERAGE:	2.10 PPM

01 Hour Averages



NCMGNCPF'PFWVT['('EQOOWPK['CUQEKVKQP/'ST. LINA

OCTOBER 2014

VQVCNJ[FTQECTDQPU'O CZ instantaneous maximum in ppm

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.4	K U	2.5	2.4	2.3	2	2	2	1.9	1.9	1.8	1.8	2	2	2	2	2.5	2.1	24	
2	2	2.9	1.9	2	1.9	1.9	2	1.9	K U	2.2	2.2	2.3	E	E	E	E	E	E	E	2.1	2.1	2.2	2.2	2.2	2.9	2.1	24	
3	2.2	2.2	2.4	2.7	2.3	2.2	2.3	K U	2.4	2.2	2.2	E	E	E	E	2.3	2.5	4.4	2.3	2.1	2.3	2.2	2.2	2.2	4.4	2.4	24	
4	2.2	2.3	2.3	2.3	2.3	2.3	K U	2.3	2.2	2.2	2.1	2.1	2	2	2.1	2	2	2	2.3	2.6	4.2	2.8	2.5	2.3	4.2	2.3	24	
5	2.8	2.8	3.1	3	3	K U	2.7	2.5	2.6	2.7	2.7	2.5	2.4	2.1	1.9	O	2.1	2	2	2	2	2	2	2	3.1	2.4	23	
6	2	2	2	2.1	K U	2.3	2.4	2.5	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.9	2.6	2	2.1	2	2.1	2.1	2.9	2.2	24	
7	2.1	2.1	2.1	K U	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2	2	2	2	2	2	2.1	2	2	2.1	2	2.2	2.1	24	
8	2	2	K U	2.1	2.1	2.3	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.3	2.9	2.5	2.9	2.2	24	
9	2.5	K U	2.1	2.4	2.6	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.5	2.3	3.1	2.6	2.6	2.9	2.6	2.9	2.5	3.1	2.5	24	
10	K U	2.1	2.6	2.6	2.2	2	2	2	2	2	2	2	2	2	2	2.1	2.2	2.1	2	2.1	2.1	2.1	2.1	K U	2.6	2.1	24	
11	6.3	4.9	10.5	4.9	5.3	6.8	3.9	2.3	2.2	2.1	2.1	2	2.1	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.3	2.3	K U	2.1	10.5	3.4	24	
12	2.1	2	2	2	2	2.1	2.6	2.3	2.1	2.1	2.4	2.5	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	K U	2.5	2.7	2.7	2.3	24	
13	2.8	2.8	2.5	2.4	2.5	3.6	2.4	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.2	K U	2	2	2.4	3.6	2.4	24	
14	2	2	2	2.1	2	2	2.1	2.1	2.1	2	1.9	1.9	1.8	1.9	1.9	1.9	2	2	2.1	K U	2.3	2.3	3208	7	3208	2.6	24	
15	2.2	2.1	2.2	2.4	2.4	2.2	2.2	2.2	2.2	2.1	2	2.1	2.2	2	2.9	2.1	2	2.1	K U	1.9	1.9	1.9	1.9	1.9	1.9	2.9	2.1	24
16	2.3	2.4	2.7	3.3	3.5	3.6	3.4	3.5	3.5	3.4	3.8	3	2.4	2	1.9	2.5	2.1	K U	2.1	2.1	2.1	2.7	2.1	2.2	3.8	2.7	24	
17	2.5	2.2	2.2	2.2	2.3	2.6	2.5	2.2	2.2	2.4	2.5	2.3	2.9	2.3	E	E	K U	E	E	E	2.4	2.1	2.2	2	2	2.9	2.3	24
18	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2	2	2	2	0	K U	E	E	E	2.1	2.2	2.2	2.2	2.1	2.2	2.0	24	
19	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2	2	2	2	2	K U	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.3	2.1	24	
20	2.1	2.2	2.1	2.5	2.3	3.2	2.3	2.9	2.2	2.2	2.2	2.1	K U	2	2	2.2	2.1	2.3	2.1	2.2	2.2	2.2	2.1	3.2	2.3	24		
21	2.1	2.1	2.1	2.3	2.1	2.1	2.1	2.1	2.4	2.1	2.2	2.1	K U	2	2	2.1	2.1	2	2.1	2.1	2	2.1	2.1	2.2	2.4	2.1	24	
22	2.2	2.3	2.2	2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	K U	2	2	2	2	2	2.1	2	2.2	2.5	2	2.5	R	2.5	2.1	23	
23	R	R	R	R	R	2.1	2.1	2	2.1	2.1	K U	2.2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.2	2.0	19
24	2	2	2	2	2	2	2	2	2	K U	2	2	2	2	2	2	2	2	2.1	2.1	2.5	2.3	2.3	2.1	2.5	2.1	24	
25	2	2.1	3	2.3	2.2	2.1	2.1	2.1	K U	2.4	2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.5	2.4	2.4	2.4	3.5	3.5	3.5	2.3	24	
26	2.1	2.7	2.5	2.4	2.6	4.5	3.2	K U	2.2	2.6	2.4	2.6	2.4	2.5	2.3	2.6	2.6	3.6	2.7	4.2	2.7	3.1	2	2.7	4.5	2.7	24	
27	2.4	3.1	2.5	2	2	2	K U	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.6	2.7	2.6	3.1	2.3	24	
28	2.5	2.4	2.3	2.3	2.2	K U	2.1	2	2	2	2	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	4	2.9	3.1	4	2.3	24
29	3	2.1	4.3	3.6	K U	2.2	2.8	3.2	3	2.7	2.5	2.2	2.2	2.2	2.2	2.1	2	2	2.1	2	2	2.4	2.4	4.3	2.5	24		
30	2.1	2.5	2.4	K U	2.7	2.5	2.4	2.3	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	E	E	2.4	2	2	2	2	2	2.7	2.3	24	
31	2.2	2	K U	2.3	2	2.1	3	2.5	2.5	2.3	2.2	2.1	2.3	2.1	2.4	2.1	2.3	2.3	2.2	2.1	2.1	2.2	2.2	2.3	3	2.3	24	
HOURLY MAX	6.3	4.9	10.5	4.9	5.3	6.8	3.9	3.5	3.5	3.4	3.8	3.0	2.9	2.5	2.9	2.6	2.6	4.4	2.7	4.2	4.2	4.0	10.6	7.0				
HOURLY AVG	2.4	2.4	2.7	2.5	2.4	2.5	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.2	2.1	2.3	2.2	2.2	2.3	2.3	2.6	2.5				

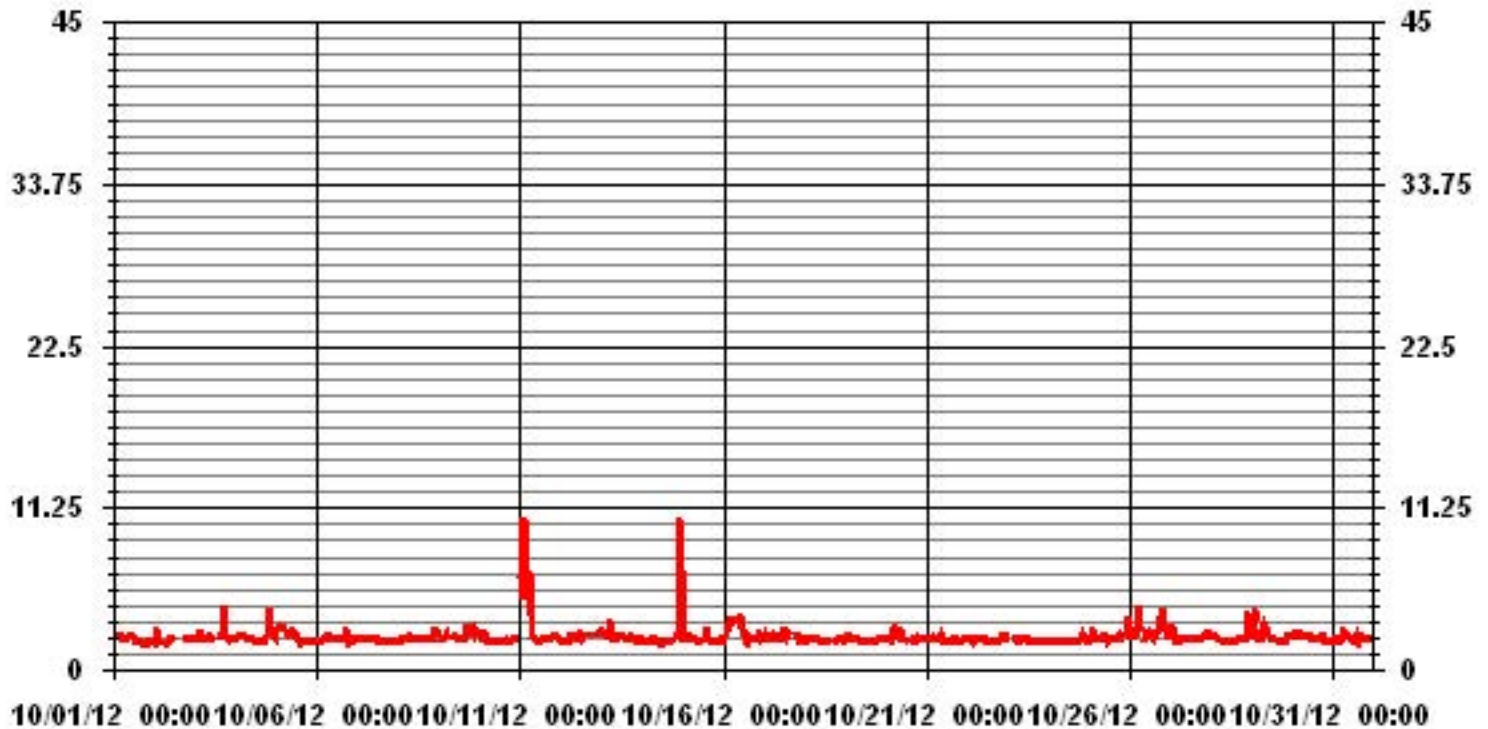
UVCVWUHNCI 'EQFGU

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		

OQPVJ N['UWO O CT[

NUMBER OF NON-ZERO READINGS:	684					
MAXIMUM INSTANTANEOUS VALUE:	10.6	PPM	@ HOUR(S)	22	ON DAY(S)	14
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	737	HRS	
MONTHLY CALIBRATION TIME:	20	HRS				
STANDARD DEVIATION:	0.67					

01 Hour Averages



LICA31
 THC / WDR Joint Frequency Distribution (Percent)

October 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	7.84	4.36	2.32	2.90	2.76	4.21	6.83	5.81	3.92	7.70	5.95	4.94	5.37	9.15	11.19	13.37	98.69
< 10.0	.00	.00	.00	.14	.00	.29	.43	.00	.00	.00	.00	.00	.14	.00	.14	.14	1.30
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	7.84	4.36	2.32	3.05	2.76	4.50	7.26	5.81	3.92	7.70	5.95	4.94	5.52	9.15	11.33	13.51	

Calm : .00 %

Total # Operational Hours : 688

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	54	30	16	20	19	29	47	40	27	53	41	34	37	63	77	92	679
< 10.0				1		2	3						1		1	1	9
< 50.0																	
>= 50.0																	
Totals	54	30	16	21	19	31	50	40	27	53	41	34	38	63	78	93	

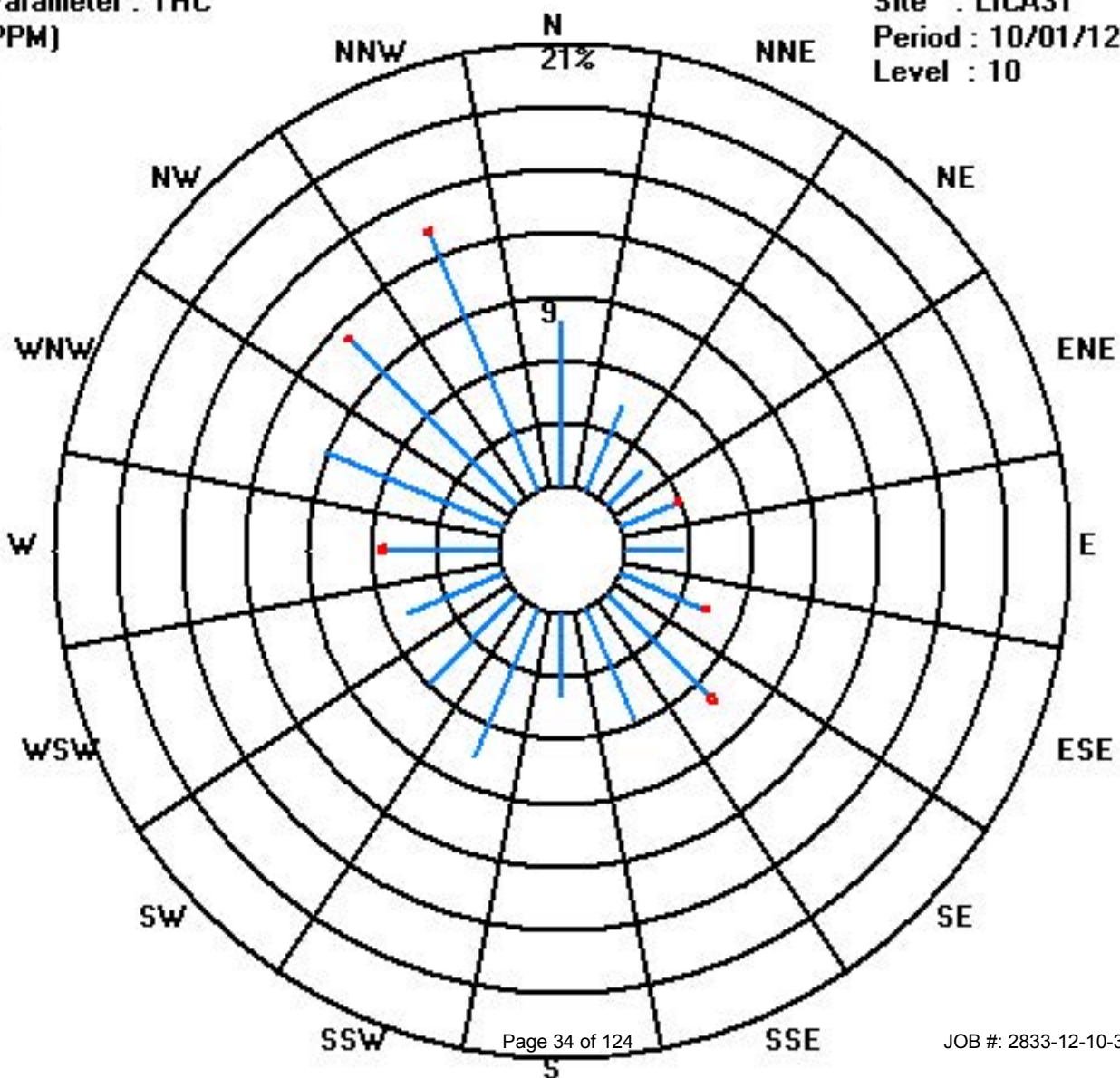
Calm : .00 %

Total # Operational Hours : 688

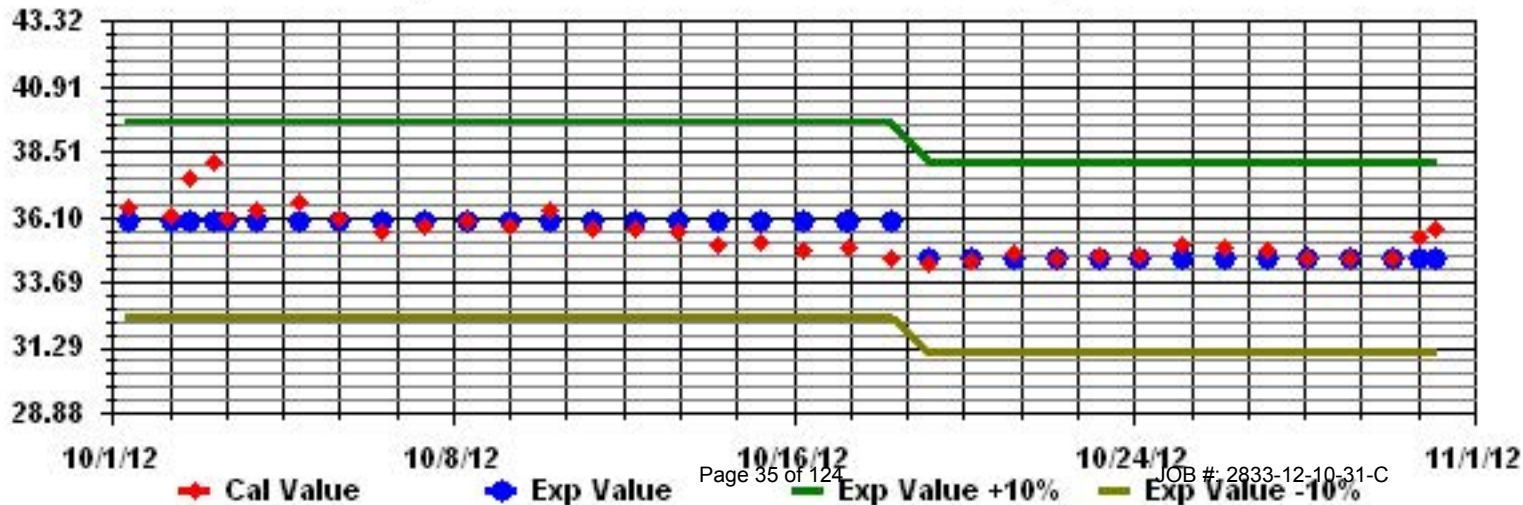
Class Limits (PPM)

Period : 10/01/12-10/31/12

Level : 10



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



Ozone

NCMGNCPF'PFWVT['('EQ O WPW['CUUQEKVQP/'ST. LINA

OCTOBER 2012

Q\ QPG'*Q5+ hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.		
DAY																												
1	30	29	27	27	28	28	31	33	31	K U	33	30	30	30	28	32	37	37	33	29	29	25	22	20	37	29.5	24	
2	18	18	19	19	22	24	23	28	K U	28	24	21	23	25	24	24	23	22	22	22	21	21	19	16	28	22.0	24	
3	14	14	14	14	14	14	16	K U	14	15	15	17	17	O	21	22	22	22	21	20	21	21	18	16	22	17.4	23	
4	14	15	14	13	13	13	K U	12	E	E	E	E	E	E	E	30	29	28	27	27	26	20	23	23	30	20.4	24	
5	21	20	17	13	18	K U	16	15	14	E	E	E	E	E	E	E	31	31	30	29	28	28	28	27	31	22.9	24	
6	26	25	24	23	K U	20	21	22	22	24	29	32	35	37	36	36	35	34	35	35	34	31	29	29	37	29.3	24	
7	27	24	24	K U	24	22	19	18	20	22	24	24	25	26	28	29	30	30	31	32	32	32	32	32	32	32	26.4	24
8	32	32	K U	30	29	28	28	28	28	29	29	30	31	30	31	32	33	31	32	32	31	30	30	29	33	52.0	24	
9	29	K U	27	28	28	23	23	21	21	25	29	30	30	31	31	32	31	31	29	30	31	28	25	26	32	27.8	24	
10	K U	23	21	21	21	21	22	22	22	22	23	23	24	25	27	27	29	31	31	31	31	31	31	K U	31	25.4	24	
11	32	31	31	31	29	28	29	26	26	30	31	31	31	31	31	30	29	29	27	25	23	K U	20	32	28.8	24		
12	19	18	18	17	16	14	15	12	14	15	15	14	13	12	12	12	12	13	12	11	11	K U	10	8	19	13.6	24	
13	6	5	2	1	0	0	0	3	4	5	6	6	6	7	10	12	13	11	11	11	K U	34	34	31	34	9.5	24	
14	29	26	25	25	24	22	21	20	20	23	29	34	36	34	37	37	35	33	31	K U	27	26	25	23	37	27.9	24	
15	22	23	21	18	16	15	13	13	16	22	28	34	41	41	41	39	38	K U	35	36	36	35	36	63	28.7	24		
16	35	30	27	26	25	23	22	20	19	21	23	29	36	38	36	34	32	K U	32	33	32	32	32	32	38	29.1	24	
17	32	33	34	34	34	34	31	26	20	16	16	14	13	14	12	12	K U	15	15	16	17	17	20	20	34	21.5	24	
18	21	21	16	15	16	17	16	13	13	17	25	29	31	33	35	K U	35	33	32	31	30	30	29	28	35	24.6	24	
19	27	25	24	22	22	21	21	19	18	18	19	19	19	19	K U	18	17	17	16	15	14	13	11	10	27	18.4	24	
20	10	10	9	10	13	16	18	19	19	19	19	18	17	K U	14	13	12	11	10	10	10	9	10	11	19	13.3	24	
21	13	15	17	18	19	21	22	22	22	23	23	23	K U	23	23	23	22	22	21	21	21	20	19	21	23	20.6	24	
22	23	23	23	23	23	23	22	20	18	21	21	K U	23	23	23	24	24	23	23	24	24	24	23	R	24	22.6	23	
23	R	R	R	R	R	22	20	21	19	22	K U	21	22	23	23	23	23	22	21	20	21	21	21	20	23	21.4	19	
24	19	18	19	20	19	19	20	20	21	K U	19	20	20	20	21	20	19	19	17	17	18	18	16	15	21	18.9	24	
25	15	15	16	18	17	17	17	17	K U	19	19	18	18	20	21	22	23	23	22	22	22	23	22	23	23	19.5	24	
26	22	22	22	22	21	19	19	K U	21	22	24	26	27	26	26	25	24	24	24	23	23	23	22	24	27	23.1	24	
27	21	19	20	18	19	18	K U	18	18	20	21	22	25	25	26	26	27	26	25	24	24	23	21	22	27	22.1	24	
28	22	22	23	23	23	K U	25	25	25	25	25	25	25	25	26	26	26	26	26	25	24	24	23	23	23	26	24.3	24
29	23	22	21	21	K U	19	17	15	16	16	18	20	21	22	21	21	20	19	20	19	18	18	17	16	23	19.1	24	
30	16	16	16	K U	14	13	12	15	14	15	16	15	15	16	17	17	17	18	20	22	21	21	22	22	22	17.0	24	
31	23	23	K U	25	25	24	24	24	22	24	25	25	25	26	25	24	23	22	22	22	22	21	22	22	26	23.5	24	
HOURLY MAX	35	33	34	34	34	34	31	33	31	30	33	34	41	41	41	41	39	38	35	35	36	36	35	36				
HOURLY AVG	22.1	21.3	20.4	20.5	20.4	19.9	20.1	19.6	19.2	20.7	22.4	23.2	24.3	25.3	25.2	25.0	25.8	24.7	24.0	23.8	24.1	24.1	23.0	22.2				

UVCVW'HNCI 'EQFGU

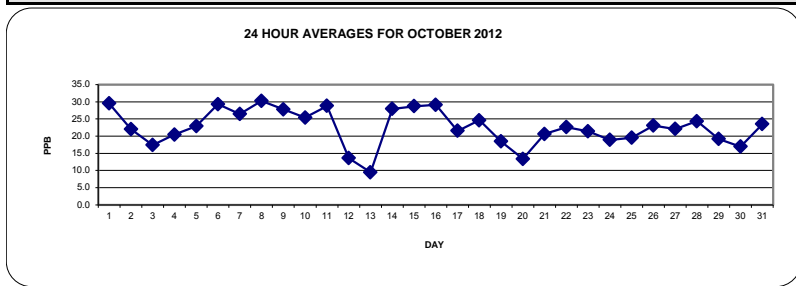
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

QDLGEVKG'NIO W<

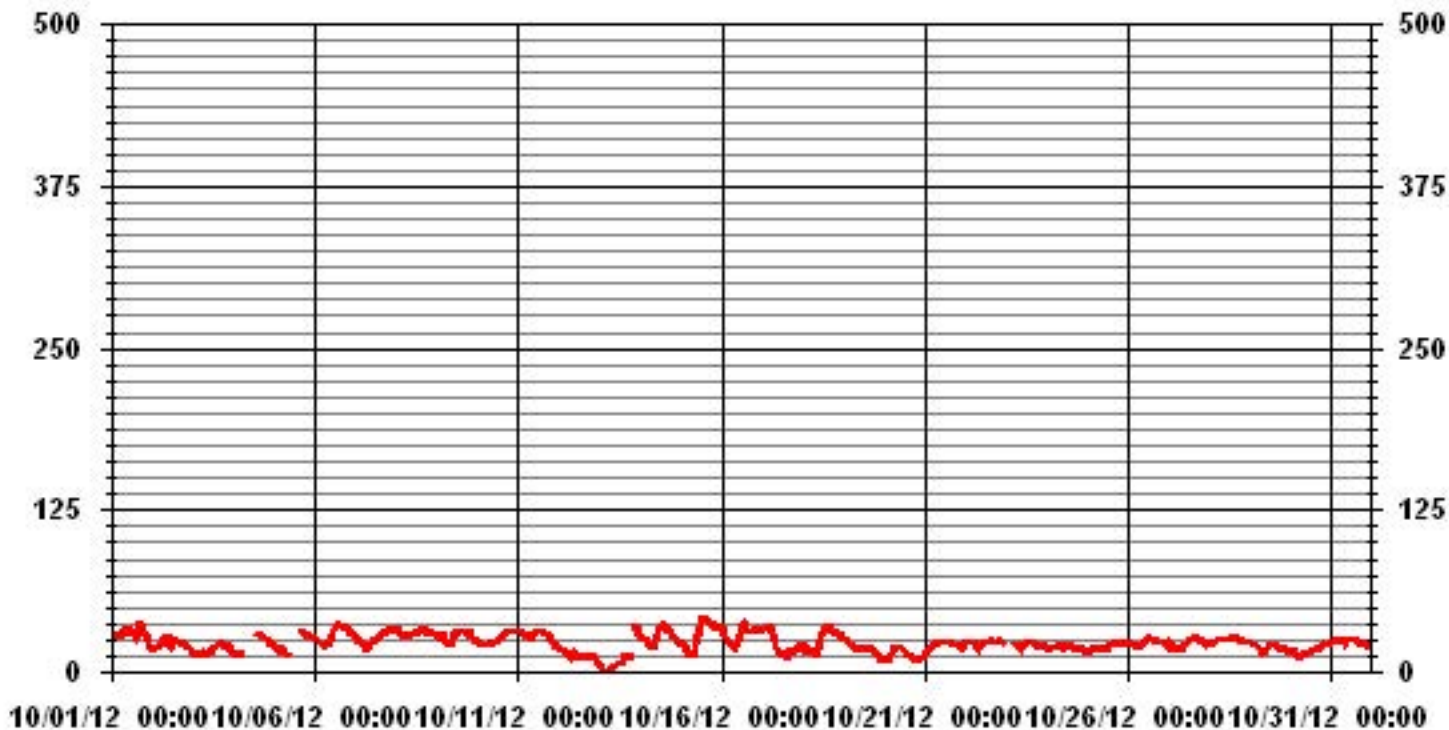
CNDGTVC'GPXW'QPO GPV< 1-HR 82 PPB

O QPVJN['UWO OCT[

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	688				
MAXIMUM 1-HR AVERAGE:	41	PPB	@ HOUR(S)	VAR	ON DAY(S) 15
MAXIMUM 24-HR AVERAGE:	30.2	PPB			ON DAY(S) 8
					VAR-VARIOUS
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	737	HRS
MONTHLY CALIBRATION TIME:	14	HRS	AMD OPERATION UPTIME:	99.1	%
STANDARD DEVIATION:	6.99		MONTHLY AVERAGE:	22.6	PPB



01 Hour Averages



NCMGNCPF 'PF WVT[(' 'EQO O WP KW['CUQEKVKQP /)'ST. LINA

OCTOBER 2012

Q\ QPG O CZ instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	32	29	29	28	30	31	33	35	32	K U	35	31	31	31	31	35	38	38	36	31	30	27	24	21	38	31.2	24	
2	20	20	20	20	23	25	25	30	K U	29	27	22	25	26	25	26	23	23	23	23	22	21	20	17	30	23.4	24	
3	15	14	14	15	15	15	17	K U	16	16	16	17	19	O	O	23	23	23	24	22	21	21	21	18	24	18.3	22	
4	16	16	15	14	14	14	K U	14	E	E	E	E	E	E	E	31	31	30	29	28	29	22	24	24	31	21.9	24	
5	22	21	21	17	19	K U	17	29	28	E	E	E	E	E	E	E	E	31	31	29	29	28	28	28	31	25.2	24	
6	26	26	25	24	K U	21	22	22	23	26	30	34	37	38	37	36	35	35	36	36	35	32	30	29	38	30.2	24	
7	29	25	25	K U	24	23	20	19	20	23	25	25	25	27	29	29	31	30	32	32	33	33	33	33	33	33	27.2	24
8	33	32	K U	30	30	29	28	28	29	29	29	32	32	32	31	33	34	32	33	33	32	31	30	30	34	31.0	24	
9	30	K U	28	29	29	26	25	22	23	27	31	31	31	31	33	33	32	31	31	32	32	32	25	27	33	29.2	24	
10	K U	25	23	22	23	22	24	23	23	23	23	24	25	27	27	29	31	32	32	32	32	32	32	K U	32	26.6	24	
11	32	32	32	31	30	29	30	29	28	33	33	32	32	32	32	31	30	29	29	28	26	24	K U	20	33	29.7	24	
12	20	19	18	17	16	15	16	14	15	16	16	15	14	14	12	12	13	14	12	12	11	K U	10	9	20	14.3	24	
13	7	6	4	1	0	0	P	4	4	5	7	6	6	9	12	14	14	13	11	12	K U	35	35	33	35	10.8	23	
14	30	29	26	26	25	23	22	21	22	25	32	36	37	35	37	37	36	34	32	K U	28	26	25	25	37	29.1	24	
15	23	24	22	21	17	16	15	14	19	26	31	40	64	64	41	41	41	38	K U	36	37	37	36	36	64	30.2	24	
16	37	31	29	26	26	24	22	22	20	22	25	33	37	38	38	35	33	K U	32	33	33	32	32	32	38	30.1	24	
17	33	34	35	34	35	35	32	29	27	16	16	14	13	14	14	13	K U	16	16	17	18	18	21	21	35	22.7	24	
18	22	23	19	18	17	18	17	15	16	21	27	30	32	35	35	K U	35	34	32	32	31	30	29	29	35	26.0	24	
19	28	25	24	22	22	21	21	20	19	19	19	19	19	19	K U	19	18	18	16	16	15	15	13	11	28	19.0	24	
20	10	11	11	12	14	17	20	20	20	20	20	19	18	K U	14	13	12	12	11	10	11	10	10	11	20	14.1	24	
21	14	16	17	19	20	21	22	23	23	23	23	23	K U	23	23	23	23	22	22	21	21	21	22	22	23	21.2	24	
22	23	23	24	23	23	23	23	21	20	21	22	K U	24	24	24	25	24	24	23	24	24	24	24	R	25	23.2	23	
23	R	R	R	R	R	23	21	22	20	23	K U	22	23	23	23	23	23	23	21	21	22	22	21	20	23	22.0	19	
24	19	19	20	20	20	20	20	21	K U	20	20	20	20	21	21	20	20	18	18	18	18	17	15	21	19.3	24		
25	16	15	18	18	17	18	18	18	K U	20	20	19	19	21	21	23	23	24	23	22	23	23	23	23	24	20.2	24	
26	23	22	22	22	21	20	20	K U	22	24	26	28	29	27	26	26	25	24	24	24	24	24	24	23	27	29	24.0	24
27	23	20	21	19	21	20	K U	18	18	21	22	24	26	26	27	27	27	27	26	24	24	24	22	22	27	23.0	24	
28	23	22	23	24	23	K U	25	25	25	25	25	25	25	26	26	26	26	26	25	25	24	24	24	24	26	24.6	24	
29	23	23	22	22	K U	20	19	16	16	17	19	21	22	22	22	21	20	20	20	20	19	18	18	17	23	19.9	24	
30	17	17	16	K U	15	14	15	16	15	16	16	16	15	16	17	18	18	18	22	22	22	21	22	23	23	17.7	24	
31	23	24	K U	25	25	25	25	25	23	25	25	25	26	26	25	25	24	22	23	23	22	21	22	22	26	24.0	24	
HOURLY MAX	37	34	35	34	35	35	33	35	32	33	35	40	42	42	41	41	41	38	36	36	37	37	36	36				
HOURLY AVG	23.1	22.2	21.5	21.4	21.2	21.0	21.9	21.2	21.0	21.9	23.5	24.4	25.1	26.1	26.0	25.8	26.4	25.4	24.8	24.6	24.9	24.9	23.9	23.1				

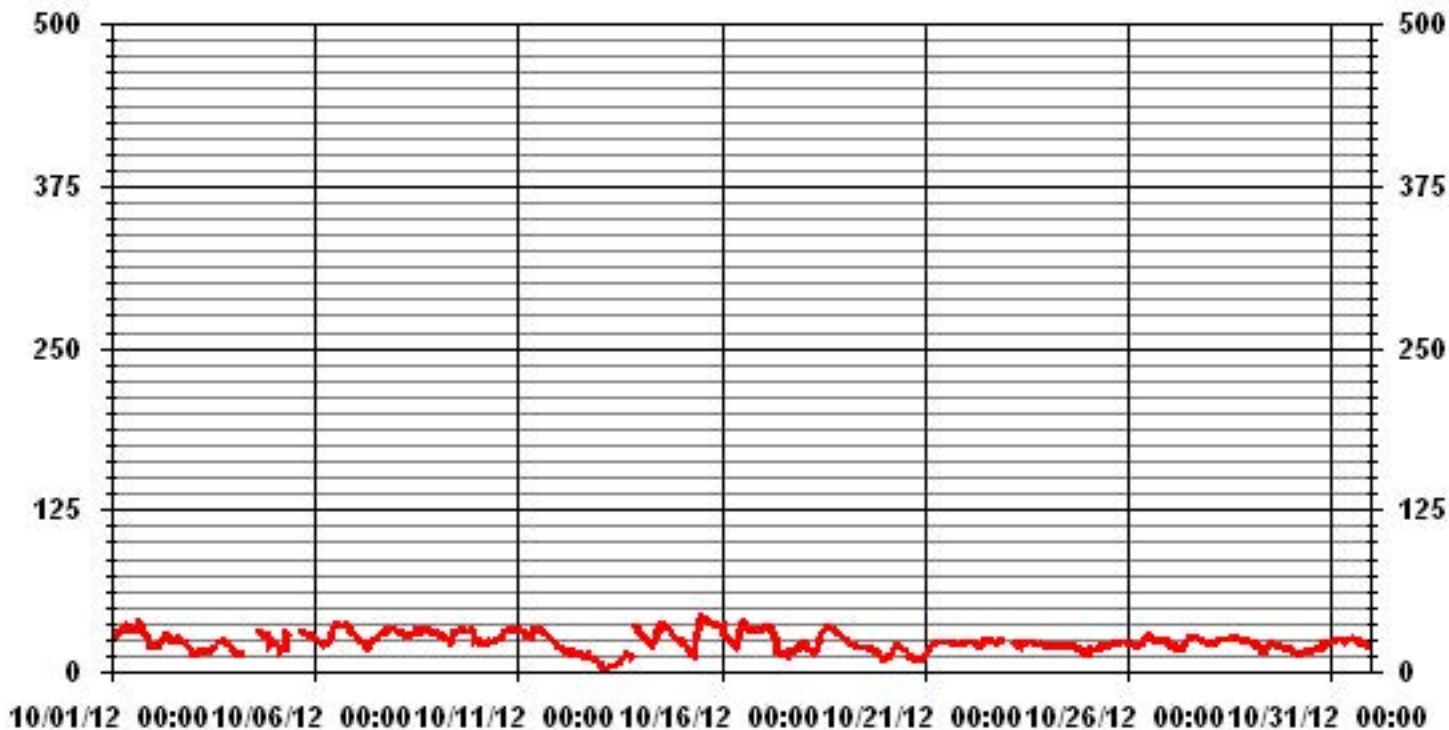
UVCVW'HNCI 'EQFGU

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

O QP VJ N['UWO O CT[

NUMBER OF NON-ZERO READINGS:	686
MAXIMUM INSTANTANEOUS VALUE:	42 PPB @ HOUR(S) 12,13 ON DAY(S) 15
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	15 HRS
OPERATIONAL TIME:	735 HRS
STANDARD DEVIATION:	7.00

01 Hour Averages



LICA31
 O3_ / WDR Joint Frequency Distribution (Percent)

October 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	8.53	4.63	2.31	3.03	2.74	4.48	7.23	5.78	4.19	6.94	5.20	4.77	5.35	8.97	12.01	13.74	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	8.53	4.63	2.31	3.03	2.74	4.48	7.23	5.78	4.19	6.94	5.20	4.77	5.35	8.97	12.01	13.74	

Calm : .00 %

Total # Operational Hours : 691

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	59	32	16	21	19	31	50	40	29	48	36	33	37	62	83	95	691
< 110																	
< 210																	
>= 210																	
Totals	59	32	16	21	19	31	50	40	29	48	36	33	37	62	83	95	

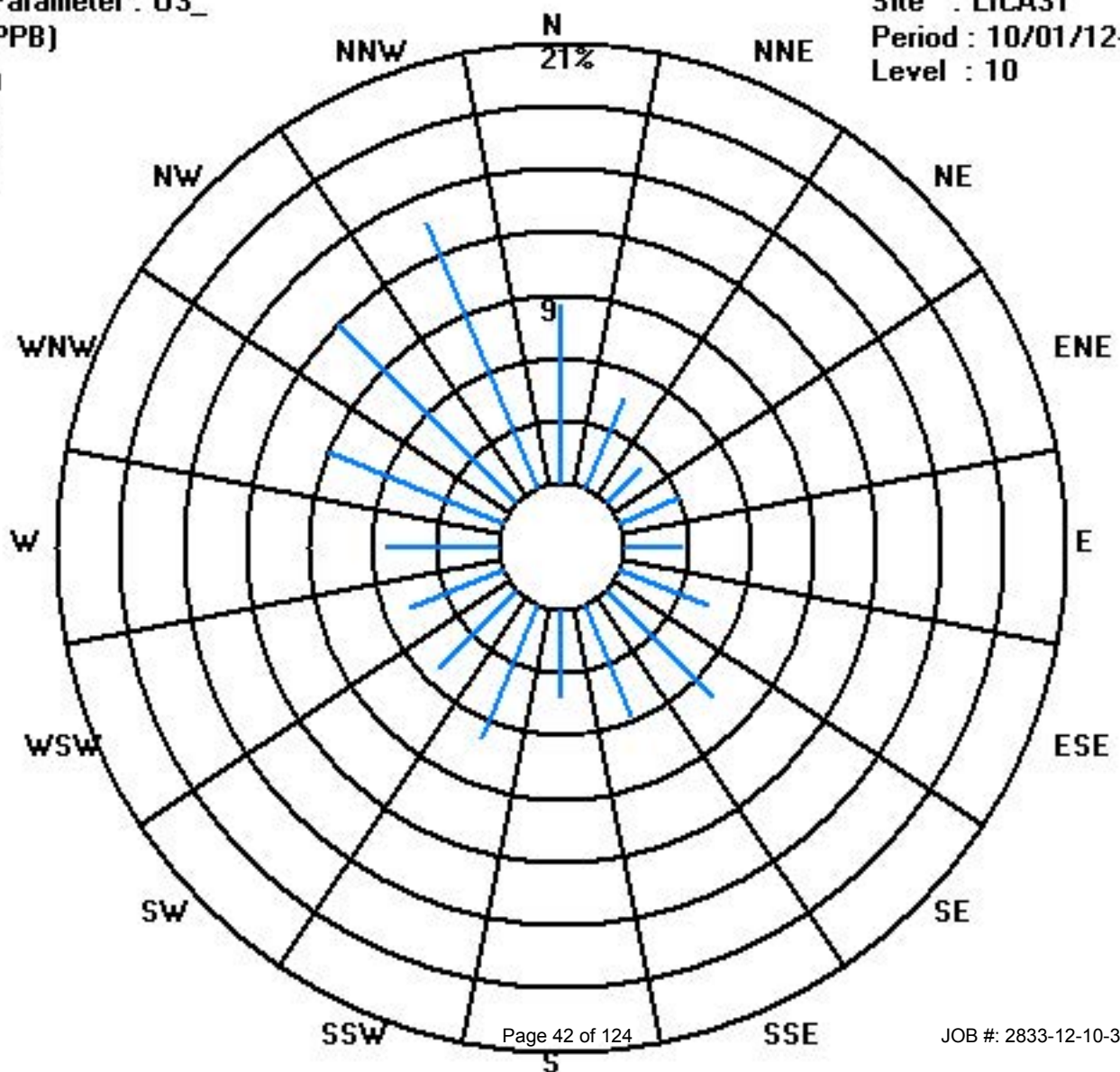
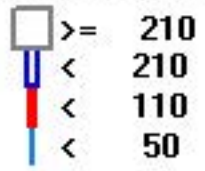
Calm : .00 %

Total # Operational Hours : 691

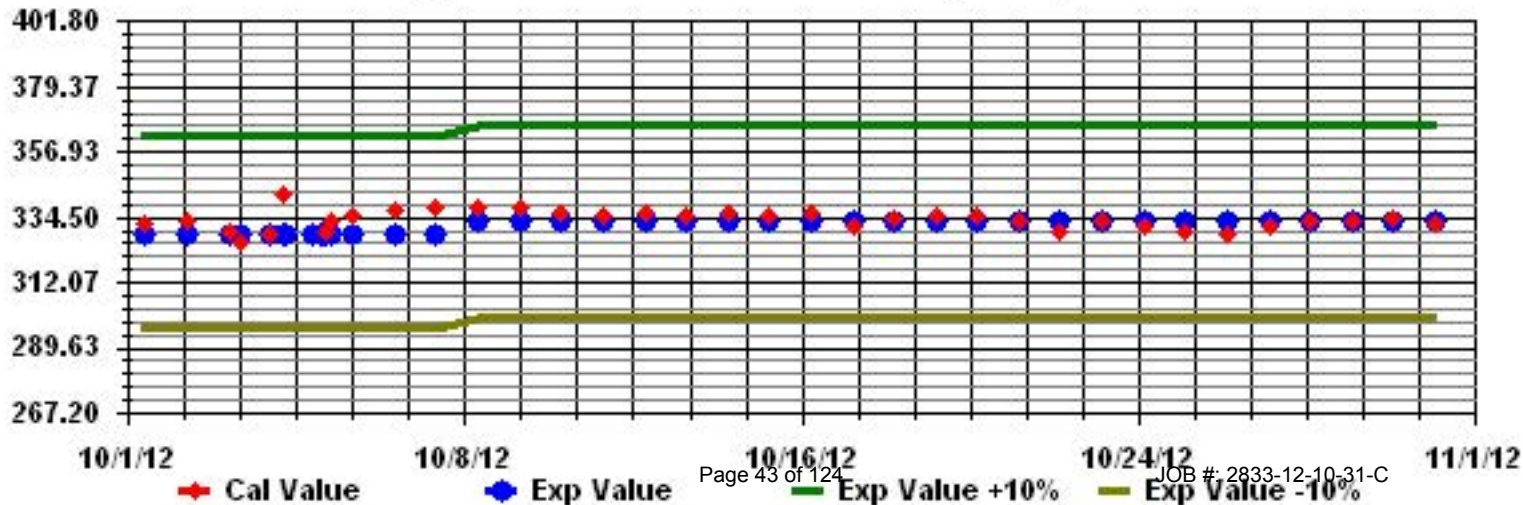
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



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



Nitrogen Dioxide

NCMGNCPF'KFWVT['('EQO O WPK['CUUQEKVKQP''UVONPC
OCTOBER 2012
PKWTQI GP'FQZKFG hourly averages in ppb

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	23:00	DAILY 24-HOUR	RDGS.
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	
1		1	1	2	2	2	2	2	1	2	KU	3	3	2	1	2	2	1	0	0	0	0	0	0	0	3	1.3	24
2		0	0	0	0	0	0	0	0	KU	0	1	1	E	E	E	E	E	E	E	0	0	1	1	1	1	0.3	24
3		1	0	1	0	0	1	1	KU	1	1	1	0	1	1	0	0	0	0	1	0	0	0	1	2	2	0.6	24
4		2	1	2	2	2	2	KU	2	2	3	2	1	1	0	1	1	1	1	2	1	1	2	2	1	3	1.5	24
5		2	3	3	2	2	KU	2	2	2	2	2	2	1	2	2	O	1	1	2	1	1	1	1	2	3	1.8	23
6		2	2	2	3	KU	3	3	3	2	1	1	1	1	1	0	0	0	1	1	1	1	2	1	1	3	1.4	24
7		2	3	2	KU	3	3	3	3	3	2	1	1	1	1	0	0	0	1	0	0	0	0	0	3	1.3	24	
8		0	0	KU	1	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	0	1	1	1	1	1	0.4	24
9		0	KU	1	1	1	2	1	2	1	1	1	1	1	1	0	1	1	1	1	1	2	2	1	1	2	1.1	24
10		KU	2	2	3	2	1	1	2	2	1	0	1	0	1	1	1	1	0	1	0	0	0	0	KU	3	1.0	24
11		0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	KU	1	2	1.0	24
12		1	1	1	1	2	3	2	3	2	1	2	2	2	3	3	3	4	3	3	2	3	KU	2	3	4	2.3	24
13		4	6	9	34	11	11	11	7	3	3	3	4	4	4	4	4	5	5	7	7	KU	1	2	2	34	70B	24
14		2	2	2	1	1	2	4	5	4	3	1	2	1	2	2	1	2	2	2	KU	3	2	2	2	5	2.2	24
15		2	2	2	3	3	3	3	3	3	3	2	2	1	0	0	1	1	1	KU	2	1	2	2	1	3	1.9	24
16		1	3	3	3	3	3	3	3	3	3	2	2	1	1	1	1	1	KU	0	1	1	1	1	1	3	1.8	24
17		1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	KU	0	1	1	1	1	1	1	1	0.9	24
18		1	1	1	2	3	3	3	5	6	4	3	2	1	2	1	KU	1	1	1	1	2	2	2	2	6	2.2	24
19		2	2	2	2	2	2	2	2	2	2	1	2	1	1	KU	1	1	2	2	2	2	2	2	2	2	1.8	24
20		2	3	3	2	2	1	1	2	1	2	1	1	2	KU	1	0	0	1	1	1	1	1	1	1	3	1.3	24
21		1	1	1	1	1	1	1	1	1	1	1	0	KU	0	0	0	0	0	0	0	0	0	0	0	1	0.5	24
22		0	0	0	0	0	0	0	0	0	0	1	KU	0	1	1	1	1	0	1	1	1	0	0	R	1	0.4	23
23		R	R	R	R	R	1	1	1	1	0	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	19
24		0	0	0	0	0	0	0	0	0	KU	1	2	1	2	2	2	2	2	2	2	2	1	1	1	2	1.0	24
25		2	2	2	2	2	2	2	1	KU	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.7	24
26		0	0	0	0	0	0	1	KU	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
27		0	0	1	1	1	1	KU	2	2	2	1	2	1	1	1	1	1	1	2	2	3	4	3	4	4	1.5	24
28		3	2	2	1	1	KU	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	2	3	3	1.6	24
29		2	2	2	2	KU	1	3	5	3	4	3	2	2	1	1	2	2	1	1	1	1	1	1	5	1.9	24	
30		1	1	1	KU	2	1	3	1	1	2	1	0	1	0	0	1	2	1	1	0	0	1	0	3	0.9	24	
31		0	0	KU	1	1	1	0	1	1	1	1	1	1	1	1	2	3	2	1	1	1	1	1	3	1.0	24	
HOURLY MAX		4	6	9	12	11	11	11	7	6	4	3	4	4	4	4	5	5	7	7	7	3	3	4	3			
HOURLY AVG		1.2	1.4	1.7	1.8	1.8	1.8	1.9	2.1	1.8	1.6	1.3	1.3	1.0	1.0	1.0	1.0	1.1	1.0	1.3	1.1	1.0	1.0	1.1	1.1			

UVCVWUINCI 'EQFGU

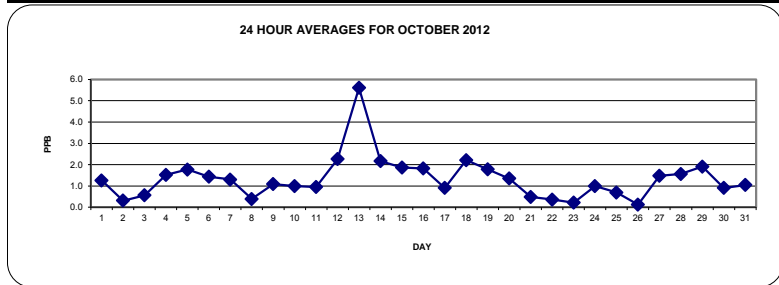
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

QDLGEVIXG'NIO KW<

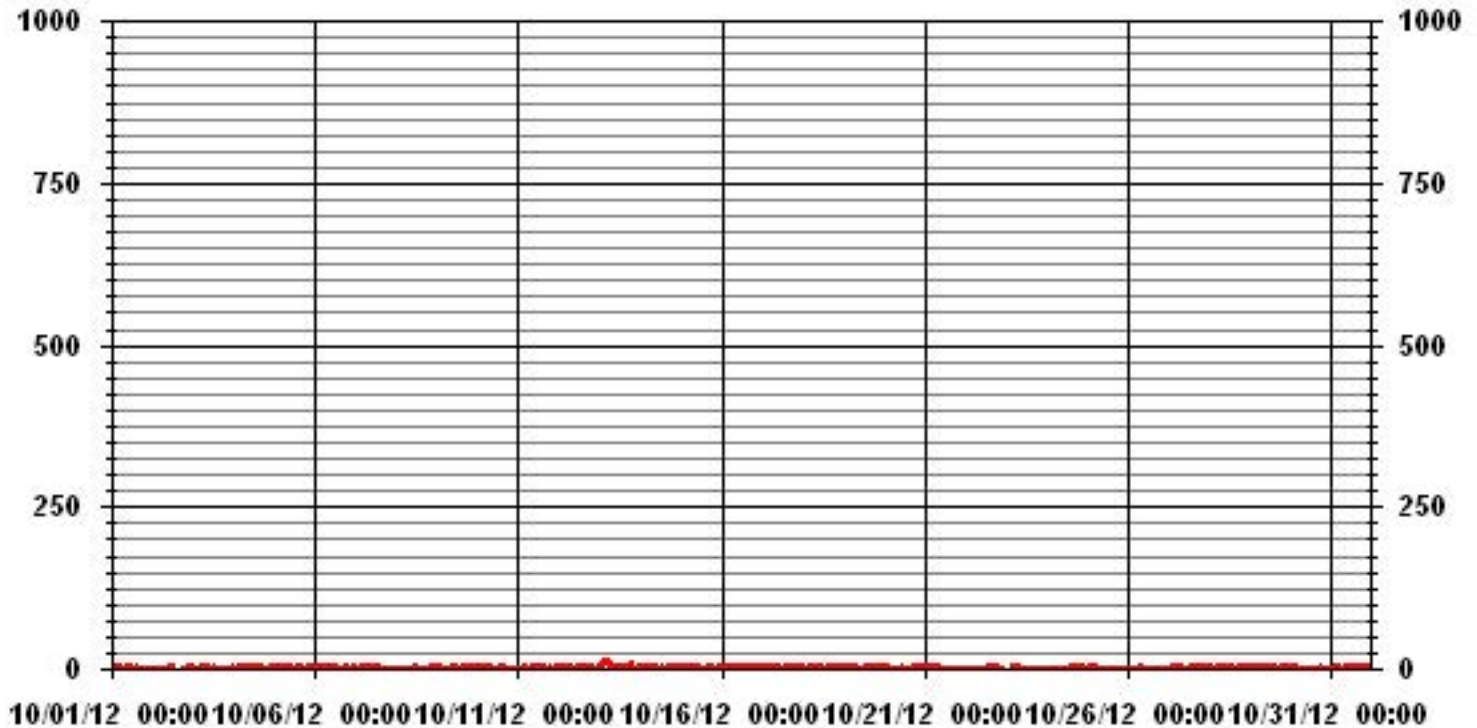
CNDGTVC'GP'XIK'QPO GPV< 1-HR 159 PPB

OQPVI N['UWO O CT[

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	528				
MAXIMUM 1-HR AVERAGE:	12	PPB	@ HOUR(S)	3	ON DAY(S) 13
MAXIMUM 24-HR AVERAGE:	5.6	PPB			ON DAY(S) 13
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	737	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.1	%
STANDARD DEVIATION:	1.38		MONTHLY AVERAGE:	1.36	PPB



01 Hour Averages



NCMGNCPF'KFWVT[('EQOOWPK['CUQEKVKQP'/'ST. LINA

OCTOBER 2012

PKTQI GP'FIQZFG'O CZ instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR			
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.		
DAY																													
1	2	2	2	2	2	2	3	2	2	KU	4	3	3	2	2	3	3	2	1	1	1	1	1	1	1	4	2.0	24	
2	1	1	1	1	1	1	2	1	KU	1	1	2	E	E	E	E	E	E	1	1	1	1	2	1	2	1	2	1.2	24
3	1	1	2	1	1	2	2	KU	1	1	2	1	4	11	1	1	2	1	2	1	1	1	2	3	11	2.0	24		
4	2	2	3	2	3	3	KU	5	5	3	9	11	10	1	1	2	2	3	5	4	2	3	2	2	11	3.7	24		
5	3	3	3	3	2	KU	2	3	4	3	14	13	3	2	8	O	2	2	3	15	2	2	2	2	15	4.4	23		
6	2	3	3	3	KU	4	9	3	2	1	1	1	1	1	1	1	1	4	3	1	2	2	2	2	9	2.3	24		
7	2	3	2	KU	3	3	3	3	3	2	1	2	1	1	1	1	1	1	2	1	1	1	1	1	3	1.7	24		
8	1	0	KU	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1.7	24	
9	2	KU	3	2	3	14	3	14	9	3	3	2	12	13	3	3	2	2	2	2	4	3	3	3	14	4.8	24		
10	KU	2	3	4	2	1	1	2	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	KU	4	1.5	24		
11	0	0	0	1	1	5	4	1	1	1	1	1	1	1	2	1	1	1	2	2	2	2	KU	1	5	1.4	24		
12	1	1	1	2	2	3:	2	8	2	2	2	3	3	3	4	4	4	4	3	2	3	KU	3	4	3:	3.5	24		
13	4	8	12	12	12	12	12	17	4	3	5	5	8	5	4	5	6	7	7	14	KU	2	1	2	17	7.3	24		
14	2	2	2	1	2	8	5	7	5	3	2	1	1	2	2	2	2	2	2	KU	2	2	3	2	8	2.7	24		
15	2	2	2	3	3	17	3	4	4	3	9	2	7	2	2	2	2	2	KU	KU	2	2	2	2	17	3.5	24		
16	3	3	3	4	4	3	3	4	6	3	3	3	2	1	1	1	1	KU	KU	1	1	1	1	1	6	2.3	24		
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	1	KU	1	1	1	1	1	1	1	9	1.3	24		
18	1	1	2	3	3	6	4	8	8	6	4	2	2	2	2	KU	2	2	2	2	2	2	2	2	8	3.0	24		
19	3	3	2	3	2	2	2	2	2	2	1	1	1	1	KU	1	2	2	2	2	2	2	2	2	3	2.0	24		
20	2	3	3	3	2	2	8	2	1	2	8	2	7	KU	1	3	1	1	1	1	1	1	1	1	8	2.5	24		
21	1	1	1	1	1	1	1	1	1	1	2	1	KU	1	1	1	1	0	1	1	1	1	1	1	2	1.0	24		
22	1	1	1	1	1	1	1	5	13	7	3	KU	4	14	1	16	2	2	2	2	2	2	2	R	16	3.8	23		
23	R	R	R	R	R	3	2	2	2	2	KU	2	1	1	1	1	1	1	1	1	1	1	1	1	3	1.4	19		
24	1	1	1	1	1	1	1	1	1	1	KU	1	1	1	1	1	2	2	2	2	2	1	1	1	2	1.3	24		
25	2	2	2	2	2	2	2	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.3	24		
26	1	1	1	1	1	1	2	KU	2	1	1	1	1	1	1	1	1	2	1	2	2	1	1	1	2	1.2	24		
27	2	1	2	2	2	2	KU	2	3	3	2	2	2	2	2	2	3	2	2	3	3	5	5	4	5	2.5	24		
28	4	3	3	2	2	KU	2	2	2	2	2	2	2	2	2	2	2	3	3	4	3	3	5	3	5	2.6	24		
29	3	3	3	3	KU	3	6	7	5	6	5	5	4	3	3	4	4	4	4	2	3	3	3	3	7	3.8	24		
30	3	3	3	KU	4	3	5	3	3	3	3	3	3	2	2	2	4	3	3	2	2	3	2	1	5	2.8	24		
31	1	1	KU	1	2	2	1	2	2	2	2	2	1	2	2	2	4	4	3	3	2	2	2	2	4	2.0	24		
HOURLY MAX	4	8	12	12	12	18	12	17	13	7	14	13	12	14	9	16	6	7	7	15	4	5	5	4					
HOURLY AVG	1.9	2.0	2.4	2.4	2.4	4.3	3.2	4.0	3.4	2.5	3.2	2.6	3.1	2.9	2.2	2.5	2.1	2.2	2.2	2.7	1.8	1.8	1.9	1.8					

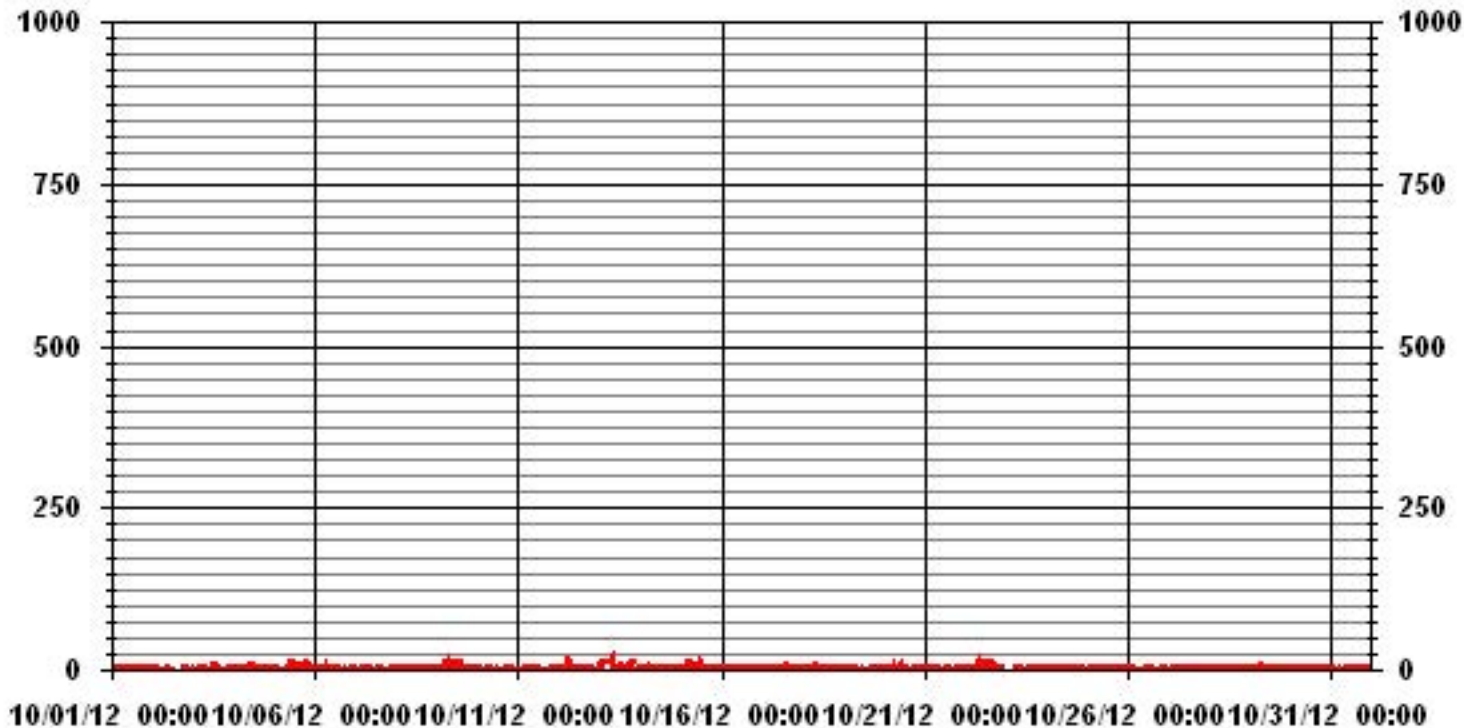
UVCVWUHNCI 'EQFGU

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

O QP VJ N['UWO O CT[

NUMBER OF NON-ZERO READINGS:	692
MAXIMUM INSTANTANEOUS VALUE:	18 PPB @ HOUR(S) 5 ON DAY(S) 12
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	2.48
OPERATIONAL TIME:	737 HRS

01 Hour Averages



LICA31
 NO2_ / WDR Joint Frequency Distribution (Percent)

October 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	7.73	4.29	2.29	3.00	2.72	4.44	7.16	5.73	4.15	7.59	5.87	4.87	5.44	9.02	12.03	13.61	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	7.73	4.29	2.29	3.00	2.72	4.44	7.16	5.73	4.15	7.59	5.87	4.87	5.44	9.02	12.03	13.61	

Calm : .00 %

Total # Operational Hours : 698

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	54	30	16	21	19	31	50	40	29	53	41	34	38	63	84	95	698
< 110																	
< 210																	
>= 210																	
Totals	54	30	16	21	19	31	50	40	29	53	41	34	38	63	84	95	

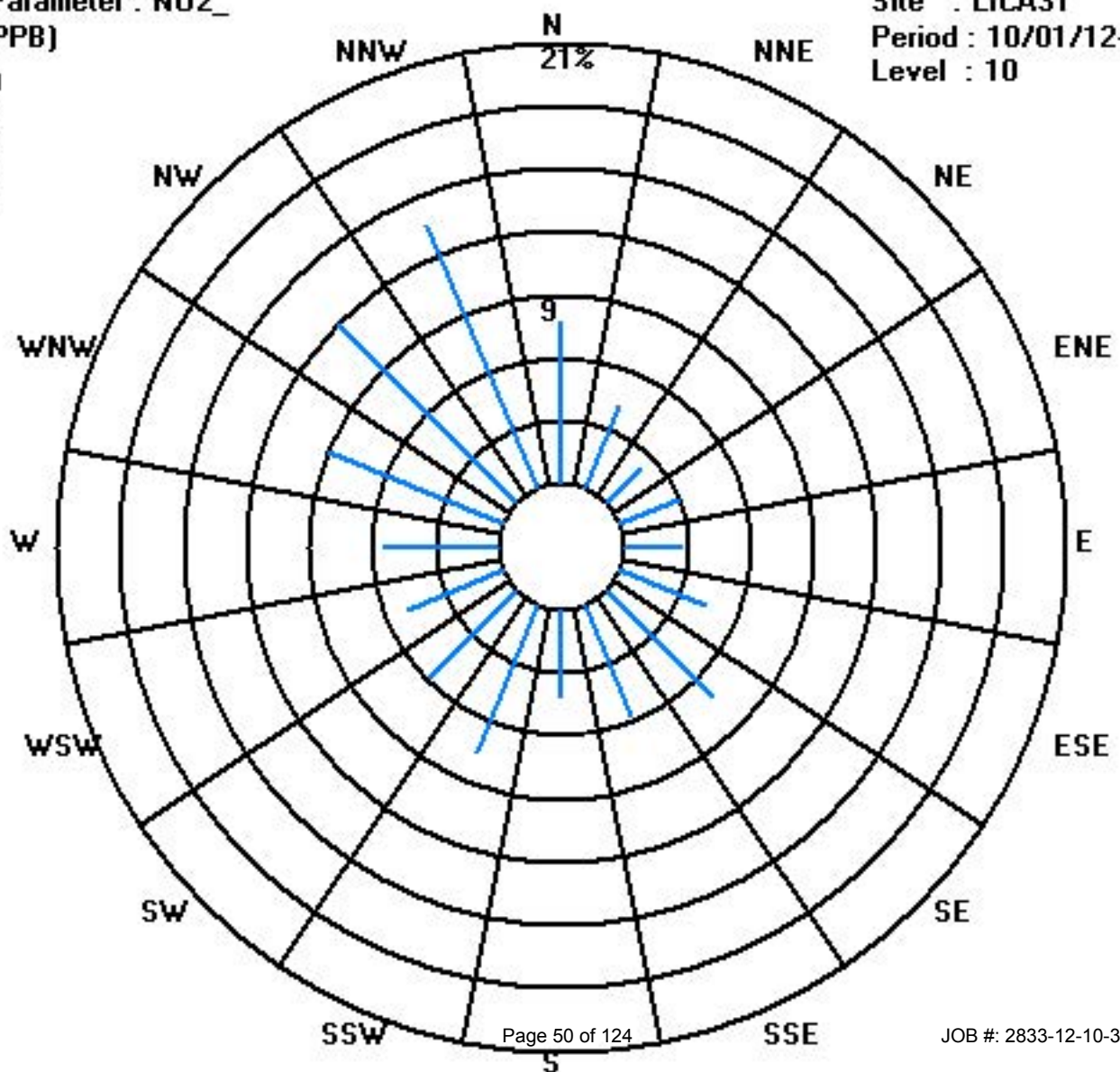
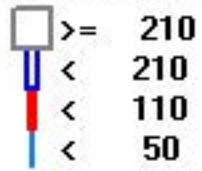
Calm : .00 %

Total # Operational Hours : 698

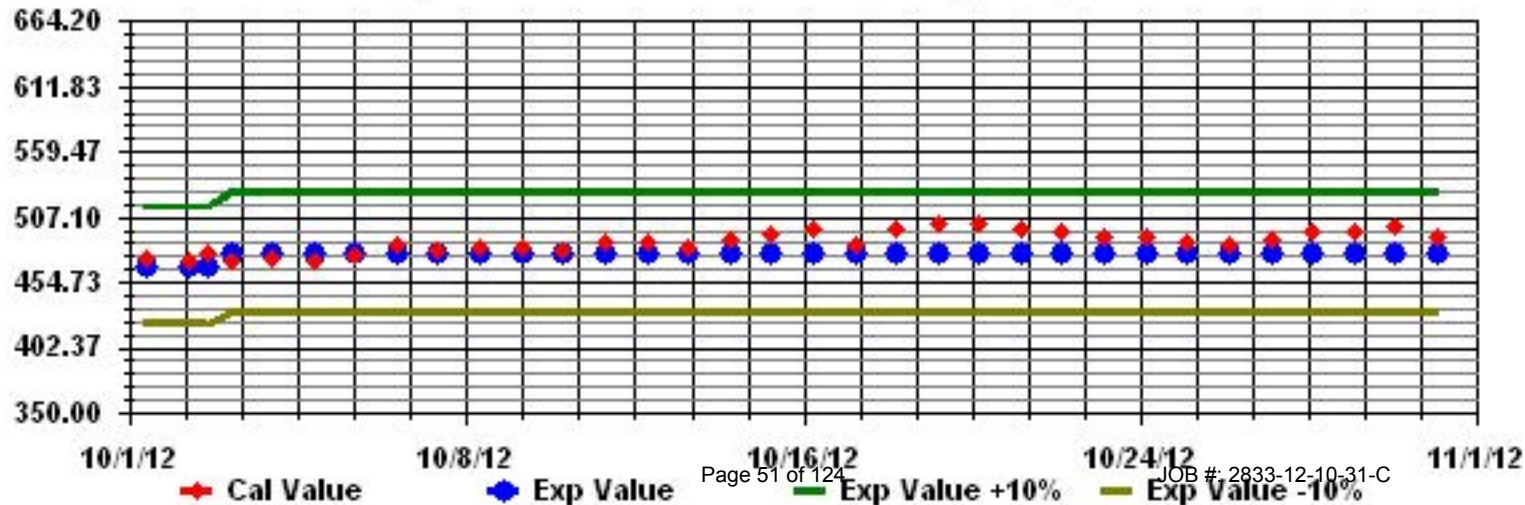
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



Calibration Graph for Site: LICA31 Parameter: NO2_ Sequence: NO2 Phase: SPAN



Nitric Oxide

NCMGNCPF'KFWVT[('EQOOWPK['CUEQKCVKQP/'UVONKPC

OCTOBER 2012

PKTE'QZFG hourly averages in ppb

MST

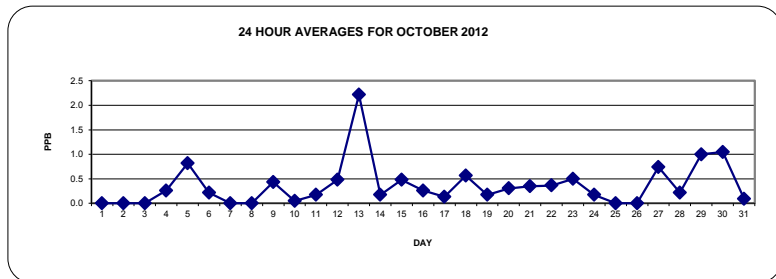
DAY	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY 24-HOUR				
	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.		
1	0	0	0	0	0	0	0	0	0	KU	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	KU	0	0	0	E	E	E	E	E	E	E	0	0	0	0	0	0	0	0.0	24	
3	0	0	0	0	0	0	0	0	KU	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	KU	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24	
5	0	0	0	0	0	KU	1	1	2	2	2	2	1	0	0	O	1	1	0	1	1	1	1	1	1	2	0.8	23	
6	1	1	1	1	KU	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
7	0	0	0	KU	0	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	KU	0	0	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	KU	0	0	0	1	1	1	2	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	2	0.4	24	
10	KU	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	KU	1	0.0	24	
11	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	KU	1	0.2	24	
12	0	0	0	0	0	1	0	2	0	1	1	1	1	0	1	1	0	0	0	0	0	KU	1	1	2	0.5	24		
13	0	0	1	2	5	8	4	2	3	4	4	3	4	4	3	2	2	1	0	0	KU	1	0	0	8	400	24		
14	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	KU	0	0	0	0	0	1	0.2	24	
15	0	0	0	0	0	1	0	1	2	1	1	0	1	1	1	0	0	0	KU	1	1	0	0	0	0	2	0.5	24	
16	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	KU	1	0	0	0	0	0	0	1	0.3	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	KU	1	0	0	0	0	0	0	0	1	0.1	24	
18	0	0	0	0	0	1	0	1	2	3	1	1	1	0	0	KU	1	1	1	1	0	0	0	0	0	3	0.6	24	
19	0	0	0	0	0	0	0	0	0	0	0	0	1	1	KU	1	1	0	0	0	0	0	0	0	0	0	1	0.2	24
20	0	0	0	0	0	1	1	0	0	0	1	1	0	KU	1	1	1	0	0	0	0	0	0	0	0	1	0.3	24	
21	0	0	0	0	0	0	0	0	0	0	0	1	KU	1	1	1	1	0	0	1	1	0	1	0	1	0.3	24		
22	0	0	0	0	0	1	1	1	1	1	1	KU	1	1	0	0	0	0	0	0	0	0	0	0	R	1	0.4	23	
23	R	R	R	R	R	0	0	0	0	0	KU	2	1	1	1	1	1	0	1	1	0	0	0	0	0	2	0.5	19	
24	0	0	0	0	1	1	1	0	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	24	
25	0	0	0	0	0	0	0	0	KU	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	KU	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	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24	
28	1	1	1	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	24	
29	0	0	0	0	KU	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24
30	1	1	1	KU	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24	
31	1	1	KU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
HOURLY MAX	1	1	1	2	5	6	4	2	3	4	4	3	4	4	3	2	2	1	1	1	1	1	1	1	1				
HOURLY AVG	0.2	0.1	0.1	0.1	0.3	0.6	0.4	0.5	0.7	0.7	0.7	0.6	0.6	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				

UVCVW'HNCL'EQFGU

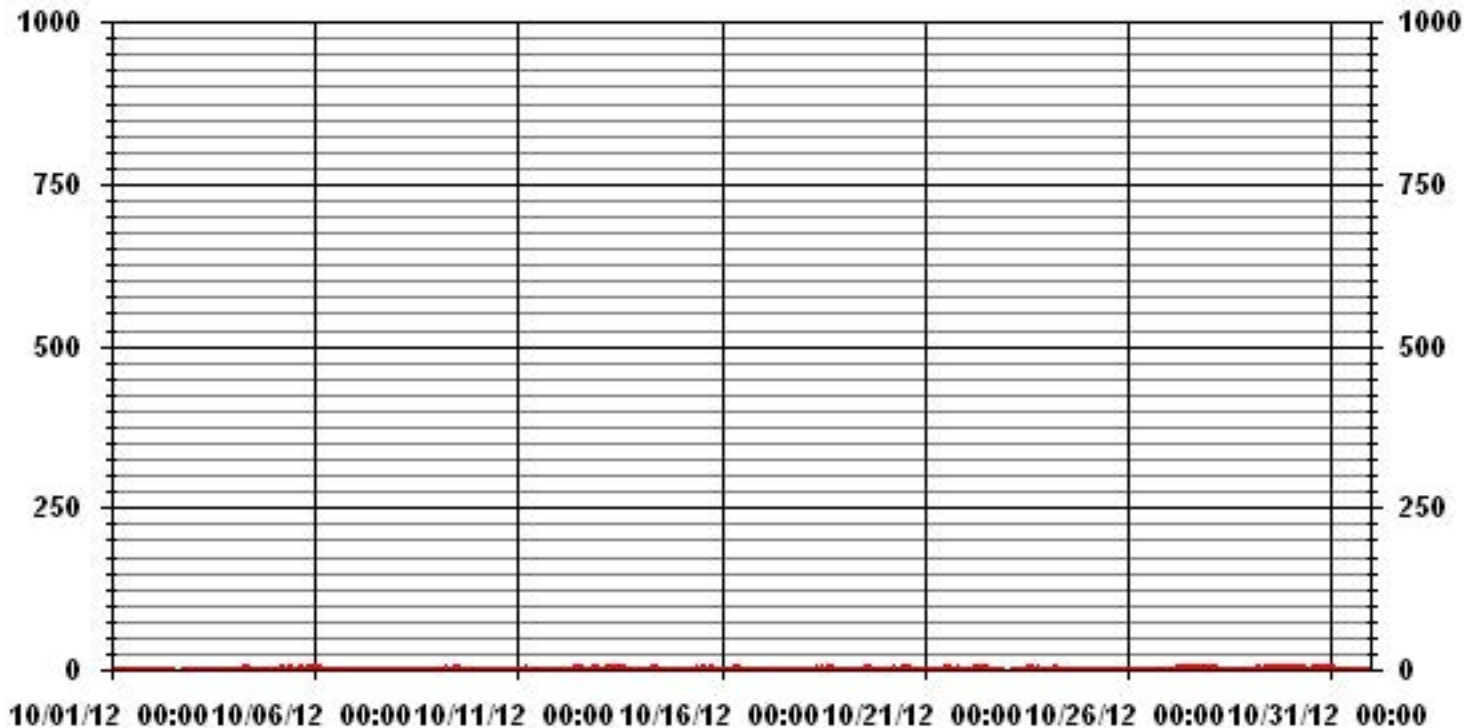
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OQPJN['UWO OCT[

NUMBER OF NON-ZERO READINGS:	202					
MAXIMUM 1-HR AVERAGE:	6	PPB	@ HOUR(S)	5	ON DAY(S)	13
MAXIMUM 24-HR AVERAGE:	2.2	PPB			ON DAY(S)	13
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	737	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	99.1	%	
STANDARD DEVIATION:	0.69		MONTHLY AVERAGE:	0.36	PPB	



01 Hour Averages



— LICA31 NO_ PPB

NCMGNCPF'KFWVT[('EQOOWPK['CUUQEKVKQP)'ST. LINA

OCTOBER 2012

PWTE'QZHG'O CZ" instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	0	0	0	0	0	0	0	0	1	KU	2	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	24
2	0	0	0	0	0	0	0	0	KU	1	0	1	E	E	E	E	E	E	E	0	0	0	0	0	1	0.1	24
3	0	0	0	0	1	2	1	KU	1	1	1	0	15	15	1	1	0	0	0	0	0	0	0	0	15	1.7	24
4	0	0	0	0	1	0	KU	6	5	3	13	11	25	1	1	2	2	1	1	1	0	0	1	0	25	3.2	24
5	0	1	1	0	1	KU	1	4	6	5	22	33	2	2	2	O	3	1	1	18	1	2	1	1	33	4.9	23
6	1	2	1	1	KU	1	11	1	1	1	1	1	1	1	1	1	1	1	2	1	0	0	0	0	11	1.3	24
7	0	1	1	KU	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	1	0	0	0	1	0.6	24
8	1	1	KU	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24
9	0	KU	1	1	1	16	2	11	21	3	2	2	15	10	3	2	2	1	1	1	1	1	1	1	21	4.3	24
10	KU	1	1	1	1	1	1	1	1	2	2	1	1	2	2	1	1	1	1	1	1	1	1	KU	2	1.2	24
11	1	1	1	1	1	3	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	KU	2	1.3	24
12	1	1	1	1	1	31	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	KU	2	2	31	2.7	24
13	1	2	1	4	6	7	7	13	4	6	6	5	22	29	4	4	4	4	2	14	KU	2	1	1	29	6.5	24
14	1	1	1	1	1	9	1	2	3	2	2	1	1	1	1	1	1	1	1	KU	1	1	1	1	9	1.6	24
15	1	1	1	1	1	58	1	2	3	3	8	2	4	2	12	1	1	1	KU	2	1	1	1	1	58	3.8	24
16	1	1	1	1	1	1	1	1	3	2	2	2	1	1	1	1	1	KU	3	1	1	1	1	1	3	1.3	24
17	1	1	1	1	1	2	1	1	1	1	1	1	2	2	6	2	KU	2	1	1	2	1	1	1	6	1.5	24
18	1	1	1	1	1	3	1	4	3	4	3	2	2	1	1	KU	2	1	1	1	1	1	1	1	4	1.7	24
19	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	KU	1	1	1	1	1	1	1	1	2	1.0	24
20	1	1	1	1	1	2	18	2	1	2	10	2	14	KU	2	10	2	1	1	1	1	1	1	1	18	3.3	24
21	1	1	1	1	1	1	1	1	1	1	2	1	KU	2	1	1	2	1	1	2	1	1	1	1	2	1.2	24
22	1	1	1	1	1	2	2	9	10	8	9	KU	12	7	1	2	1	0	0	0	0	0	0	R	12	3.1	23
23	R	R	R	R	R	0	0	0	0	1	KU	2	2	1	1	2	1	1	1	1	1	1	1	1	2	0.9	19
24	1	1	1	1	1	1	1	1	2	KU	1	1	1	1	1	1	1	1	1	0	0	1	0	0	2	0.9	24
25	0	0	0	0	1	2	0	0	KU	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	2	0.5	24
26	0	0	0	0	0	0	1	KU	1	1	1	1	1	1	1	1	1	2	2	1	1	0	1	0	2	0.7	24
27	0	0	0	0	1	0	KU	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	1	2	1.3	24
28	1	1	1	2	1	KU	1	1	1	1	0	1	1	1	1	1	0	0	1	0	1	0	0	0	2	0.8	24
29	0	1	0	1	KU	2	2	2	3	3	3	2	2	2	2	2	2	1	1	1	1	1	2	1	3	1.6	24
30	1	1	1	KU	3	3	3	2	2	5	3	2	3	3	2	2	3	1	2	2	2	2	1	1	5	2.2	24
31	1	1	KU	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0.7	24
HOURLY MAX	1	2	1	4	6	36	18	13	21	8	22	33	25	29	12	10	4	4	3	18	2	2	2	2			
HOURLY AVG	0.6	0.8	0.7	0.9	1.1	4.4	2.3	2.7	2.8	2.2	3.4	2.8	4.7	3.2	1.9	1.6	1.4	1.0	1.0	1.9	0.7	0.8	0.8	0.7			

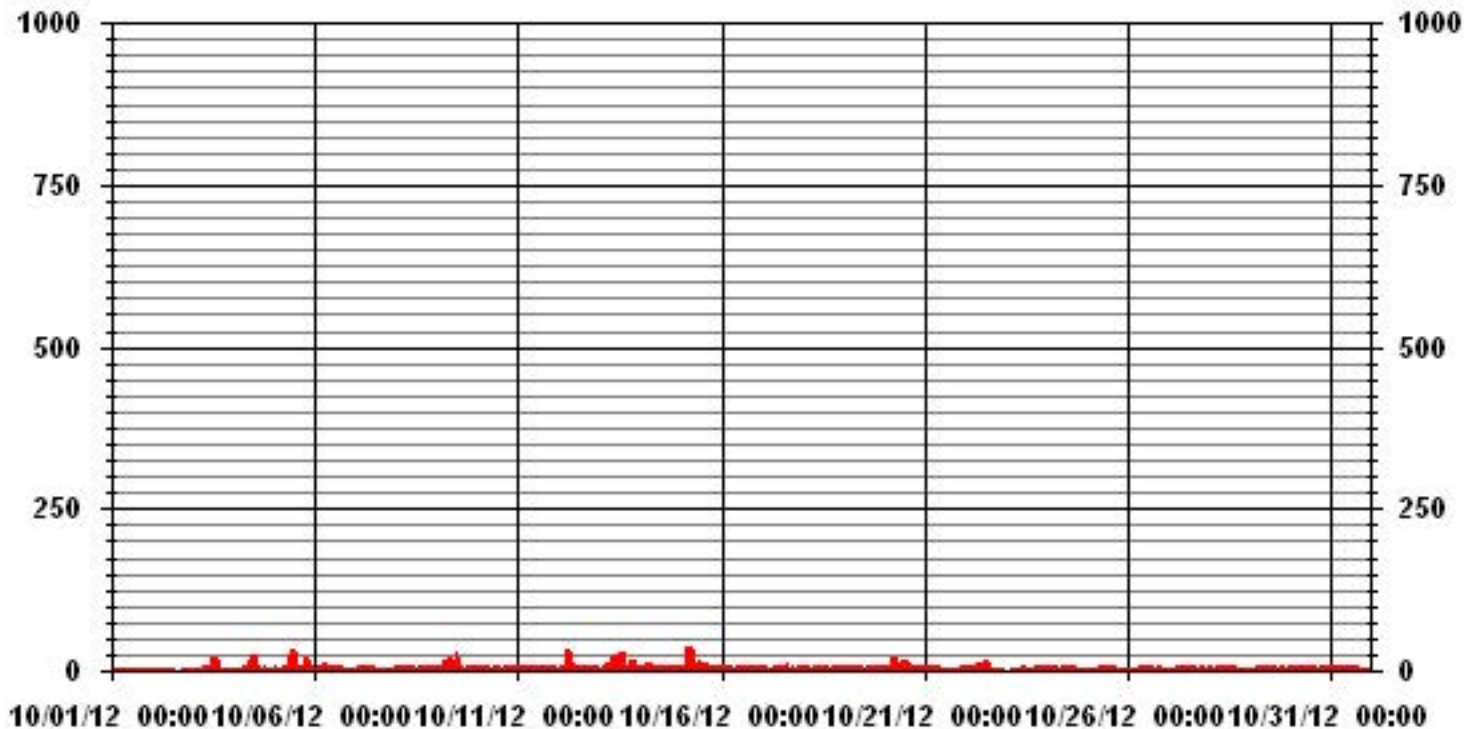
UVCVW'HNCI 'EQFGU

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

O QP VJ N['UWO O C T[

NUMBER OF NON-ZERO READINGS:	572
MAXIMUM INSTANTANEOUS VALUE:	36 PPB @ HOUR(S) 5 ON DAY(S) 15
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	737 HRS
STANDARD DEVIATION:	3.64

01 Hour Averages



LICA31
 NO_ / WDR Joint Frequency Distribution (Percent)

October 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	7.73	4.29	2.29	3.00	2.72	4.44	7.16	5.73	4.15	7.59	5.87	4.87	5.44	9.02	12.03	13.61	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	7.73	4.29	2.29	3.00	2.72	4.44	7.16	5.73	4.15	7.59	5.87	4.87	5.44	9.02	12.03	13.61	

Calm : .00 %

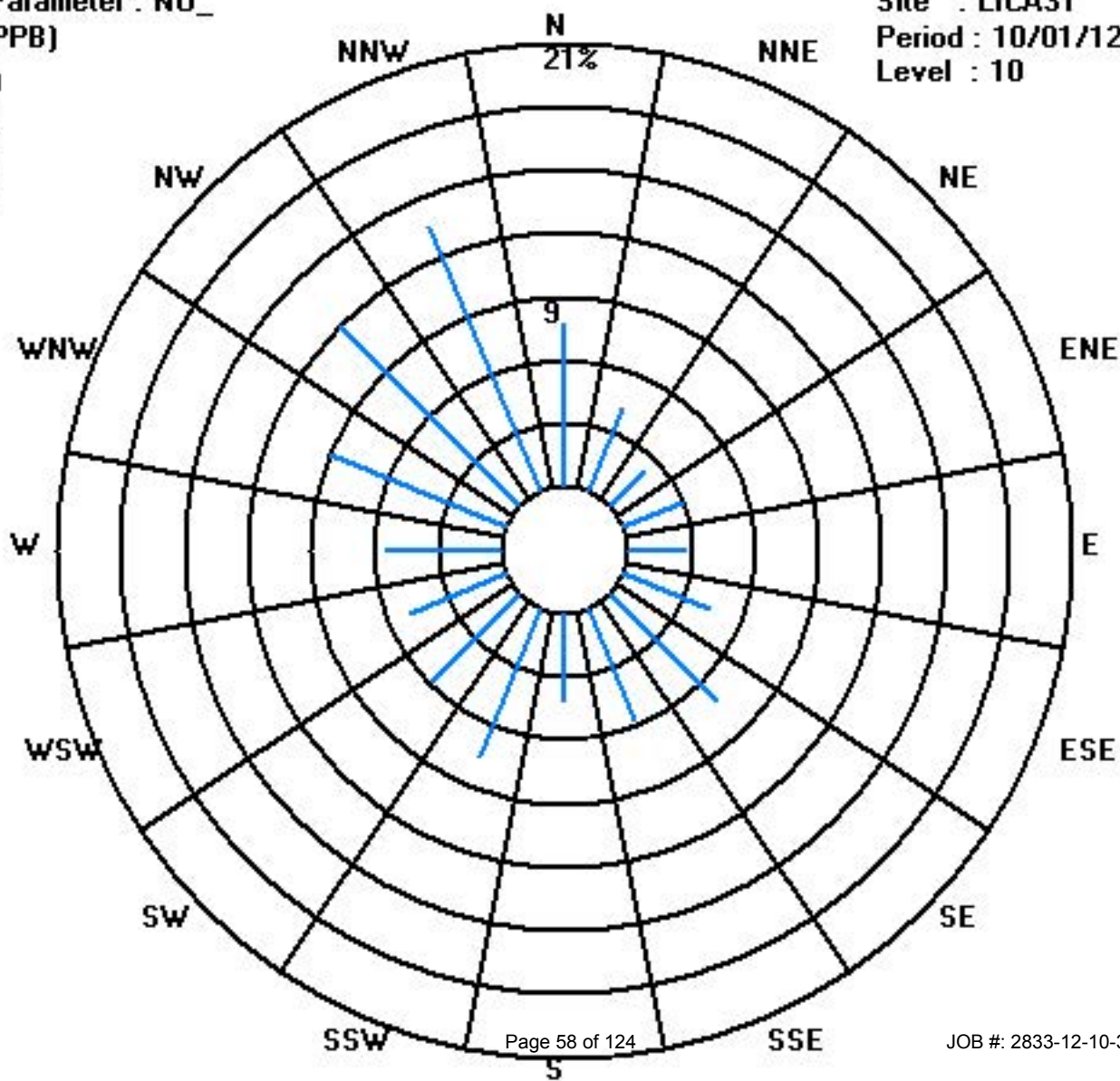
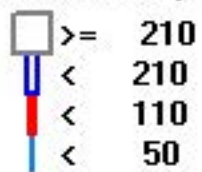
Total # Operational Hours : 698

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	54	30	16	21	19	31	50	40	29	53	41	34	38	63	84	95	698
< 110																	
< 210																	
>= 210																	
Totals	54	30	16	21	19	31	50	40	29	53	41	34	38	63	84	95	

Calm : .00 %

Total # Operational Hours : 698



Oxides of Nitrogen

NCMGNCPF 'R'F WVTI ' (' 'EQO O WPKI 'CUQEKVIQP 'UVONPC

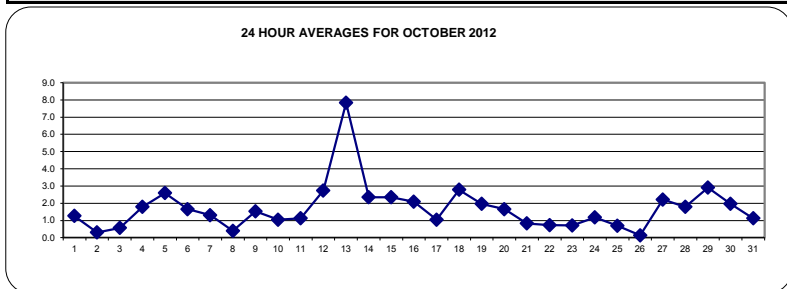
OCTOBER 2012

QZK GUQHPWTQI GP hourly averages in ppb

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR			
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.		
DAY																													
1	1	1	2	2	2	2	2	1	2	KU	3	3	2	1	2	2	1	0	0	0	0	0	0	0	0	3	1.3	24	
2	0	0	0	0	0	0	0	0	KU	0	1	1	C	C	C	C	C	C	0	0	1	1	1	1	1	1	0.3	24	
3	1	0	1	0	0	1	1	KU	1	1	1	0	1	1	0	0	0	0	1	0	0	0	1	2	2	2	0.6	24	
4	2	1	2	2	2	2	KU	4	4	4	3	1	1	0	1	1	1	1	2	1	1	2	2	1	4	1.8	24		
5	2	3	3	2	2	KU	3	3	4	4	4	4	2	2	2	O	2	2	2	2	2	2	2	3	4	2.6	23		
6	3	3	3	4	KU	4	3	3	2	1	1	1	1	1	0	0	0	1	1	1	1	2	1	1	4	1.7	24		
7	2	3	2	KU	3	3	3	3	3	2	1	1	1	1	1	0	0	0	1	0	0	0	0	0	3	1.3	24		
8	0	0	KU	1	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	0	1	1	1	1	1	1	0.4	24	
9	0	KU	1	1	1	3	2	3	3	2	2	1	2	2	1	1	1	1	1	1	1	2	2	1	3	1.5	24		
10	KU	2	2	3	2	1	1	2	2	1	1	1	0	1	1	1	1	0	1	0	0	0	0	KU	3	1.0	24		
11	1	0	0	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	KU	2	2	1.1	24	
12	1	1	1	1	2	4	2	5	2	2	3	3	3	3	4	4	4	3	3	2	3	KU	3	4	5	2.7	24		
13	4	6	10	14	16	39	15	9	6	7	7	7	8	8	7	6	7	6	7	7	KU	2	2	2	39	90	24		
14	2	2	2	1	1	2	4	6	5	4	2	2	1	2	2	1	2	2	2	KU	3	2	2	2	6	2.3	24		
15	2	2	2	3	3	4	3	4	5	4	3	2	2	1	1	1	1	1	KU	3	2	2	2	1	5	2.3	24		
16	2	3	3	3	3	3	3	3	3	4	4	3	3	1	1	1	1	KU	1	1	1	1	1	1	1	4	2.1	24	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	KU	1	1	1	1	1	1	1	1	2	1.0	24	
18	1	1	1	2	3	4	3	6	8	7	4	3	2	2	1	KU	2	2	2	2	2	2	2	2	2	8	2.8	24	
19	2	2	2	2	2	2	2	2	2	2	1	2	2	2	KU	2	2	2	2	2	2	2	2	2	2	2	2	2.0	24
20	2	3	3	2	2	2	2	2	2	1	2	2	2	2	KU	2	1	1	1	1	1	1	1	1	1	3	1.7	24	
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	1	0.8	24		
22	0	0	0	0	0	1	1	1	1	1	1	2	KU	1	2	1	1	1	0	1	1	1	0	0	R	2	0.7	23	
23	R	R	R	R	R	R	1	1	1	0	KU	2	1	1	1	1	1	0	1	1	0	0	0	0	0	2	0.7	19	
24	0	0	0	0	1	1	1	0	1	KU	1	2	1	2	2	2	2	2	2	2	2	2	1	1	1	2	1.2	24	
25	2	2	2	2	2	2	2	1	KU	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.7	24	
26	0	0	0	0	0	0	1	KU	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
27	0	0	1	1	1	1	KU	3	3	3	2	3	2	2	2	2	2	2	2	2	3	3	4	5	4	5	2.2	24	
28	4	3	3	2	2	KU	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	2	4	1.8	24		
29	2	2	2	2	KU	2	4	6	5	6	5	4	3	2	2	3	3	2	2	2	2	2	2	2	6	2.9	24		
30	2	2	2	KU	3	2	4	2	2	3	2	2	2	1	1	2	3	2	2	1	1	2	1	1	4	2.0	24		
31	1	1	KU	1	1	1	0	1	1	1	1	1	1	1	1	1	2	3	2	1	1	1	1	1	3	1.1	24		
HOURLY MAX	4	6	10	14	16	17	15	9	8	7	7	7	8	8	7	6	7	6	7	7	3	4	5	4					
HOURLY AVG	1.4	1.6	1.9	1.9	2.0	2.4	2.3	2.6	2.5	2.3	2.0	1.9	1.6	1.5	1.4	1.3	1.5	1.3	1.5	1.3	1.2	1.2	1.3	1.3					

