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March 24, 2016

RE: 2015 Ambient Air Monitoring Annual Reports

Attached are the annual ambient air monitoring reports for the LICA Airshed Zone's Cold Lake South, Maskwa, St. Lina, and Portable Air Monitoring System (located in Elk Point) continuous stations.

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

Respectfully,

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

Michael Bisaga

Airshed Program Manager
Lakeland Industry and Community Association

cc (email): LICA Office



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**AMBIENT AIR MONITORING ANNUAL REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
COLD LAKE SOUTH SITE**

JOB #:2833-2015-01- A

**JANUARY - DECEMBER
2015**

Prepared for:

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
BOX 8237, 5107W - 50 STREET
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Attention: MIKE BISAGA

DATE: **January 29, 2016**

Prepared by:

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Project Manager Assistant, Air Services

Reviewed by:

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

SUMMARY

Maxxam Analytics Air Services Group conducted an Ambient Air monitoring program between January 2015 and December 2015 on the Cold Lake South Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the Project Coordinator.

Data presented in this report has undergone the Post-Final Validation Procedures, which include a cursory inspection of annual charts. If errors or omissions in the data are suspected or discovered after the initial submittal of data (monthly report), the post-validation step serves to re-evaluate the affected data. The report certification form is also included in this report to verify that the annual validation review has been completed, as per the Reporting Chapter (Chapter 9) of the Air Monitoring Directive (AMD).

The summary of basic statistics includes monthly mean, maximum, and minimum values as well as comparisons to the historical mean, maximum and minimum values from the previous calendar year are presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods during the monitoring period are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, Cold Lake South Site.

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

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1.0 Discussion

This annual validation report consists of data for parameters Sulphur Dioxide (SO₂), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxide (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Wind Speed (WS), Relative Humidity (RH) and Ambient Temperature (TPX). It also includes analytical results for the Passive Sampling Program from January 2015 to January 2016.

The air monitoring trailer was located at Latitude 54°24'50.9"N and Longitude 110°13'58.5"W during the monitoring period.

The monitoring methods and equipment met all AMD requirements.

All monitoring analyzers and meteorological systems met the 90% operational uptime requirement during the monitoring period, with the exception of PM 2.5: 89.4% in October and 88.2% in November. AE reference numbers 306212 and 306982 respectively.

All data collected during the monitoring period were within the objectives outlined in the Alberta Ambient Air Quality Objectives and Guidelines Summary (AAAQOs), with the exception of PM 2.5. A total of ten 24-hr contraventions were recorded for PM 2.5 in 2015. AE reference numbers are as follows: 298739, 298789, 300140, 300251, 300393, 300636, 300693, 300799, 300802 and 300905.

The annual Maxxam internal quality audit was performed on November 17 and 18.

The summaries of the monthly maintenance report for the monitoring period are presented below:

SULPHUR DIOXIDE (SO2)

January	No issues were identified.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	The channel was put into Maintenance mode on May 6 at hour 12 while a flow check was being performed.
June	No issues were identified.
July	The channel was put into maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance.
August	No issues were identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure. Hourly maximum data collected on September 1 at hour 7 was invalidated as the analyzer was recovering from a short power outage.
October	No issues were identified.
November	The routine annual internal quality audit was attempted on November 17. Due to issues with the calibrator, the audit was aborted. The audit was repeated on November 18 using a different calibrator.
December	No issues were identified.

TOTAL REDUCED SULPHUR (TRS)

January	No issues were identified.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	No issues were identified.
July	The channel was put into Maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance. The analyzer spanned low on July 13. As the as found points check performed on July 13 and the shut-down/start-up calibrations performed on July 15 all passed AMD requirements, no data was discarded due to this issue. The analyzer was put into maintenance mode on July 16 at hour 8 for a calibration gas cross-check.
August	No issues were identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure. Hourly maximum data collected on September 1 at hour 7 was invalidated as the analyzer was recovering from a short power outage.
October	The channel was put into Maintenance On October 27 at hour 9 while an external zero air generator was being verified.
November	The routine annual internal quality audit was completed on November 17.
December	No issues were identified.

TOTAL HYDROCARBONS (THC)

January	The analyzer was put into Maintenance mode for a hydrogen cylinder change out on January 21. Fourteen hours of data are invalid while the analyzer was stabilizing prior to calibration on January 27.
February	No issues were identified.
March	The hydrogen cylinder's distribution valve was closed in error causing the analyzer to flame out on March 26. The valve was reset on March 27. Nine hours of data were discarded due to this issue.
April	The analyzer was put into Maintenance mode at hour 8 on April 24 while the zero air generator was being relocated in order to reduce interference with the Teom unit.
May	Twelve hours of data collected on May 23 from hour 13 to hour 19 and on May 31 from hour 15 to hour 18 were invalidated as the data were below the background concentration of 1.5 ppm.
June	The sample flow rate was checked on June 25. One hour of data collected on June 14 at hour 18 was invalidated as the value was below the background concentration of 1.5 ppm.
July	The channel was put into Maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance.
August	No issues were identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure. Hourly maximum data collected on September 1 at hour 7 was invalidated as the analyzer was recovering from a short power outage.
October	No issues were identified.
November	The routine annual internal quality audit was completed on November 17.
December	No issues were identified.

NITROGEN DIOXIDE (NO2)

January	The analyzer spanned high on January 12. The charcoal for zero air supply was renewed and the daily zero/span system was rebuilt following an as found points check on January 13. No data was discarded due to this event.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	No issues were identified.
July	The channel was put into maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance. The pump for the zero/span system was rebuilt on July 8 following a shut-down calibration.
August	No issues were identified.

September	Data collected on September 8 at hour 8 was invalidated due to a malfunction. The analyzer spanned high on September 8 due to an incorrect expected span value. The expected span value was adjusted following an as found points check on September 18. No further issues were identified. Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure. Hourly maximum data collected on September 1 at hour 7 was invalidated as the analyzer was recovering from a short power outage.
October	The analyzer started spanning high after the calibration on October 5 as the expected span value was not set correctly. An as found points check was completed on October 28. The expected span value was then adjusted. No further issues were identified.
November	The routine annual internal quality audit was completed on November 17. The analyzer was put into Maintenance mode for three hours on November 18 while the GPT reference points for the Ozone analyzer audit were being generated.
December	The AEMERA-supplied Thermo 42C, S/N: 427408716, analyzer was replaced with the LICA-owned Thermo 42i, S/N: 1505664393, analyzer on December 14. Seventeen hours of data are invalid while the new analyzer was stabilizing prior to calibration.

OZONE (O3)

January	Fifteen hours of data collected between January 9 and January 10 were discarded due to a zero system valve malfunction.
February	No issues were identified.
March	No issues were identified.
April	The analyzer was put into Maintenance mode on April 16 between hour 10 and hour 11 for a calibrator check.
May	No issues were identified.
June	No issues were identified.
July	The channel was put into Maintenance mode on July 7 from hour 11 to hour 14 for HVAC maintenance. The analyzer started spanning high on July 20. The pump for the zero/span system was rebuilt following an as found points check on July 22. No further issues were identified. Four hours of data are invalid due to this maintenance event.
August	No issues were identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure. Hourly maximum data collected on September 1 at hour 7 was invalidated as the analyzer was recovering from a short power outage.
October	No issues were identified.
November	The routine annual internal quality audit was completed on November 18.
December	No issues were identified.

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

January	Twenty-eight hours of data were invalidated as the data were below -3 ug/m3.
February	Five hours of data were invalidated as the data were below -3 ug/m3.
March	The Teom unit started generating readings that were lower than expected on March 23. As no issue could be identified, during the site visit on March 24, data collected between March 23 and March 24 should be used with caution. Forty-four hours of data were invalidated as the data were below -3 ug/m3.
April	Twenty-three hours of data were invalidated as the data were below -3 ug/m3.
May	Eleven hours of data were invalidated as the data were below -3 ug/m3. Two 24-hr contraventions were recorded in May: concentration of 79 ug/m3 on May 25 and concentration of 67 ug/m3 on May 26. AE Reference numbers 298739 and 298789 respectively.
June	Forty-five hours of data were invalidated as the data were below -3 ug/m3. One 24-hr contravention was recorded this month: concentration of 51 ug/m3 on June 29. AE Reference number 300140.
July	The channel was put into maintenance mode on July 7 from hour 7 to hour 15 for HVAC maintenance. Ten hours of data were invalidated as the data were below -3 ug/m3. Seven 24-hr contraventions were recorded this month: concentrations of 51 ug/m3 on July 1, 114 ug/m3 on July 4, 47 ug/m3 on July 9, 155 ug/m3 on July 10, 128 ug/m3 on July 11, 41 ug/m3 on July 12 and 33 ug/m3 on July 13. AE Reference numbers 300251, 300393, 300636, 300693, 300799, 300802 and 300905 respectively.
August	Twenty-five hours of data were invalidated as the data were below -3 ug/m3.
September	The unit displayed a vacuum pressure warning on September 3. Following a shut-down audit, the sampling pump was checked and the by-pass filter was changed and re-insulated. A post-repair audit was completed on the same day. As both audits met requirements, no data was discarded due to this event. Thirty-eight hours of data were invalidated as the data were below -3 ug/m3. Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure.
October	The sample pump was replaced on October 6. Seventy-nine hours of data were invalidated as the data were below -3 ug/m3. The operational uptime for the month is 89.4%. AE Reference number: 306212.
November	The routine annual internal quality audit was completed on November 18. Eighty-three hours of data were invalidated as the data were below -3 ug/m3. The operational uptime for the month is 88.2%. AE Reference number: 306982.
December	No hourly data was invalidated as all data was above -3ug/m3.

WIND SPEED (WS)

January	No issues were identified.
February	Twenty-three hours of data were discarded due to a power plug malfunction.
March	The wind speed range was changed from 180kph to 200kph in an attempt to install the manufacturer-calibrated MetOne wind system. As the MetOne wind system showED a malfunction, the Maxxam-supplied RM Young wind system was re-installed. However, the range was not changed back to 180kph when the RM Young was installed. This offset was corrected by multiplying the data collected between 10 am on March 12 and 9am on March 16 by 1.1.
April	Maxxam-supplied RM Young wind system unit was replaced with the repaired LICA-owned MetOne unit on April 16. The wind system data channel was reconfigured from 180 kph to 200 kph when the RM Young wind system was installed.
May	No issues were identified.
June	No issues were identified.
July	No issues were identified.
August	No issues were identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure. Hourly maximum data collected on September 1 at hour 7 was invalidated as the analyzer was recovering from a short power outage.
October	No issues were identified.
November	No issues were identified.
December	No issues were identified.

RELATIVE HUMIDITY (RH)

January	No issues were identified.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	No issues were identified.
July	No issues were identified.
August	No issues were identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure.
October	No issues were identified.
November	No issues were identified.
December	No issues were identified.

AMBIENT TEMPERATURE (TPX)

January	No issues were identified.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	No issues were identified.
July	No issues were identified.
August	No issues were identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power failure.
October	No issues were identified.
November	No issues were identified.
December	No issues were identified.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

All data collected during the monitoring period were within the objectives outlined in the AAAQOs, with the exception of PM 2.5. A total of ten 24-hr contraventions were recorded in 2015. AE reference numbers are as follows: 298739, 298789, 300140, 300251, 300393, 300636, 300693, 300799, 300802 and 300905.

The operational uptime for all analyzers and meteorological system was above the 90% requirement, with the exception of PM 2.5: 89.4% in October and 88.2% in November. AE reference numbers 306212 and 306982 respectively.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00210: Ambient TRS Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

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

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

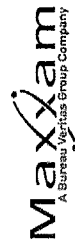
Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB SO2)						OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE (PPB)	
			≤ 20 ppb	20 < C ≤ 60 ppb	60 < C ≤ 110 ppb	110 < C ≤ 170 ppb	170 < C ≤ 340 ppb	> 340 ppb	1-HR	24-HR	1-HR	24-HR		
January	705	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.2
February	636	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.2
March	707	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
April	684	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
May	705	99.9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
June	680	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
July	706	99.5	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
August	708	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.2
September	681	99.7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
October	708	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
November	678	99.6	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
December	708	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
											ANNUAL AVERAGE		0.1	

N/D - Valid Data Not Available

* Number of Readings - included calibration hours

** if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	8.0	PPB
Annual Average for 2015	0.1	PPB



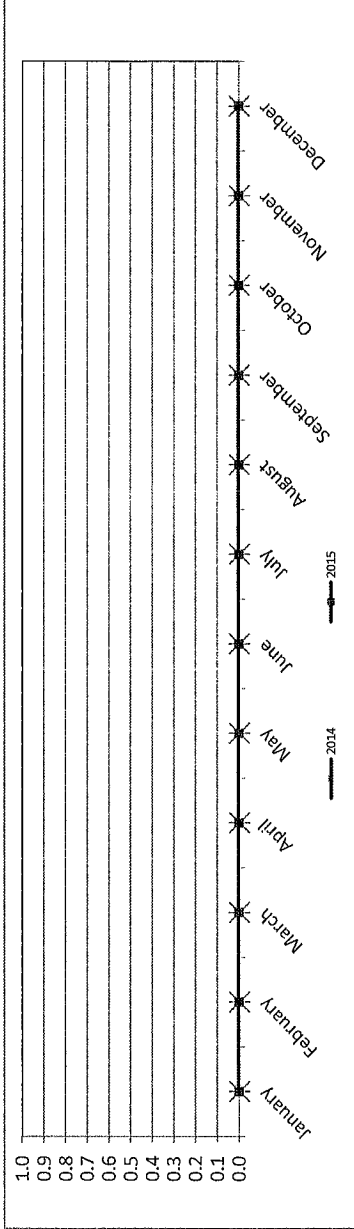
SULPHUR DIOXIDE (SO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	0	0	4	0	0	4	0
February	0	0	4	0	0	3	0
March	0	0	3	0	0	4	0
April	0	0	1	0	0	1	0
May	0	0	2	0	0	5	0
June	0	0	2	0	0	1	0
July	0	0	2	0	0	2	0
August	0	0	2	0	0	3	0
September	0	0	2	0	0	2	0
October	0	0	4	0	0	2	0
November	0	0	3	0	0	2	0
December	0	0	2	0	0	3	0

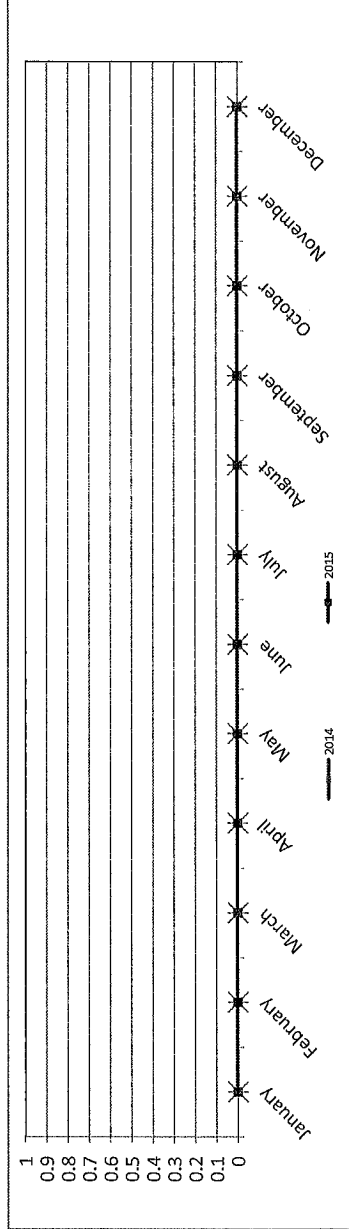
N/D - Valid Data Not Available

* Annual peak is bolded and highlighted.

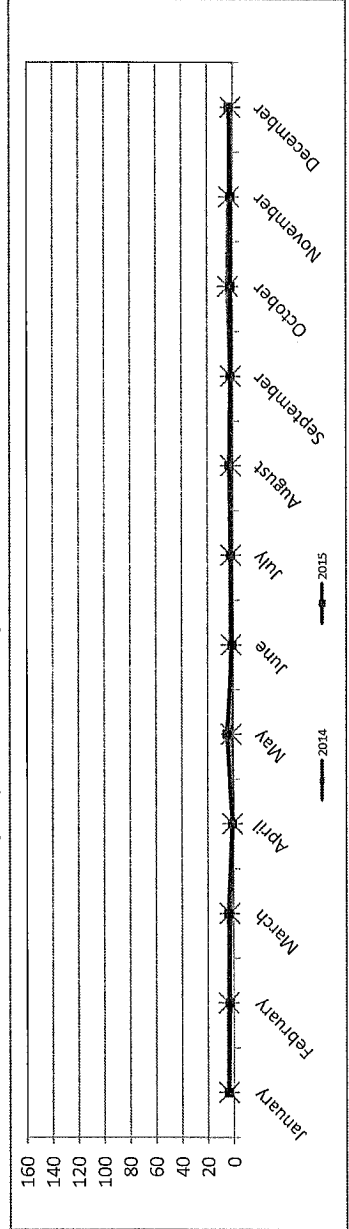
SULPHUR DIOXIDE (SO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA
SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20.0	2.87	3.56	5.79	4.17	6.70	5.36	10.43	4.03	3.07	3.70	6.50	16.54	11.71	6.66	5.33	3.50	100.00
< 60.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.87	3.56	5.79	4.17	6.70	5.36	10.43	4.03	3.07	3.70	6.50	16.54	11.71	6.66	5.33	3.50	