UVCVW'HNCI 'EQFGU

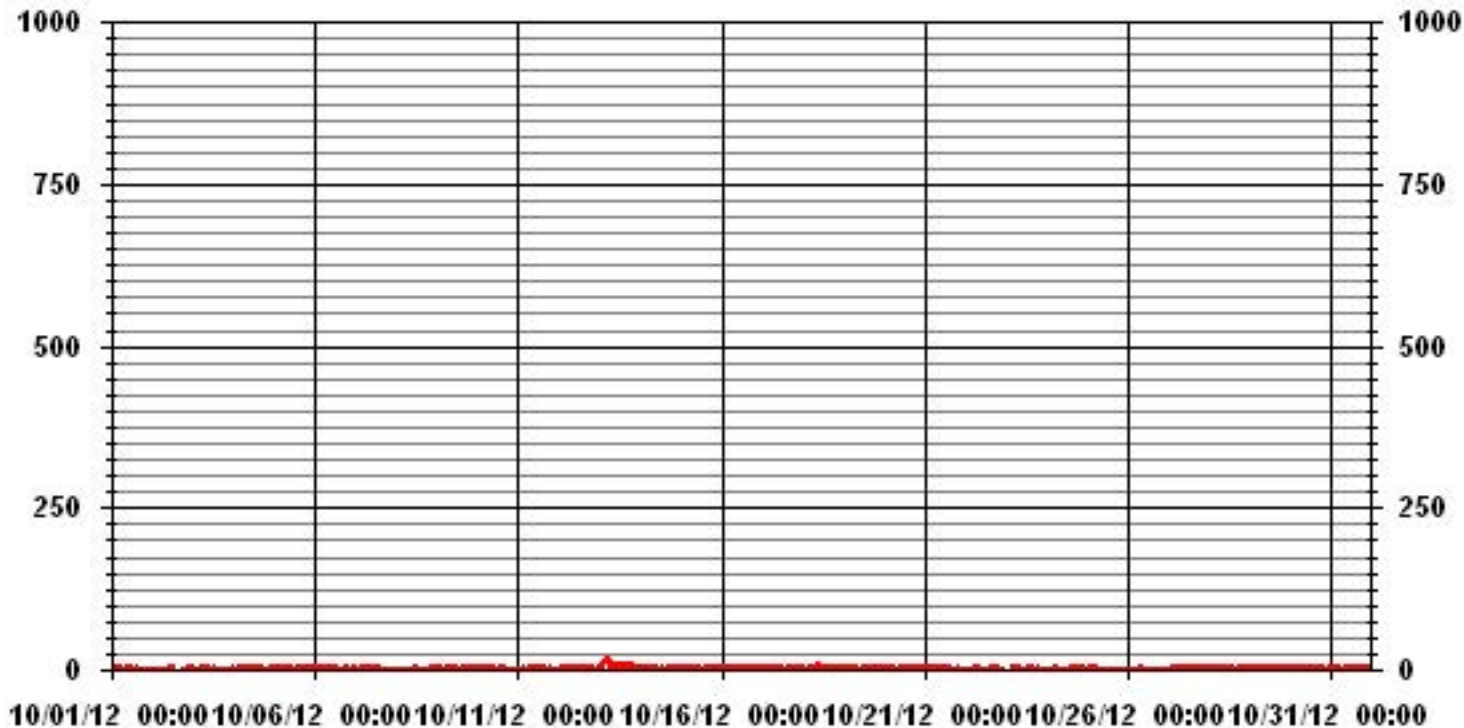
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



OQPVI N' UWOOCTI

NUMBER OF NON-ZERO READINGS:	573		
MAXIMUM 1-HR AVERAGE:	17 PPB	@ HOUR(S)	5 ON DAY(S)
MAXIMUM 24-HR AVERAGE:	7.8 PPB		13 ON DAY(S)
IZS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	737 HRS
MONTHLY CALIBRATION TIME:	7 HRS	AMD OPERATION UPTIME:	99.1 %
STANDARD DEVIATION:	1.78	MONTHLY AVERAGE:	1.72 PPB

01 Hour Averages



NCMGNCPF'KFWVT[('EQOOWPK['CUUQEKVKQP/'ST. LINA
OCTOBER 2012
QZHG'GU'QHP'KTQI GP''O CZ instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	2	2	2	2	3	3	3	2	3	KU	4	4	3	2	3	3	2	2	0	1	0	0	0	1	4	2.0	24	
2	0	1	1	1	0	0	2	0	KU	1	2	3	E	E	E	E	E	E	E	1	1	1	2	1	3	1.1	24	
3	2	1	1	1	2	4	3	KU	2	2	3	1	16	21	2	1	2	1	2	1	1	1	2	3	21	3.3	24	
4	2	2	3	2	4	3	KU	8	9	6	18	20	32	2	2	4	4	4	6	5	2	3	3	2	32	6.3	24	
5	3	4	3	3	3	KU	3	6	10	7	36	43	5	3	10	O	4	4	4	32	3	3	3	3	43	8.9	23	
6	3	4	4	5	KU	5	17	4	2	2	2	2	1	2	1	1	1	4	5	1	2	2	2	2	17	3.2	24	
7	3	3	3	KU	4	4	4	4	4	3	2	2	2	2	1	1	1	1	2	1	1	1	1	1	4	2.2	24	
8	1	1	KU	1	1	1	1	1	1	1	1	2	3	1	2	1	2	2	1	1	1	1	1	1	3	1.3	24	
9	1	KU	2	2	2	28	4	23	29	5	3	3	24	20	4	4	3	1	1	2	4	2	2	2	29	7.4	24	
10	KU	3	4	4	3	2	2	3	3	4	3	2	1	3	3	1	2	1	1	1	1	1	1	KU	4	2.2	24	
11	1	1	1	1	2	8	7	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	KU	2	8	2.1	24
12	2	2	2	2	2	49	3	16	4	3	3	4	4	4	4	5	5	4	4	3	3	KU	4	6	49	6.0	24	
13	4	9	13	16	17	19	19	29	7	9	10	8	30	30	8	9	9	11	9	27	KU	3	2	2	30	13.0	24	
14	3	2	2	2	2	15	6	8	8	5	4	2	2	3	2	2	2	2	3	KU	3	3	3	3	15	3.8	24	
15	3	3	3	4	4	73	4	6	7	5	13	3	10	3	10	3	3	3	KU	4	3	2	2	2	73	6.6	24	
16	4	4	4	4	4	4	4	4	8	5	5	5	2	2	2	2	KU	3	1	1	1	1	1	1	8	3.2	24	
17	1	1	1	1	1	3	1	1	1	2	2	2	3	2	11	2	KU	2	2	2	2	2	2	1	11	2.1	24	
18	2	2	2	3	4	9	5	12	11	9	6	4	3	3	2	KU	3	3	2	3	3	3	3	2	12	4.3	24	
19	3	3	3	3	3	2	2	2	2	2	2	2	2	2	KU	3	3	3	2	3	2	3	3	3	3	2.5	24	
20	2	3	3	3	3	4	23	4	2	4	17	3	16	KU	3	13	2	2	2	2	2	1	2	1	23	5.1	24	
21	1	1	1	1	1	2	1	1	1	1	3	2	KU	1	0	1	1	0	0	1	0	0	1	0	3	0.9	24	
22	0	0	1	0	0	1	1	10	21	14	10	KU	16	20	1	18	2	1	2	1	1	1	1	R	21	5.5	23	
23	R	R	R	R	R	3	2	1	1	1	KU	4	1	1	1	2	1	1	1	1	0	0	0	0	4	1.2	19	
24	0	0	0	0	0	1	1	0	2	KU	2	3	2	3	3	2	4	4	4	3	3	2	2	4	1.9	24		
25	3	3	2	2	3	4	2	2	KU	2	1	1	1	1	0	1	1	2	1	0	0	1	1	1	4	1.5	24	
26	1	1	1	1	1	1	2	KU	3	2	1	1	1	1	1	1	1	3	2	2	2	1	1	1	3	1.4	24	
27	1	1	2	1	1	2	KU	3	4	4	3	4	3	3	3	3	3	3	3	4	4	5	6	5	6	3.1	24	
28	4	4	4	3	3	KU	2	1	1	2	2	2	2	2	2	2	2	2	2	4	3	3	4	3	4	2.6	24	
29	2	2	3	3	KU	3	6	7	6	7	7	5	4	3	3	4	4	3	2	2	3	2	2	2	7	3.7	24	
30	2	3	3	KU	5	4	6	3	4	6	4	4	3	3	2	3	6	3	3	2	2	2	2	1	6	3.3	24	
31	1	1	KU	1	2	2	1	1	2	3	2	2	2	1	2	2	4	4	3	2	2	2	2	4	2.0	24		
HOURLY MAX	4	9	13	16	17	51	23	29	29	14	36	43	32	30	11	18	9	11	9	32	4	5	6	6				
HOURLY AVG	2.0	2.3	2.6	2.6	2.9	8.2	4.7	5.7	5.5	4.1	5.7	4.8	6.7	5.0	3.1	3.4	2.8	2.7	2.6	3.8	1.9	1.8	2.0	1.9				

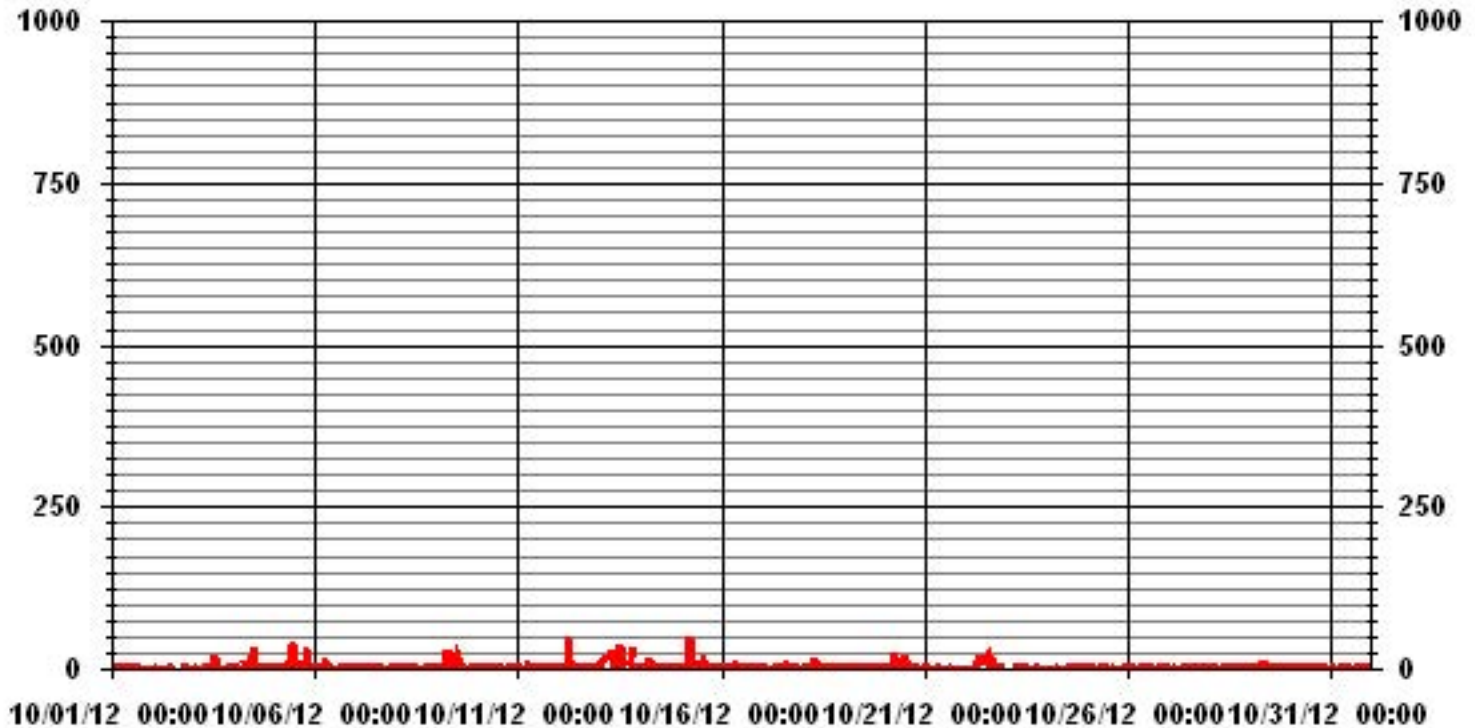
UVCVWUHNCI 'EQFGU

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

O QP VJ N['UWO O C T[

NUMBER OF NON-ZERO READINGS:	667					
MAXIMUM INSTANTANEOUS VALUE:	51	PPB	@ HOUR(S)	5	ON DAY(S)	15
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	737	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	5.45					

01 Hour Averages



LICA31
 NOX_ / WDR Joint Frequency Distribution (Percent)

October 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	7.73	4.29	2.29	3.00	2.72	4.44	7.16	5.73	4.15	7.59	5.87	4.87	5.44	9.02	12.03	13.61	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	7.73	4.29	2.29	3.00	2.72	4.44	7.16	5.73	4.15	7.59	5.87	4.87	5.44	9.02	12.03	13.61	

Calm : .00 %

Total # Operational Hours : 698

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	54	30	16	21	19	31	50	40	29	53	41	34	38	63	84	95	698
< 110																	
< 210																	
>= 210																	
Totals	54	30	16	21	19	31	50	40	29	53	41	34	38	63	84	95	

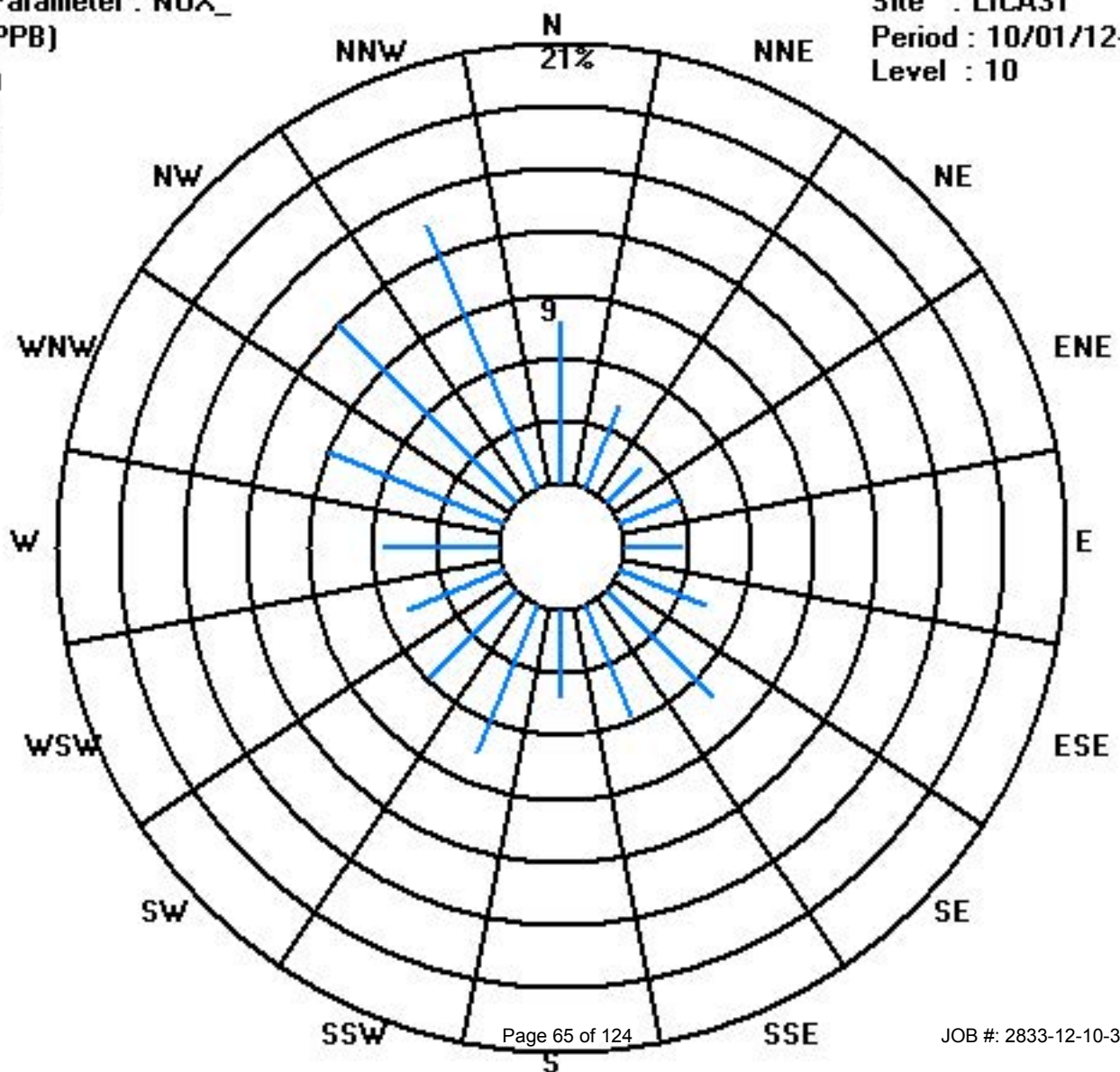
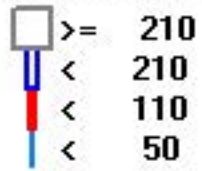
Calm : .00 %

Total # Operational Hours : 698

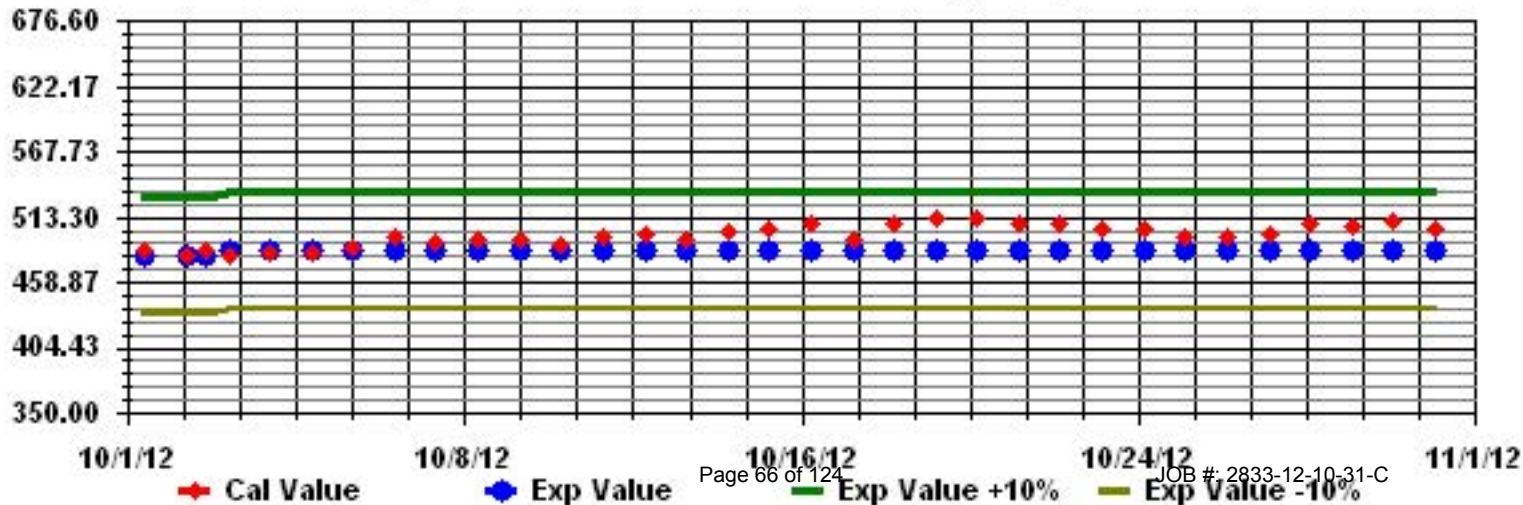
Class Limits (PPB)

Period : 10/01/12-10/31/12

Level : 10



Calibration Graph for Site: LICA31 Parameter: NOX_ Sequence: NO2 Phase: SPAN



Particulate Matter 2.5

NCMGNCPF 'R'F WVT[' ('EQO O WPK['CUQE KVKQP 'UVONPC"

OCTOBER 2012

RCTV E WNCVG'O CVVGT'40'RO 40+ hourly averages in ug/m³

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
DAY	HR	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
1	1	6	11	8	5	7	4	5	8	4	5	8	9	7	4	4	0	5	3	P	0	0	3	5	11	4.9	23	
2	4	4	0	0	0	2	1	7	12	6	15	10	12	13	8	11	8	7	1	0	4	3	2	2	15	5.5	24	
3	5	2	6	2	2	4	9	5	0	2	4	2	5	4	0	6	0	2	0	3	4	3	3	5	9	3.3	24	
4	4	3	7	2	3	6	1	2	4	6	7	E	2	5	7	4	6	2	7	3	8	7	5	4	8	4.6	24	
5	4	8	7	6	4	2	2	2	3	3	7	5	9	6	5	5	1	7	6	8	8	6	6	9	9	5.4	24	
6	5	5	7	12	13	5	7	3	8	8	9	8	7	2	7	4	4	5	6	8	9	2	4	13	6.3	24		
7	5	6	8	6	7	4	4	7	11	9	17	19	44	14	13	7	5	7	6	1	2	3	4	3	44	90	24	
8	5	2	3	1	0	0	0	3	1	1	1	6	0	0	2	3	0	1	3	6	0	0	2	3	6	1.8	24	
9	0	1	5	0	0	1	1	4	1	1	0	3	0	5	5	4	6	3	7	9	12	12	10	6	12	4.0	24	
10	7	1	4	0	1	2	1	1	3	2	3	1	0	2	1	P	0	5	2	1	0	3	2	3	7	2.0	23	
11	3	1	0	0	0	2	0	4	2	0	4	1	3	2	1	0	2	1	0	6	1	2	2	4	6	1.7	24	
12	0	5	0	5	1	2	2	2	2	5	6	6	7	5	5	3	0	0	0	0	2	1	0	0	7	2.5	24	
13	0	0	6	2	1	7	7	0	0	6	8	10	9	9	10	9	4	3	5	6	4	4	0	0	10	4.6	24	
14	0	0	6	3	1	0	1	5	3	9	3	0	2	1	0	4	0	1	0	1	2	0	1	0	9	1.8	24	
15	1	0	0	0	4	4	5	0	4	1	3	0	6	P	2	P	0	2	1	3	0	1	0	1	6	1.7	22	
16	0	0	1	1	0	2	0	0	1	1	0	0	0	P	0	4	0	0	P	0	0	1	3	3	4	0.8	22	
17	3	2	3	1	0	0	0	1	0	0	0	0	1	3	1	0	P	0	2	1	0	2	P	4	4	1.1	22	
18	0	1	1	1	0	4	2	4	3	2	2	5	2	4	2	E	0	0	0	0	0	3	0	0	5	1.6	24	
19	2	0	6	1	0	1	0	1	1	0	3	10	2	1	2	4	2	4	5	2	1	4	0	1	10	2.2	24	
20	2	0	3	3	3	4	0	2	8	1	0	3	3	0	5	0	0	0	0	P	0	0	0	0	P	8	1.7	22
21	0	1	0	0	0	0	3	0	0	0	0	P	6	0	1	N	1	8	1	0	0	0	0	0	8	1.0	21	
22	2	3	3	0	1	0	0	2	0	0	2	0	1	0	3	2	0	6	0	8	0	2	3	R	8	1.7	23	
23	R	R	R	R	R	0	1	0	P	1	0	0	1	0	0	0	P	0	4	0	0	0	P	0	4	0.4	16	
24	P	4	3	2	2	0	0	2	0	2	0	P	0	0	3	1	0	0	3	7	0	3	0	P	7	1.5	21	
25	1	4	7	0	P	0	1	3	0	P	P	1	0	P	0	2	5	P	3	2	P	3	0	0	7	1.8	18	
26	3	0	0	0	0	0	0	0	0	1	P	3	0	P	P	4	0	P	6	5	5	1	1	0	6	1.5	20	
27	0	2	0	0	2	0	0	2	6	8	4	4	8	1	5	0	6	8	4	6	6	6	11	10	11	4.1	24	
28	8	5	1	2	0	4	1	0	1	3	1	8	3	6	3	4	3	4	5	4	7	4	1	0	8	3.3	24	
29	9	4	10	5	5	8	8	6	3	4	6	3	1	6	4	7	3	0	4	1	4	3	7	3	10	4.8	24	
30	3	5	6	2	3	9	17	4	4	1	7	1	9	3	0	0	5	2	6	1	4	0	3	4	17	4.1	24	
31	1	1	4	4	3	8	2	0	6	2	3	5	5	6	4	3	2	6	2	3	8	4	6	7	8	4.0	24	
HOURLY MAX		9.0	8.0	11.0	12.0	13.0	9.0	17.0	7.0	12.0	9.0	17.0	19.0	22.0	14.0	13.0	11.0	8.0	8.0	7.0	9.0	12.0	11.0	10.0				
HOURLY AVG		2.7	2.5	3.9	2.3	2.1	2.8	2.6	2.5	3.2	3.0	4.1	4.4	4.4	3.9	3.4	3.5	2.2	3.0	3.0	3.2	3.0	2.9	2.7	2.9			

UVCVWUHNCI 'EQFGU

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

QDLGEVK'G'NIO K<

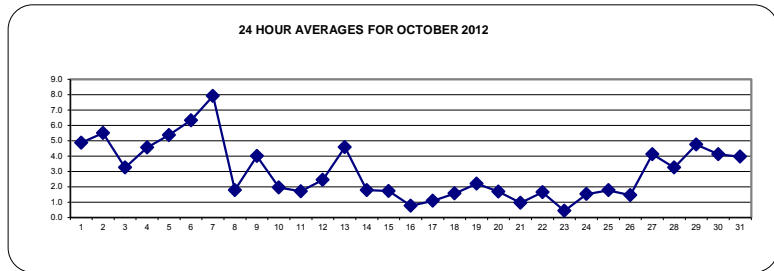
CNDGTVC'GPXKT'QPO GPV<

1-HR	-	ug/m ³	24-HR	30	ug/m ³
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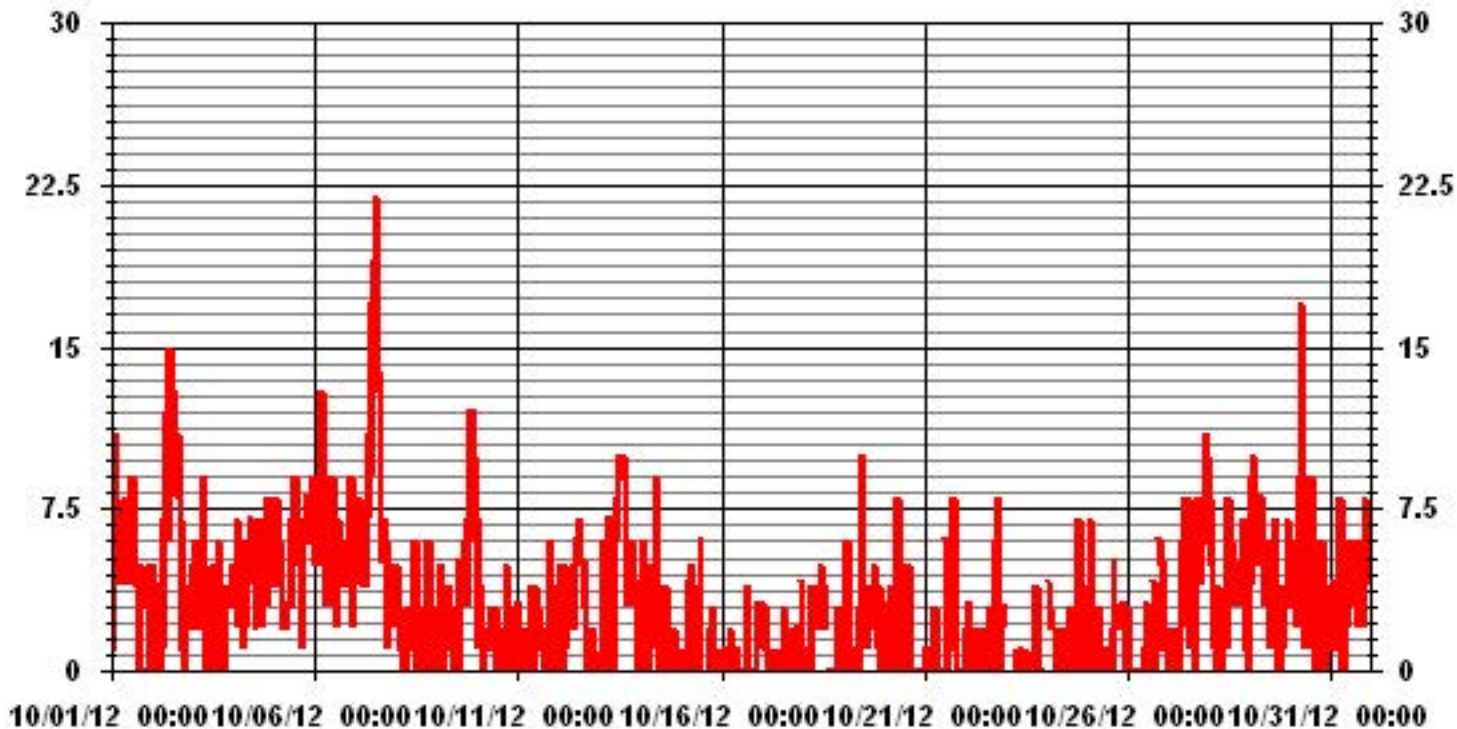
OQPVI N['UWO OCT[

NUMBER OF 1-HR EXCEEDENCES:	-		
NUMBER OF 24-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	515		
MAXIMUM 1-HR AVERAGE:	22 UG/M ³ @ HOUR(S) 12 ON DAY(S) 7		
MAXIMUM 24-HR AVERAGE:	7.9 UG/M ³ ON DAY(S) 7		
IZS CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	709 HRS
MONTHLY CALIBRATION TIME:	2 HRS	AMD OPERATION UPTIME:	95.3 %
STANDARD DEVIATION:	3.18	MONTHLY AVERAGE:	3.08 UG/M ³

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LICA31
 PM2 / WDR Joint Frequency Distribution (Percent)

October 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	8.20	4.38	2.12	2.97	2.97	4.66	7.35	5.65	4.66	7.77	6.08	5.09	5.37	8.20	11.31	13.15	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 120	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	8.20	4.38	2.12	2.97	2.97	4.66	7.35	5.65	4.66	7.77	6.08	5.09	5.37	8.20	11.31	13.15	

Calm : .00 %

Total # Operational Hours : 707

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30	58	31	15	21	21	33	52	40	33	55	43	36	38	58	80	93	707
< 60																	
< 80																	
< 120																	
< 240																	
>= 240																	
Totals	58	31	15	21	21	33	52	40	33	55	43	36	38	58	80	93	

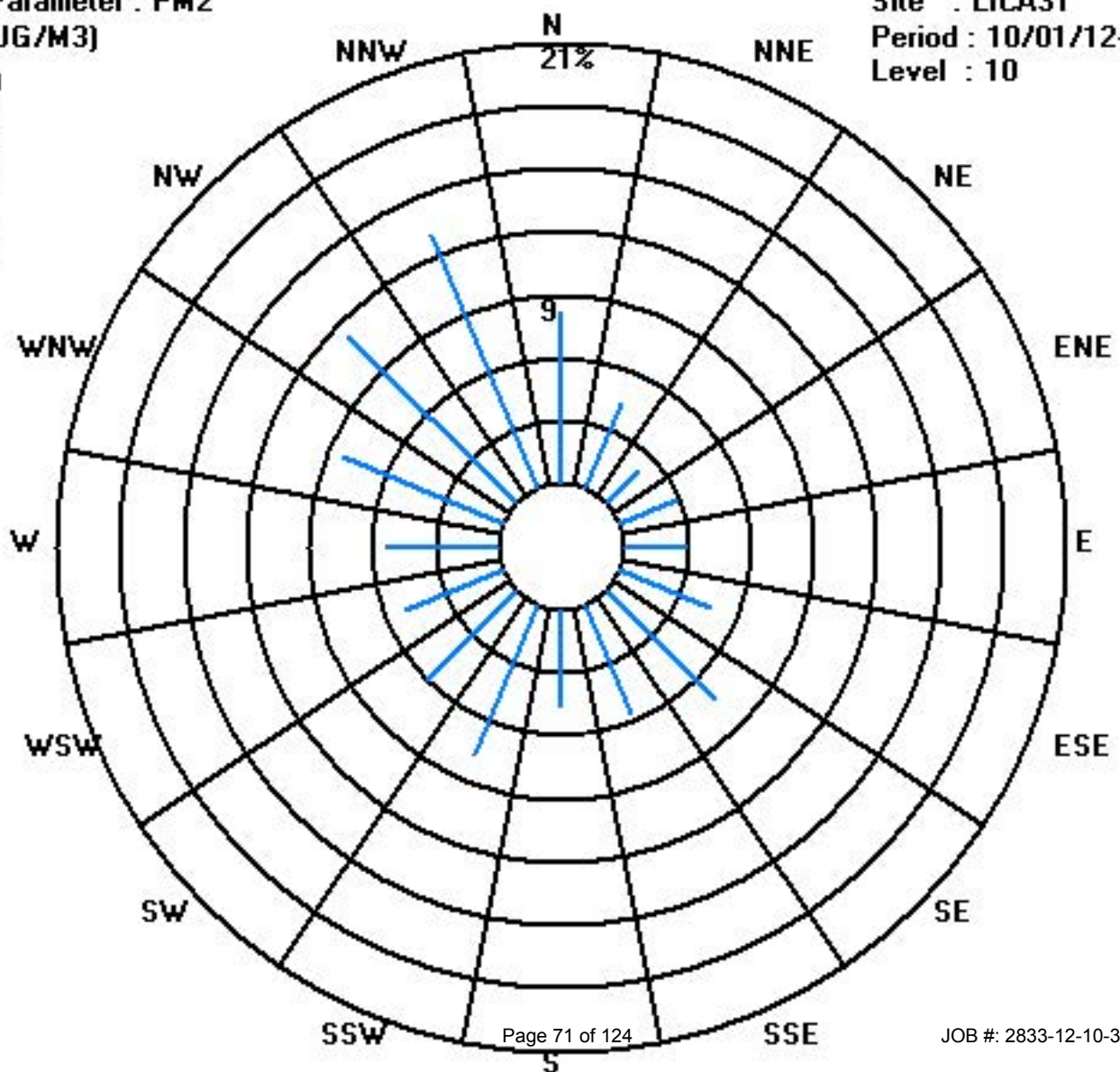
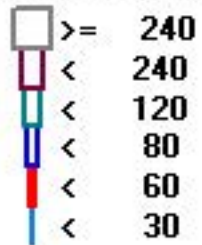
Calm : .00 %

Total # Operational Hours : 707

Class Limits (UG/M3)

Period : 10/01/12-10/31/12

Level : 10



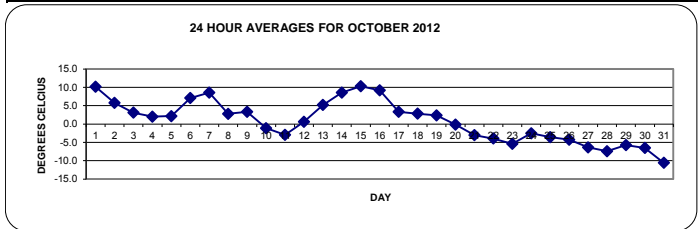
Temperature

NCMGNCPF'RFWUVT['EQOOWPK['CUQEKVQP/'UVONPC
OCTOBER 2012
CO DKGPV'VGO RGT CVWTG hourly averages (Degrees C)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
1	6.3	5.9	5.8	6.4	7.1	7.8	8.6	9.7	10.3	13.5	13.8	12.6	13.6	13.5	13.4	13.6	11.3	11.6	11.3	10.7	10.6	9.7	8.3	8.1	13.8	10.1	24	
2	8.3	7.9	6.9	6.4	5.7	4.6	4.4	4.3	5.5	5.5	5.9	6.2	7.2	7.7	7.5	7.1	6.5	5.6	5.2	4.9	4.2	3.8	3.4	3.2	8.3	5.7	24	
3	3	2.9	2.9	2.7	2.3	2.2	2.2	2.3	2.8	3.5	4.3	4.7	4.7	5	5.2	5.8	5.7	4.7	2.8	1.9	1.3	1	0.5	0.1	5.8	3.1	24	
4	0	-0.6	-0.9	-0.9	-0.8	-0.8	-0.7	-0.3	1.3	2.7	4.6	5.9	5.6	6.6	4.9	4.7	4.4	3.7	2.5	2.1	2.1	0.9	0.8	0.3	6.6	2.0	24	
5	-0.1	0.1	-0.4	-2.4	-2.5	-3.6	-4.1	-3.6	-1.5	-0.3	1.3	3.6	5.6	6.8	7.3	7.2	6.4	5.7	5.1	4.6	4	3.8	4.1	4.5	7.3	2.2	24	
6	4.5	4.6	4.5	3.8	3	2.8	2.4	3.3	4.9	7.2	9.5	10.3	11.4	12.2	12.3	12.3	11.8	10.3	8.4	7.9	7.3	5.7	4.9	4.6	12.3	7.1	24	
7	4.2	3.7	3.8	4.1	4.8	4.7	3.9	4.3	7.9	11.5	13.1	13.4	13.8	15.1	14.5	14.1	12.6	10.7	9.6	8.9	8.1	7.1	6	5.2	15.1	8.5	24	
8	4	3.3	2.3	1.8	1.9	1.7	1.7	2.3	2.7	3.6	4.5	3.9	4.8	5	6.3	5.1	4.4	3	2.2	0.8	0.8	0.8	0.1	-0.1	6.3	2.8	24	
9	0.2	-0.6	-1	-0.3	0.3	-1	-1.1	-0.7	1	4.5	5.8	6.1	6.7	7.5	8.5	7.9	6.8	5.8	5.1	5.1	4.4	3.4	2.8	2.2	8.5	3.3	24	
10	1.7	0.8	0.1	-0.1	-0.2	-0.5	-0.9	-0.9	-0.8	-0.6	-0.1	0.6	0.5	0.2	-0.2	-1	-1.9	-2.5	-2.9	-3.1	-3.4	-4	-4.2	-4.2	1.7	-1.2	24	
11	-5	-4.7	-4.8	-5.6	-6.1	-6.5	-6.9	-4.7	-3.3	-3	-2.4	-2.1	-2.2	-2	-2	-2	-1.9	-2	-1.8	-1.5	-1.1	-0.4	0.2	0.5	0.5	-3.0	24	
12	0.6	0.8	0.7	0.6	0.4	0.4	0.3	0.4	0.7	1.8	2	1.7	1.4	0.8	0.4	0.2	0	0	0.1	0.1	0.2	0.1	0.2	0.3	2.0	0.6	24	
13	0.4	0.6	0.8	0.7	0.7	0.7	0.7	0.7	1.2	2.7	5.6	6.2	6.9	8.5	10.6	12.1	11.2	9.4	8.4	8.2	7.1	7.4	7.5	6.1	12.1	5.2	24	
14	5.2	4.3	3.9	3.3	2.9	1.8	2.3	4	4.3	6.6	9.9	12.7	14	13.4	13.3	13.1	13	12.3	11.8	11.5	11.1	10.6	10.3	9.9	14.0	8.6	24	
15	9.3	8.9	8.2	6.9	6	5.6	4.5	5	8.3	11.6	13.8	15.2	15.9	16.1	3800	16	12.9	11.4	9.8	9.1	8.7	8.8	9	9.7	3800	3205	24	
16	9.9	7.5	6.3	6.7	6.9	6.3	6.2	6	6.2	8.8	10.3	13.3	14.1	14.3	13.6	13.6	12.2	10.6	10	9.1	8.1	6.9	6.5	6.2	14.3	9.2	24	
17	5.8	5.6	5.3	5.4	5.2	4.5	4.3	4.1	3.8	3.6	3.3	3.9	4	3.8	3.2	3	3.3	3	2.3	1.5	0.7	0.2	-0.3	-0.1	5.8	3.3	24	
18	-0.2	-0.7	-1.7	-2.4	-3.1	-3	-3.1	-2.8	-2.1	1	4.7	6.1	7.6	7.9	8.3	8.6	8.1	6.6	5	4.8	4.4	4.1	4.8	4.6	8.6	2.8	24	
19	3.7	2.8	2.7	2.3	2.3	2.4	2.6	2.3	2	2.6	3.7	4.2	4.8	5.4	4.7	3.1	2.5	2	1.2	0.8	0.5	-0.1	-0.9	-1.4	5.4	2.3	24	
20	-1.2	-0.6	-0.5	-0.2	-0.1	0.1	0	-0.4	-0.1	0.1	0.2	0.3	0.5	0.5	0.4	0.3	0.1	-0.2	-0.2	-0.3	-0.5	-0.7	-0.7	-0.9	0.5	-0.2	24	
21	-1.3	-1.8	-2.3	-2.7	-3	-3.4	-3.8	-4	-3.9	-3.5	-3.2	-2.5	-2.3	-1.4	-0.8	-0.9	-1.6	-2.3	-3.2	-4	-4.5	-5.2	-6.1	-5.2	-0.8	-3.0	24	
22	-5.2	-5.1	-5	-5	-5.2	-6.1	-7.5	-8	-6.7	-4.6	-3.3	-2.1	-1	-0.4	0	0.1	-0.7	-2.7	-3.7	-4.2	-4.4	-4.8	-5.5	R	0.1	-4.0	23	
23	R	R	R	R	-7.3	-7.5	-7.2	-6.2	-6.1	-5.8	-5.9	-5.7	-5.4	-5	-5	-4.7	-4.6	-4.4	-4.3	-4.6	-5	-4.6	-4.1	-3.9	-3.9	-5.4	20	
24	-3.6	-3.4	-3.3	-3.3	-3.2	-3	-3	-3	-2.9	-2.7	-2.3	-2	-1.4	-1.3	-1.2	-1.5	-1.9	-2.2	-2.4	-2.5	-2.5	-2.5	-2.6	-2.7	-1.2	-2.5	24	
25	-3	-3.3	-3.7	-3.9	-3.8	-3.6	-3.7	-3.9	-3.9	-3.4	-2.7	-2.3	-2.7	-2.6	-2.7	-3.1	-3.5	-3.9	-4.2	-4.2	-5	-5.1	-5.2	-2.3	-3.6	24		
26	-5.3	-5	-4.9	-5.1	-5.4	-5.6	-5.4	-5.8	-4.5	-2.2	-2.8	-1.8	-1.5	-2.3	-2.6	-3.1	-3.7	-4.1	-4.5	-5.1	-5.2	-5.4	-5.7	-6.1	-1.5	-4.3	24	
27	-6.4	-6.1	-5.9	-6.2	-6.4	-6.9	-6.7	-6.9	-6.6	-5.8	-4.9	-3.2	-3	-3.3	-3.7	-3.9	-5.3	-7.1	-8	-8.7	-8.8	-9.2	-9.7	-9.6	-3.0	-6.3	24	
28	-9.3	-8.9	-8.4	-8.3	-8.5	-8.5	-8.5	-8.3	-8.1	-7.6	-7.1	-6.7	-6.5	-6.4	-6.3	-6.2	-6.3	-6.5	-6.4	-6.4	-6.9	-7.4	-7.1	-7.1	-6.2	-7.4	24	
29	-7.1	-7.6	-7.7	-7.4	-7.3	-7.4	-7.1	-7.1	-6.7	-6	-5.5	-5	-4.8	-4.7	-4.7	-4.7	-4.8	-4.8	-4.7	-4.6	-4.6	-4.5	-4.6	-4.6	-4.5	-5.8	24	
30	-4.6	-4.6	-4.6	-4.6	-4.6	-4.7	-5	-5.3	-5.5	-5.4	-4.1	-4.5	-5.3	-5.7	-6.1	-6.5	-7.1	-8.2	-9	-9.5	-10.2	-10.2	-10.2	-10.2	-4.1	-6.5	24	
31	-10.2	-10.2	-10.4	-10.6	-11	-11.6	-11.7	/330	-11.3	-10.2	-9.9	-9.9	-9.4	-9.5	-9.1	-9.9	-10.3	-10.7	-10.7	-11.1	-11.5	-11.2	-10.9	-10.7	-9.1	-10.6	24	
HOURLY MAX	9.9	8.9	8.2	6.9	7.1	7.8	8.6	9.7	10.3	13.5	13.8	15.2	15.9	16.1	16.7	16.0	13.0	12.3	11.8	11.5	11.1	10.6	10.3	9.9				
HOURLY AVG	0.2	-0.1	-0.4	-0.6	-0.9	-1.2	-1.4	-1.1	-0.4	1.0	2.0	2.7	3.1	3.4	3.4	3.3	2.6	1.8	1.1	0.7	0.3	0.0	-0.3	-0.2				

UVCVW/HNCI 'EQFGU

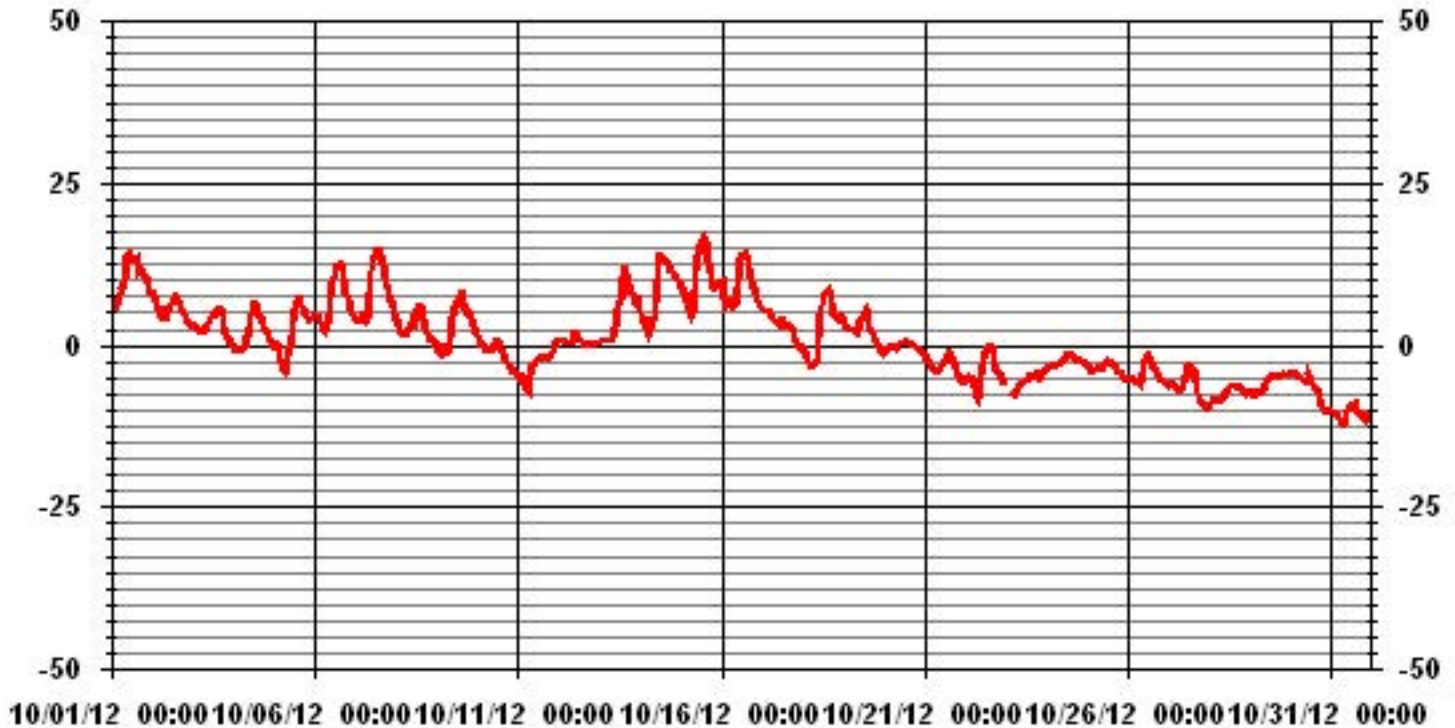
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



OQPJVJ 'UWO OCTI

MINIMUM 1-HR AVERAGE:	-11.9 °C	@ HOUR(S)	7	ON DAY(S)	31
MAXIMUM 1-HR AVERAGE:	16.7 °C	@ HOUR(S)	14	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	10.3 °C			ON DAY(S)	15
CALIBRATION TIME:	0	HRS		OPERATIONAL TIME:	739
				AMD OPERATION UPTIME:	99.3
STANDARD DEVIATION:	6.11			MONTHLY AVERAGE:	0.80 °C

01 Hour Averages



Barometric Pressure

NCMGNCPF 'RPF WUVT[(' 'EQO O WPK['CUUQEKC'VKQP'/'UV0NRC

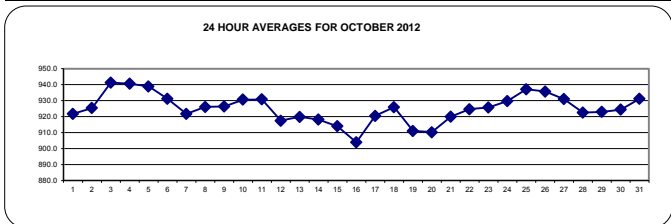
OCTOBER 2012

DCTQO GVTKE RTGUWIG hourly averages (millibar)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR			
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.		
1		931	931	931	930	930	928	927	926	926	924	922	920	919	918	918	918	917	916	915	915	915	915	915	915	915	931	921.8	24	
2		915	915	916	916	917	918	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	936	936	936	936	925.4	24
3		937	937	938	939	940	940	940	941	941	942	942	943	943	943	943	943	943	943	943	943	943	942	942	942	942	942	935	936	24
4		941	941	941	941	941	941	941	940	941	941	941	941	941	941	941	940	940	940	940	940	940	940	940	940	940	941	940.6	24	
5		940	940	940	940	940	940	940	940	941	941	941	941	941	941	940	939	939	938	937	936	936	935	934	934	941	938.9	24		
6		933	933	932	932	931	931	931	932	932	933	933	933	933	933	932	932	931	930	929	929	928	927	926	926	933	931.2	24		
7		925	924	923	922	920	920	919	919	919	919	920	920	921	921	921	921	922	923	923	923	923	924	924	924	925	925	921.7	24	
8		925	925	925	925	925	925	925	925	925	925	925	925	926	926	926	926	927	927	927	927	927	928	928	928	928	928	926.1	24	
9		928	928	927	928	927	927	927	927	927	927	928	928	927	927	927	926	926	925	925	925	924	924	924	924	923	928	926.3	24	
10		923	924	924	924	925	926	927	928	929	930	931	931	932	932	933	933	934	935	935	935	936	936	936	936	936	936	936	930.6	24
11		936	937	936	936	936	936	935	935	935	935	934	933	932	931	930	929	928	927	926	925	923	922	921	921	937	930.8	24		
12		920	920	919	919	919	919	918	918	918	917	917	917	917	916	916	915	916	916	916	916	917	917	917	917	920	917.4	24		
13		917	917	918	918	918	918	918	918	918	919	919	920	920	920	921	922	922	922	922	922	922	922	922	923	923	923	919.8	24	
14		923	923	923	923	923	923	922	922	921	921	920	920	919	918	916	915	915	914	913	913	912	912	912	913	923	918.2	24		
15		913	913	913	913	914	914	914	914	915	916	916	916	916	916	916	916	915	914	913	912	911	910	909	916	914.0	24			
16		907	905	903	902	901	901	900	899	899	900	900	901	902	903	903	904	905	906	907	908	909	909	910	911	911	904.0	24		
17		911	912	913	914	914	915	915	916	917	918	919	920	921	922	923	924	925	926	927	927	928	928	928	928	928	928	920.5	24	
18		928	928	928	928	928	928	928	928	927	927	928	928	928	927	926	926	925	925	924	923	922	921	920	920	928	925.9	24		
19		919	917	916	915	914	913	912	911	910	910	910	910	909	909	909	910	909	909	909	909	909	909	909	908	919	911.0	24		
20		908	908	908	908	908	908	908	908	909	909	909	909	910	910	910	911	911	912	912	913	913	914	914	915	915	910.2	24		
21		915	916	916	917	917	918	918	919	919	919	920	921	921	921	921	922	922	922	922	922	923	923	923	923	923	923	919.9	24	
22		924	924	924	924	924	924	924	924	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	924.7	23	
23		R	R	R	R	925	925	925	925	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	926	925.8	20	
24		926	9R26	926	927	927	927	927	928	928	929	929	929	929	930	930	931	931	932	933	933	933	933	934	934	934	934	929.7	24	
25		934	935	935	935	935	936	936	937	937	937	937	937	938	938	938	938	938	939	939	938	938	938	938	938	938	938	937.1	24	
26		938	938	938	937	937	937	937	937	937	937	937	937	936	936	935	935	935	934	934	934	934	934	933	933	933	938	935.7	24	
27		932	932	932	932	932	932	932	932	932	932	932	932	932	932	931	931	931	930	930	929	929	929	928	927	932	931.0	24		
28		927	926	926	925	924	924	923	923	922	922	921	920	920	920	921	921	922	922	922	922	922	922	923	923	923	927	922.6	24	
29		924	924	924	924	924	924	924	924	924	924	923	923	923	922	922	922	922	922	922	922	922	922	922	922	924	923.0	24		
30		922	922	921	921	921	921	922	922	922	923	923	923	924	924	925	925	926	927	927	928	928	929	930	930	930	930	924.4	24	
31		931	931	931	932	932	932	932	932	933	933	933	933	933	934	934	931	931	931	930	930	929	929	928	928	933	931.2	24		
HOURLY MAX		941	941	941	941	941	941	941	941	941	942	942	943	943	943	943	943	943	943	943	943	942	942	942	942	942				
HOURLY AVG		925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	925	926	925	925	925	925	925	925	925				

UVCVWUHNCI 'EQFGU

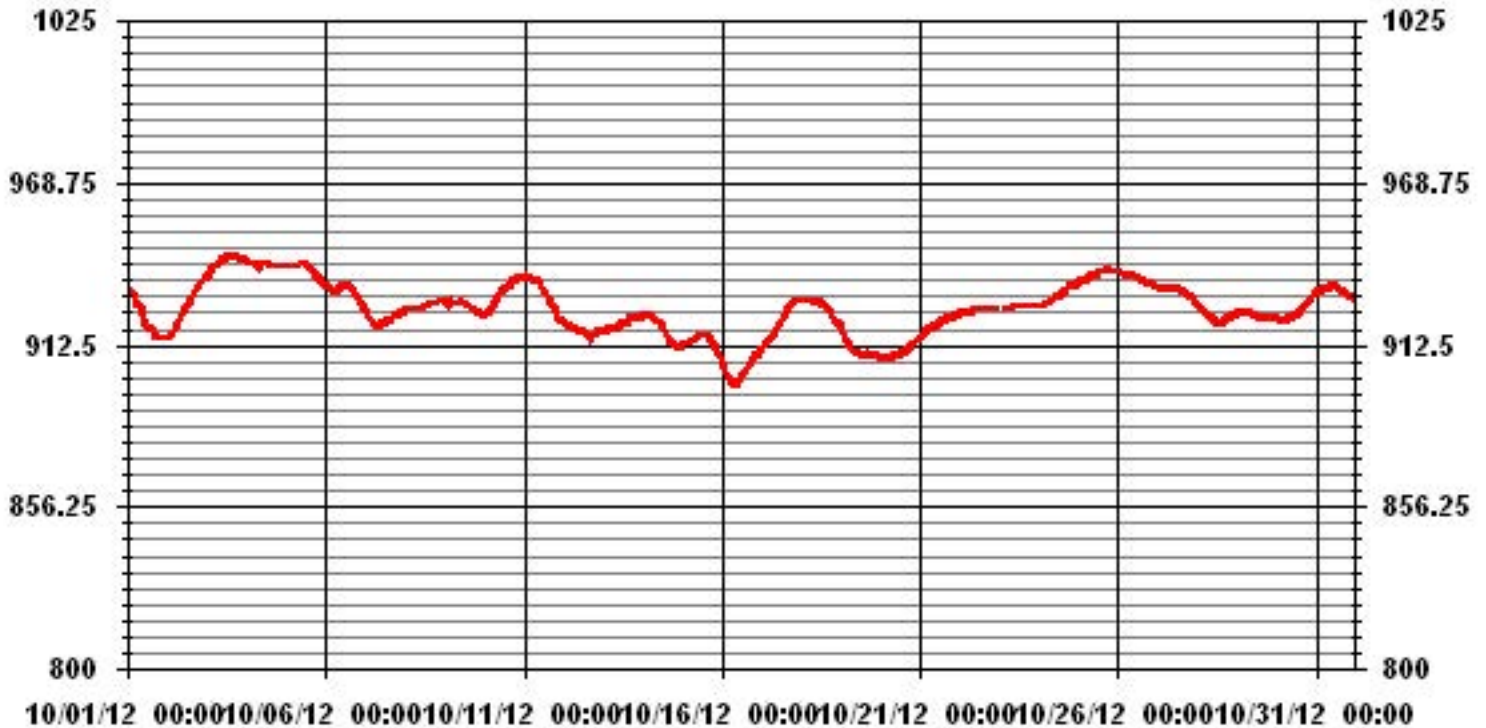
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



OQPVI N['UWO OCT[

MAXIMUM 1-HR AVERAGE:	943	MB	@ HOUR(S)	VAR	ON DAY(S)	3
MAXIMUM 24-HR AVERAGE:	941.3	MB			ON DAY(S)	3
					VAR-VARIOUS	
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	739	HRS	
			AMD OPERATION UPTIME:	99.3	%	
STANDARD DEVIATION:	9.25		MONTHLY AVERAGE:	925	MB	

01 Hour Averages



Relative Humidity

NCMGNCPF 'RPF WUVT['('EQO O WPK['CUUQEKVKQP'/'UV0NRC

OCTOBER 2012

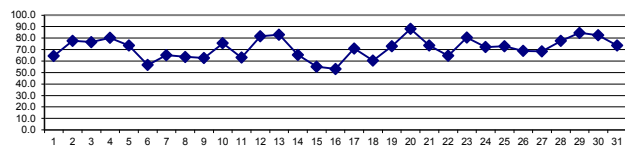
TGNCVKKGJ WO R KW[hourly averages (%)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOURLY MAX	HOURLY AVG	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																												
1		59	62	62	59	57	56	53	49	50	42	51	62	60	64	68	65	76	71	74	78	78	79	84	87	87	64.4	24
2		87	89	89	88	87	86	85	82	77	76	75	74	69	66	67	70	71	73	73	73	74	75	78	78	89	77.6	24
3		78	79	79	82	84	83	82	83	82	78	76	73	72	69	67	64	63	65	73	77	79	80	83	85	85	76.5	24
4		88	89	90	90	90	90	89	87	83	77	71	64	63	58	68	71	72	76	82	84	83	86	87	88	90	80.3	24
5		89	89	89	89	89	88	87	87	89	89	89	86	74	62	59	52	53	54	56	58	60	61	58	56	89	73.5	24
6		57	57	58	62	66	68	71	69	67	60	49	43	38	38	40	42	45	49	55	57	60	66	69	71	71	56.5	24
7		72	74	75	75	74	76	79	79	71	62	56	56	55	52	53	52	55	60	62	63	65	66	67	65	79	65.2	24
8		67	68	69	69	69	70	70	69	71	73	66	66	61	56	50	49	48	52	58	62	64	63	66	71	73	63.6	24
9		68	72	69	64	62	69	71	72	68	56	48	48	48	47	45	47	51	54	58	58	72	82	86	86	86	62.5	24
10		87	89	90	90	90	89	87	84	82	79	74	73	70	65	67	66	64	65	65	65	61	61	60	90	75.5	24	
11		61	60	57	64	72	77	79	73	67	60	56	55	56	56	56	57	59	60	60	63	64	66	67	68	79	63.0	24
12		70	71	73	73	74	75	75	77	75	73	74	80	84	87	89	90	90	90	90	90	90	90	90	90	90	81.6	24
13		90	90	90	90	90	91	91	91	91	88	87	85	80	72	66	68	74	78	78	80	76	75	79	90	90	82.9	24
14		82	82	78	79	78	81	79	73	73	69	61	52	46	51	51	51	53	56	58	59	61	63	65	68	82	65.4	24
15		72	73	76	80	84	85	87	84	72	59	48	39	29	29	27	28	35	40	45	46	47	47	46	45	87	55.1	24
16		44	54	59	60	61	65	67	69	61	57	49	49	45	43	39	42	46	44	44	44	46	49	55	58	69	53.1	24
17		61	63	62	60	58	61	64	66	67	67	72	69	67	68	75	76	71	71	78	81	84	86	87	88	88	70.9	24
18		85	86	88	87	87	84	82	79	77	70	56	50	43	40	36	35	36	40	45	47	48	49	48	49	88	60.3	24
19		53	57	58	59	60	62	63	69	73	72	69	68	67	66	70	80	84	85	88	89	90	90	90	90	90	73.0	24
20		90	90	90	90	90	89	88	90	89	86	86	87	88	88	88	88	88	88	88	86	86	87	87	87	90	80.5	24
21		87	84	83	82	81	81	80	78	76	73	72	71	69	66	62	64	65	68	70	70	71	75	73	87	73.5	24	
22		72	71	70	70	70	71	75	76	71	66	63	60	57	55	52	52	53	58	61	63	64	67	71	R	76	64.7	23
23		R	R	R	R	81	81	81	80	79	81	82	82	81	80	80	79	79	79	80	82	81	82	80	79	82	80.5	20
24		78	78	76	76	76	76	75	75	73	74	71	70	67	67	66	67	67	68	70	70	68	69	76	79	79	72.2	24
25		75	74	74	77	81	80	80	81	82	75	72	72	71	68	66	66	67	66	67	68	69	73	74	74	82	73.0	24
26		74	74	75	77	80	82	82	81	72	64	64	58	56	60	61	61	65	65	66	67	66	67	69	67	82	68.9	24
27		71	71	71	74	74	77	78	79	79	75	69	61	54	54	51	51	55	61	67	73	72	74	77	75	79	68.5	24
28		71	65	64	67	72	72	73	74	75	76	79	80	80	80	82	82	82	83	83	84	84	84	84	84	84	77.5	24
29		84	83	83	83	83	83	84	84	84	84	84	84	84	84	85	85	85	86	86	86	86	86	86	86	86	84.6	24
30		86	86	86	86	86	86	86	85	85	85	85	83	83	81	80	79	79	79	79	79	79	80	78	77	86	82.4	24
31		76	76	75	76	75	76	77	76	75	71	70	69	67	68	68	71	72	74	74	74	75	76	77	78	78	73.6	24
HOURLY MAX		90	90	90	90	90	90	91	91	91	91	89	87	88	88	89	89	90	90	90	90	90	90	90	90	90		
HOURLY AVG		74.5	75.2	75.3	75.9	76.8	77.7	78.1	77.5	75.7	71.8	68.9	66.8	64.4	63.1	62.6	62.7	64.4	66.2	68.7	70.1	71.3	72.6	74.1	74.7			

UVCVWUINCI 'EQFGU

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

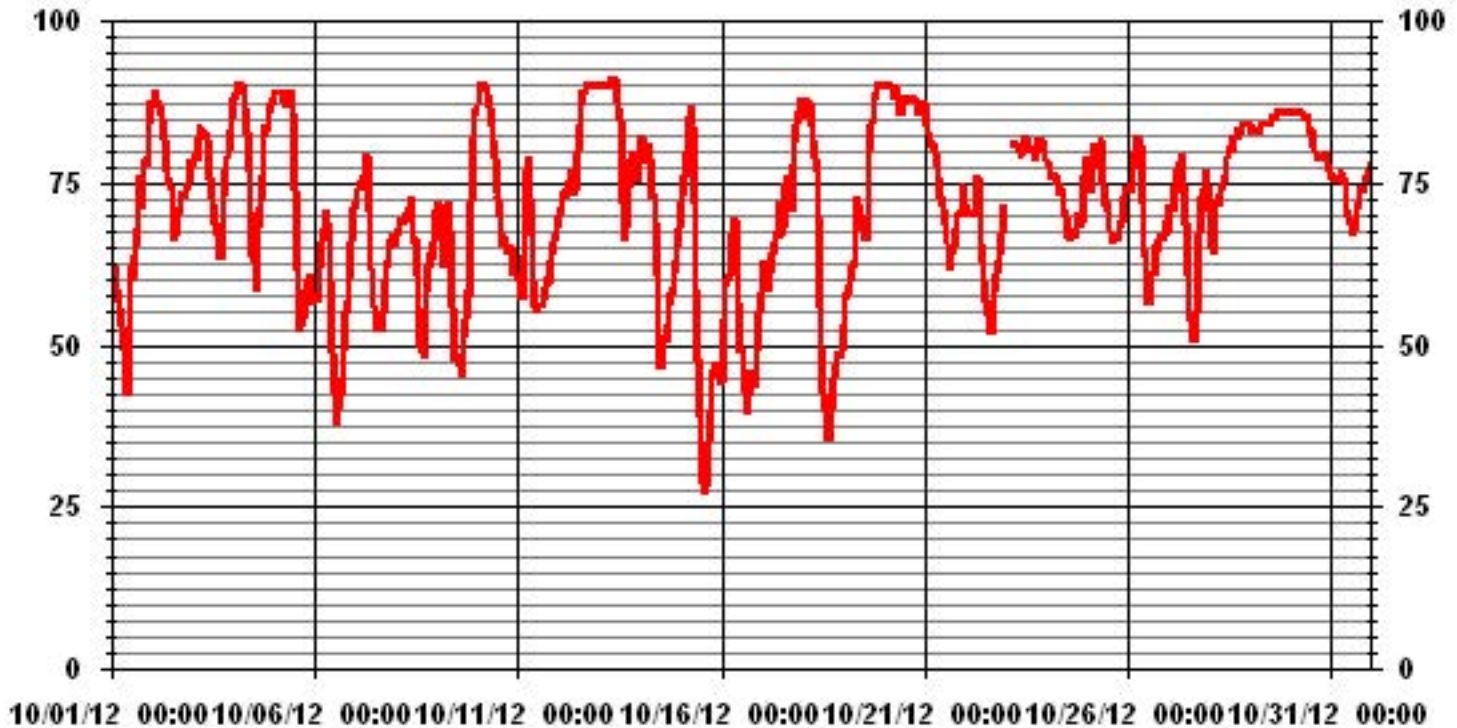
24 HOUR AVERAGES FOR OCTOBER 2012



OQPVI NI 'UWO OCT[

MAXIMUM 1-HR AVERAGE:	91	%	@ HOUR(S)	VAR	ON DAY(S)	13
MAXIMUM 24-HR AVERAGE:	88.1	%			ON DAY(S)	20
				VAR-VARIOUS		
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	739	HRS	
STANDARD DEVIATION:	13.09		AMD OPERATION UPTIME:	99.3	%	
			MONTHLY AVERAGE:	71.20	%	

01 Hour Averages



Precipitation

NCMGNCF'WFWVUT[('EQOOWPK['CUQEKVQIP/'UVONPC
 OCTOBER 2012
 RTGERK/CVQIP"j qwtq'cxgtci gu'o o +

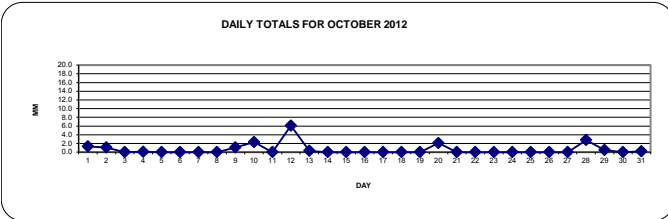
DAY	MST																								DAILY MAX.	DAILY TOTAL	DAILY RDGS.	
	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00				00:00
1	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.4	0	0.2	0.6	0	0	0	0	0	0	0	0.6	1.3	24	
2	0	0.3	0.1	0.4	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1.1	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	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	24	
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.2	0.2	0.4	0.4	1.1	24
10	0.4	0.6	0.6	0.3	0.2	0.1	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.6	2.3	24	
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
12	0	0	0	0	0	0	0	0	0	0	0	0.6	0.4	3.0	0.8	0.9	0.9	0.4	0.4	0.3	0.1	0.1	0.1	0	3.0	8.0	24	
13	0.1	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.3	24	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
20	0	0	0	0	0	0	0.1	0.3	0.1	0.1	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0	0	0	0	0	0	0	0.3	2.1	24	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	0.0	0.0	23	
23	R	R	R	R	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	19	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
28	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0.3	0.5	0.7	0.4	0.1	0	0.4	0.2	0	0	0	0	0.7	2.8	24	
29	0	0	0	0	0	0.1	0	0	0	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.5	24	
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	24	
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.2	0.2	0.2	24	
HOURLY MAX	0.4	0.6	0.6	0.4	0.3	0.1	0.1	0.3	0.1	0.2	0.3	0.6	0.4	1.1	0.8	0.9	0.9	0.4	0.4	0.3	0.3	0.2	0.2	0.4				

UVCWUHNCI 'EQFGU

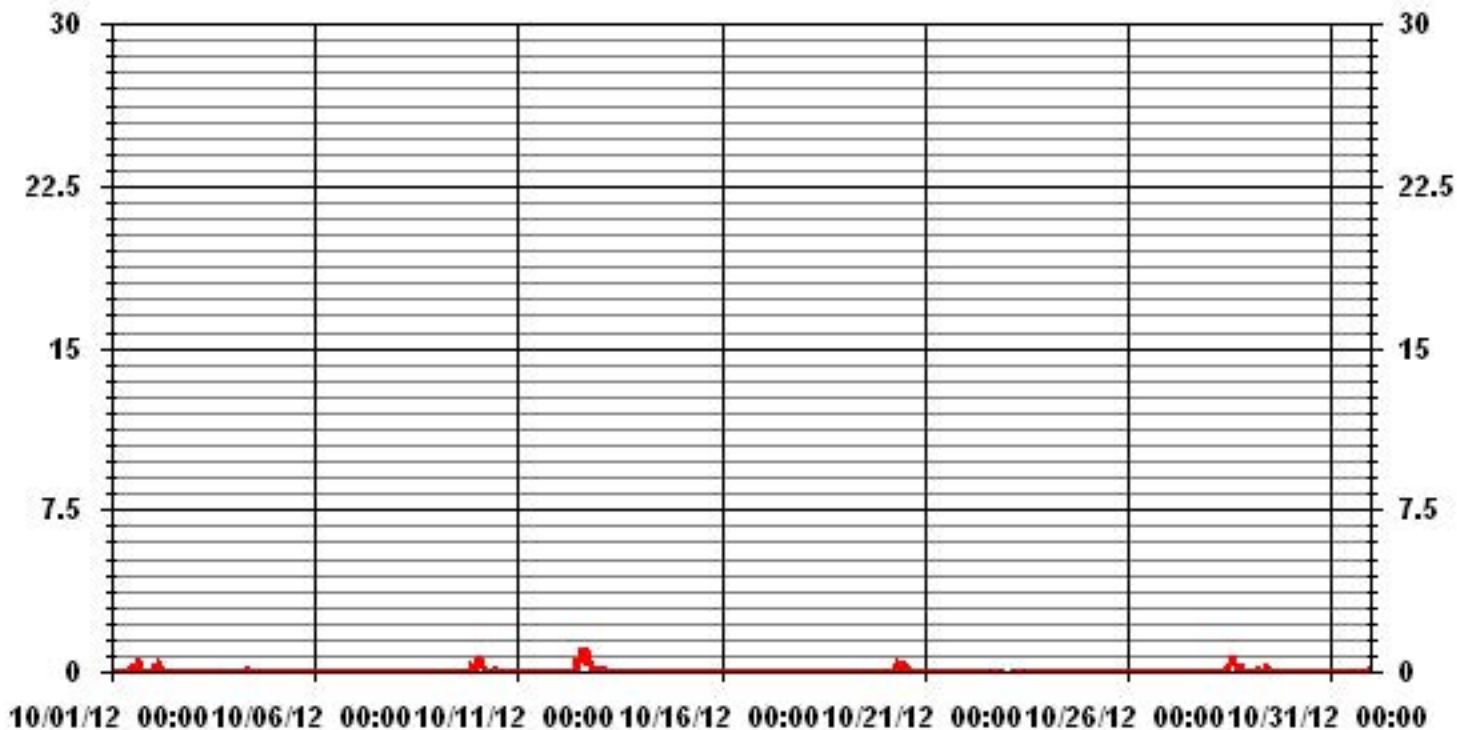
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MAINTENANCE
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	MD	-MISSING DATA

OQPJN 'UWOCT[

MAXIMUM 1-HR AVERAGE:	1.1	MM	HOUR(S)	13	ON DAY(S)	12
MAXIMUM DAILY TOTAL	6.1	MM			ON DAY(S)	12
MONTHLY TOTAL	17.9	MM				
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	738	HRS	
STANDARD DEVIATION:	0.11		AMD OPERATION UPTIME:	99.2	%	
			MONTHLY AVERAGE:	0.02	MM	



01 Hour Averages



Vector Wind Speed

NCMGNCPF 'R'FWVT[' 'EQO O WPK['CUUQEKVKQP/'UVNRP C
OCTOBER 2012
Y 'R'F'URGGF hourly averages (km/hr)

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	6.9	6.8	6.9	7.3	6.6	6.6	8.1	10	12.1	17.2	17.9	10.6	11.7	9	16.6	22.3	21	21.1	20.2	18.2	14	14.1	11.1	9.3	22.3	7.7	24
2	7.4	6.5	5.2	10.4	13.6	12.7	11.5	13.1	12.3	15.5	15.5	15.4	16.5	17.7	13.8	15.2	15.2	16.2	14.8	13.5	13.4	13.4	13.1	17.7	12.3	24	24
3	12.3	11.3	10.4	12.1	11.1	10.8	10	8.2	8.9	8.1	7.5	6.6	8.4	8.5	7.3	5.9	4.1	2.7	3.8	4.4	4.7	5.4	6.2	5.4	12.3	5.5	24
4	6.1	6.9	7.8	5.7	6.2	5.9	6.7	6.1	4.7	6.6	7.2	14.4	13.2	9.4	10	7.7	4.4	4.8	1.8	2.9	1.8	6.2	5.5	7	14.4	5	24
5	6.3	5.1	1.3	5.1	4	6.9	4.1	4.6	5	5.6	7.9	11.7	12.9	12.5	13.2	14.8	12.5	9.4	8.4	8.8	9.9	11.6	14	13.4	14.8	7.6	24
6	12.7	11.5	12.6	13.5	11.1	10.3	12.7	10	13.2	13.8	15.6	18.2	16.3	16.1	14.9	13.8	10.4	4.8	4.4	5.4	6.2	7.6	8.1	9	18.2	7.6	24
7	11	11.3	11.1	10.7	12.4	13.5	12.7	13.5	12.6	16.5	20.8	20.6	23.2	21.7	24	22.2	23.2	25.5	21.8	21	22	20	14.9	18.7	25.5	12.6	24
8	15.5	14.7	17.1	16.6	18.8	14.6	13.5	15.1	18	18.4	17.8	14	13.9	15	20.3	19.7	14.7	10.4	12.9	9.2	10.7	8.8	8.1	9.3	20.3	13.9	24
9	9.4	8.1	9.6	8.8	7.2	9.1	7.5	5.2	4.3	6.8	7.3	9.6	9.9	9.6	8.3	7	1.9	3.9	5.4	0.1	2	3.1	7	9	9.9	4.2	24
10	6.5	6.7	11.2	15.5	14.5	16.2	16.3	12.5	13.1	13.6	15.2	16.1	14.8	16.9	16.9	15	15.6	13.3	10.3	10.6	13.2	11.3	8.5	7.7	16.9	12	24
11	6.6	4.7	4.7	5.5	4.8	4.4	2.9	4.4	5.8	10	12.5	13.9	13.2	13.2	15.1	15.5	16.3	14.2	14.1	11.3	12.5	13.6	13.4	12.3	16.3	7.4	24
12	9.6	6.2	4.7	3.3	4.1	3	1.6	4.5	7.6	7.4	9.6	8	3.6	3	8.5	14.5	14.4	5.9	5	4.8	4.2	4.6	5.4	6.7	14.5	3.1	24
13	7.1	9.1	12.2	10.9	6.1	3.9	10.4	13.4	8.5	9.1	8.7	9.4	10.8	9.6	10.1	11	13.8	9.4	6.9	8	15.1	16.4	18	9.6	18	9.9	24
14	10	10.9	12.1	9.2	11.1	11.4	9.4	8.3	8.6	9.2	11.5	13.4	16.6	17.3	17.6	16.4	15.2	11.8	10.4	10.6	12.2	9.6	7.4	6.4	17.6	9	24
15	7.7	1.6	5.5	9.2	11.4	8.6	10.1	9.5	13	11.8	15.6	18.4	20.9	18.2	16.4	14.6	11.3	10.1	7.8	5.7	7.2	10.2	11.5	14.7	20.9	7.3	24
16	17.4	18.5	16.3	13	6.5	7.3	8.8	7.1	2.5	2.7	13	17.3	22.8	23.5	490	23.3	25.5	18.1	25.6	23.7	22	20.6	26.1	21.6	490	9.4	24
17	22	24.4	24.6	19.2	21.6	23.2	24.1	24	24.3	25.4	24.1	21.7	19.7	24.6	21	19.7	19.4	20.8	18.3	12	11.2	9.5	9.8	11.2	25.4	3; 0	24
18	9.3	7.4	9.3	8.2	7.8	7.9	8.2	9.3	8.8	9.1	11.6	16.7	16.1	15.9	17.7	16.2	15.5	12.1	11.3	14.6	14.2	12.4	13	12.7	17.7	10.6	24
19	13.9	15.7	15.9	17.7	20	19.7	16.7	15.8	23.9	18.4	18.5	17.2	18.8	14.5	7.9	11.1	12.5	6.8	6.9	7.8	6.8	5.1	4.2	5.3	23.9	12.4	24
20	8.5	6.6	6.3	8.9	10.3	11.7	12.1	7.6	9.7	10.9	12	12.5	12.1	13.5	14.3	15.4	16.5	16.3	15.8	18.5	16.6	16.1	16.9	17.9	18.5	12.2	24
21	19.2	21	21.1	19.4	19.4	19.5	19.6	20.9	21.9	23.7	21.7	22	21.3	19.6	20.9	18.4	15.5	14.7	12.7	11.6	14.6	13.8	13.9	13	23.7	18.2	24
22	15.8	14.5	13.4	15.4	15.8	15.7	12.5	13.6	13.7	16.6	17.6	16.5	16.7	18.1	18.7	15	11	8.8	8.1	7.1	7.2	6.6	6.3	R	18.7	11.8	23
23	R	R	R	R	R	6.7	7.9	8	7.6	9.6	10.9	9.7	9.1	9.7	10.6	11.4	13.7	13.6	15	13.7	18.1	16.9	17	14.9	18.1	11.7	19
24	13.1	13.2	14.5	13.9	14.1	14.4	15.8	17	16.8	17.6	17.7	20.8	19.1	19.3	17.6	16.2	16.1	13.9	14.4	12.4	12.3	11.5	11.6	12	20.8	14.9	24
25	11.5	9.9	11.8	11.9	11	12.7	13.6	13.4	12.6	14.9	14.3	15.8	15	15.3	14.5	13.4	14.9	12.9	10.9	9.8	10.6	9.4	8.6	7.2	15.8	12.1	24
26	6.6	7.5	7.7	7.7	7.1	6.3	7.5	7.6	6.5	7	7.2	6.1	6.2	6.2	6.8	6.5	7	5.8	6.4	4.2	5.3	3.4	4	2.9	7.7	5.7	24
27	4.8	5.1	4.3	5.7	8.3	9.4	6.7	7.5	7.5	8.8	9.4	11.4	16	14.4	17.2	15.3	13.7	10.4	10.9	12.1	15.6	13.9	13.1	15.5	17.2	9.7	24
28	16.6	18.4	20.3	20	19.9	20.2	20.7	20.7	21.4	21.8	22.1	23.6	20.9	18.8	16.4	12.7	12.3	11.4	8.2	6.4	5.4	4.9	6.2	5.5	23.6	14.2	24
29	5.4	2.5	3.9	5.9	6.4	6.3	5.3	7.1	7.3	8.2	8.8	7.9	10.2	12.9	11.2	9.9	9.2	8.2	6.9	5.6	4	2	4	3	12.9	5.7	24
30	3.2	1.6	2.8	1.8	1.1	5.1	8.1	8.3	7.6	6.3	6.5	9.2	10.9	9.2	10.8	11.8	10.5	13.5	15.6	10.3	10.5	9.3	10.6	7.7	15.6	7.5	24
31	6.9	6.5	6.4	4.2	5.6	4.8	4.6	5.9	6.4	10.1	10.6	9.8	11.3	12.5	13.3	12.5	12.5	11.6	14	17	18.2	19.1	20.6	16.8	20.6	8.8	24
HOURLY MAX	22.0	24.4	24.6	20.0	21.6	23.2	24.1	24.0	24.3	25.4	24.1	23.6	23.2	24.6	27.2	23.3	25.5	25.5	25.6	23.7	22.0	20.6	26.1	21.6			
HOURLY AVG	10.3	9.8	10.4	10.6	10.6	10.6	10.6	10.7	11.2	12.3	13.4	14.1	14.6	14.4	14.8	14.3	13.5	11.7	11.3	10.4	11.0	10.7	10.9	10.6			

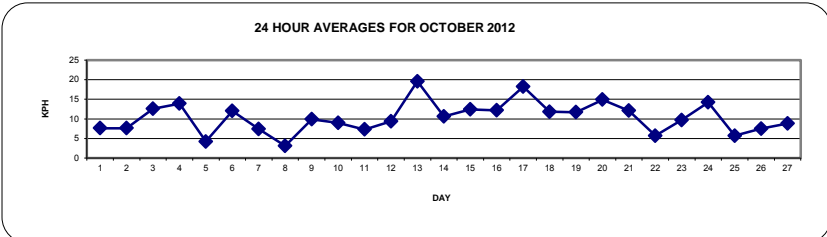
UVCVWHNCI 'EQFGU

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

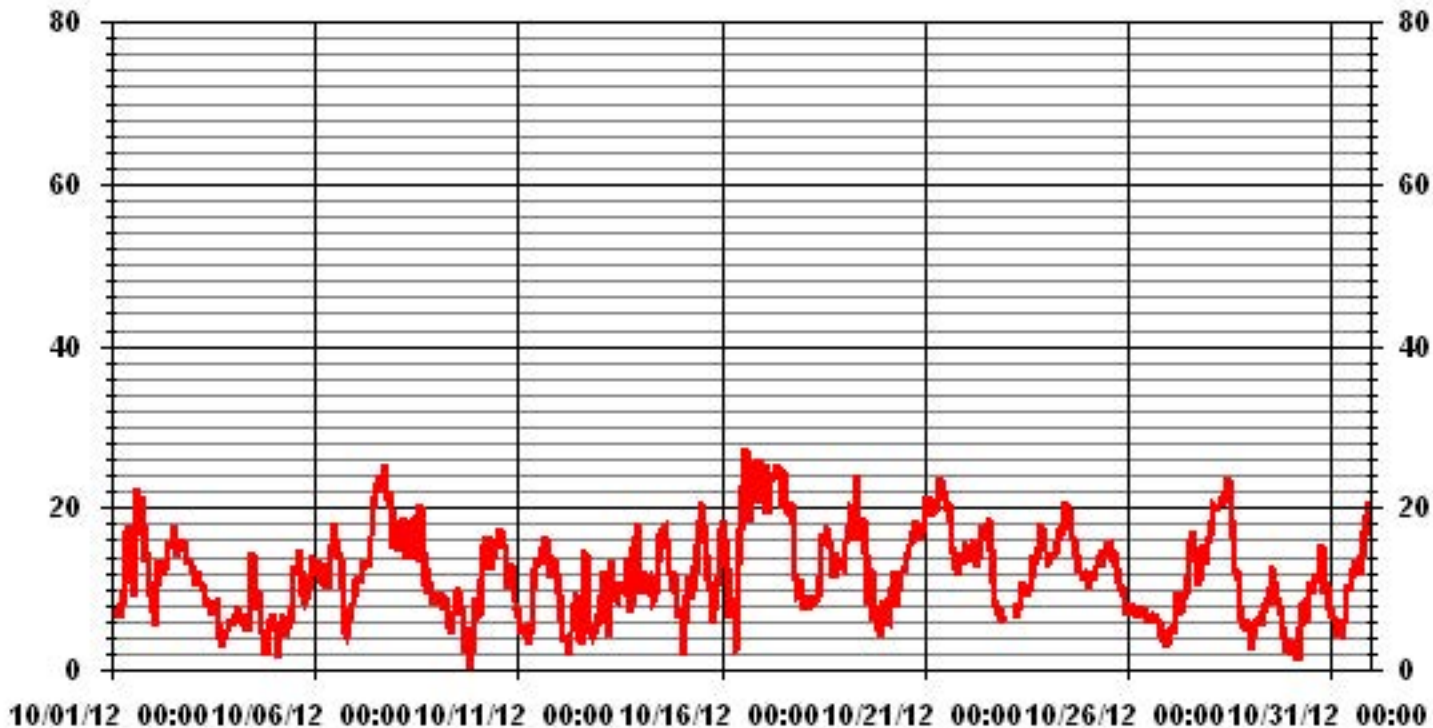
LAST CALIBRATION: June 12, 2012

O QPVJ N['UWO O CT[

MAXIMUM 1-HR AVERAGE:	27.2	KPH	@ HOUR(S)	14	ON DAY(S)	16
MAXIMUM 24-HR AVERAGE:	19.6	KPH			ON DAY(S)	17
CALMS (≤ 0 KPH)	0.13	%	OPERATIONAL TIME:		738	HRS
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME:		99.2	%
STANDARD DEVIATION:	5.39		MONTHLY AVERAGE:		11.80	KPH



01 Hour Averages



— LICA31 WSP KPH

NCMGNCPF'RF WVT[('EQO O WP KW['CUQEKC VKQP)'ST. LINA

OCTOBER 2012

XGEVQT'Y RFF'URGGF'O CZ''''lpucpwpqwb' czko wo 'lp'ho lj t

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.
DAY																									
1	13.2	11	11.7	10.1	13.4	10.5	14.7	20.4	28.9	38.3	43.1	34.4	31.3	23.4	49.9	52.1	49.5	46.6	51.9	46.2	37	32.2	21.5	22.1	52.1
2	17.7	29.6	20.2	25.2	39.9	37.1	31.6	40.1	35	36.4	39	42.5	43.8	44.4	38.1	47.7	46.2	41.2	42	44	34.8	34.4	37.5	31.6	47.7
3	33.5	25.2	25.2	28.3	24.3	23.4	21.5	17.8	20.2	18.6	18.7	19.5	18.9	22.1	16.7	18	11	9.2	6.4	7.5	7.2	9.2	12.5	9	33.5
4	12.1	11	13.2	14.5	14.3	13.8	14	10.6	8.8	17.3	16.7	39.2	27.2	28.9	30.1	21.5	10.1	11.8	11.4	11.9	11.2	11.8	14.3	10.3	39.2
5	11.6	7.9	13.6	13	11.6	15.1	8.4	10.8	11	13	17.1	22.6	24.1	30.5	30	29.8	25	18.2	14	16.4	18.2	21	23.7	24.6	30.5
6	25.2	21.2	24.8	19.5	18	20.6	24.8	23.4	26.3	29.6	44	39.2	39	39.2	36.1	31.8	32.6	11.8	7.5	11	10.1	11.6	12.5	14.9	44
7	21.3	18.2	19.7	19.7	23.9	20.4	17.8	18.6	27.4	40.7	53	47.9	52.3	48.2	52.3	53.8	58.9	60.2	65.7	49.2	48.4	46.4	36.6	51.7	65.7
8	39.2	36.8	37.9	34.2	38.5	37.2	27.4	34.2	40.5	42.9	40.5	41	32.6	44.7	49.5	48.2	41.8	29.6	35.7	16.7	23.4	18.2	15.3	14.7	49.5
9	15.6	12.9	13.6	14	15.1	16.9	15.8	11	11.6	13.4	19.3	19.7	21.7	23.4	20.8	18.4	11.2	6.4	7.5	15.3	11.4	7	12.5	16.7	23.4
10	15	13	28.7	31.6	32.9	35.1	35.5	31.6	41.4	34.2	37.7	37	42.7	39.9	42.7	41	41.8	33.3	27.2	25.6	39.3	30.2	22.1	21.9	42.7
11	13.4	8.4	11.6	13.8	13.8	7.7	10.8	13	13.8	27.2	30.5	30.9	33.3	29.2	31.9	37.3	34.2	28.7	32	25.9	26.9	32.4	31.6	29.8	37.3
12	19.1	16.1	11.8	11.6	12.1	10.5	10.9	14.5	16.5	15.8	19.7	17.5	11	9.2	17.8	31.6	28.9	18.7	10.8	10.3	12.7	7.9	11.3	12.9	31.6
13	13.2	18.6	20.6	27.4	13.6	12.1	25.2	22.6	14.9	19.4	16.5	17.1	19.5	17.8	17.7	23.7	23.9	18	10.3	12.3	38.3	30.9	32.5	20.8	38.3
14	15.6	16.9	20.4	15.8	16.5	16.2	14	15.4	16.4	23.9	26.1	31.1	38.5	40.3	38.1	32.4	33.7	30.1	26.5	26.5	28.7	26.9	14.9	18	40.3
15	16.2	12.9	11.4	12.1	20.8	13.4	17.8	19.1	21.2	19.7	36.6	44.4	56.7	40.6	39.4	40.3	21	15.3	12.3	10.3	13.4	18	22.8	28.3	56.7
16	35.3	30.2	31.1	23.9	21.9	14.5	23	17.5	12.5	9	33.7	45.5	52.3	59.5	61.7	54.3	61.3	43.4	61.5	55.6	52.1	48	8900	51.5	8900
17	61.3	54.7	64.6	45.8	51.3	58.1	55.8	64.3	57.8	56.9	56.3	47.3	44.2	61.1	53	44	41.5	50.4	44.9	32.2	23	18.6	17.5	18.9	64.6
18	16.2	10.1	11.9	12.5	11.4	10.3	12.1	20.2	20.2	20.8	29.4	36.8	35.5	38.3	41	37.9	36.1	28	21.9	29.4	34.4	28.3	29.6	29.4	41
19	27.8	30.9	29.1	33.8	37.2	36.1	34.4	41.9	48.4	44.5	33.7	32	36.6	32.4	21.5	29.2	44.9	14	11.5	14.1	11.4	11.2	12.1	14	48.4
20	15.2	13.8	9.7	22.3	20.2	23.9	28.9	22.3	21.3	22.8	25.4	24.3	25.4	27.6	34.8	33.1	37.2	43.4	38.8	45.8	46.4	38.4	38.8	42.1	46.4
21	51.2	45.8	44.2	43.4	48	43.6	58.7	48	48.4	52.1	52.6	49.1	48.2	52.3	54.7	49	36.9	30.1	30.9	22.6	30	26.9	35.7	35.7	58.7
22	34.6	37.2	36.2	33.5	39	42.3	20.4	21.9	23.2	33.3	33.6	30.1	26.7	34.8	31.8	26.9	22	14.5	13	12.5	15.6	15.2	18.9	R	42.3
23	R	R	R	R	R	18	20	16.2	16	20.4	21.7	21.7	25.4	28.1	25	31.3	31.8	32.2	33.8	37	37.7	35.1	35.3	36.9	37.7
24	33.1	35.1	36.6	36	35.5	35.1	42.1	40.5	44.7	41.9	40.3	45.6	46.4	46.7	45.1	39.2	43.6	34.4	34	28	25.2	25.6	23.7	29.2	46.7
25	29.6	26.1	27.8	27.2	27.2	30.9	27.4	30.5	31.6	32	34.6	31.1	32	33.8	34.4	26.7	32	28.5	26.1	17.8	23.7	22.6	15.8	14.1	34.6
26	12.7	16	14	14.7	14	12.3	15.6	14.3	16.9	23.9	19.7	15.4	21.5	15.1	16.5	15.4	17.1	12.3	15.6	12.5	13.2	12.7	11.7	6.2	23.9
27	14.9	13.6	12.6	15.6	20.8	20.2	16.5	18.9	18.4	21.7	22.1	26.7	34.2	36.6	38.6	34.8	30.3	24.8	21.1	23.7	32.7	26.3	25	34.2	38.6
28	33.1	35.1	40.8	42.1	45.6	44	45.1	44.7	43	47.3	43.4	47.5	43.4	38.6	34.2	26.7	24.1	23.5	18.2	17.3	14.9	12.2	10.8	11.2	47.5
29	14	15.6	13.4	17.6	16	12.1	14.7	12.7	16.5	16.5	17.8	16	22.4	23.7	22.6	19.5	18	18.2	14.9	12.1	7.5	9.5	9.7	10.5	23.7
30	11.6	10.8	11.2	10.5	9.9	14.3	18.9	18.9	16.9	18	18.2	21.7	24.6	23.7	27.6	29.6	26.3	31.4	32.5	28.1	26.3	25.5	25.6	23.7	32.5
31	23.7	18.4	19.5	15.4	15.4	14.8	18.7	14.3	19.5	22.4	22.8	23	22.8	23.2	24.8	27	25.9	24.1	26.7	38.1	36.2	36.6	39.2	33.3	39.2
PEAK	61.3	54.7	64.6	45.8	51.3	58.1	58.7	64.3	57.8	56.9	56.3	49.1	56.7	61.1	61.7	54.3	61.3	60.2	65.7	55.6	52.1	48.0	67.2	51.7	

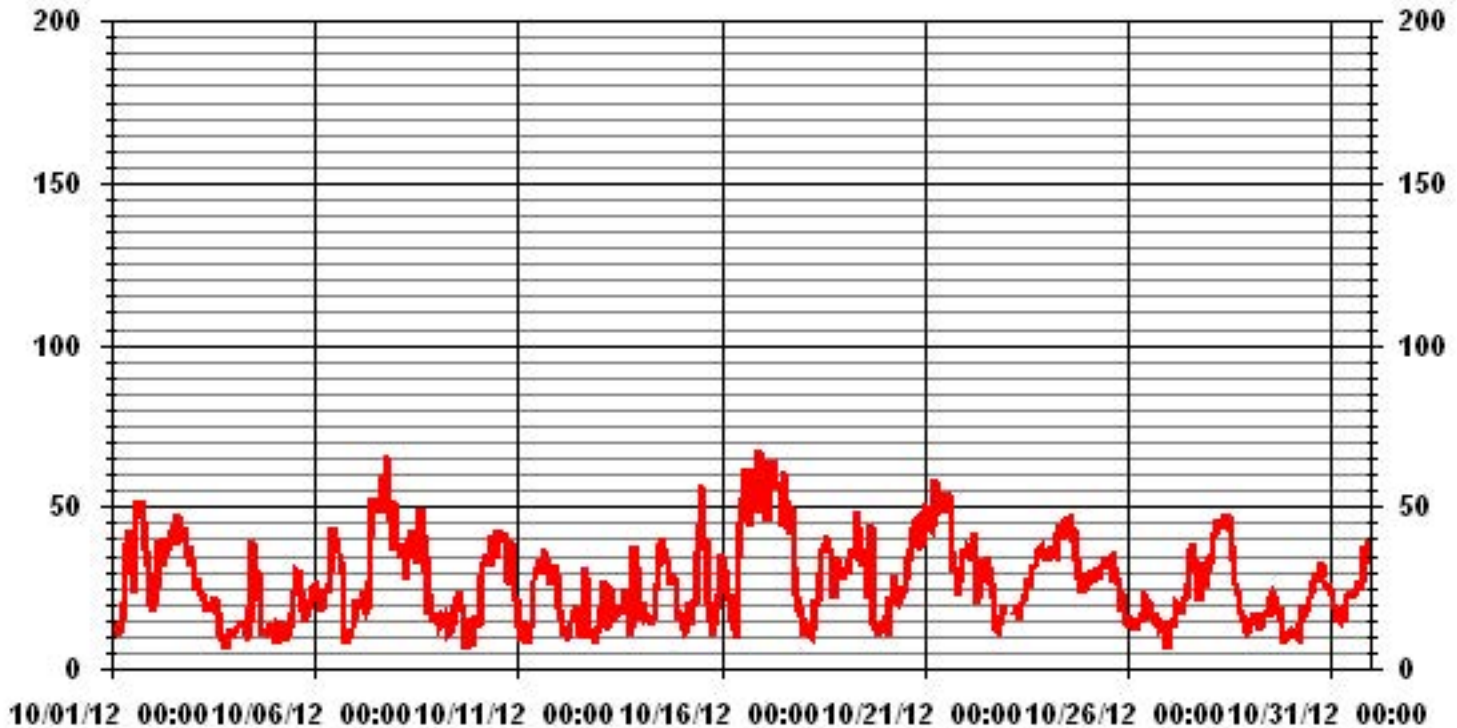
UVCVW'HNCI 'EQFGU

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

OQP'VJ N['UWO O CT[

MAXIMUM INSTANTANEOUS READING	67.2	KPH	@ HOUR(S)	22
			ON DAY(S)	16

01 Hour Averages



LICA31
WSP / WDR Joint Frequency Distribution (Percent)