Calm : .00 %

Total # Operational Hours : 8281

Distribution By Samples

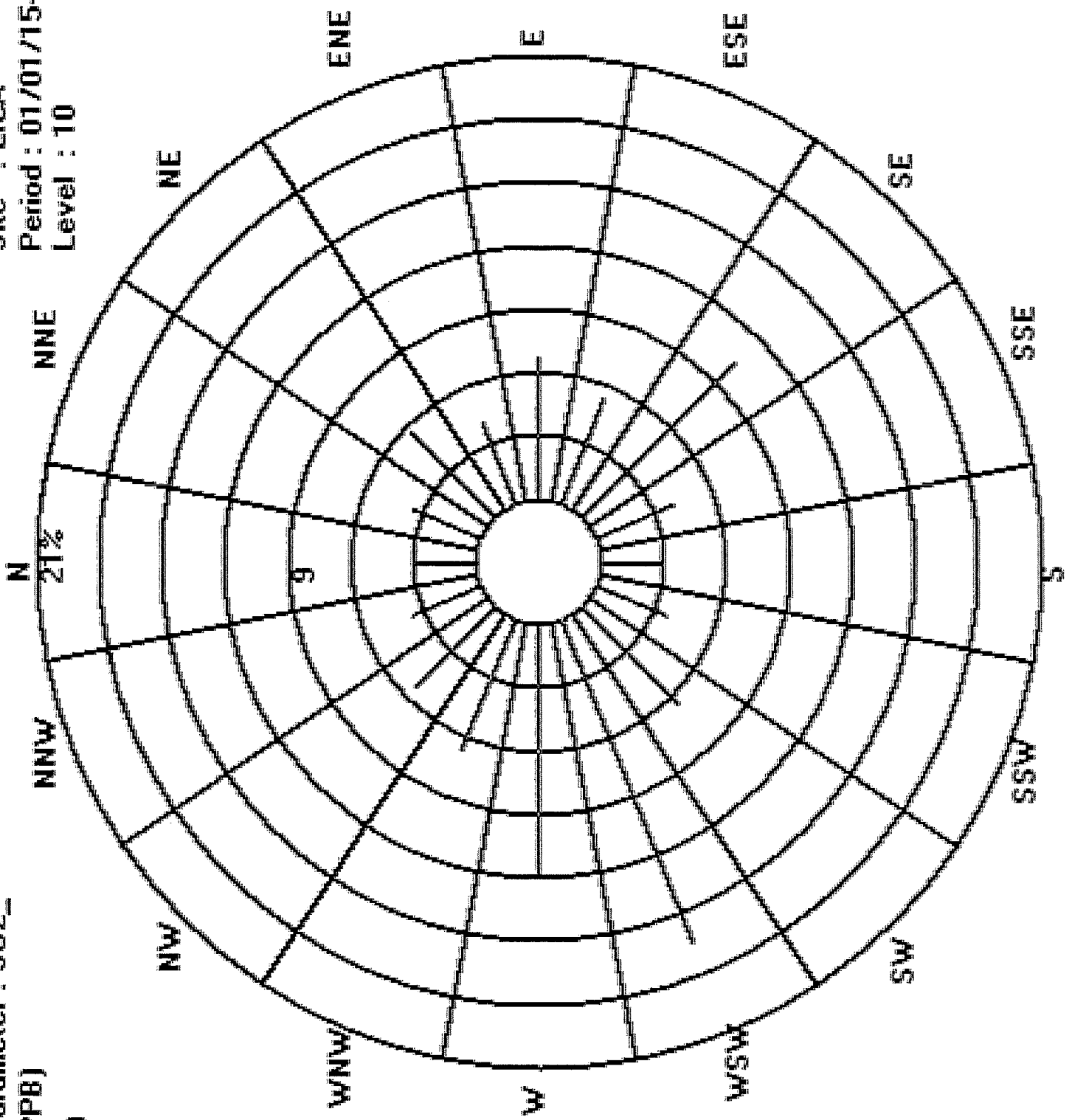
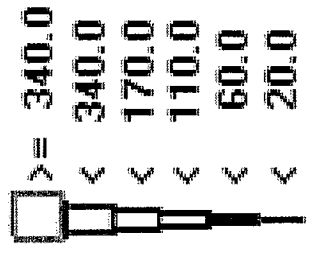
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20.0	238	295	480	346	555	444	864	334	255	307	539	1370	970	552	442	290	8281
< 60.0																	
< 110.0																	
< 170.0																	
< 340.0																	
>= 340.0																	
Totals	238	295	480	346	555	444	864	334	255	307	539	1370	970	552	442	290	8281

Calm : .00 %

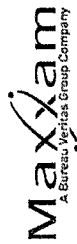
Total # Operational Hours : 8281

Site : LICA
Period : 01/01/15-12/31/15
Level : 10

Logger : 01 Parameter : SO2_



TOTAL REDUCED SULPHUR



TOTAL REDUCED SULPHUR (TRS) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (PPB-TRS)				OBJECTIVES**			EXCEEDENCES		MONTHLY AVERAGE
			≤ 3 ppb	4 < C ≤ 10 ppb	11 < C ≤ 50 ppb	> 50 ppb	1-HR	24-HR	1-HR	24-HR		
January	707	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
February	634	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
March	708	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
April	685	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
May	706	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
June	683	100.0	99.71%	0.29%	0.00%	0.00%	-	-	-	-	1	
July	687	99.3	98.84%	1.02%	0.15%	0.00%	-	-	-	-	1	
August	700	100.0	99.57%	0.43%	0.00%	0.00%	-	-	-	-	0	
September	677	99.7	99.85%	0.15%	0.00%	0.00%	-	-	-	-	0	
October	705	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
November	683	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
December	708	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0	
ANNUAL AVERAGE											0	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	0	PPB



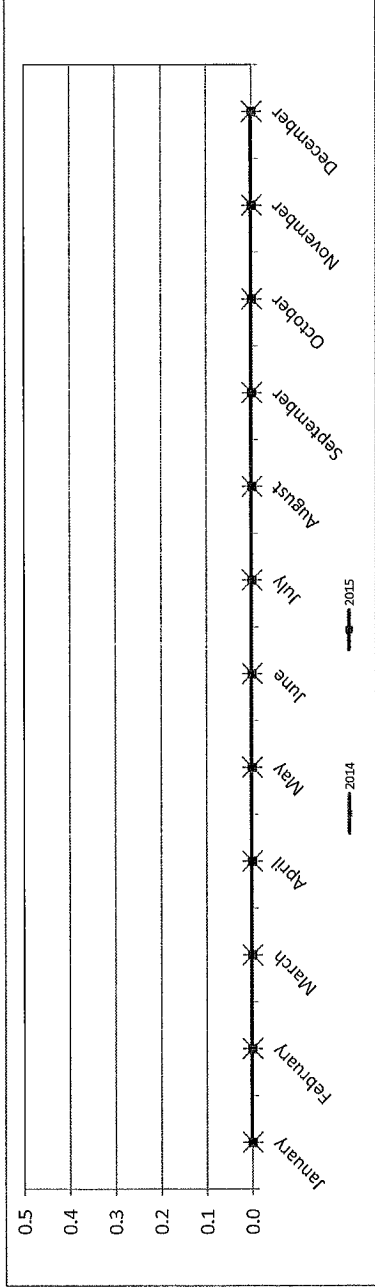
TOTAL REDUCED SULPHUR (TRS) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	0	0	1		0	0	1		0
February	0	0	1		0	0	1		0
March	0	0	0		0	0	1		0
April	0	0	1		0	0	1		0
May	0	0	1		0	0	3		0
June	0	0	4		0	0	4		-1
July	1	0	6		1	0	10		0
August	0	0	3		0	0	7		0
September	0	0	5		0	0	7		0
October	0	0	1		0	0	0		0
November	0	0	0		0	0	0		0
December	0	0	1		0	0	0		0

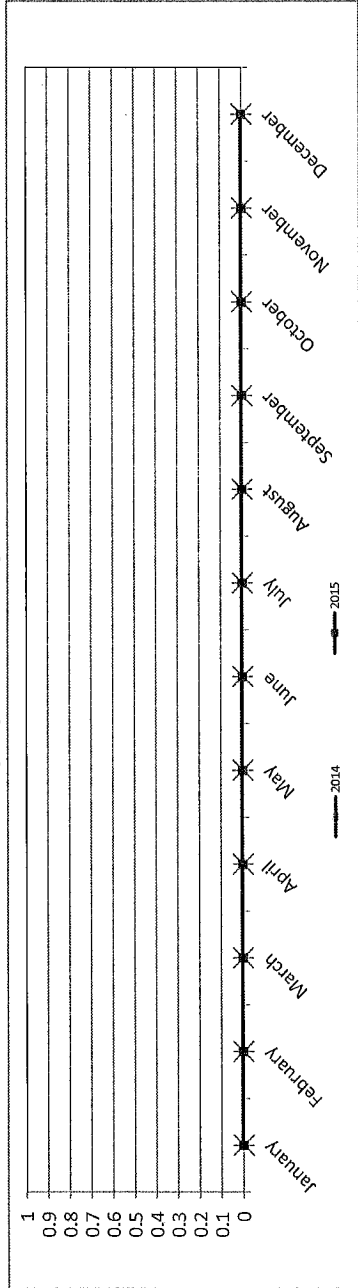
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

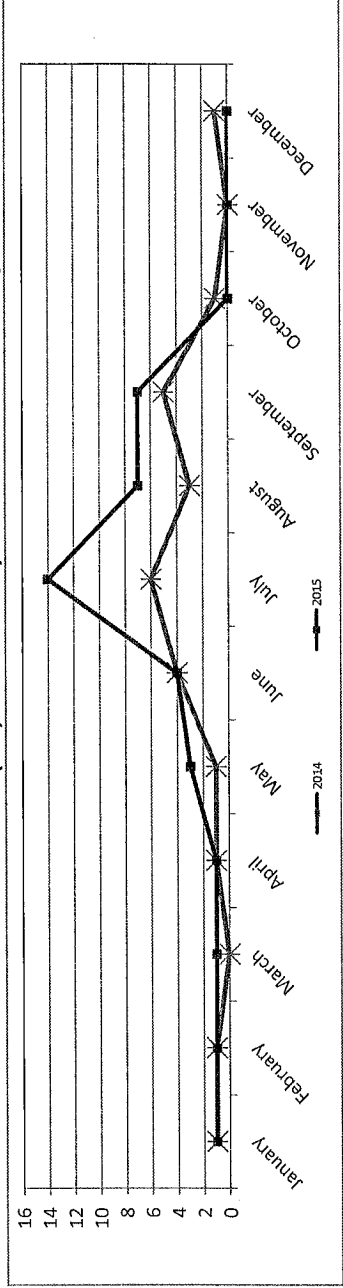
TOTAL REDUCED SULPHUR (TRS) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



TOTAL REDUCED SULPHUR (TRS) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



TOTAL REDUCED SULPHUR (TRS) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



IICA
 TRS_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
 Distribution By % Of Samples

Logger Id : 01
 Site Name : IICA
 Parameter : TRS
 Units : PPS

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	2.86	3.51	5.79	4.18	6.73	5.37	10.39	4.00	3.05	3.66	6.45	16.41	11.74	6.70	5.33	3.48	99.74
< 10.0	.00	.00	.00	.00	.00	.01	.01	.00	.01	.02	.02	.13	.00	.00	.01	.01	.24
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.01
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.86	3.51	5.79	4.18	6.73	5.38	10.41	4.00	3.06	3.69	6.47	16.54	11.75	6.70	5.35	3.49	

Calm : .00 %

Total # Operational Hours : 8260

Distribution By Samples





Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	237	290	479	346	556	444	859	331	252	303	533	1356	970	554	441	288	8239
< 10.0						1	1		1	2	2	11			1	1	20
< 50.0																1	1
>= 50.0																	
Totals	237	290	479	346	556	445	860	331	253	305	535	1367	971	554	442	289	

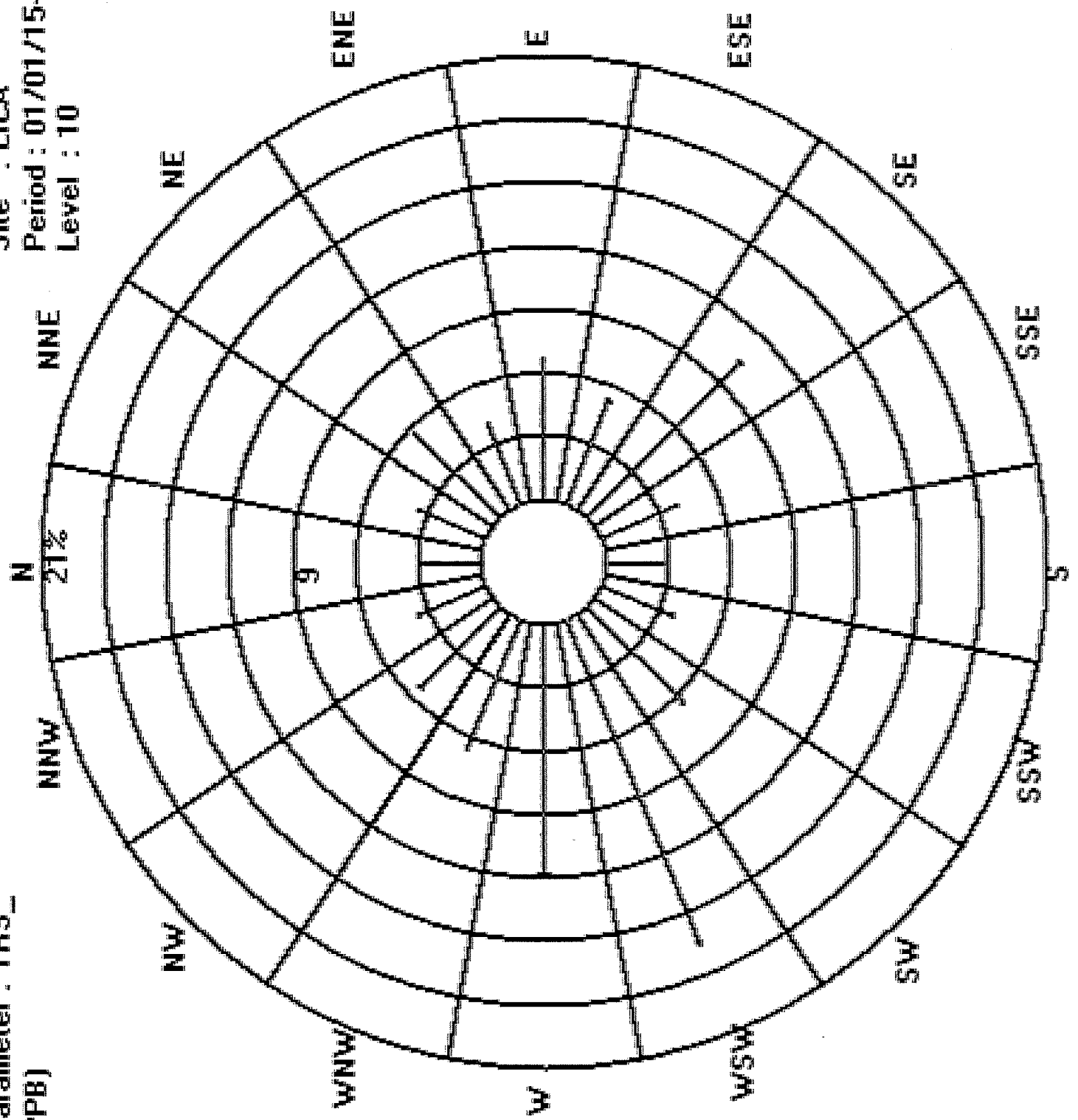
Calm : .00 %

Total # Operational Hours : 8260

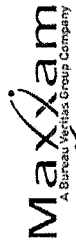
Site : LICA
Period : 01/01/15-12/31/15
Level : 10

Logger : 01 Parameter : TRS_
Class Limits (PPB)

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



TOTAL HYDROCARBON



TOTAL HYDROCARBONS (THC) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm THC)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 3.0 ppm	3.1 < C ≤ 10.0 ppm	10.1 < C ≤ 50.0 ppm	> 50.0 ppm	1-HR	24-HR	1-HR	
January	687	98.0	95.20%	4.80%	0.00%	0.00%	-	-	-	2.3
February	636	100.0	98.58%	1.42%	0.00%	0.00%	-	-	-	2.2
March	698	98.8	97.71%	2.29%	0.00%	0.00%	-	-	-	2.2
April	683	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	2.0
May	695	98.4	100.00%	0.00%	0.00%	0.00%	-	-	-	2.1
June	682	99.7	99.41%	0.59%	0.00%	0.00%	-	-	-	2.1
July	706	99.5	99.72%	0.28%	0.00%	0.00%	-	-	-	2.1
August	707	100.0	99.15%	0.85%	0.00%	0.00%	-	-	-	2.2
September	681	99.7	98.38%	1.62%	0.00%	0.00%	-	-	-	2.1
October	707	100.0	97.88%	2.12%	0.00%	0.00%	-	-	-	2.2
November	684	100.0	99.71%	0.29%	0.00%	0.00%	-	-	-	2.2
December	708	100.0	92.80%	7.20%	0.00%	0.00%	-	-	-	2.4
ANNUAL AVERAGE										2.2

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**f Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPM
Annual Average for 2015	2.2	PPM

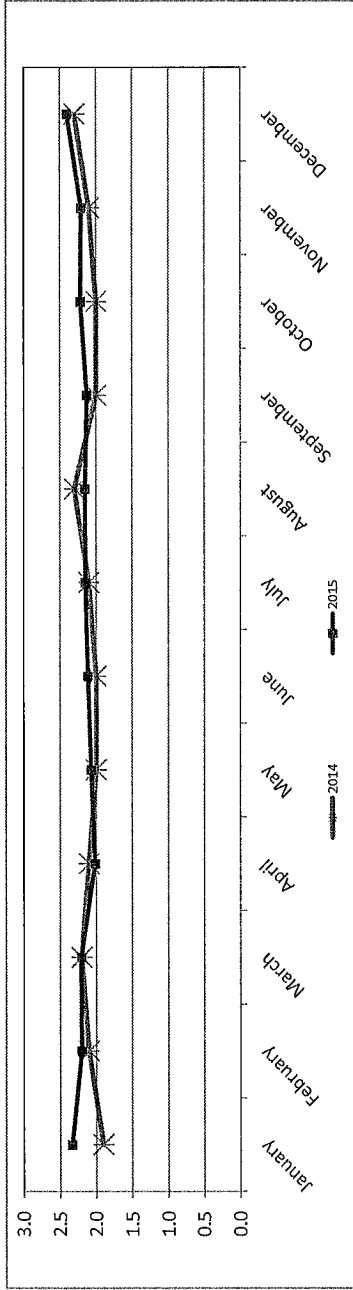
TOTAL HYDROCARBONS (THC) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPM

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	1.9	1.5	3.0		2.3	1.5	3.9		-0.4
February	2.1	1.6	3.3		2.2	1.7	3.4		-0.1
March	2.2	1.8	3.5		2.2	1.7	4.6		0.0
April	2.1	1.8	3.3		2.0	1.7	2.8		0.1
May	2.0	1.8	2.8		2.1	1.5	3.0		-0.1
June	2.0	1.7	3.1		2.1	1.5	3.2		-0.1
July	2.1	1.5	3.3		2.1	1.7	3.2		0.0
August	2.3	1.5	4.2		2.2	1.8	3.2		0.1
September	2.0	1.5	3.8		2.1	1.8	3.5		-0.1
October	2.0	1.4	3.4		2.2	1.8	4.3		-0.2
November	2.1	1.7	3.5		2.2	1.9	3.2		-0.1
December	2.3	1.8	3.7		2.4	1.9	4.3		-0.1