October 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	.27	.67	.94	.81	.81	.67	1.35	.81	.54	2.16	.54	.54	.81	.54	1.35	.81	13.68
< 12.0	2.43	1.76	.94	1.89	1.35	1.08	1.21	1.89	2.16	4.74	3.65	2.16	1.89	3.25	3.38	5.42	39.29
< 20.0	5.55	2.16	.27	.13	.67	1.89	3.38	2.71	1.76	.67	1.62	2.03	2.03	3.79	3.92	5.28	37.94
< 29.0	.13	.00	.00	.00	.00	.67	1.08	.00	.00	.00	.00	.13	.67	1.21	2.98	2.03	8.94
< 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	8.40	4.60	2.16	2.84	2.84	4.33	7.04	5.42	4.47	7.58	5.82	4.87	5.42	8.80	11.65	13.55	

Calm : .13 %

Total # Operational Hours : 738

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	2	5	7	6	6	5	10	6	4	16	4	4	6	4	10	6	101
< 12.0	18	13	7	14	10	8	9	14	16	35	27	16	14	24	25	40	290
< 20.0	41	16	2	1	5	14	25	20	13	5	12	15	15	28	29	39	280
< 29.0	1					5	8					1	5	9	22	15	66
< 39.0																	
>= 39.0																	
Totals	62	34	16	21	21	32	52	40	33	56	43	36	40	65	86	100	

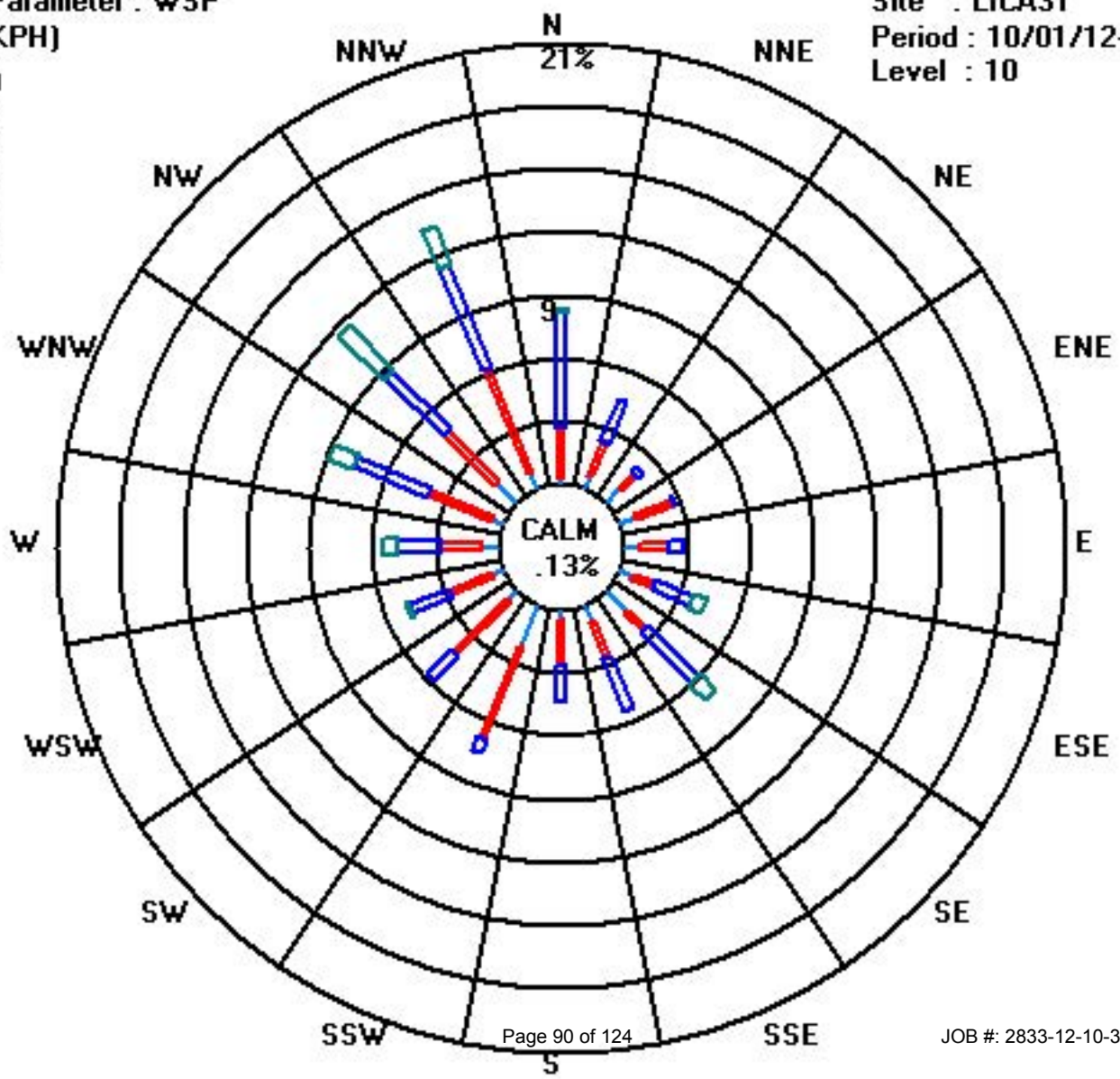
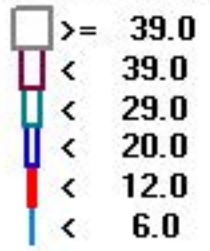
Calm : .13 %

Total # Operational Hours : 738

Class Limits (KPH)

Period : 10/01/12-10/31/12

Level : 10



Vector Wind Direction

NCMGNCPF 'RPF WVT[' 'EQO O WP KW['CUUQEKVKQP 'UVONPC

OCTOBER 2012

Y R F F 'K I G E V I Q P hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR	24-HOUR AVG	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	AVG.	QUADRANT	RDGS.
DAY 1	219	220	211	230	205	167	165	152	157	144	164	175	157	175	236	262	246	262	270	265	290	312	316	305	229	SW	24
2	283	316	167	343	1	19	7	16	348	348	344	351	2	4	5	357	357	16	12	3	1	355	347	349	358	N	24
3	350	342	331	325	333	337	348	339	337	345	354	347	324	315	318	324	326	48	35	76	124	138	195	195	339	NNW	24
4	191	189	197	201	187	189	188	209	233	209	228	267	239	204	295	238	246	196	203	220	133	105	134	161	211	SSW	24
5	171	211	162	99	93	106	153	206	217	207	206	208	216	216	220	221	226	221	208	207	210	210	216	219	207	SSW	24
6	225	220	228	247	261	296	314	321	320	326	332	327	329	340	333	323	333	321	289	251	206	205	209	199	295	WNW	24
7	201	203	204	204	211	235	250	267	286	314	326	329	329	334	333	333	345	347	345	332	335	338	338	347	318	NW	24
8	356	348	335	336	333	324	317	318	314	317	331	350	336	3	343	349	347	345	357	337	350	354	306	301	337	NNW	24
9	303	286	267	276	262	264	284	280	278	281	291	286	281	290	292	280	276	103	99	110	292	85	87	92	284	WNW	24
10	86	54	45	47	39	32	29	7	356	354	358	1	1	347	347	351	344	349	357	352	8	14	7	352	8	N	24
11	327	309	328	332	304	296	271	173	130	155	164	162	167	161	159	155	149	145	141	135	144	166	179	185	161	SSE	24
12	190	210	200	200	194	206	147	39	37	60	71	84	136	54	67	75	82	135	138	142	176	196	201	225	119	ESE	24
13	234	242	246	256	228	213	212	221	216	219	231	224	217	219	215	213	238	247	226	201	238	248	251	274	232	SW	24
14	251	240	267	267	236	228	246	218	194	194	193	166	166	159	155	150	167	166	164	172	181	191	211	298	193	S	24
15	14	29	217	237	242	222	229	249	265	262	262	282	293	296	289	287	271	248	226	209	159	157	144	131	255	WSW	24
16	121	101	104	131	123	125	127	71	102	274	318	322	327	331	318	317	316	316	310	306	302	306	305	323	323	NW	24
17	307	309	313	308	306	305	306	311	313	317	315	319	320	329	325	322	324	323	327	325	312	309	290	291	314	NW	24
18	282	260	252	231	224	215	211	201	200	188	200	201	199	191	189	192	184	171	167	161	167	174	174	166	194	SSW	24
19	144	139	124	117	107	103	108	108	104	110	114	117	114	125	102	69	93	78	65	61	96	111	159	207	111	ESE	24
20	230	257	249	310	307	306	330	315	305	309	316	308	304	301	302	299	299	303	308	308	304	299	297	295	302	WNW	24
21	296	295	297	298	290	292	289	293	286	277	284	282	281	283	283	283	285	282	286	286	275	274	277	290	286	WNW	24
22	296	294	290	277	280	275	261	248	245	259	257	256	255	251	257	259	264	241	256	282	335	17	24	R	269	W	23
23	R	R	R	R	R	27	19	37	42	42	32	33	24	26	30	16	17	17	23	29	28	27	25	24	27	NNE	19
24	17	7	13	11	9	6	2	2	360	354	356	353	351	355	352	355	352	349	344	341	339	332	330	333	355	N	24
25	353	352	341	338	342	346	338	336	332	341	339	329	327	326	313	321	329	331	328	314	325	329	328	309	332	NNW	24
26	288	303	303	302	300	318	338	343	348	347	353	316	342	333	350	315	303	309	310	313	340	320	263	242	319	NW	24
27	113	106	138	165	160	175	173	178	181	190	197	198	187	188	193	183	178	161	142	144	158	140	130	129	166	SSE	24
28	130	127	128	125	127	131	128	129	125	127	121	123	126	130	127	128	128	132	140	163	190	248	282	294	130	SE	24
29	330	25	25	8	30	54	85	90	85	71	77	76	89	98	89	80	66	67	70	57	43	346	331	8	65	ENE	24
30	41	67	63	86	312	316	327	328	329	331	328	311	321	333	334	332	335	332	343	349	348	7	359	354	340	NNW	24
31	345	358	9	16	17	34	78	64	103	106	112	138	115	118	116	135	135	126	130	126	116	105	108	101	107	ESE	24
HOURLY AVG	356	358	341	343	342	346	348	343	360	354	358	353	351	355	352	357	357	349	357	352	350	355	359	354			

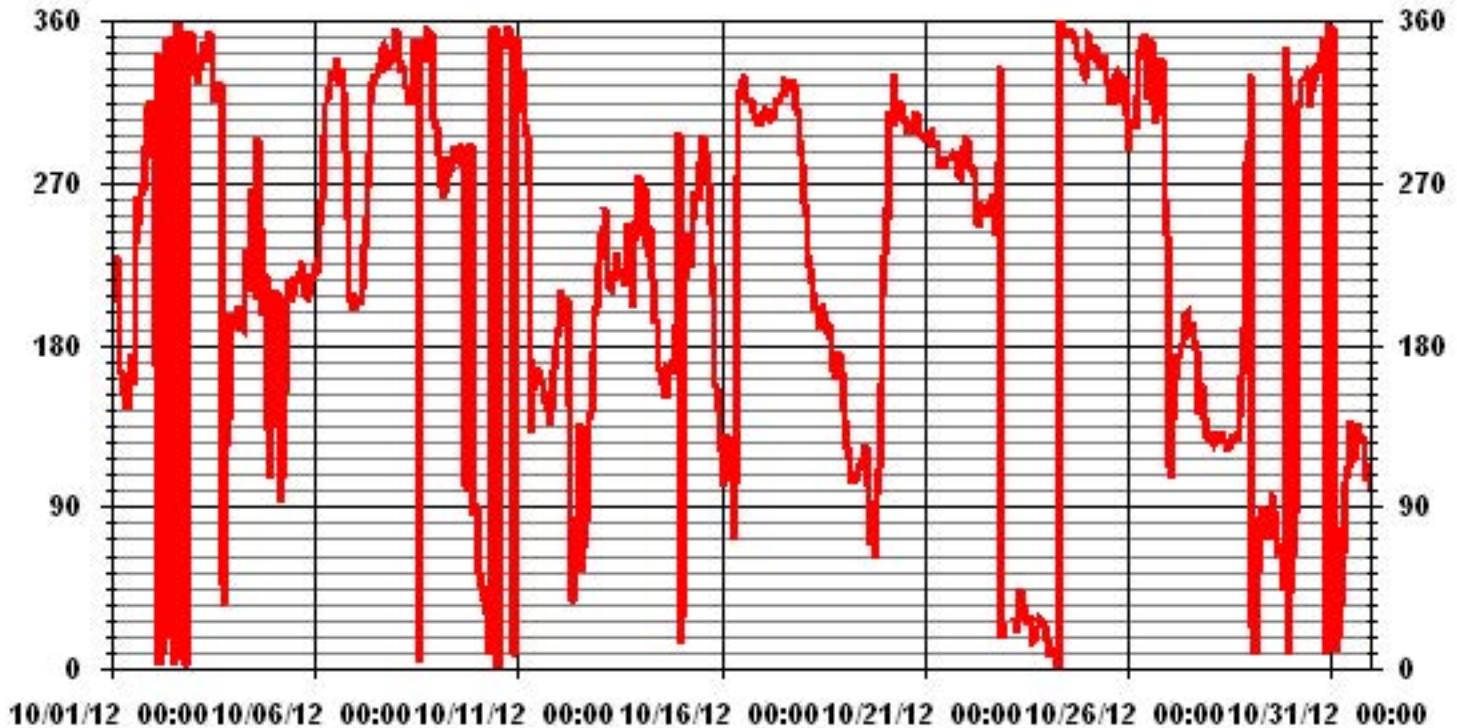
UVCVUHNCI 'EQFGU

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 12, 2012
DECLINATION :	19 DEGREES FROM MAGNETIC NORTH

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	738 HRS
STANDARD DEVIATION:	104.35	AMD OPERATION UPTIME:	99.2 %
		MONTHLY AVERAGE:	306 DEG

01 Hour Averages



Standard Deviation Wind Direction

NCMGNCPF'RFWVUT[('EQOOWPK['CUUQEKVKQP'UVNRC"

OCTOBER 2012

'UVCPCFCTF'FGXKVKQP'Y RFF'FKTGEVKQP'UVFYFKT+ hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00
DAY																								
1	10	5	9	4	7	10	11	13	15	15	16	16	15	17	10	11	11	14	11	10	15	14	13	16
2	16	45	54	16	24	17	18	17	17	17	21	17	18	18	18	18	24	17	16	17	17	17	19	16
3	16	16	15	14	16	14	16	16	16	18	22	22	18	20	22	31	25	24	11	10	13	9	5	5
4	7	9	8	11	10	8	8	12	15	15	18	16	12	22	21	21	23	16	41	17	38	10	19	6
5	7	6	34	8	10	7	12	13	14	18	16	15	16	17	17	13	10	9	9	10	9	9	10	11
6	9	13	10	4	4	11	12	14	14	15	16	17	18	18	18	16	14	14	13	8	11	8	7	8
7	8	9	10	10	12	7	5	5	13	16	15	14	14	16	14	15	15	15	16	13	15	13	14	15
8	15	15	14	14	13	13	13	14	14	15	15	20	17	23	16	16	15	14	14	11	14	15	10	9
9	9	7	5	8	9	6	11	13	20	19	25	22	19	21	25	23	39	8	7	48	53	12	10	11
10	13	10	11	11	11	12	13	17	16	17	21	16	18	16	16	21	16	15	17	16	19	16	16	16
11	10	12	16	14	13	9	9	17	18	19	19	23	17	17	15	14	13	13	13	13	13	13	12	13
12	12	19	18	13	9	12	29	39	14	15	12	14	17	25	10	10	12	22	13	13	12	10	12	10
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14	5	6	7	7	5	4	4	8	12	14	14	16	14	14	13	13	13	14	13	12	9	11	18	21
15	17	35	22	8	6	8	7	10	9	11	14	17	16	18	17	16	9	8	7	11	12	8	10	11
16	11	8	8	10	18	18	17	18	35	34	16	17	15	15	15	15	16	16	15	15	15	15	15	15
17	15	15	15	15	15	15	15	15	16	15	15	14	15	14	14	14	14	14	14	14	12	11	9	10
18	7	6	7	7	5	4	4	9	9	12	14	14	14	15	13	13	12	10	11	11	12	10	11	13
19	12	12	11	11	10	10	11	11	9	12	12	13	14	16	25	12	14	11	12	11	11	16	18	11
20	9	10	11	14	13	13	14	15	15	14	14	14	15	15	15	14	14	14	15	15	15	15	15	14
21	16	15	15	16	14	15	15	15	15	11	14	14	13	14	14	14	14	12	12	13	10	9	R1	16
22	16	16	15	13	13	10	7	6	8	10	12	11	13	11	12	13	10	7	6	8	12	7	9	N
23	R	R	R	R	R	8	11	11	12	14	16	15	16	19	16	15	15	15	14	12	12	12	13	13
24	15	16	15	20	16	16	15	14	21	15	16	15	16	18	15	15	15	14	18	13	12	13	14	13
25	16	16	14	13	17	14	13	13	14	14	15	14	14	14	16	15	13	13	13	12	12	11	11	11
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28	12	12	13	12	13	14	14	13	12	13	11	12	13	13	12	12	12	12	15	20	9	15	15	13
29	15	50	28	16	14	11	13	14	14	13	13	14	13	12	12	13	11	11	11	10	11	19	16	16
30	17	47	27	48	58	20	13	13	15	21	21	16	16	18	15	14	14	14	15	15	14	19	15	17
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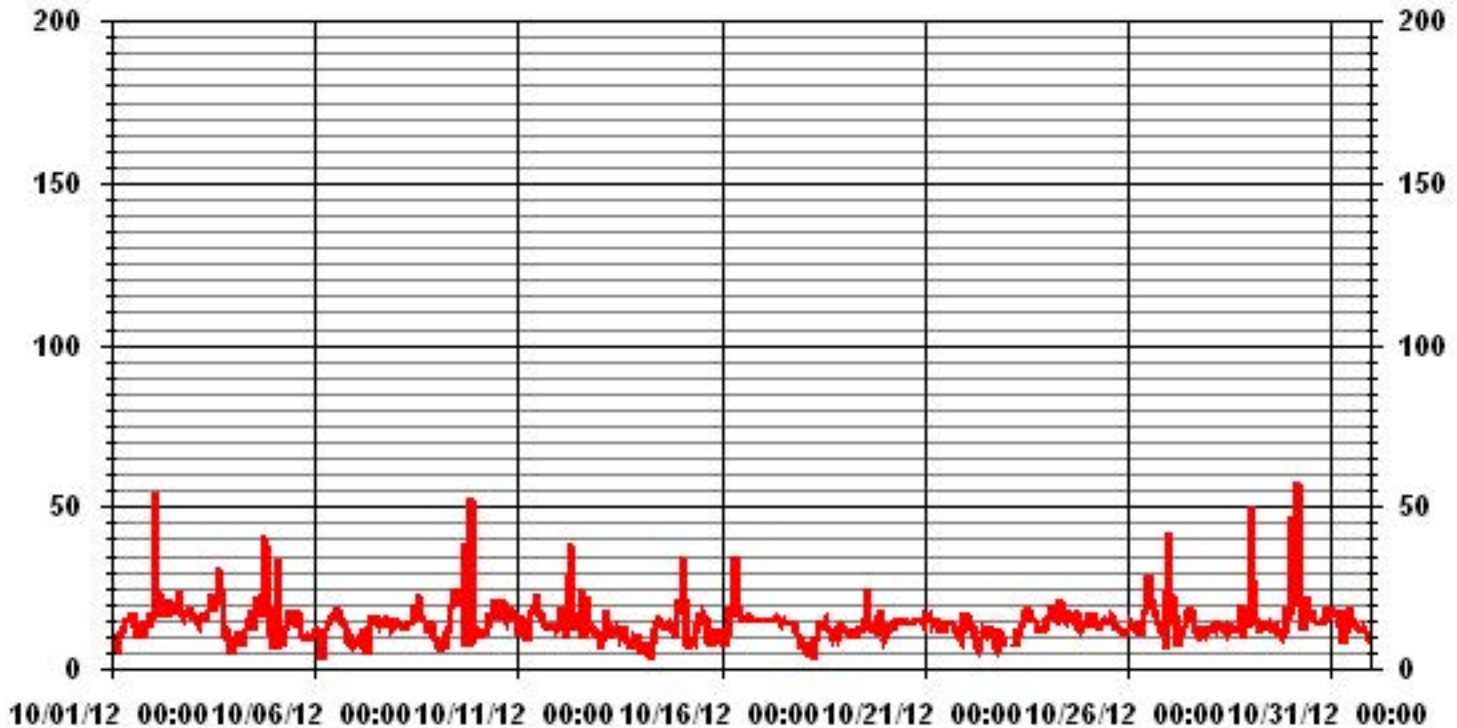
UVCVWUHNCI 'EQFGU

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: July 18, 2012

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 738 HRS

01 Hour Averages



Calibration Reports

Sulphur Dioxide

SO2 Calibration Report

Station Information

Calibration Date	October 3, 2012	Previous Calibration	September 12, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST. LINA		
Start Time (MST)	10:41	End Time (MST)	14:11
Reason:	Monthly Calibration		
Barometric Pressure	940 mBar	Station Temperature	23 Deg C
Cal Gas	49.6 ppm	Gas Cyl. #	LL42502
DAS Output Voltage	0 - 1 Volts	Cal Gas Expiry date	December 29, 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 ppb				
Sample Flow / Box Temp	591 ccm	31.1 Deg C	589 ccm	31.2 Deg C	
HVPS / Lamp Setting	540	2191	540	2220	
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	40.0 Deg C	
Offset / Slope	93	0.997	93	0.997	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4996	0	0	1	N/A
4921	75.4	749	752	0.9954
4954	No Span Adj.	399	399	1.0000
4977	40.2	170	171	0.9932
4997	17.1	0	0	N/A
			Sum of Least Squares	0.9964
			New Correction Factor	0.9954

IZS alibration Data

Before Calibration		After Calibration	
Auto Zero	0.6	Auto Zero	0.4
Auto Span	239.0	Auto Span	237.0
Sample Lines Connected		Sample Lines Connected	YES

Percent Change

Previous Month's Calibration Correction Factor:	0.9954
Current Correction Factor Before Span Adjust:	0.9954
Percent Change:	0.0%

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

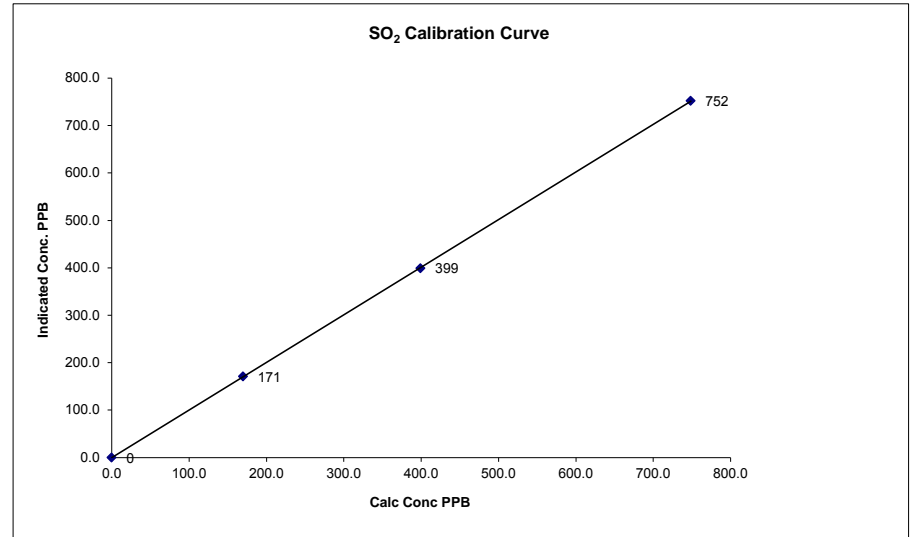
Inlet filter replaced.

Calibration Performed by: Ting Xu

SO2 Calibration Curve

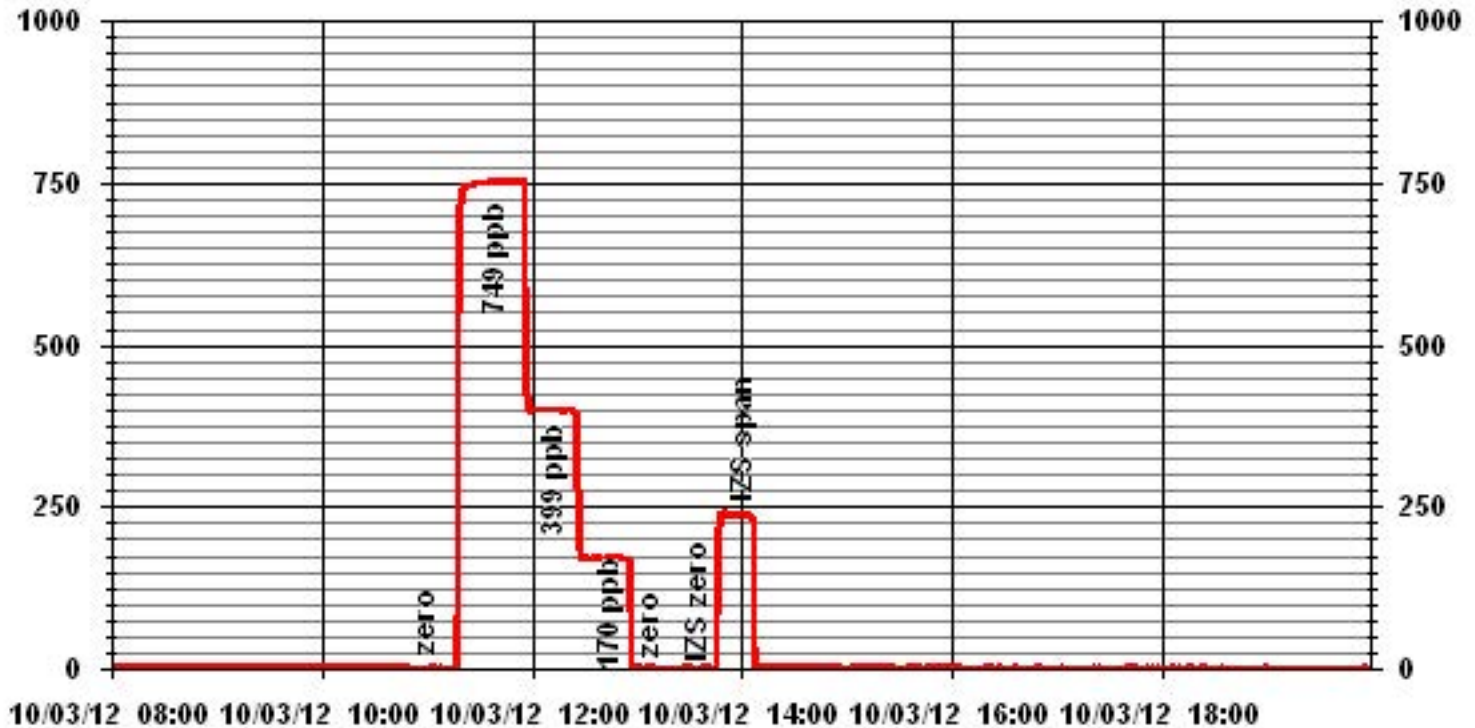
Calibration Date	October 3, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Plant / Location	ST. LINA
Start Time (MST)	10:41
End Time (MST)	14:11

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	Intercept
0	0	n/a	0.999988	1.004008
170	171	0.9932		-0.216749
399	399	1.0006		
749	752	0.9954		



Notes:

01 Minute Averages



Hydrogen Sulphide

H2S Calibration Report

Station Information

Calibration Date	October 2, 2012	Previous Calibration	September 12, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST.LINA		
Start Time (MST)	13:26	End Time (MST)	17:32
Reason:	Monthly Calibration		
Barometric Pressure	923 mBar	Station Temperature	23 Deg C
Cal Gas	10 ppm	Gas Cyl. #	LL42648
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 :	AO717		
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	531 ccm 33.6 Deg C	533 ppb	43.3 Deg C
HVPS / Lamp Setting	518 2184	518	2186
PMT / RxCell Temp	8.4 Deg C 50 Deg C	8.4 Deg C	50 Deg C
Converter / IZS Temp	315 Deg C 45 Deg C	315 Deg C	45.0 Deg C
Offset / Slope	94.4 1.014	97.4	1.007

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4997	0	0	2	NA
4997	0	0	0	1.0000
4959	40.0	80	82	0.9758
4959	40.0	80	80	1.0000
4979	20.0	40	40	1.0000
4986	11.5	23	23	1.0000
4996	0	0	0	NA
Sum of Least Squares				1.0002
New Correction Factor				1.0000

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	1.7	-0.1	
Auto Span	41.4	39.8	
Sample Lines Connected		YES	

Percent Change

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	0.9758
Percent Change:	2.5%

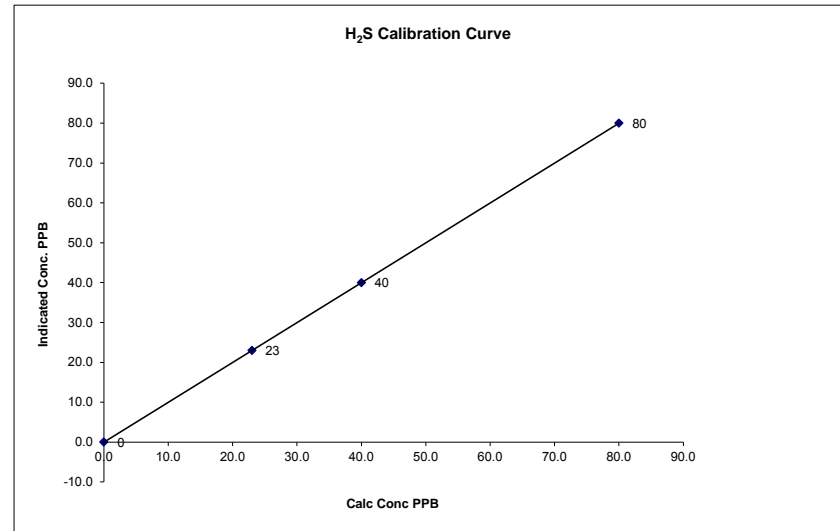
Notes: **NA : Not Applicable**
 Replaced inlet filter.

Calibration Performed by: Ting Xu

H₂S Calibration Curve

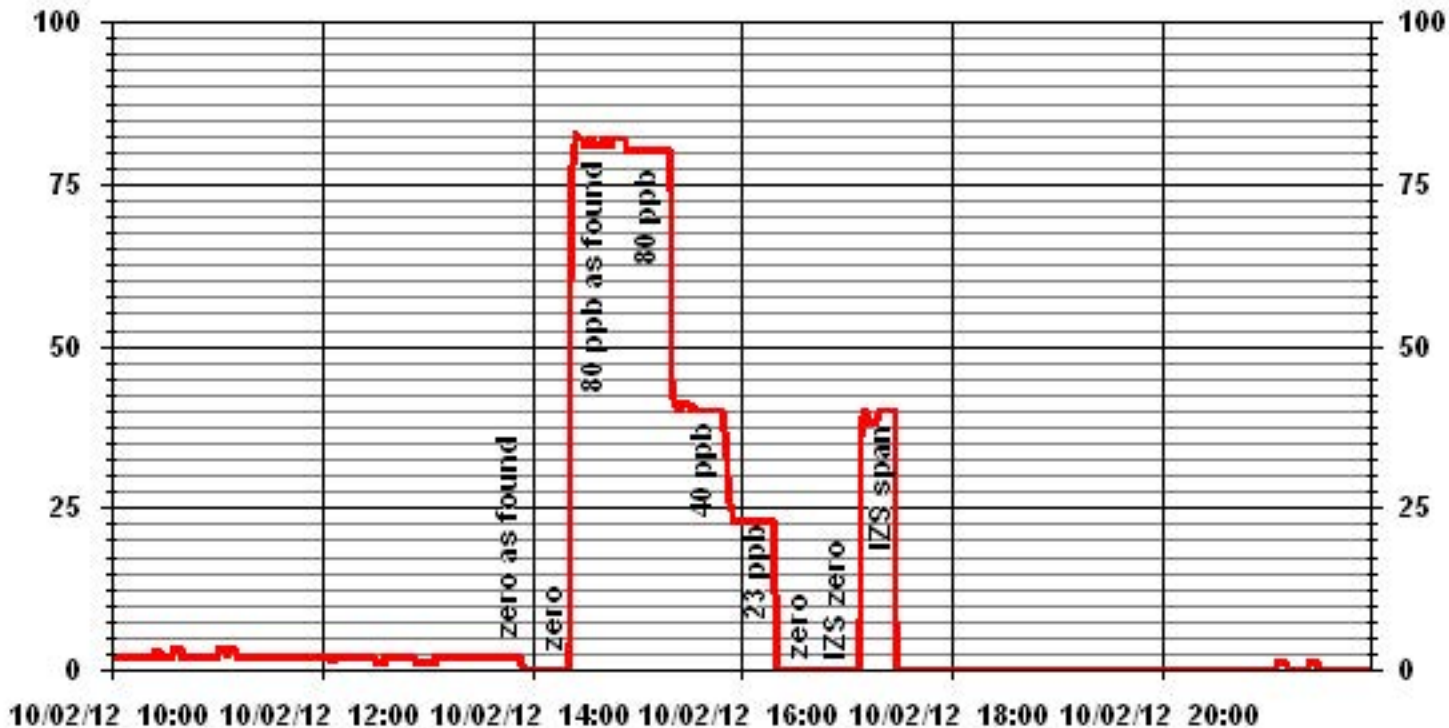
Calibration Date	October 2, 2012
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Plant / Location	ST.LINA
Start Time (MST)	13:26
End Time (MST)	17:32

Calculated Conc.	Indicated Response	Correction Factor	Correlation Coefficient	Slope	Intercept	R ²
0	0		1.000000	1.000000	0.000000	1.000000
23	23	1.0005				
40	40	1.0002				
80	80	1.0002				



Notes:

01 Minute Averages



Total Hydrocarbons

THC Calibration Report

Station Information			
Calibration Date:	October 2, 2012	Previous Calibration:	September 21, 2012
Company:	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location:	ST. LINA		
Start Time (MST):	12:06	End Time (MST):	18:43
Reason:	As Found		
Barometric Pressure:	920 mBar	Station Temperature:	22 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM C3H8 204 PPM	Gas Cyl. #	LL155310
TOTAL CH4	1161.0 PPM	Cal Gas Expiry Date:	September 9, 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		

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
2000	0.0	0.0	-0.8	NA
	No Zero Adj.			
2000	74.0	41.4	39.8	1.0408
New Correction Factor:				1.0408

Percent Change	
Previous Calibration Correction Factor:	1.0030
Current Correction Factor Before Span Adjust:	1.0408
Percent Change:	-3.6%

IZS Calibration Data		
	Before Calibration	After Calibration
Auto Zero	-0.9	-0.1
Auto Span	36.2	37.5
Sample Lines Connected	YES	

Cylinder Pressures			
Span	1800 psi	Hydrogen	950 psi
Zero Air	34 psi		

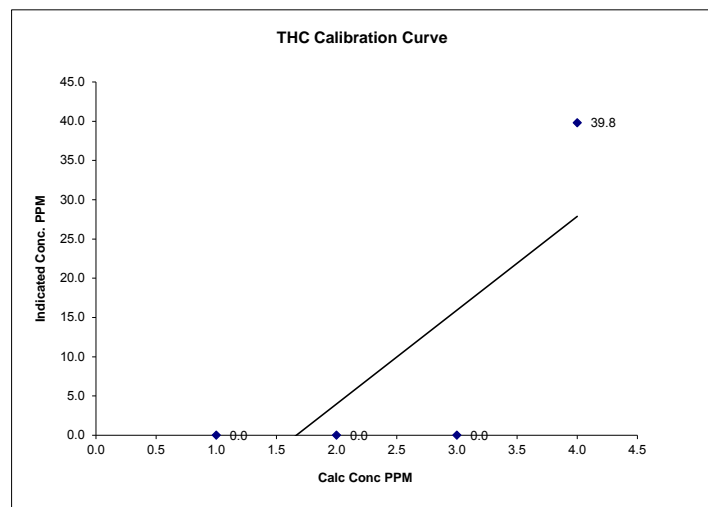
Notes: **NA : Not Applicable**
 Following the as found point, replace the inside pump.

Calibration Performed by: Ting Xu

THC Calibration Curve

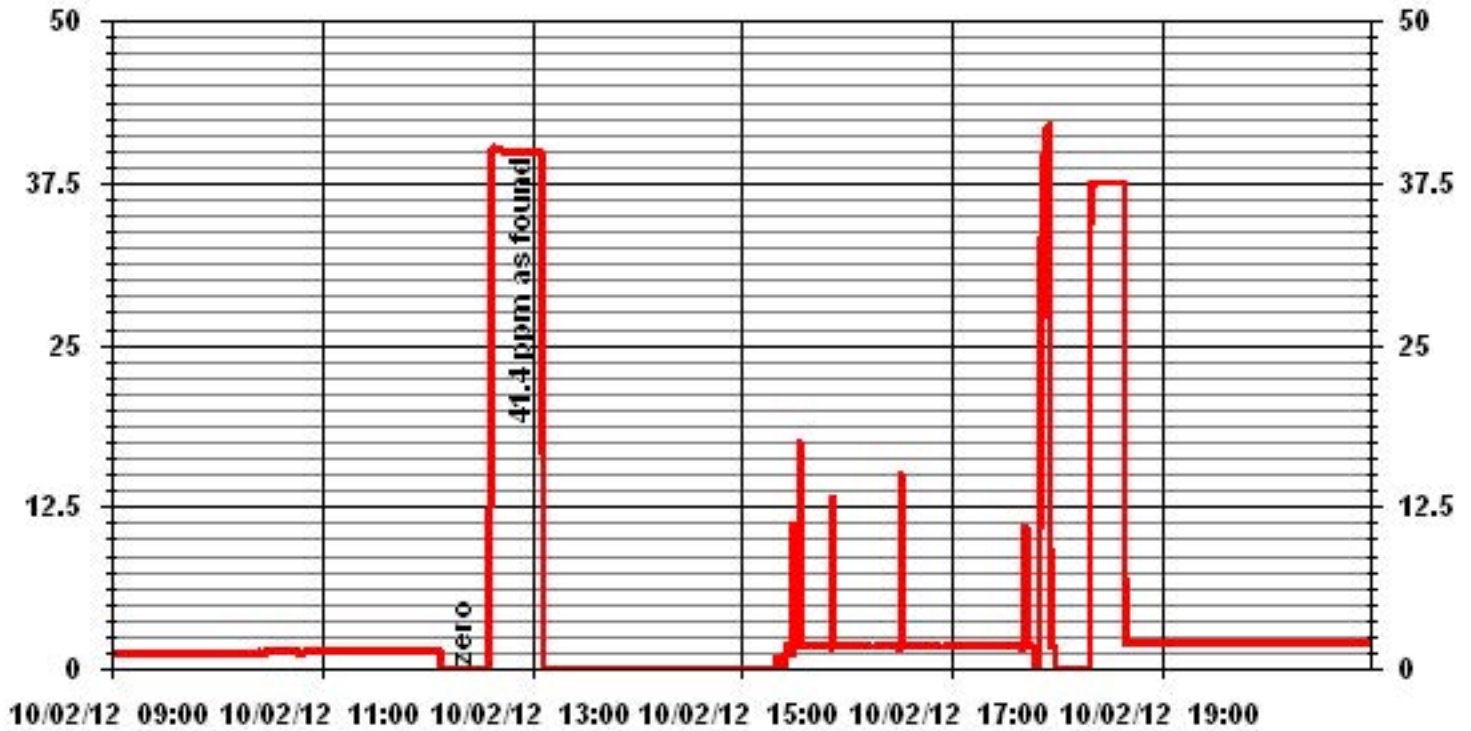
Calibration Date	October 2, 2012		
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST. LINA		
Start Time (MST)	12:06	End Time (MST)	18:43

Calculated Conc.	Indicated Response	Correction Factor	Correlation Coefficient	Slope	Intercept	%: 20; 7+	#DIV/0!
ppm	ppm					'20 7+; 307+	#DIV/0!
	0.0	NA				'05 '110	#DIV/0!
	0.0	#VALUE!					
	0.0	#VALUE!					
41.4	39.8	1.0408					



Notes:

01 Minute Averages



THC Calibration Report

Station Information			
Calibration Date:	October 3, 2012	Previous Calibration	October 2, 2012
Company:	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location:	ST. LINA		
Start Time (MST)	11:13	End Time (MST)	14:26
Reason:	Post repair calibration		
Barometric Pressure:	940 mBar	Station Temperature:	23 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM	C3H8 204 PPM	
	TOTAL CH4 1161.0 PPM	Gas Cyl. # LL155310	Cal Gas Expiry Date: September 9, 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
2000	0.0	0.0	0.0	NA
	No Zero Adj.			
2000	74.0	41.4	41.6	0.9958
	No Span Adj.			
2000	37.0	21.1	21.0	1.0042
2000	20.0	11.5	11.5	1.0000
2000	0.0	0.0	0.0	NA
New Correction Factor:				0.9958

Percent Change

Previous Calibration Correction Factor:	1.0030
Current Correction Factor Before Span Adjust:	0.9958
Percent Change:	0.7%

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	-0.1	-0.1
Auto Span	38.1	36.1
Sample Lines Connected	YES	

Cylinder Pressures			
Span	1800 psi	Hydrogen	950 psi
		Zero Air	34 psi

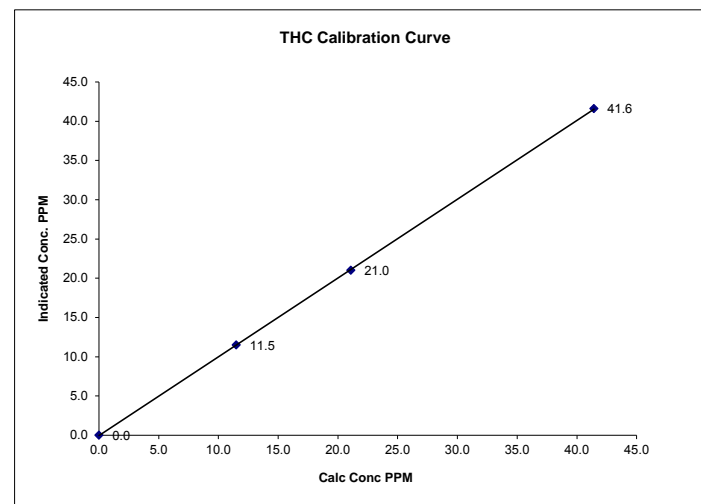
Notes: NA : Not Applicable

Calibration Performed by: Ting Xu

THC Calibration Curve

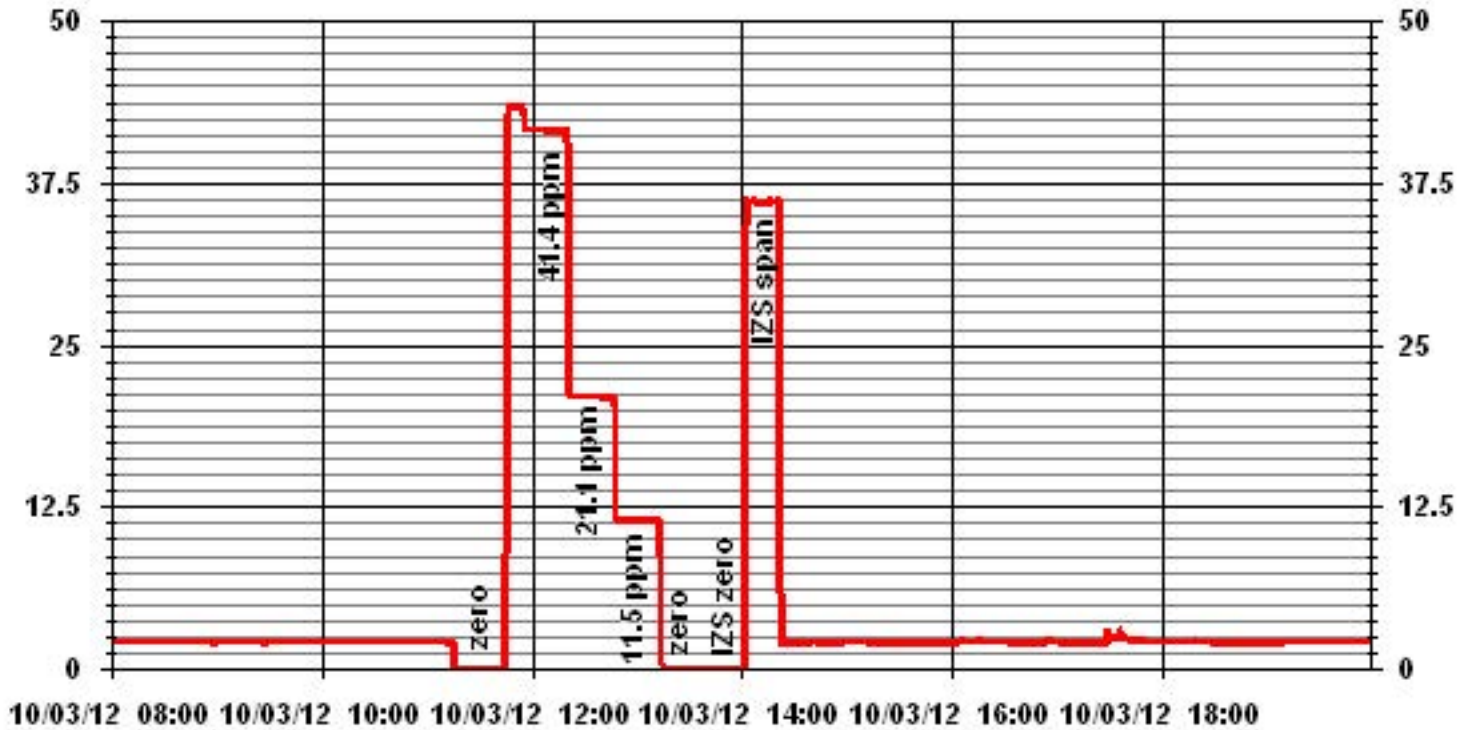
Calibration Date	October 3, 2012		
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST. LINA		
Start Time (MST)	11:13	End Time (MST)	14:26

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient	Slope	Intercept
0.0	0.0	NA	0.999977	1.004076	-0.05234
11.5	11.5	0.9996			
21.1	21.0	1.0042			
41.4	41.6	0.9958			



Notes:

01 Minute Averages



THC Calibration Report

Station Information			
Calibration Date:	October 17, 2012	Previous Calibration	October 3, 2012
Company:	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location:	ST. LINA		
Start Time (MST)	14:20	End Time (MST)	16:30
Reason:	Removal Calibration		
Barometric Pressure:	922 mBar	Station Temperature:	19 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM	C3H8 204 PPM	
	TOTAL CH4 1161.0 PPM	Gas Cyl. # LL155310	Cal Gas Expiry Date: September 9, 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
2000	0.0	0.0	0.0	NA
	No Zero Adj.			
2000	74.0	41.4	41.6	0.9958
	No Span Adj.			
2000	37.0	21.1	20.6	1.0237
2000	20.0	11.5	11.2	1.0263
2000	0.0	0.0	-0.1	NA
New Correction Factor:				0.9958

Percent Change

Previous Calibration Correction Factor:	0.9958
Current Correction Factor Before Span Adjust:	1.0103
Percent Change:	-1.4%

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	-0.3	N/A
Auto Span	34.9	N/A
Sample Lines Connected		YES

Cylinder Pressures			
Span	1600 psi	Hydrogen	650 psi
		Zero Air	34 psi

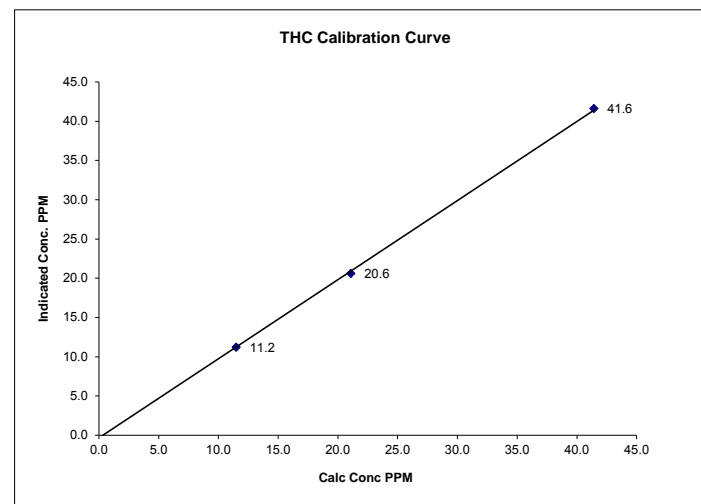
Notes: **NA : Not Applicable**
 During the last zero point, the analyzer started the daily calibration, had to abort the daily cal.
 Redo this point.

Calibration Performed by: Ting Xu

THC Calibration Curve

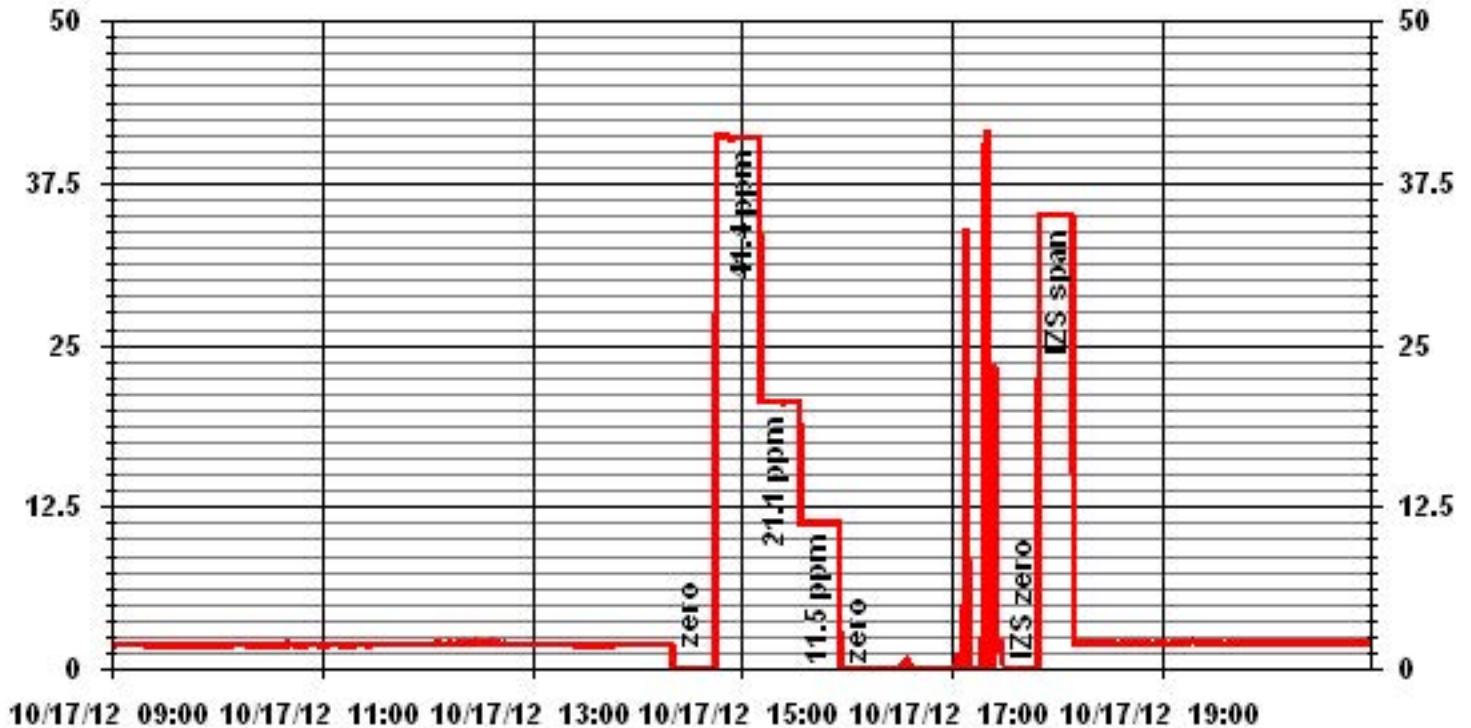
Calibration Date	October 17, 2012		
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST. LINA		
Start Time (MST)	14:20	End Time (MST)	16:30

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient	Slope	Intercept	R ²
0.0	-0.1	NA	0.999794	1.007235	-0.31079	
11.5	11.2	1.0263				
21.1	20.6	1.0237				
41.4	41.6	0.9958				



Notes:

01 Minute Averages



THC Calibration Report

Station Information			
Calibration Date:	October 18, 2012	Previous Calibration	October 17, 2012
Company:	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location:	ST. LINA		
Start Time (MST)	14:52	End Time (MST)	17:52
Reason:	Installation Calibration		
Barometric Pressure:	926 mBar	Station Temperature:	21 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM	C3H8 204 PPM	
	TOTAL CH4 1161.0 PPM	Gas Cyl. # LL155310	Cal Gas Expiry Date: September 9, 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
--------------	----------	-------	-----------	--------	------------------

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
2000	0.0	0.0	0.0	NA
	No Zero Adj.			
2000	74.0	41.4	41.4	1.0000
	No Span Adj.			
2000	37.0	21.1	20.8	1.0139
2000	20.0	11.5	11.3	1.0173
2000	0.0	0.0	0.0	NA
New Correction Factor:				1.0000

Percent Change

Previous Calibration Correction Factor:	N/A
Current Correction Factor Before Span Adjust:	1.0000
Percent Change:	#VALUE!

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	0.0	N/A
Auto Span	35.0	34.6
Sample Lines Connected		YES

Cylinder Pressures			
Span	1600 psi	Hydrogen	650 psi
		Zero Air	34 psi

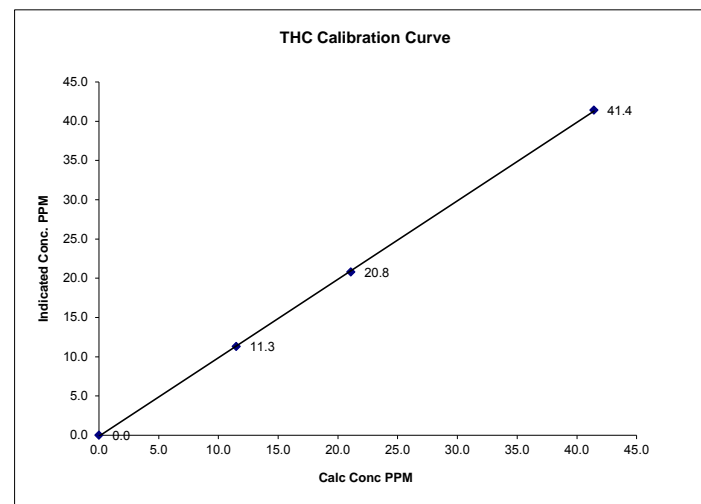
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu

THC Calibration Curve

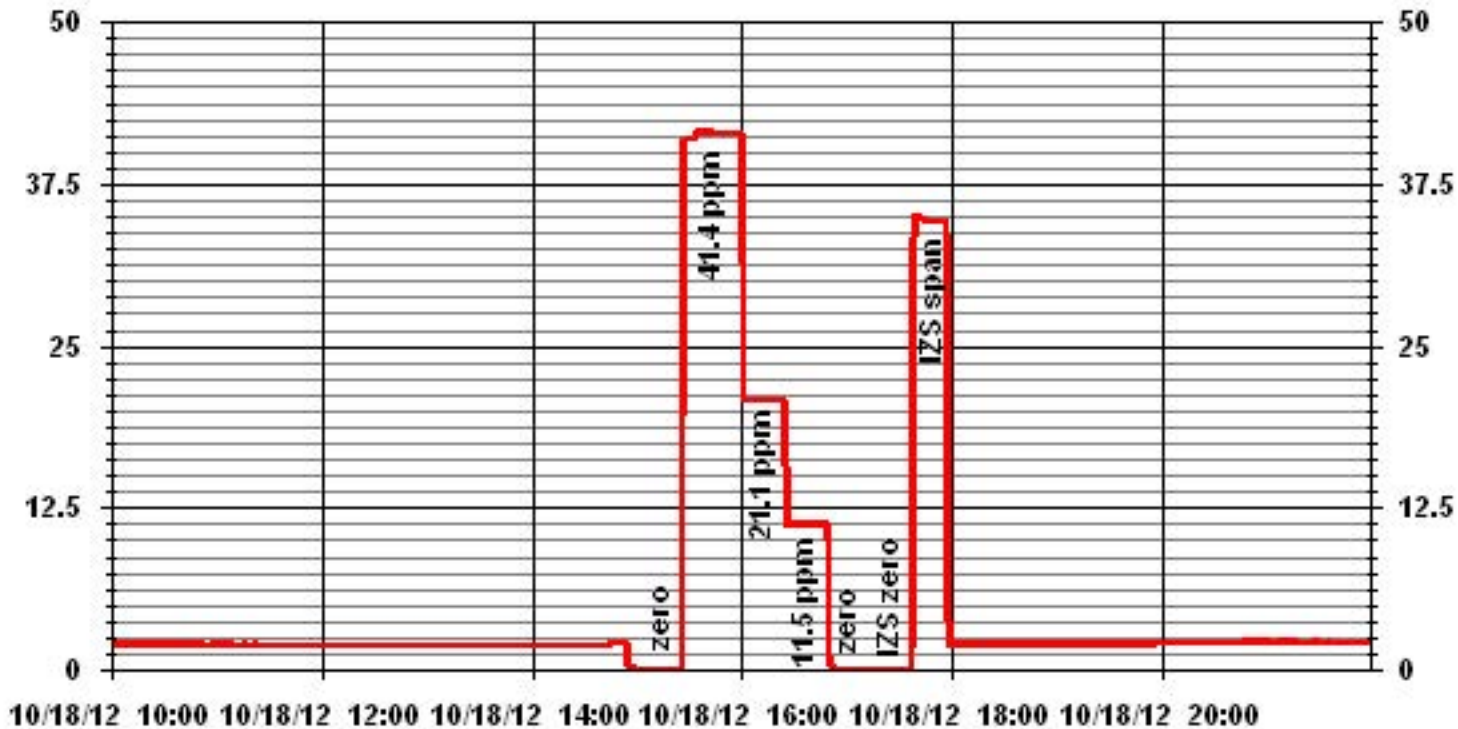
Calibration Date	October 18, 2012		
Company	LAKELAND INDUSTRY & COMMUNITY ASSOCIATION		
Plant / Location	ST. LINA		
Start Time (MST)	14:52	End Time (MST)	17:52

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient	Slope	Intercept	R ²
0.0	0.0	NA	0.999938	1.000069	-0.12821	
11.5	11.3	1.0173				
21.1	20.8	1.0139				
41.4	41.4	1.0006				



Notes:

01 Minute Averages



Nitrogen Dioxide

NOx - NO- NO2 Calibration Report

Station Information

Calibration Date	October 2, 2012	Previous Calibration	September 13, 2012
Company	LICA	Plant/Location	St. Lina
Start Time (MST)	12:06	End Time (MST)	18:42
Reason:	Monthly Calibration		
Barometric Pressure	920 mBar	Station Temperature	22 Deg C
Cal Gas Concentration	NOx 50.1 ppm	NO 50.1 ppm	Cal Gas Expiry date
Cal Gas Cylinder #	LL42502		December 29, 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:	Enviroics 6100	S/N:	4760		
DAS Make / Model:	ESC 8832	S/N :	AO717		
Chart Recorder Make / Model:	NA	S/N:	NA		
Flow Meter:	Enviroics 6100	S/N :	4760		

Analyzer Settings

Before Calibration				After Calibration			
Concentration Range	0 - 1000			ppb			
Sample Flow/Conv. Temp	467 ccm	316 Deg C		479 ccm	315 Deg C		
Ozone Flow / Vacuum	73 ccm	5.9 *Hg-A		74 ccm	5.9 *Hg-A		
HVPS / A ZERO	637 Volts	22.0 MV		637 Volts	22.3 MV		
Rx/ Temp / PMT Temp	50.0 Deg C	6.9 Deg C		50.0 Deg C	6.9 Deg C		
Box Temp / IZS Temp	30.4 Deg C	45.1 Deg C		31.5 Deg C	45.2 Deg C		
Offset	-1.1 NOx	-1.3 NO		-1.1 NOx	-1.3 NO		
Slope	1.007 NOx	1.002 NO		1.024 NOx	1.021 NO		
NO2 COEF / Conv Efficiency	N/A	0.993	N/A	NA	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	0	0	0	NA	NA
	No Zero Adj.									
4920	74.6	NA	748	748	NA	737	737	1	1.0153	1.0153
4920	74.6	NA	748	748	NA	749	749	1	0.9991	0.9991
4961	34.8	NA	349	349	NA	347	347	0	1.0057	1.0057
4978	16.9	NA	170	170	NA	169	169	0	1.0030	1.0030
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		
4921	74.6	NA	748	748	NA	746	746	-1	NA	NA
4921	74.6	600	748	NA	527	746	218	528	0.9981	100.19%
	No Adj.									
4921	74.6	300	748	NA	267	746	478	268	0.9963	100.37%
4921	74.6	120	748	NA	106	746	639	107	0.9907	100.93%

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= 1.000	NO= 1.000	NO2= 0.998
				NOx= 0.9991	NO= 0.9991	NO2= 0.9981
Average Converter Efficiency= 100.50%						

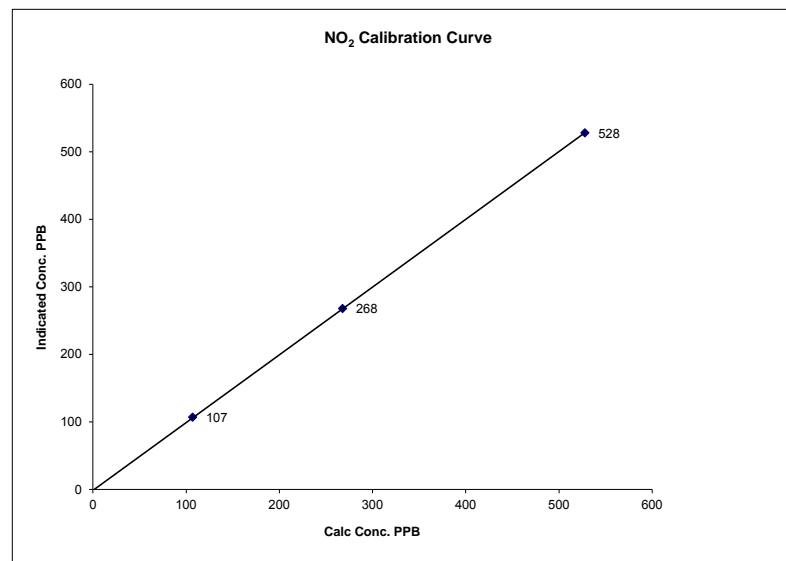
IZS Calibration Data

Before Calibration				After Calibration								
Auto Zero	-0.3	NOx	0.6	NO2		-0.4	NOx	0.6	NO2			
Auto Span	481	NOx	472	NO2		485	NOx	478	NO2			
Sample Lines Connected: YES												
Percent Change from Previous Calibration	NOx		-1.3%		NO		-1.6%		NO2		-0.2%	
Notes	NA : Not Applicable											
	Replaced inlet filter.											
	When started the NOX adjusted first point, there was a dilution gas alarm, causing the reading higher few minutes.											
Calibration Performed by:	Ting Xu											

NO2 Calibration Curve

Calibration Date	October 2, 2012
Company	LICA
Plant / Location	St. Lina
Start Time (MST)	12:06
End Time (MST)	18:42

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	Intercept	"NO2" ; 7+ "NO" ; 307+ "NO2" ; 100
1	-1	N/A			0.999989
107	107	1.0000			1.002853
268	268	1.0000			
528	528	1.0000			-1.14467

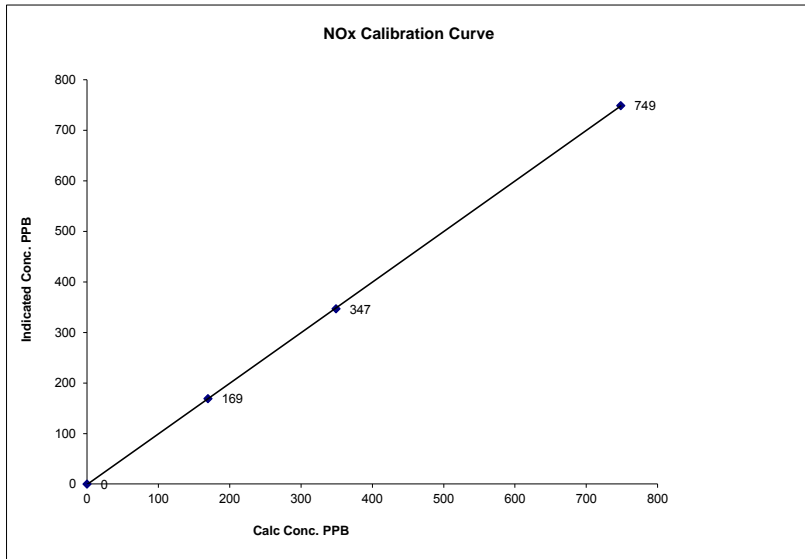


Notes:

NOx Calibration Curve

Calibration Date	October 2, 2012		
Company	LICA		
Plant / Location	St. Lina		
Start Time (MST)	12:06	End Time (MST)	18:42

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient	Slope	Intercept	R ²
0	0	N/A	0.999988	1.001012	-0.77058	0.999988
170	169	1.0030				
349	347	1.0057				
748	749	0.9991				

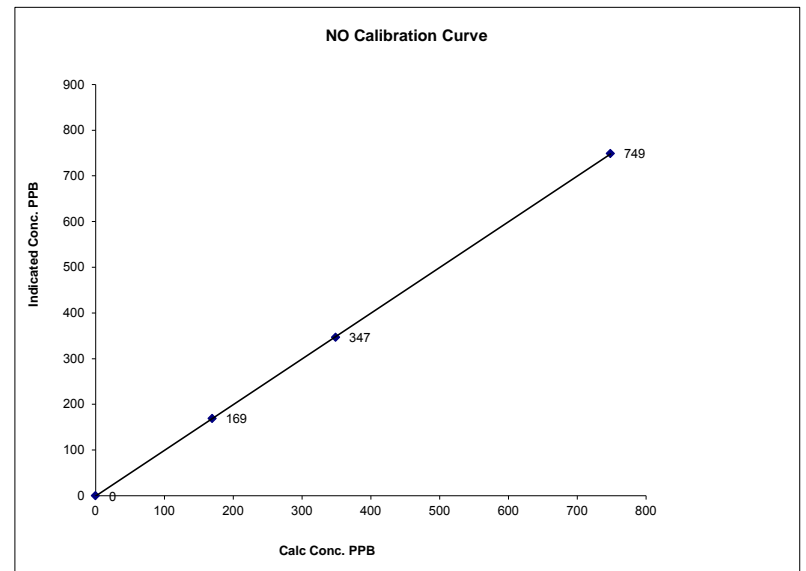


Notes:

NO Calibration Curve

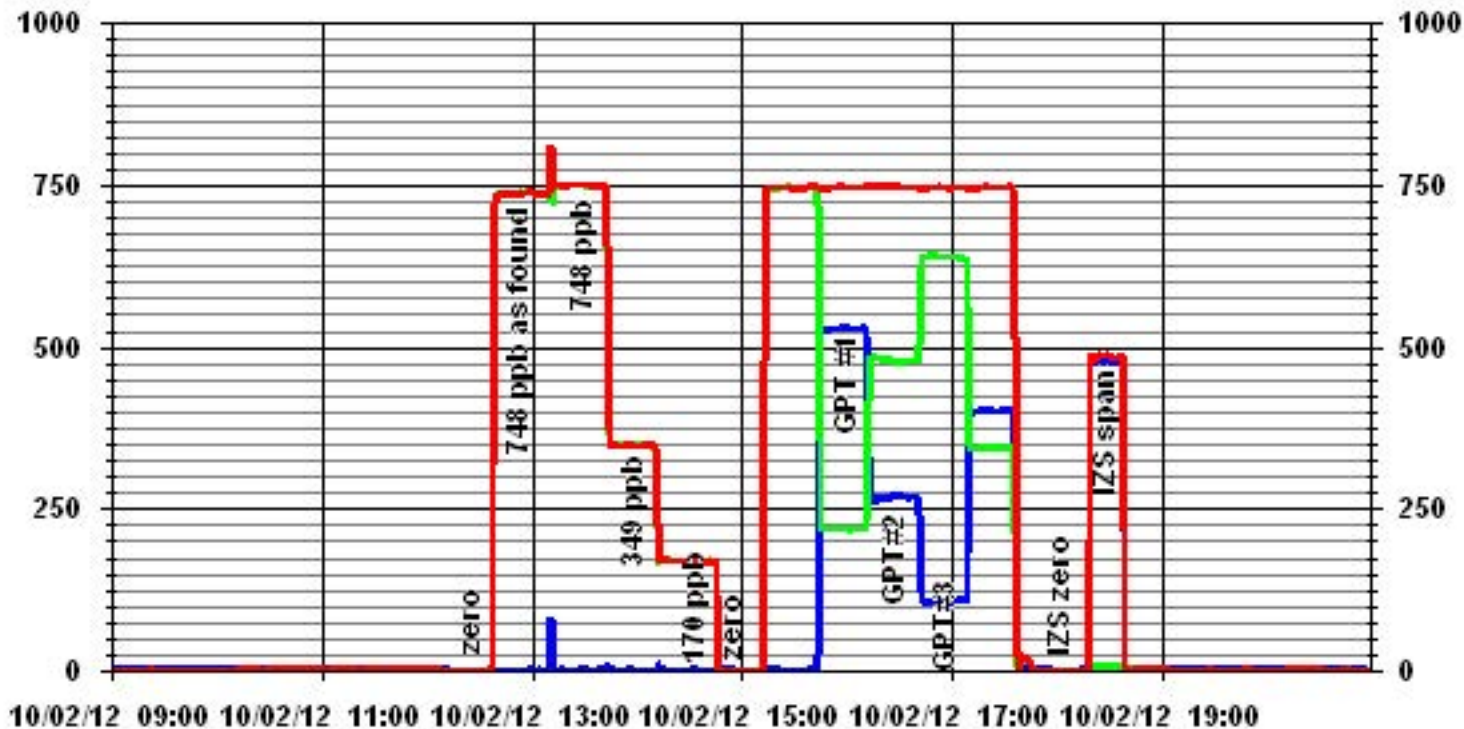
Calibration Date	October 2, 2012		
Company	LICA		
Plant / Location	St. Lina		
Start Time (MST)	12:06	End Time (MST)	18:42

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient	Slope	Intercept	R ²
0	0	N/A	0.999988	1.002866	-4.3393	0.999988
170	169	1.0030				
349	347	1.0057				
748	749	0.9991				



Notes:

01 Minute Averages



— LICA31 IIOX_ PPB

— LICA31 IIO_ PPB

— LICA31 IIO2_ PPB

Ozone

O₃ Calibration Report
Station Information

Calibration Date	October 4, 2012	Previous Calibration	September 14, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	St. Lina		
Start Time (MST)	08:39	End Time (MST)	17:13
Reason:	Removal Calibration		
Barometric Pressure	939 mBar	Station Temperature	22 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:	EnviroNics 6100	S/N :	4760	Method:	GPT
DAS Make / Model:	ESC 8832	S/N :	AO 717		

Analyzer Settings

	Before Calibration			After Calibration		
Concentration Range	0 - 500 ppb					
Cell A Flow / Cell B Flow	839 ccm	856 ccm	837 ccm	855 ccm		
Pressure	703 mmHg			704 mmHg		
Bench Temp	56.8 Deg C			56.8 Deg C		
O3 Lamp / Box Temp	80 Deg C	32.7 Deg C	80 Deg C	33.7 Deg C		
Offset / Slope	0.1		1.012		0.1 1.012	

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	402	396	1.0152
4994				
4994	300	268	264	1.0152
4994	120	107	106	1.0094
4994	0	0	0	N/A
		Sum of Least Squares		N/A
		New Correction Factor		0.0000

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	0.3	N/A
Auto Span	329	N/A
Sample Lines Connected		YES
Percent Change from Previous Calibration		-1.5%

Note: **NA: Not Applicable**

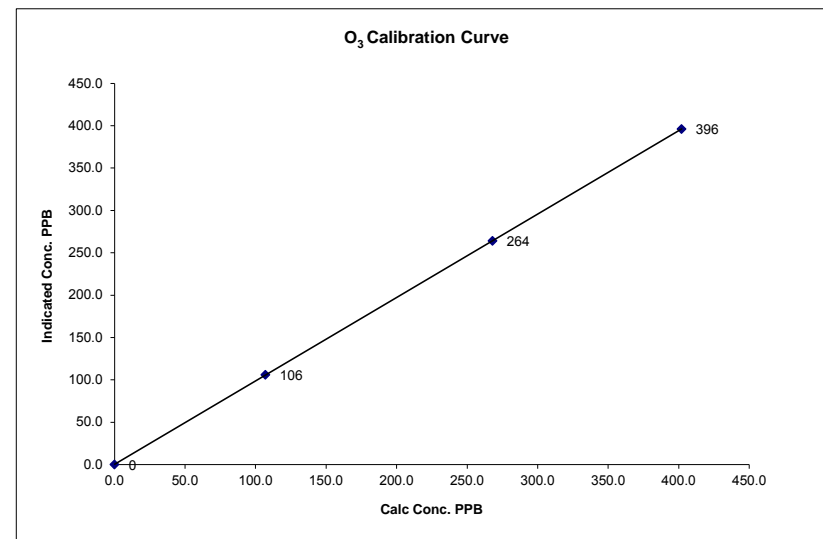
Installed 49I O3 analyzer, let it stabilize for a night.

Calibration Performed by: Ting Xu

O₃ Calibration Curve

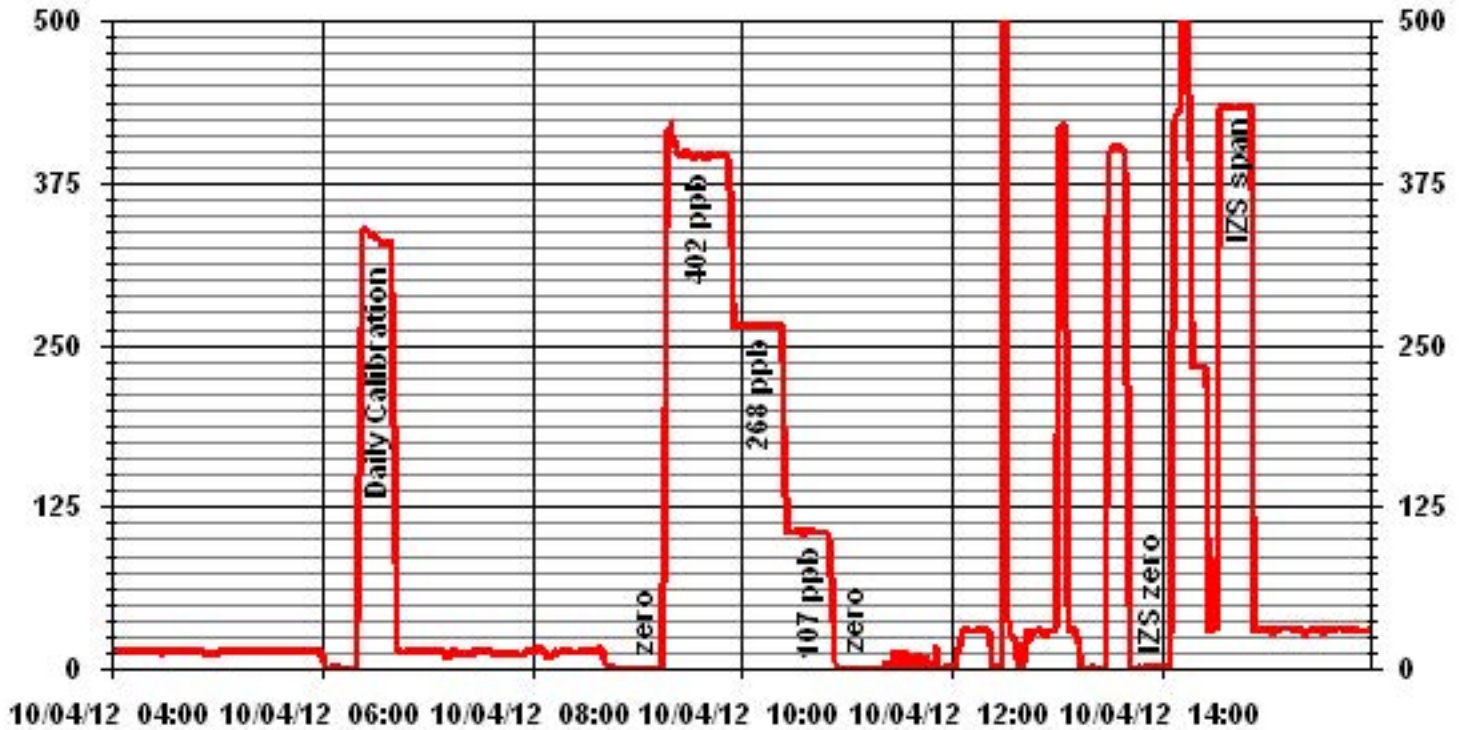
Calibration Date	October 4, 2012
Company	Lakeland Industry & Community Association
Plant / Location	St. Lina
Start Time (MST)	08:39
End Time (MST)	17:13

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient	Slope	Intercept
0	0	n/a	0.999997		0.256960
107	106	1.0094	0.984520		
268	264	1.0152			
402	396	1.0152			



Notes:

01 Minute Averages



O₃ Calibration Report
Station Information

Calibration Date	October 5, 2012	Previous Calibration	N/A
Company	Lakeland Industry & Community Association		
Plant / Location	St. Lina		
Start Time (MST)	12:47	End Time (MST)	16:08
Reason:	Installation Calibration		
Barometric Pressure	937 mBar	Station Temperature	23 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:	EnviroNics 6100	S/N :	4760	Method:	GPT
DAS Make / Model:	ESC 8832	S/N :	AO 717		

Analyzer Settings

	Before Calibration			After Calibration		
Concentration Range	0 - 500 ppb					
Cell A Flow / Cell B Flow	909 ccm	877 ccm		908 ccm	878 ccm	
Pressure	712 mmHg			714 mmHg		
Bench Temp	56.8 Deg C			56.8 Deg C		
O3 Lamp / Box Temp	80 Deg C	31.8 Deg C		80 Deg C	34.1 Deg C	
Offset / Slope	0.1	1.012		0.1	1.034	

Calibration Data

Dilution Flow Rate	Ozone Set Point	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4994	0	0	0	N/A
	No Zero Adj			
4994	450	402	402	1.0000
4994	300	268	269	0.9963
4994	120	107	108	0.9907
4994	0	0	0	N/A
Sum of Least Squares				N/A
New Correction Factor				0.0000

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	N/A	0.4
Auto Span	N/A	333.0
Sample Lines Connected		YES
Percent Change from Previous Calibration		N/A

Note: **NA: Not Applicable**

Oct 4th. Installed 49I O3 analyzer, let it stabilize for a night.

Oct 5th. Tried to do 49I O3 calibration, but zero reading was not stable. Aborted calibration.

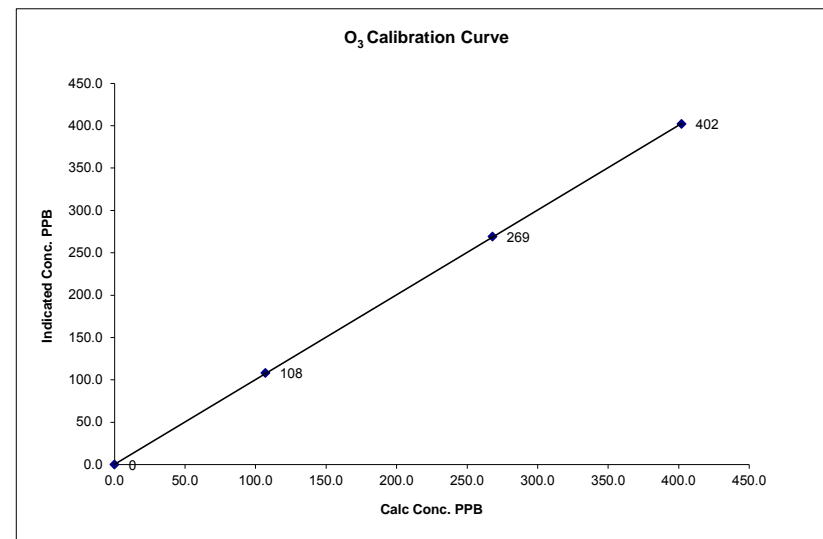
Had to uninstal 49I O3 analyzer, re-instal 49C analyzer back, let it stabilize for a while. Performed the cal.

Calibration Performed by: Ting Xu

O₃ Calibration Curve

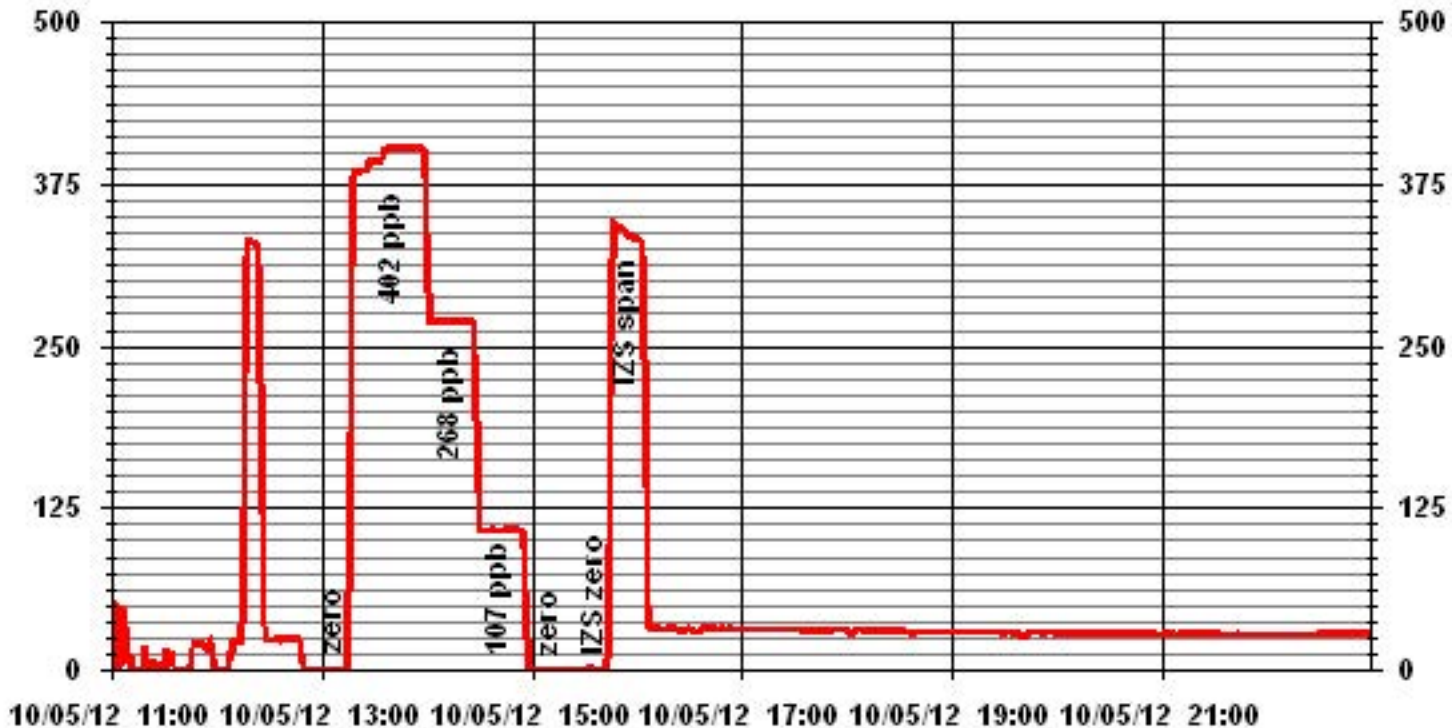
Calibration Date	October 5, 2012
Company	Lakeland Industry & Community Association
Plant / Location	St. Lina
Start Time (MST)	12:47
End Time (MST)	16:08

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	Intercept	
0	0	n/a	0.999989	0.527914	0.999989
107	108	0.9907	0.999856		0.999856
268	269	0.9963			
402	402	1.0000			



Notes:

01 Minute Averages



Particulate Matter 2.5

TEOM[®] 1405F Audit

	<u>Station</u>		<u>Audit Transfer Standard</u>
Date:	October 4, 2012	Make/Model:	Streamline FTS
Station Name:	Lica St. Lina (CASA # 31)	Serial Number:	LO 091099, Hi 091001
Location:	St. Lina Station	Cell s/n:	NA
Operator:	LICA	Thermometer s/	Station Temp. Sensor

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
Make/Model	Thermo Scientific Series 1405F	F-Main Set Pt (l/min)	3.00
Unit #	NA	F-Aux Set Pt (l/min)	13.67
Unit s/n	1405A207691003	Filter Load (%)	25.5%
Firmware Ver.	1.55	K _o Factor	15634.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	6.86
		Press (ATM)	0.938

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

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

Audit

Status			
Noise <0.10ug	0.003	Warnings	None
Pump Vacuum <0.4atm	0.31	Pump Gauge (inHg)	-20
Temperature/Pressure			
Measured Temp (± 2 °C)	6.44	D °C	0.4
Measured Press (± 0.01atm)	0.936	DATM	0.002
Flow Audit			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	0.78%
Measured Main Flow (l/min)	3.02	Flow Adjusted to Measured?	YES
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	1.67%
Measured Bypass Flow (l/min)	13.80	Flow Adjusted to Measured?	YES
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	N/A	Flow Control = Active	
Aux (< 0.6 l/min)	N/A	Report Conditions = Actual	
K_o Factor			
Measured	NA		
K _o Difference (± 2.5%)	NA		

Start Time: 11:02 **Finish Time:** 14:48

Sample Inlet Cleaned: Yes **New Filters Installed:** Yes
New Filter Loading %: N/A

Comments: _____

TEOM[®] 1405F Audit

	<u>Station</u>		<u>Audit Transfer Standard</u>
Date:	October 18, 2012	Make/Model:	Streamline FTS
Station Name:	Lica St. Lina (CASA # 31)	Serial Number:	LO 091099, Hi 091001
Location:	St. Lina Station	Cell s/n:	NA
Operator:	LICA	Thermometer s/:	Station Temp. Sensor

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
Make/Model	Thermo Scientific Series 1405F	F-Main Set Pt (l/min)	3.00
Unit #	NA	F-Aux Set Pt (l/min)	13.67
Unit s/n	1405A207691003	Filter Load (%)	28.0%
Firmware Ver.	1.55	K _o Factor	15634.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	9.59
		Press (ATM)	0.921

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

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

Audit

Status			
Noise <0.10ug	0.004	Warnings	None
Pump Vacuum <0.4atm	0.31	Pump Gauge (inHg)	-19
Temperature/Pressure			
Measured Temp (± 2 °C)	8.37	D °C	1.2
Measured Press (± 0.01atm)	0.920	DATM	0.001
Flow Audit			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	3.47%
Measured Main Flow (l/min)	2.88	Flow Adjusted to Measured?	YES
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	1.30%
Measured Bypass Flow (l/min)	13.60	Flow Adjusted to Measured?	YES
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	Base=-0.01 Ref=-0.00	Flow Control = Active	
Aux (< 0.6 l/min)	Base=0.00 Ref=0.00	Report Conditions = Actual	
K_o Factor			
Measured	NA		
K _o Difference (± 2.5%)	NA		

Start Time: 15:10 **Finish Time:** 16:50

Sample Inlet Cleaned: Yes **New Filters Installed:** Yes
New Filter Loading %: 18.4%

Comments: _____

Lakeland Industry & Community Association

Cold Lake Monitoring Site

Ambient Air Monitoring

Data Report

For

October 2012

Prepared By:



November 30, 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: October 2012

The monthly ambient data report:

- Prepared by Maram Ghaleb
- Reviewed by Lily Lin

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 – October2012

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION COLD LAKE SITE						MAXIMUM VALUES						OPERATIONAL TIME (PERCENT)	
						OBJECTIVES				EXCEEDENCES			MONTHLY AVERAGE
PARAMETER	1-HR	24-HR	1-HR	24-HR	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY		
SO ₂ (PPB)	172	48	0	0	0.21	3	VAR	VAR	VAR	VAR	1.2	25	99.7
TRS (PPB)	-	-	-	-	0.00	0	ALL	ALL	VAR	VAR	0.0	ALL	99.5
NO ₂ (PPB)	159	-	0	-	2.91	21	11	7	4.8	248(SWS)	8.0	9	99.7
NO (PPB)	-	-	-	-	0.75	35	18	7	3.3	150(SSE)	3.9	18	99.7
NOx (PPB)	-	-	-	-	3.66	44	18	7	3.3	150(SSE)	9.4	9	99.7
O ₃ (PPB)	82	-	0	-	19.82	41	15	16	14.5	270(W)	27.7	16	99.7
THC (PPM)	-	-	-	-	2.22	3.2	9	5	6.2	227(SW)	2.5	5	99.9
PM 2.5 (UG/M ³)	-	30	-	0	2.46	56	25	9	16.0	320(NW)	5.6	25	89.9
TEMPERATURE (DEG C)	-	-	-	-	0.97	16.2	15	14	23.5	271(W)	9.3	1	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	75.96	98	5	12	6.5	215(SSW)	96.3	20	100.0
VECTOR WS (KPH)	-	-	-	-	7.00	19.4	7	17	-	331(NNW)	14.7	24	100.0
VECTOR WD (DEGREES)	-	-	-	-	302(WNW)	-	-	-	-	-	-	-	100.0

VAR-VARIOUS NA: NOT AVAILABLE

Monthly Non-Continuous Data Summary

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

Passive Ambient Monitoring Network – October2012

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION PASSIVE NETWORK			
NETWORK MAXIMUM			NETWORK AVERAGE
PARAMETER	STATION	READING (PPB)	READING (PPB)
SO ₂	#14	0.8	0.36
H ₂ S	#27	0.36	0.11
NO ₂	#28	3.4	1.4
O ₃	#08	26.1	20.1

Volatile Organics Data Summary

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – COLD LAKE

Xontech Model 910A – October 06, 2012

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

Xontech Model 910A – October 12, 2012

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

Xontech Model 910A – October 18, 2012

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

Xontech Model 910A – October 24, 2012

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

Xontech Model 910A – October 30, 2012

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

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

PUF cartridge – October 06, 2012

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

PUF cartridge – October 12, 2012

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

PUF cartridge – October 8, 2012

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

PUF cartridge – October 24, 2012

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

PUF cartridge – October 30, 2012

Maximum reading (ng/m3)	Semi-Volatile Organic
<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 were observed during the month. The inlet filter was changed on October 25th. 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 were observed during the month. On October 25th. Data was corrected using daily zero information.

Ozone (PPB)

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

No operational issues were observed during the month. The inlet filter was changed on October 25th. 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 issues were observed during the month. The inlet filter was changed on October 25th. Data was corrected using daily zero information.

Nitrogen Dioxide (PPB)

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

No operational issues were observed during the month. The inlet filter was changed on October 25th. Data was corrected using daily zero information.

Particulate Matter 2.5 (UG/M3)

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

A Teom audit was performed on October 1st. The O-ring inside the switching valve was replaced, and teom and FDMS filters were replaced as well. A leak check was performed, and the inlet was also cleaned. On October 2nd it was noticed that there was a teom dew point alarm. The dew point temperature cables were checked and reconnected and the alarm was cleared. On October 3rd Teom reading was negative, the switching valve was checked and the teom and FDMS filters were replaced again. A leak check was performed as well as a flow audit. Data was good. On October 9th it was discovered that there was an “FDMS value position” alarm. The switching valve was disassembled and it was found that the screw that connects the motor with the valve was loose. The screw was tightened and a leak check was performed as well as a flow audit. On October 25th the switching valve was replaced as per client’s suggestion. After the replacement, a teom audit and leak check were performed. A total of 75 hours of data were invalidated this month. 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. Seventy-five hours of data were invalid as the data were below –3 ug/m3. The operational time for the month was 669 hours (89.9%).

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 issues were observed during the month.

Relative Humidity (PERCENT)

- System make / model - Rotronic Hygroclip-S3

No operational issues were observed during the month.

Ambient Temperature (DEGC)

- System make / model - Rotronic Hygroclip-S3

No operational issues were observed during the month.

Trailer Temperature (DEGC)

- System make / model - R&R 61

No operational issues were 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

The manifold was cleaned on October 25th.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Air Quality Index (AQI)

No AQI report is included in this report, as the AQI value is no longer used by Alberta Environment.

Passive Network

No operational issues were observed during the month.

Volatile Organics (VOCs)

The volatile organics were sampled from October 1st to October 31st. 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 October 1st to October 31st. 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

Sulphur Dioxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

SULPHUR DIOXIDE (SO₂) hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.		
DAY																												
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	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	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	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	1	1	0	0	0	0	0	0	1	1	2	3	2	1	1	0	0	0	0	0	0	0	0	0	3	0.6	24	
7	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24
8	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0.2	24	
9	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
10	0	0	0	0	1	1	0	0	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0.6	24	
11	1	1	1	1	1	0	0	0	1	1	0	1	1	1	1	0	1	0	0	0	0	0	0	0	1	0.5	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	0	0	0	0	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	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23	
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	0	0	0	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	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0.0	24	
26	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	0	0	0	0	0	0	1	2	1.0	24
27	1	1	0	1	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	24	
30	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	3	3	0.8	24
31	3	2	1	1	1	1	1	1	1	0	1	2	2	0	0	0	0	0	0	0	0	0	0	0	3	0.9	24	
HOURLY MAX	3	2	1	1	1	1	1	1	1	2	2	3	2	2	2	2	1	1	1	1	1	2	3	3				
HOURLY AVG	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3				

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

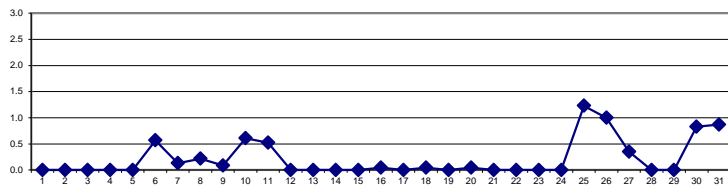
OBJECTIVE LIMIT:

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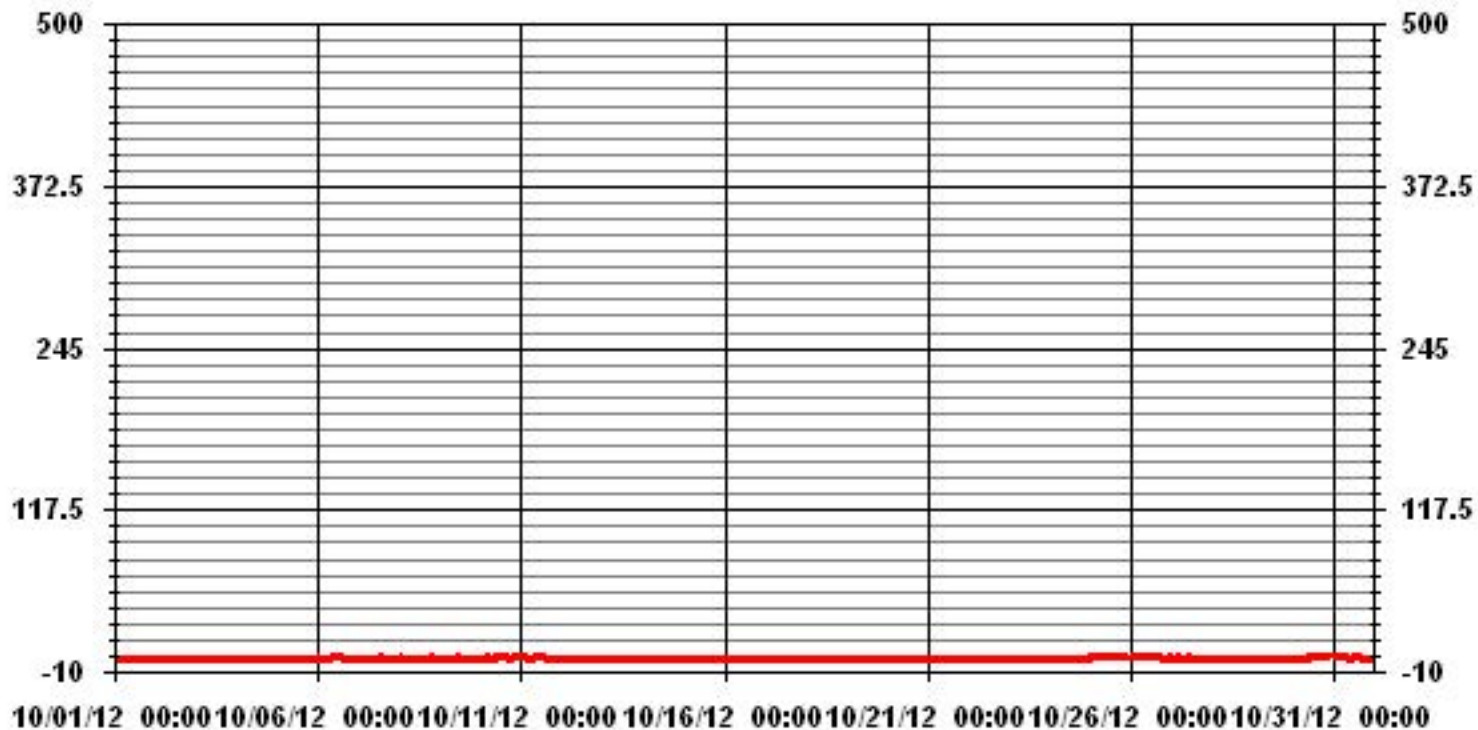
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	127
MAXIMUM 1-HR AVERAGE:	3 PPB @ HOUR(S) VAR ON DAY(S) VAR
MAXIMUM 24-HR AVERAGE:	1.2 PPB ON DAY(S) 25
IZS CALIBRATION TIME:	32 HRS
OPERATIONAL TIME:	742 HRS
MONTHLY CALIBRATION TIME:	4 HRS
AMD OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	0.49
MONTHLY AVERAGE:	0.21 PPB

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



— LICA SO2_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2014

SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	1	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	24
2	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	0	1	1	0.7	24
3	1	1	1	0	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0.7	24
4	1	0	1	0	0	0	0	1	0	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0.6	24
5	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1	1	0.4	24
6	1	1	1	1	1	1	1	1	2	2	2	4	3	2	1	1	1	1	1	1	1	0	1	1	0	4	1.3	24
7	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24
8	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0.9	24
9	0	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0.8	24
10	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	24
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	24
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1	0.9	24
13	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
14	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	24
15	1	0	1	1	0	1	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	0	1	0	1	0.7	24
16	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0.9	24
17	0	1	0	1	1	1	1	0	1	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	1	1	0.6	24
18	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0.8	24	
19	0	0	1	1	0	1	1	0	0	0	0	1	1	0	1	0	0	0	0	0	0	1	1	1	0	1	0.3	24
20	0	1	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0.3	24
21	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0.3	23	
22	0	1	0	0	1	0	1	0	1	0	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0.6	24	
23	0	1	0	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	0	0	0	1	1	1	1	0.6	24	
24	1	0	0	1	0	1	1	C	C	C	C	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0.8	24	
25	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	M	1	2	1	1	2	2	2	1.4	23	
26	2	1	2	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	1.5	24	
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	24
29	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0.8	24	
30	1	0	0	1	1	0	1	1	1	2	1	2	1	1	1	1	1	1	1	2	2	3	4	4	4	1.4	24	
31	3	3	1	1	1	1	1	1	1	1	2	3	3	1	3	1	1	1	1	1	1	1	1	1	1	3	1.5	24
HOURLY MAX	3	3	2	2	2	2	1	1	2	2	2	4	3	2	3	1	1	2	2	2	3	4	4	4	4			
HOURLY AVG	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.8	0.9	1.2	1.0	0.9	0.9	1.0	0.7	0.9	0.8	0.8	0.9	0.9	1.0	0.9				

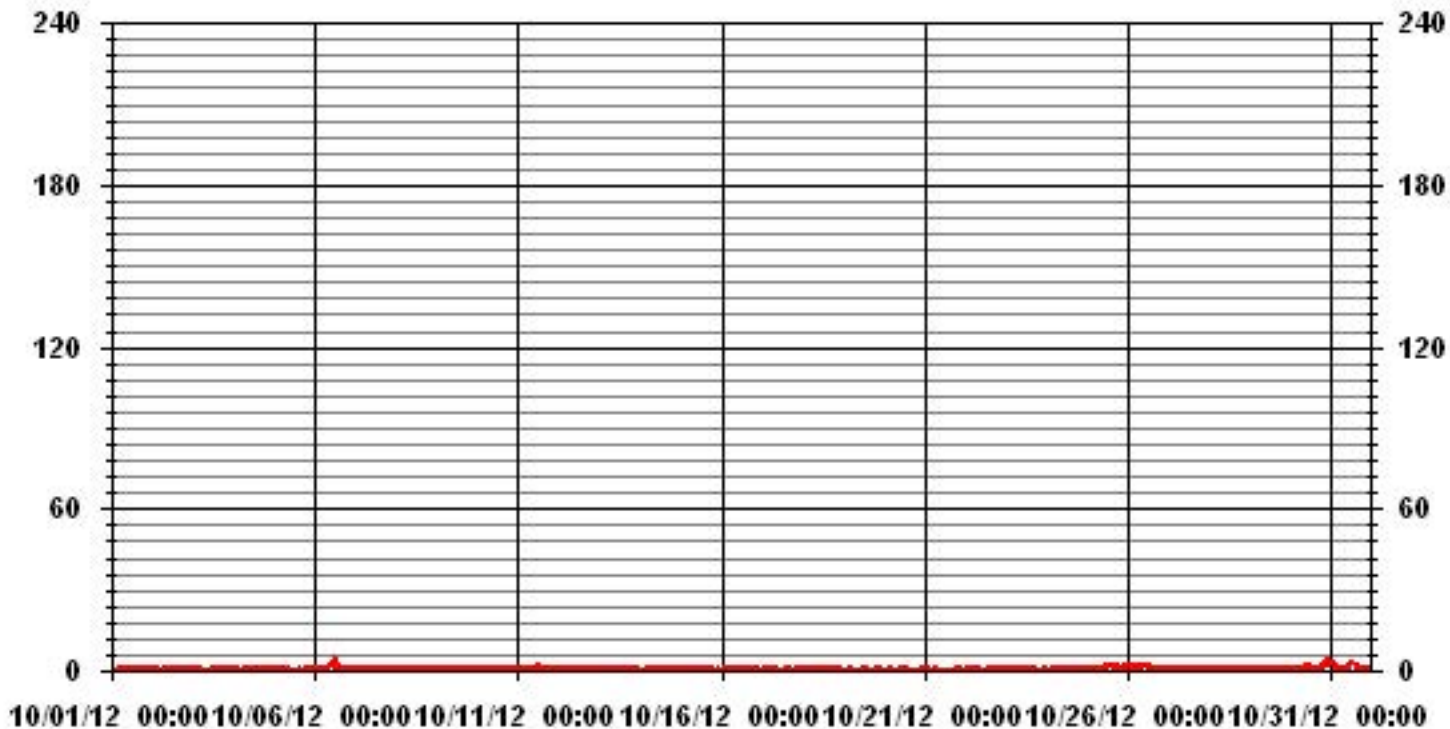
STATUS FLAG CODES

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:	538				
MAXIMUM INSTANTANEOUS VALUE:	4	PPB @ HOUR(S)	ON DAY(S)		
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	742	HRS
MONTHLY CALIBRATION TIME:	4	HRS			
STANDARD DEVIATION:	0.57				

01 Hour Averages



LICA
 SO2_ / WDR Joint Frequency Distribution (Percent)

October 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	2.40	.84	1.13	1.55	6.36	7.07	14.99	3.53	2.68	3.96	7.35	6.93	8.62	8.76	16.12	7.63	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.40	.84	1.13	1.55	6.36	7.07	14.99	3.53	2.68	3.96	7.35	6.93	8.62	8.76	16.12	7.63	

Calm : .00 %

Total # Operational Hours : 707

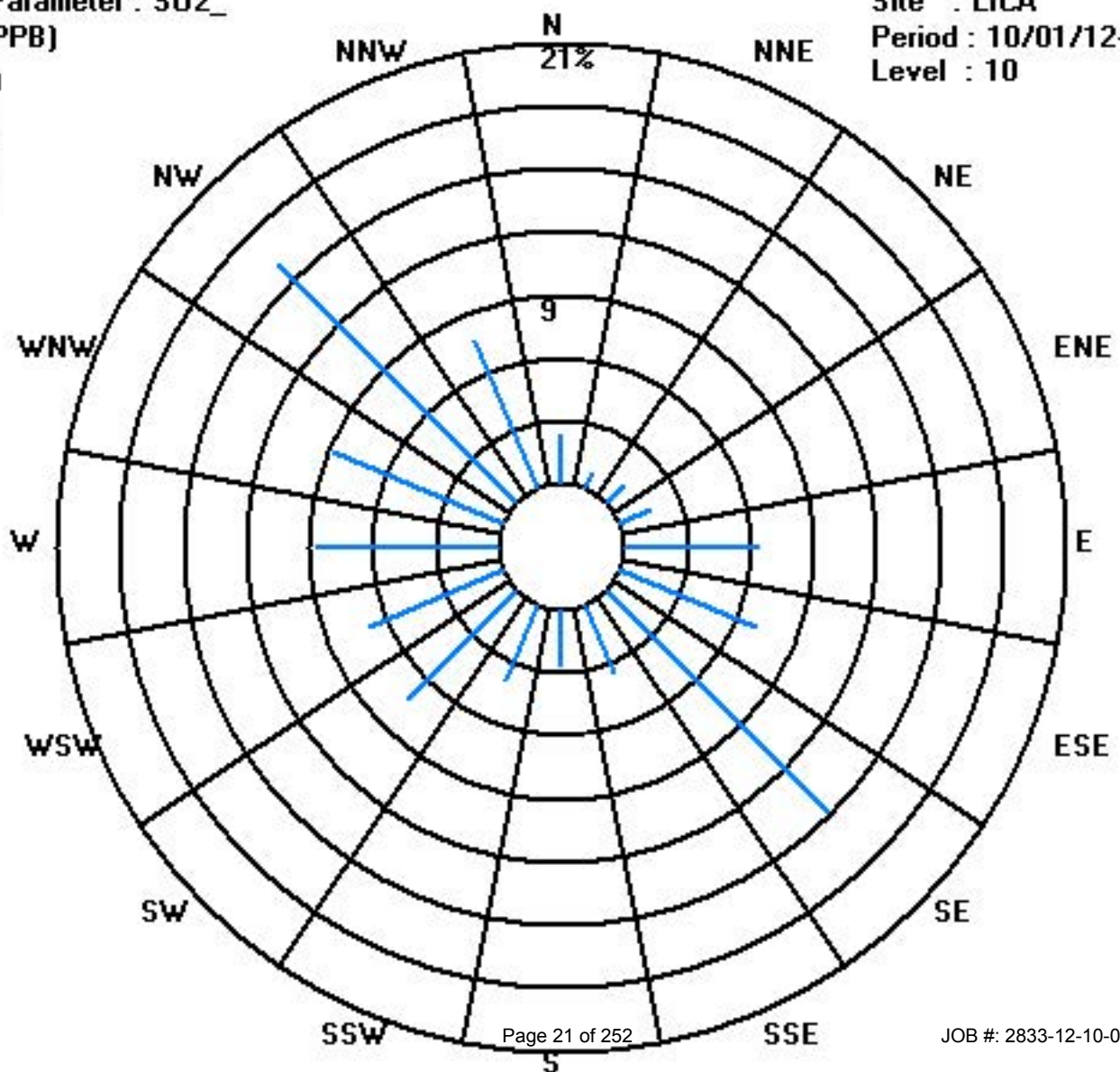
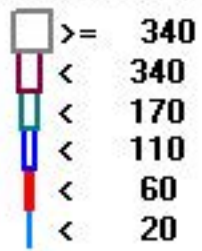
Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	17	6	8	11	45	50	106	25	19	28	52	49	61	62	114	54	707
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	17	6	8	11	45	50	106	25	19	28	52	49	61	62	114	54	

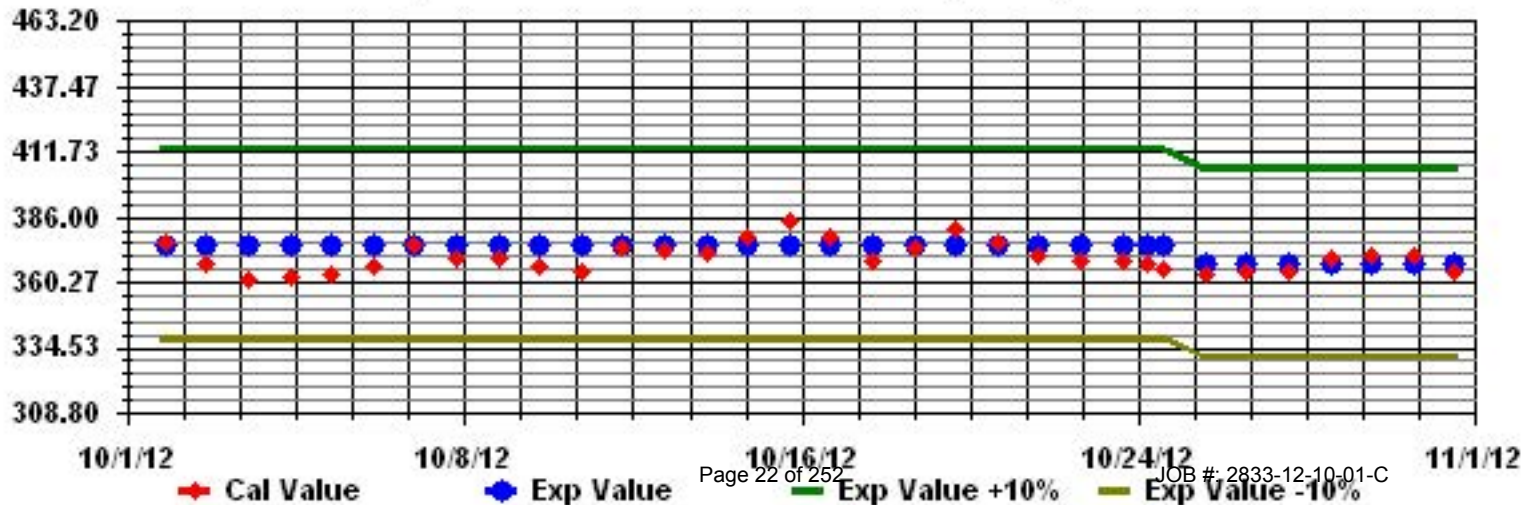
Calm : .00 %

Total # Operational Hours : 707

Class Limits (PPB)



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



Total Reduced Sulphur

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

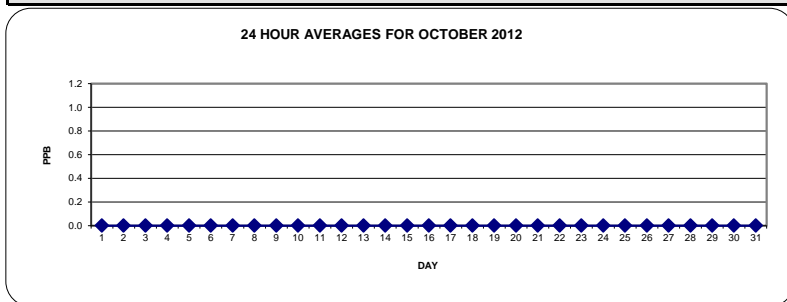
OCTOBER 2012

TOTAL REDUCED SULPHUR (TRS) hourly averages in ppb

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY 24-HOUR		
HOURLY MAX	HOURLY AVG	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																													
1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	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	23
3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	22
6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
7		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
9		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
10		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
11		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
12		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
13		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
14		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
15		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
16		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
17		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
18		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
19		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
20		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
21		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
22		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
31		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
HOURLY MAX		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOURLY AVG		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

STATUS FLAG CODES

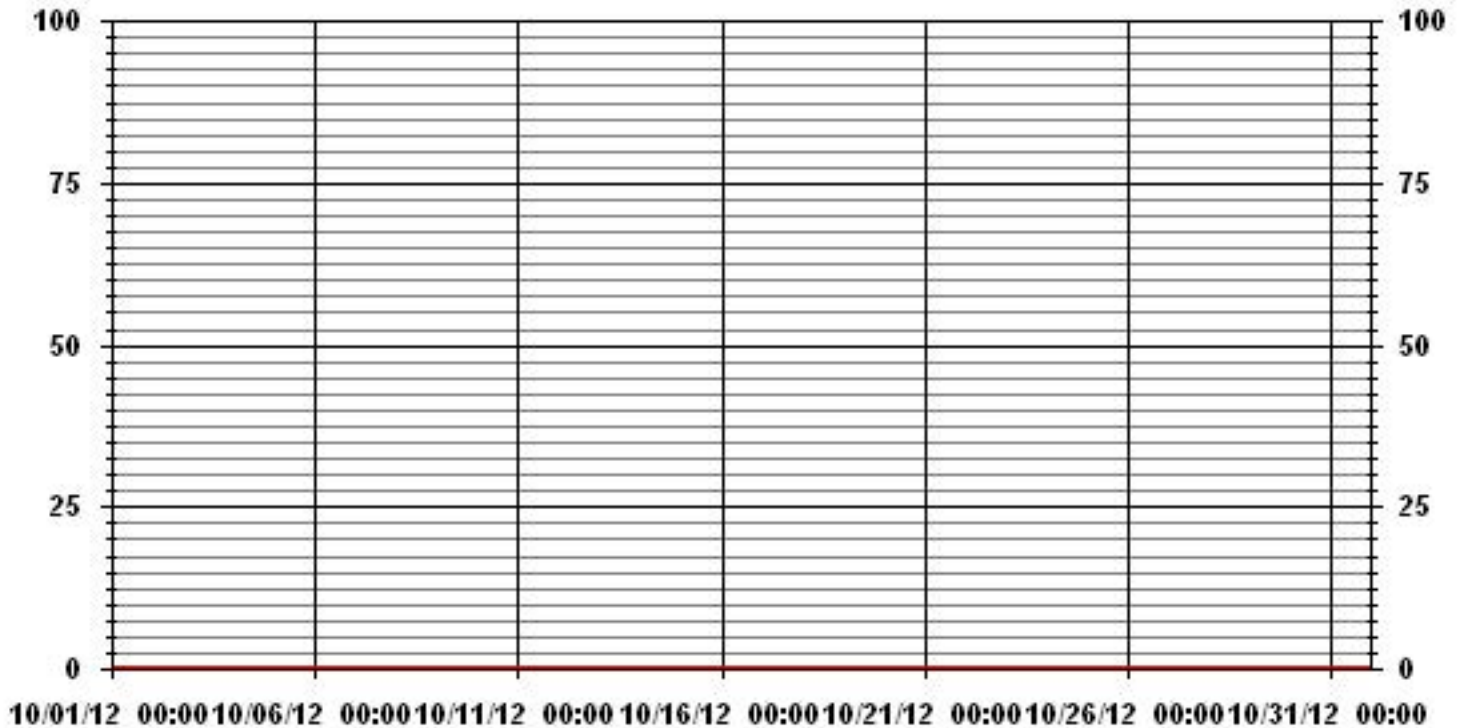
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE



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			ON DAY(S)
					VAR-VARIOUS
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	740	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	99.5	%
STANDARD DEVIATION:	0.00		MONTHLY AVERAGE:	0.00	PPB

01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

TOTAL REDUCED SULPHUR MAX instantaneous maximum in ppb

MST																										DAILY 24-HOUR		
DAY	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.	AVG.	RDGS.	
1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	IZS	0	0	0	1	0.1	24
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	IZS	N	1	0	1	1	0.2	23	
3	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	IZS	1	0	0	1	0	1	0.2	24	
4	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	IZS	0	0	0	0	0	0	1	0.1	24	
5	0	0	0	0	0	0	0	0	0	N	N	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0.0	22	
6	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	IZS	0	0	0	0	0	0	0	0	0	1	0.1	24
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	1	0	0	1	0	0	0	0	1	1	0.1	24	
8	0	0	0	0	1	0	1	0	0	0	0	0	0	IZS	0	1	0	0	0	0	0	0	0	0	1	0.1	24	
9	1	0	0	0	0	0	0	0	0	0	0	1	IZS	0	0	0	0	0	0	0	0	0	0	0	1	0.1	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	1	0	0	0	0	0	0	IZS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
12	0	0	0	0	0	0	0	0	0	IZS	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	1	0	IZS	0	0	1	0	1	0	1	0	1	0	1	0	0	0	1	1	0.3	24	
14	0	0	0	0	0	0	0	IZS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
15	0	0	0	0	0	1	IZS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
16	0	0	0	0	0	IZS	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.1	24	
17	0	0	0	0	IZS	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	24	
18	0	0	0	IZS	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
19	0	0	IZS	0	0	0	1	0	0	0	0	0	0	0	0	1	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	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	0	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	1	0	0	0	C	C	C	C	C	0	0	1	0	0	IZS	0	0	1	0.1	24	
24	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	1	0.1	24	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	M	0	0	IZS	0	0	0	0	0	0.0	23	
26	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	0	1	0.0	24	
27	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	
28	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	
29	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	IZS	0	1	0	0	0	0	0	0	1	0.1	24	
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	1	0	0	0	0	0	1	0.0	24	
31	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	
HOURLY MAX	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1			
HOURLY AVG	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1				

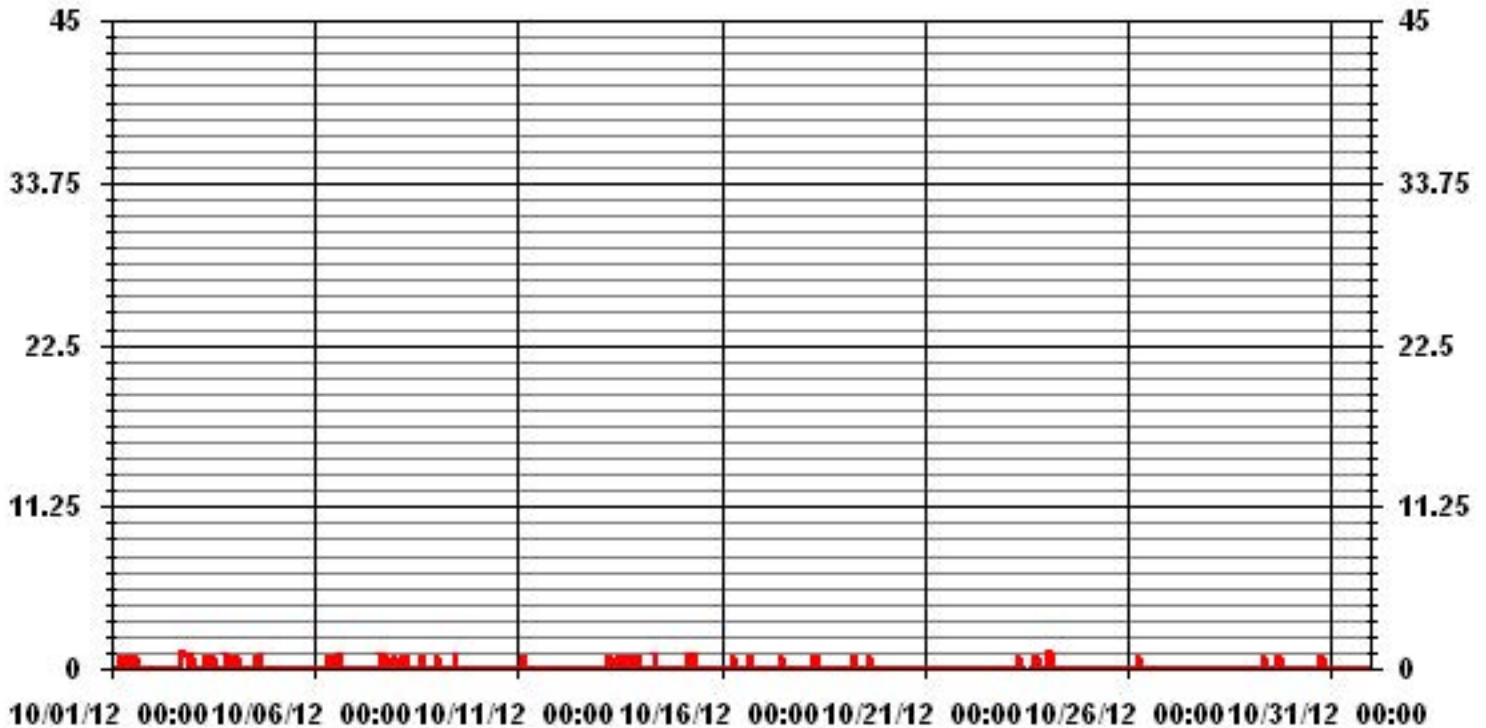
STATUS FLAG CODES

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:	51					
MAXIMUM INSTANTANEOUS VALUE:	1	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR
				VAR - VARIOUS		
IZS CALIBRATION TIME:	32	HRS		OPERATIONAL TIME:	740 HRS	
MONTHLY CALIBRATION TIME:	5	HRS				
STANDARD DEVIATION:	0.26					

01 Hour Averages



LICA
 TRS_ / WDR Joint Frequency Distribution (Percent)

October 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	1.98	.71	1.13	1.56	6.39	7.10	15.05	3.40	2.69	3.83	7.38	6.96	8.66	8.80	16.19	8.09	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	1.98	.71	1.13	1.56	6.39	7.10	15.05	3.40	2.69	3.83	7.38	6.96	8.66	8.80	16.19	8.09	

Calm : .00 %

Total # Operational Hours : 704

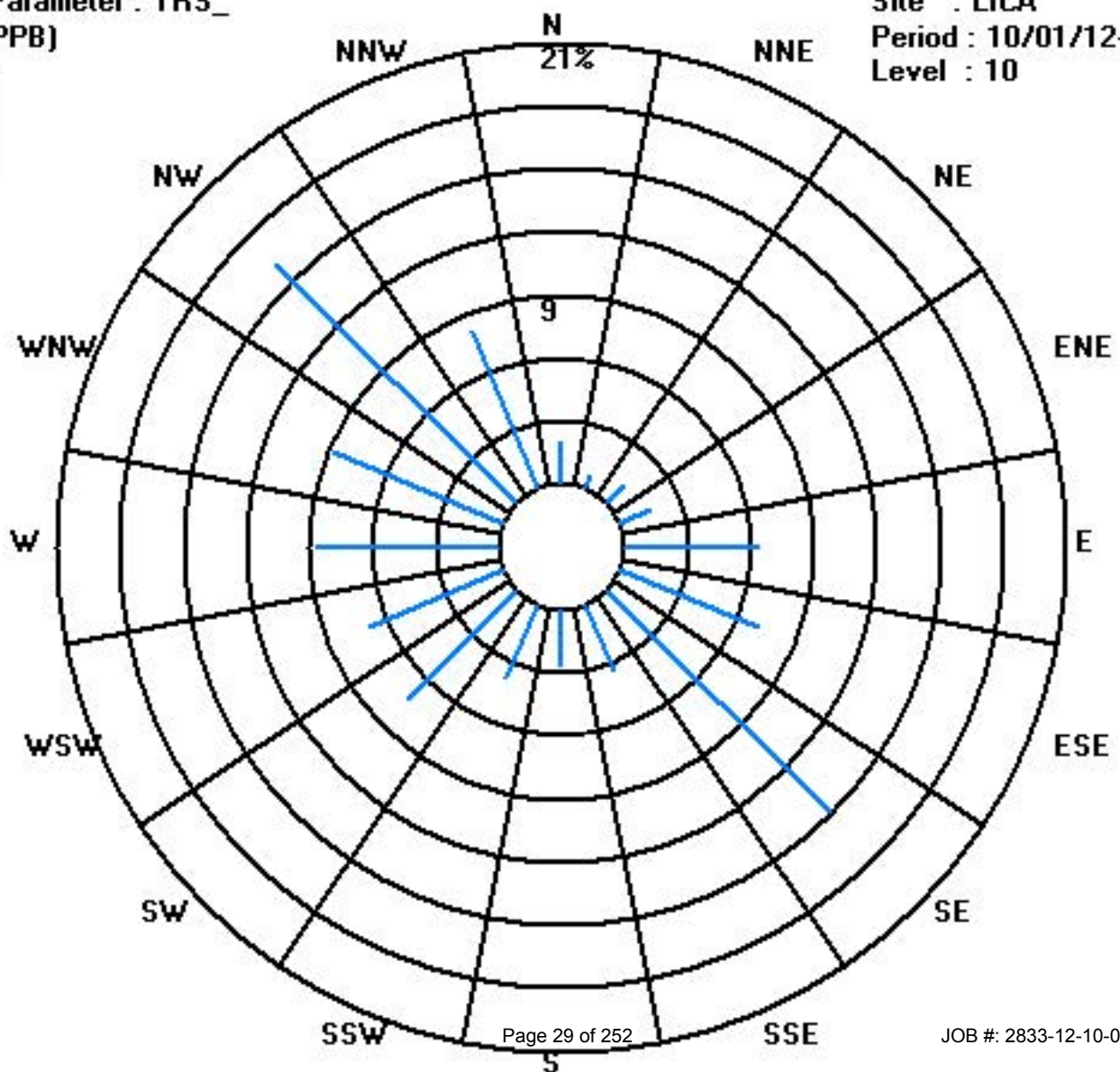
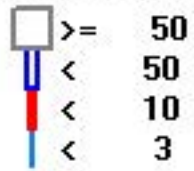
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	14	5	8	11	45	50	106	24	19	27	52	49	61	62	114	57	704
< 10																	
< 50																	
>= 50																	
Totals	14	5	8	11	45	50	106	24	19	27	52	49	61	62	114	57	

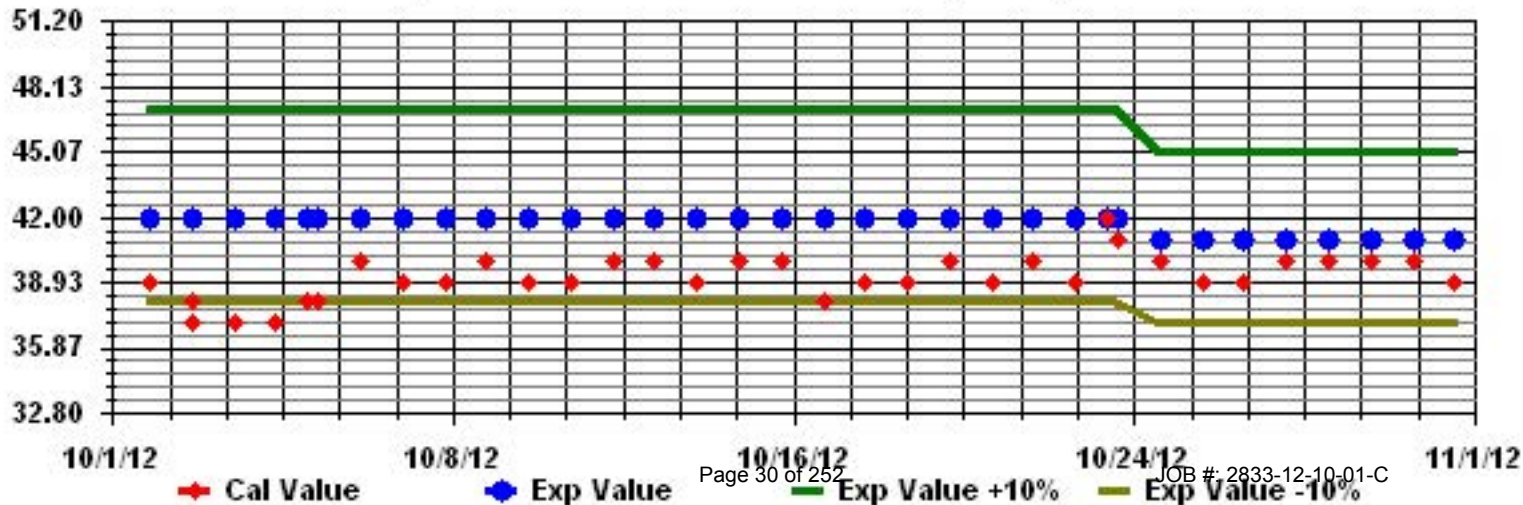
Calm : .00 %

Total # Operational Hours : 704

Class Limits (PPB)



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



Total Hydrocarbons

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
DAY	HOURLY MAX	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
1	2.7	2.7	2.6	2.6	2.7	2.9	2.9	2.7	2.6	2.5	2.5	2.5	2.4	2.3	2.3	2.4	2.3	1.9	1.9	1.9	IZS	2	2	2.1	2.9	2.4	24	
2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	IZS	2	2.1	2.1	2.1	2.2	2.1	24	
3	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.7	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	IZS	2.1	2.2	2.2	2.3	2.4	2.7	2.2	24	
4	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.4	2.6	2.3	2.2	2.1	2.1	2.1	2.1	IZS	2.3	2.2	2.2	2.3	2.4	2.6	2.2	2.4	24	
5	2.8	2.5	2.3	2.4	2.4	2.3	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.4	IZS	2.5	2.5	2.4	2.7	2.7	2.6	2.6	2.8	2.5	24	
6	2.5	2.5	2.3	2.2	2.3	2.2	2.3	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2	IZS	2.1	2.1	2.2	2.2	2.4	2.7	2.8	2.8	2.3	24	
7	2.9	2.9	2.9	2.9	2.9	2.8	2.7	2.6	2.7	2.4	2.3	2.4	2.1	2.1	IZS	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.9	2.4	24	
8	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	IZS	2	2	2	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.1	24	
9	2.4	2.5	2.8	3	3	3.2	3.1	3.1	2.9	2.6	2.3	2.2	IZS	2.1	2.1	2	2	2.1	2.1	2.1	2.2	2.4	2.2	2.1	3.2	2.5	24	
10	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	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1	24	
11	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.3	2.3	2.3	IZS	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.4	2.2	24	
12	2.3	2.2	2.2	2.2	2.3	2.4	2.5	2.4	2.4	IZS	2.3	2.3	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	2.5	2.2	24
13	2.3	2.3	2.3	2.3	2.4	2.6	2.7	2.7	IZS	2.5	2.4	2.4	2.4	2.5	2.5	2.6	2.8	2.9	2.9	3	2.9	2.7	2.3	2.1	3.0	2.5	24	
14	2.2	2.2	2.3	2.1	2.1	2.2	2.7	IZS	2.3	2.2	2.2	2.1	2	1.9	2	2	2.1	2.2	2.1	2	2.1	2.1	2.1	2.2	2.7	2.1	24	
15	2.3	2.3	2.3	2.6	2.7	2.8	IZS	2.8	2.3	2.1	2	2	1.9	1.9	1.9	1.9	1.9	1.9	2	2.1	2.2	2.5	2.8	3	3.0	2.3	24	
16	2.7	2.4	2.1	2	2	IZS	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.7	2.2	24
17	2.1	2.1	2.1	2.1	IZS	2	2	2	2	2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	24	
18	2.2	2.3	2.5	IZS	2.5	2.6	2.7	2.8	3	2.6	2.3	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	3.0	2.3	24
19	2.2	2.2	IZS	2.1	2.1	2.1	2	2	2	2	2	2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2	1.9	2	2.2	2.0	24	
20	2	IZS	2.1	2.2	2.2	2.3	2.4	2.4	2.4	2.6	2.7	2.5	2.4	2.2	2.1	2.1	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.2	2.1	2.7	2.3	24
21	IZS	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.2	IZS	2.2	2.1	24
22	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	IZS	2.4	2.1	24	
23	2.4	2.5	2.5	2.9	2.9	2.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2	C	C	C	2	2.1	2.1	IZS	2	2	2.9	2.2	24	
24	2	2	2	2	2	2	2	2	2	2.1	2.2	2.1	2	2	2.1	2.1	2	2.1	2.1	2.1	IZS	2	2.1	2.1	2.2	2.0	24	
25	2.2	2.2	2.2	2.2	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	M	2.1	2.1	IZS	2.1	2.2	2.1	2.1	2.2	2.1	23
26	2.1	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	2.2	IZS	2.1	2.1	2.2	2.2	2.1	2.2	2.1	24	
27	2.2	2.2	2.2	2.3	2.2	2.1	2.2	2.2	2.2	2.5	2.6	2.6	2.4	2.4	2.4	2.3	2.2	IZS	2.1	2.1	2.3	2.4	2.5	2.5	2.4	2.6	2.3	24
28	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2	2	2	2	2	2	2	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.1	24
29	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	IZS	2	2	2	2	2.1	2	2.1	2.2	2.1	24	
30	2.4	2.4	2.3	2.4	2.4	2.4	2.7	2.3	2.1	2.2	2.1	2.2	2.1	2.1	2.1	IZS	2.1	2.1	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.7	2.2	24
31	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	24
HOURLY MAX	2.9	2.9	2.9	3.0	3.0	3.2	3.1	3.1	3.0	2.6	2.7	2.6	2.4	2.5	2.5	2.6	2.8	2.9	2.9	3.0	2.9	2.7	2.8	3.0				
HOURLY AVG	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2				

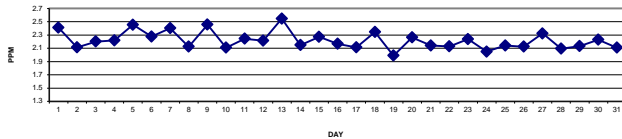
STATUS FLAG IZSODES

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

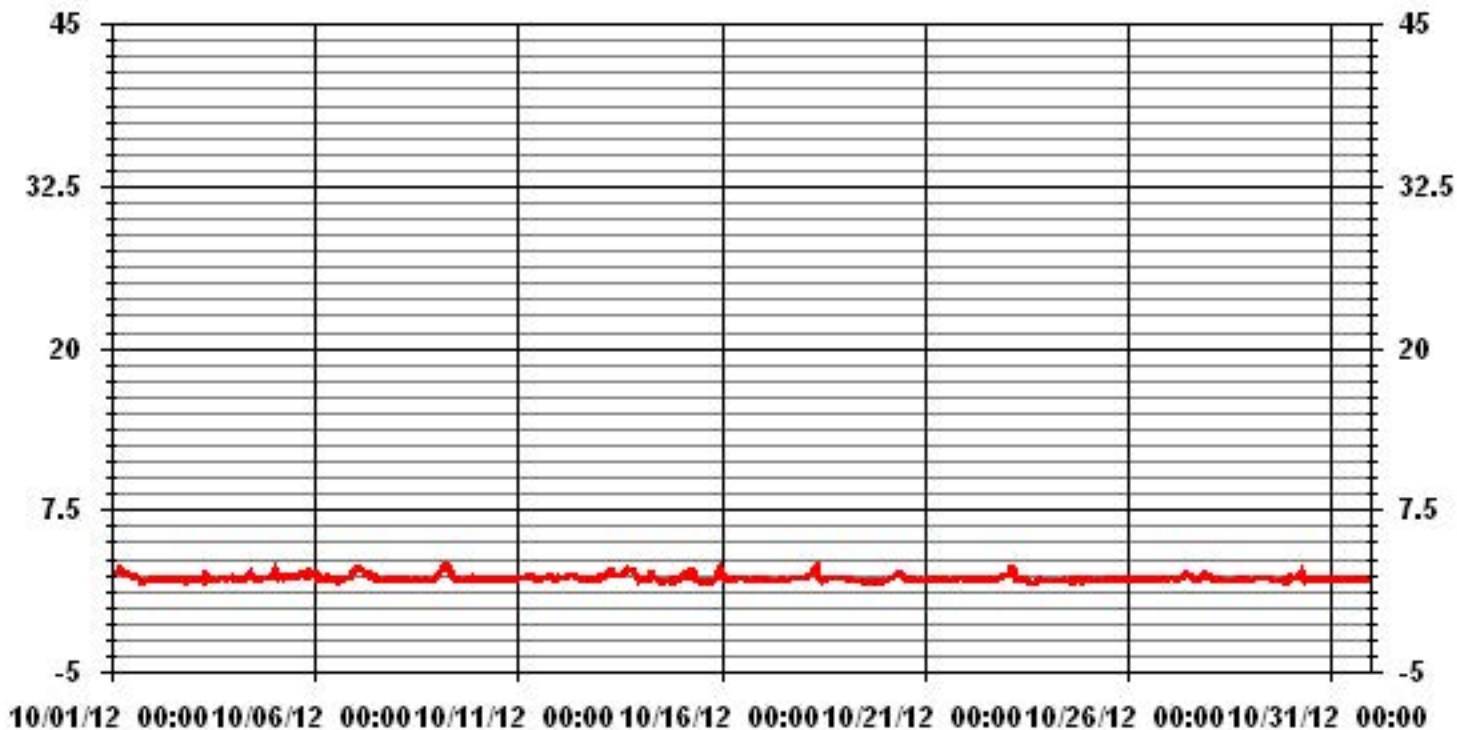
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	708
MAXIMUM 1-HR AVERAGE:	3.2 PPM @ HOUR(S) 5 ON DAY(S) 9
MAXIMUM 24-HR AVERAGE:	2.5 PPM ON DAY(S) 5
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	32 HRS
STANDARD DEVIATION:	0.22
OPERATIONAL TIME:	743 HRS
AMD OPERATION UPTIME:	99.9 %
MONTHLY AVERAGE:	2.22 PPM

24 AVERAGES FOR OCTOBER 2012



01 Hour Averages



— LICA THC PPM

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST																										DAILY	24-HOUR		
HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	23:00	00:00	MAX.	AVG.	RDGS.
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	23:00	00:00				
DAY																													
1	2.8	2.8	2.7	2.6	2.8	3.1	3	2.9	2.7	2.6	2.6	2.6	2.4	2.4	2.4	2.6	2.7	2.1	1.9	1.9	IZS	2	2.1	2.1	2.1	3.1	2.5	24	
2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	IZS	2.1	2.1	2.2	2.1	2.2	2.2	24		
3	2.2	2.2	2.2	2.2	2.2	2.3	2.2	3.2	2.5	2.2	2.2	2.2	2.3	2.4	2.2	2.3	2.2	2.3	IZS	2.3	2.3	2.3	2.4	2.6	3.2	2.3	24		
4	2.5	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.5	2.8	2.6	2.3	2.2	2.1	2.6	2.1	IZS	2.4	2.3	2.2	2.3	2.4	2.6	2.8	2.3	24		
5	3	2.9	2.4	2.5	2.6	2.3	2.9	2.5	2.6	2.5	2.4	2.4	2.3	2.4	2.5	2.6	IZS	2.6	2.6	2.6	3.3	2.8	2.6	2.7	3.3	2.6	24		
6	2.6	2.6	2.5	2.3	2.4	2.4	2.4	2.5	2.4	2.3	2.2	2.1	2.1	2.2	2.1	IZS	2.1	2.2	2.3	2.2	2.4	2.8	2.9	2.9	2.9	2.4	24		
7	3.1	3	3.1	3	3.1	3	2.9	2.7	2.8	2.6	2.5	2.5	2.2	2.1	IZS	2.1	2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	3.1	2.5	24		
8	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.2	IZS	2	2.1	2.1	2.1	2.2	2.3	2.2	2.2	2.2	2.2	2.4	2.2	24		
9	2.6	2.8	3	3.1	3.1	3.3	3.2	3.2	3.2	2.8	2.4	2.3	IZS	2.1	2.3	2.1	2.1	2.1	2.2	2.2	2.3	2.6	2.6	2.1	3.3	2.6	24		
10	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	IZS	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.2	24		
11	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.4	2.4	2.4	IZS	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.3	2.4	2.4	2.3	2.4	2.5	2.3	24		
12	2.4	2.3	2.3	2.3	2.5	2.6	2.6	2.5	2.5	IZS	2.9	3	2.5	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.6	2.2	2.2	2.2	3	2.4	24		
13	2.5	2.4	2.5	2.4	2.6	2.7	2.7	3.5	IZS	2.6	2.6	2.5	2.6	2.7	2.6	2.7	2.9	3	3	3.1	3.1	2.8	2.7	2.2	3.5	2.7	24		
14	2.2	2.2	2.5	2.2	2.1	2.7	2.8	IZS	2.4	2.5	2.3	2.3	2	2	2.1	2.2	2.3	2.2	2.2	2.1	2.1	2.2	2.2	2.4	2.8	2.3	24		
15	2.3	2.4	2.5	2.8	2.8	2.9	IZS	3	2.5	2.2	2.1	2.1	2	2	2	2	2	2	2.1	2.2	2.3	3	3.4	3.6	3.6	2.4	24		
16	3.2	2.7	2.5	2.1	2.1	IZS	2.3	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.1	2.1	2.2	2.5	2.3	2.2	2.2	2.2	3.2	2.3	2.4	24		
17	2.1	2.2	2.1	2.1	IZS	2	2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	24		
18	2.3	2.6	2.6	IZS	2.6	2.7	3	3.7	3.3	3	2.4	2.2	2.3	2.4	2.2	2.3	2.3	2.3	2.4	2.2	2.2	2.3	2.2	2.3	3.7	2.5	24		
19	2.2	2.2	IZS	2.1	2.1	2.2	2.1	2	2	2	2	2	2	2	2.1	2	2	2	2	2	2	2	2	2.1	2.2	2.0	24		
20	2.1	IZS	2.1	2.2	2.3	2.4	2.5	2.7	2.5	2.9	2.9	2.7	2.5	2.3	2.2	2.3	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.9	2.4	24		
21	IZS	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	IZS	2.3	2.2	24	
22	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.1	2.3	2.2	2.2	2.3	2.3	IZS	2.5	2.5	2.2	2.4	24		
23	2.6	2.6	2.6	3.2	3.2	3	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	C	C	C	C	C	2.1	2.1	IZS	2	2	3.2	2.4	24		
24	2	2.1	2	2.1	2	2.1	2	2.1	2.1	2.5	2.5	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	IZS	2.1	2.1	2.2	2.5	2.1	24		
25	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.7	2.3	2.2	2.2	2.1	2.2	2.2	2.2	2.3	M	2.2	2.2	IZS	2.2	2.2	2.2	2.2	2.7	2.2	23		
26	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.4	2.2	2.1	2.1	2.1	2.2	2.3	IZS	2.1	2.2	2.3	2.3	2.2	2.4	2.2	24		
27	2.4	2.5	2.5	2.6	2.3	2.1	2.3	2.3	2.4	2.7	2.7	2.7	2.9	2.5	2.5	2.4	2.3	IZS	2.2	2.4	2.7	2.7	2.6	2.5	2.9	2.5	24		
28	2.4	2.3	2.6	2.2	2.4	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2	2.1	IZS	2.8	2.1	2.1	2.1	2.1	2.1	2.1	2.8	2.2	24		
29	2.2	2.2	2.4	2.3	2.3	2.3	2.5	2.4	2.2	2.2	2.2	2.3	2.2	2.2	2.2	IZS	2	2.1	2.3	2.1	2.1	2.1	2.1	2.4	2.5	2.2	24		
30	2.7	2.5	2.5	2.5	2.6	2.5	2.8	2.7	2.3	2.4	2.2	2.2	2.2	2.2	IZS	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.8	2.3	24		
31	2.2	2.2	2.4	2.2	2.2	2.1	2.2	2.3	2.2	2.1	2.1	2.2	2.2	IZS	2.1	9.1	2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.1	9.1	2.5	24		
HOURLY MAX	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	9	3	3	3	3	3	3	3	4					
HOURLY AVG	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.5	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3					

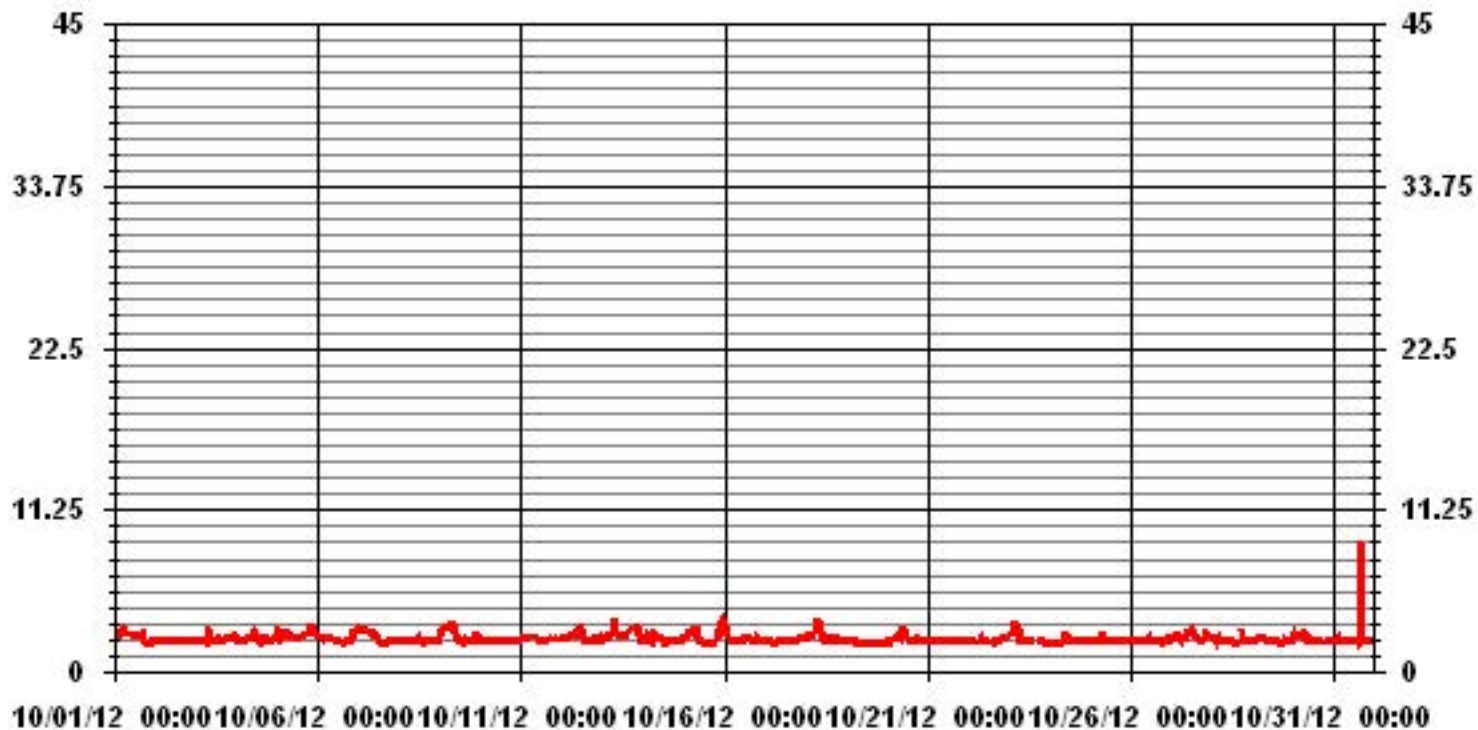
STATUS FLAG CODES

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
BB - BELOW BACKGROUND OF 1.5 PPM	

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	706					
MAXIMUM INSTANTANEOUS VALUE:	9.1	PPM	@ HOUR(S)	15	ON DAY(S)	31
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	743 HRS		
MONTHLY CALIBRATION TIME:	5	HRS				
STANDARD DEVIATION:	0.38					

01 Hour Averages



— LICA THCMAX PPM

LICA
 THC / WD Joint Frequency Distribution (Percent)

October 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	2.25	.84	.98	1.41	6.21	7.06	14.97	3.53	2.54	3.95	7.06	6.63	8.61	8.75	16.10	7.90	98.87
< 10.0	.00	.00	.14	.14	.14	.00	.00	.00	.14	.00	.28	.28	.00	.00	.00	.00	1.12
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.25	.84	1.12	1.55	6.35	7.06	14.97	3.53	2.68	3.95	7.34	6.92	8.61	8.75	16.10	7.90	

Calm : .00 %

Total # Operational Hours : 708

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	16	6	7	10	44	50	106	25	18	28	50	47	61	62	114	56	700
< 10.0			1	1	1				1		2	2					8
< 50.0																	
>= 50.0																	
Totals	16	6	8	11	45	50	106	25	19	28	52	49	61	62	114	56	

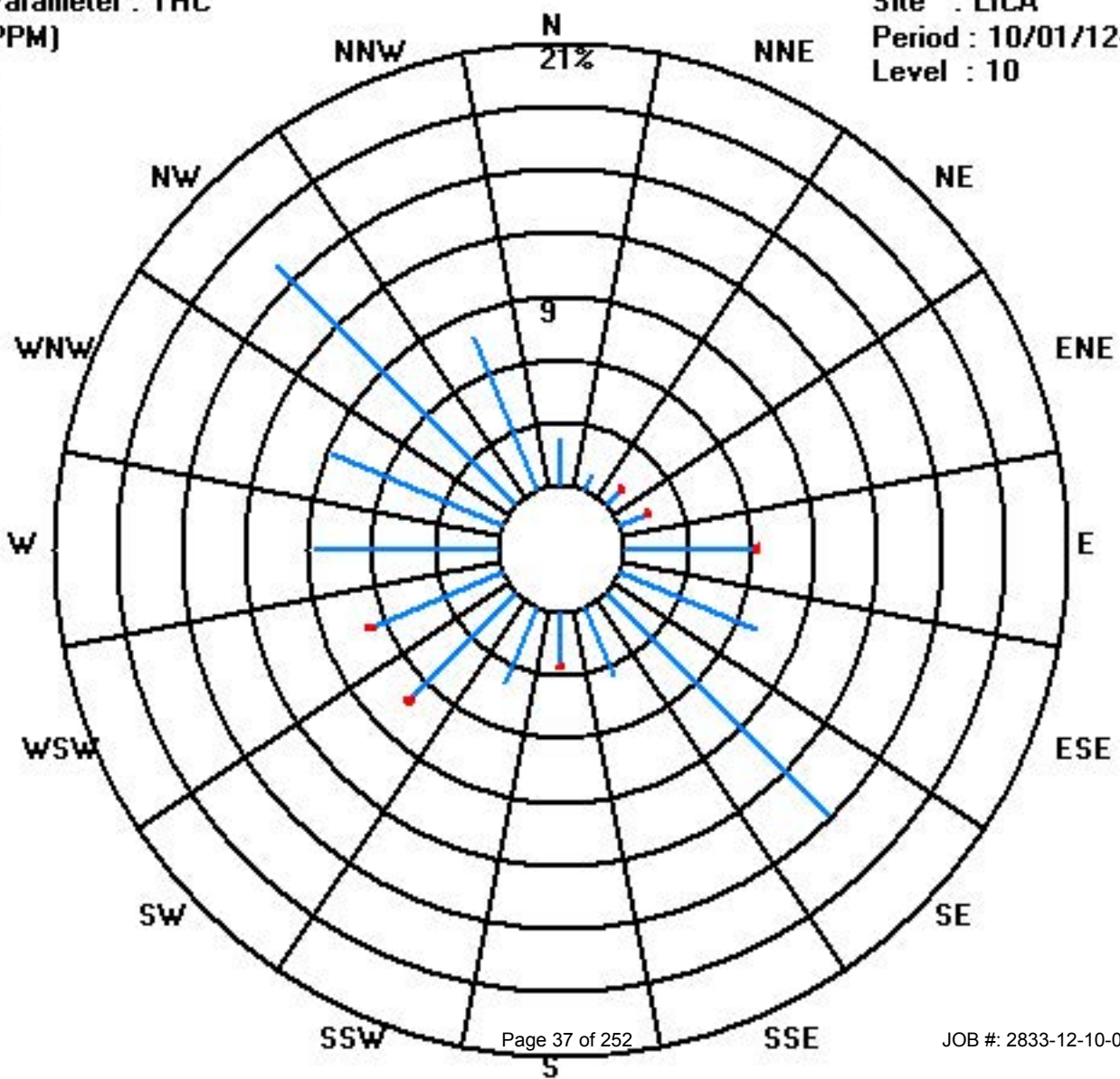
Calm : .00 %

Total # Operational Hours : 708

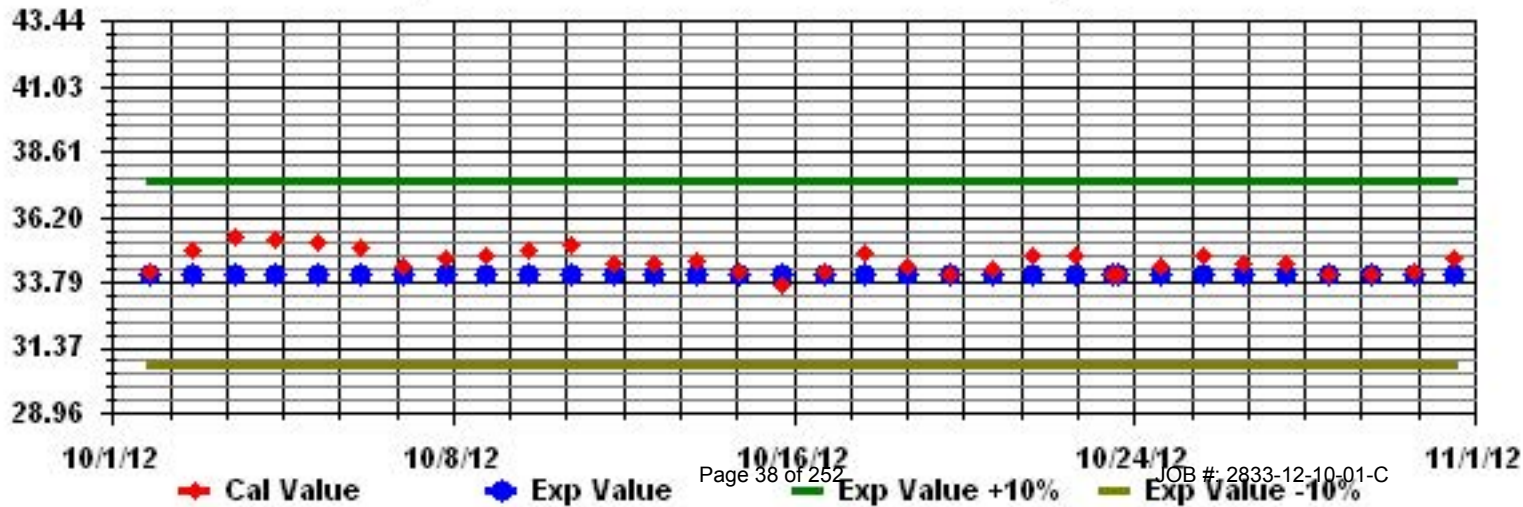
Class Limits (PPM)

Period : 10/01/12-10/31/12

Level : 10



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



Particulate Matter 2.5

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

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

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR START	HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																													
1		0	3	2	4	2	2	0	4	C	C	C	C	C	C	C	C	2	0	1	N	1	0	0	4	1.5	23		
2		0	0	0	0	0	6	N	N	C	C	N	N	N	N	N	N	N	N	0	0	N	N	N	6	0.8	10		
3		N	N	N	N	N	N	C	C	0	0	0	1	0	0	1	0	0	1	3	1	0	0	2	2	3	0.7	18	
4		1	0	3	3	0	2	0	0	0	0	1	0	0	0	0	0	2	2	3	0	N	0	0	0	3	0.7	23	
5		0	2	N	1	1	2	0	1	0	0	0	1	4	0	0	0	2	0	0	0	1	1	2	1	4	0.8	23	
6		1	0	0	0	1	1	1	0	0	1	0	0	0	3	0	2	0	0	0	0	3	0	1	0	3	0.6	24	
7		0	3	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	2	1	0	3	0.4	24	
8		0	0	0	0	0	0	0	0	2	0	1	2	0	1	N	0	1	2	2	0	0	0	0	1	2	0.5	23	
9		2	1	0	0	0	1	0	0	5	C	C	C	C	C	6	1	0	2	3	3	0	4	0	2	6	1.6	24	
10		2	2	2	3	3	0	4	3	0	4	6	3	0	3	0	1	1	3	0	1	2	1	0	2	6	1.9	24	
11		5	2	3	0	3	2	N	N	1	3	1	3	0	3	0	4	0	1	0	0	2	N	3	0	5	1.7	21	
12		1	1	1	2	2	3	3	1	4	4	0	0	0	0	0	0	2	1	1	1	1	2	4	4	4	1.5	24	
13		6	5	1	3	1	1	0	0	N	N	0	0	N	N	0	0	0	5	1	0	N	0	1	4	6	1.5	19	
14		3	3	6	6	2	5	2	4	2	4	5	4	8	8	6	5	5	3	7	4	2	4	5	5	8	4.5	24	
15		7	5	0	3	4	0	6	2	6	7	7	4	2	5	4	3	2	0	0	2	0	1	2	3	7	3.1	24	
16		2	0	2	4	0	4	4	0	2	3	0	1	4	5	3	4	4	5	5	4	5	4	4	5	4	5	3.0	24
17		5	5	8	4	8	3	6	5	4	5	6	6	7	5	6	3	3	3	3	3	6	4	7	2	8	4.9	24	
18		4	2	1	0	3	5	0	N	0	2	3	2	2	0	3	2	0	3	2	1	1	1	2	2	5	1.8	23	
19		1	0	2	3	0	N	0	0	0	1	1	0	1	4	3	2	3	5	1	3	2	3	4	4	5	1.9	23	
20		6	5	4	0	4	1	0	2	0	0	0	1	2	3	4	4	3	5	4	6	3	3	4	6	6	2.9	24	
21		7	5	3	1	3	3	4	0	0	4	3	2	5	3	2	3	4	2	2	0	1	0	0	4	7	2.5	24	
22		0	3	0	N	7	4	3	N	1	0	3	4	0	3	0	0	0	0	0	0	0	1	2	2	7	1.5	22	
23		N	0	0	0	1	0	0	N	0	0	1	N	3	12	2	0	8	5	22	0	2	N	N	N	22	3.1	18	
24		N	0	N	2	N	2	2	10	N	6	0	7	0	2	1	3	0	2	0	N	0	0	4	0	10	2.2	19	
25		N	0	0	N	0	N	0	N	9	56	7	N	N	0	6	N	M	5	0	1	2	0	2	2	56	5.6	16	
26		N	0	2	N	N	0	3	1	1	N	0	0	2	4	6	0	4	4	0	N	1	2	0	3	6	1.7	19	
27		5	7	1	N	9	0	3	7	4	0	N	N	9	N	4	0	1	6	0	N	8	N	5	5	9	4.1	18	
28		N	10	4	N	3	1	4	0	6	0	8	3	7	4	3	N	0	N	6	7	1	2	N	0	10	3.6	19	
29		2	9	4	4	3	7	0	0	4	N	11	0	7	7	10	15	0	7	8	4	3	6	0	1	15	4.9	23	
30		4	4	N	5	2	2	7	3	3	7	2	3	0	5	N	N	3	5	11	1	5	14	1	3	14	4.3	21	
31		8	10	8	6	4	0	5	0	9	0	2	15	12	7	4	0	5	8	13	2	9	0	1	0	15	5.3	24	
HOURLY MAX		8	10	8	6	9	7	7	10	9	56	11	15	12	12	10	15	8	8	22	7	9	14	7	6				
HOURLY AVG		2.9	2.9	2.1	2.2	2.4	2.0	2.0	1.8	2.3	4.3	2.6	2.5	2.9	3.3	2.7	2.0	1.9	3.0	3.3	1.6	2.1	2.1	2.0	2.1				

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

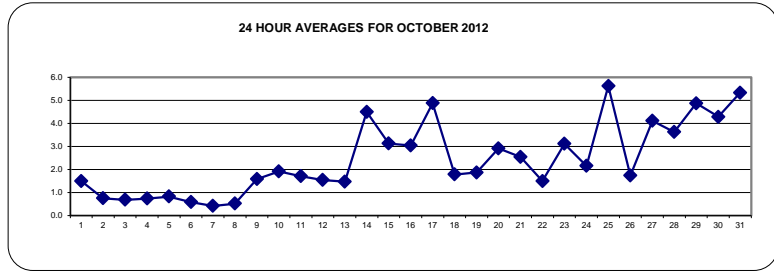
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR - ug/m³ 24-HR 30 ug/m³

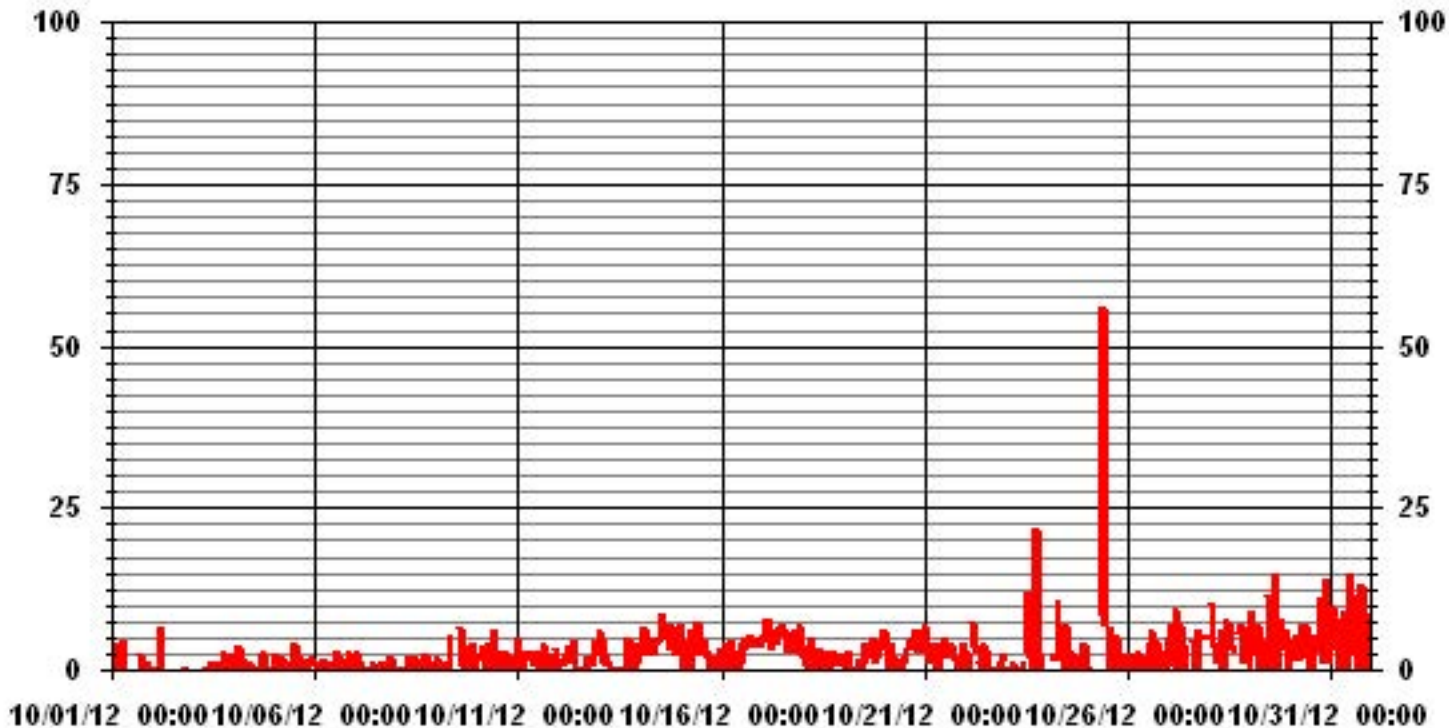
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	-
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	428
MAXIMUM 1-HR AVERAGE:	56 UG/M ³ @ HOUR(S) 9 ON DAY(S) 25
MAXIMUM 24-HR AVERAGE:	5.6 UG/M ³ ON DAY(S) 25
IZS CALIBRATION TIME:	0 HRS
MONTHLY CALIBRATION TIME:	18 HRS
STANDARD DEVIATION:	3.43
OPERATIONAL TIME:	669 HRS
AMD OPERATION UPTIME:	89.9 %
MONTHLY AVERAGE:	2.46 UG/M ³

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LICA
PM2 / WD Joint Frequency Distribution (Percent)

October 2012

Distribution By % Of Samples

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

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
< 30	1.84	.76	1.07	1.53	6.60	7.06	15.36	3.53	3.07	4.14	7.52	7.21	9.37	8.90	15.66	6.14	99.84
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.15	.00	.15
< 80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 120	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 240	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	1.84	.76	1.07	1.53	6.60	7.06	15.36	3.53	3.07	4.14	7.52	7.21	9.37	8.90	15.82	6.14	

Calm : .00 %

Total # Operational Hours : 651

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30	12	5	7	10	43	46	100	23	20	27	49	47	61	58	102	40	650
< 60															1		1
< 80																	
< 120																	
< 240																	
>= 240																	
Totals	12	5	7	10	43	46	100	23	20	27	49	47	61	58	103	40	

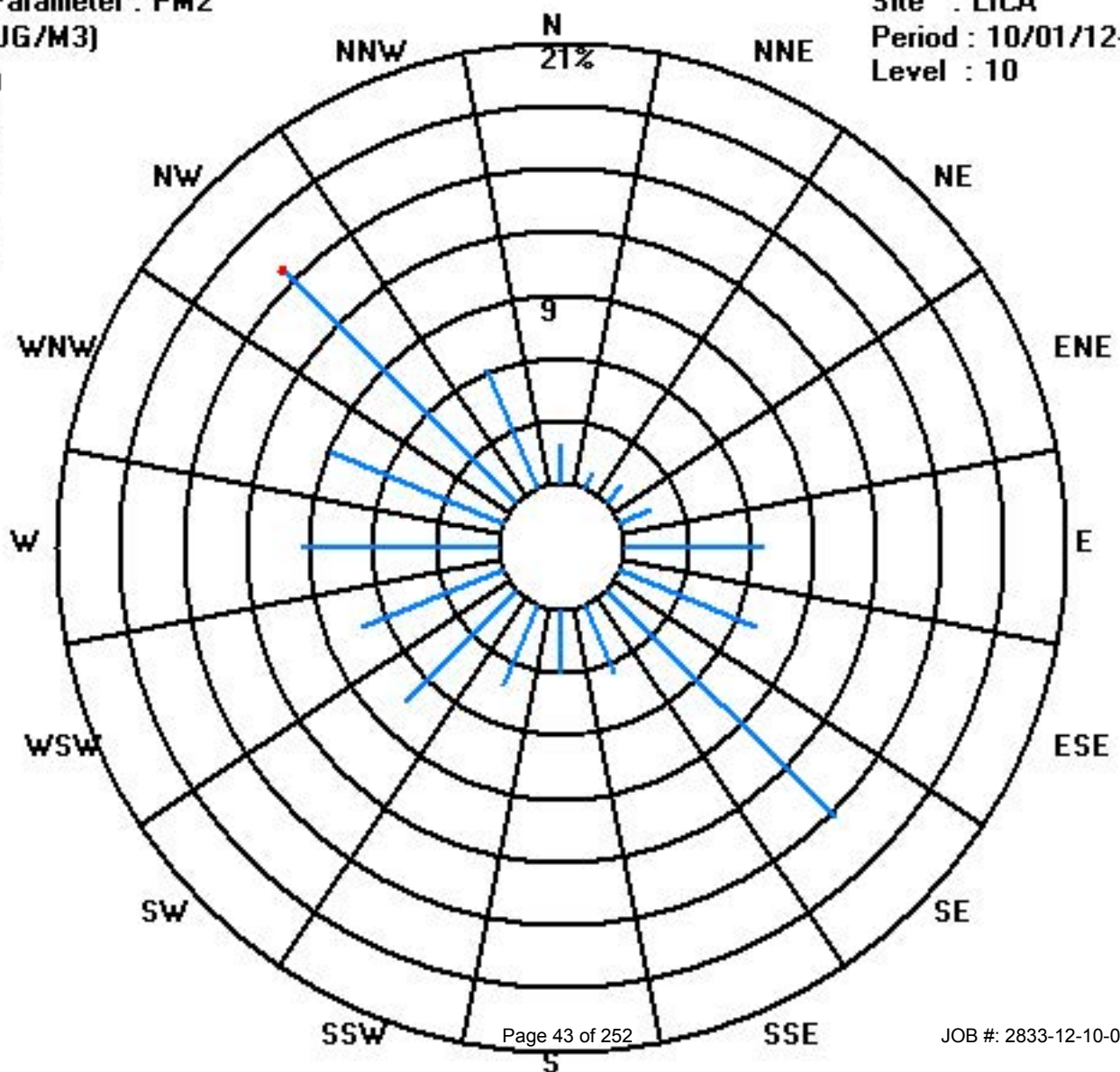
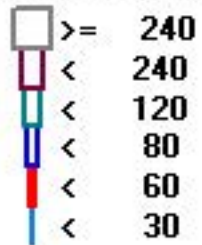
Calm : .00 %

Total # Operational Hours : 651

Class Limits (UG/M3)

Period : 10/01/12-10/31/12

Level : 10



Nitrogen Dioxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

NITROGEN DIOXIDE hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	DAILY MAX.	24-HOUR AVG.	RDGS.
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00				
DAY																												
1	6	5	4	4	5	8	10	9	8	5	3	2	4	3	3	3	4	2	2	2	IZS	1	1	1	10	4.1	24	
2	1	1	1	1	0	0	0	0	1	1	1	1	2	2	1	0	0	0	0	IZS	0	0	0	1	2	0.6	24	
3	0	1	1	1	1	2	1	1	1	0	0	0	1	0	0	2	2	2	IZS	1	3	2	3	4	4	1.3	24	
4	3	1	1	1	1	1	3	4	2	3	5	1	2	1	1	2	2	IZS	3	3	3	4	6	4	6	2.5	24	
5	2	1	1	1	2	2	2	2	1	2	0	1	0	2	3	2	IZS	3	5	4	4	3	4	4	5	2.2	24	
6	3	3	3	5	6	8	7	8	6	3	3	1	1	1	1	IZS	1	1	8	8	6	8	5	5	8	4.4	24	
7	4	4	4	5	6	3	4	4	4	4	3	4	3	1	IZS	1	1	1	1	1	1	1	1	1	6	2.7	24	
8	1	1	1	2	1	1	1	1	2	1	1	1	1	IZS	1	1	1	1	1	2	3	3	4	5	7	1.9	24	
9	13	9	8	12	13	10	13	15	12	8	6	3	IZS	0	1	1	2	8	9	10	9	17	5	1	17	8.0	24	
10	1	1	2	2	1	1	1	2	4	1	2	IZS	1	2	2	1	1	1	1	2	1	1	1	2	4	1.5	24	
11	3	4	5	4	5	10	18	21	14	6	IZS	0	1	0	1	2	2	2	2	2	1	1	1	1	21	4.6	24	
12	1	1	1	1	2	2	5	5	4	IZS	4	2	2	3	9	10	9	5	4	2	4	4	1	1	10	3.6	24	
13	1	1	1	2	3	5	7	6	IZS	5	5	4	3	4	4	5	4	6	3	2	3	8	6	4	8	4.0	24	
14	3	0	3	3	3	3	6	IZS	4	3	2	1	1	1	2	2	3	3	2	2	2	3	4	6	2.5	24		
15	3	2	4	6	5	6	IZS	8	6	3	2	1	1	1	1	1	2	6	15	9	11	10	7	10	15	5.2	24	
16	12	7	4	2	2	IZS	3	9	4	3	1	3	3	1	2	2	2	1	1	1	1	1	1	1	12	2.9	24	
17	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	1.1	24	
18	2	3	4	IZS	5	6	7	9	8	6	7	1	1	1	2	2	3	4	5	2	2	2	1	1	9	3.7	24	
19	1	1	IZS	1	2	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	1	1	1	1	2	1.6	24	
20	1	IZS	2	3	3	3	5	5	5	5	3	3	3	1	2	2	3	3	2	3	3	3	3	3	5	3.1	24	
21	IZS	2	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	2	1.2	23	
22	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	1	3	3	8	11	7	10	IZS	7	11	2.9	24	
23	6	5	6	8	9	7	3	3	3	2	1	1	C	C	C	C	C	0	1	1	IZS	0	0	9	3.3	24		
24	0	0	0	0	0	0	1	1	2	1	1	1	1	2	2	1	1	1	1	1	IZS	2	2	2	2	1.0	24	
25	4	4	4	4	4	4	5	5	3	3	1	2	2	2	2	2	M	2	2	IZS	2	4	2	2	5	3.0	23	
26	2	2	3	3	3	2	2	3	2	3	4	3	2	1	1	1	2	3	IZS	2	3	6	6	4	6	2.7	24	
27	1	2	2	2	2	5	5	2	2	2	2	2	2	1	1	2	2	IZS	1	2	3	4	4	3	5	2.3	24	
28	3	3	2	2	2	1	1	2	1	1	1	1	1	1	2	1	IZS	3	2	1	1	1	1	1	3	1.5	24	
29	1	1	1	1	2	6	7	4	6	5	3	3	3	3	3	IZS	3	3	3	3	2	2	2	3	7	3.0	24	
30	4	3	4	7	10	12	10	6	6	6	5	3	1	IZS	3	6	7	5	5	4	5	5	4	12	5.6	24		
31	4	2	1	2	2	2	2	1	2	1	3	3	2	IZS	3	3	3	2	2	2	2	2	1	4	2.1	24		
HOURLY MAX	13	9	8	12	13	10	18	21	14	8	7	5	4	4	9	10	9	8	15	11	11	17	7	10				
HOURLY AVG	2.9	2.4	2.5	2.9	3.3	3.7	4.5	5.0	4.0	3.0	2.6	1.8	1.8	1.5	2.0	2.0	2.4	2.8	3.2	3.0	3.0	3.7	2.7	2.8				

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

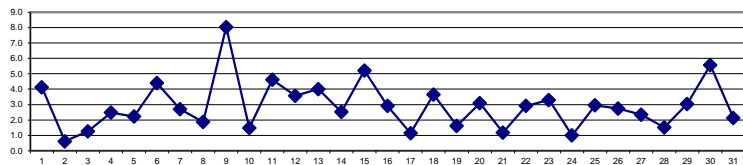
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

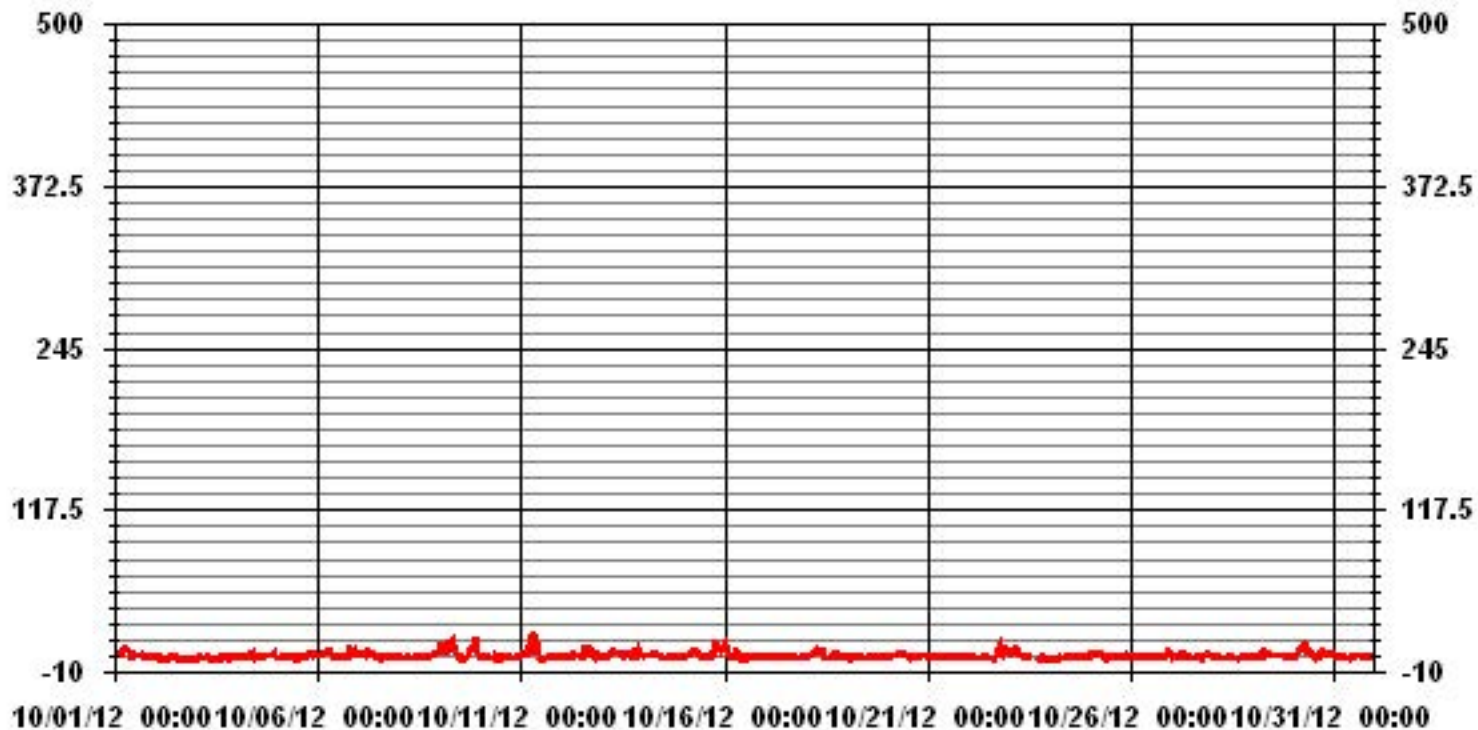
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	673					
MAXIMUM 1-HR AVERAGE:	21	PPB	@ HOUR(S)	7	ON DAY(S)	11
MAXIMUM 24-HR AVERAGE:	8.0	PPB			ON DAY(S)	9
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	742	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.7	%	
STANDARD DEVIATION:	2.71		MONTHLY AVERAGE:	2.91	PPB	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



— LICA NO2_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	7	8	5	6	8	24	15	15	13	8	9	4	8	4	9	4	10	4	3	5	IZS	2	1	2	24	7.6	24	
2	1	1	2	2	1	1	1	1	2	2	2	2	5	3	1	1	1	1	1	IZS	0	1	0	1	5	1.4	24	
3	1	1	2	1	2	3	2	2	1	1	1	1	2	3	1	3	6	4	IZS	3	5	5	6	7	7	2.7	24	
4	7	2	2	2	2	2	9	10	9	10	20	15	3	6	3	5	6	IZS	5	5	6	7	9	7	20	6.6	24	
5	4	3	1	2	5	6	5	6	2	3	1	3	2	3	3	3	IZS	7	12	8	5	3	7	4	12	4.3	24	
6	4	4	4	8	11	11	12	13	6	5	3	2	2	1	1	IZS	5	5	17	12	9	11	11	7	17	7.1	24	
7	5	4	6	6	11	4	8	5	10	4	4	5	3	2	IZS	1	1	2	2	1	2	2	2	2	11	4.0	24	
8	2	2	2	3	1	1	1	2	3	2	1	1	1	IZS	1	2	1	2	3	5	4	6	10	12	12	3.0	24	
9	19	11	11	14	14	13	18	19	15	11	17	5	IZS	1	2	2	4	15	13	15	14	24	16	3	24	12.0	24	
10	3	2	3	3	2	2	1	9	9	2	2	IZS	2	2	4	2	2	2	2	2	2	2	2	3	9	2.8	24	
11	4	5	6	5	7	18	26	28	18	9	IZS	2	1	4	2	4	5	4	5	2	2	2	2	2	28	7.1	24	
12	2	2	1	3	3	4	15	11	7	IZS	10	4	4	4	30	12	14	7	6	9	7	8	1	1	30	7.2	24	
13	2	2	2	3	9	7	9	10	IZS	8	6	9	7	9	5	7	6	8	7	4	7	9	8	6	10	6.5	24	
14	5	4	4	4	4	4	11	IZS	8	5	3	3	2	1	3	3	7	8	4	3	5	3	6	6	11	4.6	24	
15	5	4	7	8	12	12	IZS	13	9	5	4	3	2	1	2	1	3	13	22	15	16	14	9	13	22	8.4	24	
16	16	12	8	4	4	IZS	6	13	6	6	4	6	6	3	3	4	3	2	8	7	2	2	2	1	16	5.6	24	
17	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	3	2	3	3	3	1.4	24	
18	3	5	5	IZS	6	9	13	14	12	7	48	2	2	2	2	3	6	6	10	4	3	2	2	2	48	7.3	24	
19	1	1	IZS	2	5	5	3	4	8	3	3	3	3	3	5	4	4	4	4	3	3	2	1	2	8	3.3	24	
20	1	IZS	3	4	4	4	6	6	7	6	7	5	5	3	3	2	4	4	3	4	4	4	4	3	7	4.2	24	
21	IZS	3	2	1	2	1	2	4	2	2	2	2	1	1	1	1	2	2	1	2	2	1	2	IZS	4	1.8	23	
22	2	1	1	2	1	2	3	3	2	2	3	2	2	2	3	3	6	6	14	17	11	13	IZS	7	17	4.7	24	
23	7	6	8	11	10	10	6	6	12	8	2	C	C	C	C	C	C	C	3	7	1	IZS	1	1	12	6.2	24	
24	1	1	1	1	1	1	1	1	2	2	1	1	1	7	10	1	1	1	2	2	IZS	3	2	2	10	2.0	24	
25	5	5	5	4	4	5	6	6	4	4	2	2	3	3	4	3	M	3	2	IZS	3	5	4	3	6	3.9	23	
26	3	4	4	4	4	4	5	8	5	4	4	3	4	5	1	2	3	4	IZS	4	6	9	9	7	9	4.6	24	
27	2	3	2	2	3	3	10	10	4	3	5	3	2	2	2	2	4	IZS	3	3	5	6	5	5	10	3.9	24	
28	4	4	4	4	3	2	2	3	4	3	4	2	1	3	2	3	IZS	4	3	2	2	4	2	1	4	2.9	24	
29	2	1	3	3	5	11	11	6	13	11	5	4	17	18	6	IZS	6	5	4	3	3	3	4	5	18	6.5	24	
30	5	4	8	9	13	12	14	14	7	9	9	8	5	2	IZS	6	7	9	5	6	5	6	6	5	14	7.6	24	
31	5	4	2	3	3	2	2	2	5	3	7	9	4	IZS	5	8	8	5	4	3	3	2	2	2	9	4.0	24	
HOURLY MAX	19	12	11	14	14	24	26	28	18	11	48	15	17	18	30	12	14	15	22	17	16	24	16	13				
HOURLY AVG	4.3	3.7	3.8	4.2	5.3	6.1	7.5	8.2	6.9	5.0	6.3	3.9	3.5	3.5	4.1	3.4	4.7	5.0	5.8	5.4	4.8	5.4	4.6	4.2				

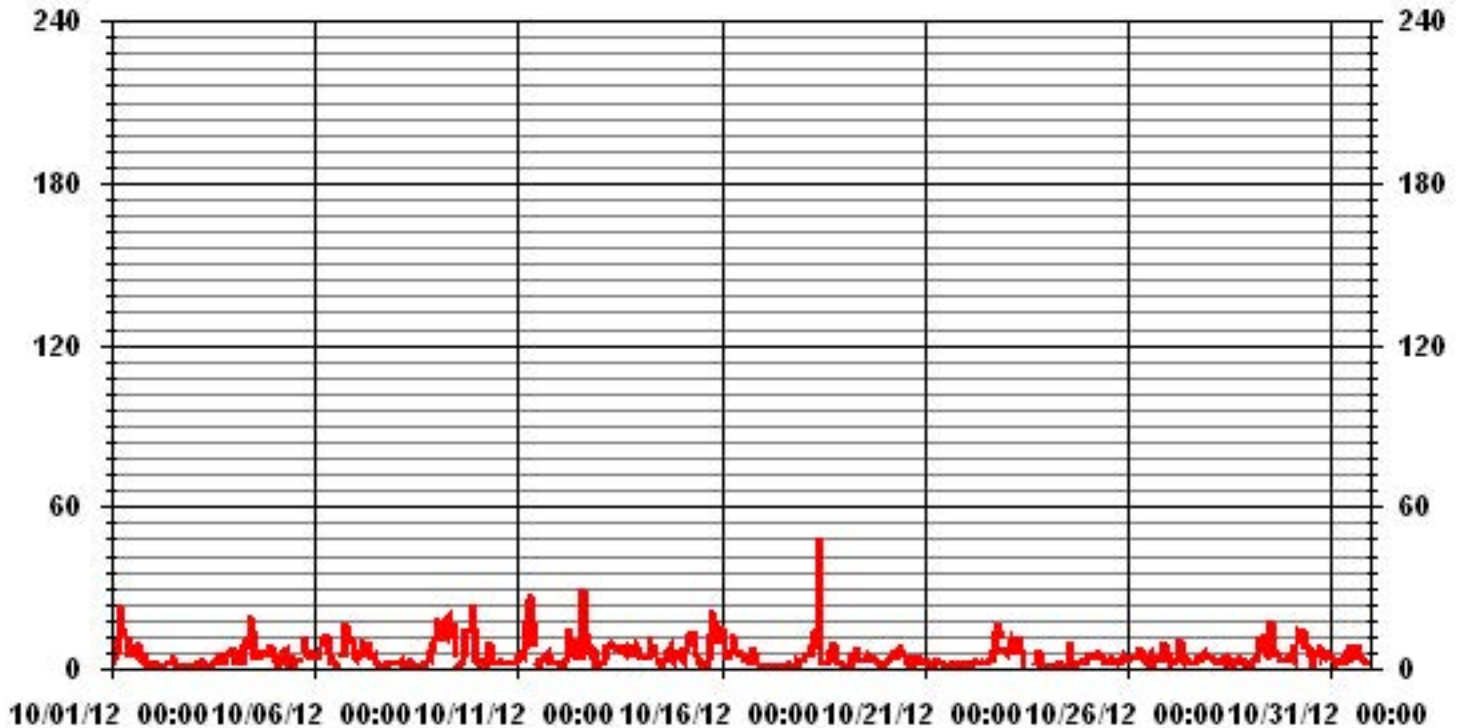
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	702					
MAXIMUM INSTANTANEOUS VALUE:	48	PPB	@ HOUR(S)	10	ON DAY(S)	18
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	742	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	4.55					

01 Hour Averages



— LICA NO2MAX PPB

LICA
 NO2_ / WD Joint Frequency Distribution (Percent)

October 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	1.98	.71	1.13	1.56	6.39	7.10	15.05	3.55	2.69	3.97	7.24	6.96	8.66	8.80	16.19	7.95	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	1.98	.71	1.13	1.56	6.39	7.10	15.05	3.55	2.69	3.97	7.24	6.96	8.66	8.80	16.19	7.95	