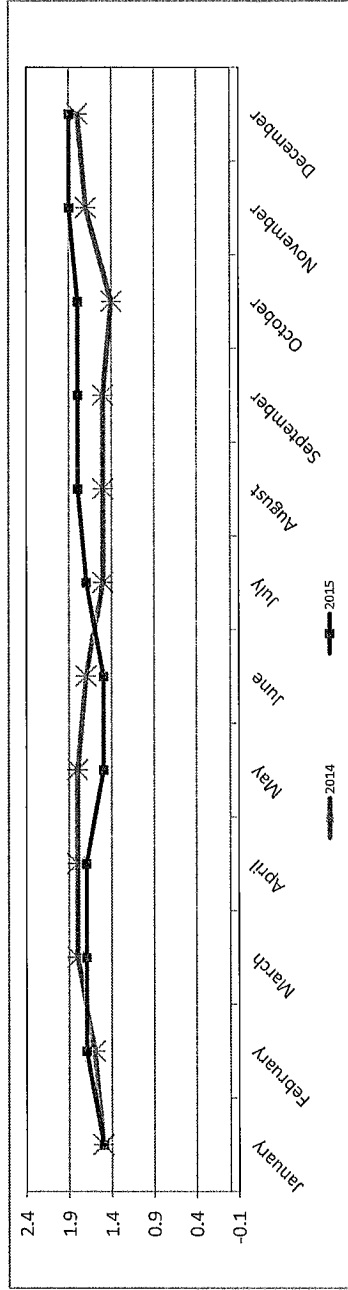
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

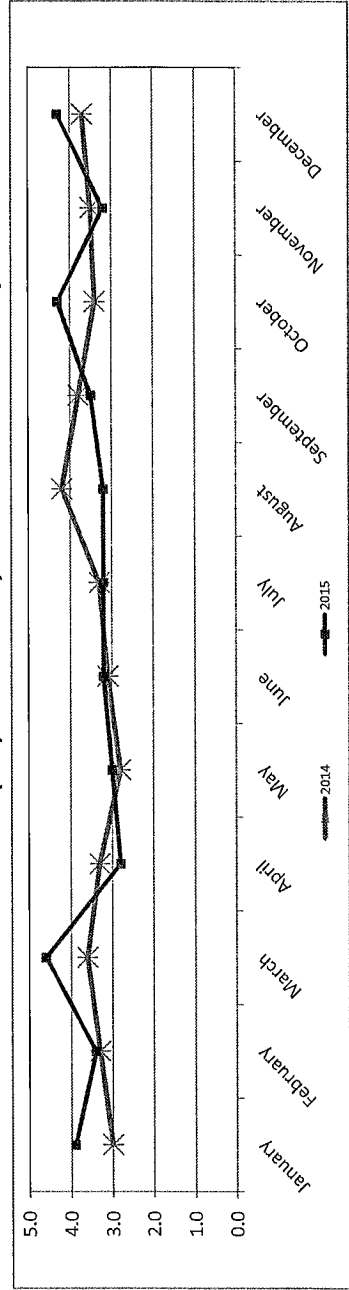
TOTAL HYDROCARBONS (THC) 2014 Monthly Mean vs. 2015 Monthly Mean in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPM



LICA
THC / WD Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % of Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	2.86	3.52	5.57	4.08	6.57	5.21	10.32	3.84	2.87	3.52	6.24	15.96	11.20	6.58	5.29	3.52	97.23
< 10.0	.02	.02	.07	.08	.16	.19	.09	.15	.20	.15	.23	.49	.55	.18	.08	.02	2.76
< 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	2.88	3.55	5.64	4.17	6.74	5.40	10.42	4.00	3.07	3.68	6.47	16.46	11.76	6.76	5.38	3.55	

Calm : .00 %

Total # Operational Hours : 8248

Distribution By Samples

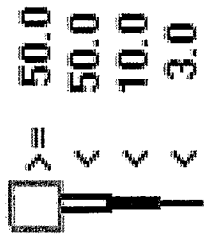
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	236	291	460	337	542	430	852	317	237	291	515	1317	924	543	437	291	8020
< 10.0	2	2	6	7	14	16	8	13	17	13	19	41	46	15	7	2	228
< 50.0																	
>= 50.0																	
Totals	238	293	466	344	556	446	860	330	254	304	534	1358	970	558	444	293	

Calm : .00 %

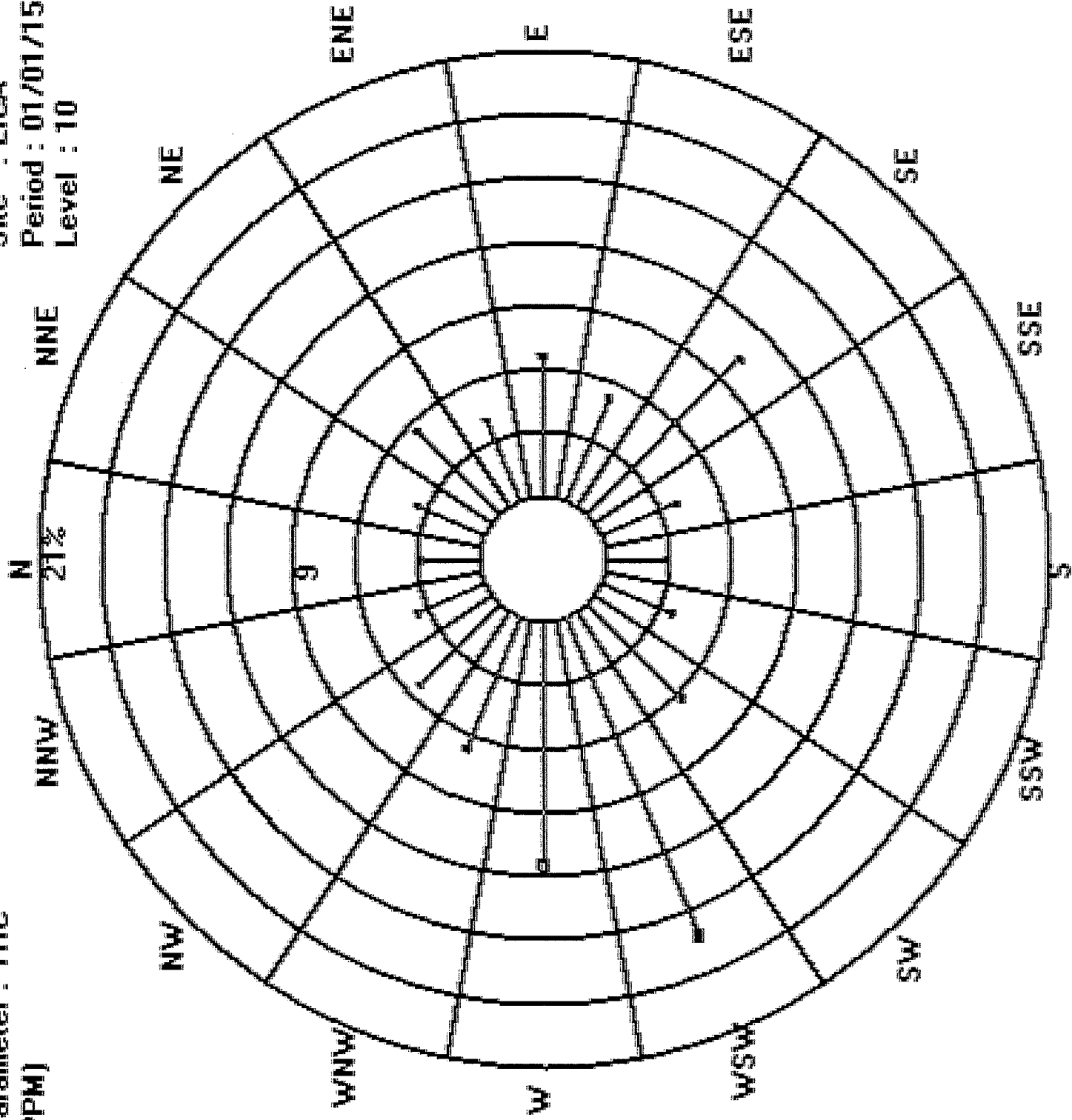
Total # Operational Hours : 8248

Logger : 01 Parameter : THC

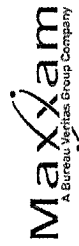
Class Limits (PPM)



Site : LICA
Period : 01/01/15-12/31/15
Level : 10



OXIDES OF NITROGEN



OXIDES OF NITROGEN (NOx) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB NOx)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	
January	665	100.0	98.65%	1.35%	0.00%	0.00%	-	-	-	9.8
February	633	100.0	99.68%	0.32%	0.00%	0.00%	-	-	-	7.2
March	681	100.0	99.71%	0.29%	0.00%	0.00%	-	-	-	5.5
April	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	3.1
May	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	2.7
June	679	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	3.0
July	673	99.5	100.00%	0.00%	0.00%	0.00%	-	-	-	2.3
August	681	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	2.0
September	667	99.6	100.00%	0.00%	0.00%	0.00%	-	-	-	2.5
October	677	100.0	99.85%	0.15%	0.00%	0.00%	-	-	-	4.8
November	678	99.6	100.00%	0.00%	0.00%	0.00%	-	-	-	6.2
December	658	97.7	99.70%	0.30%	0.00%	0.00%	-	-	-	9.5
ANNUAL AVERAGE										4.9

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	4.9	PPB



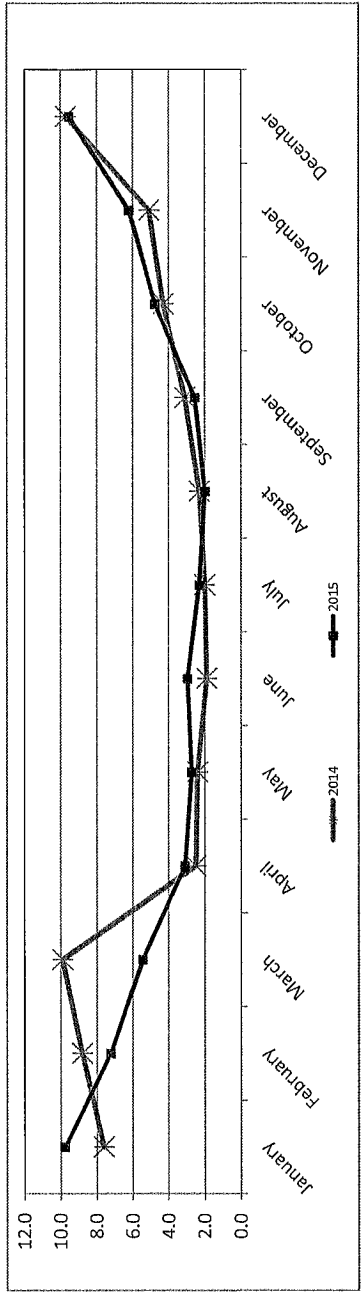
OXIDES OF NITROGEN (NOx) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	7.6	0.5	49.4		9.8	0.1	78		-2.2
February	8.8	0.6	83.2		7.2	0	103.4		1.6
March	9.9	0.8	105.7		5.5	0.4	65.2		4.4
April	2.5	0.2	18.6		3.1	0.2	35.7		-0.6
May	2.4	0.1	20.5		2.7	0.3	22.5		-0.3
June	1.9	0	16.5		3.0	0	15.2		-1.1
July	2.0	0.2	28.1		2.3	0	14.9		-0.3
August	2.3	0	14.2		2.0	0	12.6		0.3
September	3.1	0	25.4		2.5	0	40.9		0.6
October	4.3	0	44.9		4.8	0	61.1		-0.5
November	5.1	0	26.6		6.2	0.4	35.4		-1.1
December	9.7	0.7	132.5		9.5	0.1	65.3		0.2

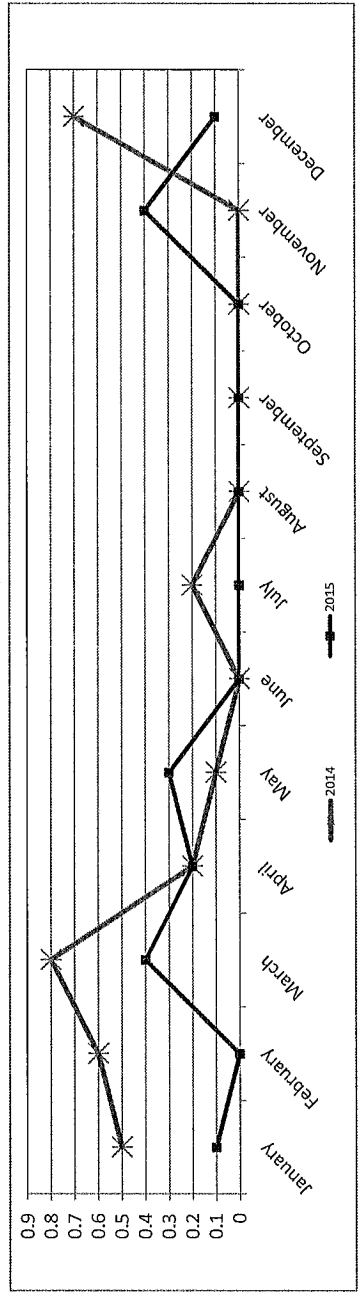
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

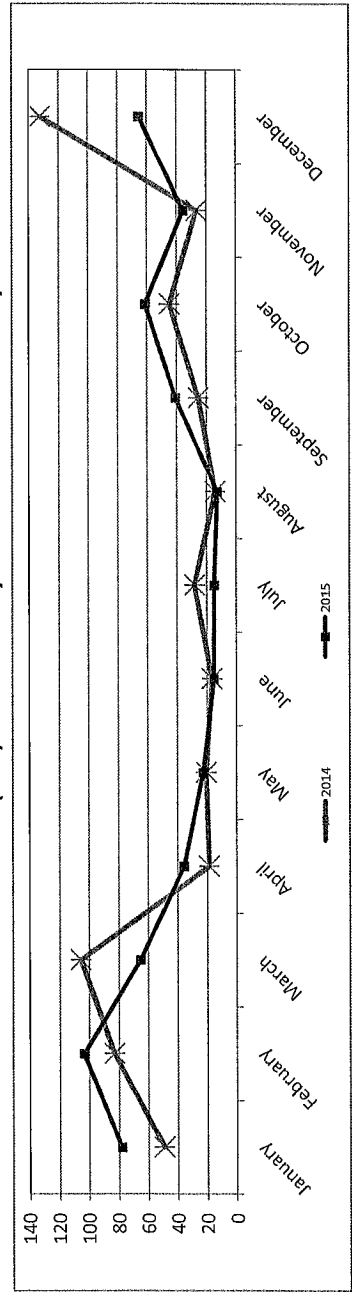
OXIDES OF NITROGEN (NOx) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA
NOX_ / WD Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : NOX_
Units : PPB

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	2.85	3.58	5.82	4.17	6.72	5.34	10.42	4.00	3.06	3.63	6.45	16.52	11.64	6.67	5.36	3.50	99.80
< 110.0	.01	.00	.02	.01	.02	.02	.01	.01	.00	.01	.00	.01	.01	.02	.00	.01	.19
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.86	3.58	5.84	4.18	6.74	5.36	10.43	4.01	3.06	3.64	6.45	16.53	11.65	6.70	5.36	3.51	

Calm : .00 %

Total # Operational Hours : 8194

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	234	294	477	342	551	438	854	328	251	298	529	1354	954	547	440	287	8178
< 110.0	1		2	1	2	2	1	1	1	1		1	1	2		1	16
< 210.0																	
>= 210.0																	
Totals	235	294	479	343	553	440	855	329	251	299	529	1355	955	549	440	288	





Calm : .00 %

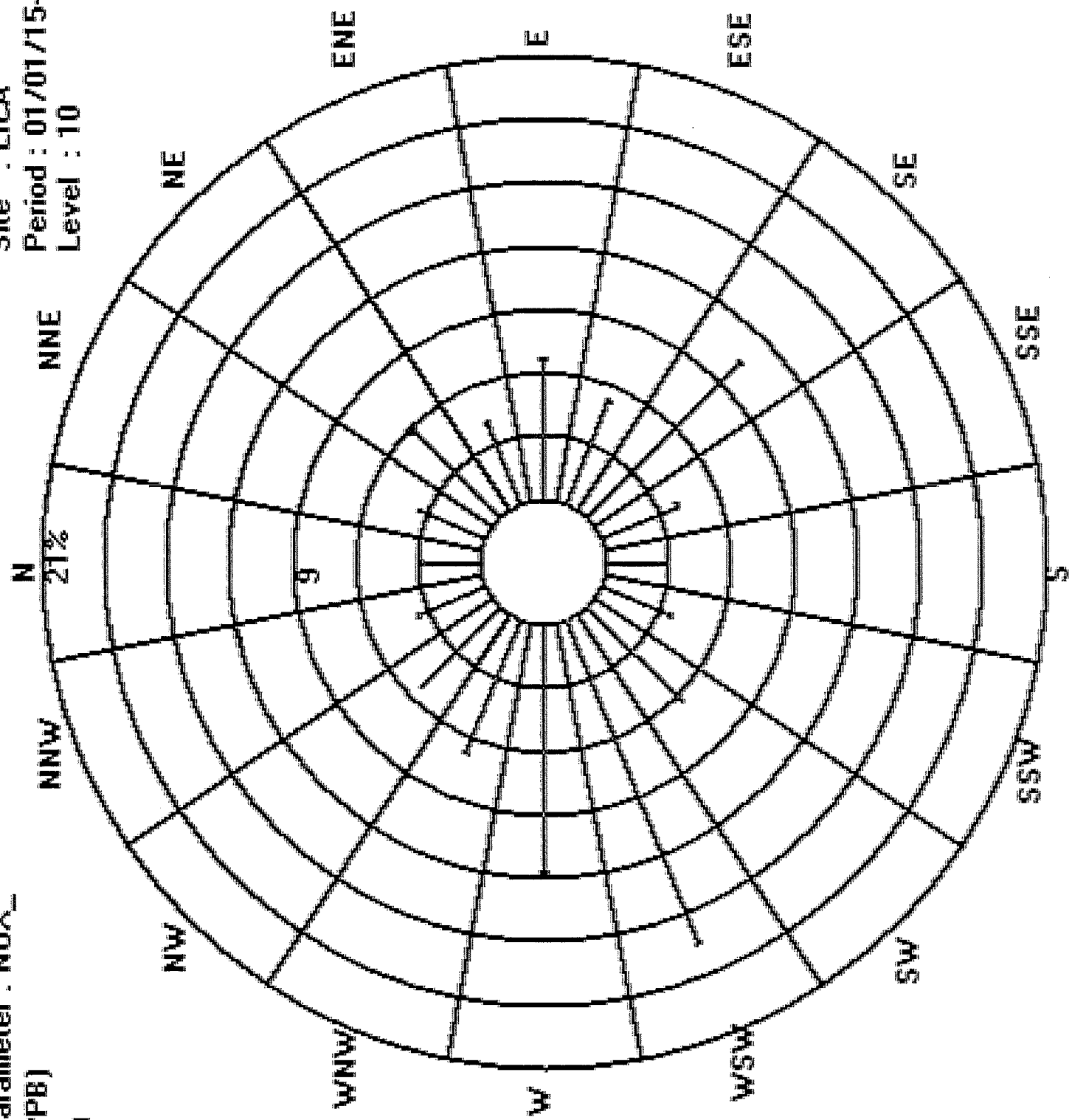
Total # Operational Hours : 8194

Site : LICA
Period : 01/01/15-12/31/15
Level : 10

Logger : 01 Parameter : NOX_

Class Limits (PPB)