Calm : .00 %

Total # Operational Hours : 704

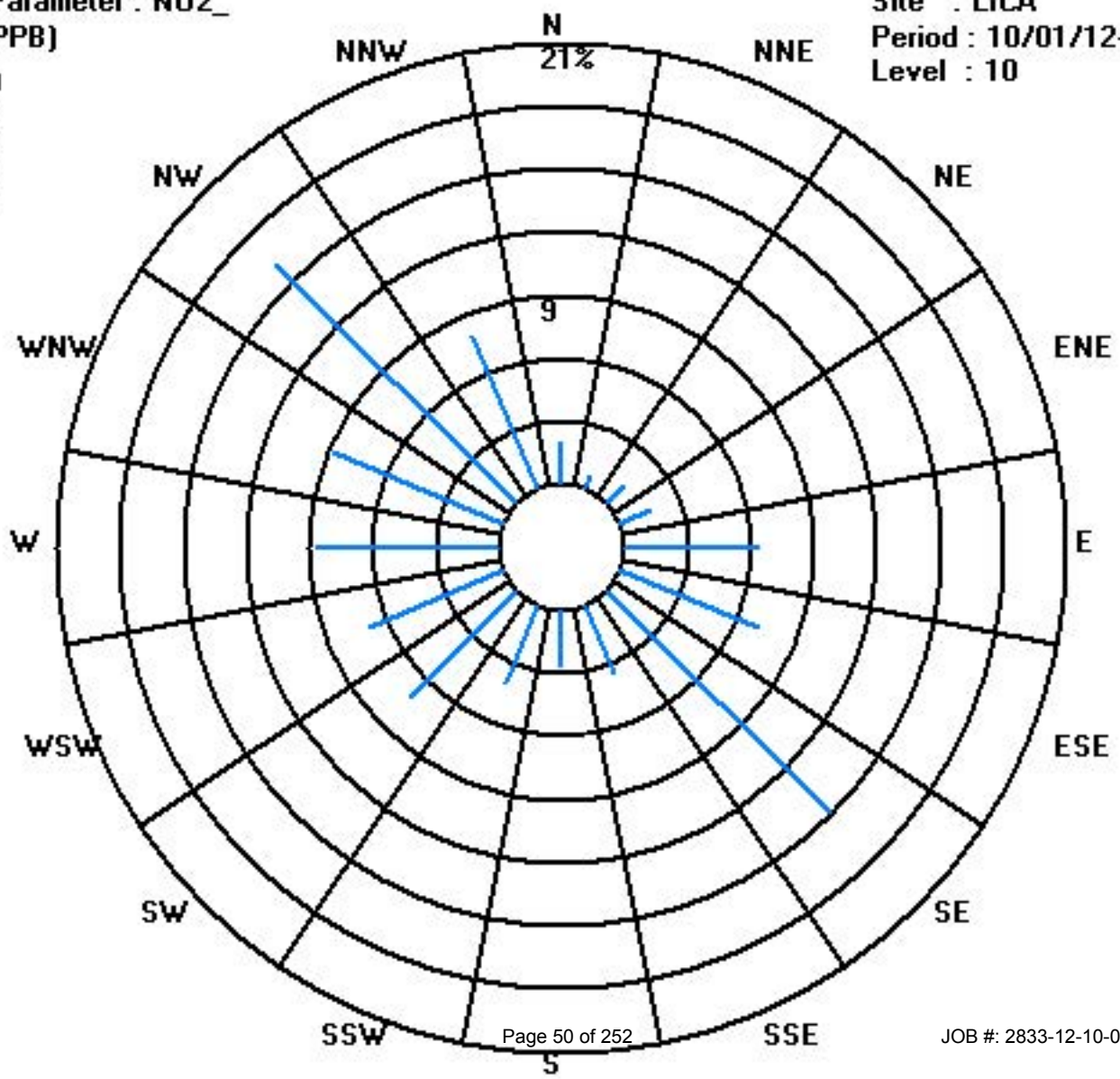
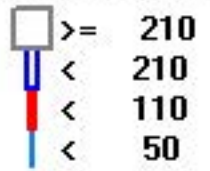
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	14	5	8	11	45	50	106	25	19	28	51	49	61	62	114	56	704
< 110																	
< 210																	
>= 210																	
Totals	14	5	8	11	45	50	106	25	19	28	51	49	61	62	114	56	

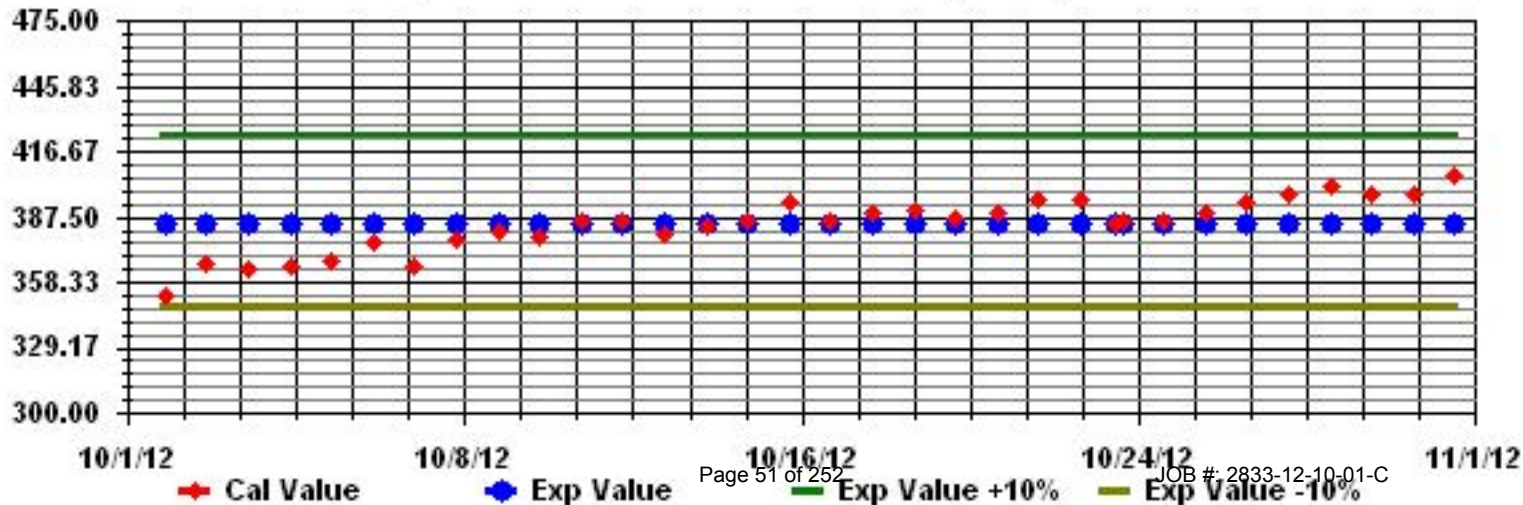
Calm : .00 %

Total # Operational Hours : 704

Class Limits (PPB)



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



Nitric Oxide

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

NITRIC OXIDE hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	RDGS.
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	
DAY																											
1	0	0	0	0	0	4	1	1	1	1	1	1	1	0	0	0	0	0	0	0	IZS	0	0	0	4	0.5	24
2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	IZS	0	0	0	0	1	0.0	24
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IZS	0	0	0	0	1	0.0	24	
4	0	0	0	0	0	0	3	2	3	3	7	3	0	1	0	1	1	IZS	0	0	0	0	1	1	7	1.1	24
5	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	IZS	0	1	1	0	0	0	1	0.5	24	
6	0	0	0	0	0	0	1	2	2	2	1	1	1	0	0	IZS	0	0	0	0	0	0	0	2	0.4	24	
7	0	0	0	0	1	0	0	0	1	1	2	1	0	1	IZS	0	0	0	0	0	0	0	0	2	0.3	24	
8	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	
9	1	0	0	0	0	0	1	9	9	4	2	2	IZS	0	0	0	0	0	1	1	0	1	0	9	1.3	24	
10	0	0	0	0	0	0	0	1	1	1	0	IZS	0	0	0	0	0	0	0	0	0	0	0	1	0.1	24	
11	0	0	0	0	0	0	2	19	12	4	IZS	1	0	1	1	0	0	0	0	0	0	0	0	19	1.7	24	
12	0	0	0	0	0	0	1	1	1	IZS	2	1	1	1	3	2	3	1	1	0	0	1	0	3	0.8	24	
13	0	0	0	0	1	1	5	4	IZS	6	6	5	3	3	3	3	4	7	12	10	10	1	0	12	3.7	24	
14	0	0	0	0	0	0	1	IZS	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0.3	24	
15	0	0	0	0	1	5	IZS	12	4	2	1	1	0	0	0	0	0	0	1	0	1	0	0	12	1.2	24	
16	1	0	0	0	0	0	IZS	0	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	1	0.4	24	
17	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	
18	0	0	0	IZS	0	2	20	35	18	5	7	1	1	1	0	0	0	0	0	0	0	0	0	35	3.9	24	
19	0	0	IZS	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	0.6	24	
20	0	IZS	0	0	0	0	0	1	2	2	4	3	2	1	1	0	1	0	0	1	0	0	0	4	0.8	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	0.0	23	
22	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	2	1	4	IZS	0	4	0.7	24
23	0	0	2	4	2	2	0	0	4	1	1	1	C	C	C	C	C	1	1	0	IZS	0	0	4	1.1	24	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	IZS	0	0	3	0.3	24	
25	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	M	0	0	IZS	0	0	0	1	0.3	23	
26	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	IZS	0	0	0	1	0	1	0.3	24
27	0	0	0	0	0	0	0	0	0	1	2	2	1	1	1	0	0	IZS	0	0	0	0	0	2	0.3	24	
28	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	IZS	0	0	0	0	0	0	1	0.3	24	
29	0	0	0	0	0	0	0	0	2	2	2	1	1	1	2	IZS	1	0	0	0	0	0	0	2	0.5	24	
30	0	0	0	0	1	2	3	4	2	3	4	4	1	1	1	0	0	0	0	0	0	0	0	4	1.1	24	
31	0	0	0	0	0	0	0	0	1	1	1	1	2	IZS	2	1	1	0	0	0	0	0	0	2	0.4	24	
HOURLY MAX	1	0	2	4	2	5	20	35	18	6	7	5	3	3	3	3	4	7	12	10	10	4	1	1			
HOURLY AVG	0.1	0.0	0.1	0.1	0.2	0.6	1.3	3.2	2.4	1.6	1.7	1.2	0.8	0.8	0.7	0.4	0.4	0.3	0.6	0.6	0.4	0.2	0.1	0.1			

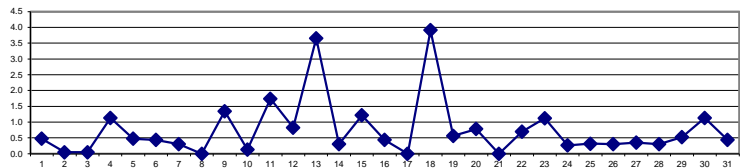
STATUS FLAG CODES

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

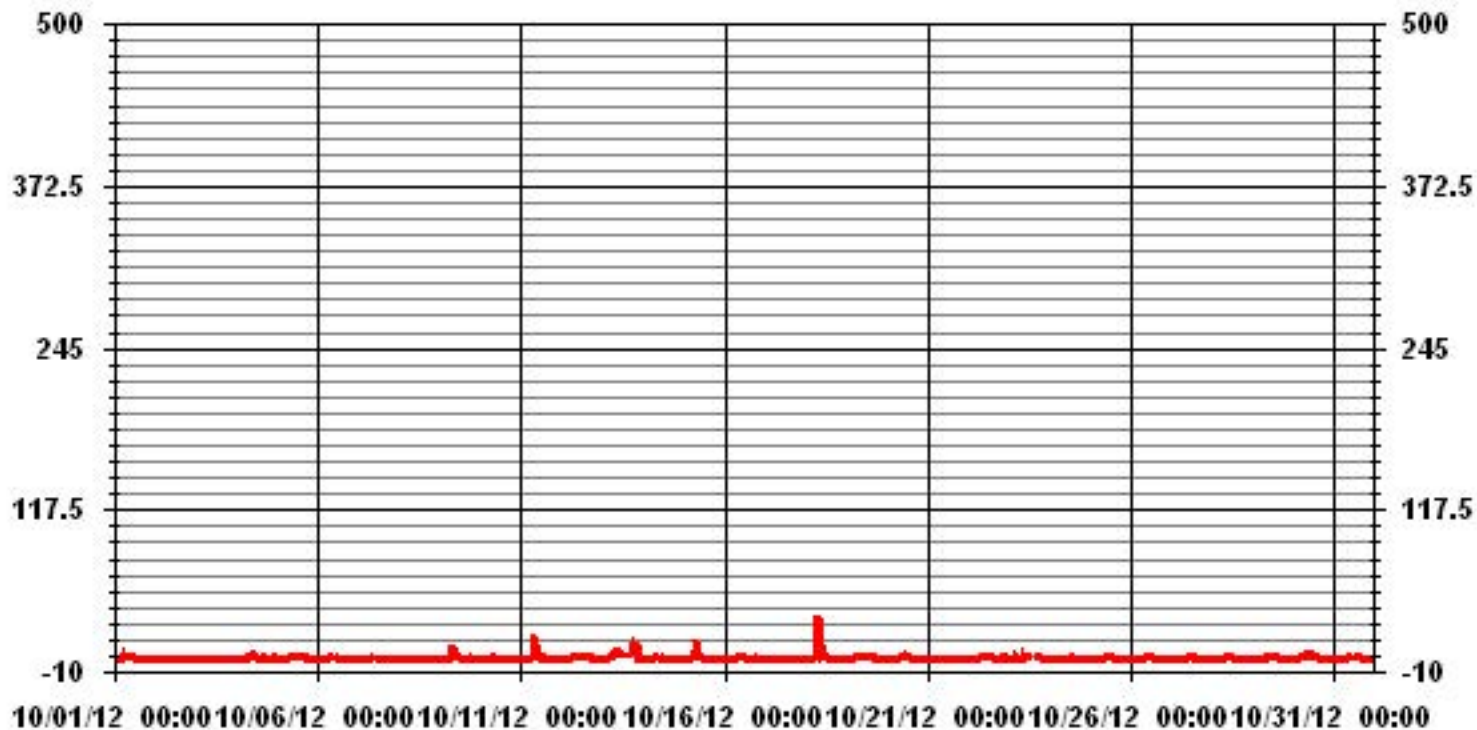
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	229					
MAXIMUM 1-HR AVERAGE:	35	PPB	@ HOUR(S)	7	ON DAY(S)	18
MAXIMUM 24-HR AVERAGE:	3.9	PPB			ON DAY(S)	18
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	742	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.7	%	
STANDARD DEVIATION:	2.27		MONTHLY AVERAGE:	0.75	PPB	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

NITRIC OXIDE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00				
DAY																												
1	1	1	1	1	1	61	3	7	5	5	3	2	5	2	2	2	11	1	0	0	IZS	0	0	0	61	5.0	24	
2	0	0	0	0	0	1	0	0	0	1	2	1	14	2	2	0	0	1	0	IZS	0	1	0	0	14	1.1	24	
3	0	0	0	1	1	0	1	1	1	3	1	1	4	1	2	1	1	1	IZS	1	3	1	2	4	4	1.3	24	
4	3	1	1	1	5	1	40	12	16	13	34	18	1	5	2	2	2	IZS	6	2	1	3	3	3	40	7.6	24	
5	1	2	1	1	1	1	2	16	3	4	1	2	1	2	2	1	IZS	2	5	14	0	0	2	1	16	2.8	23	
6	0	0	0	2	2	2	3	7	3	3	2	1	1	1	1	IZS	3	3	3	1	1	2	1	2	7	1.9	24	
7	1	1	2	2	4	0	3	3	7	2	2	2	1	1	1	IZS	0	0	0	0	0	0	0	0	7	1.3	24	
8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	IZS	1	1	0	0	0	0	1	1	1	2	2	0.5	24
9	3	2	2	2	1	3	4	22	17	8	8	3	IZS	1	2	1	1	1	13	4	3	13	2	1	22	5.1	24	
10	1	1	2	1	1	1	1	4	5	1	1	IZS	1	1	5	1	0	0	0	0	1	0	0	0	5	1.2	24	
11	0	1	1	0	2	3	12	28	25	7	IZS	1	2	6	3	2	6	2	1	1	1	0	0	1	28	4.6	24	
12	1	0	1	1	1	1	14	5	3	IZS	18	2	3	11	11	6	8	4	3	9	2	6	1	0	18	4.8	24	
13	2	1	1	0	9	2	18	17	IZS	10	14	16	9	9	6	7	12	18	34	20	27	5	1	1	34	10.4	24	
14	1	2	0	0	0	0	2	IZS	3	3	2	2	3	1	3	1	3	5	0	1	1	0	0	1	5	1.5	24	
15	2	1	1	1	10	11	IZS	38	6	4	2	1	1	1	1	1	1	7	3	6	3	1	1	38	4.5	24		
16	3	2	2	3	1	IZS	1	3	2	4	1	2	2	1	1	3	2	0	5	4	0	0	1	0	5	1.9	24	
17	0	0	1	0	IZS	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	2	1	2	0.4	24	
18	1	0	1	IZS	4	6	75	46	45	9	46	2	1	8	1	1	5	2	5	1	1	1	0	0	75	11.3	24	
19	1	0	IZS	1	1	3	2	2	5	2	4	2	2	2	4	6	2	2	1	1	1	0	0	1	6	2.0	24	
20	1	IZS	2	2	2	2	3	15	3	4	6	3	4	2	2	1	2	2	1	7	1	1	2	1	15	3.0	24	
21	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	IZS	2	1.1	23	
22	1	1	1	1	1	1	2	2	3	2	2	1	2	2	2	2	3	1	2	7	10	7	IZS	1	10	2.5	24	
23	1	1	9	10	7	8	1	2	74	3	9	C	C	C	C	C	C	C	4	3	1	IZS	1	1	74	8.4	24	
24	1	1	1	1	1	1	1	1	1	1	1	1	1	11	12	1	0	0	0	0	IZS	0	0	0	12	1.6	24	
25	0	0	0	0	1	0	1	1	2	2	1	1	1	1	2	1	M	0	0	IZS	0	0	1	1	2	0.7	23	
26	0	1	1	1	1	4	2	1	1	2	2	2	2	2	1	1	1	1	IZS	1	1	4	3	1	4	1.6	24	
27	0	2	1	1	1	1	1	2	3	2	3	3	2	1	1	1	2	IZS	1	1	2	2	8	1	8	1.8	24	
28	1	1	2	2	2	1	1	2	5	2	1	1	1	1	1	1	IZS	2	2	1	1	2	1	1	5	1.5	24	
29	1	0	1	1	1	2	2	1	7	5	3	5	3	4	6	IZS	2	1	6	1	4	1	1	1	7	2.6	24	
30	1	1	2	1	5	7	7	6	4	6	6	6	3	1	IZS	3	1	1	1	1	0	0	0	0	7	2.7	24	
31	0	1	1	1	1	0	0	0	3	2	5	5	3	IZS	31	4	18	1	1	1	1	1	1	1	31	3.6	24	
HOURLY MAX	3	2	9	10	10	61	75	46	74	13	46	18	14	11	31	7	18	18	34	20	27	13	8	4				
HOURLY AVG	0.9	0.8	1.3	1.3	2.3	4.1	6.8	8.2	8.5	3.7	6.1	3.1	2.6	2.9	3.9	1.9	3.2	1.9	3.5	3.0	2.5	1.9	1.2	0.9				

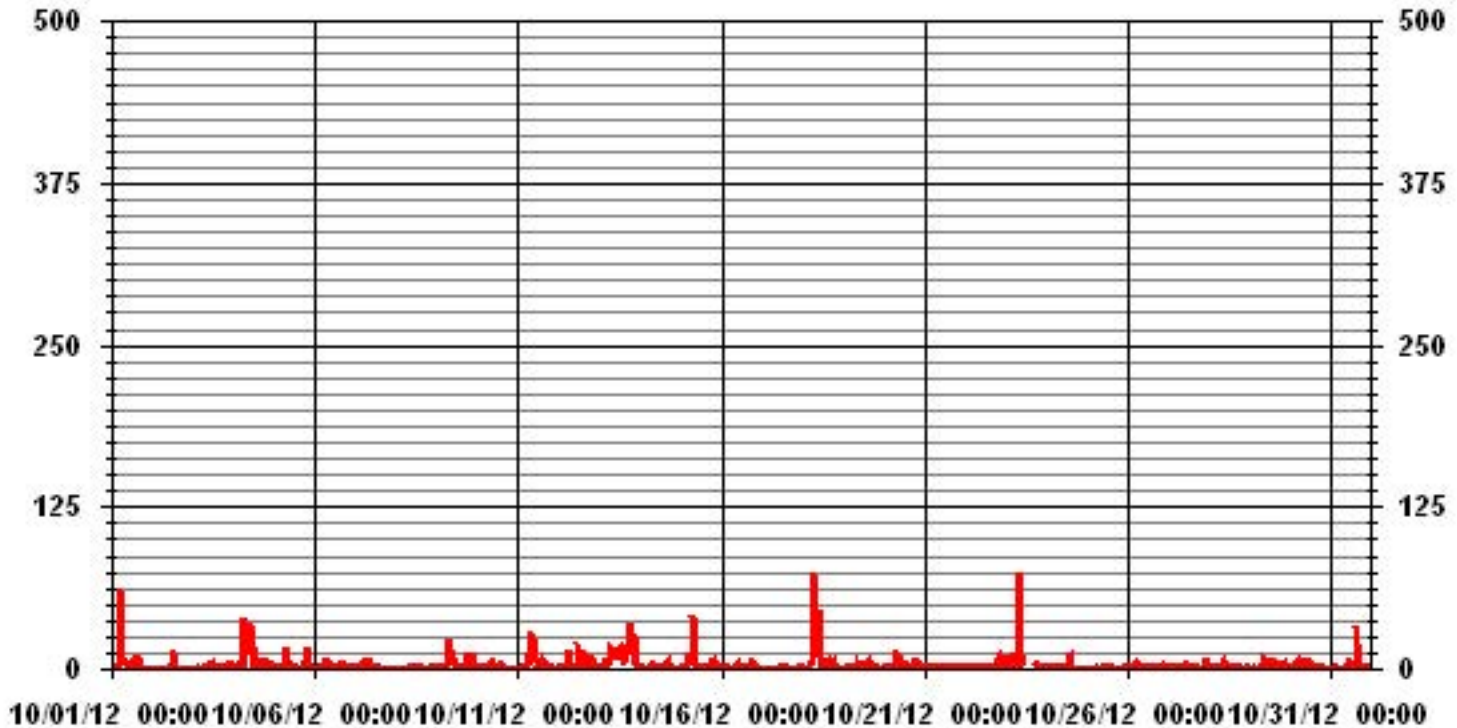
STATUS FLAG CODES

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:	581					
MAXIMUM INSTANTANEOUS VALUE:	75	PPB	@ HOUR(S)	6	ON DAY(S)	18
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	741	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	6.91					

01 Hour Averages



— LICA NOMAX PPB

LICA
NO_ / WD Joint Frequency Distribution (Percent)

October 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	1.98	.70	1.13	1.56	6.38	7.09	15.03	3.54	2.69	3.97	7.37	6.95	8.65	8.79	16.17	7.94	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	1.98	.70	1.13	1.56	6.38	7.09	15.03	3.54	2.69	3.97	7.37	6.95	8.65	8.79	16.17	7.94	

Calm : .00 %

Total # Operational Hours : 705

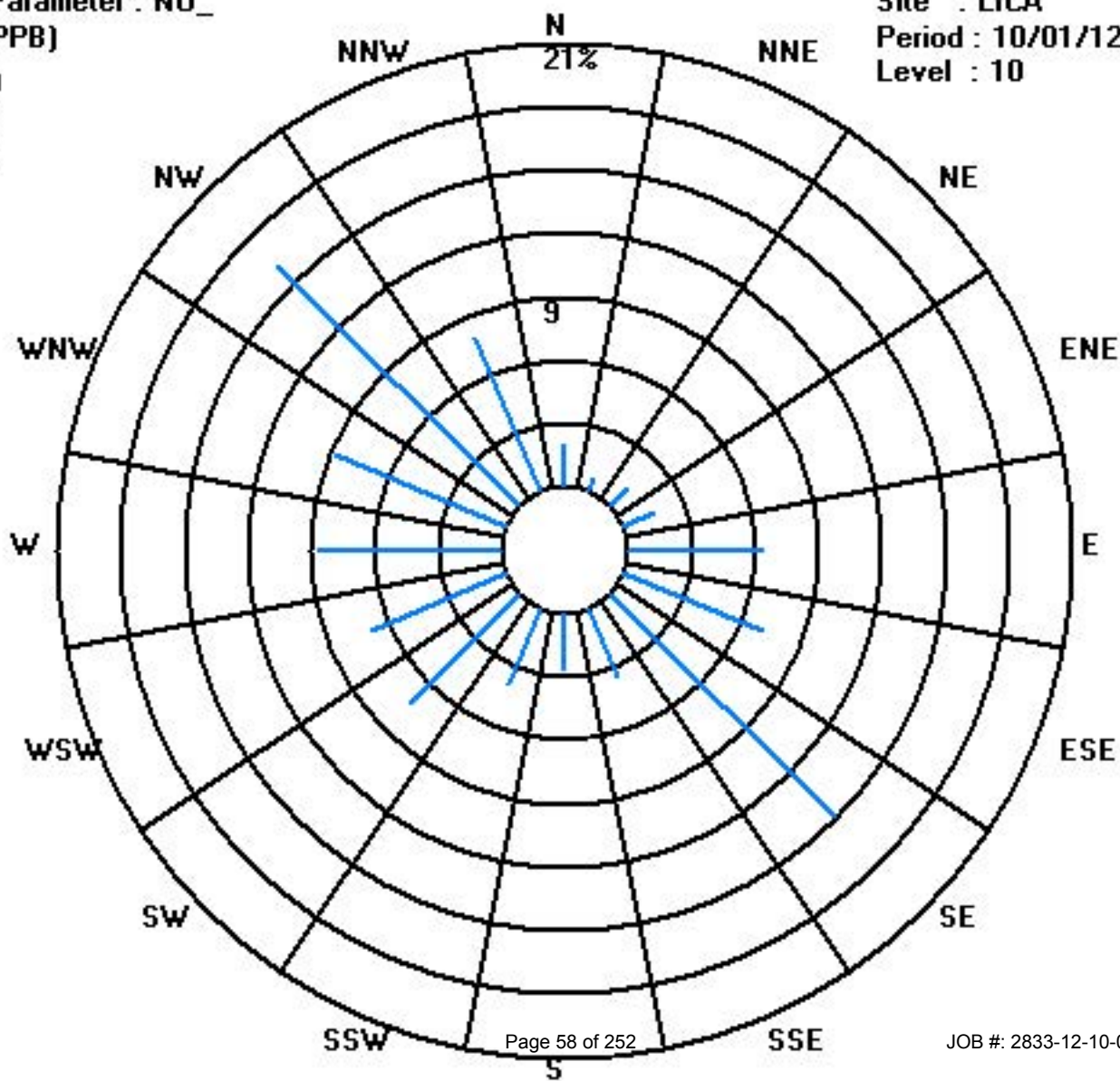
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	14	5	8	11	45	50	106	25	19	28	52	49	61	62	114	56	705
< 110																	
< 210																	
>= 210																	
Totals	14	5	8	11	45	50	106	25	19	28	52	49	61	62	114	56	

Calm : .00 %

Total # Operational Hours : 705

Class Limits (PPB)



Oxides of Nitrogen

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

OXIDES OF NITROGEN hourly averages in ppb

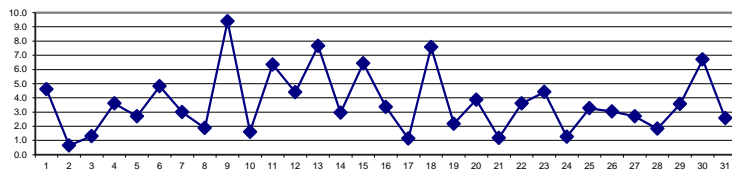
MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.	
DAY																												
1	6	5	4	4	5	12	11	10	9	6	4	3	5	3	3	3	4	2	2	2	IZS	1	1	1	12	4.6	24	
2	1	1	1	1	0	0	0	0	1	1	1	1	3	2	1	0	0	0	0	IZS	0	0	0	1	3	0.7	24	
3	0	1	1	1	1	2	1	1	1	0	0	0	1	0	0	2	2	2	IZS	1	3	2	3	5	5	1.3	24	
4	3	1	1	1	1	1	6	6	5	6	12	4	2	2	1	3	3	IZS	3	3	3	4	7	5	12	3.6	24	
5	2	1	1	1	2	2	2	3	2	3	1	2	1	3	4	3	IZS	3	6	5	4	3	4	4	6	2.7	24	
6	3	3	3	5	6	8	8	10	8	5	4	2	2	1	1	IZS	1	1	8	8	6	8	5	5	10	4.8	24	
7	4	4	4	5	7	3	4	4	5	5	5	5	3	2	IZS	1	1	1	1	1	1	1	1	1	7	3.0	24	
8	1	1	1	2	1	1	1	1	2	1	1	1	1	IZS	1	1	1	1	1	2	3	3	4	5	7	7	1.9	24
9	14	9	8	12	13	10	14	24	21	12	8	5	IZS	0	1	1	2	8	10	11	9	18	5	1	24	9.4	24	
10	1	1	2	2	1	1	1	3	5	2	2	IZS	1	2	2	1	1	1	1	2	1	1	1	2	5	1.6	24	
11	3	4	5	4	5	10	20	40	26	10	IZS	1	1	1	2	2	2	2	2	2	1	1	1	1	40	6.3	24	
12	1	1	1	1	2	2	6	6	5	IZS	6	3	3	4	12	12	12	12	6	5	2	4	5	1	1	12	4.4	24
13	1	1	1	2	4	6	12	10	IZS	11	11	9	6	7	7	8	8	13	15	12	13	9	6	4	15	7.7	24	
14	3	3	3	3	3	3	7	IZS	6	5	3	2	1	1	2	2	3	3	2	2	2	2	3	4	7	3.0	24	
15	3	2	4	6	6	11	IZS	20	10	5	3	2	1	1	1	1	2	6	16	9	12	10	7	10	20	6.4	24	
16	13	7	4	2	2	IZS	3	10	5	4	2	4	4	2	2	2	2	1	2	2	1	1	1	1	13	3.3	24	
17	1	1	1	1	IZS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	1.1	24	
18	2	3	4	IZS	5	8	27	44	26	11	14	2	2	2	2	2	3	4	5	2	2	2	1	1	44	7.6	24	
19	1	1	IZS	1	2	3	2	3	3	3	3	2	3	3	3	3	3	3	2	2	1	1	1	1	3	2.2	24	
20	1	IZS	2	3	3	3	5	6	7	7	9	6	5	4	2	2	3	3	3	3	3	3	3	3	9	3.9	24	
21	IZS	2	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	IZS	2	1.2	24	
22	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	8	13	8	14	IZS	7	14	3.6	24	
23	6	5	8	12	11	9	3	3	7	3	2	2	2	C	C	C	C	C	1	2	1	IZS	0	0	12	4.4	24	
24	0	0	0	0	0	0	1	1	2	1	1	1	1	5	5	1	1	1	1	1	IZS	2	2	2	5	1.3	24	
25	4	4	4	4	4	4	5	5	4	4	2	3	3	3	3	2	M	2	2	IZS	2	4	2	2	5	3.3	23	
26	2	2	3	3	3	2	2	3	3	4	5	4	3	2	1	1	2	3	IZS	2	3	6	7	4	7	3.0	24	
27	1	2	2	2	2	2	5	5	2	3	4	4	3	2	2	2	2	IZS	1	2	3	4	4	3	5	2.7	24	
28	3	3	2	2	2	1	1	2	2	2	2	2	2	2	2	2	IZS	3	2	1	1	1	1	1	3	1.8	24	
29	1	1	1	1	2	6	7	4	8	7	5	4	4	4	5	IZS	4	3	3	3	2	2	2	3	8	3.6	24	
30	4	3	4	7	8	12	15	14	8	9	10	9	4	2	IZS	4	6	7	5	5	4	5	5	4	15	6.7	24	
31	4	2	1	2	2	2	2	1	3	2	4	4	4	IZS	5	4	4	2	2	2	2	2	2	1	5	2.6	24	
HOURLY MAX	14	9	8	12	13	12	27	44	26	12	14	9	6	7	12	12	12	13	16	13	13	18	7	10				
HOURLY AVG	3.0	2.5	2.6	3.1	3.5	4.2	5.8	8.1	6.4	4.6	4.3	3.0	2.5	2.3	2.7	2.5	2.9	3.1	3.9	3.6	3.4	3.9	2.8	2.9				

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

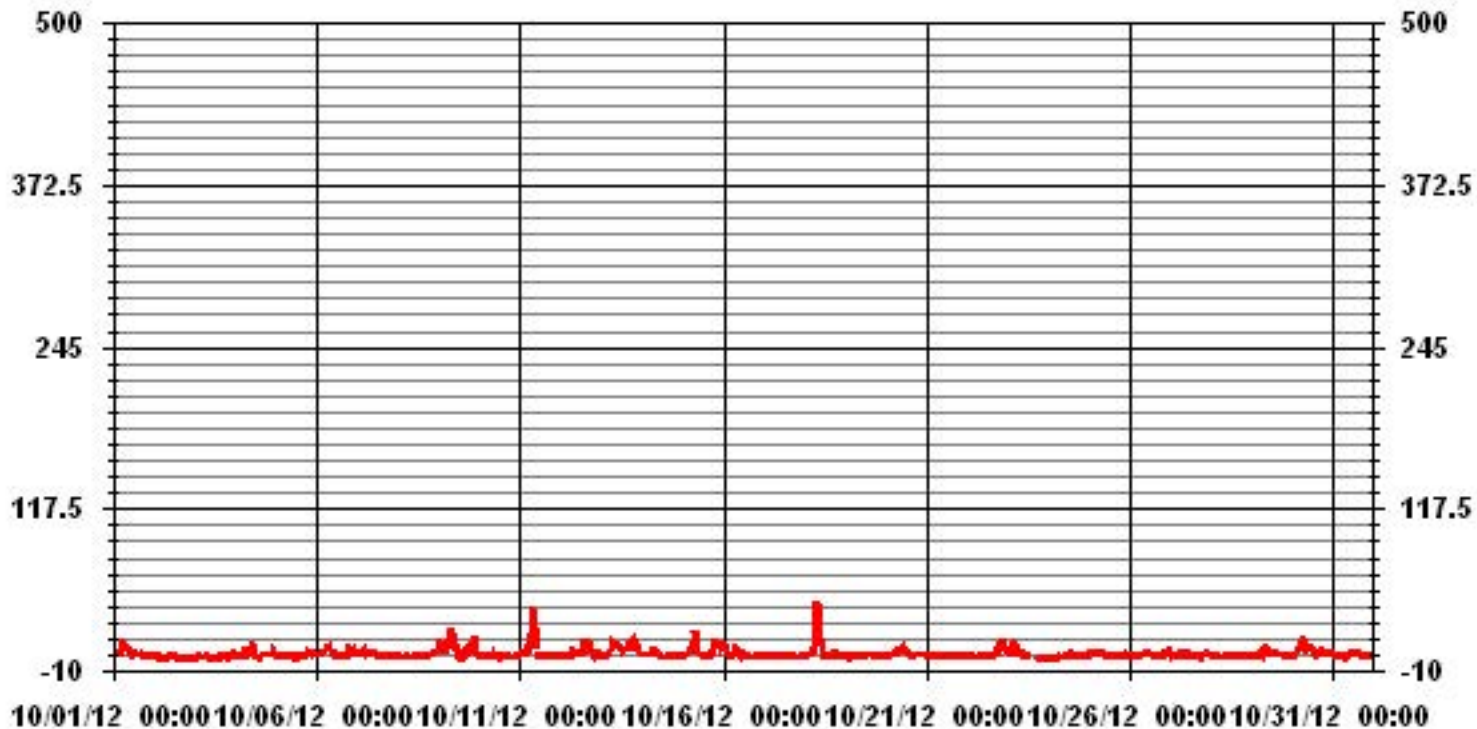
24 HOUR AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679
MAXIMUM 1-HR AVERAGE:	44 PPB @ HOUR(S) 7 ON DAY(S) 18
MAXIMUM 24-HR AVERAGE:	9.4 PPB ON DAY(S) 9
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	4.16
OPERATIONAL TIME:	743 HRS
AMD OPERATION UPTIME:	99.9 %
MONTHLY AVERAGE:	3.66 PPB

01 Hour Averages



— LICA NOX_ PPB

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	7	9	6	7	8	74	17	18	16	10	13	6	11	6	12	6	21	3	3	5	IZS	2	1	2	74	11.4	24
2	1	1	2	2	1	1	1	1	2	3	3	2	15	5	3	1	1	1	IZS	1	1	1	1	1	15	2.2	24
3	1	1	2	2	2	3	2	2	1	3	1	1	3	3	2	3	7	4	IZS	3	7	5	7	10	10	3.3	24
4	9	2	2	3	6	3	37	20	23	20	53	33	3	11	5	7	7	IZS	8	6	7	8	11	9	53	12.7	24
5	5	4	1	3	6	6	7	17	5	5	2	4	3	5	5	4	IZS	8	16	20	6	4	8	4	20	6.4	24
6	4	4	4	8	12	11	14	19	8	8	5	3	2	2	1	IZS	7	7	17	12	11	12	11	7	19	8.2	24
7	6	5	6	8	14	4	8	8	16	6	6	6	4	3	IZS	1	1	2	2	1	2	2	2	2	16	5.0	24
8	2	2	2	3	1	1	1	2	3	3	2	2	1	IZS	2	2	1	2	3	5	4	6	10	12	12	3.1	24
9	21	12	12	15	15	13	22	41	30	19	24	6	IZS	1	3	2	4	15	23	19	15	32	17	3	41	15.8	24
10	4	3	4	3	3	2	2	11	12	2	3	IZS	2	2	9	2	2	2	3	2	2	2	2	3	12	3.6	24
11	4	5	6	5	9	21	37	48	41	16	IZS	3	2	9	4	5	6	5	5	2	2	2	2	2	48	10.5	24
12	2	2	2	3	4	4	29	15	10	IZS	27	5	6	12	40	16	21	10	8	16	7	12	2	1	40	11.0	24
13	3	2	2	3	18	8	25	26	IZS	14	19	23	15	17	11	12	13	25	37	24	31	12	9	7	37	15.5	24
14	6	5	4	4	4	4	13	IZS	11	8	5	4	3	2	6	4	8	9	4	3	6	3	6	6	13	5.6	24
15	7	4	7	8	20	21	IZS	50	13	9	5	4	3	2	2	2	3	13	28	17	20	15	10	14	50	12.0	24
16	18	14	8	7	4	IZS	6	16	8	10	4	8	8	4	4	5	5	2	12	7	2	2	2	1	18	6.8	24
17	1	1	1	1	IZS	1	1	1	1	1	1	2	1	1	1	2	2	2	1	1	3	2	4	4	4	1.6	24
18	3	5	6	IZS	9	12	86	56	56	16	74	4	2	6	2	4	9	7	13	4	3	3	2	2	86	16.7	24
19	2	1	IZS	2	6	8	4	5	12	5	4	4	4	5	7	9	5	5	4	3	3	2	1	2	12	4.5	24
20	2	IZS	4	5	5	5	8	19	9	10	12	7	8	5	4	3	5	5	4	10	4	4	4	3	19	6.3	24
21	IZS	3	2	2	2	2	2	4	3	3	3	2	2	1	2	2	2	2	2	2	2	3	2	IZS	4	2.3	23
22	2	2	2	3	2	3	4	4	4	3	4	3	3	3	5	4	8	6	16	24	21	20	IZS	8	24	6.7	24
23	8	7	17	17	16	17	7	7	54	10	3	C	C	C	C	C	C	C	5	8	1	IZS	1	1	54	11.2	24
24	1	1	1	1	1	1	2	2	2	2	2	1	15	19	2	1	1	2	2	IZS	3	2	2	2	19	2.9	24
25	5	5	5	4	4	5	6	6	6	6	3	3	3	4	5	3	M	3	2	IZS	3	5	4	3	6	4.2	23
26	4	4	4	4	4	7	6	8	6	5	5	5	5	6	2	2	4	4	IZS	4	7	11	11	7	11	5.4	24
27	2	4	2	2	4	3	11	12	5	5	6	5	3	3	3	3	6	IZS	4	3	7	6	10	5	12	5.0	24
28	5	5	5	5	5	3	2	4	6	5	5	3	2	4	3	4	IZS	6	4	2	2	6	3	2	6	4.0	24
29	2	1	3	4	5	12	11	7	19	15	7	7	20	21	11	IZS	8	6	8	4	6	4	4	5	21	8.3	24
30	5	5	10	9	18	19	19	20	10	14	14	13	8	3	IZS	7	7	9	6	6	5	6	6	5	20	9.7	24
31	5	4	2	3	3	3	3	2	9	4	11	13	6	IZS	25	9	10	6	5	4	4	3	2	3	25	6.0	24
HOURLY MAX	21	14	17	17	20	74	86	56	56	20	74	33	20	21	40	16	21	25	37	24	31	32	17	14			
HOURLY AVG	4.9	4.1	4.5	4.9	7.0	9.2	13.1	15.0	13.4	8.0	10.9	6.3	5.1	5.8	7.1	4.5	6.4	6.1	8.5	7.6	6.7	6.6	5.2	4.5			

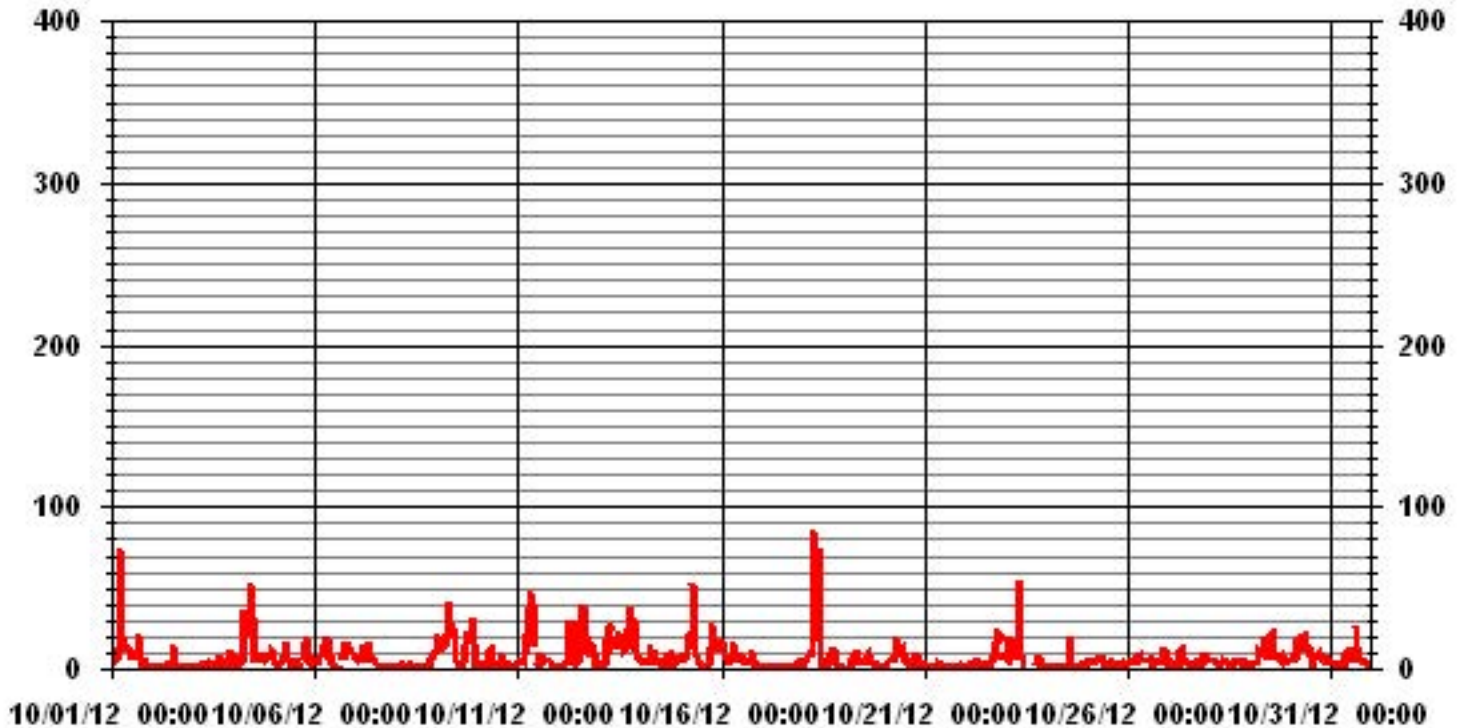
STATUS FLAG CODES

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:	704					
MAXIMUM INSTANTANEOUS VALUE:	86	PPB	@ HOUR(S)	6	ON DAY(S)	18
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	742	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	9.00					

01 Hour Averages



LICA
NOX_ / WD Joint Frequency Distribution (Percent)

October 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	1.98	.70	1.13	1.56	6.38	7.09	15.03	3.54	2.69	3.97	7.37	6.95	8.65	8.79	16.17	7.94	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	1.98	.70	1.13	1.56	6.38	7.09	15.03	3.54	2.69	3.97	7.37	6.95	8.65	8.79	16.17	7.94	

Calm : .00 %

Total # Operational Hours : 705

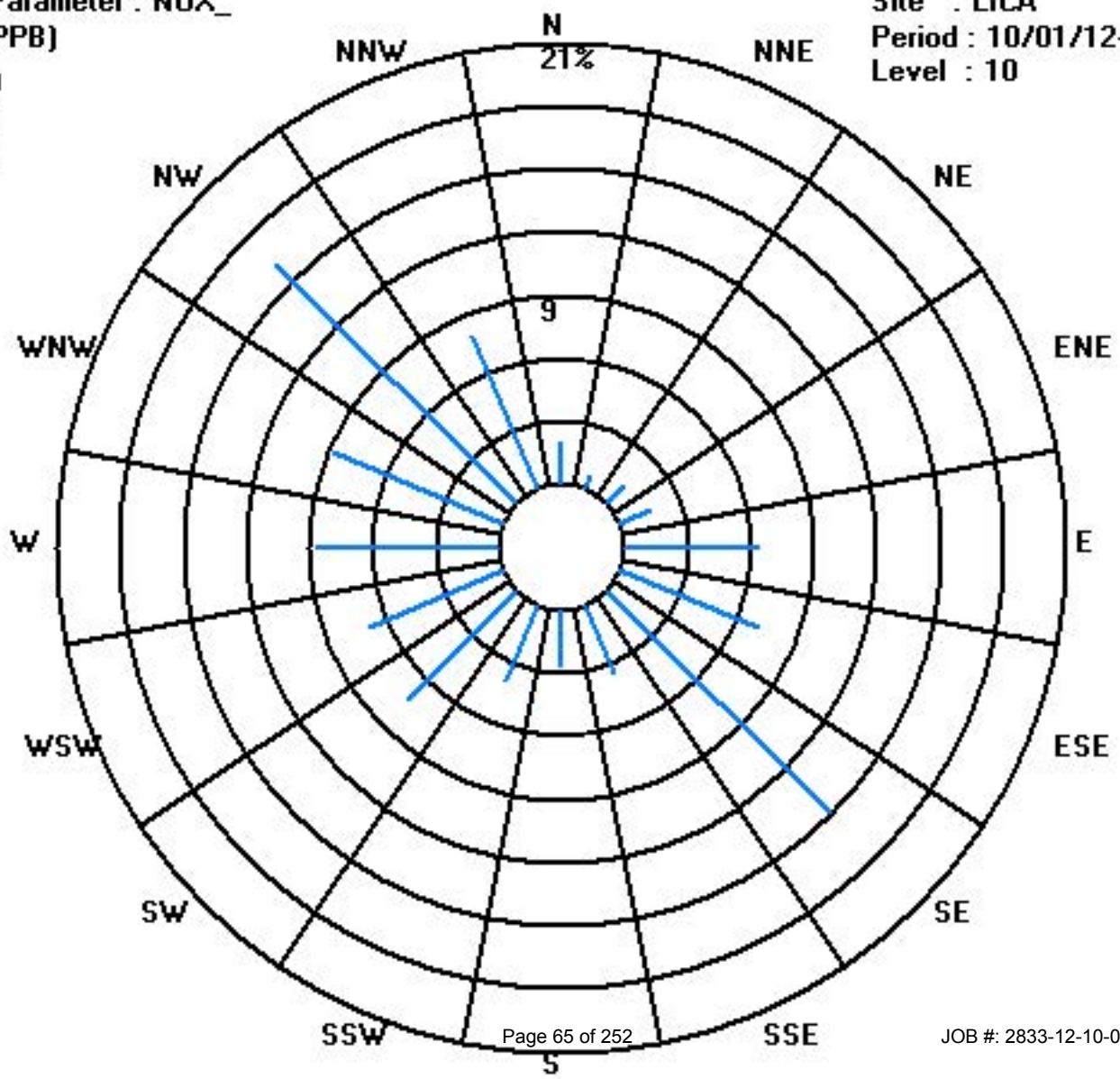
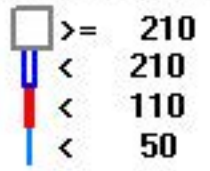
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	14	5	8	11	45	50	106	25	19	28	52	49	61	62	114	56	705
< 110																	
< 210																	
>= 210																	
Totals	14	5	8	11	45	50	106	25	19	28	52	49	61	62	114	56	

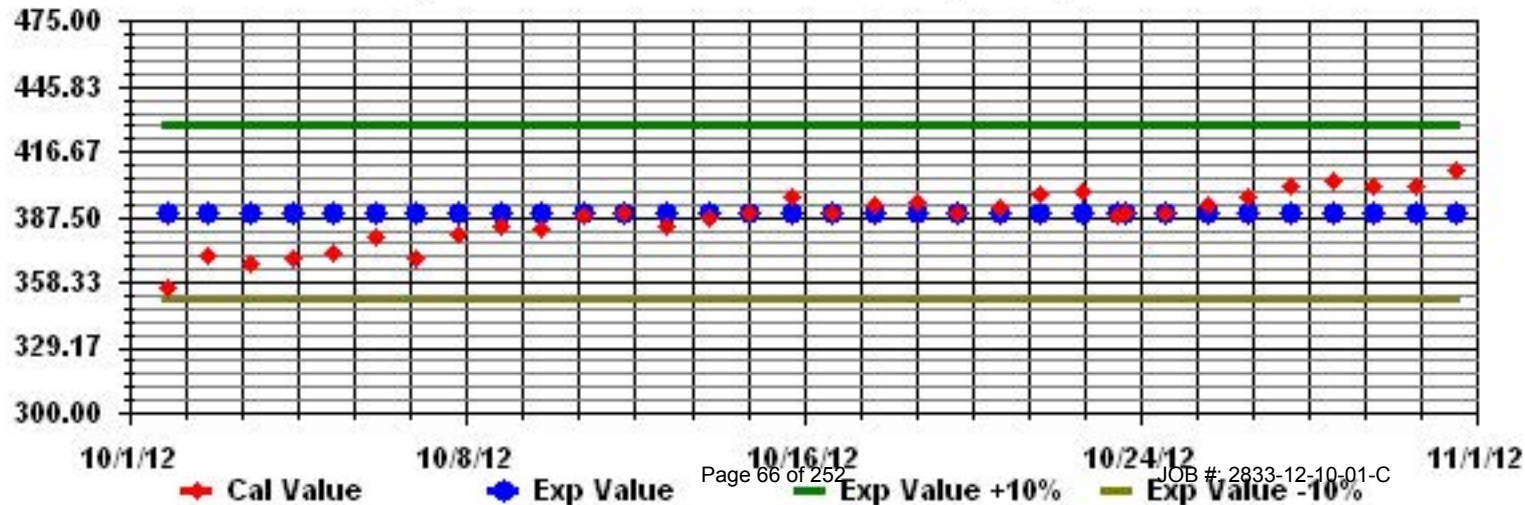
Calm : .00 %

Total # Operational Hours : 705

Class Limits (PPB)



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



Ozone

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

OZONE (O₃) hourly averages in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	13	9	9	11	9	10	10	18	19	22	28	30	29	33	33	30	28	38	39	35	IZS	27	26	27	39	23.2	24
2	28	27	26	27	29	30	33	34	31	29	26	27	27	26	26	25	24	23	23	IZS	26	23	19	18	34	26.4	24
3	18	16	14	16	15	14	19	18	21	22	24	24	23	23	22	22	21	IZS	19	12	9	5	2	24	17.5	24	
4	14	15	9	12	14	13	11	10	12	11	12	17	21	22	27	26	26	IZS	19	23	17	6	2	7	27	15.0	24
5	14	14	16	18	17	15	14	14	13	14	15	16	19	20	21	25	IZS	23	17	17	19	21	20	19	25	17.4	24
6	24	24	24	23	20	17	15	13	18	21	27	31	33	35	38	IZS	36	33	18	14	11	10	12	10	38	22.0	24
7	8	7	7	5	10	25	23	24	23	23	23	21	22	23	IZS	27	28	28	30	31	31	31	30	28	31	22.1	24
8	31	30	30	28	28	28	28	27	27	28	29	30	30	IZS	32	32	32	30	29	28	26	22	17	16	32	27.7	24
9	9	12	11	8	6	10	8	4	8	17	23	26	IZS	33	33	33	31	21	14	10	10	9	25	29	33	17.0	24
10	28	28	28	27	28	25	25	23	24	24	23	IZS	26	27	27	28	30	30	31	31	31	31	30	29	31	27.6	24
11	27	24	22	24	23	15	6	3	12	23	IZS	32	32	32	32	31	30	29	29	28	28	26	25	32	24.5	24	
12	24	24	23	22	21	19	15	15	17	IZS	18	20	20	19	12	10	10	13	15	16	13	12	14	13	24	16.7	24
13	11	10	8	7	5	3	1	3	IZS	6	7	7	7	7	6	6	4	1	1	1	1	4	13	17	17	5.9	24
14	6	17	20	19	16	16	8	IZS	17	20	24	26	33	37	37	38	36	36	35	34	32	31	23	14	38	25.0	24
15	9	8	7	9	6	1	IZS	4	13	21	29	34	39	40	40	41	39	31	11	15	9	9	10	6	41	18.7	24
16	6	19	28	32	32	IZS	27	20	24	25	26	26	27	29	32	34	35	34	31	31	31	30	29	29	35	27.7	24
17	29	28	28	29	IZS	30	30	29	28	23	15	9	9	10	10	11	13	14	15	13	11	12	13	10	30	18.2	24
18	9	6	4	IZS	5	2	1	1	4	7	16	28	31	32	33	31	30	28	26	28	28	27	26	25	33	18.6	24
19	24	24	IZS	22	19	18	17	16	16	17	18	18	18	20	18	17	16	14	14	14	14	14	13	12	24	17.0	24
20	10	IZS	7	6	5	5	4	3	3	3	4	6	7	7	9	9	8	7	6	6	6	6	7	9	10	6.2	24
21	IZS	10	11	14	16	17	19	17	19	21	22	22	22	23	23	23	23	24	25	23	23	23	23	IZS	25	20.1	23
22	24	24	25	24	25	24	24	22	21	22	23	22	23	23	23	23	20	12	5	6	2	IZS	4	25	19.4	24	
23	3	2	1	1	1	10	21	21	22	25	24	24	25	25	24	24	24	23	23	23	IZS	21	20	25	17.9	24	
24	20	20	19	20	20	20	21	C	C	C	C	C	21	22	22	23	23	21	20	18	IZS	17	17	17	23	20.1	24
25	15	14	14	14	13	12	11	12	16	19	21	21	22	22	22	21	M	19	20	IZS	22	20	24	23	24	18.0	23
26	20	19	19	21	21	24	25	27	27	27	27	27	27	27	27	25	23	IZS	22	21	16	15	18	27	23.1	24	
27	22	22	20	22	21	19	16	18	21	21	22	22	24	25	25	26	27	IZS	26	25	25	23	23	22	27	22.5	24
28	23	23	24	24	24	24	23	23	23	24	26	26	27	27	27	27	IZS	26	27	28	27	27	27	26	28	25.3	24
29	25	25	24	24	22	18	18	19	18	20	21	22	21	21	20	IZS	20	20	19	18	17	16	14	10	25	19.7	24
30	10	7	8	5	4	2	1	3	7	9	10	12	15	16	IZS	13	11	11	15	16	16	15	17	18	18	10.5	24
31	19	22	23	22	23	25	23	24	23	23	23	22	21	IZS	22	23	23	24	25	25	25	25	24	24	25	23.2	24
HOURLY MAX	31	30	30	32	32	30	33	34	31	29	29	34	39	40	40	41	39	38	39	35	32	31	30	29			
HOURLY AVG	17.4	17.7	17.0	17.9	16.6	16.4	16.6	16.1	18.2	19.5	20.8	22.4	23.3	24.3	25.0	24.3	24.2	23.0	21.2	20.6	19.3	18.2	18.8	17.6			

STATUS FLAG CODES

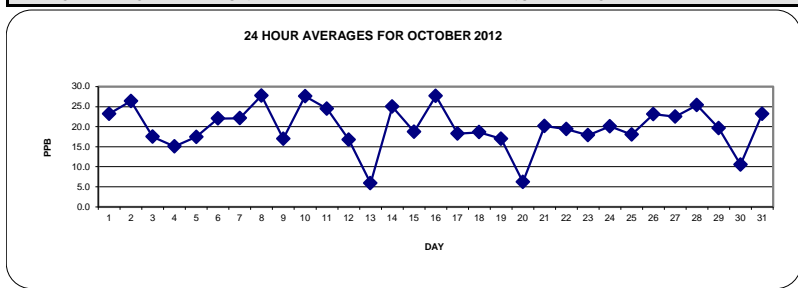
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

OBJECTIVE LIMIT:

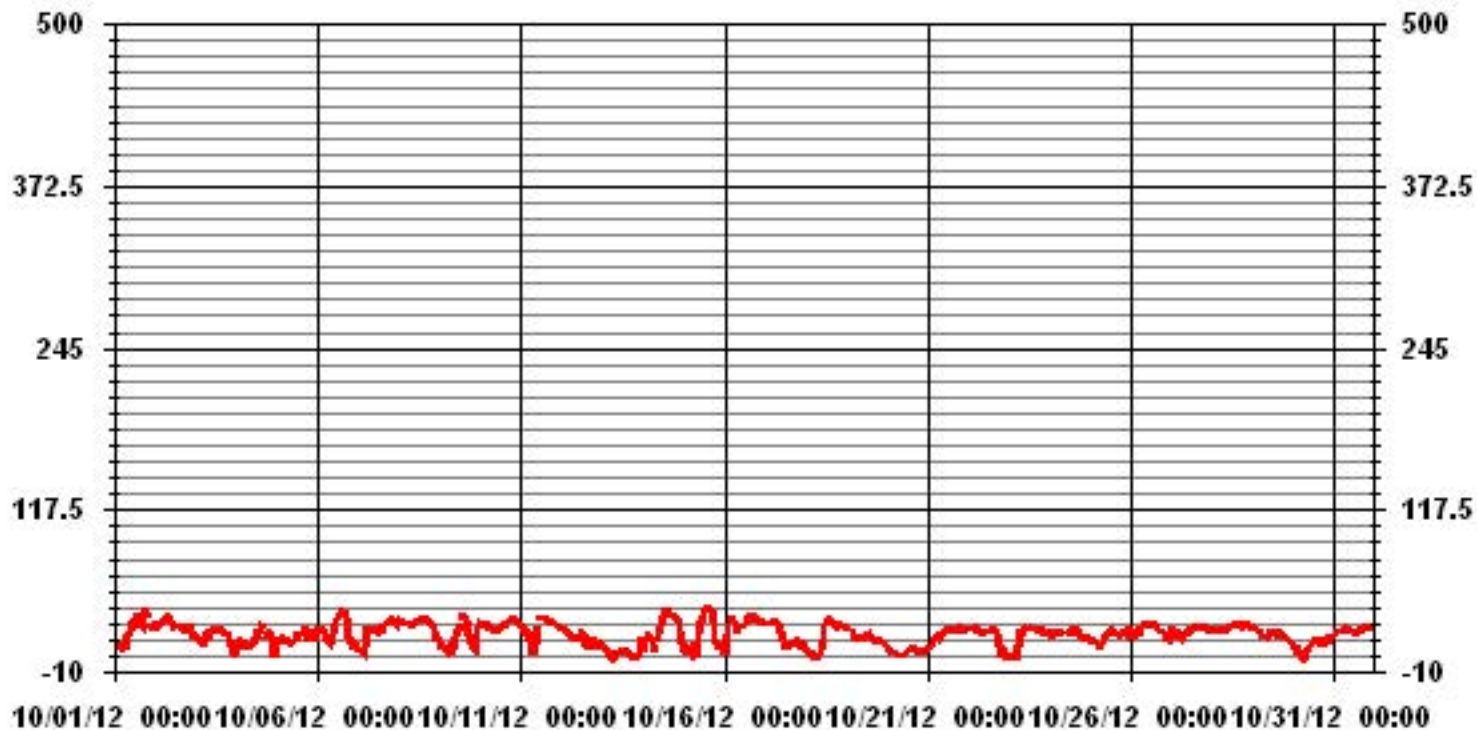
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	706				
MAXIMUM 1-HR AVERAGE:	41	PPB	@ HOUR(S)	16	ON DAY(S) 15
MAXIMUM 24-HR AVERAGE:	27.7	PPB			ON DAY(S) 16
					VAR-VARIOUS
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	742	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	99.7	%
STANDARD DEVIATION:	8.55		MONTHLY AVERAGE:	19.82	PPB



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

OZONE MAX instantaneous maximum in ppb

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	DAILY MAX.	24-HOUR AVG.	RDGS.
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00				
DAY																												
1	18	13	12	13	13	15	18	22	24	25	32	32	38	38	32	33	43	43	37	IZS	29	27	29	29	43	26.9	24	
2	29	28	28	29	30	31	34	35	33	30	28	28	28	27	26	25	23	24	IZS	27	24	20	19	35	27.6	24		
3	19	17	16	17	16	19	20	19	23	24	25	25	24	24	24	25	25	IZS	23	18	14	11	3	25	19.8	24		
4	17	17	14	17	15	15	13	11	14	13	14	24	22	30	30	28	28	IZS	21	27	25	10	3	18	30	18.5	24	
5	16	16	18	19	18	16	15	15	15	15	17	19	21	22	22	29	IZS	27	24	22	21	23	23	24	29	19.9	24	
6	25	25	26	26	23	19	19	17	19	25	32	33	34	38	39	IZS	37	35	28	21	16	18	12	39	25.4	24		
7	10	10	9	8	23	27	26	26	24	24	23	23	24	IZS	28	28	31	31	32	32	32	31	30	32	24.2	24		
8	33	32	32	29	29	28	29	28	30	29	30	31	31	IZS	34	33	33	31	31	31	27	25	20	18	34	29.3	24	
9	15	15	13	10	8	11	10	7	15	22	27	29	IZS	35	34	34	33	28	21	18	12	14	31	33	35	20.7	24	
10	29	29	29	28	29	27	26	24	27	25	24	IZS	28	28	28	30	31	31	32	32	32	31	30	32	28.8	24		
11	29	26	23	26	25	20	13	4	19	29	IZS	33	32	33	32	32	31	30	30	30	29	29	27	26	33	26.4	24	
12	25	24	24	23	22	21	18	18	18	IZS	20	22	20	20	17	12	13	15	16	17	16	15	15	14	25	18.5	24	
13	13	12	10	9	6	5	2	5	IZS	8	7	8	8	8	7	7	6	3	1	1	2	6	20	20	20	7.6	24	
14	14	23	21	20	18	17	16	IZS	20	22	27	29	36	38	40	40	37	37	36	35	33	33	29	19	40	27.8	24	
15	13	12	13	13	11	3	IZS	10	15	25	32	37	40	41	41	42	41	37	22	21	17	15	16	11	42	23.0	24	
16	13	29	32	34	34	IZS	29	25	26	28	27	27	28	31	33	36	36	35	33	32	32	30	30	30	36	30.0	24	
17	30	29	29	30	IZS	31	30	30	29	27	18	11	10	10	11	12	14	15	16	15	12	13	14	12	31	19.5	24	
18	11	8	6	IZS	6	5	1	3	6	12	23	31	33	35	34	32	31	30	28	29	29	28	27	26	35	20.6	24	
19	25	24	IZS	23	21	19	18	17	17	17	18	19	20	21	20	18	17	16	16	16	15	14	13	25	18.3	24		
20	11	IZS	9	7	6	6	5	4	4	5	5	7	7	8	10	9	9	7	6	7	7	7	8	11	11	7.2	24	
21	IZS	12	13	16	16	18	20	19	20	22	22	22	23	23	23	24	24	26	38	24	24	24	24	IZS	38	21.7	23	
22	25	25	25	25	26	26	25	25	24	23	23	24	23	24	23	24	24	22	20	12	11	6	IZS	5	26	21.3	24	
23	4	3	2	2	4	18	23	23	25	26	25	26	25	26	25	25	24	24	24	24	IZS	22	20	26	19.3	24		
24	20	20	20	20	20	20	22	C	C	C	C	22	24	23	24	24	24	22	21	19	IZS	18	18	18	24	20.8	24	
25	17	15	15	15	14	13	12	15	17	21	21	22	22	23	22	22	M	20	20	IZS	23	21	26	25	26	19.1	23	
26	21	20	21	21	22	25	27	28	28	29	28	28	28	28	28	27	26	23	IZS	23	22	21	17	22	29	24.5	24	
27	23	23	22	23	22	21	19	20	22	22	23	23	26	26	26	27	28	IZS	27	26	26	25	24	23	28	23.8	24	
28	24	25	25	25	25	25	24	24	25	27	27	27	28	28	28	IZS	27	28	28	28	28	28	27	27	28	26.3	24	
29	26	26	25	25	24	20	20	20	20	20	22	22	22	22	22	IZS	21	20	20	19	18	17	15	12	26	20.9	24	
30	11	9	10	6	5	5	2	7	8	10	12	14	16	17	IZS	14	12	14	16	17	17	17	18	19	19	12.0	24	
31	20	23	23	22	25	25	24	24	24	24	24	23	23	IZS	23	27	24	25	26	26	26	25	25	25	27	24.2	24	
HOURLY MAX	33	32	32	34	34	31	34	35	33	30	32	37	40	41	41	42	41	43	43	37	33	33	31	33				
HOURLY AVG	19.5	19.7	18.8	19.4	18.5	18.4	18.7	18.1	20.3	21.7	22.7	24.1	24.5	26.0	26.3	25.7	25.6	24.9	24.1	22.9	21.4	20.5	21.0	19.8				

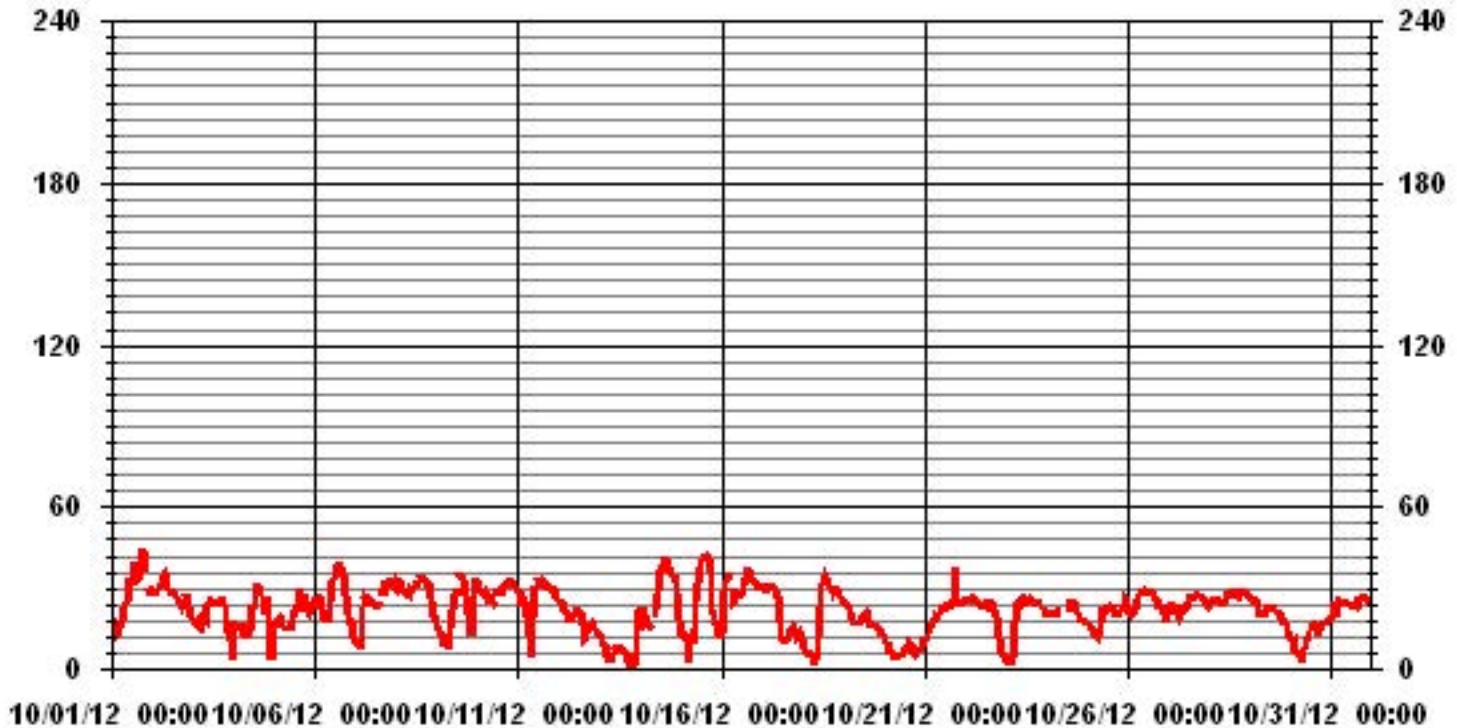
STATUS FLAG CODES

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:	706					
MAXIMUM INSTANTANEOUS VALUE:	43	PPB	@ HOUR(S)	17	ON DAY(S)	1
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	742	HRS	
MONTHLY CALIBRATION TIME:	5	HRS				
STANDARD DEVIATION:	8.31					

01 Hour Averages



LICA
O3_ / WD Joint Frequency Distribution (Percent)

October 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	2.40	.84	1.13	1.55	6.37	7.08	15.01	3.54	2.69	3.96	7.36	6.94	8.64	8.78	16.00	7.64	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	2.40	.84	1.13	1.55	6.37	7.08	15.01	3.54	2.69	3.96	7.36	6.94	8.64	8.78	16.00	7.64	

Calm : .00 %

Total # Operational Hours : 706

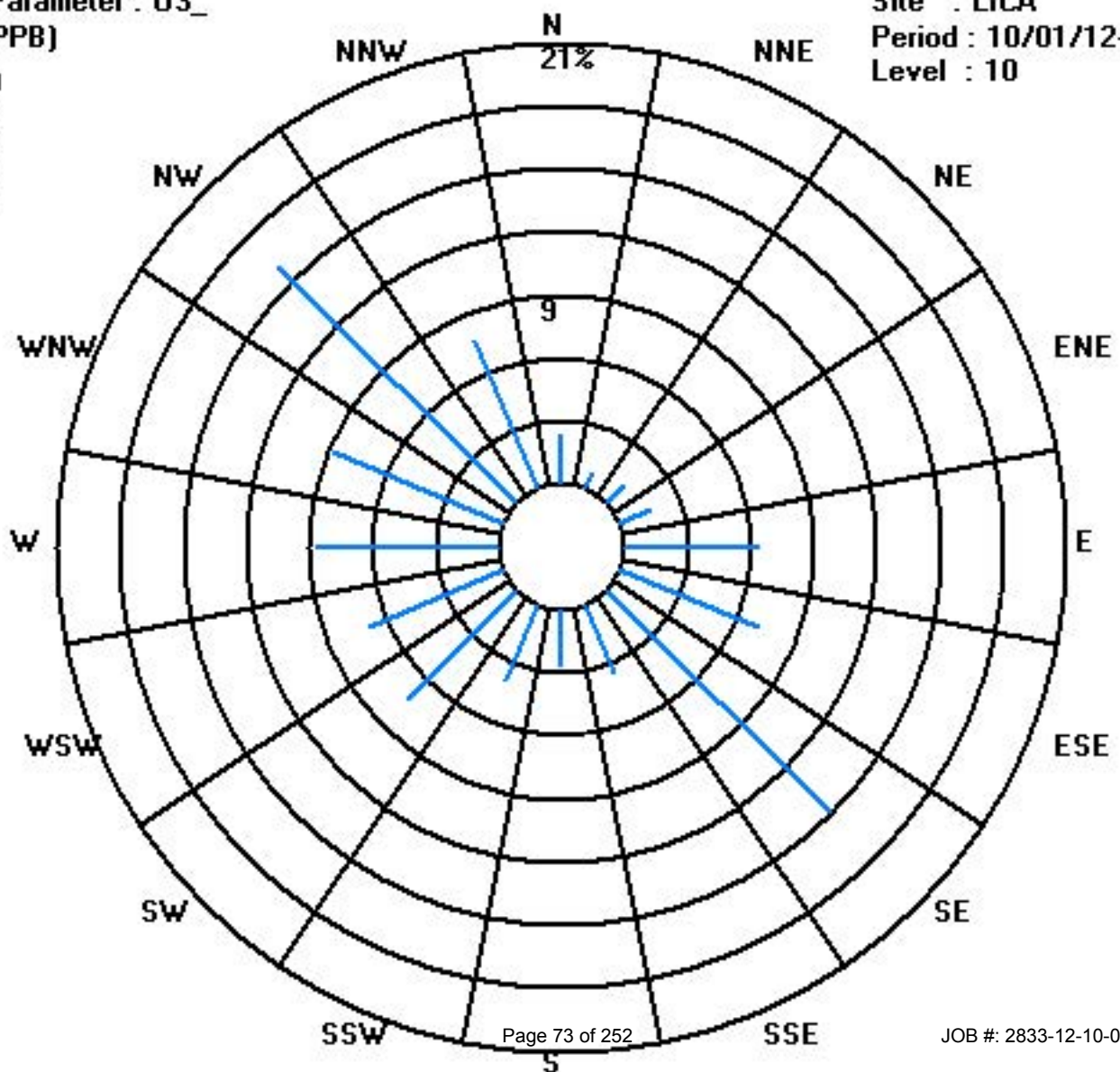
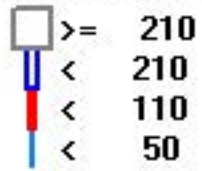
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	17	6	8	11	45	50	106	25	19	28	52	49	61	62	113	54	706
< 110																	
< 210																	
>= 210																	
Totals	17	6	8	11	45	50	106	25	19	28	52	49	61	62	113	54	

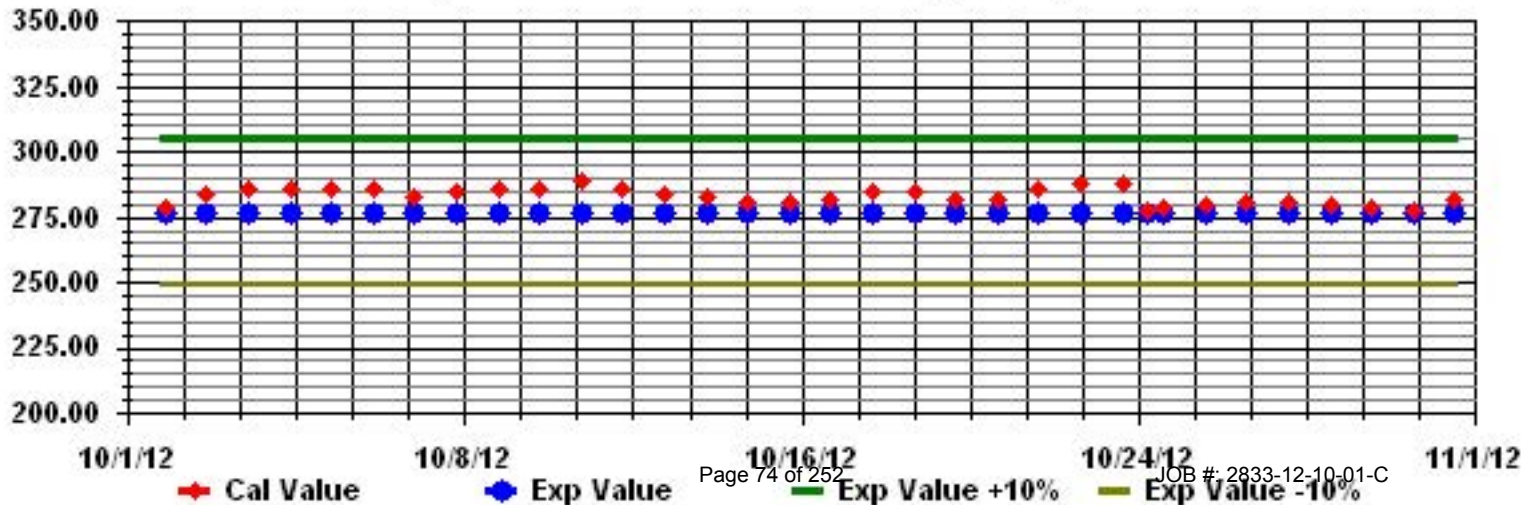
Calm : .00 %

Total # Operational Hours : 706

Class Limits (PPB)



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



Ambient Temperature

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

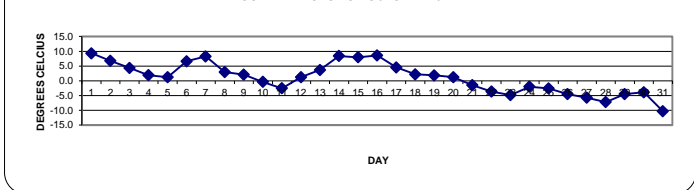
AMBIENT TEMPERATURE hourly averages (Degrees C)

MST		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	23:00	DAILY	24-HOUR	RDGS.
DAY	DAY	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.		
1	1	3.2	3.3	3.5	3.8	4.4	4.4	4.7	6.3	7.8	8.5	11.3	12.7	12.8	14	14.2	14.6	14.2	13.3	12.9	12.4	12	11.1	9.8	8.8	14.6	9.3	24	
2	2	8.4	8.5	8.2	7	6	5.6	5.6	5.6	6.2	6.5	7.2	7.1	7.7	8.2	9.4	9.1	8.7	7.3	5.9	5.1	5.5	5.4	4.7	4.6	9.4	6.8	24	
3	3	4.6	4.3	3.8	3.3	2.7	2.6	3.7	3.8	4.7	5.2	6	6.7	6.4	7.1	6.7	6.3	6.6	5.4	4	3.4	3.1	2.5	1.5	0.6	7.1	4.4	24	
4	4	1.1	1	-0.3	-0.6	-0.1	0.3	0.4	0.7	1.4	2.2	3	4.6	5.1	4.2	5.7	6.3	5.9	3.5	2.3	2.1	1.1	-0.6	-1.6	-1.7	6.3	1.9	24	
5	5	-1.9	-2.3	-2.3	-2.2	-2.4	-2.9	-3.2	-3.2	-2.4	-1.7	-0.5	0.8	2.5	4.3	6.6	7.4	6.7	5.7	4.3	3.8	3.4	3.3	3.3	3.1	7.4	1.3	24	
6	6	4.3	4.7	4.8	5.1	4.1	3.7	3.1	2.8	5.3	7.8	9.4	10.4	11.1	12.1	12.4	12.5	11.8	10.2	6.1	3.8	3.5	3.5	3.4	3.4	12.5	6.6	24	
7	7	2.4	1.9	1.9	2.3	3.6	6.3	6.4	6.8	7.8	9.6	10.9	11.6	11.6	13.3	14.8	14.5	13.3	11.5	10.7	9.9	8.9	7.5	6.2	4.9	14.8	8.3	24	
8	8	3.9	3.5	2.9	2.4	2.6	2.5	2.3	2.4	3.2	3.9	4.1	4.3	3.7	4.7	5.6	5.5	5.2	4.2	3.9	3.1	1.8	0	-1.7	-2.1	5.6	3.0	24	
9	9	-1.9	-1.7	-2.6	-2.4	-2.1	-1.9	-2.3	-2.6	-1.1	1.9	3.7	5	6.5	6.8	7.6	7.5	6.8	5.1	3.4	2.5	2.3	3.2	3.6	3.1	7.6	2.1	24	
10	10	2.6	1.1	0.3	0.3	0.4	0	-0.3	-0.4	-0.3	0.3	0.5	0.7	0.8	0.4	0.2	0	-0.7	-1.1	-1.5	-1.7	-2.1	-2.4	-2.7	-3	2.6	-0.4	24	
11	11	-3.5	-4.6	-4.7	-4.2	-4.9	-6.4	-7.8	-8.4	-4.5	-2.2	-2.2	-1.5	-1.1	-0.4	-0.4	-0.4	-0.6	-0.7	-0.8	-0.7	-0.6	-0.3	0.2	0.6	0.6	-2.5	24	
12	12	0.8	0.9	0.9	0.8	0.7	0.8	0.8	1.1	1.8	2.6	3.1	3.7	3.9	2.5	1.1	0.7	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	3.9	1.3	24	
13	13	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.1	1.7	2.2	2.9	4.2	5.8	6.8	7.7	8.3	9.3	7.5	4.9	3.1	2	3.9	5.7	6.5	9.3	3.7	24	
14	14	4.2	4.1	4.1	3.7	2.7	2.4	1.1	1.5	4.5	6.7	9.6	11.3	13	14	14.5	14.4	13.5	13	12.4	11.7	11	11.1	9.4	7.7	14.5	8.4	24	
15	15	6.9	6	5.4	5.3	4.1	2	0.8	2.4	7.1	10.6	12.8	14.6	15.5	15.9	16.2	15.8	14.7	11.8	7.8	6	4.3	2.5	1.6	1.9	16.2	8.0	24	
16	16	3.1	4.7	6	8.1	7.7	7.1	6.1	6.1	6.6	7.3	8.7	10.5	11	12	13.2	13	12.5	11.7	10.3	9.5	9	8	6.9	6.6	13.2	8.6	24	
17	17	6.9	6.3	6	5.9	5.6	5.3	5	4.9	4.9	4.7	4.4	4.7	4.9	5.5	5.4	5.1	4.5	4.2	3.9	3.1	2.8	2.7	2.1	0.3	6.9	4.5	24	
18	18	0.3	-0.2	-1.7	-2.5	-3	-3.9	-4.6	-4.2	-1.8	0.5	3.6	7	8.3	8.7	8.2	7.5	7	5.6	4.2	3.3	3	2.5	2.2	2.3	8.7	2.2	24	
19	19	2.4	2.4	2.6	2.6	1.7	1.7	1.7	1.6	1.6	1.5	2	1.9	2.1	2.1	2.1	2.1	2.1	1.7	1.5	1.4	1.4	1.3	1.3	1.5	2.6	1.8	24	
20	20	1.6	1.6	1.7	1.4	1.6	1.8	2	2.1	2	1.8	0.5	0.7	1	1.4	1.9	1.7	1.5	0.8	0.6	0.6	0.6	0.5	0.5	0.3	2.1	1.3	24	
21	21	0.2	0.2	0	-0.3	-0.5	-1	-1.3	-1.7	-2.1	-2.1	-1.9	-1.6	-1.6	-1.5	-1.4	-1.3	-1.4	-1.6	-2.1	-2.1	-2.4	-2.8	-3.2	0.2	-1.5	24		
22	22	-3.6	-3.8	-3.9	-3.9	-4	-4.1	-4.1	-4	-4	-4	-3.3	-2.1	-0.9	-0.2	0.3	0.5	-0.1	-1.5	-3.3	-5	-6.4	-7.5	-8.4	-9.1	0.5	-3.6	24	
23	23	-9.6	-10.2	-10.5	-10.1	-9.5	-7.5	-5.4	-4.9	-3.9	-3.4	-3.3	-2.9	-2.4	-2.1	-2.3	-2.9	-3.5	-3.6	-3.8	-3.6	-2.9	-2.6	-2.7	-2.6	-2.1	-4.8	24	
24	24	-2.6	-2.6	-2.6	-2.8	-2.8	-2.7	-2.7	-2.5	-2.3	-1.9	-1.3	-1.2	-0.9	-0.7	-0.7	-0.9	-1.3	-1.7	-1.8	-2.2	-2.2	-2.4	-2.6	-2.7	-0.7	-2.0	24	
25	25	-2.9	-3.2	-3.4	-3.4	-3.3	-3.2	-3.1	-2.9	-2.6	-2.3	-2.1	-1.6	-1.9	-1.7	-1.6	-1.7	-2	-2.3	-2.4	-2.6	-2.8	-3.1	-3	-2.9	-1.6	-2.6	24	
26	26	-3	-3.1	-3.3	-4.1	-4.6	-4.7	-5.1	-5.7	-5.5	-5	-4.4	-3.9	-3.4	-3.1	-3	-3	-3.2	-4.1	-5.2	-6.1	-5.8	-6.4	-6.1	-5.9	-3.0	-4.5	24	
27	27	-6	-6.3	-6.3	-6.6	-6.7	-6.7	-6.9	-6.8	-6.6	-5.9	-4.2	-3.3	-2.4	-2.8	-2.9	-2.8	-3.3	-4.4	-5.9	-6.8	-7.1	-8.2	-8.9	-9.2	-2.4	-5.7	24	
28	28	-9	-8.9	-9	-8.6	-8.2	-8.1	-8.4	-8.4	-8.1	-7.8	-7.3	-6.7	-5.9	-5.6	-5.4	-5.8	-6	-6.2	-6.3	-6.4	-6.6	-6.6	-6.5	-6.4	-5.4	-7.2	24	
29	29	-6.3	-6.3	-6.3	-6.4	-6.2	-6.1	-6.2	-6.2	-5.8	-5	-4.2	-3.9	-3.6	-3.5	-3.5	-3.4	-3.4	-3.4	-3.3	-3.3	-3.1	-3	-2.9	-3	-2.9	-4.5	24	
30	30	-3.3	-3.4	-3.5	-3.3	-3.2	-3.2	-3.3	-3.3	-3	-2.4	-2.1	-2	-1.9	-1.9	-2.1	-2.8	-3.6	-4.3	-4.9	-5.7	-6.2	-6.9	-8.2	-9.1	-1.9	-3.9	24	
31	31	-10	-10.1	-10	-9.9	-9.9	-10.1	-10.3	-10.4	-10.2	-10.2	-10.3	-10.6	-10.4	-10.4	-10.6	-10.6	-10.6	-10.5	-10.5	-10.4	-10.2	-10	-9.8	-9.8	-9.8	-10.2	24	
HOURLY MAX		8.4	8.5	8.2	8.1	7.7	7.1	6.4	6.8	7.8	10.6	12.8	14.6	15.5	15.9	16.2	15.8	14.7	13.3	12.9	12.4	12.0	11.1	9.8	8.8				
HOURLY AVG		-0.2	-0.4	-0.6	-0.6	-0.7	-0.8	-1.0	-0.9	0.1	1.0	1.8	2.6	3.1	3.5	3.9	3.8	3.4	2.5	1.6	0.9	0.6	0.2	-0.2	-0.5				

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

24 HOUR AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-10.6 °C	@ HOUR(S)	VAR	ON DAY(S)	31
MAXIMUM 1-HR AVERAGE:	16.2 °C	@ HOUR(S)	14	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	9.3 °C			ON DAY(S)	1
				VAR-VARIOUS	
CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	744 HRS		
		AMD OPERATION UPTIME:	100.0 %		
STANDARD DEVIATION:	5.72	MONTHLY AVERAGE:	0.97 °C		

* Outside detection limits of sensor.