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



NITRIC OXIDES

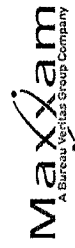


NITRIC OXIDE (NO) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (PPE/NO)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	665	100.0	99.55%	0.45%	0.00%	0.00%	-	-	-	-	2.0
February	633	100.0	99.84%	0.16%	0.00%	0.00%	-	-	-	-	1.2
March	681	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.0
April	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.5
May	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.4
June	679	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.9
July	673	99.5	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.3
August	681	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.4
September	667	99.6	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.7
October	677	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.0
November	678	99.6	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.2
December	658	97.7	100.00%	0.00%	0.00%	0.00%	-	-	-	-	3.1
										ANNUAL AVERAGE	1.0

N/D - Valid Data Not Available
*Number of Readings - included calibration hours
**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average	N/D	PPB
Annual Average for 2015	1.0	PPB



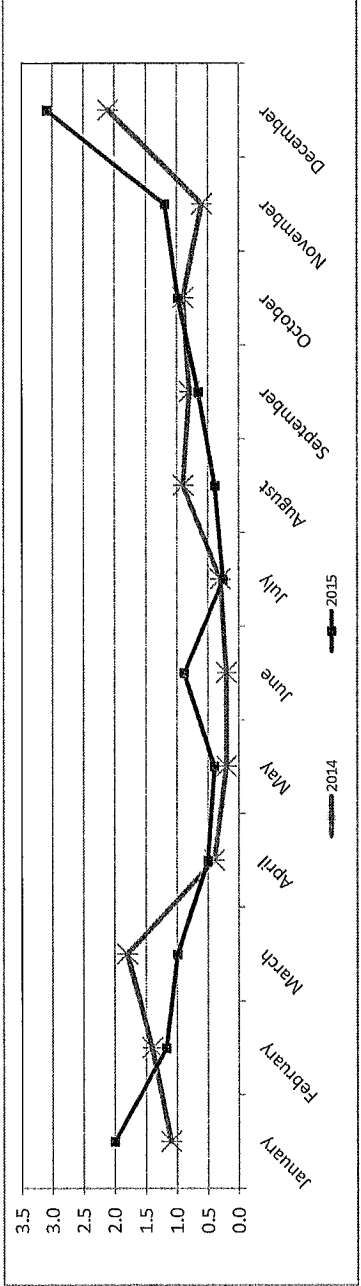
NITRIC OXIDE (NO) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	1.1	0.0	27.4	2.0	0.0	52.8	-0.9
February	1.4	0.0	39.1	1.2	0.0	68.9	0.2
March	1.8	0.0	68.0	1.0	0.0	35.8	0.8
April	0.4	0.0	10.5	0.5	0.0	19.3	-0.1
May	0.2	0.0	6.6	0.4	0.0	10.9	-0.2
June	0.2	0.0	9.9	0.9	0.0	11.4	-0.7
July	0.3	0.0	24.8	0.3	0.0	8.3	0.0
August	0.9	0.0	14.2	0.4	0.0	8.7	0.5
September	0.8	0.0	15.7	0.7	0.0	28.1	0.1
October	0.9	0.0	36.4	1.0	0.0	47.4	-0.1
November	0.6	0.0	10.9	1.2	0.0	22.1	-0.6
December	2.1	0.0	104.6	3.1	0.0	39.8	-1.0

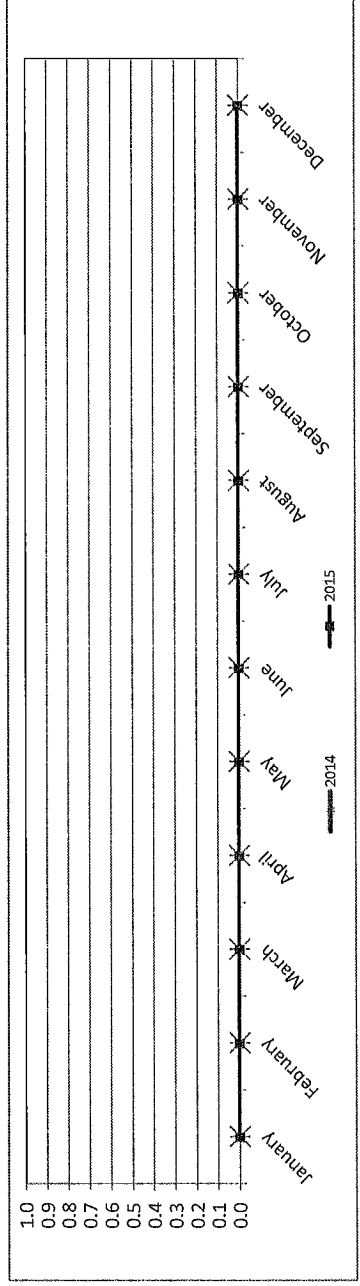
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

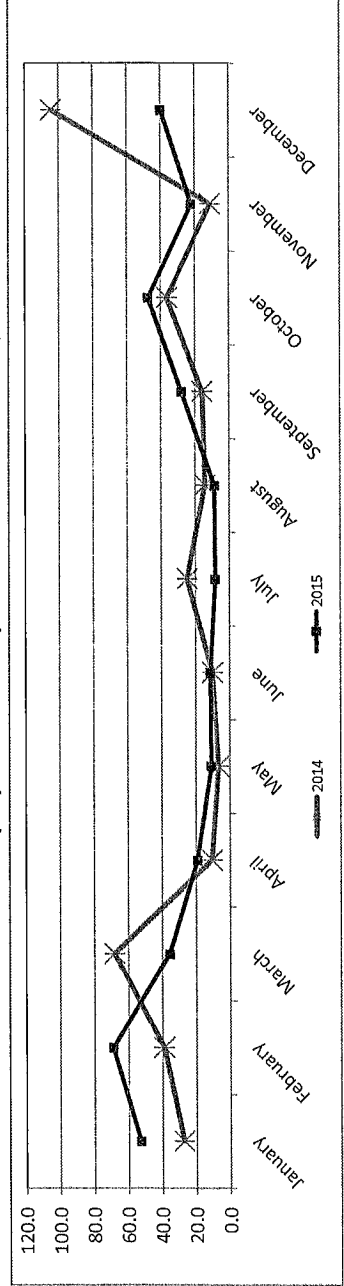
NITRIC OXIDE (NO) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITRIC OXIDE (NO) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITRIC OXIDE (NO) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LIICA
 NO_ / WD Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % Of Samples

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

Wind Parameter : WD
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.86	3.58	5.84	4.18	6.74	5.36	10.42	4.00	3.06	3.64	6.45	16.53	11.64	6.68	5.36	3.51	99.95
< 110.0	.00	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00	.01	.01	.00	.00	.04
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.86	3.58	5.84	4.18	6.74	5.36	10.43	4.01	3.06	3.64	6.45	16.53	11.65	6.70	5.36	3.51	

Calm : .00 %

Total # Operational Hours : 8194

Distribution By Samples

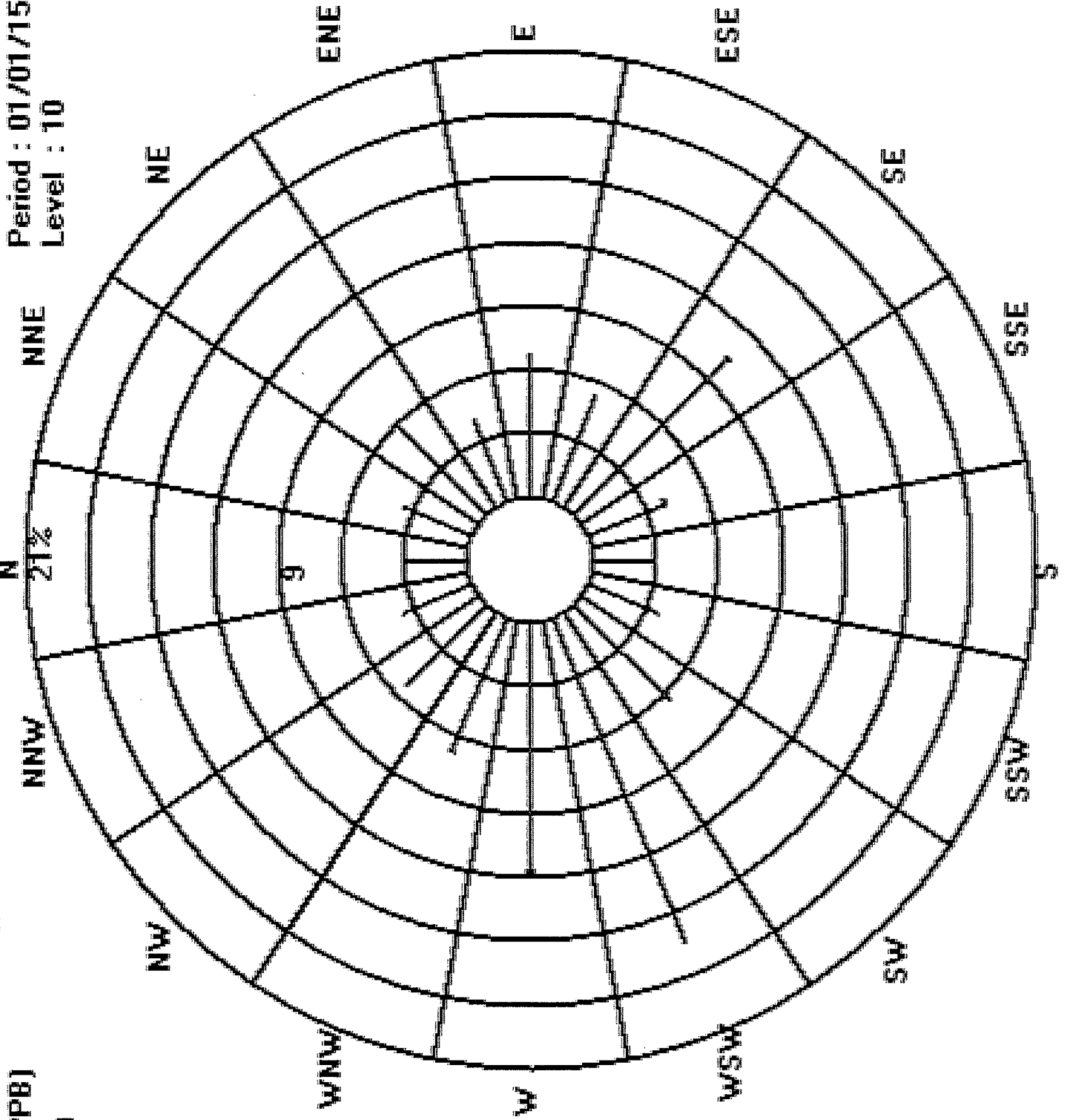
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	235	294	479	343	553	440	854	328	251	299	529	1355	954	548	440	288	8190
< 110.0						1	1						1	1			4
< 210.0																	
>= 210.0																	
Totals	235	294	479	343	553	440	855	329	251	299	529	1355	955	549	440	288	

Calm : .00 %

Total # Operational Hours : 8194

Logger : 01 Parameter : NO₂

Site : LICA
Period : 01/01/15-12/31/15
Level : 10



Class Limits (PPB)
□ >= 210.0
▒ < 210.0
▓ < 110.0
■ < 50.0

NITROGEN DIOXIDE



NITROGEN DIOXIDE (NO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

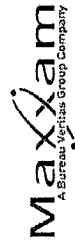
Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (ppb NO2)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE	
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR		24-HR
January	665	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	7.8
February	633	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	6.1
March	681	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	4.5
April	682	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.6
May	682	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.3
June	679	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.1
July	673	99.5	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.1
August	681	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.6
September	667	99.6	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.9
October	677	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	3.8
November	678	99.6	100.00%	0.00%	0.00%	0.00%	159	-	0	-	5.0
December	658	97.7	100.00%	0.00%	0.00%	0.00%	159	-	0	-	6.4
ANNUAL AVERAGE										3.8	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	24	PPB
Annual Average for 2015	3.8	PPB

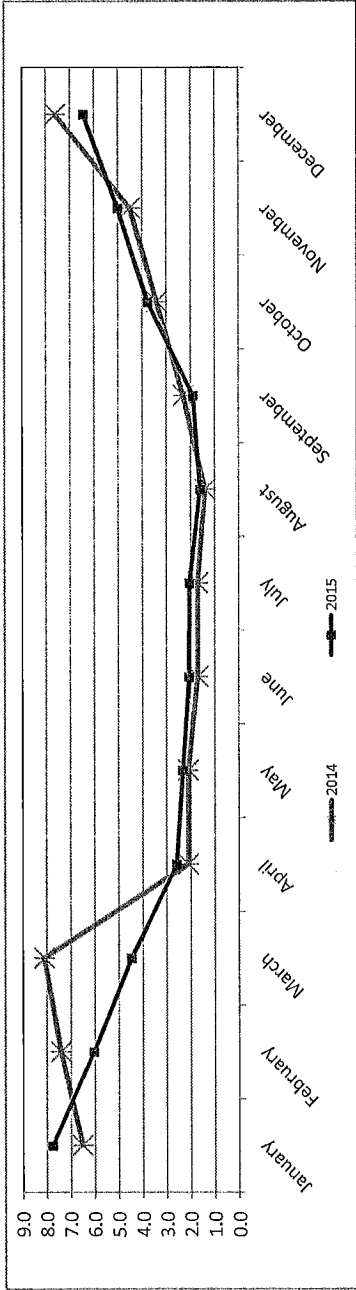


NITROGEN DIOXIDE (NO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

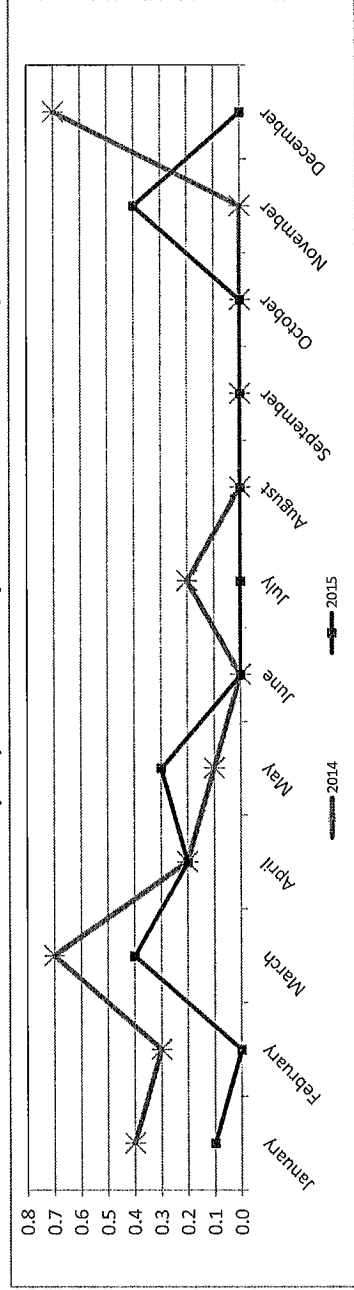
Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	MAXIMUM		
January	6.5	0.4	30.7	7.8	0.1	33.3	33.3	-1.3	
February	7.4	0.3	40.1	6.1	0.0	34.5	34.5	1.3	
March	8.1	0.7	37.7	4.5	0.4	29.4	29.4	3.6	
April	2.1	0.2	11.1	2.6	0.2	17.6	17.6	-0.5	
May	2.1	0.1	13.9	2.3	0.3	15.4	15.4	-0.2	
June	1.7	0.0	8.0	2.1	0.0	7.2	7.2	-0.4	
July	1.7	0.2	5.9	2.1	0.0	9.4	9.4	-0.4	
August	1.4	0.0	6.6	1.6	0.0	6.6	6.6	-0.2	
September	2.3	0.0	21.9	1.9	0.0	12.8	12.8	0.4	
October	3.4	0.0	23.5	3.8	0.0	17.1	17.1	-0.4	
November	4.5	0.0	22.7	5.0	0.4	21.6	21.6	-0.5	
December	7.6	0.7	30.5	6.4	0.0	26.9	26.9	1.2	

N/D - Valid Data Not Available
 *Annual peak is bolded and highlighted.