01 Hour Averages



Relative Humidity

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

RELATIVE HUMIDITY hourly averages (%)

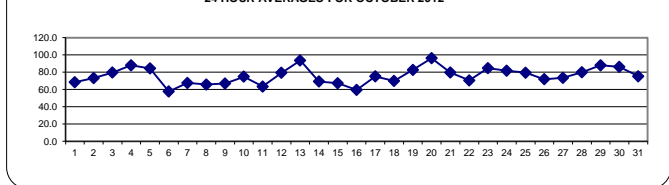
MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR	
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	MAX.	AVG.	RDGS.
DAY																											
1	76	77	78	76	77	78	76	67	64	66	53	49	54	51	63	65	69	69	68	71	74	73	75	73	78	68.4	24
2	72	73	76	82	80	78	76	77	74	73	70	71	68	69	60	61	64	70	76	78	76	76	79	81	82	73.3	24
3	80	81	85	85	86	86	82	81	75	72	65	62	71	61	64	72	69	77	88	91	93	94	95	95	95	79.6	24
4	93	91	93	94	92	92	92	92	91	93	92	84	79	85	74	70	70	83	89	90	92	94	94	94	94	88.0	24
5	96	96	96	96	96	95	95	95	95	96	96	97	98	96	72	61	56	63	71	73	73	72	70	70	98	84.3	24
6	61	60	61	60	64	68	71	73	65	58	49	42	39	36	33	35	38	44	62	69	73	73	74	77	77	57.7	24
7	81	83	84	85	81	70	72	69	66	63	60	60	63	58	54	54	55	61	60	59	63	69	75	79	85	67.7	24
8	70	68	66	69	73	72	71	70	67	66	66	68	75	62	51	47	47	54	54	57	67	75	82	83	83	65.8	24
9	84	84	86	86	85	84	84	85	81	70	59	53	45	42	42	42	46	55	63	68	71	66	61	68	86	67.1	24
10	62	82	94	96	96	94	89	87	86	83	81	77	69	66	68	67	65	65	65	63	61	59	61	61	96	74.9	24
11	65	70	73	73	75	81	86	86	75	67	60	49	49	48	50	52	54	56	58	59	61	63	64	86	86	63.5	24
12	65	65	66	67	68	70	70	70	67	66	66	65	65	79	92	94	96	96	96	96	96	96	96	96	96	79.3	24
13	96	96	96	96	96	96	96	97	96	96	95	92	88	87	87	89	87	95	97	97	96	95	89	91	97	93.6	24
14	94	94	91	90	92	91	92	91	78	71	63	59	49	43	40	40	46	50	54	57	60	61	74	83	94	69.3	24
15	86	89	92	91	92	95	95	95	83	65	50	41	35	32	31	31	34	43	60	66	72	77	79	79	95	67.2	24
16	76	68	63	54	56	58	63	65	64	63	60	55	54	51	50	52	51	50	56	58	60	64	70	72	76	59.7	24
17	71	77	76	73	78	77	77	75	74	78	82	77	75	71	69	69	70	69	71	77	78	77	78	85	85	75.2	24
18	88	89	92	93	94	93	91	90	90	88	75	53	45	41	42	46	48	51	56	59	61	63	65	65	94	69.9	24
19	66	66	65	66	73	75	76	75	78	84	83	85	87	86	85	85	86	91	93	94	95	96	97	98	98	82.7	24
20	98	98	98	98	97	97	97	96	96	95	96	97	96	96	95	95	96	96	97	96	96	95	95	98	96.3	24	
21	95	95	94	92	89	87	82	86	85	83	80	80	79	78	77	74	72	70	68	67	68	69	70	71	95	79.6	24
22	71	72	72	72	71	71	70	70	72	72	68	64	60	57	56	55	58	63	72	80	85	86	87	88	88	70.5	24
23	88	87	86	87	87	87	85	87	83	81	82	80	77	76	76	80	85	87	90	91	91	89	90	85	91	84.9	24
24	83	83	84	86	88	87	85	83	81	79	79	82	81	79	77	75	77	77	79	85	85	84	83	81	88	81.8	24
25	83	86	88	89	91	92	92	91	87	83	80	74	72	71	70	71	71	73	75	73	73	76	73	71	92	79.4	24
26	76	76	72	73	73	73	74	74	73	71	69	66	64	62	62	61	62	67	72	78	79	82	82	85	85	71.9	24
27	87	87	87	86	85	85	86	85	83	79	71	66	62	61	58	54	56	56	61	66	68	74	80	83	87	73.6	24
28	82	79	78	75	73	74	78	77	76	77	75	74	73	75	75	84	86	85	84	86	90	88	87	86	90	79.9	24
29	86	87	87	87	88	88	88	88	87	84	81	81	83	85	88	90	89	91	92	93	93	92	92	93	93	87.9	24
30	92	92	93	92	92	92	92	93	93	93	92	88	85	82	80	80	81	81	80	80	80	79	80	79	93	86.3	24
31	77	75	75	75	73	71	75	74	74	74	76	74	72	72	73	74	73	75	76	77	78	78	81	81	81	75.3	24
HOURLY MAX	98	98	98	98	97	97	97	97	96	96	96	97	98	96	95	95	96	96	97	97	96	96	97	98			
HOURLY AVG	80.6	81.5	82.2	82.1	82.6	82.5	82.5	82.1	79.3	77.1	73.3	69.8	68.1	66.4	65.0	65.2	66.4	69.7	73.5	75.9	77.6	78.6	79.9	81.0			

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

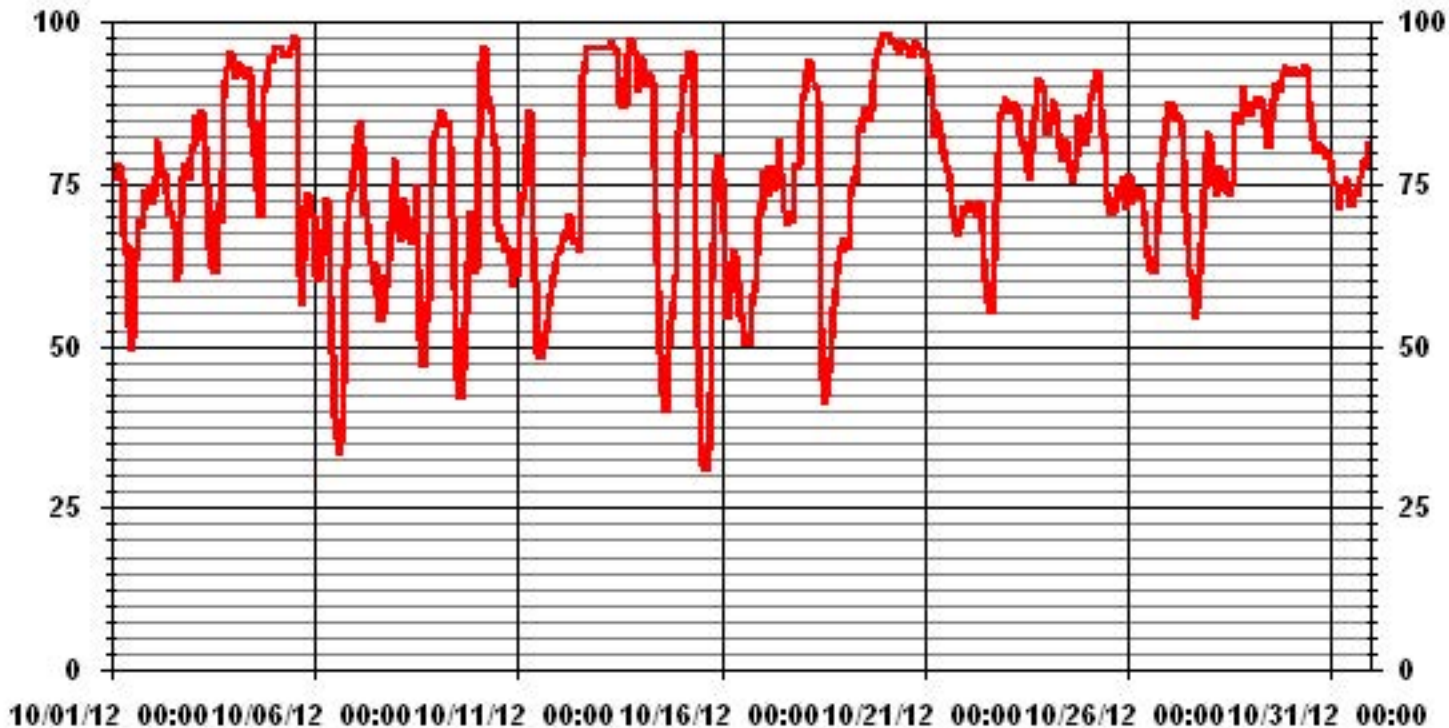
24 HOUR AVERAGES FOR OCTOBER 2012



MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	98	%	@ HOUR(S)	12	ON DAY(S)	5
MAXIMUM 24-HR AVERAGE:	96.3	%			ON DAY(S)	20
CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	744	HRS	
STANDARD DEVIATION:	14.25		AMD OPERATION UPTIME:	100.0	%	
			MONTHLY AVERAGE:	75.96	%	

01 Hour Averages



Vector Wind Speed

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

VECTOR WIND SPEED (WS) hourly averages (km/hr)

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	24-HOUR		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.	AVG.	RDGS.		
DAY																												
1	1	0.6	0.8	1	0.5	2.4	2.4	2.7	2.4	4.7	8.5	8.8	6.1	6.7	4.1	2.4	4.9	12	11.8	11.5	10.8	13.3	9.8	12.5	13.3	13.3	1.7	24
2	8.4	9.3	12.6	12.1	12.7	12.7	13.6	11.4	13.5	13.7	15.2	13.7	15.2	13.8	14.6	18.7	17.6	14.4	16.2	14.2	13.2	14.2	10.1	10.3	18.7	13.1	24	
3	10.6	7.6	4.4	5.2	4.4	6.1	7.7	7.6	7.7	6.9	8.3	6.5	4.7	5.5	4.3	4.9	2.8	3.5	4.1	2.4	0.2	0.2	0.6	1.4	10.6	3.8	24	
4	3.4	4	0.8	2.7	3.4	3.3	3.5	3.2	5.1	3.4	4.7	3.6	2.7	3.5	3.7	2.5	3	4.9	1.8	4	1.6	1.2	0.3	1.5	5.1	1.8	24	
5	1.7	2	3.1	2.6	2.1	1.7	2.6	3.3	1.6	3	2.7	3.4	3.1	1.7	4.4	2.9	3.3	2.3	1.8	2.3	3	2.7	1	1.5	4.4	2.5	24	
6	3.6	3.6	4.2	5.7	4.2	4.5	5.7	3.8	6.7	7.1	10.6	11.4	11.3	10.1	11.5	10.6	10.9	4.9	1.4	0.6	0.3	2.3	1.1	0.3	11.5	5.7	24	
7	0.2	0.4	0.4	0.2	2.9	4.3	1.9	3.4	3.6	5.6	7.4	6.8	9.6	13.2	14.8	15.9	19	19.4	15.1	16.7	13.9	16.3	17.3	12.3	19.4	9.2	24	
8	15.3	12.8	11.6	8.5	12.3	11.7	10.4	9	11.1	14.2	15.2	11.1	7.3	13.8	15.1	14.2	12.6	6.8	8.5	5.9	5.6	3.3	3.9	4.4	15.3	10.2	24	
9	3.5	3	3.2	3.2	3	4.1	4.1	0.1	1.5	3.3	2.8	5.4	6.8	8.1	5.7	5.2	3.2	1.3	0.4	0.4	2.7	0.8	3.8	2.8	8.1	3.3	24	
10	5.8	5.9	5.4	4.3	7.9	9	9.3	8.5	7.8	8.4	9.2	8.6	13.9	12.2	10.8	11.7	12	11.2	10.3	12.5	12.2	11.1	8.8	8.5	13.9	9.4	24	
11	7.3	4.1	4.9	6.1	4.7	2.7	4.1	2.3	1.8	2.4	4.9	7.2	7.2	6.5	8.7	8	7.9	8.7	8.2	7.4	8.5	8.8	10.4	8.9	10.4	6.3	24	
12	7.7	8	6.6	4.8	4.4	1.7	1.1	1.4	0.8	3.2	3.7	4.3	5.6	5.6	2.2	2.1	4	4.5	4.8	3.5	2.3	2.9	3.5	3.3	8.0	3.8	24	
13	1.8	1.7	1.4	2.8	0.9	1.4	1.4	1.9	3.9	3	3.5	3.4	2.7	3	1.8	1.9	1.4	1.5	1.3	0.5	1.8	4.8	6.2	3.7	6.2	2.4	24	
14	1.9	5.9	5.8	6.4	5.4	5.9	3.1	5	3.1	3.2	2.3	5.3	6.6	7.7	7.7	9.5	8.1	9.1	6.4	7.6	7.1	2.9	1.7	1	9.5	5.4	24	
15	0.4	0.9	2	4.2	1	0.6	1.9	4.8	6.9	8.7	10.9	12.8	15.2	14.8	12.8	13.5	8.4	3.8	1.6	1	1	1.1	1.2	1.5	15.2	5.5	24	
16	2.2	3.4	4.5	9.2	11.3	10	3.6	3.7	6.1	3.8	0.4	3.4	7.2	10.1	12.6	14.6	17.3	18.8	16.5	15.7	14.7	14.3	10	11.3	18.8	9.4	24	
17	13	12.3	12.6	12.4	9.6	11.9	12.5	14.4	15.1	16.1	13.4	15.7	17.7	15.5	18.4	15.9	16.6	13.5	12.8	12.2	10.5	11.3	6.3	2.4	18.4	13.0	24	
18	1.8	3.4	0.8	2.5	1.8	0.2	0.4	0.5	1	1.2	4.8	6.3	7.2	6.7	7.5	5.8	5.1	5.5	5.9	6.9	8.1	9.7	10.7	11.7	11.7	4.8	24	
19	11.3	9.4	10.6	8.8	9.4	10.4	10.1	9.9	11.1	12.4	12.1	10.8	10.6	11.5	10.5	8	6.3	9.1	5.8	5.1	3.2	5.4	5.2	1.4	12.4	8.7	24	
20	1.5	1.7	2	1.8	0.7	1.9	1.9	2.3	2.3	4.7	4.4	4.9	3.7	4.8	5.4	6.8	7.6	6.7	6	5.6	6.7	7.2	8.2	9.2	9.2	4.5	24	
21	10.6	10.9	11.8	13.3	13	14.5	15.5	12.6	14	15.9	17	17	17.3	18	16.4	15.5	14.2	15.9	16.1	16.5	13.3	14.9	14	14.2	18.0	14.7	24	
22	14.5	13.3	13.2	11.8	13	13.9	10.7	10.3	9.9	10	11.3	10.9	10	11	10.5	9.2	6.3	4.3	1.7	0.7	0.1	1	0.9	0.8	14.5	8.3	24	
23	0.7	0.8	0.6	0.9	1.2	3.6	5.5	3	5.8	7.2	9.1	8.7	7.6	9.3	12	12.4	11.8	11.6	10.7	11.1	10.5	12.8	12.9	13.9	13.9	7.7	24	
24	12	12	11.1	12.2	10.4	10.7	10.7	11.7	12.6	13.6	11.4	11.4	12.6	14.7	13.9	13.7	12.7	12.1	12	9.5	8.3	9.6	9.4	10.6	14.7	11.6	24	
25	8.5	9.1	8.7	8	6.8	6	5.2	7	8.4	11	11.8	12.7	13	11.5	10.3	9.9	9.5	11.7	10.6	8.1	8.4	7.9	8.1	7.4	13.0	9.2	24	
26	5.5	6	6.6	7.7	5.7	5.7	4.6	6.2	6	7.1	6.6	6.8	7.1	7.8	10.1	7.1	5.3	5.8	4.9	3.4	3.9	3.4	1.4	3.5	10.1	5.8	24	
27	2.6	2.9	1.6	4.8	2.9	0.8	1.9	1.7	3.5	3	6.1	5.3	5.7	7	6.9	5.8	5.2	3.2	2.2	2	3.2	4.2	4.7	3.3	7.0	3.8	24	
28	4.5	5.1	5.2	7.1	9.2	9.4	9.7	9.1	9.6	10.8	10.8	11	12.6	11.9	11.2	9.8	7.3	7.7	7.8	8.7	7.4	6.2	4	3.8	12.6	8.3	24	
29	2.3	1.1	2.6	1.9	1.3	1.3	2.7	3.4	2.9	4.1	5.3	8.2	7.2	7.3	6.9	5.5	5.4	5.4	6.9	5.3	1.7	0.6	0.9	1.4	8.2	3.8	24	
30	1.3	1.3	1.2	0.7	0.6	2.1	2.8	4.6	4.1	4.6	5.3	7.1	6.8	8.2	10.3	10.7	9	9	9.4	9.4	7.4	9.1	11.3	10.3	11.3	6.1	24	
31	9.2	5.4	4.8	5.3	5.6	6.6	6.4	6.5	2	5.5	6.5	7.6	5.5	6.6	6	6.4	6.5	8.6	8.8	8.9	7.4	8.3	7.6	8.8	9.2	6.7	24	
HOURLY MAX	15.3	13.3	13.2	13.3	13.0	14.5	15.5	14.4	15.1	16.1	17.0	17.0	17.7	18.0	18.4	18.7	19.0	19.4	16.5	16.7	14.7	16.3	17.3	14.2				
HOURLY AVG	5.6	5.4	5.3	5.7	5.6	5.8	5.7	5.7	6.2	7.2	7.9	8.4	8.7	9.3	9.4	9.1	8.6	8.3	7.5	7.1	6.4	6.8	6.3	6.1				

STATUS FLAG CODES

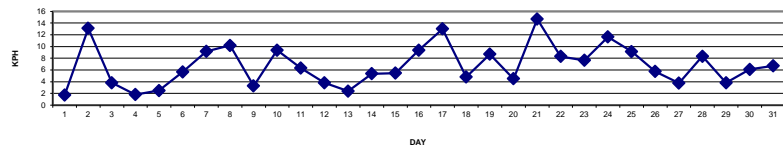
S	- OUT OF SERVICE	IZS	- IZS - DAILY ZERO/SPAN CHECK
N	- INVALID DATA	M	- MISSING DATA
D	- INSTRUMENT DRIFT	P	- POWER FAILURE
C	- CALIBRATION	NA	- NOT APPLICABLE

LAST CALIBRATION: December 16, 2010

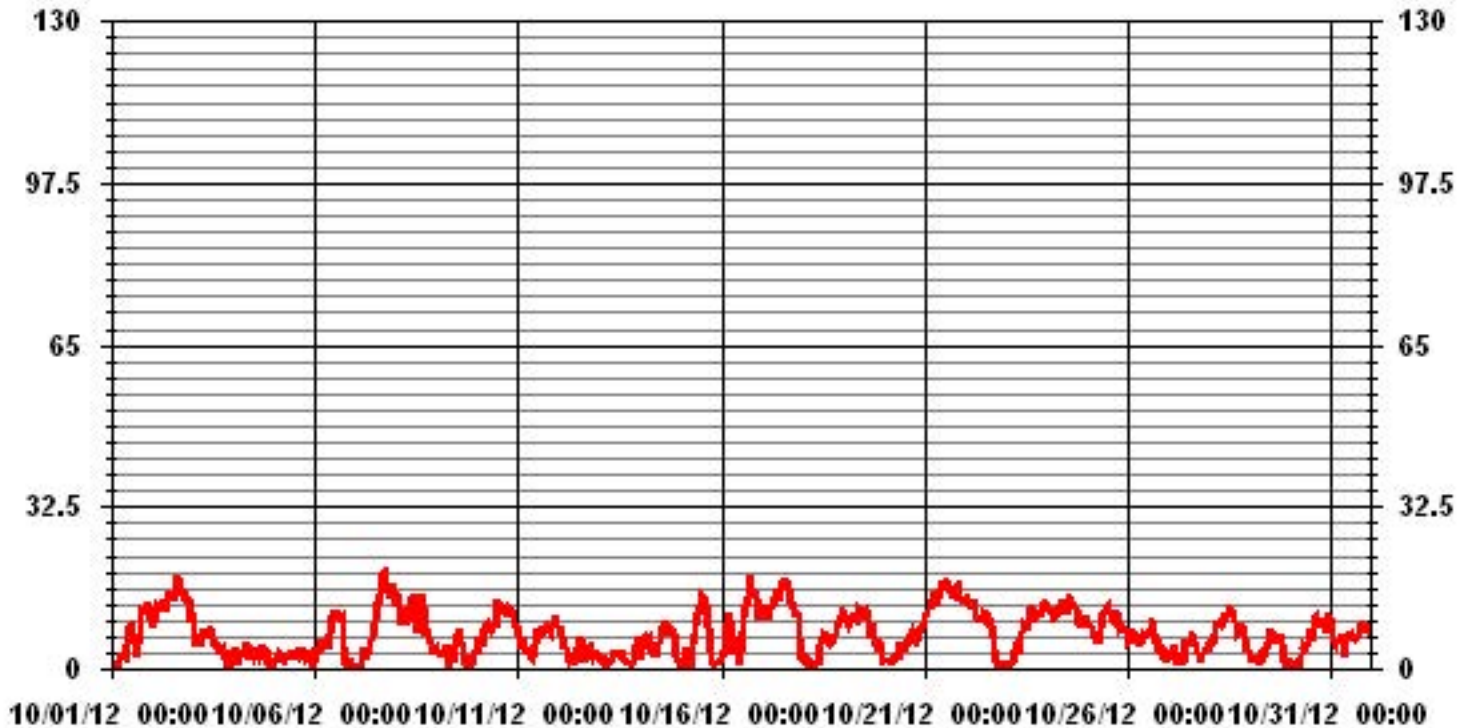
MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:	19.4	KPH	@ HOUR(S)	17	ON DAY(S)	7
MAXIMUM 24-HR AVERAGE:	14.7	KPH			ON DAY(S)	24
CALMS (≤ 0 KPH)	1.34	%	OPERATIONAL TIME:	744	HRS	
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	4.52		MONTHLY AVERAGE:	7.00	KPH	

24 HOUR AVERAGES FOR OCTOBER 2012



01 Hour Averages



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST																								DAILY	
hour start	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	MAX.
hour end	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	
DAY																									
1	3.6	2.7	2.3	1.9	1.9	4.2	5.6	5.1	4.9	7.9	19.9	15.2	13.2	12.2	11.9	6.9	12.7	19.3	19.3	16.1	17.7	22.7	19.1	25.1	25.1
2	14.5	14.4	18.1	17.3	21.7	17.8	23.3	19.4	21.2	19.8	23.3	22.5	21.2	20.6	23.2	28.7	27.3	22.3	21.9	24.8	21.3	23.5	17.7	14.3	28.7
3	15.5	12.2	6.7	8.5	9.1	10.9	10.7	12.2	12.8	10.6	13.2	12.5	12.3	13.2	10.3	12.5	6.7	8.6	6.8	6.3	3.5	2.3	3.1	3.7	15.5
4	7.1	6.8	2.9	5.3	7	6.2	6.3	6	9.4	6	9	8	14.8	11.5	9.8	6.6	5.8	9.8	5.4	6.3	4.9	3.9	3.7	5.1	14.8
5	3.6	5	6.2	5.4	3.7	3.7	5.5	5.6	5	7	8.5	8	6.5	6.7	8.1	8.9	10.6	4.5	3.4	3.5	4.2	4.3	3.4	3.5	10.6
6	5.8	5.6	7.9	8.6	9	6.6	7.4	9.1	9.9	15.8	17.1	19.6	22.6	16.9	17.3	17.1	15.7	8.6	4	3.2	3.4	5.8	4.2	2.4	22.6
7	2.1	2.2	2.5	2.6	7.6	6.9	5.6	7.3	13.2	9.8	14.2	11	15.6	19.5	22.6	24.9	27	28.2	22.3	25.7	22.7	24	25.1	20	28.2
8	27.6	20.3	17.8	12.5	18.1	16.8	15.9	13.6	16.7	20.3	21	19.9	13.2	22.5	25.5	26.1	20.7	11.1	13.3	9	9	4.4	5	5.9	27.6
9	6.5	5.2	7.5	5	4.5	6.2	6.4	3.1	5.1	6.1	9.4	8.7	13.7	16.7	13.5	11.7	5.9	2.7	2.7	2.4	4.4	5.8	7.2	5.7	16.7
10	9.1	9.6	8.3	7.9	11.9	13.1	14.8	12.5	12.7	15.8	15.5	17.6	22.5	21.8	19.3	19.4	17.5	17	17	18	16.5	15.7	14	15.5	22.5
11	12.9	7.9	7.2	8.8	8.7	4.5	6.1	4.8	3.7	8	10.8	15	17.1	14.3	14.6	13	13.7	12.5	11	10.4	11.7	11.9	13.6	12.3	17.1
12	11.1	10.1	10.2	6.8	6.6	4.3	2.5	3.6	2.7	6.8	6.6	9.1	9.9	10	5.9	3.5	6.7	6.7	7.7	7.1	4.6	4.5	6.1	5.2	11.1
13	3.2	3.7	3.7	5	5.7	4.9	6.3	6.6	8.9	6.6	7	11.3	5.6	6	5	4.6	3.1	3.6	2.8	2.6	5.2	6.5	12.9	9.5	12.9
14	3.9	7.4	9.6	8.6	8.4	8.8	5.4	6.9	6.6	6	6.1	10	12.6	13.7	14.3	12.8	11.6	12.8	9	10.6	12.7	11.2	2.9	4.5	14.3
15	4.8	5.9	5.6	7.1	4.4	3.5	4.4	6.7	10.6	17.1	16.2	22.1	21.8	22.7	23.5	20	14.5	6	2.5	3.6	4.4	3	2.3	3.9	23.5
16	4	5.3	9	15.4	18.1	18.2	9.6	6.8	10.4	9	5.4	8.4	12.6	17.3	20.9	25.8	26.5	33.5	26	25.6	20.7	23.4	18.5	19.3	33.5
17	23.6	20.4	21	20	20.7	20	19.2	21	24.7	22.4	21.6	21.9	25.2	24.1	25.5	27.1	24.6	24	21.2	17.2	16.5	19	12.7	4.2	27.1
18	4.6	7	3.4	6.1	4.6	2	2.4	3.3	2.9	3.8	11.1	11.5	16	13.8	12.9	9.5	8.2	7.4	7.9	8.8	11	12.7	14.6	17.2	17.2
19	14.8	12.9	16.7	13.6	12.7	16.4	16.1	14.8	17.8	19.2	18.7	16.3	16.7	19.5	17.6	16.7	11.3	17.7	14.2	9	6.2	8.6	9.7	5.1	19.5
20	4.9	4.4	6.5	5.1	3.2	4.5	4.5	5	5.1	8.2	6.9	7.7	6.4	6.9	10.2	9.5	10.9	9.6	10.2	8.5	10.5	11.4	11.3	14.3	14.3
21	14.3	15.8	16.6	20.2	17.4	21.1	22.4	20.4	21	23	26.5	23.5	24.9	26.5	24.6	24.3	20.7	24.5	25.3	23.7	22.1	26	20	23.7	26.5
22	25.5	20.3	21.9	19	18.2	19.9	18.8	16.3	14.2	18.6	20.1	16.3	17.6	17.6	15.4	17.1	10	6.8	4.9	3	3.5	2.9	2.6	5.2	25.5
23	3.7	2.9	2.7	3.4	3.6	8.1	8.1	10.7	8.4	10.6	14.8	14	12	15.6	16.9	20.3	16.9	15.7	15.4	15.4	19.6	20.6	20.3	23.4	23.4
24	17.9	17.6	19.4	17.4	15.3	16.2	18.6	17.9	18.1	20.9	20.6	15.7	17.4	20	23.3	19.6	18.5	18.8	19.4	13.8	12.5	14.4	13.6	16.1	23.3
25	12.2	14.1	12.2	10.6	9.3	9	7.9	9.9	11.5	16	18.9	17.6	18.6	18.2	16.5	16.8	14.9	16.6	17.8	13.7	11.9	12	13.9	14.6	18.9
26	8.9	9.4	11.1	11.7	10.1	10.2	7.4	9.5	8.8	11.1	11.8	11.4	12.3	12.8	14.8	10.7	8.6	8.7	6.8	5.4	8	5.4	4.8	5.1	14.8
27	5.2	6.3	4.8	8.9	7.4	4.2	5.8	6	9.2	7.4	10.5	11.1	10.5	11.5	12.1	9.6	10	7.2	4.9	4.7	5.4	6.6	7.2	5.5	12.1
28	6.6	9.4	9.8	11.9	13.9	15	14.7	13.6	13.2	16.4	17.7	18.5	18.1	20.2	16.7	18.1	11.4	12.5	14.1	13.8	13.5	10.1	8.2	8.6	20.2
29	5.4	5.2	6.4	5.5	4.8	4	5.2	5.6	7.1	8.4	11.4	13.3	13.2	13.4	11.6	12.5	10.7	9.1	10.8	8.4	5.1	4	2.4	2.9	13.4
30	3	3.4	4.3	3.5	3.6	4	4.7	7.4	6	7.2	11.4	11.1	11.7	13.1	15.7	16.4	13.6	13.9	14.3	14.1	12	16.9	16.2	15.9	16.9
31	14.2	9	8.4	8.9	8.8	13	11.4	9.9	6.7	9.2	13.3	11.6	10.7	13.4	9.5	11.5	11.6	15	15.8	12.5	13.3	15.1	14	14.1	15.8
PEAK	27.6	20.4	21.9	20.2	21.7	21.1	23.3	21.0	24.7	23.0	26.5	23.5	25.2	26.5	25.5	28.7	27.3	33.5	26.0	25.7	22.7	26.0	25.1	25.1	

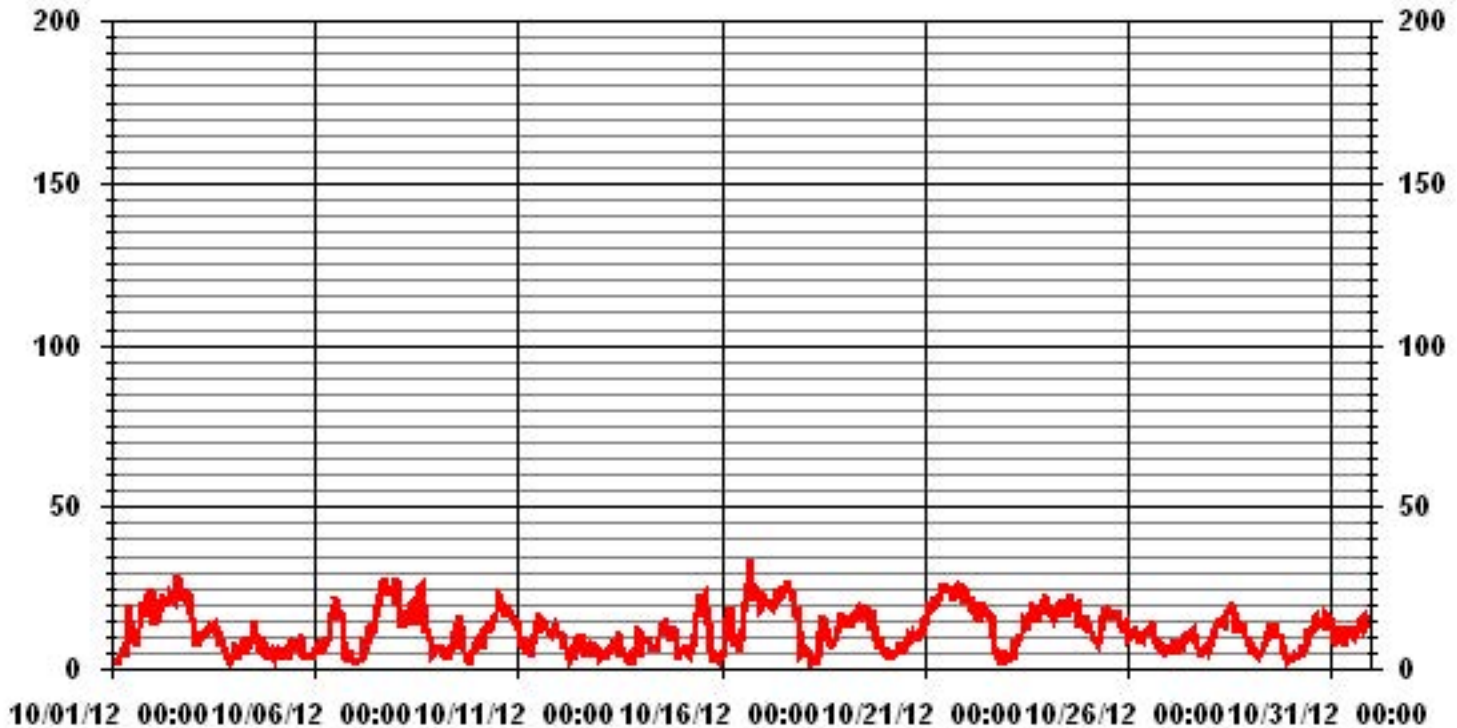
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS READING	33.5	KPH	@ HOUR(S)	17
			ON DAY(S)	16

01 Hour Averages



— LICA WSMAX KPH

LICA
WSP / WD Joint Frequency Distribution (Percent)

October 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	.53	.53	.53	1.47	2.82	2.95	9.40	3.09	2.41	3.89	5.37	4.70	2.95	2.15	1.74	1.34	45.96	
< 12.0	.94	.13	.40	.00	3.22	4.03	4.97	.13	.13	.26	1.34	1.20	2.68	3.36	9.67	3.22	35.75	
< 20.0	.94	.00	.00	.00	.26	.13	.00	.00	.00	.00	.13	1.07	3.09	2.82	4.97	3.49	16.93	
< 29.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	2.41	.67	.94	1.47	6.31	7.12	14.38	3.22	2.55	4.16	6.85	6.98	8.73	8.33	16.39	8.06		

Calm : 1.34 %

Total # Operational Hours : 744

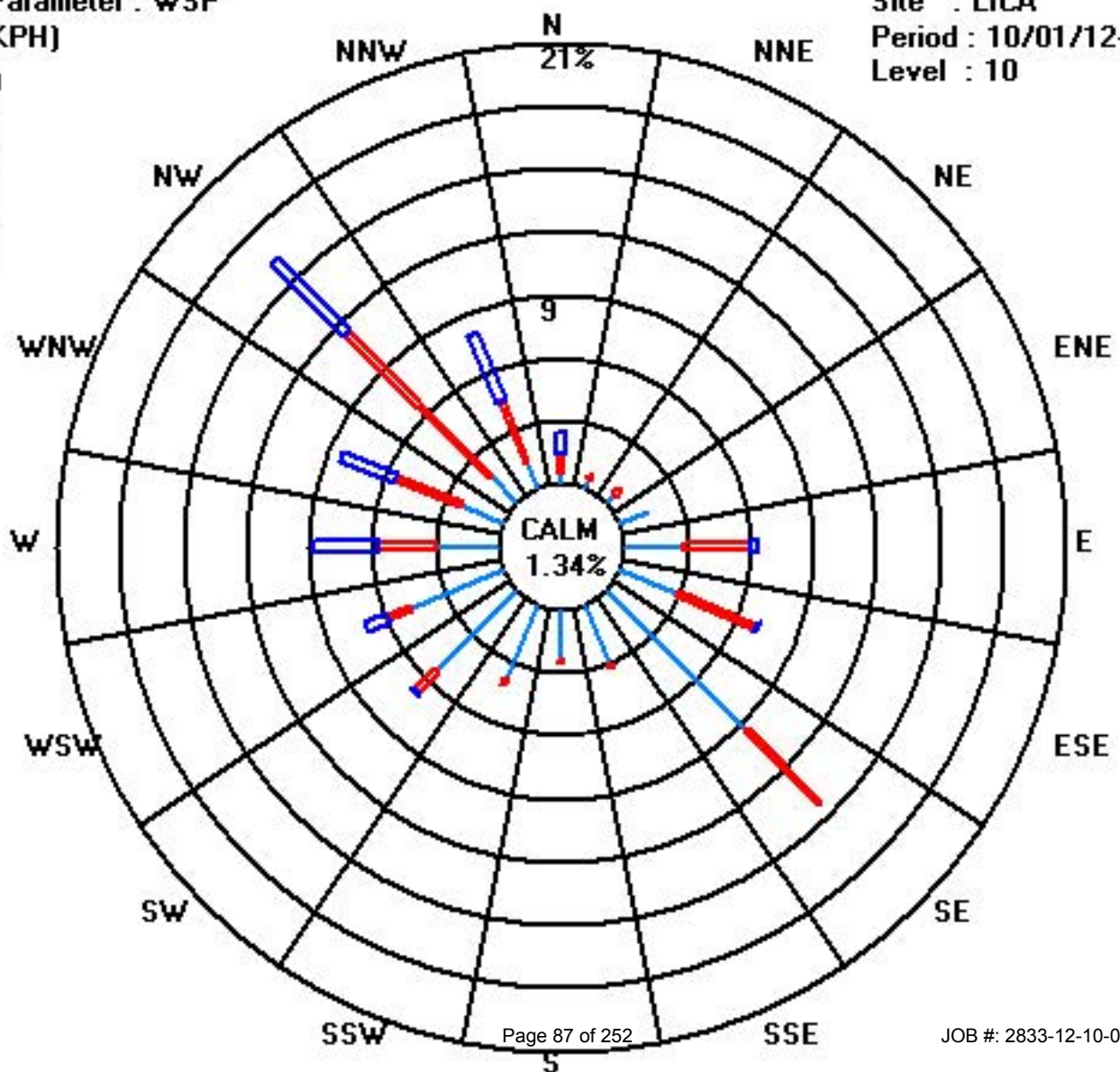
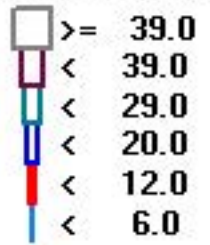
Distribution By Samples

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 6.0	4	4	4	11	21	22	70	23	18	29	40	35	22	16	13	10	342	
< 12.0	7	1	3		24	30	37	1	1	2	10	9	20	25	72	24	266	
< 20.0	7				2	1					1	8	23	21	37	26	126	
< 29.0																		
< 39.0																		
>= 39.0																		
Totals	18	5	7	11	47	53	107	24	19	31	51	52	65	62	122	60		

Calm : 1.34 %

Total # Operational Hours : 744

Class Limits (KPH)



Vector Wind Direction

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

VECTOR WIND DIRECTION (WD) hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR	24-HOUR AVG		
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	AVG.	QUADRANT	RDGS.	
DAY																												
1	295	212	221	128	81	128	124	119	97	77	113	112	103	113	143	150	200	220	238	240	260	294	303	303	222	SW	24	
2	287	297	318	342	350	341	345	345	324	324	335	339	336	337	335	340	346	343	334	344	347	342	339	333	336	NNW	24	
3	334	316	308	343	312	308	334	325	343	353	337	3	30	21	341	295	257	357	136	160	136	162	99	80	337	NNW	24	
4	96	119	200	135	133	144	130	136	132	142	141	142	266	325	346	77	81	132	199	243	128	127	293	176	136	SE	24	
5	136	140	140	147	256	166	144	132	176	156	197	153	215	270	265	213	199	154	138	139	139	145	158	183	170	SSE	24	
6	209	210	218	231	233	242	249	261	298	305	312	314	319	299	306	321	310	295	196	189	146	236	220	145	289	WNW	24	
7	224	231	126	223	113	140	147	211	226	256	266	272	294	305	310	317	320	331	321	324	323	314	325	322	312	NW	24	
8	323	310	313	299	297	302	307	304	308	308	307	323	313	312	313	318	326	313	310	307	293	261	253	252	309	NW	24	
9	234	229	230	240	238	227	236	55	139	226	220	301	279	304	255	272	255	211	168	134	242	293	124	126	250	WSW	24	
10	91	67	63	77	6	345	348	333	318	317	322	327	335	331	345	336	320	316	313	320	319	323	319	315	334	NNW	24	
11	302	303	293	304	308	261	254	248	253	166	138	138	141	153	140	140	138	135	130	132	128	131	134	131	148	SE	24	
12	130	130	130	130	138	142	153	208	104	115	86	86	90	128	110	62	70	79	95	139	94	115	137	141	116	ESE	24	
13	150	138	176	185	169	217	151	203	217	195	192	194	194	213	200	174	215	177	188	95	244	252	255	230	207	SSW	24	
14	191	226	236	235	235	233	229	241	246	227	211	128	137	138	133	133	128	128	122	126	124	121	96	317	162	SSE	24	
15	223	197	221	249	247	187	255	242	245	250	274	272	274	274	271	276	270	246	189	232	164	110	101	78	263	W	24	
16	65	104	73	96	110	122	130	59	84	111	40	287	278	297	303	305	303	299	296	299	303	302	288	290	306	NW	24	
17	294	301	294	294	282	285	288	294	300	304	300	305	307	302	303	307	314	308	305	301	307	309	300	268	301	WNW	24	
18	255	217	184	243	249	172	82	150	180	215	214	207	204	182	146	143	137	130	130	125	127	126	128	128	153	SSE	24	
19	127	126	126	116	94	93	97	99	104	93	90	92	92	92	93	98	99	95	100	123	127	131	136	135	104	ESE	24	
20	163	184	230	296	276	271	281	244	256	236	269	295	275	267	280	273	264	265	277	268	261	264	269	268	266	266	W	24
21	262	261	264	269	269	266	266	261	262	259	257	256	253	253	255	255	259	255	264	263	268	269	269	268	261	261	W	24
22	269	268	265	259	262	254	255	247	229	223	238	245	234	228	233	232	221	210	250	38	27	172	195	208	246	WSW	24	
23	240	224	353	192	264	334	346	14	56	36	34	43	29	10	352	349	345	344	349	346	5	4	353	357	2	N	24	
24	350	345	345	344	340	342	341	338	334	333	331	323	328	325	328	332	329	322	324	319	314	314	318	320	331	NNW	24	
25	314	311	305	303	294	297	289	306	310	320	322	319	324	325	324	316	320	322	324	322	310	306	322	326	316	NW	24	
26	302	300	338	0	350	327	326	322	305	302	301	315	281	285	317	317	305	310	310	316	341	258	260	131	314	NW	24	
27	145	140	151	135	154	208	121	133	138	152	138	146	225	226	223	219	204	192	158	146	144	126	125	120	167	SSE	24	
28	113	114	115	112	118	116	107	110	106	110	113	110	105	99	98	102	105	99	118	124	125	123	127	133	111	ESE	24	
29	144	241	130	154	9	39	135	138	107	95	89	90	87	90	91	97	103	116	126	133	147	224	266	303	107	ESE	24	
30	336	177	277	143	226	236	250	260	271	296	291	294	288	295	315	324	317	314	325	314	308	308	308	306	303	303	WNW	24
31	307	319	321	331	342	331	322	317	27	121	100	114	116	100	99	108	113	124	112	97	112	113	113	107	88	E	24	
HOURLY AVG	350	345	353	344	350	345	348	345	343	353	337	339	336	337	352	349	346	357	349	346	347	342	353	357				

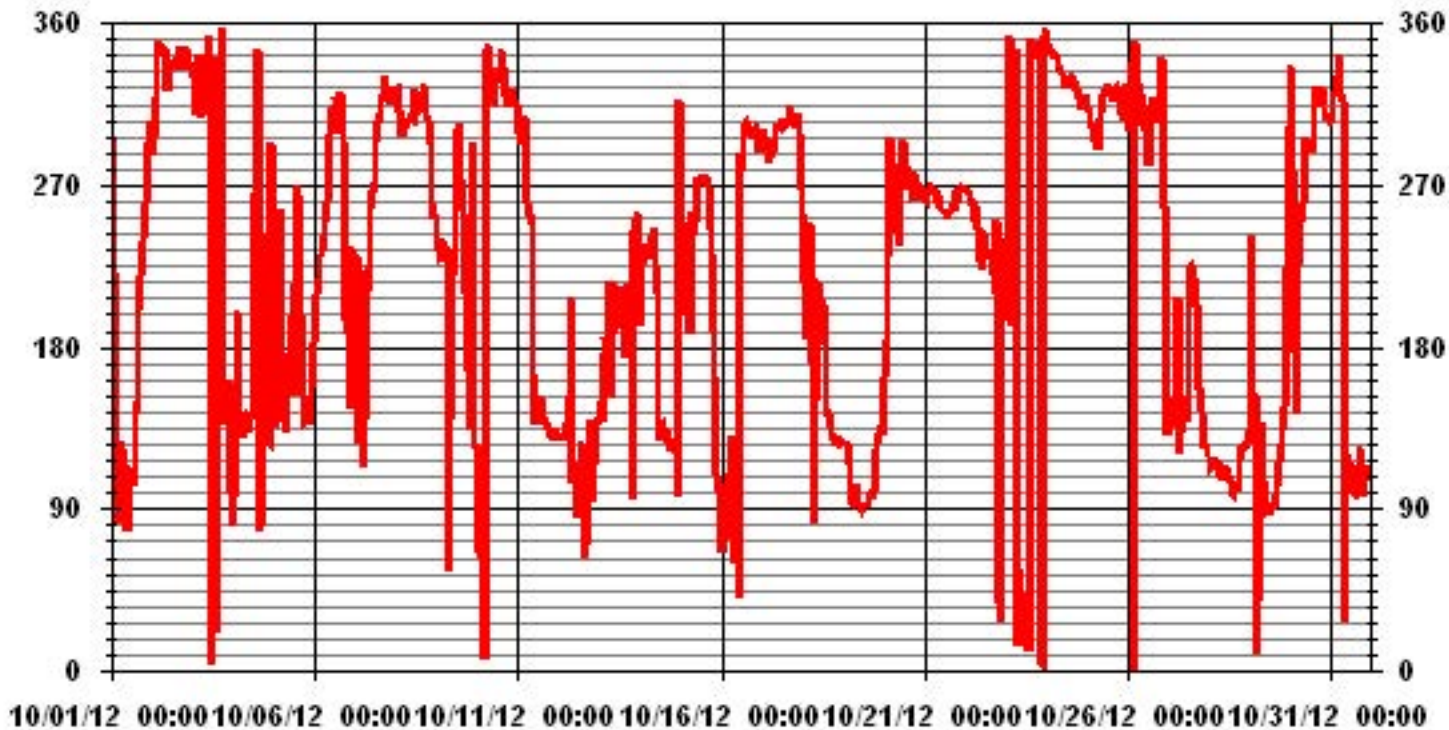
STATUS FLAG CODES

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:	744 HRS
STANDARD DEVIATION:	90.59	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	302 DEG

01 Hour Averages



Standard Deviation Wind Direction

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

OCTOBER 2012

STANDARD DEVIATION WIND DIRECTION (STDWDIR) hourly averages in degrees

MST

HOUR START	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
HOUR END	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00
DAY																								
1	37	59	39	27	32	13	23	19	24	25	25	23	23	24	46	55	37	22	22	20	19	16	15	18
2	17	18	14	16	17	18	22	21	16	16	17	18	16	18	18	17	18	17	15	16	18	23	17	17
3	14	15	17	16	18	14	15	14	18	28	22	34	35	38	31	24	31	20	24	29	30	39	50	36
4	20	20	36	24	17	25	24	22	18	28	24	33	49	41	37	43	40	26	42	19	32	41	55	49
5	36	40	30	37	38	28	31	24	44	36	46	44	43	48	32	50	38	27	28	21	17	28	59	50
6	30	22	20	17	17	14	13	17	14	22	19	21	25	22	20	20	15	15	22	61	65	44	56	56
7	44	47	66	56	19	22	55	36	30	31	25	23	16	18	17	16	16	16	16	16	15	14	16	15
8	16	16	15	14	16	15	15	15	15	15	15	25	24	16	15	15	16	14	13	12	12	13	9	11
9	21	39	25	16	12	16	14	61	32	23	37	29	32	23	36	31	19	39	45	57	16	36	25	24
10	20	18	18	24	20	17	16	14	16	16	15	17	17	18	19	18	15	15	15	16	15	15	15	15
11	14	13	14	15	12	13	9	13	39	52	41	38	32	39	27	24	21	14	13	13	14	14	14	14
12	13	13	13	12	16	38	43	37	62	30	30	33	28	18	21	20	16	18	20	23	22	16	18	17
13	31	38	43	35	45	55	52	31	24	38	37	36	36	34	42	36	33	45	50	41	41	14	27	50
14	23	16	16	16	12	17	29	12	22	25	49	28	28	21	16	14	13	13	16	14	16	44	30	46
15	58	53	47	20	44	51	27	13	16	20	22	21	20	21	22	20	19	16	18	51	51	40	37	38
16	22	14	18	21	21	22	56	37	18	29	54	47	22	20	16	16	16	17	17	17	16	14	19	18
17	17	16	17	20	22	19	19	18	17	16	16	15	15	17	15	15	15	14	15	15	14	13	15	24
18	24	19	36	15	59	50	57	54	32	48	28	34	39	39	31	24	16	12	12	11	12	12	13	13
19	14	15	16	20	18	21	23	24	24	20	21	21	20	21	21	24	23	20	31	19	29	19	19	52
20	48	47	34	46	52	24	28	28	18	17	17	15	17	16	19	18	18	18	18	18	17	19	20	19
21	17	17	18	19	19	18	19	19	19	18	19	18	19	18	19	18	19	17	18	19	20	19	19	19
22	21	20	20	19	19	18	19	20	19	20	22	24	23	22	22	21	20	19	37	41	63	42	43	58
23	49	48	40	34	43	43	20	29	18	21	20	20	21	20	19	18	16	17	17	17	19	19	17	23
24	20	18	18	18	16	17	17	15	16	17	17	16	15	15	15	15	15	15	14	14	14	13	14	14
25	13	13	13	12	14	13	14	14	14	14	15	16	16	17	16	15	16	14	14	15	15	13	16	17
26	15	15	16	17	17	15	13	13	13	16	25	23	22	19	15	18	15	11	11	10	27	15	51	13
27	29	41	39	23	29	67	39	49	40	47	25	27	34	25	22	24	32	38	35	38	22	14	12	18
28	21	20	22	21	20	22	23	22	23	22	22	23	23	22	22	22	23	22	22	19	20	17	21	42
29	41	51	44	51	46	32	28	17	24	26	19	21	21	23	21	24	23	21	17	13	33	28	43	22
30	48	22	30	55	63	26	20	18	19	17	18	17	20	18	15	16	14	14	14	14	16	16	13	13
31	13	18	14	16	20	22	15	15	38	22	24	24	26	26	25	22	22	19	21	22	22	21	23	23

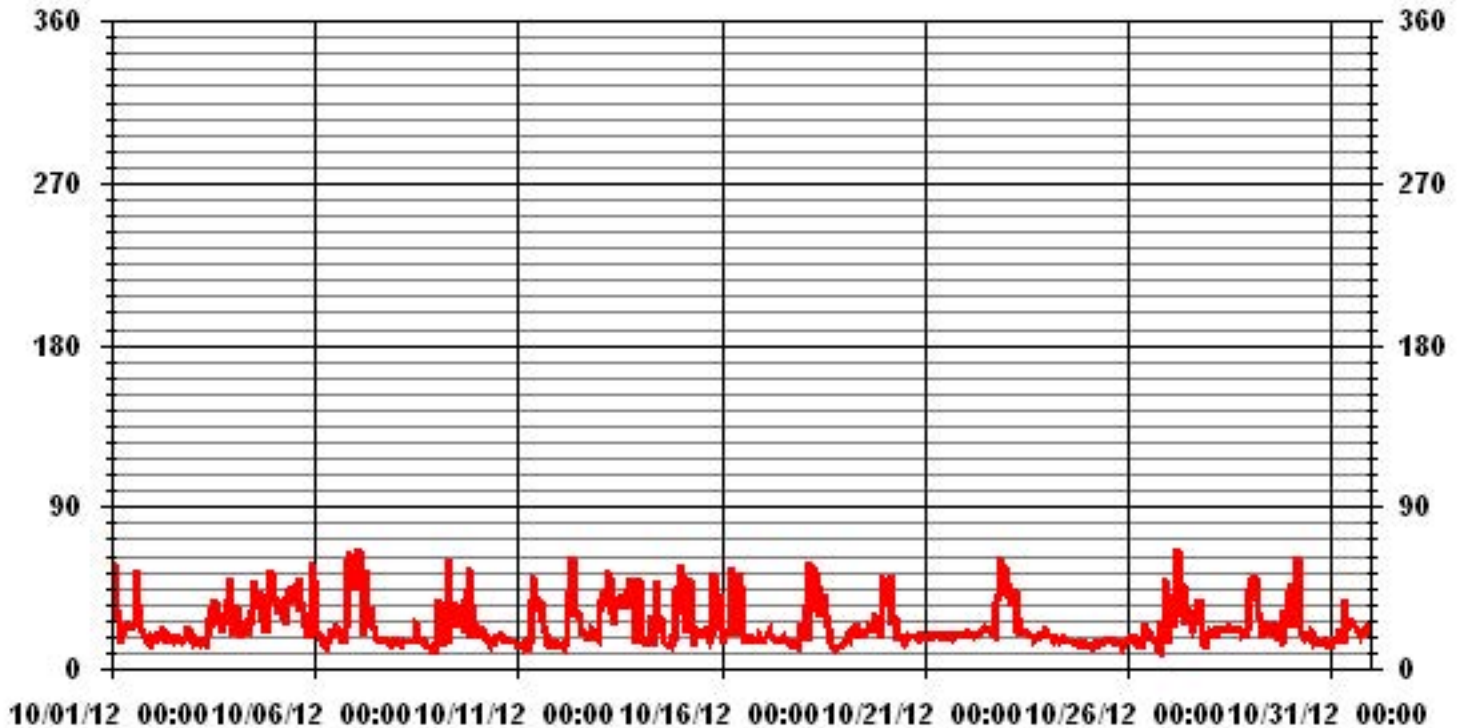
STATUS FLAG CODES

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: 744 HRS

01 Hour Averages



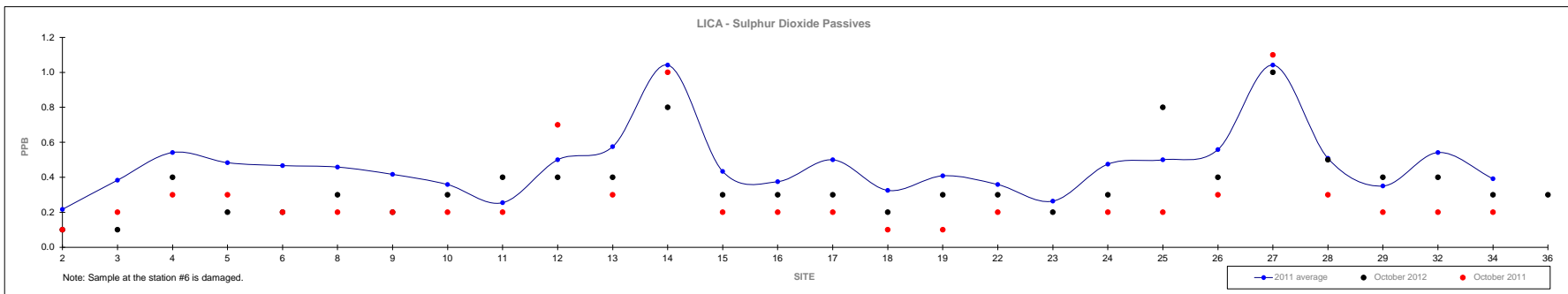
— LICA STDWDIR DEG

Non-Continuous Monitoring

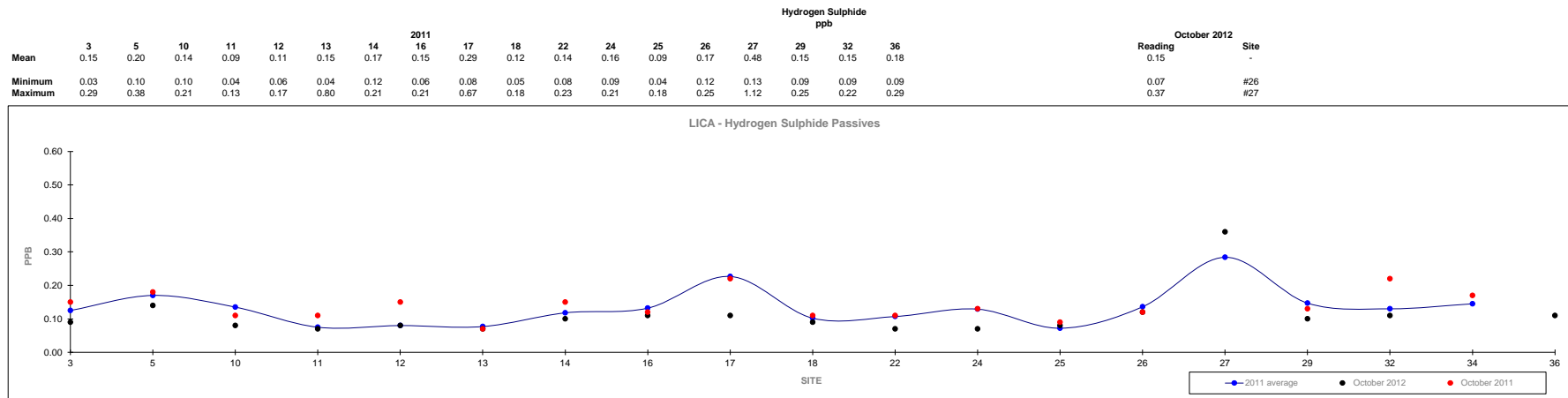
Passive Summary Results for October 2012

Lakeland Industry & Community Association

	Sulphur Dioxide ppb																												October 2012	
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	25	26	27	28	29	32	36	Reading	Site	
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	0.4	0.32	-		
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	<0.1	#2, #11	
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	1.3	#27	

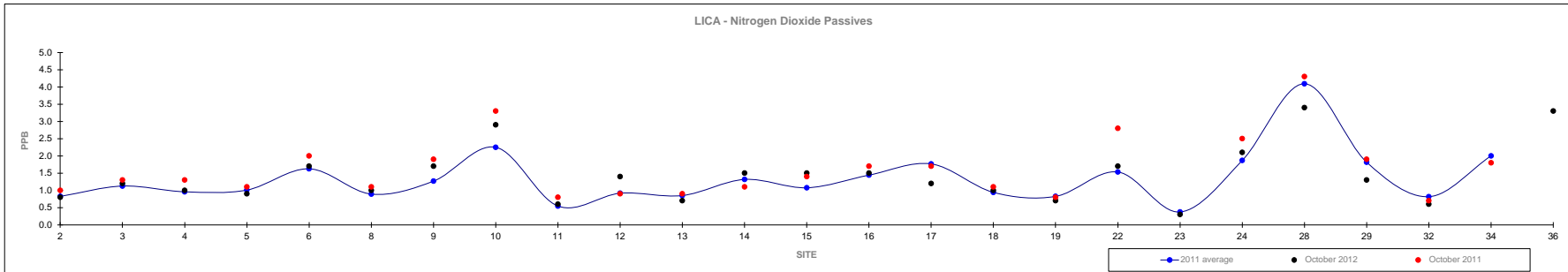


Passive Summary Results for October 2012
Lakeland Industry & Community Association



Passive Summary Results for October 2012 Lakeland Industry & Community Association

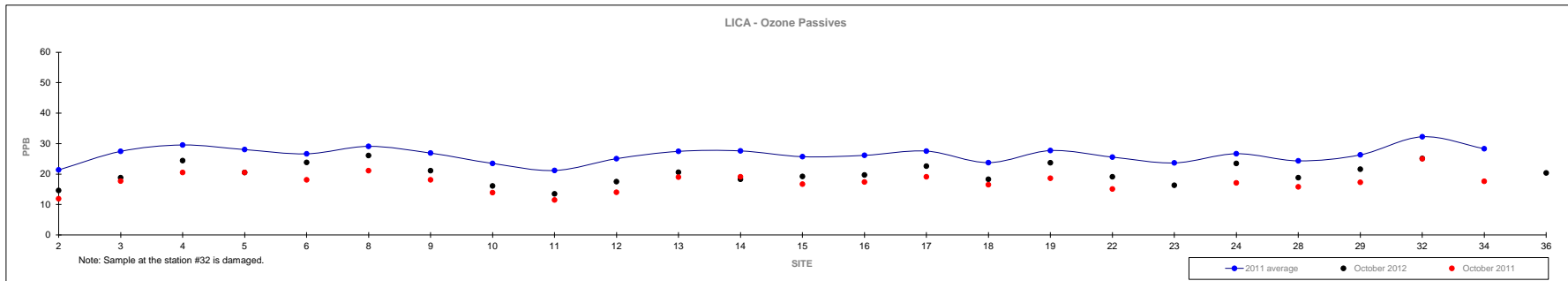
	Nitrogen Dioxide ppb																																October 2012	
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	28	29	32	36	Reading	Site								
Mean	0.8	1.1	1.0	1.0	1.6	0.9	1.3	2.3	0.5	0.9	0.9	1.3	1.1	1.4	1.8	0.9	0.8	1.5	0.4	1.9	4.1	1.8	0.8	2.0	1.0	-								
Minimum	0.1	0.4	0.1	0.2	0.6	0.2	0.4	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	0.2	#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	2.5	#36								



Passive Summary Results for October 2012

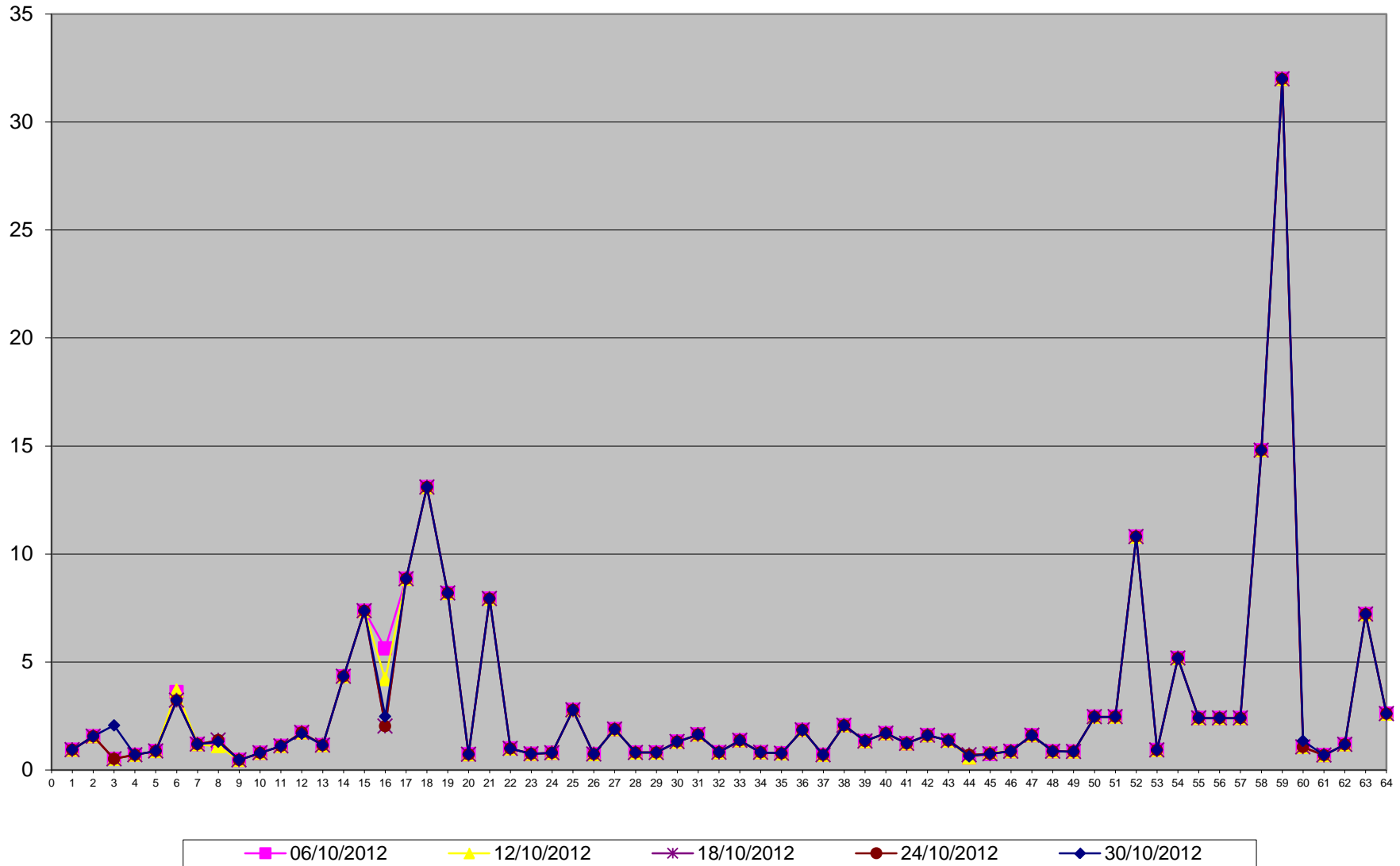
Lakeland Industry & Community Association

	Ozone ppb																												October 2012	
	2	3	4	5	6	8	9	10	11	12	2011 13	14	15	16	17	18	19	22	23	24	28	29	32	36	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	17.4	-				
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	11.8	#23				
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	22.3	#19				



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)

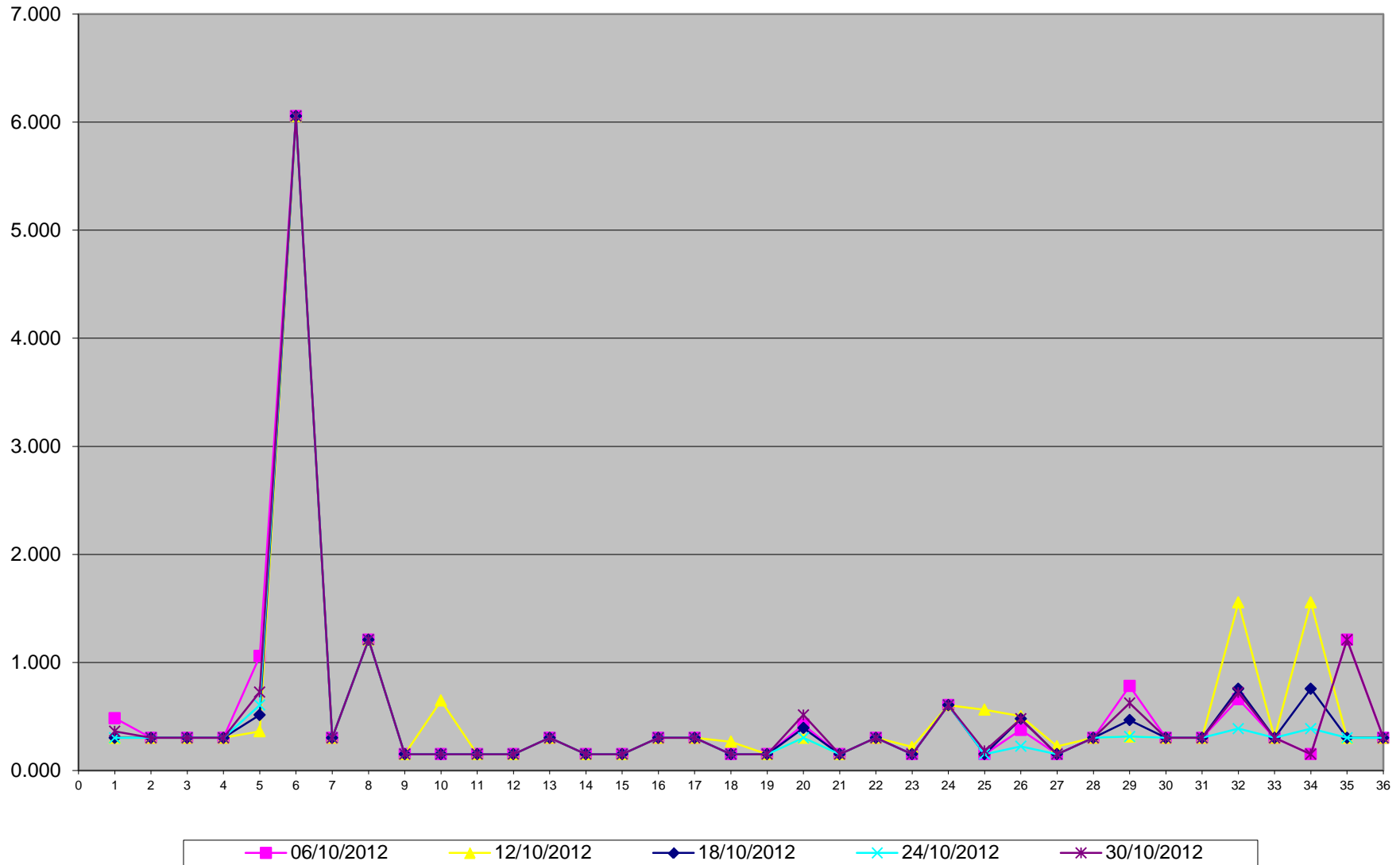
Polycyclic Aromatic Hydrocarbons

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

PAHs	06/10/2012	12/10/2012	18/10/2012	24/10/2012	30/10/2012
Sample Volume (unit: m3)	330.33	330.33	330.34	330.33	330.33
1 1-Methylnaphthalene	0.484	0.303	0.303	0.303	0.363
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-Methylantracene	0.303	0.303	0.303	0.303	0.303
5 2-Methylnaphthalene	1.060	0.363	0.515	0.605	0.727
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-Dimethylantracene	1.211	1.211	1.211	1.211	1.211
9 Acenaphthene	0.151	0.151	0.151	0.151	0.151
10 Acenaphthylene	0.151	0.648	0.151	0.151	0.151
11 Anthracene	0.151	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	0.266	0.151	0.151	0.151
19 Benzo(k)fluoranthene	0.151	0.151	0.151	0.151	0.151
20 Biphenyl	0.424	0.303	0.394	0.303	0.515
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	0.218	0.151	0.151	0.151
24 Dibenzo(a,e)pyrene	0.605	0.605	0.605	0.605	0.605
25 Fluoranthene	0.151	0.563	0.151	0.151	0.182
26 Fluorene	0.375	0.503	0.478	0.224	0.478
27 Indeno(1,2,3-cd)pyrene	0.151	0.224	0.151	0.151	0.151
28 m-Terphenyl	0.303	0.303	0.303	0.303	0.303
29 Naphthalene	0.781	0.315	0.466	0.315	0.624
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	0.660	1.556	0.757	0.387	0.720
33 p-Terphenyl	0.303	0.303	0.303	0.303	0.303
34 Pyrene	0.151	1.556	0.757	0.387	0.151
35 Quinoline	1.211	0.303	0.303	0.303	1.211
36 Tetralin	0.303	0.303	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-Methylantracene
5	2-Methylnaphthalene
6	3-Methylcholanthrene
7	7,12-Dimethylbenzo(a)anthracene
8	9,10-Dimethylantracene
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	October 24, 2012	Previous Calibration	September 11, 2012
Company	Lakeland Community and Industry Association		
Plant / Location	LICA 1 - Cold Lake South		
Start Time (MST)	07:40	End Time (MST)	10:56
Reason:	Monthly Calibration		
Barometric Pressure	28.13 inHg	Station Temperature	23 Deg C
Cal Gas	49.6 ppm	Gas Cyl. #	LL42502
DAS Output Voltage	0 - 10 Volts	Cal Gas Expiry date	December 29, 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 - 500 ppb				
Sample Flow / Box Temp	450 ccm	31.4 Deg C	450 ccm	31.5 Deg C	
HVPS / Lamp Setting	-632	736	-632	734	
PMT / RxCell Temp	OK Deg C	45 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	6	1.031	6	1.031	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4997	0	0	0	N/A
	No Zero Adj			
4956	40.3	400	402	0.9952
	No Span Adj.			
4976	22.7	225	229	0.9836
4982	12.6	125	128	0.9776
4994	0	0	0	N/A
Sum of Least Squares				0.9913
New Correction Factor				0.9952

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	0.3	Auto Zero	0.1
Auto Span	379.0	Auto Span	368.0
Sample Lines Connected		Sample Lines Connected	YES

Percent Change

Previous Month's Calibration Correction Factor:	0.9952
Current Correction Factor Before Span Adjust:	0.9952
Percent Change:	0.0%

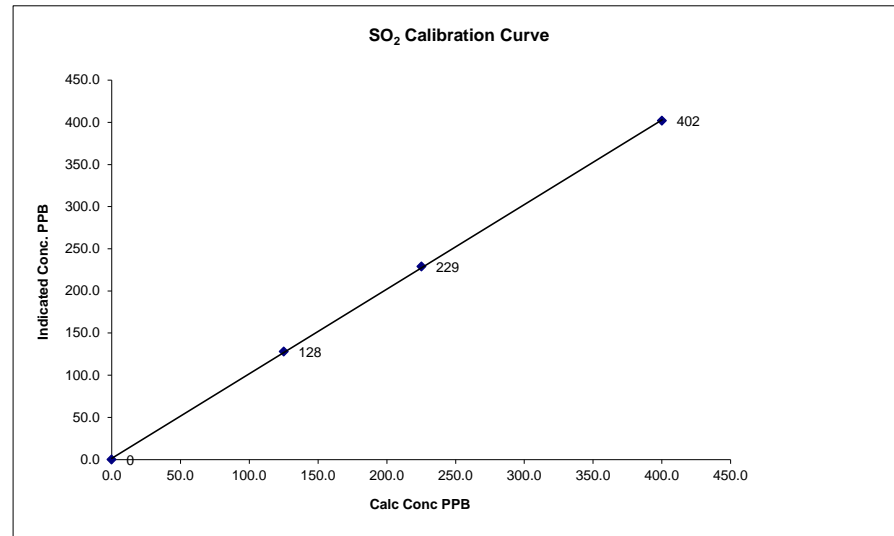
Notes: **N/A : Not applicable**

Calibration Performed by: Ting Xu

SO2 Calibration Curve

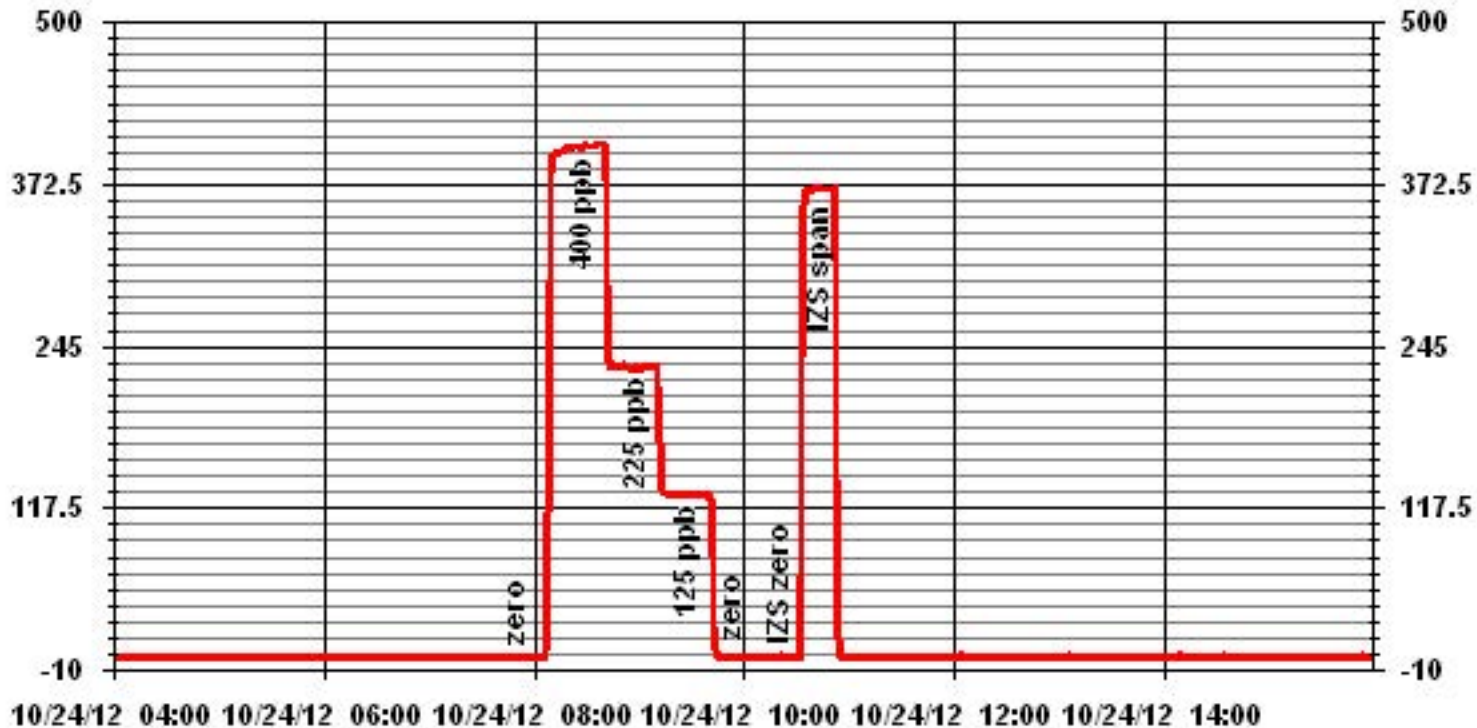
Calibration Date	October 24, 2012
Company	Lakeland Community and Industry Association
Plant / Location	LICA 1 - Cold Lake South
Start Time (MST)	07:40
End Time (MST)	10:56

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		0.999929
125	128	0.9776		1.004337
225	229	0.9836		1.325872
400	402	0.9952		



Notes:

01 Minute Averages



Total Reduced Sulphur

TRS Calibration Report

Station Information

Calibration Date	October 23, 2012	Previous Calibration	September 11, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	LICA 1 - Cold Lake South		
Start Time (MST)	11:50	End Time (MST)	15:42
Reason:	Monthly Calibration		
Barometric Pressure	28.11 inHg	Station Temperature	22 Deg C
Cal Gas	10 ppm	Gas Cyl. #	LL42648
DAS Output Voltage	0 - 10 Volts	Cal Gas Expiry date	December 27, 2012
		Chart Rec. Output	NA Volts

Equipment Information

Analyzer Make / Model:	Thermo 450i	S/N :	812728560	Method:	Fluorescent
Converter Make / Model:	CDN 101	S/N :	501		
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	469 ccm 33.3 Deg C	466 ccm 34.7 Deg C	
HVPS / Lamp Setting	-640.1 747	-640 746	
PMT / RxCell Temp	OK Deg C 45.1 Deg C	0.1 Deg C 45.1 Deg C	
Converter / IZS Temp	810 Deg C 45 Deg C	810 Deg C 45.0 Deg C	
Offset / Slope	12.9 1.014	13 1.03	

Calibration Data

Dilution Flow Rate	Source Gas Flow Rate	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4996	0	0	0	N/A
	No Zero Adj			
4960	40.0	80	78	1.0256
4960	40.0	80	80	1.0000
4976	20.0	40	40	1.0000
4987	11.5	23	24	0.9586
4996	0.0	0	0	N/A
Sum of Least Squares				0.9975
New Correction Factor				1.0000

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	-0.3		0.0
Auto Span	39.3		41.7
Sample Lines Connected			YES

Percent Change

Previous Month's Calibration Correction Factor:	1.0000
Current Correction Factor Before Span Adjust:	1.0256
Percent Change:	-2.5%

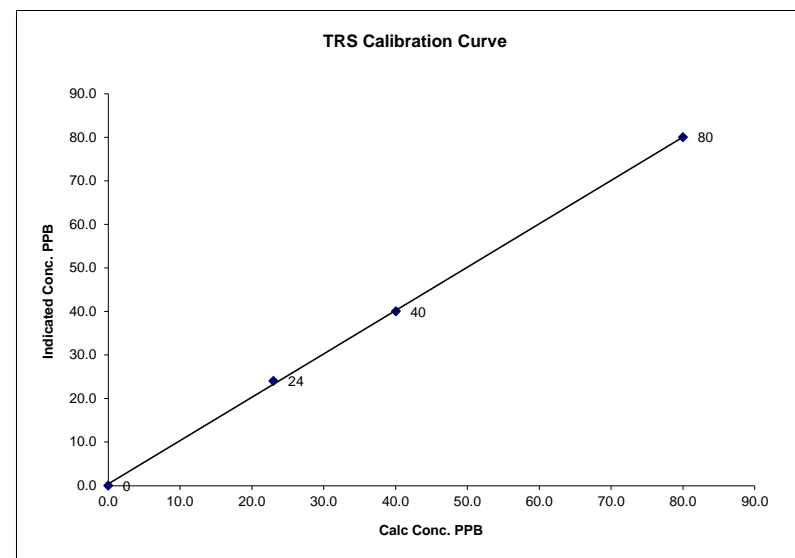
Notes: **N/A : Not applicable**

Calibration Performed by: Ting Xu

TRS Calibration Curve

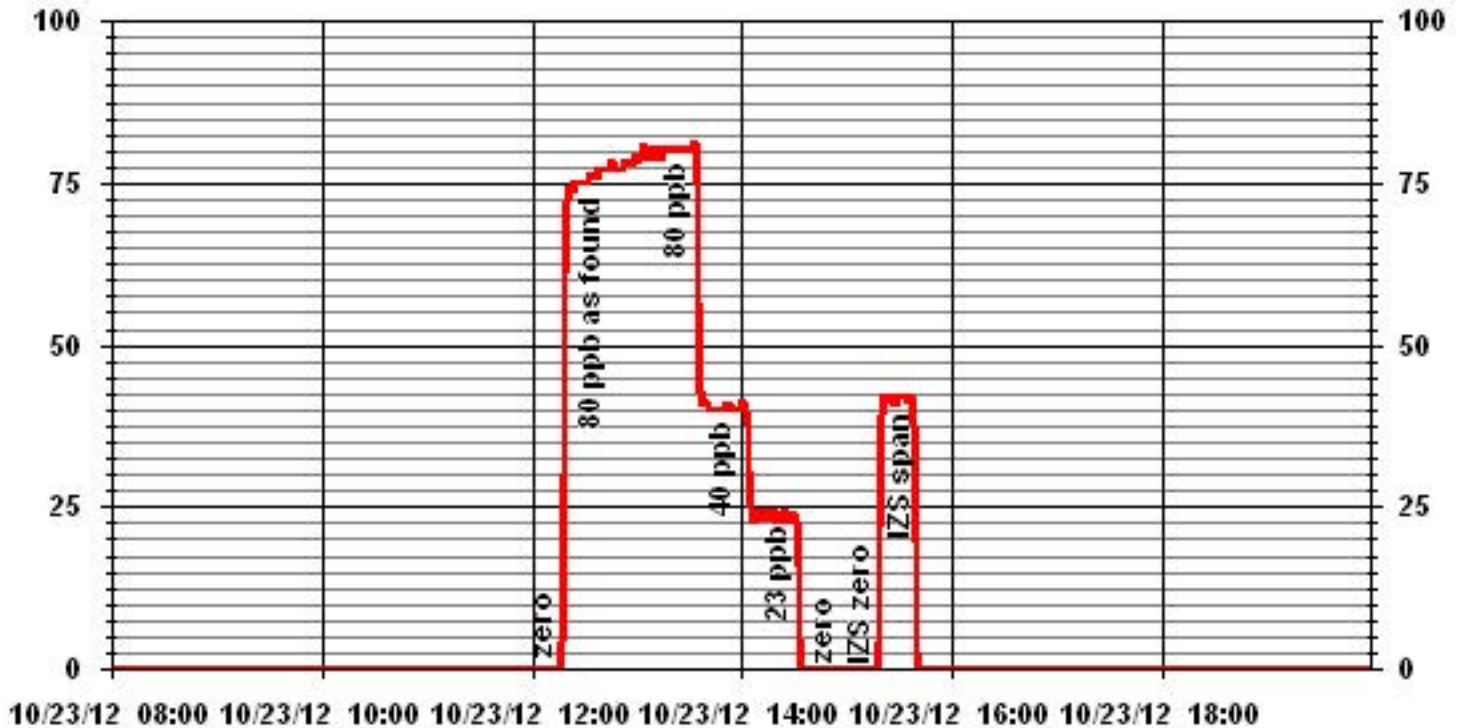
Calibration Date	October 23, 2012
Company	Lakeland Industry & Community Association
Plant / Location	LICA 1 - Cold Lake South
Start Time (MST)	11:50
End Time (MST)	15:42

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		0.999791
23	24	0.0000		0.996253
40	40	0.5752		0.374246
80	80	0.5004		



Notes:

01 Minute Averages



Total Hydrocarbons

THC Calibration Report

Station Information			
Calibration Date:	October 23, 2012	Previous Calibration	September 11, 2012
Company:	Lakeland Industry and Community Association		
Plant / Location:	LICA1/Cold Lake		
Start Time (MST)	14:57	End Time (MST)	18:09
Reason:	Monthly Calibration		
Barometric Pressure:	28.09 inHg	Station Temperature:	23 Deg C
Calibrator:	API 700	S/N:	831
Cal Gas Concentration:	CH4 600 PPM	C3H8 204 PPM	
	TOTAL CH4 1161.0 PPM	Gas Cyl. # LL55310	Cal Gas Expiry Date: September 9, 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
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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
2000	0.0	0.0	-0.1	NA
	No Zero Adj.			
2000	74.0	41.4	42.2	0.9816
2000	74.0	41.4	41.5	0.9982
2000	37.0	21.1	20.9	1.0090
2000	20.0	11.5	11.4	1.0083
2000	0.0	0.0	-0.1	NA
New Correction Factor:				0.9982

Percent Change

Previous Calibration Correction Factor:	0.9982
Current Correction Factor Before Span Adjust:	0.9816
Percent Change:	1.7%

IZS Calibration Data

	Before Calibration	After Calibration
Auto Zero	0.0	0.0
Auto Span	34.8	34.1
Sample Lines Connected	YES	

Cylinder Pressures			
Span	600 psi	Hydrogen	1000 psi
		Zero Air	32 psi

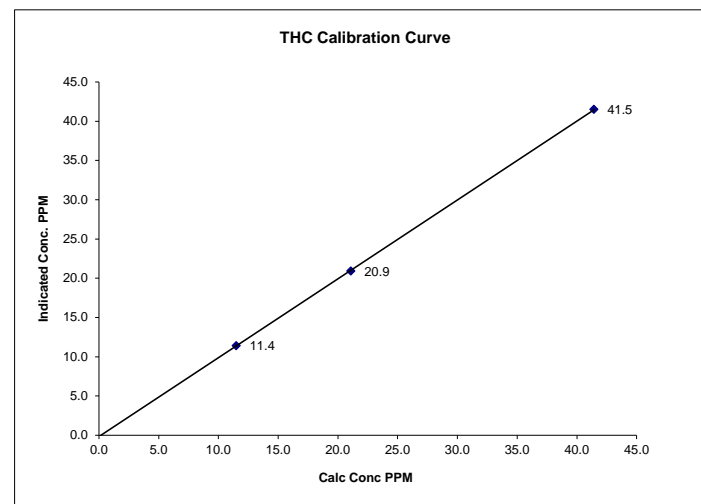
Notes: NA : Not Applicable

Calibration Performed by: Ting Xu

THC Calibration Curve

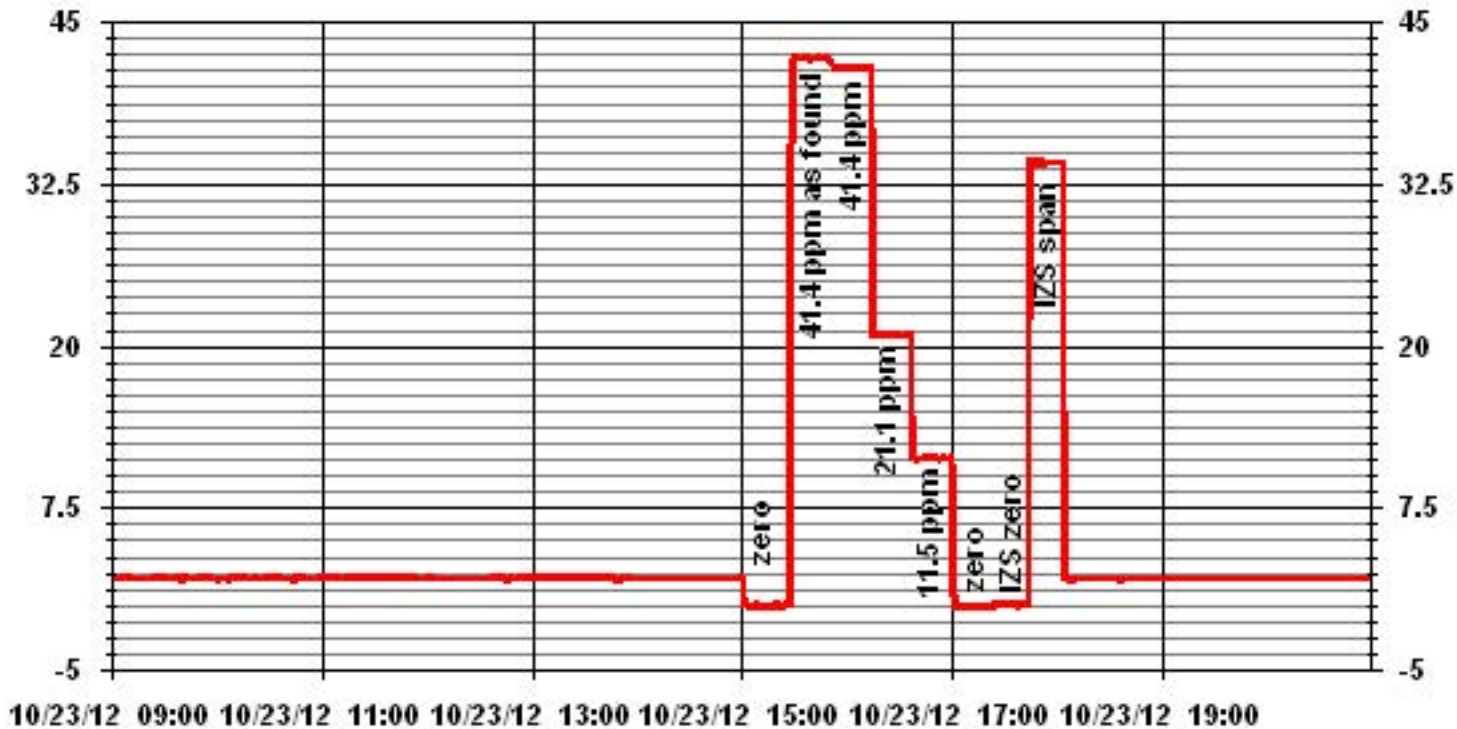
Calibration Date	October 23, 2012
Company	Lakeland Industry and Community Association
Plant / Location	LICA1/Cold Lake
Start Time (MST)	14:57
End Time (MST)	18:09

Calculated Conc. ppm	Indicated Response ppm	Correction Factor	Correlation Coefficient (≥ 0.995)	Slope (0.85 to 1.15)	Intercept (± 3% F.S.)
0.0	-0.1	NA	0.999977	1.004076	-0.15234
11.5	11.4	1.0083			
21.1	20.9	1.0090			
41.4	41.5	0.9982			



Notes:

01 Minute Averages



Particulate Matter 2.5

TEOM 1405F Audit

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

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
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 (%)	25.5%
Firmware Ver.	1.52	K _o Factor	14578.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	6.9
		Press (ATM)	0.939

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Audit

Status			
Noise <0.10ug	0.006	Warnings	None
Pump Vacuum < 0.40 atm	0.33	Pump Guage (in Hg)	NA
Temperature/Pressure			
Measured Temp (± 2 °C)	7.10	Δ °C	-0.2
Measured Press (± 0.01atm)	0.939	DATM	0.000
Flow Audit			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	1.43%
Measured Main Flow (l/min)	3.01	Flow Adjusted to Measured?	No
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	1.02%
Measured Bypass Flow (l/min)	13.84	Flow Adjusted to Measured?	No
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	Base=-0.01 Ref=0.01	Flow Control = Active	
Aux (< 0.6 l/min)	Base=-0.01 Ref=0.01	Report Conditions = Actual	
K_o Factor			
Measured	NA		
K _o Difference (± 2.5%)	NA		

Start Time: 08:09 **Finish Time:** 08:40

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

Comments: After audit, replaced O-ring inside of the switching valve.