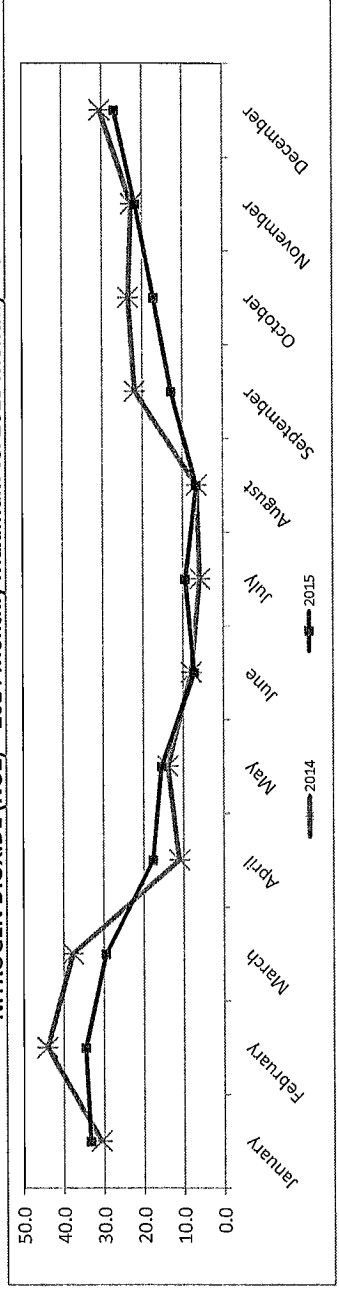
NITROGEN DIOXIDE (NO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA
 NO2_ / WD Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
 Distribution By % Of Samples

Logger Id : 01
 Site Name : LICA
 Parameter : NO2_

Wind Parameter : WD
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.86	3.58	5.84	4.18	6.74	5.36	10.43	4.01	3.06	3.64	6.45	16.53	11.65	6.70	5.36	3.51	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.86	3.58	5.84	4.18	6.74	5.36	10.43	4.01	3.06	3.64	6.45	16.53	11.65	6.70	5.36	3.51	

Calm : .00 %

Total # Operational Hours : 8194

Distribution By Samples





Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	235	294	479	343	553	440	855	329	251	299	529	1355	955	549	440	288	8194
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	235	294	479	343	553	440	855	329	251	299	529	1355	955	549	440	288	

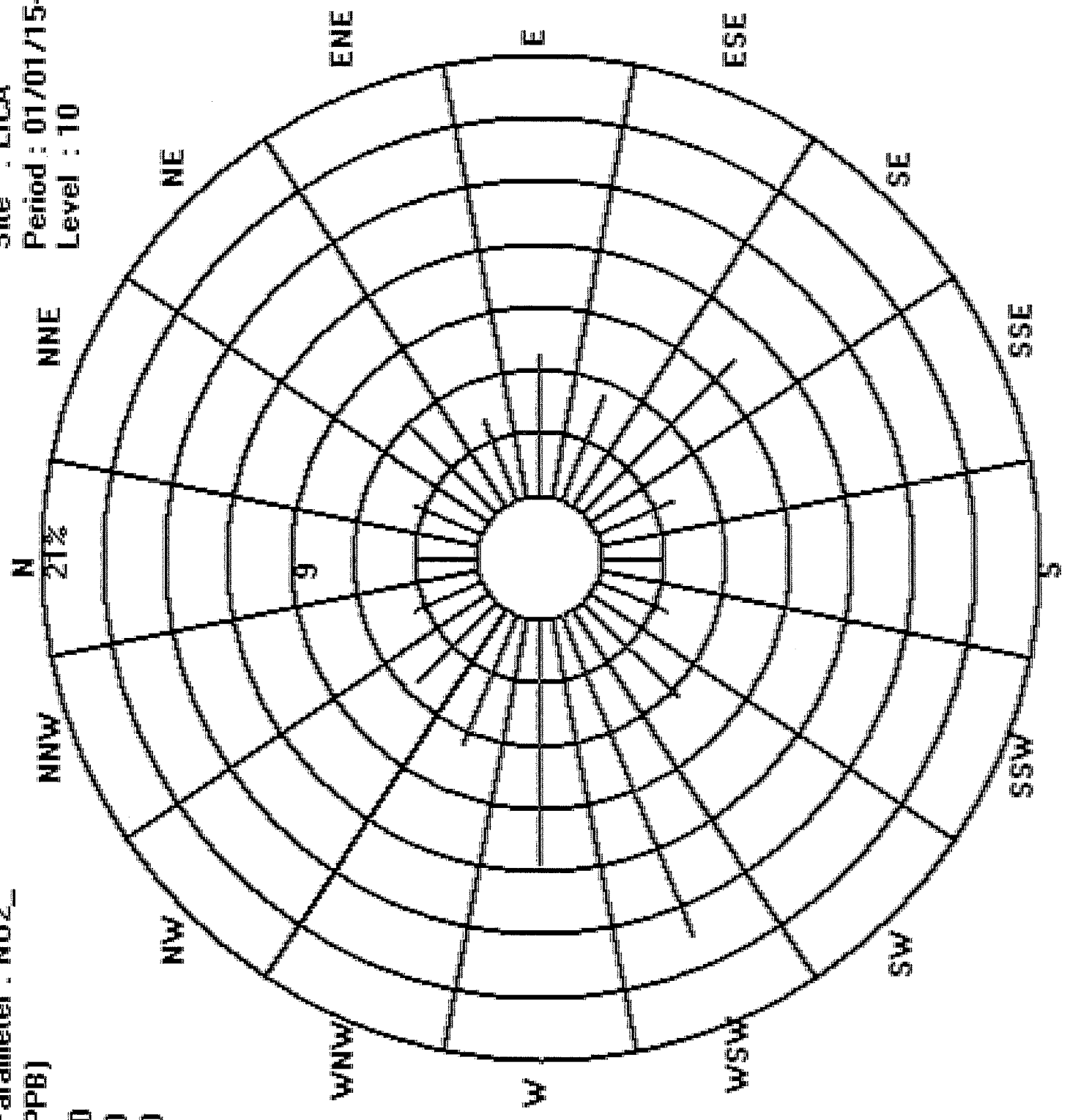
Calm : .00 %

Total # Operational Hours : 8194

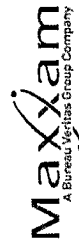
Site : LICA
Period : 01/01/15-12/31/15
Level : 10

Logger : 01 Parameter : NO2_
Class Limits (PPB)

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



OZONE



OZONE (O3) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

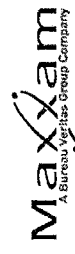
Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB-O3)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	657	98.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	25
February	638	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	28
March	686	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	32
April	682	99.7	98.83%	1.17%	0.00%	0.00%	82	-	0	-	32
May	683	100.0	89.46%	10.54%	0.00%	0.00%	82	-	0	-	33
June	683	100.0	92.68%	7.32%	0.00%	0.00%	82	-	0	-	30
July	678	99.5	98.23%	1.77%	0.00%	0.00%	82	-	0	-	24
August	685	100.0	98.25%	1.75%	0.00%	0.00%	82	-	0	-	20
September	681	99.7	100.00%	0.00%	0.00%	0.00%	82	-	0	-	18
October	682	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	21
November	681	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	18
December	686	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	14
										ANNUAL AVERAGE	25

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	25	PPB



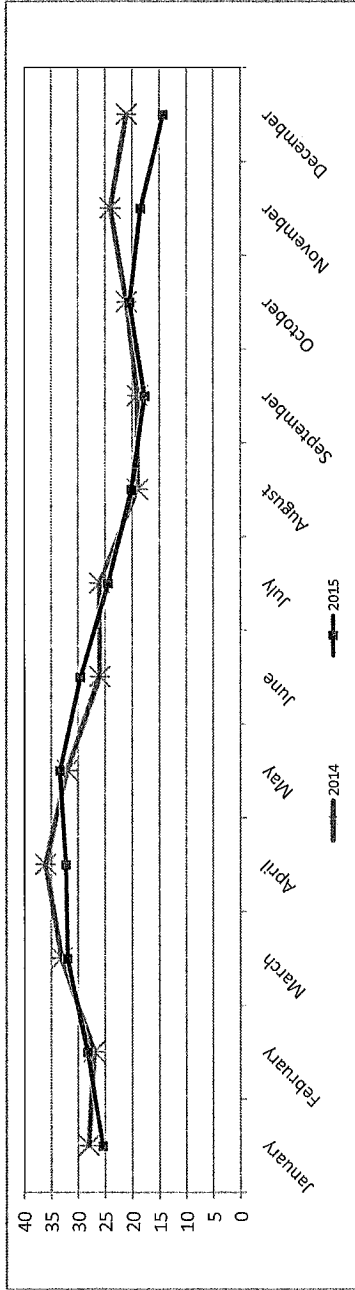
OZONE (O3) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	28	1	46	25	0	43	3
February	27	1	44	28	0	44	-1
March	33	2	55	32	1	50	1
April	36	2	56	32	1	52	4
May	32	3	59	33	2	65	-1
June	26	1	58	30	0	65	-4
July	26	1	56	24	0	56	2
August	19	0	50	20	0	58	-1
September	19	0	49	18	0	41	1
October	21	1	44	21	0	41	0
November	24	1	41	18	0	39	6
December	21	0	40	14	0	34	7

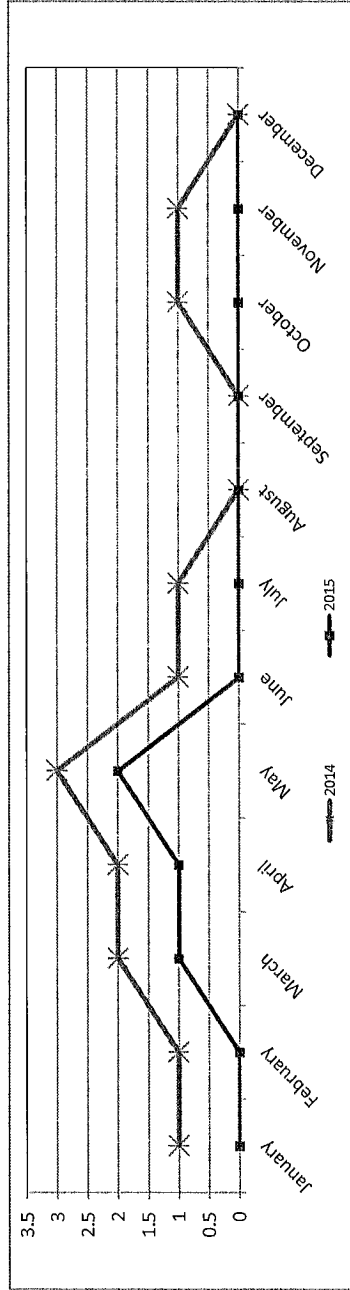
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

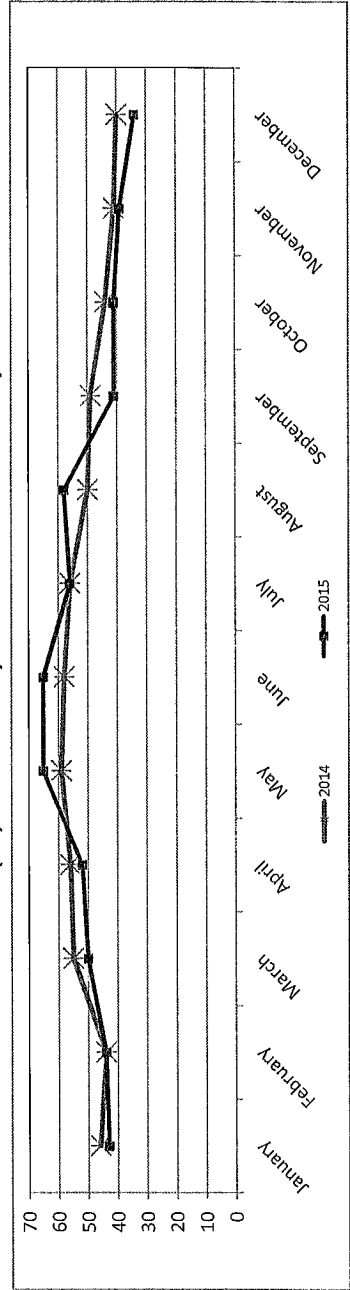
OZONE (O3) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



OZONE (O3) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



OZONE (O3) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LIICA
O3_ / WD Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.82	3.50	5.70	4.10	6.76	5.36	10.03	3.77	2.90	3.41	6.31	16.25	11.57	6.59	5.28	3.51	97.92
< 110.0	.04	.02	.07	.07	.00	.03	.33	.23	.16	.30	.23	.18	.12	.14	.08	.01	2.07
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.87	3.52	5.77	4.17	6.76	5.40	10.37	4.01	3.07	3.71	6.54	16.44	11.69	6.73	5.36	3.52	

Calm : .00 %

Total # Operational Hours : 8254

Distribution By Samples





Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	233	289	471	339	558	443	828	312	240	282	521	1342	955	544	436	290	8083
< 110.0	4	2	6	6	3	28	19	14	25	19	15	10	12	7	1	1	171
< 210.0																	
>= 210.0																	
Totals	237	291	477	345	558	446	856	331	254	307	540	1357	965	556	443	291	

Calm : .00 %

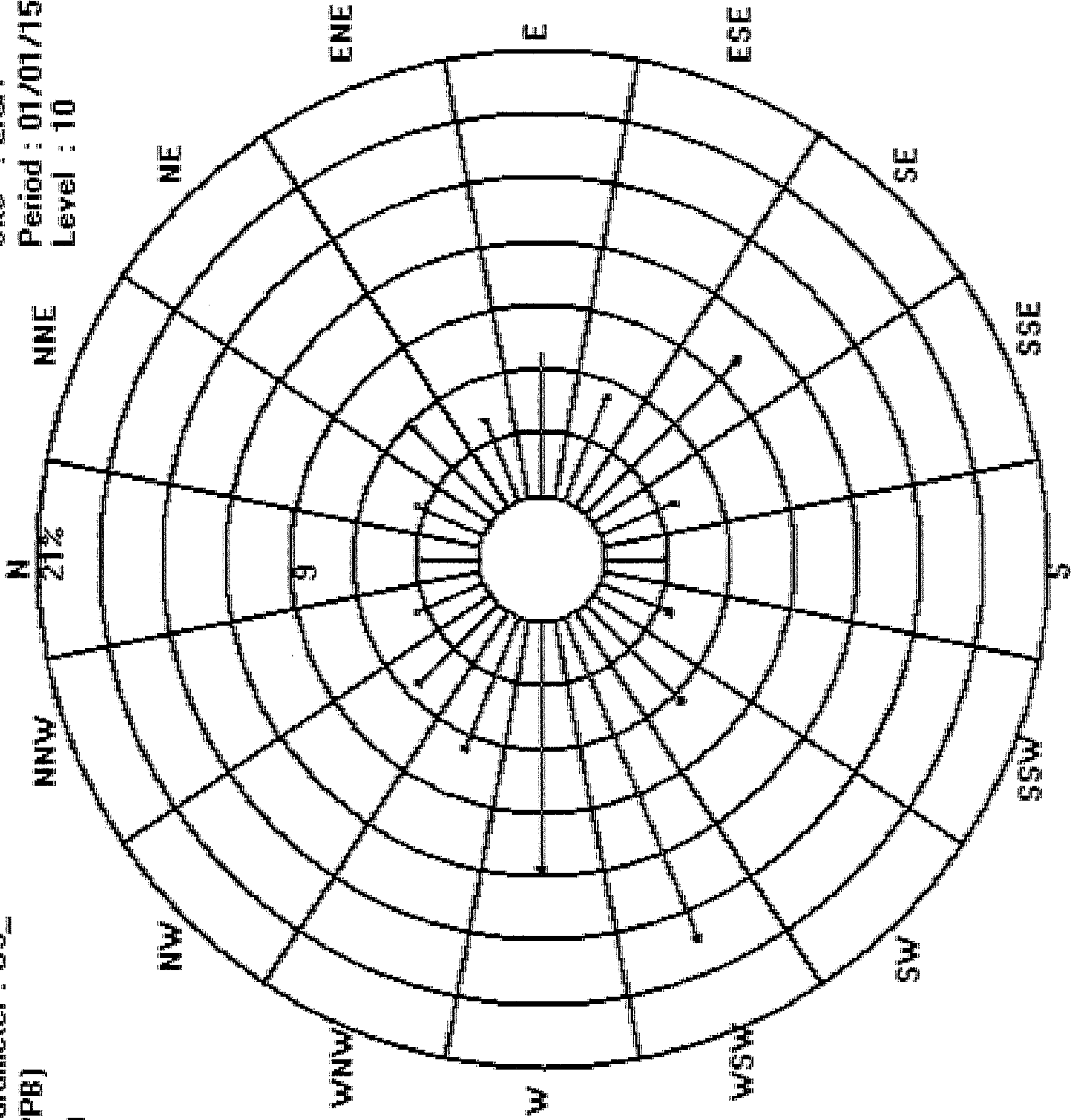
Total # Operational Hours : 8254

Logger : 01 Parameter : O3_

Class Limits (PPB)

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

Site : LICA
Period : 01/01/15-12/31/15
Level : 10



PARTICULATE MATTER 2.5

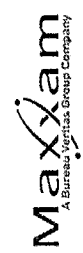


PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (ug/m3 PM2.5)					OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE	
			≤ 30 ug/m3	31 < C ≤ 60 ug/m3	61 < C ≤ 80 ug/m3	81 < C ≤ 120 ug/m3	121 < C ≤ 240 ug/m3	> 240 ug/m3	1-HR	24-HR	1-HR		24-HR
January	712	96.2	99.86%	0.14%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	7
February	664	99.3	99.40%	0.60%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	7
March	697	94.1	99.86%	0.14%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	6
April	695	96.8	99.86%	0.14%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	5
May	731	98.5	96.31%	1.37%	0.27%	0.14%	1.78%	0.14%	-	30	-	2	12
June	673	93.8	93.31%	5.50%	0.15%	0.45%	0.59%	0.00%	-	30	-	1	11
July	723	97.4	77.32%	12.72%	2.21%	1.94%	4.84%	0.97%	-	30	-	7	26
August	715	96.6	98.46%	1.54%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	6
September	677	94.4	99.41%	0.59%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	7
October	662	89.4	99.40%	0.60%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	6
November	632	88.2	98.89%	1.11%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	11
December	742	100.0	99.87%	0.13%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	7
N/D - Valid Data Not Available											ANNUAL AVERAGE		9

N/D - Valid Data Not Available
*Number of Readings - included calibration hours
**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	ug/m3
Annual Average for 2015	9	ug/m3



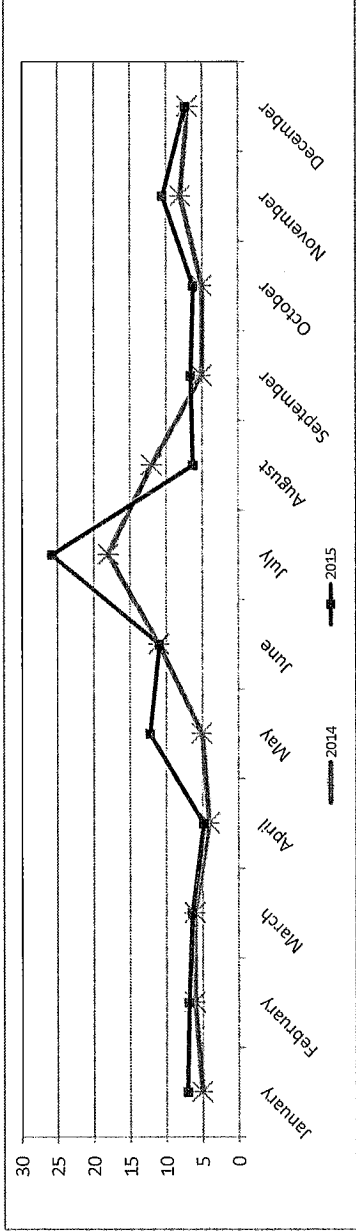
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 One-Hour Readings vs. 2015 One-Hour Readings in ug/m3

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	5	0	41	7	0	36	-2
February	6	0	29	7	0	38	-1
March	6	0	28	6	0	33	0
April	4	0	30	5	0	38	-1
May	5	0	46	12	0	266	-7
June	11	0	115	11	0	131	0
July	38	0	106	26	0	278	-8
August	12	0	60	6	0	40	6
September	5	0	28	7	0	59	-2
October	5	0	24	6	0	48	-1
November	8	0	36	11	0	46	-3
December	7	0	67	7	0	33	0

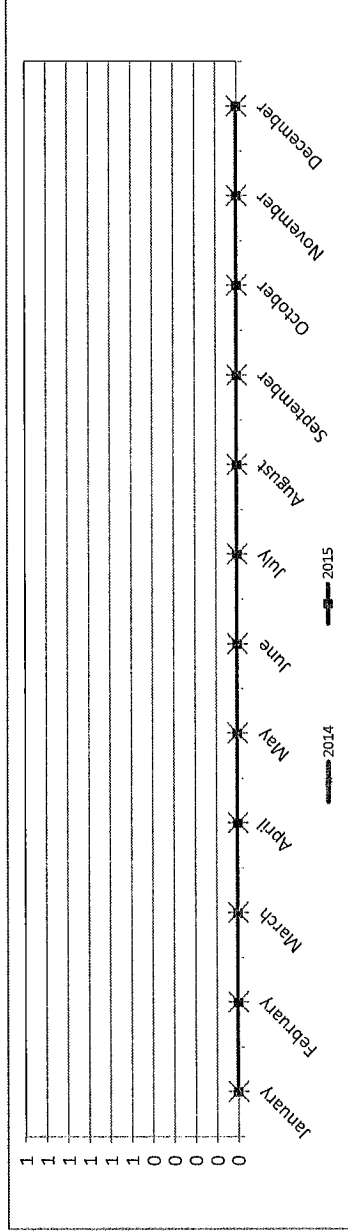
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

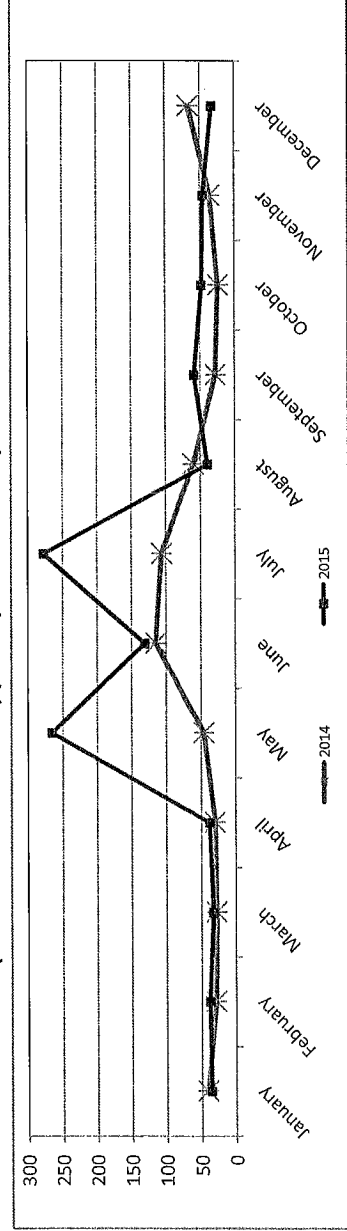
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Mean vs. 2015 Monthly Mean in ug/m3



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Minimum vs. 2015 Monthly Minimum in ug/m3



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Maximum vs. 2015 Monthly Maximum in ug/m3



LIICA
 PM2 / WD Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % Of Samples

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

Wind Parameter : WD
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30.0	2.71	3.37	5.53	3.97	6.50	5.35	10.43	4.02	3.06	3.54	6.22	16.18	11.08	6.07	5.11	3.46	96.67
< 60.0	.08	.09	.12	.10	.12	.07	.20	.08	.07	.10	.14	.20	.21	.31	.15	.04	2.15
< 80.0	.01	.01	.02	.00	.00	.00	.03	.03	.00	.00	.01	.01	.01	.04	.01	.01	.22
< 120.0	.00	.02	.00	.02	.01	.00	.03	.01	.00	.00	.02	.02	.00	.04	.01	.00	.21
< 240.0	.01	.06	.08	.03	.07	.09	.01	.01	.01	.06	.01	.01	.07	.04	.00	.02	.62
>= 240.0	.00	.02	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02	.00	.09
Totals	2.82	3.59	5.78	4.14	6.70	5.52	10.72	4.17	3.14	3.71	6.41	16.43	11.38	6.56	5.31	3.54	

Calm : .00 %

Total # Operational Hours : 8292

Distribution By Samples

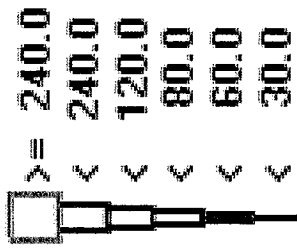
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30.0	225	280	459	330	539	444	865	334	254	294	516	1342	919	504	424	287	8016
< 60.0	7	8	10	9	10	6	17	7	6	9	12	17	18	26	13	4	179
< 80.0	1	1	2	2	1	3	3	3	1	1	1	1	1	4	1	1	19
< 120.0	2	2	7	3	6	8	1	1	1	5	2	2	2	4	1	1	18
< 240.0	1	5	7	3	6	8	1	1	1	5	1	1	6	4	2	2	52
>= 240.0	2	2	480	344	556	458	889	346	261	308	532	1363	944	544	441	294	8
Totals	234	298	480	344	556	458	889	346	261	308	532	1363	944	544	441	294	

Calm : .00 %

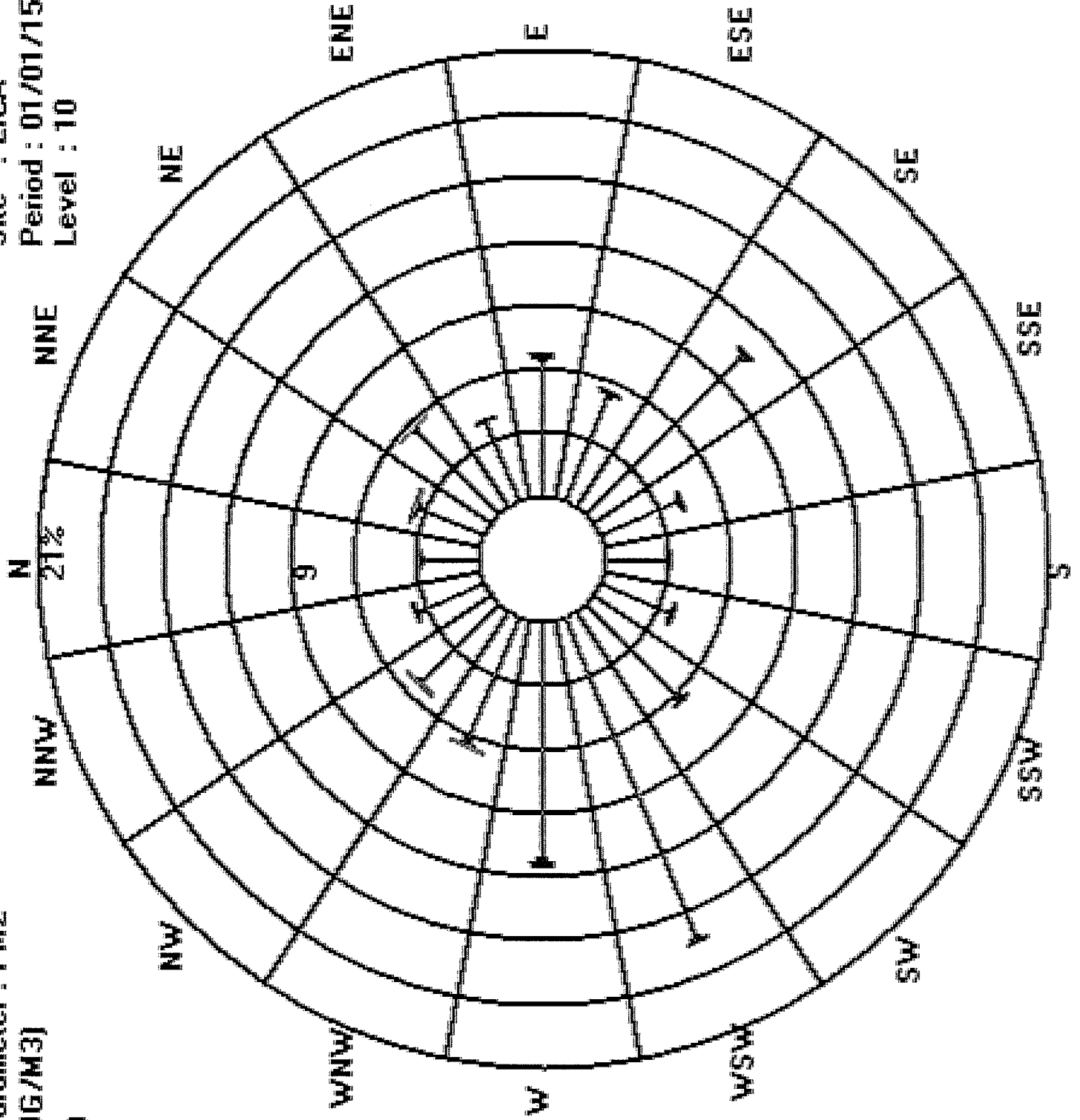
Total # Operational Hours : 8292

Logger : 01 Parameter : PM2

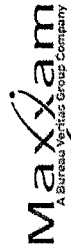
Class Limits (UG/M3)



Site : LICA
Period : 01/01/15-12/31/15
Level : 10



WIND SPEED



WIND SPEED (WS) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (KPH)	Minimum Hourly Average (KPH)	Maximum Hourly Average (KPH)	Maximum Daily Average (KPH)
January	744	100.0	4.9	0.1	17.6	10.7
February	649	96.6	5.4	0.0	14.8	10.6
March	739	99.3	5.7	0.1	23.1	14.0
April	717	99.6	7.0	0.1	24.0	13.0
May	744	100.0	6.0	0.1	20.7	15.6
June	720	100.0	5.7	0.1	24.4	9.9
July	744	100.0	5.8	0.0	17.7	10.2
August	744	100.0	5.0	0.0	16.8	8.4
September	718	99.7	5.4	0.0	20.6	13.5
October	744	100.0	6.0	0.1	21.7	12.7
November	720	100.0	5.7	0.0	23.2	14.4
December	744	100.0	4.6	0.1	13.7	8.6

N/D - Valid Data Not Available

* Annual peak is bolded and highlighted.



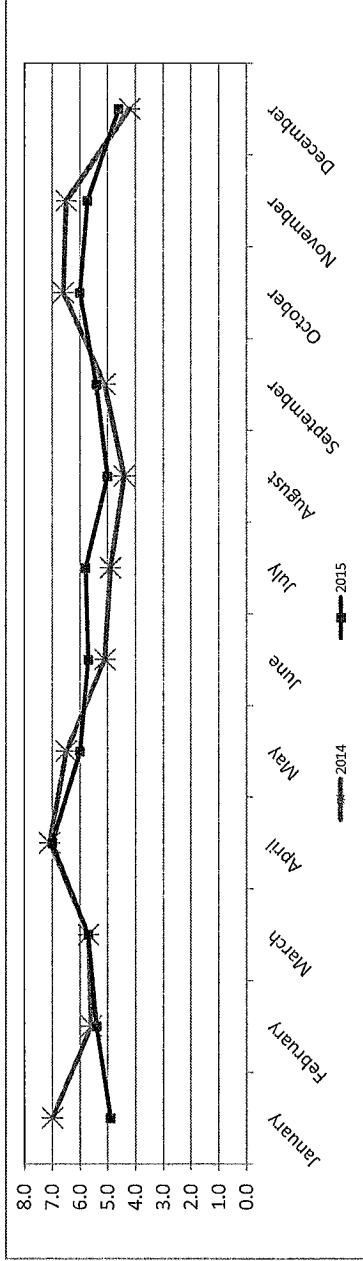
WIND SPEED (WS) 2014 One-Hour Readings vs. 2015 One-Hour Readings in km/hr

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	7.0	0.0	32.3	4.9	0.1	17.6	2.1
February	5.6	0.1	20.5	5.4	0.0	14.8	0.2
March	5.7	0.0	18.4	5.7	0.1	23.1	0.0
April	7.1	0.1	25.4	7.0	0.1	24.0	0.1
May	6.5	0.1	21.0	6.0	0.1	20.7	0.5
June	5.1	0.1	16.0	5.7	0.1	24.4	-0.6
July	4.9	0.1	18.0	5.8	0.0	17.7	-0.9
August	4.4	0.1	15.0	5.0	0.0	16.8	-0.6
September	5.1	0.1	20.3	5.4	0.0	20.6	-0.3
October	6.6	0.1	21.7	6.0	0.1	21.7	0.6
November	6.5	0.1	17.3	5.7	0.0	23.2	0.8
December	4.2	0.1	14.9	4.6	0.1	13.7	-0.4

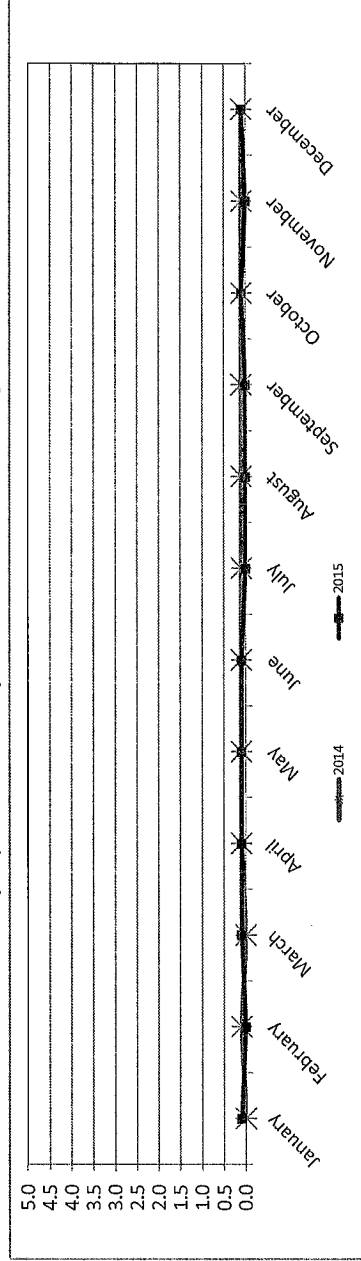
N/D - Valid Data Not Available

* Annual peak is bolded and highlighted.

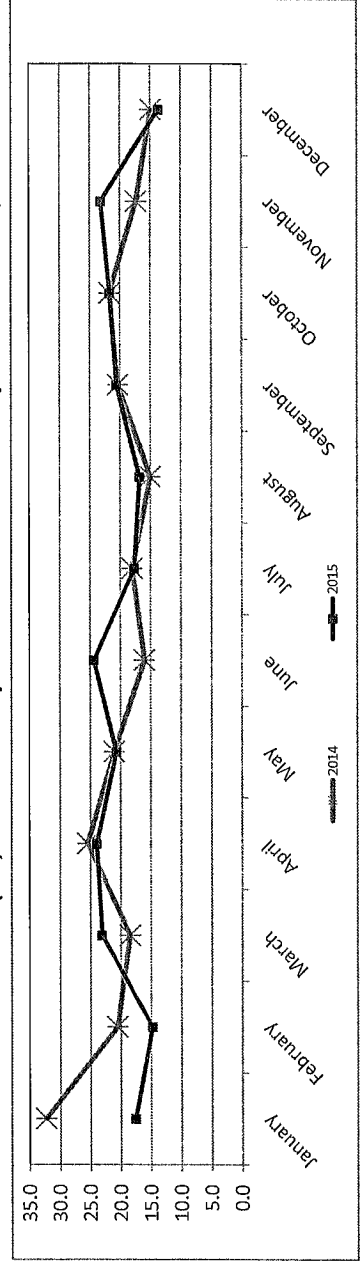
WIND SPEED (WS) 2014 Monthly Mean vs. 2015 Monthly Mean in km/hr



WIND SPEED (WS) 2014 Monthly Minimum vs. 2015 Monthly Minimum in km/hr



WIND SPEED (WS) 2014 Monthly Maximum vs. 2015 Monthly Maximum in km/hr



IICA
WSP / WD Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	1.18	1.36	2.29	2.42	3.16	3.36	5.09	3.07	2.45	3.15	4.98	11.00	6.10	2.94	1.83	1.26	55.70
< 12.0	1.07	1.51	2.76	1.40	2.77	1.74	4.50	.73	.28	.26	1.20	5.07	4.27	2.20	2.07	1.38	33.27
< 20.0	.46	.52	.53	.13	.48	.21	.59	.03	.00	.00	.26	1.19	1.34	1.24	.79	7.83	
< 29.0	.01	.01	.00	.00	.05	.00	.00	.00	.00	.00	.00	.02	.04	.08	.03	.26	
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	2.73	3.41	5.59	3.97	6.47	5.32	10.19	3.83	2.73	3.41	6.18	16.34	11.59	6.53	5.23	3.47	