Auditor/s: Ting Xu

TEOM 1405F Audit

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

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
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 (%)	NA
Firmware Ver.	1.52	K _o Factor	14578.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	14.1
		Press (ATM)	0.926

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Audit

Status			
Noise <0.10ug	NA	Warnings	None
Pump Vacuum < 0.40 atm	0.32	Pump Guage (in Hg)	NA
Temperature/Pressure			
Measured Temp (± 2 °C)	14.22	Δ °C	-0.12
Measured Press (± 0.01atm)	0.927	DATM	-0.001
Flow Audit			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	1.63%
Measured Main Flow (l/min)	3.02	Flow Adjusted to Measured?	YES
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	0.60%
Measured Bypass Flow (l/min)	13.78	Flow Adjusted to Measured?	YES
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	Base=-0.02 Ref=0.01	Flow Control = Active	
Aux (< 0.6 l/min)	Base=-0.01 Ref=0.01	Report Conditions = Actual	
K_o Factor			
Measured	NA		
K _o Difference (± 2.5%)	NA		

Start Time: 15:40 **Finish Time:** 17:13

Sample Inlet Cleaned: YES **New Filters Installed:** YES
New Filter Loading %: 18.0%

Comments:

TEOM 1405F Audit

	<u>Station</u>		<u>Audit Transfer Standard</u>
Date:	October 3, 2012	Make/Model:	Streamline FTS
Station Name:	LICA 1	Serial Number:	Hi 091001, Lo 091099
Location:	Cold Lake South	Cell s/n:	NA
Operator:	LICA	Thermometer s/n:	Station Temp Sensor

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
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 (%)	18.0%
Firmware Ver.	1.52	K _o Factor	14578.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	4.3
		Press (ATM)	0.952

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Audit

Status			
Noise <0.10ug	0.006	Warnings	None
Pump Vacuum < 0.40 atm	0.32	Pump Guage (in Hg)	NA
Temperature/Pressure			
Measured Temp (± 2 °C)	4.49	Δ °C	-0.19
Measured Press (± 0.01atm)	0.953	DATM	-0.001
Flow Audit			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	1.74%
Measured Main Flow (l/min)	3.00	Flow Adjusted to Measured?	YES
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	1.40%
Measured Bypass Flow (l/min)	13.78	Flow Adjusted to Measured?	YES
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	Base=-0.02 Ref=0.01	Flow Control = Active	
Aux (< 0.6 l/min)	Base=0.00 Ref=0.00	Report Conditions = Actual	
K_o Factor			
Measured	NA		
K _o Difference (± 2.5%)	NA		

Start Time: 06:40 **Finish Time:** 08:50

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

Comments:

Auditor/s: Ting Xu

TEOM 1405F Audit

	<u>Station</u>		<u>Audit Transfer Standard</u>
Date:	October 9, 2012	Make/Model:	Streamline FTS
Station Name:	LICA 1	Serial Number:	Hi 091001, Lo 091099
Location:	Cold Lake South	Cell s/n:	NA
Operator:	LICA	Thermometer s/n:	Station Temp Sensor

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
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 (%)	19.1%
Firmware Ver.	1.52	K _o Factor	14578.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	6.7
		Press (ATM)	0.938

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Audit

Status			
Noise <0.10ug	0.005	Warnings	None
Pump Vacuum < 0.40 atm	0.33	Pump Guage (in Hg)	NA
Temperature/Pressure			
Measured Temp (± 2 °C)	6.28	Δ °C	0.42
Measured Press (± 0.01atm)	0.939	DATM	-0.001
Flow Audit			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	0.57%
Measured Main Flow (l/min)	2.96	Flow Adjusted to Measured?	YES
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	0.42%
Measured Bypass Flow (l/min)	13.51	Flow Adjusted to Measured?	YES
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	Base=-0.02 Ref=0.02	Flow Control = Active	
Aux (< 0.6 l/min)	Base=0.00 Ref=0.00	Report Conditions = Actual	
K_o Factor			
Measured	NA		
K _o Difference (± 2.5%)	NA		

Start Time: 09:20 **Finish Time:** 14:10

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

Comments:

Auditor/s: Ting Xu

TEOM 1405F Audit

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

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
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 (%)	21.0%
Firmware Ver.	1.52	K _o Factor	14578.0
Parameter	PM 2.5 (with FDMS)	Temp (°C)	-2.3
		Press (ATM)	0.940

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Audit

Status			
Noise <0.10ug	0.009	Warnings	None
Pump Vacuum < 0.40 atm	0.34	Pump Guage (in Hg)	NA
Temperature/Pressure			
Measured Temp (± 2 °C)	-2.18	Δ °C	-0.12
Measured Press (± 0.01atm)	0.940	DATM	0.000
Flow Audit			
Indicated Main Flow (l/min)	3.00	Main Flow Drift (±10.0%)	0.82%
Measured Main Flow (l/min)	3.01	Flow Adjusted to Measured?	No
Indicated Bypass Flow (l/min)	13.67	Bypass Flow Drift (±10.0%)	2.33%
Measured Bypass Flow (l/min)	13.30	Flow Adjusted to Measured?	No
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	NA	Flow Control = Active	
Aux (< 0.6 l/min)	NA	Report Conditions = Actual	
K_o Factor			
Measured	NA		
K _o Difference (± 2.5%)	NA		

Start Time: 08:15 **Finish Time:** 09:40

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

Comments:

Auditor/s: Ting Xu

TEOM 1405F Audit

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

	<u>Sampler</u>		<u>Set-up and current Sampler readings</u>
Make/Model	<u>Thermo Scientific Series 1405F</u>	F-Main Set Pt (l/min)	<u>3.00</u>
Unit #	<u>AMU 1775</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Unit s/n	<u>1405A201620804</u>	Filter Load (%)	<u>21.0%</u>
Firmware Ver.	<u>1.52</u>	K _o Factor	<u>14578.0</u>
Parameter	<u>PM 2.5 (with FDMS)</u>	Temp (°C)	<u>-1.8</u>
		Press (ATM)	<u>0.949</u>

Conversion from mmHg or "Hg to ATM (Atmospheres)

ATM = (mmHg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Audit

Status			
Noise <0.10ug	<u>0.009</u>	Warnings	<u>None</u>
Pump Vacuum < 0.40 atm	<u>0.34</u>	Pump Guage (in Hg)	<u>NA</u>
Temperature/Pressure			
Measured Temp (± 2 °C)	<u>-1.86</u>	Δ °C	<u>0.06</u>
Measured Press (± 0.01atm)	<u>0.951</u>	DATM	<u>-0.002</u>
Flow Audit			
Indicated Main Flow (l/min)	<u>3.00</u>	Main Flow Drift (±10.0%)	<u>1.64%</u>
Measured Main Flow (l/min)	<u>3.02</u>	Flow Adjusted to Measured?	<u>Yes</u>
Indicated Bypass Flow (l/min)	<u>13.67</u>	Bypass Flow Drift (±10.0%)	<u>1.23%</u>
Measured Bypass Flow (l/min)	<u>13.77</u>	Flow Adjusted to Measured?	<u>Yes</u>
Leak Check		Instrument Setup	
Main (< 0.15 l/min)	<u>Base=0.02 Ref=0.01</u>	<u>Flow Control = Active</u>	
Aux (< 0.6 l/min)	<u>Base=0.00 Ref=0.00</u>	<u>Report Conditions = Actual</u>	
K_o Factor			
Measured	<u>NA</u>		
K _o Difference (± 2.5%)	<u>NA</u>		

Start Time: 15:10 **Finish Time:** 17:08

Sample Inlet Cleaned: No **New Filters Installed:** Yes
New Filter Loading %: 20.8%

Comments:

Nitrogen Dioxide

NOx - NO- NO2 Calibration Report

Station Information

Calibration Date	October 23, 2012	Previous Calibration	September 11, 2012
Company	LICA	Plant/Location	Cold Lake South
Start Time (MST)	11:50	End Time (MST)	17:40
Reason:	Monthly Calibration		
Barometric Pressure	28.11 inHg	Station Temperature	22 Deg C
Cal Gas Concentration	NOx 50.1 ppm	NO 50.1 ppm	Cal Gas Expiry date
Cal Gas Cylinder #	LL42502		December 29, 2013
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	729 ccm	317	Deg C	730	ccm	317	Deg C
Ozone Flow / Vacuum	OK	180.0	*Hg-A	OK	ccm	181	*Hg-A
HVPS / A ZERO	-821	Volts	NA	MV	-821	Volts	NA
Rx/ Temp / PMT Temp	49.8	Deg C	-2.5	Deg C	49.8	Deg C	-2.5
Box Temp / IZS Temp	28.8	Deg C	OK	Deg C	29.6	Deg C	OK
Offset	4	NOx	3.7	NO	3.9	NOx	3.7
Slope	1.002	NOx	0.956	NO	1.002	NOx	0.940
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
4994	0.0	NA	0	0	NA	0	0	0	NA	NA
	No Zero Adj									
4955	39.8	NA	399	399	NA	406	405	1	0.9833	0.9857
4955	39.8	NA	399	399	NA	399	399	0	1.0000	1.0000
4976	19.9	NA	200	200	NA	200	200	0	1.0000	1.0000
4985	9.9	NA	99	99	NA	101	101	0	0.9832	0.9832
4995	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	39.8	NA	399	399	NA	398	398	1	NA	NA
4954	39.8	350	399	NA	316	398	83	315	1.0032	99.68%
	No Adj. Needed									
4954	39.8	150	399	NA	137	398	262	136	1.0074	99.26%
4954	39.8	75	399	NA	68	398	331	67	1.0149	98.51%

Linearity OK?	Yes	No	Sum of Least Squares Correction Factors:	NOx= 0.999	NO= 0.999	NO2= 1.004
				NOx= 1.0000	NO= 1.0000	NO2= 1.0032
			Average Converter Efficiency=	99.15%		

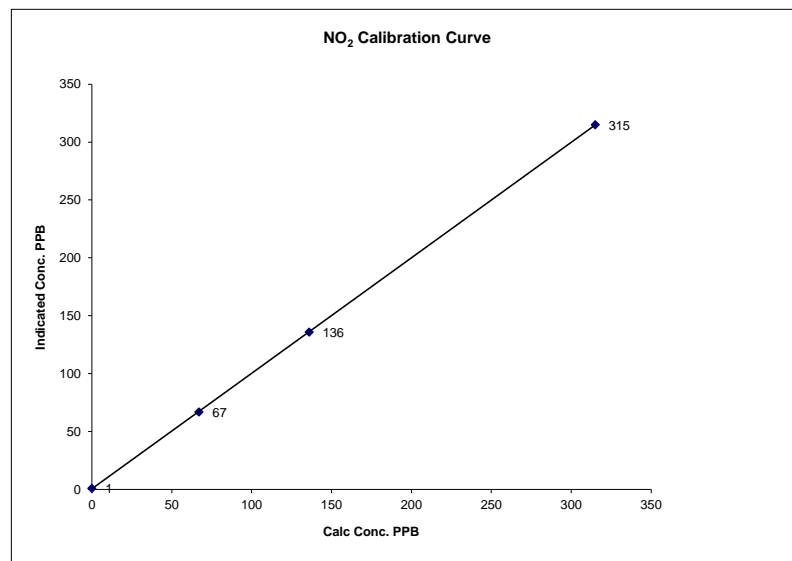
IZS Calibration Data

Before Calibration				After Calibration			
Auto Zero	0.1	NOx	0.2	NO2	0.1	NOx	0.2
Auto Span	399	NOx	396	NO2	388	NOx	385
			Sample Lines Connected	YES			
Percent Change from Previous Calibration		NOx	1.7%	NO	1.5%	NO2	-0.6%
Notes	NA : Not Applicable						
Calibration Performed by:	Ting Xu						

NO2 Calibration Curve

Calibration Date	October 23, 2012
Company	LICA
Plant / Location	Cold Lake South
Start Time (MST)	11:50
End Time (MST)	17:40

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient Slope	(≥ 0.995) (0.85 to 1.15)	0.999992
0	1	N/A	Intercept	(± 3% F.S.)	0.55420
67	67	1.0000			
136	136	1.0000			
315	315	1.0000			

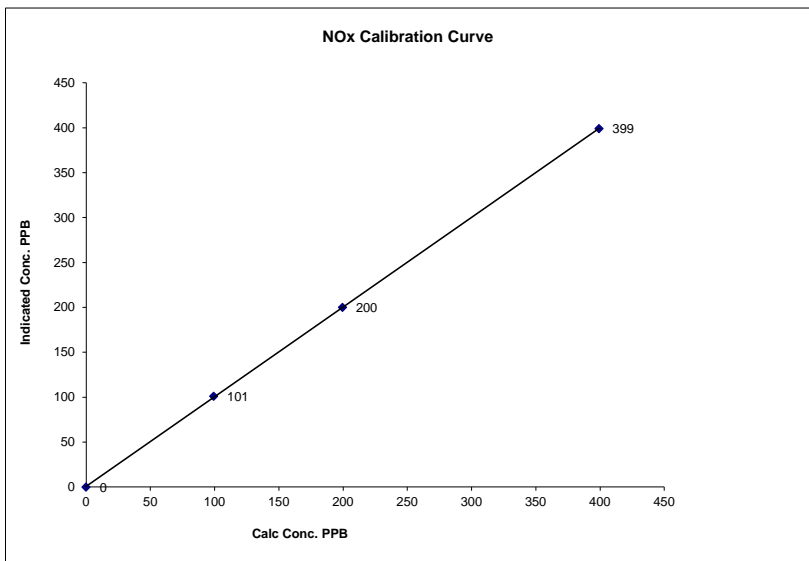


Notes:

NOx Calibration Curve

Calibration Date	October 23, 2012	
Company	LICA	
Plant / Location	Cold Lake South	
Start Time (MST)	11:50	End Time (MST) 17:40

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999978
0	0	N/A	Slope (0.85 to 1.15)	0.998115
99	101	0.9832	Intercept (± 3% F.S.)	0.81088
200	200	0.9978		
399	399	1.0005		

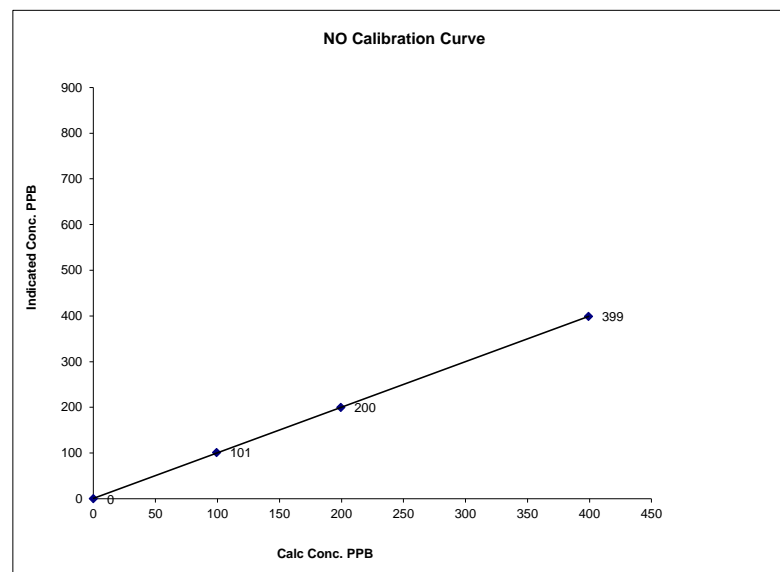


Notes:

NO Calibration Curve

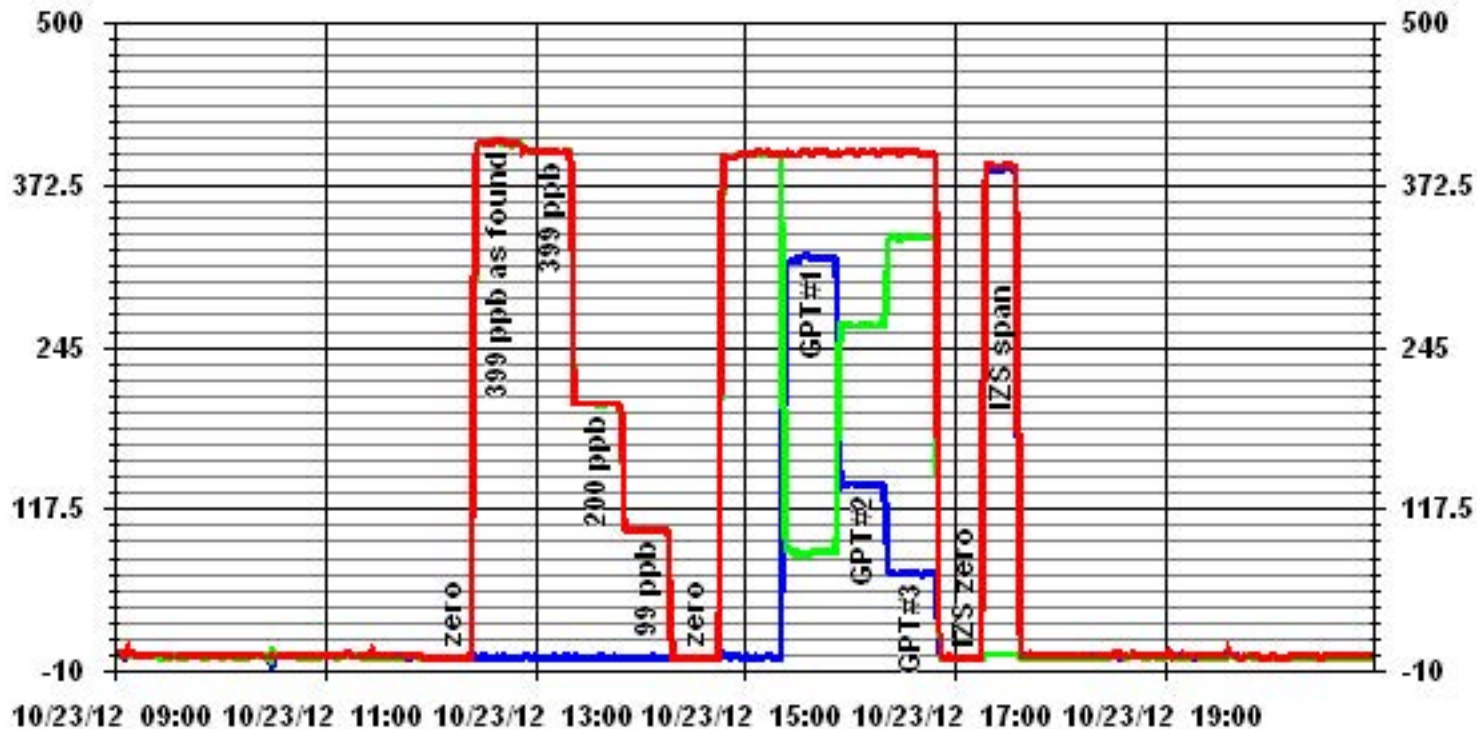
Calibration Date	October 23, 2012	
Company	LICA	
Plant / Location	Cold Lake South	
Start Time (MST)	11:50	End Time (MST) 17:40

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	0.999978
0	0	N/A	Slope (0.85 to 1.15)	0.994068
99	101	0.9832	Intercept (± 3% F.S.)	1.0876
200	200	0.9978		
399	399	1.0005		



Notes:

01 Minute Averages



— LICA

NOX_

PPB

— LICA

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NO_

PPB

— LICA

JOB #: 2833-12-10-01-C

NO2_

PPB

Ozone

O₃ Calibration Report

Station Information

Calibration Date	October 24, 2012	Previous Calibration	September 11, 2012
Company	Lakeland Industry & Community Association		
Plant / Location	LICA 1 - Cold Lake South		
Start Time (MST)	07:40	End Time (MST)	11:18
Reason:	Monthly Calibration		
Barometric Pressure	28.13 inHg	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:	Enviroics 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	698 LPM	737 LPM		711 LPM	752 LPM		
O ₃ Set Level	683 mmHg			705 mmHg			
Bench Lamp	53.6 Deg C			53.6 Deg C			
O ₃ Lamp / Box Temp	67.5 Deg	29.8 Deg C		67.5 Deg C	29.5 Deg C		
Offset / Slope	-0.2 1.039			-0.1 1.007			

Calibration Data

Dilution Flow Rate	Ozone Set Point	Calculated Concentration	Indicated Conc. (DAS)	Correction Factor
4994	0	0	0	NA
	No Zero Adj			
4994	350	314	322	0.9752
4994	350	314	315	0.9968
4994	150	135	135	1.0000
4994	75	66	67	0.9851
4994	0	0	0	NA
Sum of Least Squares				0.9969
New Correction Factor				0.9968

IZS Calibration Data

Before Calibration		After Calibration	
Auto Zero	0.1	0.2	
Auto Span	269	278	
Sample Lines Connected		YES	
Previous Calibration Correction Factor:		0.9968	
Current Correctio Factor Before Span Adjust:		0.9752	
Percent Change:		2.2%	

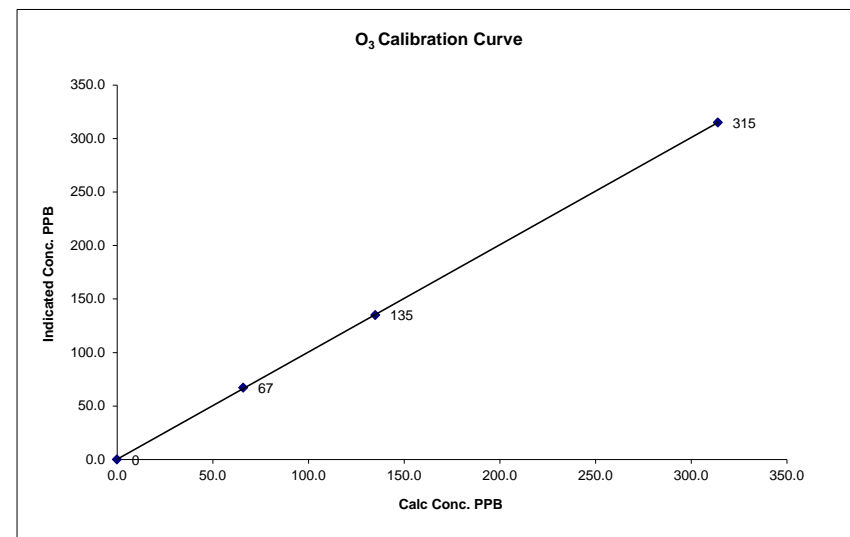
Note: NA : Not Applicable

Calibration Performed by: Ting Xu

O₃ Calibration Curve

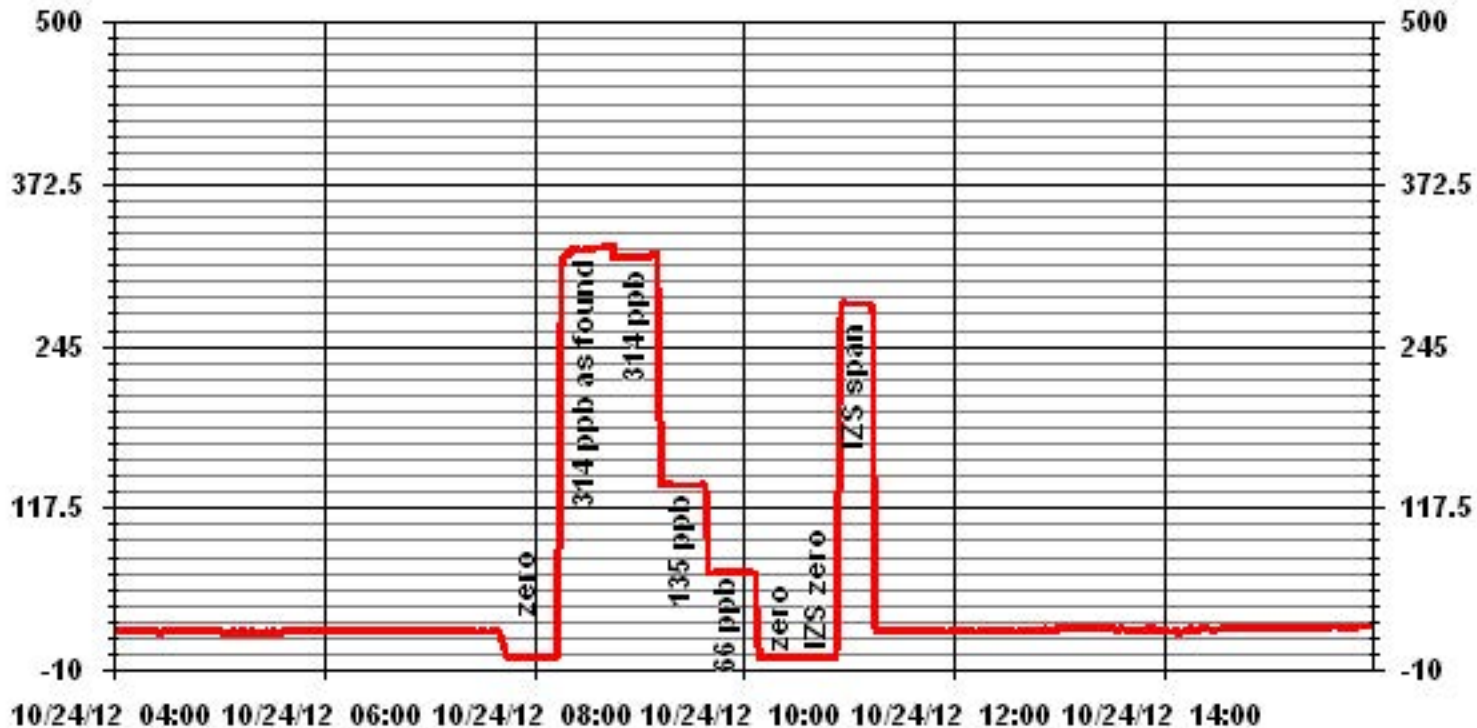
Calibration Date	October 24, 2012
Company	Lakeland Industry & Community Association
Plant / Location	LICA 1 - Cold Lake South
Start Time (MST)	07:40
End Time (MST)	11:18

Calculated Conc. ppb	Indicated Response ppb	Correction Factor	Correlation Coefficient (≥ 0.995)	Slope (0.85 to 1.15)	Intercept (± 3% F.S.)
0	0	n/a	0.999987	1.002233	0.212563
66	67	0.9851			
135	135	1.0000			
314	315	0.9968			



Notes:

01 Minute Averages



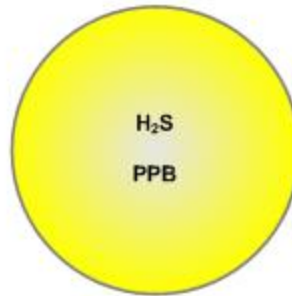
Passive Bubble Maps

Lakeland Industry & Community Association H₂S Passive Bubble Map

OCTOBER 2012

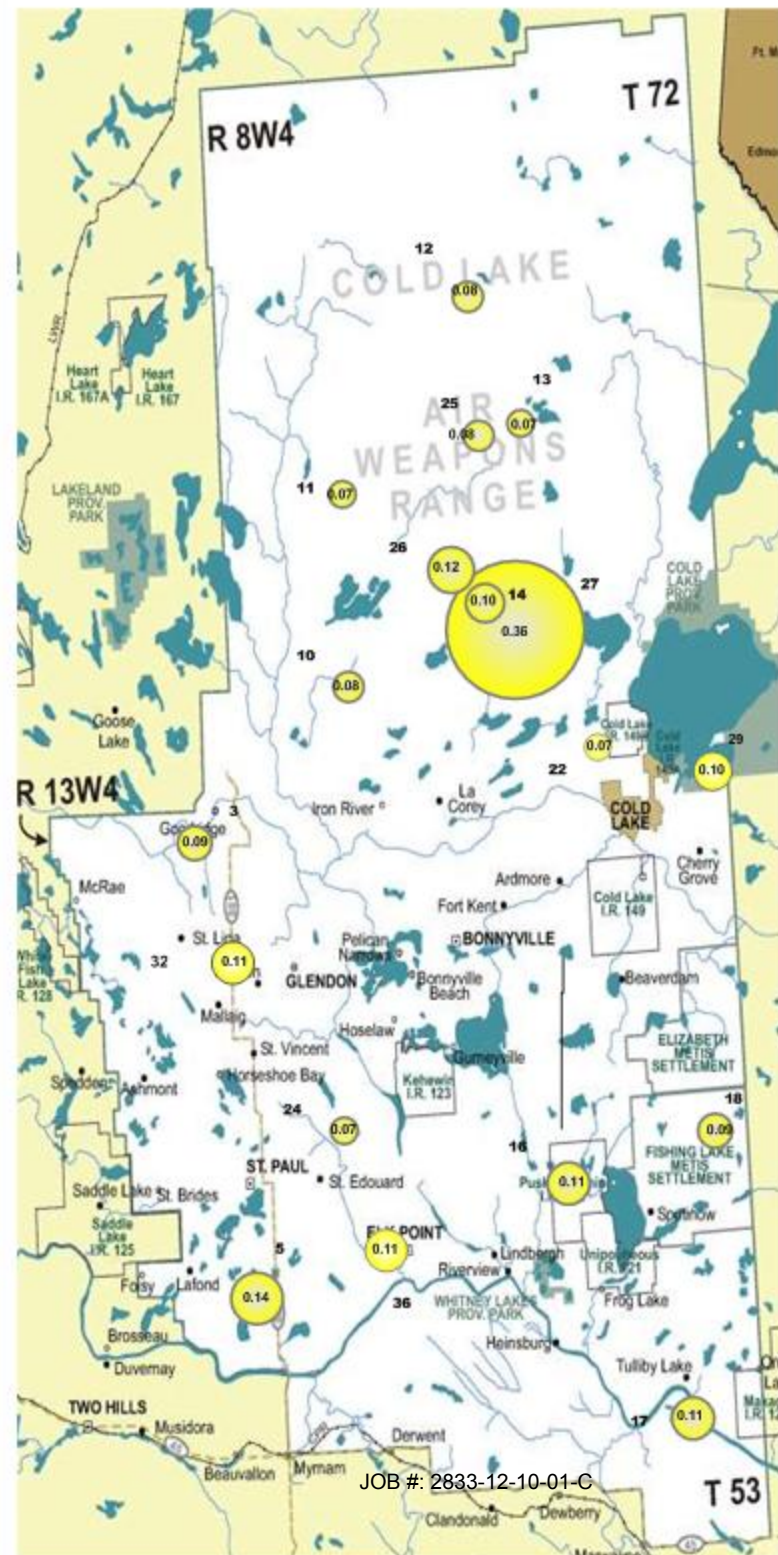
PASSIVE STATIONS

Station Number	Reading	Duplicate
3 - Therien	0.09 PPB	NA
5 - Lake Eliza	0.14 PPB	NA
10 - La Corey	0.08 PPB	NA
11 - Wolf Lake	0.07 PPB	NA
12 - Foster Creek	0.08 PPB	NA
13 - Primrose	0.07 PPB	0.07 PPB
14 - Maskwa	0.10 PPB	0.10 PPB
16 - Frog Lake	0.11 PPB	NA
17 - Clear Range	0.11 PPB	NA
18 - Fishing Lake	0.09 PPB	NA
22 - Cold Lake South	0.07 PPB	NA
24 - Fort George	0.07 PPB	NA
25 - Burnt Lake	0.08 PPB	NA
26 - Mahihkan	0.12 PPB	NA
27 - Mahkeses	0.36 PPB	NA
29 - Cold Lake South 2	0.10 PPB	NA
32 - St. Lina	0.11 PPB	NA
36 - Elk Point	0.11 PPB	NA



Summary

Minimum : 0.07 PPB - VARIOUS STATION
 Maximum: 0.36 PPB - Mahkeses
 Average: 0.11 PPB *Includes Duplicates

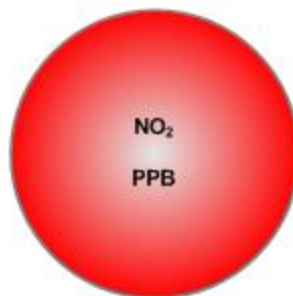


Lakeland Industry & Community Association NO₂ Passive Bubble Map

OCTOBER 2012

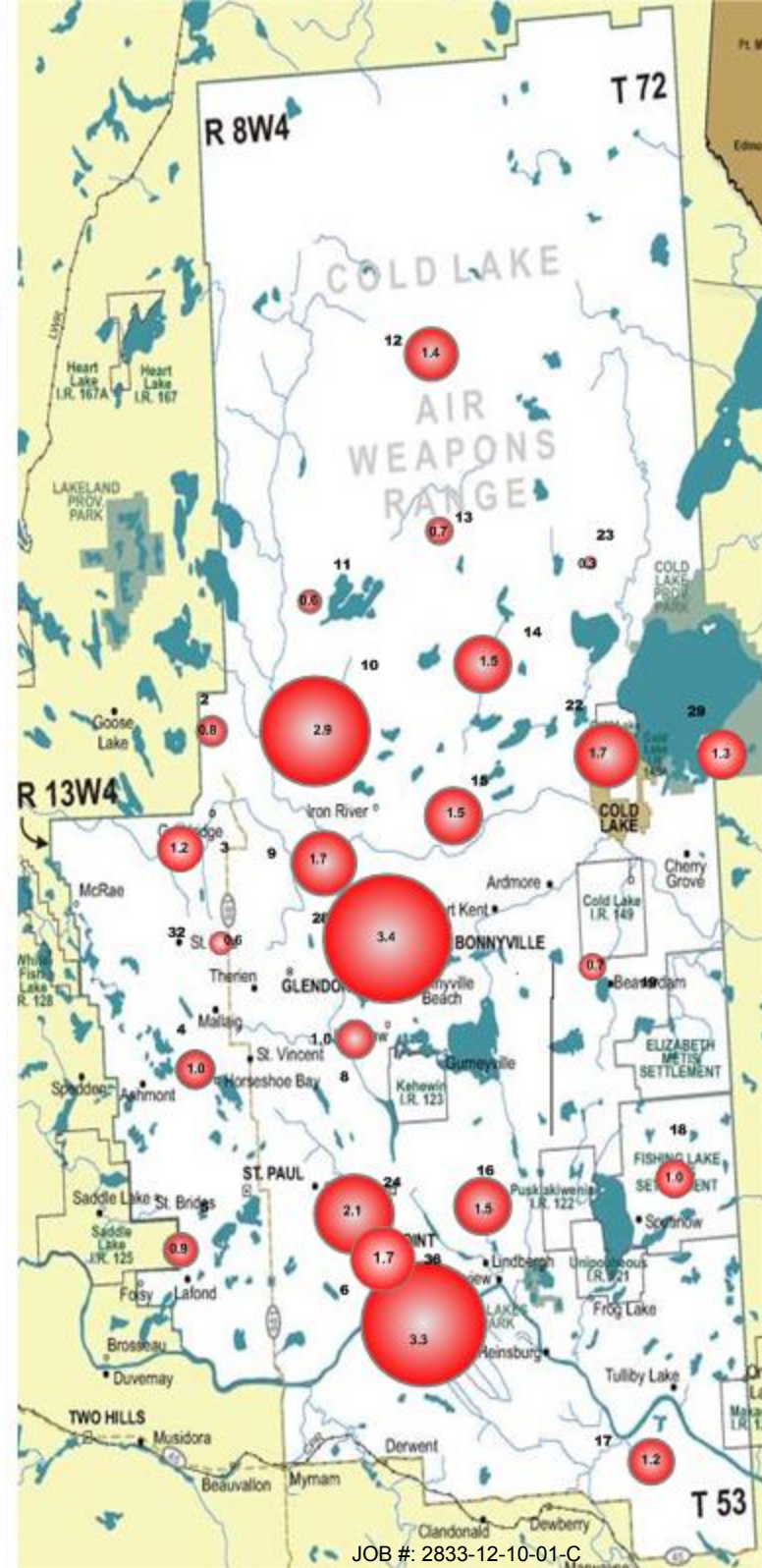
PASSIVE STATIONS

		DUPLICATE
2 – Sand River	0.8 PPB	NA
3 – Therien	1.2 PPB	NA
4 – Flat Lake	1.0 PPB	NA
5 – Lake Eliza	0.9 PPB	NA
6 – Telegraph Creek	1.7 PPB	NA
8 – Muriel-Kehewin	1.0 PPB	NA
9 – Dupre	1.7 PPB	NA
10 – La Corey	2.9 PPB	NA
11 – Wolf Lake	0.6 PPB	NA
12 – Foster Creek	1.4 PPB	NA
13 – Primrose	0.7 PPB	NA
14 – Maskwa	1.5 PPB	NA
15 – Ardmore	1.5 PPB	NA
16 – Frog Lake	1.5 PPB	NA
17 – Clear Range	1.2 PPB	NA
18 – Fishing Lake	1.0 PPB	NA
19 – Beaverdam	0.7 PPB	NA
22 – Cold Lake South	1.7 PPB	NA
23 – Medley-Martineau	0.3 PPB	NA
24 – Fort George	2.1 PPB	NA
28 – Town of Bonnyville	3.4 PPB	NA
29 – Cold Lake South 2	1.3 PPB	NA
32 – St. Lina	0.6 PPB	0.6 PPB
36 – Elk Point	3.4 PPB	3.2 PPB



Summary

Minimum : 0.3 PPB – Medley-Martineau
 Maximum: 3.4 PPB – Town of Bonnyville
 Average: 1.4 PPB *Includes Duplicates

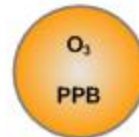


Lakeland Industry & Community Association O₃ Passive Bubble Map

OCTOBER 2012

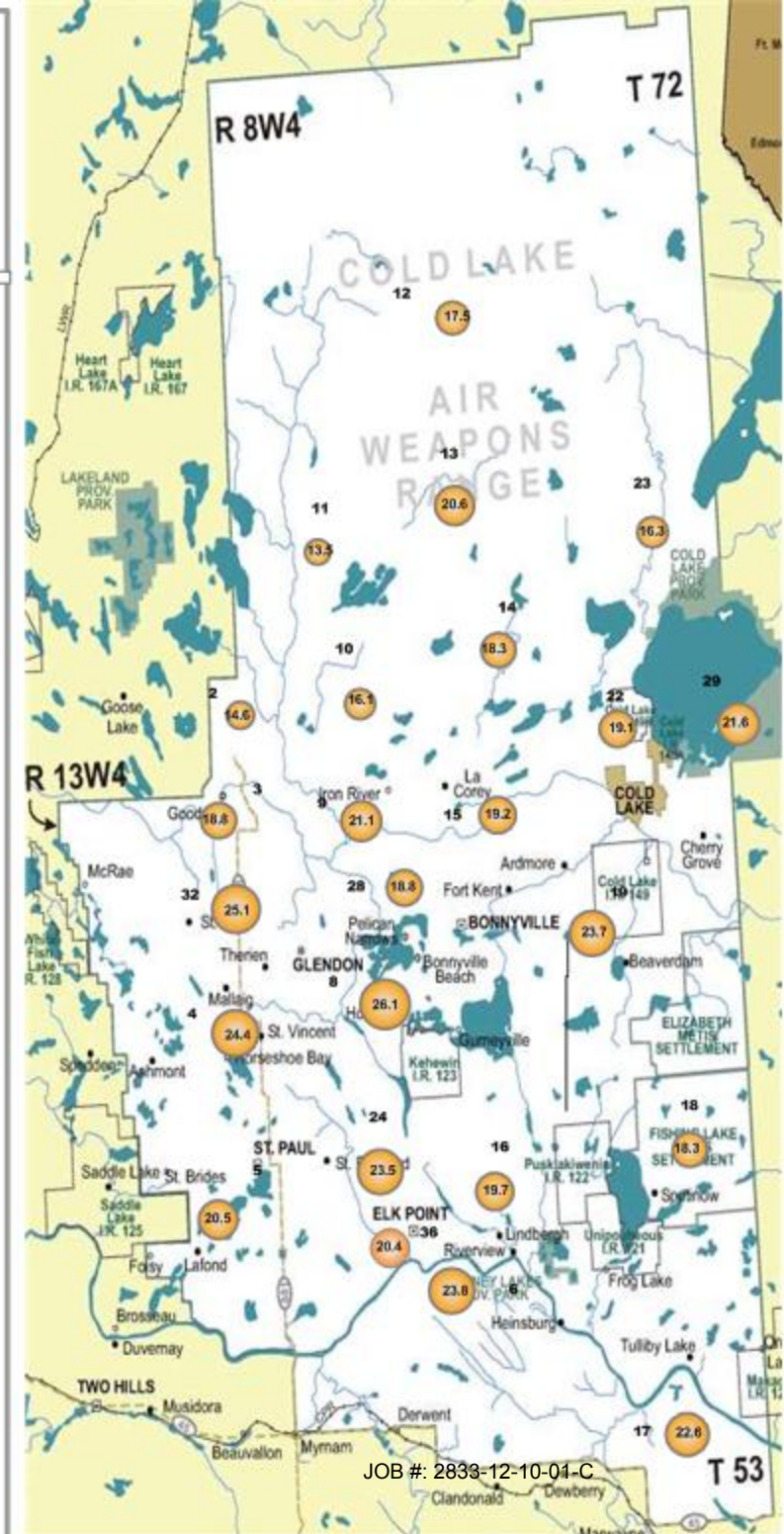
PASSIVE STATIONS

Station Number	Location	Reading (PPB)	Duplicate
2	Sand River	14.6	NA
3	Therien	18.8	NA
4	Flat Lake	24.4	NA
5	Lake Eliza	20.5	NA
6	Telegraph Creek	23.8	NA
8	Muriel-Kehewin	26.1	NA
9	Dupre	21.1	NA
10	La Corey	16.1	NA
11	Wolf Lake	13.5	NA
12	Foster Creek	17.5	NA
13	Primrose	20.6	NA
14	Maskwa	18.3	NA
15	Ardmore	19.2	NA
16	Frog Lake	19.7	NA
17	Clear Range	22.6	NA
18	Fishing Lake	18.3	NA
19	Beaverdam	23.7	NA
22	Cold Lake South	19.1	NA
23	Medley-Martineau	16.3	NA
24	Fort George	23.5	NA
28	Town of Bonnyville	18.8	NA
29	Cold Lake South 2	21.6	NA
32	St. Lina	27.8	22.4
36	Elk Point	18.4	22.3



Summary

Minimum : 13.5 PPB – Wolf Lake
 Maximum: 26.1 PPB – Muriel-Kehewin
 Average: 20.1 PPB *Includes Duplicates



Lakeland Industry & Community Association SO₂ Passive Bubble Map

OCTOBER 2012

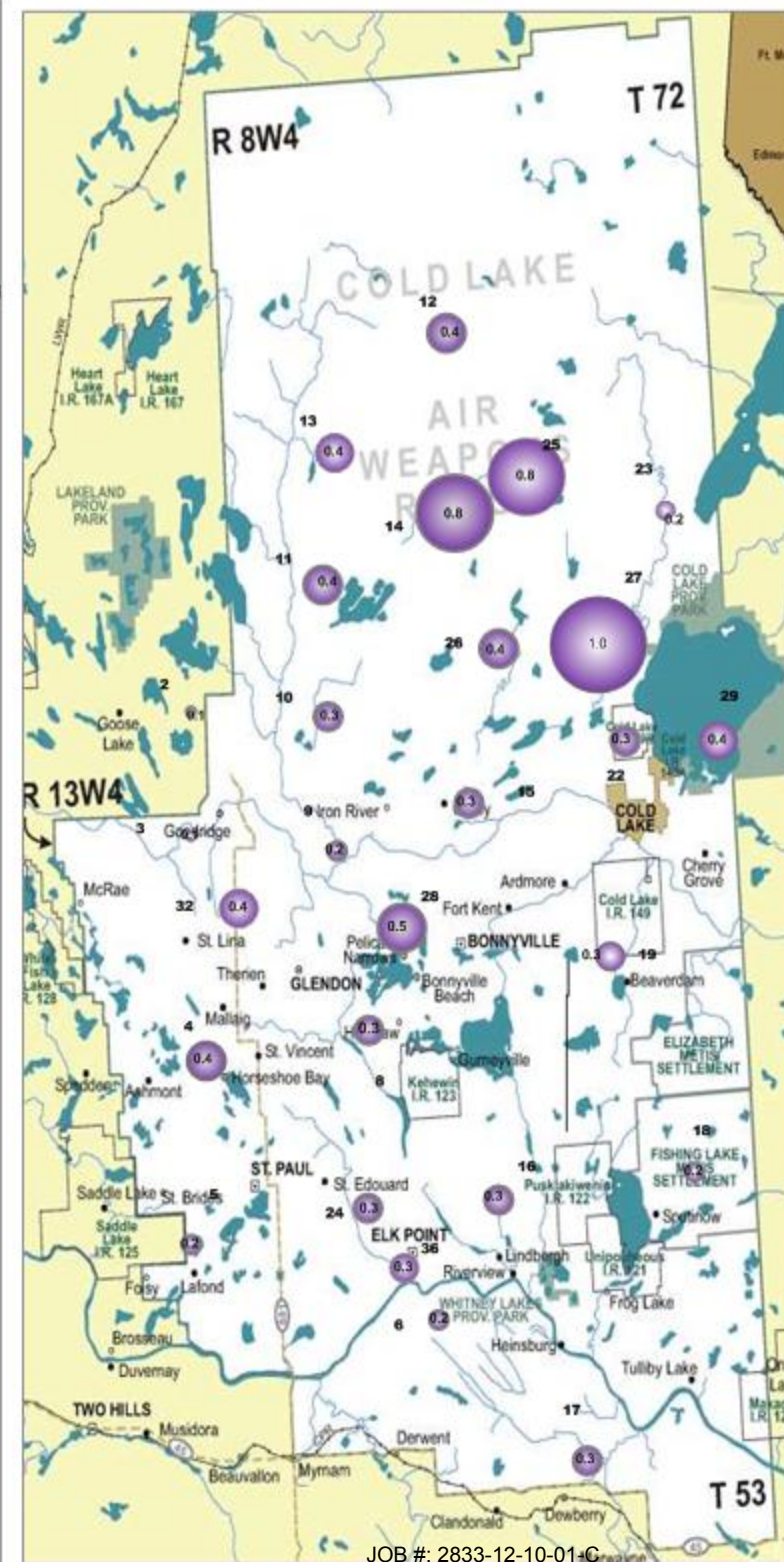
PASSIVE STATIONS

Station Number	Location	SO ₂ Concentration (PPB)	Duplicate
2	Sand River	0.1 PPB	NA
3	Therien	0.1 PPB	NA
4	Flat Lake	0.4 PPB	NA
5	Lake Eliza	0.2 PPB	NA
6	Telegraph Creek	0.2 PPB	NA
8	Muriel-Kehewin	0.2 PPB	0.4 PPB
9	Dupre	0.2 PPB	0.2 PPB
10	La Corey	0.3 PPB	NA
11	Wolf Lake	0.4 PPB	NA
12	Foster Creek	0.4 PPB	NA
13	Primrose	0.4 PPB	NA
14	Maskwa	0.8 PPB	NA
15	Ardmore	0.3 PPB	0.3 PPB
16	Frog Lake	0.3 PPB	NA
17	Clear Range	0.3 PPB	NA
18	Fishing Lake	0.2 PPB	NA
19	Beaverdam	0.3 PPB	NA
22	Cold Lake South	0.3 PPB	NA
23	Medley-Martineau	0.2 PPB	NA
24	Fort George	0.3 PPB	NA
25	Burnt Lake	0.8 PPB	NA
26	Mahikan	0.4 PPB	NA
27	Mahkeses	1.0 PPB	NA
28	Town of Bonnyville	0.5 PPB	NA
29	Cold Lake South 2	0.4 PPB	NA
32	St. Lina	0.4 PPB	NA
36	Elk Point	0.3 PPB	NA



Summary

Minimum : 0.1 PPB –Sand River and Therien
 Maximum: 0.8 PPB –Maskwa
 Average: 0.36 PPB *Includes Duplicates



Passive Field Data

Field Notes

ID	SAMPLER	START		END		NOTES
		DATE	TIME	DATE	TIME	
2	SO ₂ /NO ₂ /O ₃	09/27/2012	10:35	10/30/2012	16:00	
3	H ₂ S/SO ₂ /NO ₂ /O ₃	09/27/2012	11:20	10/30/2012	16:50	
4	SO ₂ /NO ₂ /O ₃	09/27/2012	13:15	10/31/2012	15:20	
5	H ₂ S/SO ₂ /NO ₂ /O ₃	09/27/2012	13:50	10/29/2012	16:00	
6	SO ₂ /NO ₂ /O ₃	09/28/2012	12:00	10/31/2012	13:40	
8	SO ₂ /NO ₂ /O ₃	09/27/2012	14:50	10/29/2012	17:15	
9	SO ₂ /NO ₂ /O ₃	09/27/2012	15:53	10/30/2012	19:15	
10	H ₂ S/SO ₂ /NO ₂ /O ₃	09/26/2012	18:50	10/30/2012	11:12	
11	H ₂ S/SO ₂ /NO ₂ /O ₃	09/26/2012	15:35	10/30/1012	11:50	
12	H ₂ S/SO ₂ /NO ₂ /O ₃	09/26/2012	16:40	10/30/2012	13:14	
13	H ₂ S/SO ₂ /NO ₂ /O ₃	09/27/2012	09:00	10/30/2012	09:15	
14	H ₂ S/SO ₂ /NO ₂ /O ₃	09/27/2012	08:05	10/30/2012	08:10	
15	SO ₂ /NO ₂ /O ₃	09/27/2012	16:40	10/30/2012	10:20	
16	H ₂ S/SO ₂ /NO ₂ /O ₃	09/28/2012	13:20	10/31/2012	12:05	
17	H ₂ S/SO ₂ /NO ₂ /O ₃	09/28/2012	12:55	10/31/2012	13:00	
18	H ₂ S/SO ₂ /NO ₂ /O ₃	09/28/2012	14:44	10/31/2012	11:25	
19	SO ₂ /NO ₂ /O ₃	09/28/2012	15:40	10/31/2012	10:15	
22	H ₂ S/SO ₂ /NO ₂ /O ₃	09/28/2012	07:50	10/31/2012	08:45	
23	SO ₂ /NO ₂ /O ₃	09/27/2012	17:30	10/31/2012	17:15	
24	H ₂ S/SO ₂ /NO ₂ /O ₃	09/28/2012	11:30	10/31/2012	14:15	
25	H ₂ S/SO ₂	09/26/2012	17:58	10/30/2012	14:25	
26	H ₂ S/SO ₂	09/27/2012	08:30	10/30/2012	08:30	
27	H ₂ S/SO ₂	09/27/2012	07:40	10/30/2012	07:50	
28	SO ₂ /NO ₂ /O ₃	09/27/2012	15:33	10/29/2012	17:50	
29	H ₂ S/SO ₂ /NO ₂ /O ₃	09/28/2012	08:15	10/31/2012	08:30	
32	H ₂ S/SO ₂ /NO ₂ /O ₃	09/27/2012	12:20	10/30/2012	17:40	
36	H ₂ S/SO ₂ /NO ₂ /O ₃	09/28/2012	10:20	10/29/2012	11:30	

ID	SAMPLER	START		END		NOTES
		DATE	TIME	DATE	TIME	
Duplicate # 08	SO ₂	09/27/2012	14:50	10/29/2012	17:15	
Duplicate # 09	SO ₂	09/27/2012	15:53	10/30/2012	19:15	
Duplicate # 15	SO ₂	09/27/2012	16:40	10/30/2012	10:20	
Duplicate # 13	H ₂ S	09/27/2012	09:00	10/30/2012	09:15	
Duplicate # 14	H ₂ S	09/27/2012	08:05	10/30/2012	08:10	
Duplicate # 32	NO ₂	09/27/2012	12:20	10/30/2012	17:40	
Duplicate # 36	NO ₂	09/28/2012	10:20	10/29/2012	11:30	
Duplicate # 32	O ₃	09/27/2012	12:20	10/30/2012	17:40	
Duplicate # 36	O ₃	09/28/2012	10:20	10/29/2012	11:30	

Passive Network Laboratory Analysis



Your Project #: 2012/09/27 - 2012/10/31
Site Location: LICA

Attention: MICHAEL BISAGA

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

Report Date: 2012/11/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2A1766

Received: 2012/11/08, 11:32

Sample Matrix: Air
Samples Received: 34

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
H2S Passive Analysis (1)	20	2012/11/19	2012/11/20	EINDSOP-00150	Tang.Passive H2S in
NO2 Passive Analysis (1)	26	2012/11/19	2012/11/20	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	26	2012/11/20	2012/11/20	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	30	2012/11/20	2012/11/20	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 Analytics International Corporation o/a Maxxam Analytics Edmonton: 6744 - 50th Street T6B 3M9 Telephone(780) 378-8500 FAX(780) 378-8699



Maxxam Job #: B2A1766
 Report Date: 2012/11/20

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
 Client Project #: 2012/09/27 - 2012/10/31
 Site Location: LICA
 Sampler Initials: SB

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		EY6889	EY6890	EY6891	EY6892	EY6894		
Sampling Date		2012/09/27 10:35	2012/09/27 11:20	2012/09/27 13:15	2012/09/27 13:50	2012/09/28 12:00		
	UNITS	2	3	4	5	6	RDL	QC Batch

Passive Monitoring								
Calculated H2S	ppb		0.09		0.14		0.02	6354995
Calculated NO2	ppb	0.8	1.2	1.0	0.9	1.7	0.1	6356964
Calculated O3	ppb	14.6	18.8	24.4	20.5	23.8	0.1	6359679
Calculated SO2	ppb	0.1	0.1	0.4	0.2	0.2	0.1	6359634

RDL = Reportable Detection Limit

Maxxam ID		EY6895	EY6896		EY6897	EY6898		
Sampling Date		2012/09/27 14:50	2012/09/27 15:53		2012/09/26 18:50	2012/09/26 15:35		
	UNITS	8	9	QC Batch	10	11	RDL	QC Batch

Passive Monitoring								
Calculated H2S	ppb			6354995	0.08	0.07	0.02	6354995
Calculated NO2	ppb	1.0	1.7	6356964	2.9	0.6	0.1	6356964
Calculated O3	ppb	26.1	21.1	6359679	16.1	13.5	0.1	6359679
Calculated SO2	ppb	0.2	0.2	6359634	0.3	0.4	0.1	6359640

RDL = Reportable Detection Limit

Maxxam ID		EY6899	EY6900	EY6901	EY6902	EY6904		
Sampling Date		2012/09/26 16:40	2012/09/27 09:00	2012/09/27 08:05	2012/09/27 16:40	2012/09/28 13:20		
	UNITS	12	13	14	15	16	RDL	QC Batch

Passive Monitoring								
Calculated H2S	ppb	0.08	0.07	0.10		0.11	0.02	6354995
Calculated NO2	ppb	1.4	0.7	1.5	1.5	1.5	0.1	6356964
Calculated O3	ppb	17.5	20.6	18.3	19.2	19.7	0.1	6359679
Calculated SO2	ppb	0.4	0.4	0.8	0.3	0.3	0.1	6359640

RDL = Reportable Detection Limit



Maxxam Job #: B2A1766
 Report Date: 2012/11/20

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
 Client Project #: 2012/09/27 - 2012/10/31
 Site Location: LICA
 Sampler Initials: SB

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		EY6905	EY6906	EY6907		EY6908		
Sampling Date		2012/09/28 12:55	2012/09/28 14:44	2012/09/28 15:40		2012/09/28 07:50		
	UNITS	17	18	19	QC Batch	22	RDL	QC Batch

Passive Monitoring								
Calculated H2S	ppb	0.11	0.09		6354995	0.07	0.02	6354995
Calculated NO2	ppb	1.2	1.0	0.7	6356964	1.7	0.1	6356967
Calculated O3	ppb	22.6	18.3	23.7	6359679	19.1	0.1	6359679
Calculated SO2	ppb	0.3	0.2	0.3	6359640	0.3	0.1	6359640
RDL = Reportable Detection Limit								

Maxxam ID		EY6909	EY6910	EY6911	EY6912	EY6913		
Sampling Date		2012/09/27 17:30	2012/09/28 11:30	2012/09/26 17:58	2012/09/27 08:30	2012/09/27 07:40		
	UNITS	23	24	25	26	27	RDL	QC Batch

Passive Monitoring								
Calculated H2S	ppb		0.07	0.08	0.12	0.36	0.02	6354995
Calculated NO2	ppb	0.3	2.1				0.1	6356967
Calculated O3	ppb	16.3	23.5				0.1	6359689
Calculated SO2	ppb	0.2	0.3	0.8	0.4	1.0	0.1	6359640
RDL = Reportable Detection Limit								

Maxxam ID		EY6914	EY6915	EY6916	EY6917	EY6923		
Sampling Date		2012/09/27 15:33	2012/09/28 08:15	2012/09/27 12:20	2012/09/28 10:20	2012/09/27 12:20		
	UNITS	28	29	32	36	32 DUP	RDL	QC Batch

Passive Monitoring								
Calculated H2S	ppb		0.10	0.11	0.11		0.02	6354995
Calculated NO2	ppb	3.4	1.3	0.6	3.4	0.6	0.1	6356967
Calculated O3	ppb	18.8	21.6	27.8	18.4	22.4	0.1	6359689
Calculated SO2	ppb	0.5	0.4	0.4	0.3		0.1	6359640
RDL = Reportable Detection Limit								



Maxxam Job #: B2A1766
 Report Date: 2012/11/20

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
 Client Project #: 2012/09/27 - 2012/10/31
 Site Location: LICA
 Sampler Initials: SB

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		EY6927		EY6928	EY6929		EY6930		
Sampling Date		2012/09/27 10:20		2012/09/27 14:50	2012/09/27 15:53		2012/09/27 16:40		
	UNITS	36 DUP	QC Batch	8 DUP	9 DUP	QC Batch	15 DUP	RDL	QC Batch

Passive Monitoring									
Calculated NO2	ppb	3.2	6356967					0.1	
Calculated O3	ppb	22.3	6359689					0.1	
Calculated SO2	ppb		6359640	0.4	0.2	6359634	0.3	0.1	6359640

RDL = Reportable Detection Limit

Maxxam ID		EY6931	EY6932		
Sampling Date		2012/09/26 09:00	2012/09/26 08:05		
	UNITS	13 DUP	14 DUP	RDL	QC Batch

Passive Monitoring					
Calculated H2S	ppb	0.07	0.10	0.02	6354995

RDL = Reportable Detection Limit



Maxxam Job #: B2A1766
Report Date: 2012/11/20

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2012/09/27 - 2012/10/31
Site Location: LICA
Sampler Initials: SB

General Comments

Results relate only to the items tested.



LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
 Attention: MICHAEL BISAGA
 Client Project #: 2012/09/27 - 2012/10/31
 P.O. #:
 Site Location: LICA

Quality Assurance Report
 Maxxam Job Number: PB2A1766

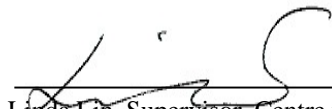
QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
6354995 WC6	Calibration Check	Calculated H2S	2012/11/19		99	%	80 - 120
	Spiked Blank	Calculated H2S	2012/11/19		98	%	N/A
6356964 DF4	Calibration Check	Calculated NO2	2012/11/19		99	%	76 - 118
	Spiked Blank	Calculated NO2	2012/11/19		100	%	N/A
	Method Blank	Calculated NO2	2012/11/19	<0.1		ppb	
6356967 DF4	Calibration Check	Calculated NO2	2012/11/20		99	%	76 - 118
	Spiked Blank	Calculated NO2	2012/11/20		93	%	N/A
	Method Blank	Calculated NO2	2012/11/20	<0.1		ppb	
6359634 DF4	Calibration Check	Calculated SO2	2012/11/20		100	%	95 - 105
	Spiked Blank	Calculated SO2	2012/11/20		101	%	N/A
	Method Blank	Calculated SO2	2012/11/20	<0.1		ppb	
6359640 DF4	Calibration Check	Calculated SO2	2012/11/20		99	%	95 - 105
	Spiked Blank	Calculated SO2	2012/11/20		107	%	N/A
	Method Blank	Calculated SO2	2012/11/20	<0.1		ppb	
6359679 OZ	Calibration Check	Calculated O3	2012/11/20		100	%	91 - 107
	Spiked Blank	Calculated O3	2012/11/20		103	%	N/A
	Method Blank	Calculated O3	2012/11/20	<0.1		ppb	
6359689 OZ	Calibration Check	Calculated O3	2012/11/20		101	%	91 - 107
	Spiked Blank	Calculated O3	2012/11/20		100	%	N/A
	Method Blank	Calculated O3	2012/11/20	<0.1		ppb	

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

Validation Signature Page

Maxxam Job #: B2A1766

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

A handwritten signature in black ink, appearing to be "Linda Lin", written over a horizontal line.

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: 263
Station ID: Lica 1 Canister Installation Date/Time: Oct 05, 2012 @ 17:08 mst
Field Sample ID: LICA VOC/ CLS /Oct 06, 2012 Canister Removal Date/Time: Oct 09, 2012 @ 07:40 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
06-Oct-12	10/06/2012 0:00	10/07/2012 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# 10204

Technician Signature: Ting Xu



Your C.O.C. #: 10204

Attention: Michael Bisaga

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

Report Date: 2012/10/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G0303

Received: 2012/10/16, 09:36

Sample Matrix: AIR
 # Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/10/31	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/10/26	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 or as contractually agreed 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

=====
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Total cover pages: 1

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

RESULTS OF ANALYSES OF AIR

Maxxam ID		PF4609	PF4610	
Sampling Date		2012/10/06	2012/10/06	
COC Number		10204	10204	
	Units	LICA VOC/CLS/OCT 06,12 - 263	LICA VOC/PORT/OCT 06,12 - 293	QC Batch

Volatile Organics				
Pressure on Receipt	psig	23	22	3016851

QC Batch = Quality Control Batch

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF4609			PF4610				
Sampling Date		2012/10/06			2012/10/06				
COC Number		10204			10204				
	Units	LICA VOC/CLS/OCT 06,12 - 263	ug/m3	DL (ug/m3)	LICA VOC/PORT/OCT 06,12 - 293	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics									
Dichlorodifluoromethane (FREON 12)	ppbv	0.73	3.60	0.989	0.75	0.20	3.73	0.989	3016849
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	<1.19	1.19	<0.17	0.17	<1.19	1.19	3016849
Chloromethane	ppbv	0.57	1.18	0.620	0.58	0.30	1.19	0.620	3016849
Vinyl Chloride	ppbv	<0.18	<0.460	0.460	<0.18	0.18	<0.460	0.460	3016849
Chloroethane	ppbv	<0.30	<0.792	0.792	<0.30	0.30	<0.792	0.792	3016849
1,3-Butadiene	ppbv	<0.50	<1.11	1.11	<0.50	0.50	<1.11	1.11	3016849
Trichlorofluoromethane (FREON 11)	ppbv	0.31	1.73	1.12	0.30	0.20	1.69	1.12	3016849
Ethanol (ethyl alcohol)	ppbv	<2.3	<4.33	4.33	<2.3	2.3	<4.33	4.33	3016849
Trichlorotrifluoroethane	ppbv	<0.15	<1.15	1.15	<0.15	0.15	<1.15	1.15	3016849
2-propanol	ppbv	<3.0	<7.37	7.37	<3.0	3.0	<7.37	7.37	3016849
2-Propanone	ppbv	2.37	5.63	1.90	2.11	0.80	5.01	1.90	3016849
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	<8.85	8.85	<3.0	3.0	<8.85	8.85	3016849
Methyl Isobutyl Ketone	ppbv	<3.2	<13.1	13.1	<3.2	3.2	<13.1	13.1	3016849
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	<8.19	8.19	<2.0	2.0	<8.19	8.19	3016849
Methyl t-butyl ether (MTBE)	ppbv	<0.20	<0.721	0.721	<0.20	0.20	<0.721	0.721	3016849
Ethyl Acetate	ppbv	<2.2	<7.93	7.93	<2.2	2.2	<7.93	7.93	3016849
1,1-Dichloroethylene	ppbv	<0.25	<0.991	0.991	<0.25	0.25	<0.991	0.991	3016849
cis-1,2-Dichloroethylene	ppbv	<0.19	<0.753	0.753	<0.19	0.19	<0.753	0.753	3016849
trans-1,2-Dichloroethylene	ppbv	<0.20	<0.793	0.793	<0.20	0.20	<0.793	0.793	3016849
Methylene Chloride(Dichloromethane)	ppbv	<0.80	<2.78	2.78	<0.80	0.80	<2.78	2.78	3016849
Chloroform	ppbv	<0.15	<0.732	0.732	<0.15	0.15	<0.732	0.732	3016849
Carbon Tetrachloride	ppbv	<0.30	<1.89	1.89	<0.30	0.30	<1.89	1.89	3016849
1,1-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
1,2-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
Ethylene Dibromide	ppbv	<0.17	<1.31	1.31	<0.17	0.17	<1.31	1.31	3016849
1,1,1-Trichloroethane	ppbv	<0.30	<1.64	1.64	<0.30	0.30	<1.64	1.64	3016849
1,1,2-Trichloroethane	ppbv	<0.15	<0.818	0.818	<0.15	0.15	<0.818	0.818	3016849
1,1,2,2-Tetrachloroethane	ppbv	<0.20	<1.37	1.37	<0.20	0.20	<1.37	1.37	3016849
cis-1,3-Dichloropropene	ppbv	<0.18	<0.817	0.817	<0.18	0.18	<0.817	0.817	3016849
trans-1,3-Dichloropropene	ppbv	<0.17	<0.772	0.772	<0.17	0.17	<0.772	0.772	3016849
1,2-Dichloropropane	ppbv	<0.40	<1.85	1.85	<0.40	0.40	<1.85	1.85	3016849

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF4609			PF4610				
Sampling Date		2012/10/06			2012/10/06				
COC Number		10204			10204				
	Units	LICA VOC/CLS/OCT 06,12 - 263	ug/m3	DL (ug/m3)	LICA VOC/PORT/OCT 06,12 - 293	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	<0.699	0.699	<0.18	0.18	<0.699	0.699	3016849
Bromoform	ppbv	<0.20	<2.07	2.07	<0.20	0.20	<2.07	2.07	3016849
Bromodichloromethane	ppbv	<0.20	<1.34	1.34	<0.20	0.20	<1.34	1.34	3016849
Dibromochloromethane	ppbv	<0.20	<1.70	1.70	<0.20	0.20	<1.70	1.70	3016849
Trichloroethylene	ppbv	<0.30	<1.61	1.61	<0.30	0.30	<1.61	1.61	3016849
Tetrachloroethylene	ppbv	<0.20	<1.36	1.36	<0.20	0.20	<1.36	1.36	3016849
Benzene	ppbv	<0.18	<0.575	0.575	<0.18	0.18	<0.575	0.575	3016849
Toluene	ppbv	<0.20	<0.753	0.753	<0.20	0.20	<0.753	0.753	3016849
Ethylbenzene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
p+m-Xylene	ppbv	<0.37	<1.61	1.61	<0.37	0.37	<1.61	1.61	3016849
o-Xylene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
Styrene	ppbv	<0.20	<0.852	0.852	<0.20	0.20	<0.852	0.852	3016849
4-ethyltoluene	ppbv	<2.2	<10.8	10.8	<2.2	2.2	<10.8	10.8	3016849
1,3,5-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
1,2,4-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
Chlorobenzene	ppbv	<0.20	<0.921	0.921	<0.20	0.20	<0.921	0.921	3016849
Benzyl chloride	ppbv	<1.0	<5.18	5.18	<1.0	1.0	<5.18	5.18	3016849
1,3-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,4-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2,4-Trichlorobenzene	ppbv	<2.0	<14.8	14.8	<2.0	2.0	<14.8	14.8	3016849
Hexachlorobutadiene	ppbv	<3.0	<32.0	32.0	<3.0	3.0	<32.0	32.0	3016849
Hexane	ppbv	<0.30	<1.06	1.06	<0.30	0.30	<1.06	1.06	3016849
Heptane	ppbv	<0.30	<1.23	1.23	<0.30	0.30	<1.23	1.23	3016849
Cyclohexane	ppbv	<0.20	<0.688	0.688	<0.20	0.20	<0.688	0.688	3016849
Tetrahydrofuran	ppbv	<0.40	<1.18	1.18	<0.40	0.40	<1.18	1.18	3016849
1,4-Dioxane	ppbv	<2.0	<7.21	7.21	<2.0	2.0	<7.21	7.21	3016849
Xylene (Total)	ppbv	<0.60	<2.61	2.61	<0.60	0.60	<2.61	2.61	3016849
Vinyl Bromide	ppbv	<0.20	<0.875	0.875	<0.20	0.20	<0.875	0.875	3016849
Propene	ppbv	<0.30	<0.516	0.516	<0.30	0.30	<0.516	0.516	3016849
2,2,4-Trimethylpentane	ppbv	<0.20	<0.934	0.934	<0.20	0.20	<0.934	0.934	3016849
Carbon Disulfide	ppbv	<0.50	<1.56	1.56	<0.50	0.50	<1.56	1.56	3016849
Vinyl Acetate	ppbv	<0.20	<0.704	0.704	<0.20	0.20	<0.704	0.704	3016849
QC Batch = Quality Control Batch									

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF4609			PF4610				
Sampling Date		2012/10/06			2012/10/06				
COC Number		10204			10204				
	Units	LICA VOC/CLS/OCT 06,12 - 263	ug/m3	DL (ug/m3)	LICA VOC/PORT/OCT 06,12 - 293	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)									
Bromochloromethane	%	100	N/A	N/A	93		N/A	N/A	3016849
D5-Chlorobenzene	%	96	N/A	N/A	91		N/A	N/A	3016849
Difluorobenzene	%	100	N/A	N/A	95		N/A	N/A	3016849

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

Maxxam Job #: B2G0303
 Report Date: 2012/10/31

Test Summary

Maxxam ID PF4609
Sample ID LICA VOC/CLS/OCT 06,12 - 263
Matrix AIR

Collected 2012/10/06
Shipped
Received 2012/10/16

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam ID PF4610
Sample ID LICA VOC/PORT/OCT 06,12 - 293
Matrix AIR

Collected 2012/10/06
Shipped
Received 2012/10/16

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam Job #: B2G0303
Report Date: 2012/10/31

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: GB2G0303

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Bromochloromethane	2012/10/26		103	%	60 - 140
		D5-Chlorobenzene	2012/10/26		104	%	60 - 140
		Difluorobenzene	2012/10/26		105	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26		106	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/10/26		125	%	70 - 130
		Chloromethane	2012/10/26		110	%	70 - 130
		Vinyl Chloride	2012/10/26		108	%	70 - 130
		Chloroethane	2012/10/26		98	%	70 - 130
		1,3-Butadiene	2012/10/26		108	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/10/26		108	%	70 - 130
		Ethanol (ethyl alcohol)	2012/10/26		99	%	70 - 130
		Trichlorotrifluoroethane	2012/10/26		100	%	70 - 130
		2-propanol	2012/10/26		106	%	70 - 130
		2-Propanone	2012/10/26		102	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26		104	%	70 - 130
		Methyl Isobutyl Ketone	2012/10/26		103	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26		99	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/10/26		101	%	70 - 130
		Ethyl Acetate	2012/10/26		103	%	70 - 130
		1,1-Dichloroethylene	2012/10/26		98	%	70 - 130
		cis-1,2-Dichloroethylene	2012/10/26		100	%	70 - 130
		trans-1,2-Dichloroethylene	2012/10/26		99	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/10/26		97	%	70 - 130
		Chloroform	2012/10/26		104	%	70 - 130
		Carbon Tetrachloride	2012/10/26		109	%	70 - 130
		1,1-Dichloroethane	2012/10/26		103	%	70 - 130
		1,2-Dichloroethane	2012/10/26		104	%	70 - 130
		Ethylene Dibromide	2012/10/26		96	%	70 - 130
		1,1,1-Trichloroethane	2012/10/26		105	%	70 - 130
		1,1,2-Trichloroethane	2012/10/26		102	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/10/26		93	%	70 - 130
		cis-1,3-Dichloropropene	2012/10/26		96	%	70 - 130
		trans-1,3-Dichloropropene	2012/10/26		95	%	70 - 130
		1,2-Dichloropropane	2012/10/26		99	%	70 - 130
		Bromomethane	2012/10/26		103	%	70 - 130
		Bromoform	2012/10/26		94	%	70 - 130
		Bromodichloromethane	2012/10/26		102	%	70 - 130
		Dibromochloromethane	2012/10/26		101	%	70 - 130
		Trichloroethylene	2012/10/26		95	%	70 - 130
		Tetrachloroethylene	2012/10/26		99	%	70 - 130
		Benzene	2012/10/26		99	%	70 - 130
		Toluene	2012/10/26		100	%	70 - 130
		Ethylbenzene	2012/10/26		99	%	70 - 130
		p+m-Xylene	2012/10/26		97	%	70 - 130
		o-Xylene	2012/10/26		99	%	70 - 130
		Styrene	2012/10/26		89	%	70 - 130
		4-ethyltoluene	2012/10/26		95	%	70 - 130
		1,3,5-Trimethylbenzene	2012/10/26		96	%	70 - 130
		1,2,4-Trimethylbenzene	2012/10/26		93	%	70 - 130
		Chlorobenzene	2012/10/26		95	%	70 - 130
		Benzyl chloride	2012/10/26		73	%	70 - 130
		1,3-Dichlorobenzene	2012/10/26		85	%	70 - 130
		1,4-Dichlorobenzene	2012/10/26		77	%	70 - 130
		1,2-Dichlorobenzene	2012/10/26		82	%	70 - 130
		1,2,4-Trichlorobenzene	2012/10/26		73	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0303

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Hexachlorobutadiene	2012/10/26		92	%	70 - 130
		Hexane	2012/10/26		99	%	70 - 130
		Heptane	2012/10/26		99	%	70 - 130
		Cyclohexane	2012/10/26		97	%	70 - 130
		Tetrahydrofuran	2012/10/26		105	%	70 - 130
		1,4-Dioxane	2012/10/26		100	%	70 - 130
		Xylene (Total)	2012/10/26		98	%	70 - 130
		Vinyl Bromide	2012/10/26		95	%	70 - 130
		Propene	2012/10/26		106	%	70 - 130
		2,2,4-Trimethylpentane	2012/10/26		96	%	70 - 130
		Carbon Disulfide	2012/10/26		101	%	70 - 130
		Vinyl Acetate	2012/10/26		102	%	70 - 130
	Method Blank	Bromochloromethane	2012/10/26		92	%	60 - 140
		D5-Chlorobenzene	2012/10/26		89	%	60 - 140
		Difluorobenzene	2012/10/26		94	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/10/26	<0.17		ppbv	
		Chloromethane	2012/10/26	<0.30		ppbv	
		Vinyl Chloride	2012/10/26	<0.18		ppbv	
		Chloroethane	2012/10/26	<0.30		ppbv	
		1,3-Butadiene	2012/10/26	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/10/26	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/10/26	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/10/26	<0.15		ppbv	
		2-propanol	2012/10/26	<3.0		ppbv	
		2-Propanone	2012/10/26	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/10/26	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/10/26	<0.20		ppbv	
		Ethyl Acetate	2012/10/26	<2.2		ppbv	
		1,1-Dichloroethylene	2012/10/26	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/10/26	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/10/26	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/10/26	<0.80		ppbv	
		Chloroform	2012/10/26	<0.15		ppbv	
		Carbon Tetrachloride	2012/10/26	<0.30		ppbv	
		1,1-Dichloroethane	2012/10/26	<0.20		ppbv	
		1,2-Dichloroethane	2012/10/26	<0.20		ppbv	
		Ethylene Dibromide	2012/10/26	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/10/26	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/10/26	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/10/26	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/10/26	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/10/26	<0.17		ppbv	
		1,2-Dichloropropane	2012/10/26	<0.40		ppbv	
		Bromomethane	2012/10/26	<0.18		ppbv	
		Bromoform	2012/10/26	<0.20		ppbv	
		Bromodichloromethane	2012/10/26	<0.20		ppbv	
		Dibromochloromethane	2012/10/26	<0.20		ppbv	
		Trichloroethylene	2012/10/26	<0.30		ppbv	
		Tetrachloroethylene	2012/10/26	<0.20		ppbv	
		Benzene	2012/10/26	<0.18		ppbv	
		Toluene	2012/10/26	<0.20		ppbv	
		Ethylbenzene	2012/10/26	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0303

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Method Blank	p+m-Xylene	2012/10/26	<0.37		ppbv	
		o-Xylene	2012/10/26	<0.20		ppbv	
		Styrene	2012/10/26	<0.20		ppbv	
		4-ethyltoluene	2012/10/26	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		Chlorobenzene	2012/10/26	<0.20		ppbv	
		Benzyl chloride	2012/10/26	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/10/26	<2.0		ppbv	
		Hexachlorobutadiene	2012/10/26	<3.0		ppbv	
		Hexane	2012/10/26	<0.30		ppbv	
		Heptane	2012/10/26	<0.30		ppbv	
		Cyclohexane	2012/10/26	<0.20		ppbv	
		Tetrahydrofuran	2012/10/26	<0.40		ppbv	
		1,4-Dioxane	2012/10/26	<2.0		ppbv	
		Xylene (Total)	2012/10/26	<0.60		ppbv	
		Vinyl Bromide	2012/10/26	<0.20		ppbv	
		Propene	2012/10/26	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/10/26	<0.20		ppbv	
		Carbon Disulfide	2012/10/26	<0.50		ppbv	
		Vinyl Acetate	2012/10/26	<0.20		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.

MAXXAM

Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6167
Location: Cold Lake South Canister ID: 279
Station ID: Lica 1 Canister Installation Date/Time: Oct 11, 2012 @ 07:32 mst
Field Sample ID: LICA VOC/ CLS /Oct 12, 2012 Canister Removal Date/Time: Oct 15, 2012 @ 07:30 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
12-Oct-12	10/12/2012 0:00	10/13/2012 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# 10248

Technician Signature: Ting Xu_____



Your C.O.C. #: 10248

Attention: Michael Bisaga

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

Report Date: 2012/10/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G0955

Received: 2012/10/17, 10:39

Sample Matrix: AIR
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/10/31	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/10/26	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 or as contractually agreed 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 #: B2G0955
 Report Date: 2012/10/31

RESULTS OF ANALYSES OF AIR

Maxxam ID		PF8346	PF8347	
Sampling Date		2012/10/12	2012/10/12	
COC Number		10248	10248	
	Units	LICA VOC\ CLS\OCT 12,12 - 279	LICA VOC\ PORT\OCT 12,12 - 251	QC Batch

Volatile Organics				
Pressure on Receipt	psig	24	23	3016851
QC Batch = Quality Control Batch				

Maxxam Job #: B2G0955
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF8346			PF8347				
Sampling Date		2012/10/12			2012/10/12				
COC Number		10248			10248				
	Units	LICA VOC\ CLS\OCT 12,12 - 279	ug/m3	DL (ug/m3)	LICA VOC\ PORT\OCT 12,12 - 251	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics									
Dichlorodifluoromethane (FREON 12)	ppbv	0.75	3.68	0.989	0.74	0.20	3.64	0.989	3016849
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	<1.19	1.19	<0.17	0.17	<1.19	1.19	3016849
Chloromethane	ppbv	0.53	1.10	0.620	0.54	0.30	1.13	0.620	3016849
Vinyl Chloride	ppbv	<0.18	<0.460	0.460	<0.18	0.18	<0.460	0.460	3016849
Chloroethane	ppbv	<0.30	<0.792	0.792	<0.30	0.30	<0.792	0.792	3016849
1,3-Butadiene	ppbv	<0.50	<1.11	1.11	<0.50	0.50	<1.11	1.11	3016849
Trichlorofluoromethane (FREON 11)	ppbv	0.31	1.73	1.12	0.30	0.20	1.67	1.12	3016849
Ethanol (ethyl alcohol)	ppbv	<2.3	<4.33	4.33	<2.3	2.3	<4.33	4.33	3016849
Trichlorotrifluoroethane	ppbv	<0.15	<1.15	1.15	<0.15	0.15	<1.15	1.15	3016849
2-propanol	ppbv	<3.0	<7.37	7.37	<3.0	3.0	<7.37	7.37	3016849
2-Propanone	ppbv	1.77	4.20	1.90	0.87	0.80	2.08	1.90	3016849
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	<8.85	8.85	<3.0	3.0	<8.85	8.85	3016849
Methyl Isobutyl Ketone	ppbv	<3.2	<13.1	13.1	<3.2	3.2	<13.1	13.1	3016849
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	<8.19	8.19	<2.0	2.0	<8.19	8.19	3016849
Methyl t-butyl ether (MTBE)	ppbv	<0.20	<0.721	0.721	<0.20	0.20	<0.721	0.721	3016849
Ethyl Acetate	ppbv	<2.2	<7.93	7.93	<2.2	2.2	<7.93	7.93	3016849
1,1-Dichloroethylene	ppbv	<0.25	<0.991	0.991	<0.25	0.25	<0.991	0.991	3016849
cis-1,2-Dichloroethylene	ppbv	<0.19	<0.753	0.753	<0.19	0.19	<0.753	0.753	3016849
trans-1,2-Dichloroethylene	ppbv	<0.20	<0.793	0.793	<0.20	0.20	<0.793	0.793	3016849
Methylene Chloride(Dichloromethane)	ppbv	<0.80	<2.78	2.78	<0.80	0.80	<2.78	2.78	3016849
Chloroform	ppbv	<0.15	<0.732	0.732	<0.15	0.15	<0.732	0.732	3016849
Carbon Tetrachloride	ppbv	<0.30	<1.89	1.89	<0.30	0.30	<1.89	1.89	3016849
1,1-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
1,2-Dichloroethane	ppbv	<0.20	<0.809	0.809	<0.20	0.20	<0.809	0.809	3016849
Ethylene Dibromide	ppbv	<0.17	<1.31	1.31	<0.17	0.17	<1.31	1.31	3016849
1,1,1-Trichloroethane	ppbv	<0.30	<1.64	1.64	<0.30	0.30	<1.64	1.64	3016849
1,1,2-Trichloroethane	ppbv	<0.15	<0.818	0.818	<0.15	0.15	<0.818	0.818	3016849
1,1,2,2-Tetrachloroethane	ppbv	<0.20	<1.37	1.37	<0.20	0.20	<1.37	1.37	3016849
cis-1,3-Dichloropropene	ppbv	<0.18	<0.817	0.817	<0.18	0.18	<0.817	0.817	3016849
trans-1,3-Dichloropropene	ppbv	<0.17	<0.772	0.772	<0.17	0.17	<0.772	0.772	3016849
1,2-Dichloropropane	ppbv	<0.40	<1.85	1.85	<0.40	0.40	<1.85	1.85	3016849

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF8346			PF8347				
Sampling Date		2012/10/12			2012/10/12				
COC Number		10248			10248				
	Units	LICA VOC\ CLS\OCT 12,12 - 279	ug/m3	DL (ug/m3)	LICA VOC\ PORT\OCT 12,12 - 251	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	<0.699	0.699	<0.18	0.18	<0.699	0.699	3016849
Bromoform	ppbv	<0.20	<2.07	2.07	<0.20	0.20	<2.07	2.07	3016849
Bromodichloromethane	ppbv	<0.20	<1.34	1.34	<0.20	0.20	<1.34	1.34	3016849
Dibromochloromethane	ppbv	<0.20	<1.70	1.70	<0.20	0.20	<1.70	1.70	3016849
Trichloroethylene	ppbv	<0.30	<1.61	1.61	<0.30	0.30	<1.61	1.61	3016849
Tetrachloroethylene	ppbv	<0.20	<1.36	1.36	<0.20	0.20	<1.36	1.36	3016849
Benzene	ppbv	<0.18	<0.575	0.575	<0.18	0.18	<0.575	0.575	3016849
Toluene	ppbv	0.21	0.802	0.753	<0.20	0.20	<0.753	0.753	3016849
Ethylbenzene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
p+m-Xylene	ppbv	<0.37	<1.61	1.61	<0.37	0.37	<1.61	1.61	3016849
o-Xylene	ppbv	<0.20	<0.868	0.868	<0.20	0.20	<0.868	0.868	3016849
Styrene	ppbv	<0.20	<0.852	0.852	<0.20	0.20	<0.852	0.852	3016849
4-ethyltoluene	ppbv	<2.2	<10.8	10.8	<2.2	2.2	<10.8	10.8	3016849
1,3,5-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
1,2,4-Trimethylbenzene	ppbv	<0.50	<2.46	2.46	<0.50	0.50	<2.46	2.46	3016849
Chlorobenzene	ppbv	<0.20	<0.921	0.921	<0.20	0.20	<0.921	0.921	3016849
Benzyl chloride	ppbv	<1.0	<5.18	5.18	<1.0	1.0	<5.18	5.18	3016849
1,3-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,4-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2-Dichlorobenzene	ppbv	<0.40	<2.40	2.40	<0.40	0.40	<2.40	2.40	3016849
1,2,4-Trichlorobenzene	ppbv	<2.0	<14.8	14.8	<2.0	2.0	<14.8	14.8	3016849
Hexachlorobutadiene	ppbv	<3.0	<32.0	32.0	<3.0	3.0	<32.0	32.0	3016849
Hexane	ppbv	<0.30	<1.06	1.06	<0.30	0.30	<1.06	1.06	3016849
Heptane	ppbv	<0.30	<1.23	1.23	<0.30	0.30	<1.23	1.23	3016849
Cyclohexane	ppbv	<0.20	<0.688	0.688	<0.20	0.20	<0.688	0.688	3016849
Tetrahydrofuran	ppbv	<0.40	<1.18	1.18	<0.40	0.40	<1.18	1.18	3016849
1,4-Dioxane	ppbv	<2.0	<7.21	7.21	<2.0	2.0	<7.21	7.21	3016849
Xylene (Total)	ppbv	<0.60	<2.61	2.61	<0.60	0.60	<2.61	2.61	3016849
Vinyl Bromide	ppbv	<0.20	<0.875	0.875	<0.20	0.20	<0.875	0.875	3016849
Propene	ppbv	<0.30	<0.516	0.516	<0.30	0.30	<0.516	0.516	3016849
2,2,4-Trimethylpentane	ppbv	<0.20	<0.934	0.934	<0.20	0.20	<0.934	0.934	3016849
Carbon Disulfide	ppbv	<0.50	<1.56	1.56	<0.50	0.50	<1.56	1.56	3016849
Vinyl Acetate	ppbv	<0.20	<0.704	0.704	<0.20	0.20	<0.704	0.704	3016849
QC Batch = Quality Control Batch									

Maxxam Job #: B2G0955
 Report Date: 2012/10/31

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PF8346			PF8347				
Sampling Date		2012/10/12			2012/10/12				
COC Number		10248			10248				
	Units	LICA VOC\ CLS\OCT 12,12 - 279	ug/m3	DL (ug/m3)	LICA VOC\ PORT\OCT 12,12 - 251	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)									
Bromochloromethane	%	88	N/A	N/A	86		N/A	N/A	3016849
D5-Chlorobenzene	%	86	N/A	N/A	83		N/A	N/A	3016849
Difluorobenzene	%	89	N/A	N/A	86		N/A	N/A	3016849

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

Maxxam Job #: B2G0955
 Report Date: 2012/10/31

Test Summary

Maxxam ID PF8346
Sample ID LICA VOC\CLS\OCT 12,12 - 279
Matrix AIR

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam ID PF8347
Sample ID LICA VOC\PORT\OCT 12,12 - 251
Matrix AIR

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3016851	N/A	2012/10/31	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	3016849	N/A	2012/10/26	Yao Liang Sun

Maxxam Job #: B2G0955
Report Date: 2012/10/31

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: GB2G0955

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Bromochloromethane	2012/10/26		103	%	60 - 140
		D5-Chlorobenzene	2012/10/26		104	%	60 - 140
		Difluorobenzene	2012/10/26		105	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26		106	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/10/26		125	%	70 - 130
		Chloromethane	2012/10/26		110	%	70 - 130
		Vinyl Chloride	2012/10/26		108	%	70 - 130
		Chloroethane	2012/10/26		98	%	70 - 130
		1,3-Butadiene	2012/10/26		108	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/10/26		108	%	70 - 130
		Ethanol (ethyl alcohol)	2012/10/26		99	%	70 - 130
		Trichlorotrifluoroethane	2012/10/26		100	%	70 - 130
		2-propanol	2012/10/26		106	%	70 - 130
		2-Propanone	2012/10/26		102	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26		104	%	70 - 130
		Methyl Isobutyl Ketone	2012/10/26		103	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26		99	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/10/26		101	%	70 - 130
		Ethyl Acetate	2012/10/26		103	%	70 - 130
		1,1-Dichloroethylene	2012/10/26		98	%	70 - 130
		cis-1,2-Dichloroethylene	2012/10/26		100	%	70 - 130
		trans-1,2-Dichloroethylene	2012/10/26		99	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/10/26		97	%	70 - 130
		Chloroform	2012/10/26		104	%	70 - 130
		Carbon Tetrachloride	2012/10/26		109	%	70 - 130
		1,1-Dichloroethane	2012/10/26		103	%	70 - 130
		1,2-Dichloroethane	2012/10/26		104	%	70 - 130
		Ethylene Dibromide	2012/10/26		96	%	70 - 130
		1,1,1-Trichloroethane	2012/10/26		105	%	70 - 130
		1,1,2-Trichloroethane	2012/10/26		102	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/10/26		93	%	70 - 130
		cis-1,3-Dichloropropene	2012/10/26		96	%	70 - 130
		trans-1,3-Dichloropropene	2012/10/26		95	%	70 - 130
		1,2-Dichloropropane	2012/10/26		99	%	70 - 130
		Bromomethane	2012/10/26		103	%	70 - 130
		Bromoform	2012/10/26		94	%	70 - 130
		Bromodichloromethane	2012/10/26		102	%	70 - 130
		Dibromochloromethane	2012/10/26		101	%	70 - 130
		Trichloroethylene	2012/10/26		95	%	70 - 130
		Tetrachloroethylene	2012/10/26		99	%	70 - 130
		Benzene	2012/10/26		99	%	70 - 130
		Toluene	2012/10/26		100	%	70 - 130
		Ethylbenzene	2012/10/26		99	%	70 - 130
		p+m-Xylene	2012/10/26		97	%	70 - 130
		o-Xylene	2012/10/26		99	%	70 - 130
		Styrene	2012/10/26		89	%	70 - 130
		4-ethyltoluene	2012/10/26		95	%	70 - 130
		1,3,5-Trimethylbenzene	2012/10/26		96	%	70 - 130
		1,2,4-Trimethylbenzene	2012/10/26		93	%	70 - 130
		Chlorobenzene	2012/10/26		95	%	70 - 130
		Benzyl chloride	2012/10/26		73	%	70 - 130
		1,3-Dichlorobenzene	2012/10/26		85	%	70 - 130
		1,4-Dichlorobenzene	2012/10/26		77	%	70 - 130
		1,2-Dichlorobenzene	2012/10/26		82	%	70 - 130
		1,2,4-Trichlorobenzene	2012/10/26		73	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0955

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Spiked Blank	Hexachlorobutadiene	2012/10/26		92	%	70 - 130
		Hexane	2012/10/26		99	%	70 - 130
		Heptane	2012/10/26		99	%	70 - 130
		Cyclohexane	2012/10/26		97	%	70 - 130
		Tetrahydrofuran	2012/10/26		105	%	70 - 130
		1,4-Dioxane	2012/10/26		100	%	70 - 130
		Xylene (Total)	2012/10/26		98	%	70 - 130
		Vinyl Bromide	2012/10/26		95	%	70 - 130
		Propene	2012/10/26		106	%	70 - 130
		2,2,4-Trimethylpentane	2012/10/26		96	%	70 - 130
		Carbon Disulfide	2012/10/26		101	%	70 - 130
		Vinyl Acetate	2012/10/26		102	%	70 - 130
	Method Blank	Bromochloromethane	2012/10/26		92	%	60 - 140
		D5-Chlorobenzene	2012/10/26		89	%	60 - 140
		Difluorobenzene	2012/10/26		94	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/26	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/10/26	<0.17		ppbv	
		Chloromethane	2012/10/26	<0.30		ppbv	
		Vinyl Chloride	2012/10/26	<0.18		ppbv	
		Chloroethane	2012/10/26	<0.30		ppbv	
		1,3-Butadiene	2012/10/26	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/10/26	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/10/26	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/10/26	<0.15		ppbv	
		2-propanol	2012/10/26	<3.0		ppbv	
		2-Propanone	2012/10/26	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/10/26	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/10/26	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/10/26	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/10/26	<0.20		ppbv	
		Ethyl Acetate	2012/10/26	<2.2		ppbv	
		1,1-Dichloroethylene	2012/10/26	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/10/26	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/10/26	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/10/26	<0.80		ppbv	
		Chloroform	2012/10/26	<0.15		ppbv	
		Carbon Tetrachloride	2012/10/26	<0.30		ppbv	
		1,1-Dichloroethane	2012/10/26	<0.20		ppbv	
		1,2-Dichloroethane	2012/10/26	<0.20		ppbv	
		Ethylene Dibromide	2012/10/26	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/10/26	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/10/26	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/10/26	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/10/26	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/10/26	<0.17		ppbv	
		1,2-Dichloropropane	2012/10/26	<0.40		ppbv	
		Bromomethane	2012/10/26	<0.18		ppbv	
		Bromoform	2012/10/26	<0.20		ppbv	
		Bromodichloromethane	2012/10/26	<0.20		ppbv	
		Dibromochloromethane	2012/10/26	<0.20		ppbv	
		Trichloroethylene	2012/10/26	<0.30		ppbv	
		Tetrachloroethylene	2012/10/26	<0.20		ppbv	
		Benzene	2012/10/26	<0.18		ppbv	
		Toluene	2012/10/26	<0.20		ppbv	
		Ethylbenzene	2012/10/26	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G0955

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3016849 LSY	Method Blank	p+m-Xylene	2012/10/26	<0.37		ppbv	
		o-Xylene	2012/10/26	<0.20		ppbv	
		Styrene	2012/10/26	<0.20		ppbv	
		4-ethyltoluene	2012/10/26	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/10/26	<0.50		ppbv	
		Chlorobenzene	2012/10/26	<0.20		ppbv	
		Benzyl chloride	2012/10/26	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/10/26	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/10/26	<2.0		ppbv	
		Hexachlorobutadiene	2012/10/26	<3.0		ppbv	
		Hexane	2012/10/26	<0.30		ppbv	
		Heptane	2012/10/26	<0.30		ppbv	
		Cyclohexane	2012/10/26	<0.20		ppbv	
		Tetrahydrofuran	2012/10/26	<0.40		ppbv	
		1,4-Dioxane	2012/10/26	<2.0		ppbv	
		Xylene (Total)	2012/10/26	<0.60		ppbv	
		Vinyl Bromide	2012/10/26	<0.20		ppbv	
		Propene	2012/10/26	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/10/26	<0.20		ppbv	
		Carbon Disulfide	2012/10/26	<0.50		ppbv	
		Vinyl Acetate	2012/10/26	<0.20		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.

MAXXAM

Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6167
Location: Cold Lake South Canister ID: S2360
Station ID: Lica 1 Canister Installation Date/Time: Oct 17, 2012 @ 08:35 mst
Field Sample ID: LICA VOC/ CLS /Oct 18, 2012 Canister Removal Date/Time: Oct 19, 2012 @ 14:30 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
18-Oct-12	10/18/2012 0:00	10/19/2012 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# 12498

Technician Signiture: Ting Xu_____



Your C.O.C. #: 12498

Attention: Michael Bisaga

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

Report Date: 2012/11/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G5647

Received: 2012/10/24, 10:59

Sample Matrix: AIR
 # Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/11/08	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/11/08	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 or as contractually agreed 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 #: B2G5647
 Report Date: 2012/11/14

RESULTS OF ANALYSES OF AIR

Maxxam ID		PI3792	PI3793	
Sampling Date		2012/10/18	2012/10/18	
COC Number		12498	12498	
	Units	LICA VOC/CLS/OCT 18,12	LICA VOC/PORT/OCT 18,12	QC Batch

Volatile Organics				
Pressure on Receipt	psig	23	22	3033295

QC Batch = Quality Control Batch

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3792				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/CLS/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatiles Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.63	0.20	3.12	0.989	3033431
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3033431
Chloromethane	ppbv	0.49	0.30	1.01	0.620	3033431
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3033431
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3033431
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3033431
Trichlorofluoromethane (FREON 11)	ppbv	0.32	0.20	1.79	1.12	3033431
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3033431
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3033431
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3033431
2-Propanone	ppbv	1.45	0.80	3.45	1.90	3033431
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3033431
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3033431
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3033431
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3033431
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3033431
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3033431
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3033431
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3033431
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3033431
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3033431
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3033431
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3033431
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3033431
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3033431
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3033431
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3033431
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3033431
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3033431
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3792				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/CLS/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3033431
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3033431
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3033431
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3033431
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3033431
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3033431
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3033431
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3033431
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3033431
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3033431
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3033431
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3033431
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3033431
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3033431
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3033431
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3033431
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3033431
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3033431
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3033431
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3033431
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3033431
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3033431
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3033431
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3033431
Propene	ppbv	<0.70	0.70	<1.20	1.20	3033431
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3033431
Carbon Disulfide	ppbv	0.53	0.50	1.64	1.56	3033431
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3033431
QC Batch = Quality Control Batch						

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3792				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/CLS/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	76		N/A	N/A	3033431
D5-Chlorobenzene	%	77		N/A	N/A	3033431
Difluorobenzene	%	83		N/A	N/A	3033431
N/A = Not Applicable QC Batch = Quality Control Batch						

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3793				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/PORT/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.63	0.20	3.12	0.989	3033431
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3033431
Chloromethane	ppbv	0.60	0.30	1.23	0.620	3033431
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3033431
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3033431
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3033431
Trichlorofluoromethane (FREON 11)	ppbv	0.32	0.20	1.78	1.12	3033431
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3033431
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3033431
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3033431
2-Propanone	ppbv	2.56	0.80	6.09	1.90	3033431
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3033431
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3033431
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3033431
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3033431
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3033431
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3033431
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3033431
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3033431
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3033431
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3033431
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3033431
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3033431
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3033431
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3033431
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3033431
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3033431
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3033431
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3033431
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3033431

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3793				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/PORT/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3033431
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3033431
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3033431
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3033431
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3033431
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3033431
Benzene	ppbv	<0.18	0.18	<0.575	0.575	3033431
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3033431
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3033431
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3033431
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3033431
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3033431
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3033431
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3033431
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3033431
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3033431
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3033431
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3033431
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3033431
Hexane	ppbv	0.55	0.30	1.95	1.06	3033431
Heptane	ppbv	0.42	0.30	1.71	1.23	3033431
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3033431
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3033431
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3033431
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3033431
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3033431
Propene	ppbv	<2.2	2.2	<3.79	3.79	3033431
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3033431
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3033431
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3033431
QC Batch = Quality Control Batch						

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PI3793				
Sampling Date		2012/10/18				
COC Number		12498				
	Units	LICA VOC/PORT/OCT 18,12	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	76		N/A	N/A	3033431
D5-Chlorobenzene	%	74		N/A	N/A	3033431
Difluorobenzene	%	83		N/A	N/A	3033431

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

Maxxam Job #: B2G5647
 Report Date: 2012/11/14

Test Summary

Maxxam ID PI3792
Sample ID LICA VOC/CLS/OCT 18,12
Matrix AIR

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3033295	N/A	2012/11/08	Jie Wu
Volatile Organics in Air (TO-15)	GC/MS	3033431	N/A	2012/11/08	Jie Wu

Maxxam ID PI3793
Sample ID LICA VOC/PORT/OCT 18,12
Matrix AIR

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3033295	N/A	2012/11/08	Jie Wu
Volatile Organics in Air (TO-15)	GC/MS	3033431	N/A	2012/11/08	Jie Wu

Maxxam Job #: B2G5647
Report Date: 2012/11/14

GENERAL COMMENTS

Sample PI3792-01: The amount reported for acetone represents the mixture of acetone and pentane.

Increased DL for propene due to possible background.

Sample PI3793-01: The amount reported for acetone represents the mixture of acetone and pentane.

Increased DL for propene due to possible background.

Results relate only to the items tested.