Calm : 2.92 %

Total # Operational Hours : 8727

Distribution By Samples

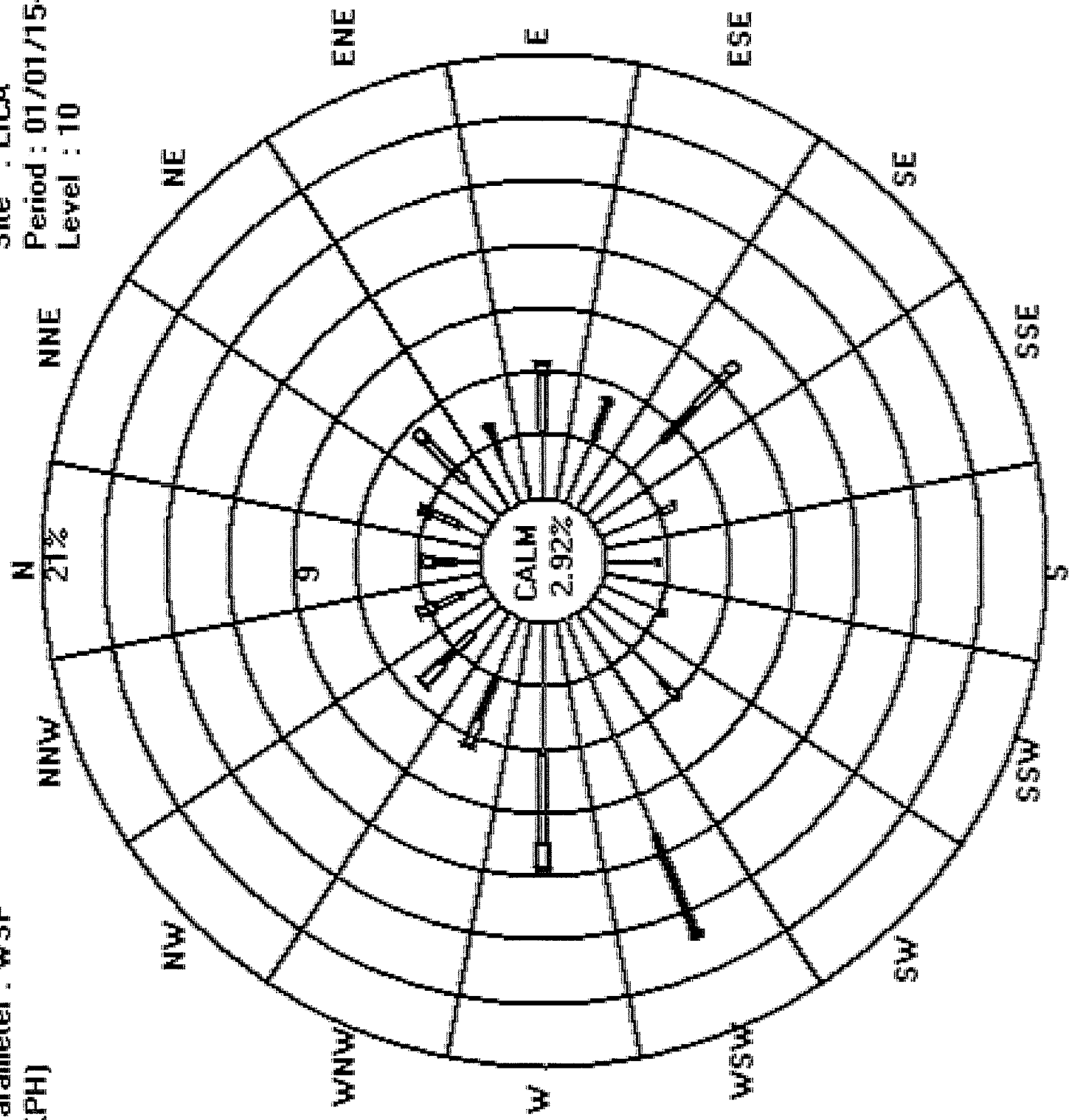
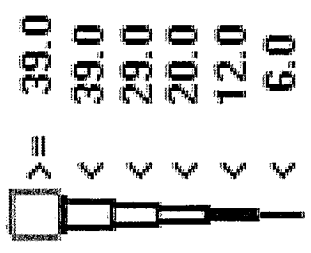
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	103	119	200	212	276	294	445	268	214	275	435	960	533	257	160	110	4861
< 12.0	94	132	241	123	242	152	393	64	25	23	105	443	373	192	181	121	2904
< 20.0	41	46	47	12	42	19	52	3			23	104	117	109	69	684	
< 29.0	1	1			5							2	4	7	3	23	
< 39.0																	
>= 39.0																	
Totals	239	298	488	347	565	465	890	335	239	298	540	1426	1012	570	457	303	

Calm : 2.92 %

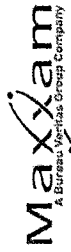
Total # Operational Hours : 8727

Site : LICÅ
 Period : 01/01/15-12/31/15
 Level : 10

Logger : 01 Parameter : W/SP
 Class Limits (KPH)



RELATIVE HUMIDITY



RELATIVE HUMIDITY (RH) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (%)	Minimum Hourly Average (%)	Maximum Daily Average (%)	Maximum Daily Average (%)
January	744	100.0	74	98	88	88
February	672	100.0	70	96	83	83
March	744	100.0	65	97	83	83
April	720	100.0	56	100	94	94
May	744	100.0	52	99	88	88
June	720	100.0	64	100	84	84
July	744	100.0	68	100	93	93
August	744	100.0	71	26	100	96
September	718	99.7	73	29	98	91
October	744	100.0	69	23	98	90
November	720	100.0	76	35	99	94
December	744	100.0	80	47	100	97

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



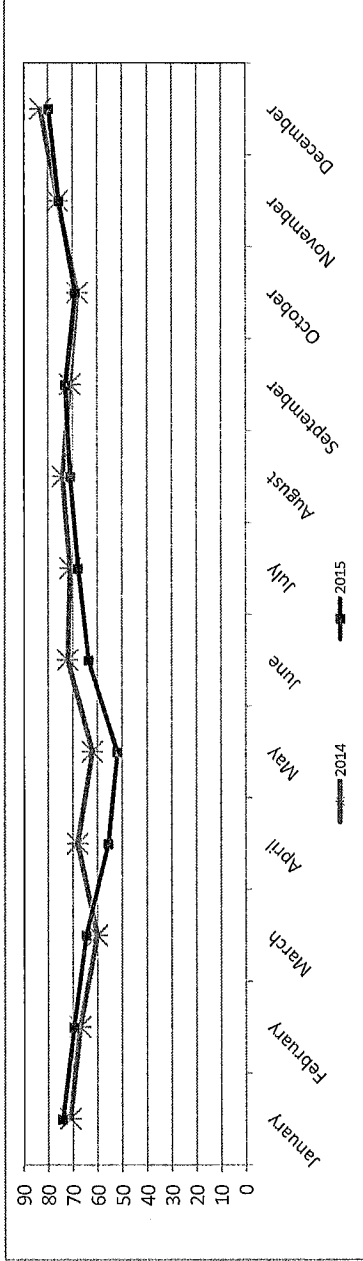
RELATIVE HUMIDITY (RH) 2014 One-Hour Readings vs. 2015 One-Hour Readings in %

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	71	39	93	74	41	98	-3
February	67	24	88	70	31	96	-3
March	60	18	92	65	27	97	-5
April	68	14	99	56	9	100	12
May	62	20	100	52	10	99	10
June	72	28	100	64	20	100	8
July	71	24	100	68	18	100	3
August	74	32	100	71	26	100	3
September	71	24	98	73	29	98	-2
October	68	21	100	69	23	98	-1
November	76	32	99	76	35	99	0
December	83	55	97	80	47	100	3

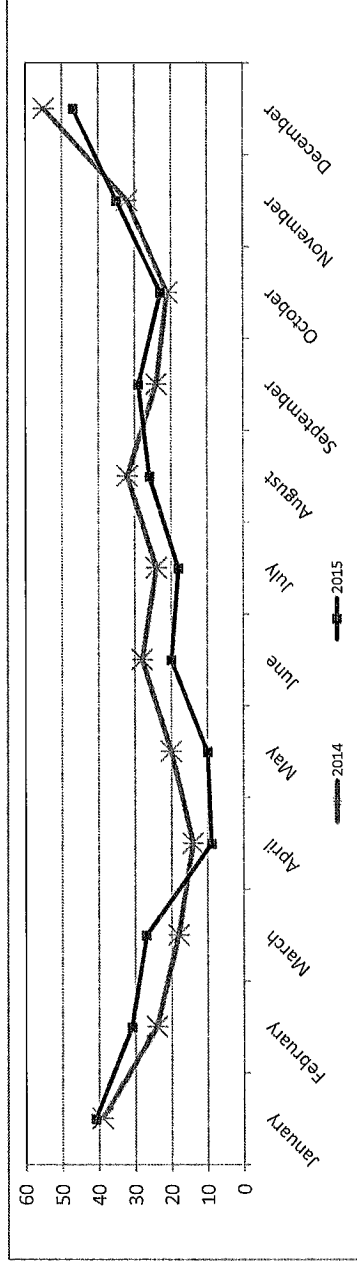
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

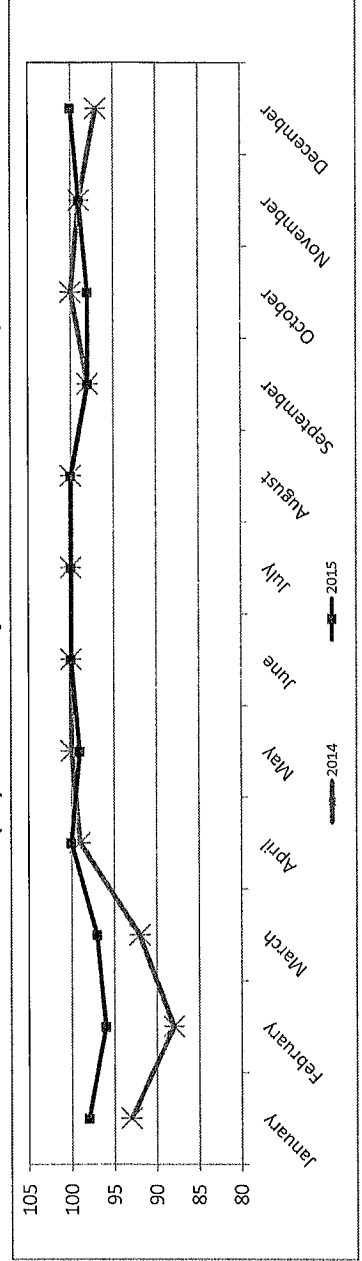
RELATIVE HUMIDITY (RH) 2014 Monthly Mean vs. 2015 Monthly Mean in %



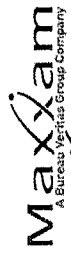
RELATIVE HUMIDITY (RH) 2014 Monthly Minimum vs. 2015 Monthly Minimum in %



RELATIVE HUMIDITY (RH) 2014 Monthly Maximum vs. 2015 Monthly Maximum in %



AMBIENT TEMPERATURE



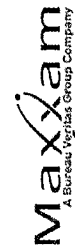
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 Cold Lake South Site - 2015
 JOB # 2833-2015-01-A

AMBIENT TEMPERATURE (TPX) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	744	100.0	-11.6	-33.2	10.1	4.1
February	672	100.0	-14.7	-32.6	7.6	2.1
March	744	100.0	-1.6	-34.0	14.8	7.8
April	720	100.0	4.7	-12.2	24.4	15.3
May	744	100.0	10.0	-4.1	27.2	18.1
June	720	100.0	16.0	1.3	31.5	23.0
July	744	100.0	18.5	4.9	30.3	24.4
August	744	100.0	16.9	0.1	31.9	23.0
September	718	99.7	10.0	-3.6	25.7	17.3
October	744	100.0	5.9	-6.1	24.6	13.9
November	720	100.0	-3.0	-17.8	7.6	2.7
December	744	100.0	-10.0	-27.0	4.7	-1.3

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



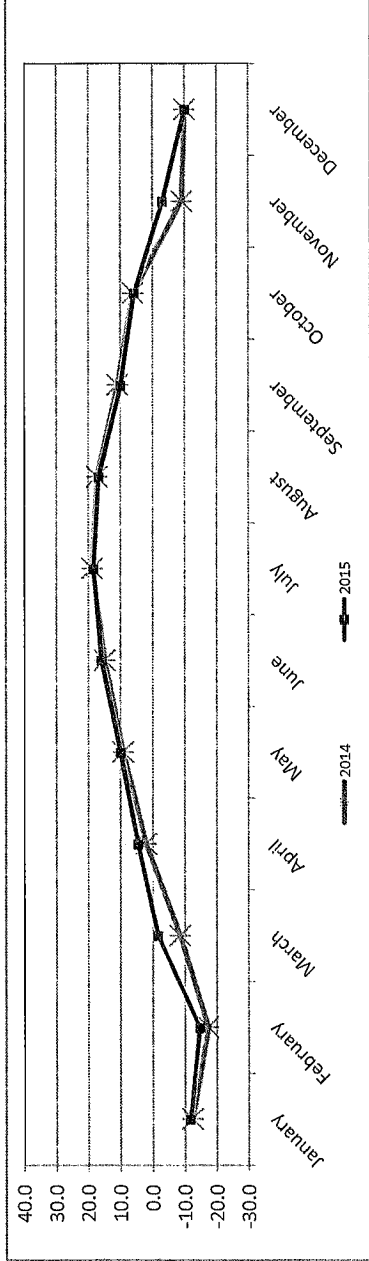
AMBIENT TEMPERATURE (TPX) 2014 One-Hour Readings vs. 2015 One-Hour Readings in Degrees Celsius

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	-12.5	-33.5	8.6	-11.6	-33.2	10.1	-0.9
February	-17.4	-34.0	2.1	-14.7	-32.6	7.6	-2.7
March	-8.6	-38.6	10.0	-1.6	-34.0	14.8	-7.0
April	2.0	-16.8	20.2	4.7	-12.2	24.4	-2.7
May	9.1	-5.2	28.3	10.0	-4.1	27.2	-0.9
June	14.8	1.8	25.7	16.0	1.3	31.5	-1.2
July	18.7	6.5	29.3	18.5	4.9	30.3	0.2
August	17.2	2.6	28.5	16.9	0.1	31.9	0.3
September	10.8	-2.9	28.8	10.0	-3.6	25.7	0.8
October	6.0	-4.5	20.8	5.9	-6.1	24.6	0.1
November	-9.2	-27.9	10.6	-3.0	-17.8	7.6	-6.2
December	-10.1	-32.5	8.5	-10.0	-27.0	4.7	-0.1

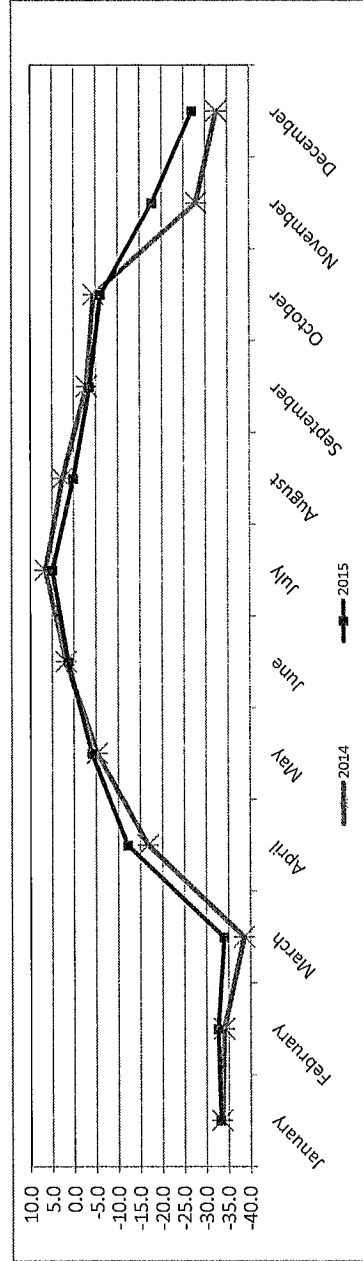
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

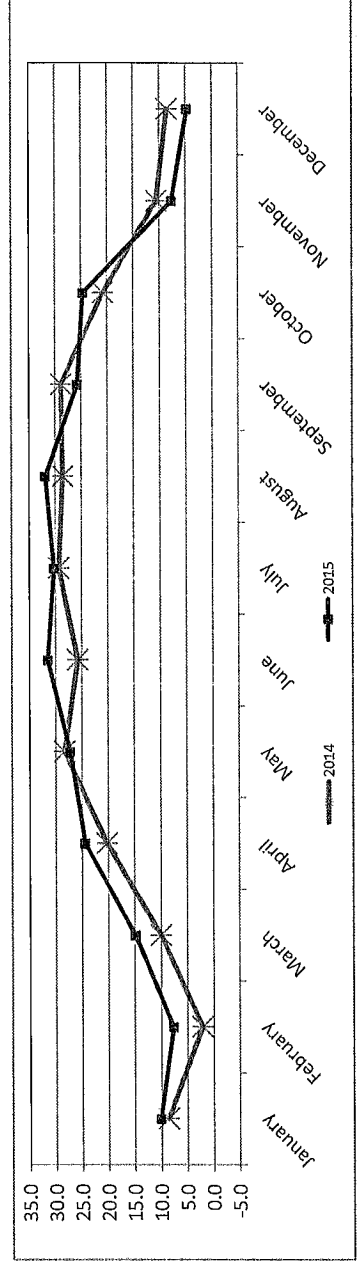
AMBIENT TEMPERATURE (TPX) 2014 Monthly Mean vs. 2015 Monthly Mean in Degrees Celsius



AMBIENT TEMPERATURE (TPX) 2014 Monthly Minimum vs. 2015 Monthly Minimum in Degrees Celsius



AMBIENT TEMPERATURE (TPX) 2014 Monthly Maximum vs. 2015 Monthly Maximum in Degrees Celsius



APPENDIX II
ANALYTICAL RESULTS

PASSIVE SAMPLES

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

BONNYVILLE

Company

Project Number

BONNYVILLE

2014/12/29

2016/02/01

Location

Date Samples Start

Date Sampled End

SO2 (ppb)

Station	Jan.	Feb.	Mar.	Apr.-May	June-July	Aug.-Sept.	Oct.-Nov.	Dec.-Jan.	Average	Maximum
3	0.7	0.7	0.5	0.2	0.3	0.2	0.3	0.4	0.4	0.7
3 DUP	NA	NA	0.3	NA	NA	NA	NA	NA	0.3	0.3
4	1.1	0.6	0.3	0.2	0.5	0.4	0.3	0.7	0.5	1.1
4 DUP	NA	NA	0.3	NA	NA	NA	NA	NA	0.3	0.3
5	0.9	0.6	0.3	0.2	0.4	0.5	0.4	0.5	0.5	0.9
5 DUP	NA	NA	NA	0.2	NA	NA	NA	NA	0.2	0.2
6	0.7	0.5	0.4	0.4	0.6	1.1	0.2	0.6	0.6	1.1
6 DUP	NA	NA	NA	0.2	NA	NA	NA	NA	0.2	0.2
8	0.4	0.6	0.3	0.4	0.6	0.3	0.3	0.8	0.5	0.8
8 DUP	NA	NA	NA	0.5	NA	NA	NA	NA	0.5	0.5
9	0.6	0.6	0.2	0.2	0.3	0.2	0.2	0.6	0.4	0.6
9 DUP	NA	NA	NA	NA	0.3	NA	NA	NA	0.3	0.3
10	0.4	0.5	0.2	0.2	0.2	0.3	0.1	0.5	0.3	0.5
10 DUP	NA	NA	NA	NA	0.2	NA	NA	NA	0.2	0.2
11	NA	NA	NA	0.3	0.1	<0.1	0.1	NA	<0.1	0.3
11 DUP	NA	NA	NA	NA	0.1	NA	NA	NA	0.1	0.1
12	0.5	0.7	NA	NA	NA	NA	NA	NA	0.6	0.7
13	0.8	0.6	0.6	0.3	0.2	0.3	0.2	0.7	0.5	0.8
13 DUP	NA	NA	NA	NA	NA	0.3	NA	NA	0.3	0.3
14	1.7	1.4	1.3	0.5	0.9	1	1	1.5	1.2	1.7
14 DUP	NA	NA	NA	NA	NA	1.1	NA	NA	1.1	1.1
15	0.5	0.7	0.2	0.2	0.4	0.3	0.2	0.5	0.4	0.7
15 DUP	NA	NA	NA	NA	NA	0.3	NA	NA	0.3	0.3
16	0.6	0.5	0.2	0.2	0.2	0.2	NA	0.5	0.3	0.6
17	0.8	0.6	0.5	0.3	0.4	0.3	NA	0.6	0.5	0.8
18	NA	0.4	0.1	0.1	0.2	0.2	NA	0.5	0.3	0.5
19	0.5	0.6	0.2	0.2	NA	0.3	NA	0.6	0.4	0.6
19 DUP	NA	NA	NA	NA	NA	NA	NA	0.7	0.7	0.7
22	0.4	0.5	0.1	0.2	0.4	0.3	0.1	0.5	0.3	0.5
22 DUP	NA	NA	NA	NA	NA	NA	NA	0.7	0.7	0.7
23	0.3	0.3	0.4	0.1	0.2	0.2	0.1	0.4	0.3	0.4
23 DUP	NA	NA	NA	NA	NA	NA	NA	0.4	0.4	0.4
24	0.6	0.5	0.3	0.2	0.3	0.3	0.3	0.6	0.4	0.6
25	0.6	0.8	NA	NA	NA	NA	NA	NA	0.7	0.8
25 DUP	0.7	NA	NA	NA	NA	NA	NA	NA	0.7	0.7
26	0.6	0.9	0.9	0.3	0.4	0.4	0.4	1.1	0.6	1.1
26 DUP	0.5	NA	NA	NA	NA	NA	NA	NA	0.5	0.5
27	1.6	1	1.2	0.5	1.2	0.9	1.4	2	1.2	2
27 DUP	1.7	NA	NA	NA	NA	NA	NA	NA	1.7	1.7
28	0.6	0.6	0.3	0.4	1	0.8	0.3	0.6	0.6	1
28 DUP	NA	0.5	NA	NA	NA	NA	NA	NA	0.5	0.5
29	0.5	0.5	0.3	0.2	0.4	0.3	0.1	0.5	0.3	0.5
29 DUP	NA	0.5	NA	NA	NA	NA	NA	NA	0.5	0.5
32	0.7	0.5	0.4	0.2	0.3	0.3	0.4	0.9	0.5	0.9
32 DUP	NA	0.6	NA	NA	NA	NA	NA	NA	0.6	0.6
36	0.6	0.6	0.8	0.2	0.3	0.2	0.1	0.5	0.4	0.8
36 DUP	NA	NA	0.4	NA	NA	NA	NA	NA	0.4	0.4
Average	0.7	0.6	0.4	0.3	0.4	<0.4	0.3	0.7		
Maximum	1.7	1.4	1.3	0.5	1.2	1.1	1.4	2		