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

Quality Assurance Report
 Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431 JIW	Spiked Blank	Bromochloromethane	2012/11/08		103	%	60 - 140
		D5-Chlorobenzene	2012/11/08		107	%	60 - 140
		Difluorobenzene	2012/11/08		104	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/08		93	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/11/08		104	%	70 - 130
		Chloromethane	2012/11/08		104	%	70 - 130
		Vinyl Chloride	2012/11/08		92	%	70 - 130
		Chloroethane	2012/11/08		79	%	70 - 130
		1,3-Butadiene	2012/11/08		94	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/11/08		106	%	70 - 130
		Ethanol (ethyl alcohol)	2012/11/08		92	%	70 - 130
		Trichlorotrifluoroethane	2012/11/08		87	%	70 - 130
		2-propanol	2012/11/08		97	%	70 - 130
		2-Propanone	2012/11/08		99	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/11/08		115	%	70 - 130
		Methyl Isobutyl Ketone	2012/11/08		100	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/11/08		102	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/11/08		89	%	70 - 130
		Ethyl Acetate	2012/11/08		101	%	70 - 130
		1,1-Dichloroethylene	2012/11/08		85	%	70 - 130
		cis-1,2-Dichloroethylene	2012/11/08		90	%	70 - 130
		trans-1,2-Dichloroethylene	2012/11/08		89	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/11/08		91	%	70 - 130
		Chloroform	2012/11/08		92	%	70 - 130
		Carbon Tetrachloride	2012/11/08		110	%	70 - 130
		1,1-Dichloroethane	2012/11/08		86	%	70 - 130
		1,2-Dichloroethane	2012/11/08		95	%	70 - 130
		Ethylene Dibromide	2012/11/08		96	%	70 - 130
		1,1,1-Trichloroethane	2012/11/08		102	%	70 - 130
		1,1,2-Trichloroethane	2012/11/08		97	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/11/08		94	%	70 - 130
		cis-1,3-Dichloropropene	2012/11/08		91	%	70 - 130
		trans-1,3-Dichloropropene	2012/11/08		96	%	70 - 130
		1,2-Dichloropropane	2012/11/08		92	%	70 - 130
		Bromomethane	2012/11/08		86	%	70 - 130
		Bromoform	2012/11/08		110	%	70 - 130
		Bromodichloromethane	2012/11/08		97	%	70 - 130
		Dibromochloromethane	2012/11/08		105	%	70 - 130
		Trichloroethylene	2012/11/08		102	%	70 - 130
		Tetrachloroethylene	2012/11/08		105	%	70 - 130
		Benzene	2012/11/08		90	%	70 - 130
		Toluene	2012/11/08		93	%	70 - 130
		Ethylbenzene	2012/11/08		96	%	70 - 130
		p+m-Xylene	2012/11/08		93	%	70 - 130
		o-Xylene	2012/11/08		96	%	70 - 130
		Styrene	2012/11/08		97	%	70 - 130
		4-ethyltoluene	2012/11/08		98	%	70 - 130
		1,3,5-Trimethylbenzene	2012/11/08		89	%	70 - 130
		1,2,4-Trimethylbenzene	2012/11/08		89	%	70 - 130
		Chlorobenzene	2012/11/08		101	%	70 - 130
		Benzyl chloride	2012/11/08		82	%	70 - 130
		1,3-Dichlorobenzene	2012/11/08		102	%	70 - 130
		1,4-Dichlorobenzene	2012/11/08		97	%	70 - 130
		1,2-Dichlorobenzene	2012/11/08		93	%	70 - 130
		1,2,4-Trichlorobenzene	2012/11/08		86	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431 JIW	Spiked Blank	Hexachlorobutadiene	2012/11/08		107	%	70 - 130
		Hexane	2012/11/08		92	%	70 - 130
		Heptane	2012/11/08		106	%	70 - 130
		Cyclohexane	2012/11/08		97	%	70 - 130
		Tetrahydrofuran	2012/11/08		106	%	70 - 130
		1,4-Dioxane	2012/11/08		88	%	70 - 130
		Xylene (Total)	2012/11/08		94	%	70 - 130
		Vinyl Bromide	2012/11/08		85	%	70 - 130
		Propene	2012/11/08		92	%	70 - 130
		2,2,4-Trimethylpentane	2012/11/08		94	%	70 - 130
		Carbon Disulfide	2012/11/08		89	%	70 - 130
	Method Blank	Vinyl Acetate	2012/11/08		102	%	70 - 130
		Bromochloromethane	2012/11/08		87	%	60 - 140
		D5-Chlorobenzene	2012/11/08		82	%	60 - 140
		Difluorobenzene	2012/11/08		89	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/08	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/11/08	<0.17		ppbv	
		Chloromethane	2012/11/08	<0.30		ppbv	
		Vinyl Chloride	2012/11/08	<0.18		ppbv	
		Chloroethane	2012/11/08	<0.30		ppbv	
		1,3-Butadiene	2012/11/08	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/11/08	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/11/08	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/11/08	<0.15		ppbv	
		2-propanol	2012/11/08	<3.0		ppbv	
		2-Propanone	2012/11/08	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/11/08	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/11/08	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/11/08	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/11/08	<0.20		ppbv	
		Ethyl Acetate	2012/11/08	<2.2		ppbv	
		1,1-Dichloroethylene	2012/11/08	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/11/08	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/11/08	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/11/08	<0.80		ppbv	
		Chloroform	2012/11/08	<0.15		ppbv	
		Carbon Tetrachloride	2012/11/08	<0.30		ppbv	
		1,1-Dichloroethane	2012/11/08	<0.20		ppbv	
		1,2-Dichloroethane	2012/11/08	<0.20		ppbv	
		Ethylene Dibromide	2012/11/08	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/11/08	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/11/08	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/11/08	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/11/08	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/11/08	<0.17		ppbv	
		1,2-Dichloropropane	2012/11/08	<0.40		ppbv	
		Bromomethane	2012/11/08	<0.18		ppbv	
		Bromoform	2012/11/08	<0.20		ppbv	
		Bromodichloromethane	2012/11/08	<0.20		ppbv	
		Dibromochloromethane	2012/11/08	<0.20		ppbv	
		Trichloroethylene	2012/11/08	<0.30		ppbv	
		Tetrachloroethylene	2012/11/08	<0.20		ppbv	
		Benzene	2012/11/08	<0.18		ppbv	
		Toluene	2012/11/08	<0.20		ppbv	
		Ethylbenzene	2012/11/08	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431	JIW	Method Blank					
		p+m-Xylene	2012/11/08	<0.37		ppbv	
		o-Xylene	2012/11/08	<0.20		ppbv	
		Styrene	2012/11/08	<0.20		ppbv	
		4-ethyltoluene	2012/11/08	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/11/08	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/11/08	<0.50		ppbv	
		Chlorobenzene	2012/11/08	<0.20		ppbv	
		Benzyl chloride	2012/11/08	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/11/08	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/11/08	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/11/08	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/11/08	<2.0		ppbv	
		Hexachlorobutadiene	2012/11/08	<3.0		ppbv	
		Hexane	2012/11/08	<0.30		ppbv	
		Heptane	2012/11/08	<0.30		ppbv	
		Cyclohexane	2012/11/08	<0.20		ppbv	
		Tetrahydrofuran	2012/11/08	<0.40		ppbv	
		1,4-Dioxane	2012/11/08	<2.0		ppbv	
		Xylene (Total)	2012/11/08	<0.60		ppbv	
		Vinyl Bromide	2012/11/08	<0.20		ppbv	
		Propene	2012/11/08	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/11/08	<0.20		ppbv	
		Carbon Disulfide	2012/11/08	<0.50		ppbv	
		Vinyl Acetate	2012/11/08	<0.20		ppbv	
	RPD - Sample/Sample Dup	Dichlorodifluoromethane (FREON 12)	2012/11/08	21.9		%	25
		1,2-Dichlorotetrafluoroethane	2012/11/08	NC		%	25
		Chloromethane	2012/11/08	NC		%	25
		Vinyl Chloride	2012/11/08	NC		%	25
		Chloroethane	2012/11/08	NC		%	25
		1,3-Butadiene	2012/11/08	NC		%	25
		Trichlorofluoromethane (FREON 11)	2012/11/08	NC		%	25
		Ethanol (ethyl alcohol)	2012/11/08	NC		%	25
		Trichlorotrifluoroethane	2012/11/08	NC		%	25
		2-propanol	2012/11/08	NC		%	25
		2-Propanone	2012/11/08	15.9		%	25
		Methyl Ethyl Ketone (2-Butanone)	2012/11/08	NC		%	25
		Methyl Isobutyl Ketone	2012/11/08	NC		%	25
		Methyl Butyl Ketone (2-Hexanone)	2012/11/08	NC		%	25
		Methyl t-butyl ether (MTBE)	2012/11/08	NC		%	25
		Ethyl Acetate	2012/11/08	NC		%	25
		1,1-Dichloroethylene	2012/11/08	NC		%	25
		cis-1,2-Dichloroethylene	2012/11/08	NC		%	25
		trans-1,2-Dichloroethylene	2012/11/08	NC		%	25
		Methylene Chloride(Dichloromethane)	2012/11/08	NC		%	25
		Chloroform	2012/11/08	NC		%	25
		Carbon Tetrachloride	2012/11/08	NC		%	25
		1,1-Dichloroethane	2012/11/08	NC		%	25
		1,2-Dichloroethane	2012/11/08	NC		%	25
		Ethylene Dibromide	2012/11/08	NC		%	25
		1,1,1-Trichloroethane	2012/11/08	NC		%	25
		1,1,2-Trichloroethane	2012/11/08	NC		%	25
		1,1,2,2-Tetrachloroethane	2012/11/08	NC		%	25
		cis-1,3-Dichloropropene	2012/11/08	NC		%	25

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5647

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3033431 JIW	RPD - Sample/Sample Dup	trans-1,3-Dichloropropene	2012/11/08	NC		%	25
		1,2-Dichloropropane	2012/11/08	NC		%	25
		Bromomethane	2012/11/08	NC		%	25
		Bromoform	2012/11/08	NC		%	25
		Bromodichloromethane	2012/11/08	NC		%	25
		Dibromochloromethane	2012/11/08	NC		%	25
		Trichloroethylene	2012/11/08	NC		%	25
		Tetrachloroethylene	2012/11/08	7.3		%	25
		Benzene	2012/11/08	NC		%	25
		Toluene	2012/11/08	15.7		%	25
		Ethylbenzene	2012/11/08	NC		%	25
		p+m-Xylene	2012/11/08	NC		%	25
		o-Xylene	2012/11/08	NC		%	25
		Styrene	2012/11/08	NC		%	25
		4-ethyltoluene	2012/11/08	NC		%	25
		1,3,5-Trimethylbenzene	2012/11/08	NC		%	25
		1,2,4-Trimethylbenzene	2012/11/08	NC		%	25
		Chlorobenzene	2012/11/08	NC		%	25
		Benzyl chloride	2012/11/08	NC		%	25
		1,3-Dichlorobenzene	2012/11/08	NC		%	25
		1,4-Dichlorobenzene	2012/11/08	NC		%	25
		1,2-Dichlorobenzene	2012/11/08	NC		%	25
		1,2,4-Trichlorobenzene	2012/11/08	NC		%	25
		Hexachlorobutadiene	2012/11/08	NC		%	25
		Hexane	2012/11/08	NC		%	25
		Heptane	2012/11/08	NC		%	25
		Cyclohexane	2012/11/08	NC		%	25
		Tetrahydrofuran	2012/11/08	NC		%	25
		1,4-Dioxane	2012/11/08	NC		%	25
		Xylene (Total)	2012/11/08	NC		%	25
		Vinyl Bromide	2012/11/08	NC		%	25
		Propene	2012/11/08	NC		%	25
		2,2,4-Trimethylpentane	2012/11/08	NC		%	25
		Carbon Disulfide	2012/11/08	NC		%	25
		Vinyl Acetate	2012/11/08	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: 7808
Station ID: Lica 1 Canister Installation Date/Time: Oct 23, 2012 @ 17:10 mst
Field Sample ID: LICA VOC/ CLS /Oct 24, 2012 Canister Removal Date/Time: Oct 25, 2012 @ 07:36 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
24-Oct-12	10/24/2012 0:00	10/25/2012 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# 05588

Technician Signature: Ting Xu_____



Your C.O.C. #: 05588

Attention: Michael Bisaga

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

Report Date: 2012/11/14

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2G8594

Received: 2012/10/29, 09:10

Sample Matrix: AIR
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/11/13	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/11/13	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 or as contractually agreed 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 #: B2G8594
 Report Date: 2012/11/14

RESULTS OF ANALYSES OF AIR

Maxxam ID		PJ9414	PJ9415	
Sampling Date		2012/10/24	2012/10/24	
COC Number		05588	05588	
	Units	LICAVOC/CLS/OCT	LICAVOC/PORT/OCT	QC Batch
		24,12 - 7808	24,12 - 314	

Volatile Organics				
Pressure on Receipt	psig	22	22	3035014

QC Batch = Quality Control Batch

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9414				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/CLS/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 7808				

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.65	0.20	3.23	0.989	3034997
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3034997
Chloromethane	ppbv	0.67	0.30	1.38	0.620	3034997
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3034997
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3034997
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3034997
Trichlorofluoromethane (FREON 11)	ppbv	0.31	0.20	1.73	1.12	3034997
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3034997
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3034997
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3034997
2-Propanone	ppbv	0.86	0.80	2.03	1.90	3034997
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3034997
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3034997
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3034997
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3034997
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3034997
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3034997
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3034997
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3034997
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3034997
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3034997
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3034997
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3034997
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3034997
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3034997
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3034997
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3034997
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3034997
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3034997
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3034997

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9414				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/CLS/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 7808				

Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3034997
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3034997
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3034997
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3034997
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3034997
Benzene	ppbv	0.22	0.18	0.700	0.575	3034997
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3034997
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3034997
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3034997
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3034997
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3034997
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3034997
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3034997
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3034997
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3034997
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3034997
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3034997
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3034997
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3034997
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3034997
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3034997
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3034997
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3034997
Propene	ppbv	<0.30	0.30	<0.516	0.516	3034997
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3034997
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3034997
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3034997
Surrogate Recovery (%)						
Bromochloromethane	%	86		N/A	N/A	3034997

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

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9414				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/CLS/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 7808				

D5-Chlorobenzene	%	83		N/A	N/A	3034997
Difluorobenzene	%	85		N/A	N/A	3034997

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

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9415				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/PORT/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 314				

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.64	0.20	3.16	0.989	3034997
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3034997
Chloromethane	ppbv	0.65	0.30	1.35	0.620	3034997
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3034997
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3034997
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3034997
Trichlorofluoromethane (FREON 11)	ppbv	0.28	0.20	1.58	1.12	3034997
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3034997
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3034997
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3034997
2-Propanone	ppbv	<0.80	0.80	<1.90	1.90	3034997
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3034997
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3034997
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3034997
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3034997
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3034997
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3034997
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3034997
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3034997
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3034997
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3034997
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3034997
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3034997
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3034997
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3034997
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3034997
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3034997
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3034997
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3034997
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3034997
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3034997
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9415				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/PORT/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 314				
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3034997
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3034997
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3034997
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3034997
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3034997
Benzene	ppbv	0.19	0.18	0.609	0.575	3034997
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3034997
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3034997
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3034997
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3034997
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3034997
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3034997
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3034997
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3034997
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3034997
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3034997
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3034997
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3034997
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3034997
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3034997
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3034997
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3034997
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3034997
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3034997
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3034997
Propene	ppbv	<0.30	0.30	<0.516	0.516	3034997
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3034997
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3034997
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3034997
Surrogate Recovery (%)						
Bromochloromethane	%	85		N/A	N/A	3034997
N/A = Not Applicable QC Batch = Quality Control Batch						

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PJ9415				
Sampling Date		2012/10/24				
COC Number		05588				
	Units	LICAVOC/PORT/OCT	RDL	ug/m3	DL (ug/m3)	QC Batch
		24,12 - 314				

D5-Chlorobenzene	%	85		N/A	N/A	3034997
Difluorobenzene	%	85		N/A	N/A	3034997

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

Maxxam Job #: B2G8594
 Report Date: 2012/11/14

Test Summary

Maxxam ID PJ9414
Sample ID LICAVOC/CLS/OCT 24,12 - 7808
Matrix AIR

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3035014	N/A	2012/11/13	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3034997	N/A	2012/11/13	Diane Temniuk

Maxxam ID PJ9415
Sample ID LICAVOC/PORT/OCT 24,12 - 314
Matrix AIR

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3035014	N/A	2012/11/13	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3034997	N/A	2012/11/13	Diane Temniuk

Maxxam Job #: B2G8594
Report Date: 2012/11/14

GENERAL COMMENTS

WS#3034997

1,2,4-Trichlorobenzene exceeded 40%RSD in the initial calibration. No positives were found, therefore data was accepted.

Results relate only to the items tested.

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

Quality Assurance Report
 Maxxam Job Number: GB2G8594

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3034997	DVO	Spiked Blank					
		Bromochloromethane	2012/11/12		97	%	60 - 140
		D5-Chlorobenzene	2012/11/12		101	%	60 - 140
		Difluorobenzene	2012/11/12		99	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/12		100	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/11/12		115	%	70 - 130
		Chloromethane	2012/11/12		109	%	70 - 130
		Vinyl Chloride	2012/11/12		104	%	70 - 130
		Chloroethane	2012/11/12		100	%	70 - 130
		1,3-Butadiene	2012/11/12		104	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/11/12		99	%	70 - 130
		Ethanol (ethyl alcohol)	2012/11/12		112	%	70 - 130
		Trichlorotrifluoroethane	2012/11/12		96	%	70 - 130
		2-propanol	2012/11/12		109	%	70 - 130
		2-Propanone	2012/11/12		109	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/11/12		103	%	70 - 130
		Methyl Isobutyl Ketone	2012/11/12		111	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/11/12		118	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/11/12		103	%	70 - 130
		Ethyl Acetate	2012/11/12		113	%	70 - 130
		1,1-Dichloroethylene	2012/11/12		98	%	70 - 130
		cis-1,2-Dichloroethylene	2012/11/12		103	%	70 - 130
		trans-1,2-Dichloroethylene	2012/11/12		103	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/11/12		99	%	70 - 130
		Chloroform	2012/11/12		103	%	70 - 130
		Carbon Tetrachloride	2012/11/12		100	%	70 - 130
		1,1-Dichloroethane	2012/11/12		105	%	70 - 130
		1,2-Dichloroethane	2012/11/12		104	%	70 - 130
		Ethylene Dibromide	2012/11/12		100	%	70 - 130
		1,1,1-Trichloroethane	2012/11/12		96	%	70 - 130
		1,1,2-Trichloroethane	2012/11/12		102	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/11/12		102	%	70 - 130
		cis-1,3-Dichloropropene	2012/11/12		106	%	70 - 130
		trans-1,3-Dichloropropene	2012/11/12		106	%	70 - 130
		1,2-Dichloropropane	2012/11/12		105	%	70 - 130
		Bromomethane	2012/11/12		97	%	70 - 130
		Bromoform	2012/11/12		93	%	70 - 130
		Bromodichloromethane	2012/11/12		100	%	70 - 130
		Dibromochloromethane	2012/11/12		97	%	70 - 130
		Trichloroethylene	2012/11/12		94	%	70 - 130
		Tetrachloroethylene	2012/11/12		93	%	70 - 130
		Benzene	2012/11/12		101	%	70 - 130
		Toluene	2012/11/12		102	%	70 - 130
		Ethylbenzene	2012/11/12		101	%	70 - 130
		p+m-Xylene	2012/11/12		100	%	70 - 130
		o-Xylene	2012/11/12		101	%	70 - 130
		Styrene	2012/11/12		104	%	70 - 130
		4-ethyltoluene	2012/11/12		100	%	70 - 130
		1,3,5-Trimethylbenzene	2012/11/12		102	%	70 - 130
		1,2,4-Trimethylbenzene	2012/11/12		103	%	70 - 130
		Chlorobenzene	2012/11/12		99	%	70 - 130
		Benzyl chloride	2012/11/12		101	%	70 - 130
		1,3-Dichlorobenzene	2012/11/12		99	%	70 - 130
		1,4-Dichlorobenzene	2012/11/12		95	%	70 - 130
		1,2-Dichlorobenzene	2012/11/12		97	%	70 - 130
		1,2,4-Trichlorobenzene	2012/11/12		102	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G8594

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3034997	DVO	Spiked Blank	2012/11/12		93	%	70 - 130
		Hexachlorobutadiene	2012/11/12		109	%	70 - 130
		Hexane	2012/11/12		105	%	70 - 130
		Heptane	2012/11/12		103	%	70 - 130
		Cyclohexane	2012/11/12		114	%	70 - 130
		Tetrahydrofuran	2012/11/12		105	%	70 - 130
		1,4-Dioxane	2012/11/12		100	%	70 - 130
		Xylene (Total)	2012/11/12		110	%	70 - 130
		Vinyl Bromide	2012/11/12		106	%	70 - 130
		Propene	2012/11/12		102	%	70 - 130
		2,2,4-Trimethylpentane	2012/11/12		103	%	70 - 130
		Carbon Disulfide	2012/11/12		111	%	70 - 130
	Method Blank	Vinyl Acetate	2012/11/12		89	%	60 - 140
		Bromochloromethane	2012/11/12		90	%	60 - 140
		D5-Chlorobenzene	2012/11/12		93	%	60 - 140
		Difluorobenzene	2012/11/12				
		Dichlorodifluoromethane (FREON 12)	2012/11/12	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/11/12	<0.17		ppbv	
		Chloromethane	2012/11/12	<0.30		ppbv	
		Vinyl Chloride	2012/11/12	<0.18		ppbv	
		Chloroethane	2012/11/12	<0.30		ppbv	
		1,3-Butadiene	2012/11/12	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/11/12	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/11/12	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/11/12	<0.15		ppbv	
		2-propanol	2012/11/12	<3.0		ppbv	
		2-Propanone	2012/11/12	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/11/12	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/11/12	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/11/12	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/11/12	<0.20		ppbv	
		Ethyl Acetate	2012/11/12	<2.2		ppbv	
		1,1-Dichloroethylene	2012/11/12	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/11/12	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/11/12	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/11/12	<0.80		ppbv	
		Chloroform	2012/11/12	<0.15		ppbv	
		Carbon Tetrachloride	2012/11/12	<0.30		ppbv	
		1,1-Dichloroethane	2012/11/12	<0.20		ppbv	
		1,2-Dichloroethane	2012/11/12	<0.20		ppbv	
		Ethylene Dibromide	2012/11/12	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/11/12	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/11/12	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/11/12	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/11/12	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/11/12	<0.17		ppbv	
		1,2-Dichloropropane	2012/11/12	<0.40		ppbv	
		Bromomethane	2012/11/12	<0.18		ppbv	
		Bromoform	2012/11/12	<0.20		ppbv	
		Bromodichloromethane	2012/11/12	<0.20		ppbv	
		Dibromochloromethane	2012/11/12	<0.20		ppbv	
		Trichloroethylene	2012/11/12	<0.30		ppbv	
		Tetrachloroethylene	2012/11/12	<0.20		ppbv	
		Benzene	2012/11/12	<0.18		ppbv	
		Toluene	2012/11/12	<0.20		ppbv	
		Ethylbenzene	2012/11/12	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G8594

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3034997	DVO	Method Blank					
		p+m-Xylene	2012/11/12	<0.37		ppbv	
		o-Xylene	2012/11/12	<0.20		ppbv	
		Styrene	2012/11/12	<0.20		ppbv	
		4-ethyltoluene	2012/11/12	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/11/12	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/11/12	<0.50		ppbv	
		Chlorobenzene	2012/11/12	<0.20		ppbv	
		Benzyl chloride	2012/11/12	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/11/12	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/11/12	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/11/12	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/11/12	<2.0		ppbv	
		Hexachlorobutadiene	2012/11/12	<3.0		ppbv	
		Hexane	2012/11/12	<0.30		ppbv	
		Heptane	2012/11/12	<0.30		ppbv	
		Cyclohexane	2012/11/12	<0.20		ppbv	
		Tetrahydrofuran	2012/11/12	<0.40		ppbv	
		1,4-Dioxane	2012/11/12	<2.0		ppbv	
		Xylene (Total)	2012/11/12	<0.60		ppbv	
		Vinyl Bromide	2012/11/12	<0.20		ppbv	
		Propene	2012/11/12	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/11/12	<0.20		ppbv	
		Carbon Disulfide	2012/11/12	<0.50		ppbv	
		Vinyl Acetate	2012/11/12	<0.20		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.

MAXXAM

Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA Sampler s/n: 6167
Location: Cold Lake South Canister ID: 298
Station ID: Lica 1 Canister Installation Date/Time: Oct 29, 2012 @ 17:30 mst
Field Sample ID: LICA VOC/ CLS /Oct 30, 2012 Canister Removal Date/Time: Oct 31, 2012 @ 06:50 mst

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
30-Oct-12	10/30/2012 0:00	10/31/2012 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# 12644

Technician Signiture: Ting Xu_____



Your C.O.C. #: 12644

Attention: Michael Bisaga

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

Report Date: 2012/11/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2H2619

Received: 2012/11/03, 11:00

Sample Matrix: AIR
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	2	N/A	2012/11/14	BRL SOP-00304	EPA TO-15
Volatile Organics in Air (TO-15) (1)	2	N/A	2012/11/14	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 or as contractually agreed 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 #: B2H2619
 Report Date: 2012/11/16

RESULTS OF ANALYSES OF AIR

Maxxam ID		PL9749	PL9750	
Sampling Date		2012/10/30	2012/10/30	
COC Number		12644	12644	
	Units	LICA VOC/CLS/OCT 30,12 - 298	LICA VOC/PORT/OCT 30,12 - 319	QC Batch

Volatile Organics				
Pressure on Receipt	psig	24	22	3037059

QC Batch = Quality Control Batch

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9749				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/CLS/OCT 30,12 - 298	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.65	0.20	3.23	0.989	3037095
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3037095
Chloromethane	ppbv	0.63	0.30	1.31	0.620	3037095
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3037095
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3037095
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3037095
Trichlorofluoromethane (FREON 11)	ppbv	0.30	0.20	1.69	1.12	3037095
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3037095
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3037095
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3037095
2-Propanone	ppbv	1.04	0.80	2.48	1.90	3037095
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3037095
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3037095
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3037095
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3037095
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3037095
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3037095
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3037095
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3037095
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3037095
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3037095
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3037095
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3037095
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3037095
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3037095
1,1,1,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3037095
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3037095
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3037095
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3037095
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9749				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/CLS/OCT 30,12 - 298	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3037095
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3037095
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3037095
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3037095
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3037095
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3037095
Benzene	ppbv	0.20	0.18	0.635	0.575	3037095
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3037095
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3037095
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3037095
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3037095
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3037095
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3037095
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3037095
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3037095
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3037095
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3037095
Hexane	ppbv	0.38	0.30	1.35	1.06	3037095
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3037095
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3037095
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3037095
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3037095
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3037095
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3037095
Propene	ppbv	<1.2	1.2	<2.07	2.07	3037095
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3037095
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3037095
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3037095
QC Batch = Quality Control Batch						

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9749				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/CLS/OCT 30,12 - 298	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	91		N/A	N/A	3037095
D5-Chlorobenzene	%	81		N/A	N/A	3037095
Difluorobenzene	%	92		N/A	N/A	3037095
N/A = Not Applicable QC Batch = Quality Control Batch						

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9750				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/PORT/OCT 30,12 - 319	RDL	ug/m3	DL (ug/m3)	QC Batch

Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	0.70	0.20	3.48	0.989	3037095
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<1.19	1.19	3037095
Chloromethane	ppbv	0.73	0.30	1.52	0.620	3037095
Vinyl Chloride	ppbv	<0.18	0.18	<0.460	0.460	3037095
Chloroethane	ppbv	<0.30	0.30	<0.792	0.792	3037095
1,3-Butadiene	ppbv	<0.50	0.50	<1.11	1.11	3037095
Trichlorofluoromethane (FREON 11)	ppbv	0.32	0.20	1.82	1.12	3037095
Ethanol (ethyl alcohol)	ppbv	<2.3	2.3	<4.33	4.33	3037095
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<1.15	1.15	3037095
2-propanol	ppbv	<3.0	3.0	<7.37	7.37	3037095
2-Propanone	ppbv	1.49	0.80	3.53	1.90	3037095
Methyl Ethyl Ketone (2-Butanone)	ppbv	<3.0	3.0	<8.85	8.85	3037095
Methyl Isobutyl Ketone	ppbv	<3.2	3.2	<13.1	13.1	3037095
Methyl Butyl Ketone (2-Hexanone)	ppbv	<2.0	2.0	<8.19	8.19	3037095
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.721	0.721	3037095
Ethyl Acetate	ppbv	<2.2	2.2	<7.93	7.93	3037095
1,1-Dichloroethylene	ppbv	<0.25	0.25	<0.991	0.991	3037095
cis-1,2-Dichloroethylene	ppbv	<0.19	0.19	<0.753	0.753	3037095
trans-1,2-Dichloroethylene	ppbv	<0.20	0.20	<0.793	0.793	3037095
Methylene Chloride(Dichloromethane)	ppbv	<0.80	0.80	<2.78	2.78	3037095
Chloroform	ppbv	<0.15	0.15	<0.732	0.732	3037095
Carbon Tetrachloride	ppbv	<0.30	0.30	<1.89	1.89	3037095
1,1-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
1,2-Dichloroethane	ppbv	<0.20	0.20	<0.809	0.809	3037095
Ethylene Dibromide	ppbv	<0.17	0.17	<1.31	1.31	3037095
1,1,1-Trichloroethane	ppbv	<0.30	0.30	<1.64	1.64	3037095
1,1,2-Trichloroethane	ppbv	<0.15	0.15	<0.818	0.818	3037095
1,1,2,2-Tetrachloroethane	ppbv	<0.20	0.20	<1.37	1.37	3037095
cis-1,3-Dichloropropene	ppbv	<0.18	0.18	<0.817	0.817	3037095
trans-1,3-Dichloropropene	ppbv	<0.17	0.17	<0.772	0.772	3037095
1,2-Dichloropropane	ppbv	<0.40	0.40	<1.85	1.85	3037095

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9750				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/PORT/OCT 30,12 - 319	RDL	ug/m3	DL (ug/m3)	QC Batch
Bromomethane	ppbv	<0.18	0.18	<0.699	0.699	3037095
Bromoform	ppbv	<0.20	0.20	<2.07	2.07	3037095
Bromodichloromethane	ppbv	<0.20	0.20	<1.34	1.34	3037095
Dibromochloromethane	ppbv	<0.20	0.20	<1.70	1.70	3037095
Trichloroethylene	ppbv	<0.30	0.30	<1.61	1.61	3037095
Tetrachloroethylene	ppbv	<0.20	0.20	<1.36	1.36	3037095
Benzene	ppbv	0.20	0.18	0.626	0.575	3037095
Toluene	ppbv	<0.20	0.20	<0.753	0.753	3037095
Ethylbenzene	ppbv	<0.20	0.20	<0.868	0.868	3037095
p+m-Xylene	ppbv	<0.37	0.37	<1.61	1.61	3037095
o-Xylene	ppbv	<0.20	0.20	<0.868	0.868	3037095
Styrene	ppbv	<0.20	0.20	<0.852	0.852	3037095
4-ethyltoluene	ppbv	<2.2	2.2	<10.8	10.8	3037095
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<2.46	2.46	3037095
Chlorobenzene	ppbv	<0.20	0.20	<0.921	0.921	3037095
Benzyl chloride	ppbv	<1.0	1.0	<5.18	5.18	3037095
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,4-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2-Dichlorobenzene	ppbv	<0.40	0.40	<2.40	2.40	3037095
1,2,4-Trichlorobenzene	ppbv	<2.0	2.0	<14.8	14.8	3037095
Hexachlorobutadiene	ppbv	<3.0	3.0	<32.0	32.0	3037095
Hexane	ppbv	<0.30	0.30	<1.06	1.06	3037095
Heptane	ppbv	<0.30	0.30	<1.23	1.23	3037095
Cyclohexane	ppbv	<0.20	0.20	<0.688	0.688	3037095
Tetrahydrofuran	ppbv	<0.40	0.40	<1.18	1.18	3037095
1,4-Dioxane	ppbv	<2.0	2.0	<7.21	7.21	3037095
Xylene (Total)	ppbv	<0.60	0.60	<2.61	2.61	3037095
Vinyl Bromide	ppbv	<0.20	0.20	<0.875	0.875	3037095
Propene	ppbv	<1.3	1.3	<2.24	2.24	3037095
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.934	0.934	3037095
Carbon Disulfide	ppbv	<0.50	0.50	<1.56	1.56	3037095
Vinyl Acetate	ppbv	<0.20	0.20	<0.704	0.704	3037095
QC Batch = Quality Control Batch						

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		PL9750				
Sampling Date		2012/10/30				
COC Number		12644				
	Units	LICA VOC/PORT/OCT 30,12 - 319	RDL	ug/m3	DL (ug/m3)	QC Batch

Surrogate Recovery (%)						
Bromochloromethane	%	90		N/A	N/A	3037095
D5-Chlorobenzene	%	87		N/A	N/A	3037095
Difluorobenzene	%	90		N/A	N/A	3037095

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

Maxxam Job #: B2H2619
 Report Date: 2012/11/16

Test Summary

Maxxam ID PL9749
Sample ID LICA VOC/CLS/OCT 30,12 - 298
Matrix AIR

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3037059	N/A	2012/11/14	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3037095	N/A	2012/11/14	Diane Temniuk

Maxxam ID PL9750
Sample ID LICA VOC/PORT/OCT 30,12 - 319
Matrix AIR

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Canister Pressure (TO-15)	PRES	3037059	N/A	2012/11/14	Diane Temniuk
Volatile Organics in Air (TO-15)	GC/MS	3037095	N/A	2012/11/14	Diane Temniuk

Maxxam Job #: B2H2619
Report Date: 2012/11/16

GENERAL COMMENTS

WS#3037095

1,2,4-Trichlorobenzene exceeded 40% RSD in initial calibration. No positives were found, therefore data was accepted.

Sample PL9749-01: DL raised for Propene due to matrix interference.

Sample PL9750-01: DL raised for Propene due to matrix interference.

Results relate only to the items tested.

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

Quality Assurance Report

Maxxam Job Number: GB2H2619

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3037095	DVO	Spiked Blank					
		Bromochloromethane	2012/11/14		96	%	60 - 140
		D5-Chlorobenzene	2012/11/14		98	%	60 - 140
		Difluorobenzene	2012/11/14		99	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/14		104	%	70 - 130
		1,2-Dichlorotetrafluoroethane	2012/11/14		108	%	70 - 130
		Chloromethane	2012/11/14		101	%	70 - 130
		Vinyl Chloride	2012/11/14		97	%	70 - 130
		Chloroethane	2012/11/14		93	%	70 - 130
		1,3-Butadiene	2012/11/14		98	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2012/11/14		99	%	70 - 130
		Ethanol (ethyl alcohol)	2012/11/14		105	%	70 - 130
		Trichlorotrifluoroethane	2012/11/14		97	%	70 - 130
		2-propanol	2012/11/14		111	%	70 - 130
		2-Propanone	2012/11/14		113	%	70 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/11/14		110	%	70 - 130
		Methyl Isobutyl Ketone	2012/11/14		118	%	70 - 130
		Methyl Butyl Ketone (2-Hexanone)	2012/11/14		126	%	70 - 130
		Methyl t-butyl ether (MTBE)	2012/11/14		105	%	70 - 130
		Ethyl Acetate	2012/11/14		120	%	70 - 130
		1,1-Dichloroethylene	2012/11/14		101	%	70 - 130
		cis-1,2-Dichloroethylene	2012/11/14		108	%	70 - 130
		trans-1,2-Dichloroethylene	2012/11/14		106	%	70 - 130
		Methylene Chloride(Dichloromethane)	2012/11/14		103	%	70 - 130
		Chloroform	2012/11/14		105	%	70 - 130
		Carbon Tetrachloride	2012/11/14		100	%	70 - 130
		1,1-Dichloroethane	2012/11/14		109	%	70 - 130
		1,2-Dichloroethane	2012/11/14		107	%	70 - 130
		Ethylene Dibromide	2012/11/14		101	%	70 - 130
		1,1,1-Trichloroethane	2012/11/14		97	%	70 - 130
		1,1,2-Trichloroethane	2012/11/14		105	%	70 - 130
		1,1,2,2-Tetrachloroethane	2012/11/14		106	%	70 - 130
		cis-1,3-Dichloropropene	2012/11/14		110	%	70 - 130
		trans-1,3-Dichloropropene	2012/11/14		109	%	70 - 130
		1,2-Dichloropropane	2012/11/14		110	%	70 - 130
		Bromomethane	2012/11/14		89	%	70 - 130
		Bromoform	2012/11/14		93	%	70 - 130
		Bromodichloromethane	2012/11/14		103	%	70 - 130
		Dibromochloromethane	2012/11/14		97	%	70 - 130
		Trichloroethylene	2012/11/14		93	%	70 - 130
		Tetrachloroethylene	2012/11/14		91	%	70 - 130
		Benzene	2012/11/14		103	%	70 - 130
		Toluene	2012/11/14		104	%	70 - 130
		Ethylbenzene	2012/11/14		104	%	70 - 130
		p+m-Xylene	2012/11/14		102	%	70 - 130
		o-Xylene	2012/11/14		104	%	70 - 130
		Styrene	2012/11/14		106	%	70 - 130
		4-ethyltoluene	2012/11/14		102	%	70 - 130
		1,3,5-Trimethylbenzene	2012/11/14		105	%	70 - 130
		1,2,4-Trimethylbenzene	2012/11/14		104	%	70 - 130
		Chlorobenzene	2012/11/14		100	%	70 - 130
		Benzyl chloride	2012/11/14		104	%	70 - 130
		1,3-Dichlorobenzene	2012/11/14		98	%	70 - 130
		1,4-Dichlorobenzene	2012/11/14		96	%	70 - 130
		1,2-Dichlorobenzene	2012/11/14		96	%	70 - 130
		1,2,4-Trichlorobenzene	2012/11/14		97	%	70 - 130

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2H2619

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3037095 DVO	Spiked Blank	Hexachlorobutadiene	2012/11/14		89	%	70 - 130
		Hexane	2012/11/14		115	%	70 - 130
		Heptane	2012/11/14		112	%	70 - 130
		Cyclohexane	2012/11/14		108	%	70 - 130
		Tetrahydrofuran	2012/11/14		121	%	70 - 130
		1,4-Dioxane	2012/11/14		105	%	70 - 130
		Xylene (Total)	2012/11/14		102	%	70 - 130
		Vinyl Bromide	2012/11/14		102	%	70 - 130
		Propene	2012/11/14		117	%	70 - 130
		2,2,4-Trimethylpentane	2012/11/14		107	%	70 - 130
		Carbon Disulfide	2012/11/14		105	%	70 - 130
		Vinyl Acetate	2012/11/14		117	%	70 - 130
	Method Blank	Bromochloromethane	2012/11/14		88	%	60 - 140
		D5-Chlorobenzene	2012/11/14		87	%	60 - 140
		Difluorobenzene	2012/11/14		92	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/11/14	<0.20		ppbv	
		1,2-Dichlorotetrafluoroethane	2012/11/14	<0.17		ppbv	
		Chloromethane	2012/11/14	<0.30		ppbv	
		Vinyl Chloride	2012/11/14	<0.18		ppbv	
		Chloroethane	2012/11/14	<0.30		ppbv	
		1,3-Butadiene	2012/11/14	<0.50		ppbv	
		Trichlorofluoromethane (FREON 11)	2012/11/14	<0.20		ppbv	
		Ethanol (ethyl alcohol)	2012/11/14	<2.3		ppbv	
		Trichlorotrifluoroethane	2012/11/14	<0.15		ppbv	
		2-propanol	2012/11/14	<3.0		ppbv	
		2-Propanone	2012/11/14	<0.80		ppbv	
		Methyl Ethyl Ketone (2-Butanone)	2012/11/14	<3.0		ppbv	
		Methyl Isobutyl Ketone	2012/11/14	<3.2		ppbv	
		Methyl Butyl Ketone (2-Hexanone)	2012/11/14	<2.0		ppbv	
		Methyl t-butyl ether (MTBE)	2012/11/14	<0.20		ppbv	
		Ethyl Acetate	2012/11/14	<2.2		ppbv	
		1,1-Dichloroethylene	2012/11/14	<0.25		ppbv	
		cis-1,2-Dichloroethylene	2012/11/14	<0.19		ppbv	
		trans-1,2-Dichloroethylene	2012/11/14	<0.20		ppbv	
		Methylene Chloride(Dichloromethane)	2012/11/14	<0.80		ppbv	
		Chloroform	2012/11/14	<0.15		ppbv	
		Carbon Tetrachloride	2012/11/14	<0.30		ppbv	
		1,1-Dichloroethane	2012/11/14	<0.20		ppbv	
		1,2-Dichloroethane	2012/11/14	<0.20		ppbv	
		Ethylene Dibromide	2012/11/14	<0.17		ppbv	
		1,1,1-Trichloroethane	2012/11/14	<0.30		ppbv	
		1,1,2-Trichloroethane	2012/11/14	<0.15		ppbv	
		1,1,2,2-Tetrachloroethane	2012/11/14	<0.20		ppbv	
		cis-1,3-Dichloropropene	2012/11/14	<0.18		ppbv	
		trans-1,3-Dichloropropene	2012/11/14	<0.17		ppbv	
		1,2-Dichloropropane	2012/11/14	<0.40		ppbv	
		Bromomethane	2012/11/14	<0.18		ppbv	
		Bromoform	2012/11/14	<0.20		ppbv	
		Bromodichloromethane	2012/11/14	<0.20		ppbv	
		Dibromochloromethane	2012/11/14	<0.20		ppbv	
		Trichloroethylene	2012/11/14	<0.30		ppbv	
		Tetrachloroethylene	2012/11/14	<0.20		ppbv	
		Benzene	2012/11/14	<0.18		ppbv	
		Toluene	2012/11/14	<0.20		ppbv	
		Ethylbenzene	2012/11/14	<0.20		ppbv	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2H2619

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3037095	DVO	Method Blank					
		p+m-Xylene	2012/11/14	<0.37		ppbv	
		o-Xylene	2012/11/14	<0.20		ppbv	
		Styrene	2012/11/14	<0.20		ppbv	
		4-ethyltoluene	2012/11/14	<2.2		ppbv	
		1,3,5-Trimethylbenzene	2012/11/14	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2012/11/14	<0.50		ppbv	
		Chlorobenzene	2012/11/14	<0.20		ppbv	
		Benzyl chloride	2012/11/14	<1.0		ppbv	
		1,3-Dichlorobenzene	2012/11/14	<0.40		ppbv	
		1,4-Dichlorobenzene	2012/11/14	<0.40		ppbv	
		1,2-Dichlorobenzene	2012/11/14	<0.40		ppbv	
		1,2,4-Trichlorobenzene	2012/11/14	<2.0		ppbv	
		Hexachlorobutadiene	2012/11/14	<3.0		ppbv	
		Hexane	2012/11/14	<0.30		ppbv	
		Heptane	2012/11/14	<0.30		ppbv	
		Cyclohexane	2012/11/14	<0.20		ppbv	
		Tetrahydrofuran	2012/11/14	<0.40		ppbv	
		1,4-Dioxane	2012/11/14	<2.0		ppbv	
		Xylene (Total)	2012/11/14	<0.60		ppbv	
		Vinyl Bromide	2012/11/14	<0.20		ppbv	
		Propene	2012/11/14	<0.30		ppbv	
		2,2,4-Trimethylpentane	2012/11/14	<0.20		ppbv	
		Carbon Disulfide	2012/11/14	<0.50		ppbv	
		Vinyl Acetate	2012/11/14	<0.20		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.

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/Oct 06, 2012

Puf+ s/n: 100-1020
 Motor s/n: 1138
 Installation Date/Time: Oct 05, 2012 @ 17:18 mst
 Removal Date/Time: Oct 08, 2012 @ 07:46 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
06-Oct-12	10/06/2012 0:00	10/07/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
02-Oct-12	10-Oct-12	15-Oct-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 ³)
715	229	8.5	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# 10205
GB2C3724 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Oct 06, 2012

Technician Signature: Ting Xu

Your C.O.C. #: 10205

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

Report Date: 2012/10/26

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2F8444****Received: 2012/10/12, 09:25**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/10/12	2012/10/19	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 #: B2F8444
 Report Date: 2012/10/26

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PE3558	PE3559		
Sampling Date		2012/10/06	2012/10/06		
COC Number		10205	10205		
	Units	LICA PUFF+QFF/CLS/OCT 06,12	LICA PUFF+QFF/PORT/OCT 06,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	0.16	0.20	0.10	2999985
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	2999985
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	2999985
2-Methylantracene	ug	<0.10	<0.10	0.10	2999985
2-Methylnaphthalene	ug	0.35	0.39	0.10	2999985
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	2999985
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	2999985
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	2999985
Acenaphthene	ug	<0.050	<0.050	0.050	2999985
Acenaphthylene	ug	<0.050	<0.050	0.050	2999985
Anthracene	ug	<0.050	<0.050	0.050	2999985
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	2999985
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	2999985
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	2999985
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	2999985
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	2999985
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	2999985
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	2999985
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	2999985
Biphenyl	ug	0.14	0.16	0.10	2999985
Chrysene	ug	<0.050	<0.050	0.050	2999985
Coronene	ug	<0.10	<0.10	0.10	2999985
Dibenz(a,h)anthracene	ug	<0.050	<0.050	0.050	2999985
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	2999985
Fluoranthene	ug	<0.050	<0.050	0.050	2999985
Fluorene	ug	0.124	0.080	0.050	2999985
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	2999985
m-Terphenyl	ug	<0.10	<0.10	0.10	2999985
Naphthalene	ug	0.258	0.270	0.072	2999985
o-Terphenyl	ug	<0.10	<0.10	0.10	2999985
Perylene	ug	<0.10	<0.10	0.10	2999985

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2F8444
 Report Date: 2012/10/26

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PE3558	PE3559		
Sampling Date		2012/10/06	2012/10/06		
COC Number		10205	10205		
	Units	LICA PUFF+QFF/CLS/OCT 06,12	LICA PUFF+QFF/PORT/OCT 06,12	RDL	QC Batch

Phenanthrene	ug	0.218	0.144	0.050	2999985
p-Terphenyl	ug	<0.10	<0.10	0.10	2999985
Pyrene	ug	<0.050	<0.050	0.050	2999985
Quinoline	ug	<0.40	<0.40	0.40	2999985
Tetralin	ug	<0.10	<0.10	0.10	2999985
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	66	72		2999985
D10-Fluoranthene	%	88	78		2999985
D10-Fluorene (FS)	%	9.8 (1)	13 (1)		2999985
D10-Phenanthrene	%	82	74		2999985
D12-Benzo(a)anthracene	%	94	86		2999985
D12-Benzo(a)pyrene	%	86	84		2999985
D12-Benzo(b)fluoranthene	%	92	88		2999985
D12-Benzo(ghi)perylene	%	90	88		2999985
D12-Benzo(k)fluoranthene	%	88	86		2999985
D12-Chrysene	%	86	88		2999985
D12-Indeno(1,2,3-cd)pyrene	%	90	86		2999985
D12-Perylene	%	88	88		2999985
D14-Dibenzo(a,h)anthracene	%	90	84		2999985
D14-Terphenyl (FS)	%	89	81		2999985
D8-Acenaphthylene	%	68	70		2999985
D8-Naphthalene	%	60	70		2999985

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 #: B2F8444
 Report Date: 2012/10/26

Test Summary

Maxxam ID PE3558
Sample ID LICA PUFF+QFF/CLS/OCT 06,12
Matrix PUF AND FILTER

Collected 2012/10/06
Shipped
Received 2012/10/12

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2999985	2012/10/12	2012/10/19	Lidija Tomic

Maxxam ID PE3559
Sample ID LICA PUFF+QFF/PORT/OCT 06,12
Matrix PUF AND FILTER

Collected 2012/10/06
Shipped
Received 2012/10/12

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	2999985	2012/10/12	2012/10/19	Lidija Tomic

Maxxam Job #: B2F8444
Report Date: 2012/10/26

GENERAL COMMENTS

Quinoline, 2-Chloronaphthalene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in initial calibration. No positives found for these 3 compounds.

7,12-dimethylbenzo(a)anthracene is above 25% RSD in continuing calibration. No positives found for this compound.

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: GB2F8444

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2999985 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/10/19		74	%	50 - 150
		D10-Fluoranthene	2012/10/19		88	%	50 - 150
		D10-Phenanthrene	2012/10/19		80	%	50 - 150
		D12-Benzo(a)anthracene	2012/10/19		94	%	50 - 150
		D12-Benzo(a)pyrene	2012/10/19		90	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/10/19		90	%	50 - 150
		D12-Benzo(ghi)perylene	2012/10/19		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/10/19		86	%	50 - 150
		D12-Chrysene	2012/10/19		82	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/10/19		90	%	50 - 150
		D12-Perylene	2012/10/19		90	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/10/19		90	%	50 - 150
		D8-Acenaphthylene	2012/10/19		72	%	50 - 150
		D8-Naphthalene	2012/10/19		70	%	50 - 150
		Acenaphthene	2012/10/19		80	%	60 - 130
	RPD	Acenaphthene	2012/10/19	3.2		%	50
	Spiked Blank	Acenaphthylene	2012/10/19		77	%	60 - 130
	RPD	Acenaphthylene	2012/10/19	4.0		%	50
	Spiked Blank	Anthracene	2012/10/19		80	%	60 - 130
	RPD	Anthracene	2012/10/19	9.1		%	50
	Spiked Blank	Benzo(a)anthracene	2012/10/19		107	%	60 - 130
	RPD	Benzo(a)anthracene	2012/10/19	2.6		%	50
	Spiked Blank	Benzo(a)pyrene	2012/10/19		78	%	60 - 130
	RPD	Benzo(a)pyrene	2012/10/19	3.6		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/10/19		92	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/10/19	0		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/10/19		86	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/10/19	1.8		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/10/19		89	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/10/19	1.1		%	50
	Spiked Blank	Chrysene	2012/10/19		85	%	60 - 130
	RPD	Chrysene	2012/10/19	5.2		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/10/19		90	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/10/19	4.6		%	50
	Spiked Blank	Fluoranthene	2012/10/19		94	%	60 - 130
	RPD	Fluoranthene	2012/10/19	10.6		%	50
	Spiked Blank	Fluorene	2012/10/19		80	%	60 - 130
	RPD	Fluorene	2012/10/19	9.6		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/10/19		87	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/10/19	2.9		%	50
	Spiked Blank	Naphthalene	2012/10/19		79	%	60 - 130
	RPD	Naphthalene	2012/10/19	6.5		%	50
	Spiked Blank	Phenanthrene	2012/10/19		85	%	60 - 130
	RPD	Phenanthrene	2012/10/19	11.8		%	50
	Spiked Blank	Pyrene	2012/10/19		85	%	60 - 130
	RPD	Pyrene	2012/10/19	11.8		%	50
	Method Blank	D10-2-Methylnaphthalene	2012/10/19		72	%	50 - 150
		D10-Fluoranthene	2012/10/19		78	%	50 - 150
		D10-Phenanthrene	2012/10/19		78	%	50 - 150
		D12-Benzo(a)anthracene	2012/10/19		92	%	50 - 150
		D12-Benzo(a)pyrene	2012/10/19		84	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/10/19		92	%	50 - 150
		D12-Benzo(ghi)perylene	2012/10/19		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/10/19		90	%	50 - 150
		D12-Chrysene	2012/10/19		96	%	50 - 150

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2F8444

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2999985 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/10/19		88	%	50 - 150
		D12-Perylene	2012/10/19		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/10/19		88	%	50 - 150
		D8-Acenaphthylene	2012/10/19		68	%	50 - 150
		D8-Naphthalene	2012/10/19		68	%	50 - 150
		1-Methylnaphthalene	2012/10/19	<0.10		ug	
		1-Methylphenanthrene	2012/10/19	<0.10		ug	
		2-Chloronaphthalene	2012/10/19	<0.10		ug	
		2-Methylanthracene	2012/10/19	<0.10		ug	
		2-Methylnaphthalene	2012/10/19	<0.10		ug	
		3-Methylcholanthrene	2012/10/19	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/10/19	<0.10		ug	
		9,10-Dimethylanthracene	2012/10/19	<0.40		ug	
		Acenaphthene	2012/10/19	<0.050		ug	
		Acenaphthylene	2012/10/19	<0.050		ug	
		Anthracene	2012/10/19	<0.050		ug	
		Benzo(a)anthracene	2012/10/19	<0.050		ug	
		Benzo(a)fluorene	2012/10/19	<0.10		ug	
		Benzo(a)pyrene	2012/10/19	<0.050		ug	
		Benzo(b)fluoranthene	2012/10/19	<0.050		ug	
		Benzo(b)fluorene	2012/10/19	<0.10		ug	
		Benzo(e)pyrene	2012/10/19	<0.10		ug	
		Benzo(g,h,i)perylene	2012/10/19	<0.050		ug	
		Benzo(k)fluoranthene	2012/10/19	<0.050		ug	
		Biphenyl	2012/10/19	<0.10		ug	
		Chrysene	2012/10/19	<0.050		ug	
		Coronene	2012/10/19	<0.10		ug	
		Dibenz(a,h)anthracene	2012/10/19	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/10/19	<0.20		ug	
		Fluoranthene	2012/10/19	<0.050		ug	
		Fluorene	2012/10/19	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/10/19	<0.050		ug	
		m-Terphenyl	2012/10/19	<0.10		ug	
		Naphthalene	2012/10/19	<0.072		ug	
		o-Terphenyl	2012/10/19	<0.10		ug	
		Perylene	2012/10/19	<0.10		ug	
		Phenanthrene	2012/10/19	<0.050		ug	
		p-Terphenyl	2012/10/19	<0.10		ug	
		Pyrene	2012/10/19	<0.050		ug	
		Quinoline	2012/10/19	<0.40		ug	
		Tetralin	2012/10/19	<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/Oct 12, 2012

Puf+ s/n: 100-1020
 Motor s/n: 1138
 Installation Date/Time: Oct 11, 2012 @ 07:50 mst
 Removal Date/Time: Oct 15, 2012 @ 07:40 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
12-Oct-12	10/12/2012 0:00	10/13/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
05-Oct-12	15-Oct-12	18-Oct-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 ³)
707	229	2.6	330.33

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# 10249
GB2C3728 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Oct 12, 2012

Technician Signature: Ting Xu

Your C.O.C. #: 10249

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

Report Date: 2012/10/29

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2G1087****Received: 2012/10/17, 08:20**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	1	2012/10/22	2012/10/23	BRL SOP-00201	CARB429(ARBM1,M2)mod
PAH's in Air (CARB429mod)	1	2012/10/22	2012/10/26	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

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PF8855	PF8856		
Sampling Date		2012/10/12	2012/10/12		
COC Number		10249	10249		
	Units	LICA PUFF+QFF/CLS/OCT 12,12	LICA PUFF+QFF/PORT/OCT 12,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	<0.10	0.11	0.10	3009615
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3009615
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3009615
2-Methylantracene	ug	<0.10	<0.10	0.10	3009615
2-Methylnaphthalene	ug	0.12	0.23	0.10	3009615
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3009615
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3009615
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3009615
Acenaphthene	ug	<0.050	<0.050	0.050	3009615
Acenaphthylene	ug	0.214	0.084	0.050	3009615
Anthracene	ug	<0.050	<0.050	0.050	3009615
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3009615
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3009615
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3009615
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3009615
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3009615
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3009615
Benzo(g,h,i)perylene	ug	0.088	<0.050	0.050	3009615
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3009615
Biphenyl	ug	<0.10	0.14	0.10	3009615
Chrysene	ug	<0.050	<0.050	0.050	3009615
Coronene	ug	<0.10	<0.10	0.10	3009615
Dibenz(a,h)anthracene	ug	0.072	<0.050	0.050	3009615
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3009615
Fluoranthene	ug	0.186	0.050	0.050	3009615
Fluorene	ug	0.166	0.120	0.050	3009615
Indeno(1,2,3-cd)pyrene	ug	0.074	<0.050	0.050	3009615
m-Terphenyl	ug	<0.10	<0.10	0.10	3009615
Naphthalene	ug	0.104	0.090	0.072	3009615
o-Terphenyl	ug	<0.10	<0.10	0.10	3009615
Perylene	ug	<0.10	<0.10	0.10	3009615

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PF8855	PF8856		
Sampling Date		2012/10/12	2012/10/12		
COC Number		10249	10249		
	Units	LICA PUFF+QFF/CLS/OCT 12,12	LICA PUFF+QFF/PORT/OCT 12,12	RDL	QC Batch

Phenanthrene	ug	0.514	0.232	0.050	3009615
p-Terphenyl	ug	<0.10	<0.10	0.10	3009615
Pyrene	ug	0.184	<0.050	0.050	3009615
Quinoline	ug	<0.40	<0.40	0.40	3009615
Tetralin	ug	<0.10	<0.10	0.10	3009615
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	60	60		3009615
D10-Fluoranthene	%	92	88		3009615
D10-Fluorene (FS)	%	13 (1)	14 (1)		3009615
D10-Phenanthrene	%	80	80		3009615
D12-Benzo(a)anthracene	%	90	94		3009615
D12-Benzo(a)pyrene	%	88	88		3009615
D12-Benzo(b)fluoranthene	%	88	94		3009615
D12-Benzo(ghi)perylene	%	90	98		3009615
D12-Benzo(k)fluoranthene	%	84	84		3009615
D12-Chrysene	%	80	90		3009615
D12-Indeno(1,2,3-cd)pyrene	%	90	96		3009615
D12-Perylene	%	86	90		3009615
D14-Dibenzo(a,h)anthracene	%	88	98		3009615
D14-Terphenyl (FS)	%	92	90		3009615
D8-Acenaphthylene	%	62	62		3009615
D8-Naphthalene	%	56	56		3009615

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2G1087
 Report Date: 2012/10/29

Test Summary

Maxxam ID PF8855
Sample ID LICA PUFF+QFF/CLS/OCT 12,12
Matrix PUF AND FILTER

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3009615	2012/10/22	2012/10/26	Lidija Tomic

Maxxam ID PF8856
Sample ID LICA PUFF+QFF/PORT/OCT 12,12
Matrix PUF AND FILTER

Collected 2012/10/12
Shipped
Received 2012/10/17

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3009615	2012/10/22	2012/10/23	Lidija Tomic

Maxxam Job #: B2G1087
Report Date: 2012/10/29

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: GB2G1087

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits	
3009615 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/10/23		70	%	50 - 150	
		D10-Fluoranthene	2012/10/23		86	%	50 - 150	
		D10-Phenanthrene	2012/10/23		76	%	50 - 150	
		D12-Benzo(a)anthracene	2012/10/23		90	%	50 - 150	
		D12-Benzo(a)pyrene	2012/10/23		90	%	50 - 150	
		D12-Benzo(b)fluoranthene	2012/10/23		96	%	50 - 150	
		D12-Benzo(ghi)perylene	2012/10/23		96	%	50 - 150	
		D12-Benzo(k)fluoranthene	2012/10/23		86	%	50 - 150	
		D12-Chrysene	2012/10/23		86	%	50 - 150	
		D12-Indeno(1,2,3-cd)pyrene	2012/10/23		98	%	50 - 150	
		D12-Perylene	2012/10/23		90	%	50 - 150	
		D14-Dibenzo(a,h)anthracene	2012/10/23		98	%	50 - 150	
		D8-Acenaphthylene	2012/10/23		68	%	50 - 150	
		D8-Naphthalene	2012/10/23		68	%	50 - 150	
	RPD	Acenaphthene	2012/10/23	7.0		%	60 - 130	
	Spiked Blank	Acenaphthene	2012/10/23				50	
	RPD	Acenaphthylene	2012/10/23	7.2		%	60 - 130	
	RPD	Acenaphthylene	2012/10/23			%	50	
	Spiked Blank	Anthracene	2012/10/23				60 - 130	
	RPD	Anthracene	2012/10/23	1		%	50	
	Spiked Blank	Benzo(a)anthracene	2012/10/23				60 - 130	
	RPD	Benzo(a)anthracene	2012/10/23	1.7		106	%	50
	Spiked Blank	Benzo(a)pyrene	2012/10/23				60 - 130	
	RPD	Benzo(a)pyrene	2012/10/23	0.6		%	50	
	Spiked Blank	Benzo(b)fluoranthene	2012/10/23				60 - 130	
	RPD	Benzo(b)fluoranthene	2012/10/23	0.5		%	50	
	Spiked Blank	Benzo(g,h,i)perylene	2012/10/23				60 - 130	
	RPD	Benzo(g,h,i)perylene	2012/10/23	1.1		%	50	
	Spiked Blank	Benzo(k)fluoranthene	2012/10/23				60 - 130	
	RPD	Benzo(k)fluoranthene	2012/10/23	0.8		%	50	
	Spiked Blank	Chrysene	2012/10/23				60 - 130	
	RPD	Chrysene	2012/10/23	1.4		%	50	
	Spiked Blank	Dibenz(a,h)anthracene	2012/10/23				60 - 130	
	RPD	Dibenz(a,h)anthracene	2012/10/23	0		%	50	
	Spiked Blank	Fluoranthene	2012/10/23				60 - 130	
	RPD	Fluoranthene	2012/10/23	2.7		%	50	
	Spiked Blank	Fluorene	2012/10/23				60 - 130	
	RPD	Fluorene	2012/10/23	5.8		%	50	
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/10/23				60 - 130	
	RPD	Indeno(1,2,3-cd)pyrene	2012/10/23	0.3		%	50	
Spiked Blank	Naphthalene	2012/10/23				60 - 130		
RPD	Naphthalene	2012/10/23	5.0		%	50		
Spiked Blank	Phenanthrene	2012/10/23				60 - 130		
RPD	Phenanthrene	2012/10/23	0.6		%	50		
Spiked Blank	Pyrene	2012/10/23				60 - 130		
RPD	Pyrene	2012/10/23	1.8		%	50		
Method Blank	D10-2-Methylnaphthalene	2012/10/23				50 - 150		
	D10-Fluoranthene	2012/10/23				50 - 150		
	D10-Phenanthrene	2012/10/23				50 - 150		
	D12-Benzo(a)anthracene	2012/10/23				50 - 150		
	D12-Benzo(a)pyrene	2012/10/23				50 - 150		
	D12-Benzo(b)fluoranthene	2012/10/23				50 - 150		
	D12-Benzo(ghi)perylene	2012/10/23				50 - 150		
	D12-Benzo(k)fluoranthene	2012/10/23				50 - 150		
	D12-Chrysene	2012/10/23				50 - 150		

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G1087

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3009615 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/10/23		98	%	50 - 150
		D12-Perylene	2012/10/23		90	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/10/23		96	%	50 - 150
		D8-Acenaphthylene	2012/10/23		74	%	50 - 150
		D8-Naphthalene	2012/10/23		72	%	50 - 150
		1-Methylnaphthalene	2012/10/23	<0.10		ug	
		1-Methylphenanthrene	2012/10/23	<0.10		ug	
		2-Chloronaphthalene	2012/10/23	<0.10		ug	
		2-Methylanthracene	2012/10/23	<0.10		ug	
		2-Methylnaphthalene	2012/10/23	<0.10		ug	
		3-Methylcholanthrene	2012/10/23	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/10/23	<0.10		ug	
		9,10-Dimethylanthracene	2012/10/23	<0.40		ug	
		Acenaphthene	2012/10/23	<0.050		ug	
		Acenaphthylene	2012/10/23	<0.050		ug	
		Anthracene	2012/10/23	<0.050		ug	
		Benzo(a)anthracene	2012/10/23	<0.050		ug	
		Benzo(a)fluorene	2012/10/23	<0.10		ug	
		Benzo(a)pyrene	2012/10/23	<0.050		ug	
		Benzo(b)fluoranthene	2012/10/23	<0.050		ug	
		Benzo(b)fluorene	2012/10/23	<0.10		ug	
		Benzo(e)pyrene	2012/10/23	<0.10		ug	
		Benzo(g,h,i)perylene	2012/10/23	<0.050		ug	
		Benzo(k)fluoranthene	2012/10/23	<0.050		ug	
		Biphenyl	2012/10/23	<0.10		ug	
		Chrysene	2012/10/23	<0.050		ug	
		Coronene	2012/10/23	<0.10		ug	
		Dibenz(a,h)anthracene	2012/10/23	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/10/23	<0.20		ug	
		Fluoranthene	2012/10/23	<0.050		ug	
		Fluorene	2012/10/23	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/10/23	<0.050		ug	
		m-Terphenyl	2012/10/23	<0.10		ug	
		Naphthalene	2012/10/23	<0.072		ug	
		o-Terphenyl	2012/10/23	<0.10		ug	
		Perylene	2012/10/23	<0.10		ug	
		Phenanthrene	2012/10/23	<0.050		ug	
		p-Terphenyl	2012/10/23	<0.10		ug	
		Pyrene	2012/10/23	<0.050		ug	
		Quinoline	2012/10/23	<0.40		ug	
		Tetralin	2012/10/23	<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/Oct 18, 2012

Puf+ s/n: 100-1020
 Motor s/n: 1138
 Installation Date/Time: Oct 17, 2012 @ 08:47 mst
 Removal Date/Time: Oct 19, 2012 @ 14:40 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
18-Oct-12	10/18/2012 0:00	10/19/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
15-Oct-12	22-Oct-12	25-Oct-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 ³)
713	220	3.3	330.34

Time set correctly prior to sampling? YES
Timer set correctly prior to sampling? YES
Sampling data saved to memory card after sampling? YES v

Comments: COC# 12499
GB2F1370 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Oct 18, 2012

Technician Signature: Ting Xu

Your C.O.C. #: 12499

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

Report Date: 2012/11/09

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2G5636****Received: 2012/10/24, 09:05**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/10/25	2012/11/09	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 #: B2G5636
 Report Date: 2012/11/09

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PI3765	PI3766		
Sampling Date		2012/10/18	2012/10/18		
COC Number		12499	12499		
	Units	LICA PUFF+QFF/CLS/OCT1 8,12	LICA PUFF+QFF/PORT/OCT 18,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	<0.10	0.13	0.10	3014016
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3014016
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3014016
2-Methylantracene	ug	<0.10	<0.10	0.10	3014016
2-Methylnaphthalene	ug	0.17	0.25	0.10	3014016
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3014016
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3014016
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3014016
Acenaphthene	ug	<0.050	<0.050	0.050	3014016
Acenaphthylene	ug	<0.050	<0.050	0.050	3014016
Anthracene	ug	<0.050	<0.050	0.050	3014016
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3014016
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3014016
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3014016
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3014016
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3014016
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3014016
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	3014016
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3014016
Biphenyl	ug	0.13	<0.10	0.10	3014016
Chrysene	ug	<0.050	<0.050	0.050	3014016
Coronene	ug	<0.10	<0.10	0.10	3014016
Dibenz(a,h)anthracene	ug	<0.050	<0.050	0.050	3014016
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3014016
Fluoranthene	ug	<0.050	<0.050	0.050	3014016
Fluorene	ug	0.158	0.110	0.050	3014016
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	3014016
m-Terphenyl	ug	<0.10	<0.10	0.10	3014016
Naphthalene	ug	0.154	0.124	0.072	3014016
o-Terphenyl	ug	<0.10	<0.10	0.10	3014016
Perylene	ug	<0.10	<0.10	0.10	3014016

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2G5636
 Report Date: 2012/11/09

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PI3765	PI3766		
Sampling Date		2012/10/18	2012/10/18		
COC Number		12499	12499		
	Units	LICA PUFF+QFF/CLS/OCT1 8,12	LICA PUFF+QFF/PORT/OCT 18,12	RDL	QC Batch

Phenanthrene	ug	0.250	0.128	0.050	3014016
p-Terphenyl	ug	<0.10	<0.10	0.10	3014016
Pyrene	ug	<0.050	<0.050	0.050	3014016
Quinoline	ug	<0.40	<0.40	0.40	3014016
Tetralin	ug	<0.10	<0.10	0.10	3014016
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	80	66		3014016
D10-Fluoranthene	%	94	88		3014016
D10-Fluorene (FS)	%	17 (1)	15 (1)		3014016
D10-Phenanthrene	%	88	82		3014016
D12-Benzo(a)anthracene	%	92	90		3014016
D12-Benzo(a)pyrene	%	94	90		3014016
D12-Benzo(b)fluoranthene	%	88	86		3014016
D12-Benzo(ghi)perylene	%	96	94		3014016
D12-Benzo(k)fluoranthene	%	86	86		3014016
D12-Chrysene	%	82	80		3014016
D12-Indeno(1,2,3-cd)pyrene	%	94	94		3014016
D12-Perylene	%	92	88		3014016
D14-Dibenzo(a,h)anthracene	%	94	92		3014016
D14-Terphenyl (FS)	%	93	88		3014016
D8-Acenaphthylene	%	88	74		3014016
D8-Naphthalene	%	72	62		3014016

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2G5636
 Report Date: 2012/11/09

Test Summary

Maxxam ID PI3765
Sample ID LICA PUFF+QFF/CLS/OCT1 8,12
Matrix PUF AND FILTER

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3014016	2012/10/25	2012/11/09	Lidija Tomic

Maxxam ID PI3766
Sample ID LICA PUFF+QFF/PORT/OCT 18,12
Matrix PUF AND FILTER

Collected 2012/10/18
Shipped
Received 2012/10/24

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3014016	2012/10/25	2012/11/09	Lidija Tomic

Maxxam Job #: B2G5636
Report Date: 2012/11/09

GENERAL COMMENTS

9,10-Dimethylanthracene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in continuing calibration. No positives found for these 2 compounds.

Results relate only to the items tested.

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

Quality Assurance Report

Maxxam Job Number: GB2G5636

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3014016 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/11/09		82	%	50 - 150
		D10-Fluoranthene	2012/11/09		86	%	50 - 150
		D10-Phenanthrene	2012/11/09		82	%	50 - 150
		D12-Benzo(a)anthracene	2012/11/09		78	%	50 - 150
		D12-Benzo(a)pyrene	2012/11/09		96	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/11/09		88	%	50 - 150
		D12-Benzo(ghi)perylene	2012/11/09		122	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/11/09		88	%	50 - 150
		D12-Chrysene	2012/11/09		72	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/11/09		120	%	50 - 150
		D12-Perylene	2012/11/09		94	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/09		124	%	50 - 150
		D8-Acenaphthylene	2012/11/09		78	%	50 - 150
		D8-Naphthalene	2012/11/09		78	%	50 - 150
		RPD	Acenaphthene	2012/11/09		85	%
	RPD	Acenaphthene	2012/11/09	0.6		%	50
	Spiked Blank	Acenaphthylene	2012/11/09		80	%	60 - 130
	RPD	Acenaphthylene	2012/11/09	4.3		%	50
	Spiked Blank	Anthracene	2012/11/09		85	%	60 - 130
	RPD	Anthracene	2012/11/09	2.6		%	50
	Spiked Blank	Benzo(a)anthracene	2012/11/09		88	%	60 - 130
	RPD	Benzo(a)anthracene	2012/11/09	12.8		%	50
	Spiked Blank	Benzo(a)pyrene	2012/11/09		89	%	60 - 130
	RPD	Benzo(a)pyrene	2012/11/09	0.3		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/11/09		87	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/11/09	1.4		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/11/09		125	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/11/09	28.8		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/11/09		93	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/11/09	4.1		%	50
	Spiked Blank	Chrysene	2012/11/09		75	%	60 - 130
	RPD	Chrysene	2012/11/09	11.4		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/11/09		131 (1)	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/11/09	31.4		%	50
	Spiked Blank	Fluoranthene	2012/11/09		91	%	60 - 130
	RPD	Fluoranthene	2012/11/09	4.6		%	50
	Spiked Blank	Fluorene	2012/11/09		85	%	60 - 130
	RPD	Fluorene	2012/11/09	2.6		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/11/09		128	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/11/09	28.4		%	50
Spiked Blank	Naphthalene	2012/11/09		91	%	60 - 130	
RPD	Naphthalene	2012/11/09	9.2		%	50	
Spiked Blank	Phenanthrene	2012/11/09		88	%	60 - 130	
RPD	Phenanthrene	2012/11/09	2.5		%	50	
Spiked Blank	Pyrene	2012/11/09		85	%	60 - 130	
RPD	Pyrene	2012/11/09	5.4		%	50	
Method Blank	D10-2-Methylnaphthalene	2012/11/09		76	%	50 - 150	
	D10-Fluoranthene	2012/11/09		92	%	50 - 150	
	D10-Phenanthrene	2012/11/09		82	%	50 - 150	
	D12-Benzo(a)anthracene	2012/11/09		86	%	50 - 150	
	D12-Benzo(a)pyrene	2012/11/09		92	%	50 - 150	
	D12-Benzo(b)fluoranthene	2012/11/09		84	%	50 - 150	
	D12-Benzo(ghi)perylene	2012/11/09		94	%	50 - 150	
	D12-Benzo(k)fluoranthene	2012/11/09		82	%	50 - 150	
	D12-Chrysene	2012/11/09		74	%	50 - 150	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G5636

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3014016 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/11/09		92	%	50 - 150
		D12-Perylene	2012/11/09		90	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/09		92	%	50 - 150
		D8-Acenaphthylene	2012/11/09		80	%	50 - 150
		D8-Naphthalene	2012/11/09		70	%	50 - 150
		1-Methylnaphthalene	2012/11/09	<0.10		ug	
		1-Methylphenanthrene	2012/11/09	<0.10		ug	
		2-Chloronaphthalene	2012/11/09	<0.10		ug	
		2-Methylantracene	2012/11/09	<0.10		ug	
		2-Methylnaphthalene	2012/11/09	<0.10		ug	
		3-Methylcholanthrene	2012/11/09	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/11/09	<0.10		ug	
		9,10-Dimethylantracene	2012/11/09	<0.40		ug	
		Acenaphthene	2012/11/09	<0.050		ug	
		Acenaphthylene	2012/11/09	<0.050		ug	
		Anthracene	2012/11/09	<0.050		ug	
		Benzo(a)anthracene	2012/11/09	<0.050		ug	
		Benzo(a)fluorene	2012/11/09	<0.10		ug	
		Benzo(a)pyrene	2012/11/09	<0.050		ug	
		Benzo(b)fluoranthene	2012/11/09	<0.050		ug	
		Benzo(b)fluorene	2012/11/09	<0.10		ug	
		Benzo(e)pyrene	2012/11/09	<0.10		ug	
		Benzo(g,h,i)perylene	2012/11/09	<0.050		ug	
		Benzo(k)fluoranthene	2012/11/09	<0.050		ug	
		Biphenyl	2012/11/09	<0.10		ug	
		Chrysene	2012/11/09	<0.050		ug	
		Coronene	2012/11/09	<0.10		ug	
		Dibenz(a,h)anthracene	2012/11/09	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/11/09	<0.20		ug	
		Fluoranthene	2012/11/09	<0.050		ug	
		Fluorene	2012/11/09	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/11/09	<0.050		ug	
		m-Terphenyl	2012/11/09	<0.10		ug	
		Naphthalene	2012/11/09	0.072, RDL=0.072		ug	
		o-Terphenyl	2012/11/09	<0.10		ug	
		Perylene	2012/11/09	<0.10		ug	
		Phenanthrene	2012/11/09	<0.050		ug	
		p-Terphenyl	2012/11/09	<0.10		ug	
		Pyrene	2012/11/09	<0.050		ug	
		Quinoline	2012/11/09	<0.40		ug	
		Tetralin	2012/11/09	<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.
 (1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

MAXXAM

Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
 Location: Cold Lake South
 Station ID: Lica1
 Field Sample ID: LICA PUF/CLS/Oct 24, 2012

Puf+ s/n: 100-1020
 Motor s/n: 1138
 Installation Date/Time: Oct 23, 2012 @ 17:14 mst
 Removal Date/Time: Oct 25, 2012 @ 07:41 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
24-Oct-12	10/24/2012 0:00	10/25/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
19-Oct-12	25-Oct-12	31-Oct-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 ³)
715	229	-0.8	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# 05589
GB2F1371 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Oct 24, 2012

Technician Signature: Ting Xu

Your C.O.C. #: 05589

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

Report Date: 2012/11/08

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2G8601****Received: 2012/10/29, 08:55**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/10/31	2012/11/07	BRL SOP-00201	CARB429(ARBM1,M2)mod

Encryption Key

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

Marinela Sim,
Email: MSim@maxxam.ca
Phone# (905) 817-5700

=====

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

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PJ9438	PJ9439		
Sampling Date		2012/10/24	2012/10/24		
COC Number		05589	05589		
	Units	LICA PUFF+QFF/CLS/OCT 24,12	LICA PUFF+QFF/PORT/OCT 24,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	<0.10	<0.10	0.10	3020466
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3020466
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3020466
2-Methylantracene	ug	<0.10	<0.10	0.10	3020466
2-Methylnaphthalene	ug	0.20	<0.10	0.10	3020466
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3020466
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3020466
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3020466
Acenaphthene	ug	<0.050	<0.050	0.050	3020466
Acenaphthylene	ug	<0.050	<0.050	0.050	3020466
Anthracene	ug	<0.050	<0.050	0.050	3020466
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3020466
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3020466
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3020466
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3020466
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3020466
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3020466
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	3020466
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3020466
Biphenyl	ug	<0.10	<0.10	0.10	3020466
Chrysene	ug	<0.050	<0.050	0.050	3020466
Coronene	ug	<0.10	<0.10	0.10	3020466
Dibenz(a,h)anthracene	ug	<0.050	<0.050	0.050	3020466
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3020466
Fluoranthene	ug	<0.050	<0.050	0.050	3020466
Fluorene	ug	0.074	<0.050	0.050	3020466
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	3020466
m-Terphenyl	ug	<0.10	<0.10	0.10	3020466
Naphthalene	ug	0.104	<0.072	0.072	3020466
o-Terphenyl	ug	<0.10	<0.10	0.10	3020466
Perylene	ug	<0.10	<0.10	0.10	3020466
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					

Maxxam Job #: B2G8601
 Report Date: 2012/11/08

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PJ9438	PJ9439		
Sampling Date		2012/10/24	2012/10/24		
COC Number		05589	05589		
	Units	LICA PUFF+QFF/CLS/OCT 24,12	LICA PUFF+QFF/PORT/OCT 24,12	RDL	QC Batch

Phenanthrene	ug	0.128	0.050	0.050	3020466
p-Terphenyl	ug	<0.10	<0.10	0.10	3020466
Pyrene	ug	<0.050	<0.050	0.050	3020466
Quinoline	ug	<0.40	<0.40	0.40	3020466
Tetralin	ug	<0.10	<0.10	0.10	3020466
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	76	64		3020466
D10-Fluoranthene	%	90	92		3020466
D10-Fluorene (FS)	%	32 (1)	27 (1)		3020466
D10-Phenanthrene	%	84	82		3020466
D12-Benzo(a)anthracene	%	88	90		3020466
D12-Benzo(a)pyrene	%	88	92		3020466
D12-Benzo(b)fluoranthene	%	88	90		3020466
D12-Benzo(ghi)perylene	%	88	90		3020466
D12-Benzo(k)fluoranthene	%	86	86		3020466
D12-Chrysene	%	84	84		3020466
D12-Indeno(1,2,3-cd)pyrene	%	88	90		3020466
D12-Perylene	%	86	90		3020466
D14-Dibenzo(a,h)anthracene	%	88	90		3020466
D14-Terphenyl (FS)	%	92	96		3020466
D8-Acenaphthylene	%	76	68		3020466
D8-Naphthalene	%	70	58		3020466

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2G8601
 Report Date: 2012/11/08

Test Summary

Maxxam ID PJ9438
Sample ID LICA PUFF+QFF/CLS/OCT 24,12
Matrix PUF AND FILTER

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3020466	2012/10/31	2012/11/07	Lidija Tomic

Maxxam ID PJ9439
Sample ID LICA PUFF+QFF/PORT/OCT 24,12
Matrix PUF AND FILTER

Collected 2012/10/24
Shipped
Received 2012/10/29

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3020466	2012/10/31	2012/11/07	Lidija Tomic

Maxxam Job #: B2G8601
Report Date: 2012/11/08

GENERAL COMMENTS

9,10-Dimethylanthracene, 7,12-dimethylbenzo(a)anthracene, Dibenzo (a,e) pyrene and Coronen are above 25% RSD in initial calibration. No positives found for these 4 compounds.

Results relate only to the items tested.

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

Quality Assurance Report

Maxxam Job Number: GB2G8601

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3020466 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/11/07		76	%	50 - 150
		D10-Fluoranthene	2012/11/07		88	%	50 - 150
		D10-Phenanthrene	2012/11/07		82	%	50 - 150
		D12-Benzo(a)anthracene	2012/11/07		88	%	50 - 150
		D12-Benzo(a)pyrene	2012/11/07		90	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/11/07		88	%	50 - 150
		D12-Benzo(ghi)perylene	2012/11/07		88	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/11/07		86	%	50 - 150
		D12-Chrysene	2012/11/07		86	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/11/07		88	%	50 - 150
		D12-Perylene	2012/11/07		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/07		88	%	50 - 150
		D8-Acenaphthylene	2012/11/07		76	%	50 - 150
		D8-Naphthalene	2012/11/07		72	%	50 - 150
		RPD	Acenaphthene	2012/11/07		82	%
	RPD	Acenaphthene	2012/11/07	0.6		%	50
	Spiked Blank	Acenaphthylene	2012/11/07		80	%	60 - 130
	RPD	Acenaphthylene	2012/11/07	1.9		%	50
	Spiked Blank	Anthracene	2012/11/07		85	%	60 - 130
	RPD	Anthracene	2012/11/07	5.4		%	50
	Spiked Blank	Benzo(a)anthracene	2012/11/07		99	%	60 - 130
	RPD	Benzo(a)anthracene	2012/11/07	0.8		%	50
	Spiked Blank	Benzo(a)pyrene	2012/11/07		78	%	60 - 130
	RPD	Benzo(a)pyrene	2012/11/07	0.3		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/11/07		85	%	60 - 130
	RPD	Benzo(b)fluoranthene	2012/11/07	0.3		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/11/07		79	%	60 - 130
	RPD	Benzo(g,h,i)perylene	2012/11/07	7.0		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/11/07		92	%	60 - 130
	RPD	Benzo(k)fluoranthene	2012/11/07	0.3		%	50
	Spiked Blank	Chrysene	2012/11/07		87	%	60 - 130
	RPD	Chrysene	2012/11/07	0.9		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/11/07		76	%	60 - 130
	RPD	Dibenz(a,h)anthracene	2012/11/07	8.5		%	50
	Spiked Blank	Fluoranthene	2012/11/07		92	%	60 - 130
	RPD	Fluoranthene	2012/11/07	1.1		%	50
	Spiked Blank	Fluorene	2012/11/07		83	%	60 - 130
	RPD	Fluorene	2012/11/07	0.3		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/11/07		79	%	60 - 130
	RPD	Indeno(1,2,3-cd)pyrene	2012/11/07	6.7		%	50
Spiked Blank	Naphthalene	2012/11/07		79	%	60 - 130	
RPD	Naphthalene	2012/11/07	2.5		%	50	
Spiked Blank	Phenanthrene	2012/11/07		88	%	60 - 130	
RPD	Phenanthrene	2012/11/07	2.0		%	50	
Spiked Blank	Pyrene	2012/11/07		87	%	60 - 130	
RPD	Pyrene	2012/11/07	0.6		%	50	
Method Blank	D10-2-Methylnaphthalene	2012/11/07		76	%	50 - 150	
	D10-Fluoranthene	2012/11/07		84	%	50 - 150	
	D10-Phenanthrene	2012/11/07		80	%	50 - 150	
	D12-Benzo(a)anthracene	2012/11/07		84	%	50 - 150	
	D12-Benzo(a)pyrene	2012/11/07		88	%	50 - 150	
	D12-Benzo(b)fluoranthene	2012/11/07		88	%	50 - 150	
	D12-Benzo(ghi)perylene	2012/11/07		86	%	50 - 150	
	D12-Benzo(k)fluoranthene	2012/11/07		84	%	50 - 150	
	D12-Chrysene	2012/11/07		84	%	50 - 150	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2G8601

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3020466 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/11/07		86	%	50 - 150
		D12-Perylene	2012/11/07		86	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/07		84	%	50 - 150
		D8-Acenaphthylene	2012/11/07		72	%	50 - 150
		D8-Naphthalene	2012/11/07		72	%	50 - 150
		1-Methylnaphthalene	2012/11/07	<0.10		ug	
		1-Methylphenanthrene	2012/11/07	<0.10		ug	
		2-Chloronaphthalene	2012/11/07	<0.10		ug	
		2-Methylanthracene	2012/11/07	<0.10		ug	
		2-Methylnaphthalene	2012/11/07	<0.10		ug	
		3-Methylcholanthrene	2012/11/07	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/11/07	<0.10		ug	
		9,10-Dimethylanthracene	2012/11/07	<0.40		ug	
		Acenaphthene	2012/11/07	<0.050		ug	
		Acenaphthylene	2012/11/07	<0.050		ug	
		Anthracene	2012/11/07	<0.050		ug	
		Benzo(a)anthracene	2012/11/07	<0.050		ug	
		Benzo(a)fluorene	2012/11/07	<0.10		ug	
		Benzo(a)pyrene	2012/11/07	<0.050		ug	
		Benzo(b)fluoranthene	2012/11/07	<0.050		ug	
		Benzo(b)fluorene	2012/11/07	<0.10		ug	
		Benzo(e)pyrene	2012/11/07	<0.10		ug	
		Benzo(g,h,i)perylene	2012/11/07	<0.050		ug	
		Benzo(k)fluoranthene	2012/11/07	<0.050		ug	
		Biphenyl	2012/11/07	<0.10		ug	
		Chrysene	2012/11/07	<0.050		ug	
		Coronene	2012/11/07	<0.10		ug	
		Dibenz(a,h)anthracene	2012/11/07	<0.050		ug	
		Dibenzo(a,e)pyrene	2012/11/07	<0.20		ug	
		Fluoranthene	2012/11/07	<0.050		ug	
		Fluorene	2012/11/07	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/11/07	<0.050		ug	
		m-Terphenyl	2012/11/07	<0.10		ug	
		Naphthalene	2012/11/07	<0.072		ug	
		o-Terphenyl	2012/11/07	<0.10		ug	
		Perylene	2012/11/07	<0.10		ug	
		Phenanthrene	2012/11/07	<0.050		ug	
		p-Terphenyl	2012/11/07	<0.10		ug	
		Pyrene	2012/11/07	<0.050		ug	
		Quinoline	2012/11/07	<0.40		ug	
		Tetralin	2012/11/07	<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/Oct 30, 2012

Puf+ s/n: 100-1020
 Motor s/n: 1138
 Installation Date/Time: Oct 29, 2012 @ 17:45 mst
 Removal Date/Time: Oct 31, 2012 @ 07:05 mst

Date and Time Information			
Sample Date	Start Time (MST)	Finish Time (MST)	Elapsed Time (Hours)
30-Oct-12	10/30/2012 0:00	10/31/2012 0:00	24.000

PUF and QFF Information			
Date Received	Date Shipped	Puf Expiration Date	QFF Prep Date
24-Oct-12	01-Nov-12	06-Nov-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 ³)
712	229	-2.0	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# 12645
GB2F1372 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Oct 30, 2012

Technician Signature: Ting Xu

Your C.O.C. #: 12645

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

Report Date: 2012/11/13

CERTIFICATE OF ANALYSIS**MAXXAM JOB #: B2H2611****Received: 2012/11/03, 10:30**

Sample Matrix: PUF AND FILTER

Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PAH's in Air (CARB429mod)	2	2012/11/06	2012/11/12	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 #: B2H2611
 Report Date: 2012/11/13

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PL9729	PL9730		
Sampling Date		2012/10/30	2012/10/30		
COC Number		12645	12645		
	Units	LICA PUFF+QFF/CLS/OCT 30,12	LICA PUFF+QFF/PORT/OCT 30,12	RDL	QC Batch

Semivolatile Organics					
1-Methylnaphthalene	ug	0.12	<0.10	0.10	3027336
1-Methylphenanthrene	ug	<0.10	<0.10	0.10	3027336
2-Chloronaphthalene	ug	<0.10	<0.10	0.10	3027336
2-Methylantracene	ug	<0.10	<0.10	0.10	3027336
2-Methylnaphthalene	ug	0.24	0.11	0.10	3027336
3-Methylcholanthrene	ug	<2.0	<2.0	2.0	3027336
7,12-Dimethylbenzo(a)anthracene	ug	<0.10	<0.10	0.10	3027336
9,10-Dimethylantracene	ug	<0.40	<0.40	0.40	3027336
Acenaphthene	ug	<0.050	<0.050	0.050	3027336
Acenaphthylene	ug	<0.050	<0.050	0.050	3027336
Anthracene	ug	<0.050	<0.050	0.050	3027336
Benzo(a)anthracene	ug	<0.050	<0.050	0.050	3027336
Benzo(a)fluorene	ug	<0.10	<0.10	0.10	3027336
Benzo(a)pyrene	ug	<0.050	<0.050	0.050	3027336
Benzo(b)fluoranthene	ug	<0.050	<0.050	0.050	3027336
Benzo(b)fluorene	ug	<0.10	<0.10	0.10	3027336
Benzo(e)pyrene	ug	<0.10	<0.10	0.10	3027336
Benzo(g,h,i)perylene	ug	<0.050	<0.050	0.050	3027336
Benzo(k)fluoranthene	ug	<0.050	<0.050	0.050	3027336
Biphenyl	ug	0.17	0.26	0.10	3027336
Chrysene	ug	<0.050	<0.050	0.050	3027336
Coronene	ug	<0.10	<0.10	0.10	3027336
Dibenz(a,h)anthracene	ug	<0.050	<0.050	0.050	3027336
Dibenzo(a,e)pyrene	ug	<0.20	<0.20	0.20	3027336
Fluoranthene	ug	0.060	0.062	0.050	3027336
Fluorene	ug	0.158	0.146	0.050	3027336
Indeno(1,2,3-cd)pyrene	ug	<0.050	<0.050	0.050	3027336
m-Terphenyl	ug	<0.10	<0.10	0.10	3027336
Naphthalene	ug	0.206	0.176	0.072	3027336
o-Terphenyl	ug	<0.10	<0.10	0.10	3027336
Perylene	ug	<0.10	<0.10	0.10	3027336

 RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B2H2611
 Report Date: 2012/11/13

SEMI-VOLATILE ORGANICS BY GC-MS (PUF AND FILTER)

Maxxam ID		PL9729	PL9730		
Sampling Date		2012/10/30	2012/10/30		
COC Number		12645	12645		
	Units	LICA PUFF+QFF/CLS/OCT 30,12	LICA PUFF+QFF/PORT/OCT 30,12	RDL	QC Batch

Phenanthrene	ug	0.238	0.220	0.050	3027336
p-Terphenyl	ug	<0.10	<0.10	0.10	3027336
Pyrene	ug	0.050	<0.050	0.050	3027336
Quinoline	ug	<0.40	<0.40	0.40	3027336
Tetralin	ug	<0.10	<0.10	0.10	3027336
Surrogate Recovery (%)					
D10-2-Methylnaphthalene	%	72	74		3027336
D10-Fluoranthene	%	98	80		3027336
D10-Fluorene (FS)	%	43 (1)	34 (1)		3027336
D10-Phenanthrene	%	88	78		3027336
D12-Benzo(a)anthracene	%	98	96		3027336
D12-Benzo(a)pyrene	%	90	84		3027336
D12-Benzo(b)fluoranthene	%	92	92		3027336
D12-Benzo(ghi)perylene	%	88	84		3027336
D12-Benzo(k)fluoranthene	%	88	84		3027336
D12-Chrysene	%	86	90		3027336
D12-Indeno(1,2,3-cd)pyrene	%	86	80		3027336
D12-Perylene	%	92	84		3027336
D14-Dibenzo(a,h)anthracene	%	88	80		3027336
D14-Terphenyl (FS)	%	98	78		3027336
D8-Acenaphthylene	%	78	72		3027336
D8-Naphthalene	%	66	70		3027336

QC Batch = Quality Control Batch
 (1) Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Maxxam Job #: B2H2611
 Report Date: 2012/11/13

Test Summary

Maxxam ID PL9729
Sample ID LICA PUFF+QFF/CLS/OCT 30,12
Matrix PUF AND FILTER

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3027336	2012/11/06	2012/11/12	Lidija Tomic

Maxxam ID PL9730
Sample ID LICA PUFF+QFF/PORT/OCT 30,12
Matrix PUF AND FILTER

Collected 2012/10/30
Shipped
Received 2012/11/03

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
PAH's in Air (CARB429mod)	GC/MS	3027336	2012/11/06	2012/11/12	Lidija Tomic

Maxxam Job #: B2H2611
Report Date: 2012/11/13

GENERAL COMMENTS

9,10-Dimethylanthracene, 7,12-dimethylbenzo(a)anthracene Benzo (g,h,i)perylene Anthranthene are above 25% RSD in initial calibration.

Results relate only to the items tested.

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

Quality Assurance Report

Maxxam Job Number: GB2H2611

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3027336 LTO	Spiked Blank	D10-2-Methylnaphthalene	2012/11/12		76	%	50 - 150
		D10-Fluoranthene	2012/11/12		84	%	50 - 150
		D10-Phenanthrene	2012/11/12		80	%	50 - 150
		D12-Benzo(a)anthracene	2012/11/12		106	%	50 - 150
		D12-Benzo(a)pyrene	2012/11/12		88	%	50 - 150
		D12-Benzo(b)fluoranthene	2012/11/12		92	%	50 - 150
		D12-Benzo(ghi)perylene	2012/11/12		84	%	50 - 150
		D12-Benzo(k)fluoranthene	2012/11/12		88	%	50 - 150
		D12-Chrysene	2012/11/12		94	%	50 - 150
		D12-Indeno(1,2,3-cd)pyrene	2012/11/12		82	%	50 - 150
		D12-Perylene	2012/11/12		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/12		82	%	50 - 150
		RPD	D8-Acenaphthylene	2012/11/12		70	%
	D8-Naphthalene		2012/11/12		70	%	50 - 150
	Spiked Blank	Acenaphthene	2012/11/12		78	%	60 - 130
		Acenaphthene	2012/11/12	4.4		%	50
	RPD	Acenaphthylene	2012/11/12		71	%	60 - 130
		Acenaphthylene	2012/11/12	7.1		%	50
	Spiked Blank	Anthracene	2012/11/12		76	%	60 - 130
		Anthracene	2012/11/12	5.1		%	50
	Spiked Blank	Benzo(a)anthracene	2012/11/12		104	%	60 - 130
		Benzo(a)anthracene	2012/11/12	12.2		%	50
	Spiked Blank	Benzo(a)pyrene	2012/11/12		70	%	60 - 130
		Benzo(a)pyrene	2012/11/12	0.4		%	50
	Spiked Blank	Benzo(b)fluoranthene	2012/11/12		87	%	60 - 130
		Benzo(b)fluoranthene	2012/11/12	0.3		%	50
	Spiked Blank	Benzo(g,h,i)perylene	2012/11/12		65	%	60 - 130
		Benzo(g,h,i)perylene	2012/11/12	0.4		%	50
	Spiked Blank	Benzo(k)fluoranthene	2012/11/12		88	%	60 - 130
		Benzo(k)fluoranthene	2012/11/12	9.0		%	50
	Spiked Blank	Chrysene	2012/11/12		93	%	60 - 130
		Chrysene	2012/11/12	8.1		%	50
	Spiked Blank	Dibenz(a,h)anthracene	2012/11/12		69	%	60 - 130
		Dibenz(a,h)anthracene	2012/11/12	2.6		%	50
	Spiked Blank	Fluoranthene	2012/11/12		86	%	60 - 130
		Fluoranthene	2012/11/12	0.3		%	50
	Spiked Blank	Fluorene	2012/11/12		79	%	60 - 130
		Fluorene	2012/11/12	4.7		%	50
	Spiked Blank	Indeno(1,2,3-cd)pyrene	2012/11/12		65	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2012/11/12	2.4		%	50
Spiked Blank	Naphthalene	2012/11/12		75	%	60 - 130	
	Naphthalene	2012/11/12	3.0		%	50	
Spiked Blank	Phenanthrene	2012/11/12		80	%	60 - 130	
	Phenanthrene	2012/11/12	2.5		%	50	
Spiked Blank	Pyrene	2012/11/12		81	%	60 - 130	
	Pyrene	2012/11/12	0.3		%	50	
Method Blank	D10-2-Methylnaphthalene	2012/11/12		78	%	50 - 150	
	D10-Fluoranthene	2012/11/12		84	%	50 - 150	
	D10-Phenanthrene	2012/11/12		82	%	50 - 150	
	D12-Benzo(a)anthracene	2012/11/12		92	%	50 - 150	
	D12-Benzo(a)pyrene	2012/11/12		88	%	50 - 150	
	D12-Benzo(b)fluoranthene	2012/11/12		90	%	50 - 150	
	D12-Benzo(ghi)perylene	2012/11/12		82	%	50 - 150	
	D12-Benzo(k)fluoranthene	2012/11/12		84	%	50 - 150	
	D12-Chrysene	2012/11/12		84	%	50 - 150	

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

Quality Assurance Report (Continued)

Maxxam Job Number: GB2H2611

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3027336 LTO	Method Blank	D12-Indeno(1,2,3-cd)pyrene	2012/11/12		80	%	50 - 150
		D12-Perylene	2012/11/12		88	%	50 - 150
		D14-Dibenzo(a,h)anthracene	2012/11/12		80	%	50 - 150
		D8-Acenaphthylene	2012/11/12		76	%	50 - 150
		D8-Naphthalene	2012/11/12		72	%	50 - 150
		1-Methylnaphthalene	2012/11/12	<0.10		ug	
		1-Methylphenanthrene	2012/11/12	<0.10		ug	
		2-Chloronaphthalene	2012/11/12	<0.10		ug	
		2-Methylanthracene	2012/11/12	<0.10		ug	
		2-Methylnaphthalene	2012/11/12	<0.10		ug	
		3-Methylcholanthrene	2012/11/12	<2.0		ug	
		7,12-Dimethylbenzo(a)anthracene	2012/11/12	<0.10		ug	
		9,10-Dimethylanthracene	2012/11/12	<0.40		ug	
		Acenaphthene	2012/11/12	<0.050		ug	
		Acenaphthylene	2012/11/12	<0.050		ug	
		Anthracene	2012/11/12	<0.050		ug	
		Benzo(a)anthracene	2012/11/12	<0.050		ug	
		Benzo(a)fluorene	2012/11/12	<0.10		ug	
		Benzo(a)pyrene	2012/11/12	<0.050		ug	
		Benzo(b)fluoranthene	2012/11/12	<0.050		ug	
		Benzo(b)fluorene	2012/11/12	<0.10		ug	
		Benzo(e)pyrene	2012/11/12	<0.10		ug	
		Benzo(g,h,i)perylene	2012/11/12	0.060, RDL=0.050		ug	
		Benzo(k)fluoranthene	2012/11/12	<0.050		ug	
		Biphenyl	2012/11/12	<0.10		ug	
		Chrysene	2012/11/12	<0.050		ug	
		Coronene	2012/11/12	<0.10		ug	
		Dibenz(a,h)anthracene	2012/11/12	0.052, RDL=0.050		ug	
		Dibenzo(a,e)pyrene	2012/11/12	<0.20		ug	
		Fluoranthene	2012/11/12	<0.050		ug	
		Fluorene	2012/11/12	<0.050		ug	
		Indeno(1,2,3-cd)pyrene	2012/11/12	0.054, RDL=0.050		ug	
		m-Terphenyl	2012/11/12	<0.10		ug	
		Naphthalene	2012/11/12	<0.072		ug	
		o-Terphenyl	2012/11/12	<0.10		ug	
		Perylene	2012/11/12	<0.10		ug	
		Phenanthrene	2012/11/12	<0.050		ug	
		p-Terphenyl	2012/11/12	<0.10		ug	
		Pyrene	2012/11/12	<0.050		ug	
		Quinoline	2012/11/12	<0.40		ug	
		Tetralin	2012/11/12	<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.