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

BONNYVILLE

Company

Project Number

BONNYVILLE

2014/12/29

2016/02/01

Location

Date Samples Start

Date Sampled End

O3 (ppb)

Station	Jan.	Feb.	Mar.	Apr.-May	June-July	Aug.-Sept.	Oct.-Nov.	Dec.-Jan.	Average	Maximum
3	29.4	NA	36.5	34.5	30.8	22.9	21.1	24.1	28.5	36.51
4	33.8	NA	38.6	39.1	34.4	27.9	25.9	24.8	32.1	39.14
4 DUP	NA	NA	39.8	NA	NA	NA	NA	NA	39.8	39.77
5	31.8	NA	32.7	36.3	31.1	24.8	20.5	23.6	28.7	36.33
5 DUP	NA	NA	34.2	NA	NA	NA	NA	NA	34.2	34.23
6	21.4	NA	34.8	33.9	28.4	17.3	17.8	22.7	25.2	34.78
6 DUP	NA	NA	NA	36.8	NA	NA	NA	NA	36.8	36.79
8	31.4	NA	36.8	42.9	33.3	25.5	26.3	31.5	32.5	42.92
8 DUP	NA	NA	NA	41.8	NA	NA	NA	NA	41.8	41.76
9	29.7	NA	33.7	40.1	31.8	18.4	21.5	32.2	29.6	40.08
9 DUP	NA	NA	NA	NA	26.6	NA	NA	NA	26.6	26.58
10	26.4	NA	35.6	34	25.7	16.6	17.3	22.3	25.4	35.62
10 DUP	NA	NA	NA	NA	26.9	NA	NA	NA	26.9	26.91
11	NA	NA	NA	22.9	21.1	12.8	17.6	NA	18.6	22.91
11 DUP	NA	NA	NA	NA	NA	16.1	NA	NA	16.1	16.12
12	28.1	NA	NA	NA	NA	NA	NA	NA	28.1	28.09
13	32.3	NA	33.5	37.2	31.1	20	22.1	21	28.2	37.19
13 DUP	NA	NA	NA	NA	NA	20.7	NA	NA	20.7	20.68
14	28.3	NA	31.7	33.5	28.1	20.3	24.8	27	27.7	33.45
14 DUP	NA	NA	NA	NA	NA	NA	21	NA	21	20.98
15	28.7	NA	39	39.3	31.3	18.2	19.9	21.8	28.3	39.3
15 DUP	NA	NA	NA	NA	NA	NA	19.2	NA	19.2	19.24
16	26.2	NA	32	42.6	27.4	19.2	22.6	19.7	27.1	42.65
16 DUP	NA	NA	NA	NA	NA	NA	NA	21.7	21.7	21.67
17	28.3	NA	39	42.2	32.5	22.7	20.6	25.3	30.1	42.23
17 DUP	NA	NA	NA	NA	NA	NA	NA	25.9	25.9	25.92
18	26.4	NA	36.9	30.3	27	16.3	18.1	26	25.9	36.86
19	31.1	NA	34.3	36.8	NA	30.6	24.6	32.7	31.7	36.8
22	24.2	NA	29.5	29.4	27.3	19.7	18.7	23.4	24.6	29.49
23	24.5	NA	31.9	28.6	21.3	15	19	24.6	23.6	31.91
24	26.2	NA	34	33.5	27.6	20.2	17.6	27.3	26.6	34.01
28	24.9	NA	31.6	40.5	29.3	19.2	17.7	22.9	26.6	40.47
29	26.9	NA	30.2	33	24.8	20.7	18.9	25.8	25.8	33.03
29 DUP	21.9	NA	NA	NA	NA	NA	NA	NA	21.9	21.85
32	31	NA	38.2	42.1	31	28.3	24.4	29.2	32	42.15
32 DUP	32.9	NA	NA	NA	NA	NA	NA	NA	32.9	32.91
36	23.4	NA	37.1	35.9	37.6	25.9	18.6	24.3	29	37.62
36 DUP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average	27.9	NA	34.8	36.1	29	20.8	20.7	25.2		
Maximum	33.82	NA	39.77	42.92	37.62	30.55	26.33	32.73		

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

BONNYVILLE

Company

Project Number

BONNYVILLE

2014/12/29

2016/02/01

Location

Date Samples Start

Date Sampled End

NO2 (ppb)

Station	Jan.	Feb.	Mar.	Apr.-May	June-July	Aug.-Sept.	Oct.-Nov.	Dec.	Average	Maximum
3	2	1.4	1.2	0.9	0.7	1.2	2	4.5	1.7	4.5
4	2.4	1.1	0.7	0.7	1.2	0.9	1.8	3.5	1.5	3.5
4 DUP	NA	NA	1	NA	NA	NA	NA	NA	1	1
5	2	1.6	1	0.7	0.5	0.6	1.4	3.8	1.4	3.8
5 DUP	NA	NA	1.2	NA	NA	NA	NA	NA	1.2	1.2
6	8.8	4.3	3.8	3.2	3.2	3.7	7.1	6.5	5.1	8.8
6 DUP	NA	NA	NA	3.1	NA	NA	NA	NA	3.1	3.1
8	1.7	1.1	0.8	0.5	0.6	0.6	1.6	4	1.4	4
8 DUP	NA	NA	NA	0.6	NA	NA	NA	NA	0.6	0.6
9	2.8	1.7	1.2	0.9	0.9	1	3.1	4.8	2	4.8
9 DUP	NA	NA	NA	NA	0.8	NA	NA	NA	0.8	0.8
10	6.4	3.8	2.7	2.2	2	2.3	5.5	9	4.2	9
10 DUP	NA	NA	NA	NA	2	NA	NA	NA	2	2
11	NA	NA	NA	0.3	0.4	0.6	0.8	NA	0.5	0.8
11 DUP	NA	NA	NA	NA	NA	0.5	NA	NA	0.5	0.5
12	1.5	1.4	NA	NA	NA	NA	NA	NA	1.4	1.5
13	2	1.2	0.5	0.5	0.4	0.5	0.9	2.1	1	2.1
13 DUP	NA	NA	NA	NA	NA	0.3	NA	NA	0.3	0.3
14	4.6	1.9	1.1	0.5	0.7	1	2.2	5.1	2.1	5.1
14 DUP	NA	NA	NA	NA	NA	NA	2.4	NA	2.4	2.4
15	3.5	1.8	0.8	0.6	1.2	0.8	2.1	3	1.7	3.5
15 DUP	NA	NA	NA	NA	NA	NA	1.9	NA	1.9	1.9
16	3.6	1.7	1.5	0.6	0.9	1.7	3.4	4.6	2.3	4.6
16 DUP	NA	NA	NA	NA	NA	NA	NA	5	5	5
17	3	2	1.3	1	1.4	2.7	3.2	3.4	2.2	3.4
17 DUP	NA	NA	NA	NA	NA	NA	NA	3.3	3.3	3.3
18	2.3	1.4	0.9	0.7	0.8	0.8	2.1	3.7	1.6	3.7
19	2.5	0.9	0.8	0.6	NA	0.5	1.6	3.8	1.5	3.8
22	3.7	0.6	1.7	0.8	0.7	0.8	2.4	7	2.2	7
23	1	1.9	0.3	0.2	0.1	0.2	0.7	1.6	0.8	1.9
24	5.6	3.7	3.2	1.9	1.8	2.9	5.3	7.3	4	7.3
28	7.9	8	4.1	2.1	1.4	1.8	4.4	10.7	5	10.7
29	5.4	2.4	1.7	0.7	0.5	0.8	1.8	6	2.4	6
29 DUP	3.7	NA	NA	NA	NA	NA	NA	NA	3.7	3.7
3 DUP	NA	1.5	NA	NA	NA	NA	NA	NA	1.5	1.5
32	2	1	0.7	0.3	0.2	0.5	1.1	4	1.2	4
32 DUP	2	NA	NA	NA	NA	NA	NA	NA	2	2
36	6.3	4.1	3.5	1.7	1.5	2.1	5.5	11.2	4.5	11.2
36 DUP	NA	4.1	NA	NA	NA	NA	NA	NA	4.1	4.1
Average	3.6	2.3	1.6	1.1	1	1.2	2.7	5.1		
Maximum	8.8	8	4.1	3.2	3.2	3.7	7.1	11.2		

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

BONNYVILLE

Company

Project Number

BONNYVILLE

2014/12/29

2016/02/01

Location

Date Samples Start

Date Sampled End

H2S (ppb)										
Station	Jan.	Feb.	Mar.	Apr.-May	June-July	Aug.-Sept.	Oct.-Nov.	Dec.	Average	Maximum
3	0.09	0.15	0.09	0.11	0.22	0.19	0.11	0.13	0.14	0.22
5	0.15	0.13	0.13	0.16	0.86	0.81	0.44	0.16	0.35	0.86
5 DUP	NA	0.13	NA	NA	NA	NA	NA	NA	0.13	0.13
10	0.15	0.14	0.1	0.15	0.15	0.2	0.1	0.15	0.14	0.2
10 DUP	NA	NA	0.1	NA	NA	NA	NA	NA	0.1	0.1
11	NA	NA	NA	0.1	0.05	0.08	0.06	NA	0.07	0.1
12	0.09	0.15	NA	NA	NA	NA	NA	NA	0.12	0.15
13	0.09	0.13	0.07	0.12	0.07	0.08	0.1	0.14	0.1	0.14
13 DUP	NA	NA	NA	0.11	NA	NA	NA	NA	0.11	0.11
14	0.11	0.19	0.11	0.11	0.13	0.16	0.15	0.15	0.14	0.19
14 DUP	NA	NA	NA	NA	0.15	NA	NA	NA	0.15	0.15
16	0.1	0.18	0.13	0.12	0.21	0.22	0.12	0.15	0.15	0.22
16 DUP	NA	NA	NA	NA	0.21	NA	0.09	NA	0.15	0.21
17	0.15	0.21	0.15	0.16	0.39	0.43	0.17	0.2	0.23	0.43
17 DUP	NA	NA	NA	NA	NA	0.48	0.16	NA	0.32	0.48
18	0.08	0.15	0.11	0.09	0.15	0.14	0.1	0.11	0.12	0.15
18 DUP	NA	NA	NA	NA	NA	0.12	0.09	NA	0.1	0.12
19	NA	NA	NA	NA	NA	NA	0.13	NA	0.13	0.13
22	0.16	0.15	0.11	0.1	0.43	0.27	0.11	0.16	0.19	0.43
22 DUP	NA	NA	NA	NA	NA	NA	0.1	NA	0.1	0.1
24	0.12	0.14	0.14	0.12	0.25	0.18	0.11	0.18	0.15	0.25
24 DUP	NA	NA	NA	NA	NA	NA	0.11	NA	0.11	0.11
25	0.12	0.18	NA	NA	NA	NA	NA	NA	0.15	0.18
26	0.13	0.24	0.13	0.08	0.12	0.18	0.13	0.18	0.15	0.24
26 DUP	NA	NA	NA	NA	NA	NA	NA	0.17	0.17	0.17
27	0.16	0.17	0.15	0.19	0.4	0.87	0.75	0.28	0.37	0.87
27 DUP	NA	NA	NA	NA	NA	NA	NA	0.43	0.43	0.43
29	0.12	0.16	0.09	0.09	0.27	0.25	0.11	0.14	0.15	0.27
3 DUP	NA	0.15	NA	NA	NA	NA	NA	NA	0.15	0.15
32	0.14	0.15	0.08	0.13	0.3	0.26	0.11	0.17	0.17	0.3
32 DUP	0.1	NA	NA	NA	NA	NA	NA	NA	0.1	0.1
36	0.12	0.18	0.14	0.11	0.28	0.24	0.13	0.18	0.17	0.28
36 DUP	0.12	NA	NA	NA	NA	NA	NA	NA	0.12	0.12
Average	0.12	0.16	0.11	0.12	0.26	0.29	0.16	0.18		
Maximum	0.16	0.24	0.15	0.19	0.86	0.87	0.75	0.43		

***APPENDIX III
REPORT CERTIFICATION FORM***

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
Yes	-
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry and Community Association	Cold Lake South site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Adekanmbi, Wunmi	Project Manager Assistant
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
-	-
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
-	-

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.

Wunmi Adekanmbi

Signature of the Representative of the Person Responsible / External Person Certifying the Report

29-Jan-2016

Report Issued Date (dd-mm-yyyy)

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

JOB #:2833-2015-30- A

**JANUARY - DECEMBER
2015**


Prepared for:

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

Attention: MIKE BISAGA

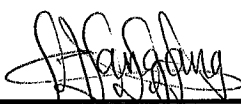
DATE: **January 28, 2016**

Prepared by:



Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Air Services

Reviewed by:



For Lily Lin, B.Sc.
Senior Project Manager, Air Services

SUMMARY

Maxxam Analytics Air Services Group conducted an Ambient Air monitoring program between January 2015 and December 2015 on the Maskwa Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the Project Coordinator.

Data presented in this report has undergone the Post-Final Validation Procedures, which include a cursory inspection of annual charts. If errors or omissions in the data are suspected or discovered after the initial submittal of data (monthly report), the post-validation step serves to re-evaluate the affected data. The report certification form is also included in this report to verify that the annual validation review has been completed, as per the Reporting Chapter (Chapter 9) of the Air Monitoring Directive (AMD).

The summary of basic statistics includes monthly mean, maximum, and minimum values as well as comparisons to the historical mean, maximum and minimum values from the previous calendar year are presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods during the monitoring period are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, Maskwa Site.

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

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	Wind Speed
	Relative Humidity
	Barometric Pressure
	Ambient Temperature
	Precipitation
Appendix II	Report Certification Form

1.0 Discussion

This annual validation report consists of data for parameters Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxide (NO), Nitrogen Dioxide (NO₂), Wind Speed (WS), Relative Humidity (RH), Barometric Pressure (BP), Ambient Temperature (TPX) and Precipitation.

The air monitoring trailer was located at Latitude: 54° 36' 18.612" N and Longitude: 110° 27' 9.719" W during the monitoring period.

The monitoring methods and equipment met all AMD requirements.

All monitoring analyzers and meteorological systems met the 90% operational uptime requirements during the monitoring period.

All data collected during the monitoring period were within the objectives outlined in the Alberta Ambient Air Quality Objectives and Guidelines Summary (AAAQOs).

No annual ambient air monitoring station audit was performed during the monitoring period.

The annual Maxxam internal quality audit was performed on November 17.

The summaries of the monthly maintenance report for the monitoring period are presented below:

SULPHUR DIOXIDE (SO2)

January	The pump was rebuilt and the analog output calibration was performed on January 15.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 at hour 15 was invalidated as the analyzer was recovering from a power outage.
July	The analyzer started spanning high after the calibration on July 10. The sample pump was rebuilt on July 13. No data was discarded due to this issue. Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	The analyzer failed the daily span check on August 24. The LICA-owned API 100E, S/N: 508, analyzer was replaced with the Maxxam-supplied API 100A, S/N: 1124 on August 24. Hourly data was invalidated back to the last good daily calibration which was August 23. Thirty-six hours of data were discarded due to this issue.
September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	The routine annual internal quality audit was completed on November 17.
December	The LICA-owned API 100E, S/N: 508, analyzer was installed back on site after maintenance was performed at Maxxam shop.

HYDROGEN SULPHIDE (H2S)

January	The analog output calibration was performed on January 15.
February	The analyzer started drifting low on January 29. As found points checks were performed on February 2 and February 3 using different calibrators. The results were good. The scrubber material was changed on February 10 following a shut-down calibration. The analyzer was allowed time to stabilize overnight and a post-repair calibration was performed on February 11. Fifteen hours of data were not valid due to this maintenance event.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 at hour 15 was invalidated as the analyzer was recovering from a power outage.
July	Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	No issues were identified.

September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	The routine annual internal quality audit was completed on November 17.
December	The analyzer spanned high on December 17 due to the failure of the sample pump. The sample pump was rebuilt on December 18. Data was invalidated back to the last good calibration, which was December 16. Thirty-six hours of data were discarded due to this event.

TOTAL HYDROCARBONS (THC)

January	No issues were identified.
February	On February 19, the zero-air pump was rebuilt, the tubing was replaced, the scrubber material was renewed and the pump cabinet was replaced with a new unit. Two hours of data were invalid because of this maintenance event.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 at hour 15 was invalidated as the analyzer was recovering from a power outage.
July	Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	No issues were identified.
September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	The routine annual internal quality audit was completed on November 17.
December	The analyzer failed on December 2 due to the failure of the zero air generator. The Thermo 51i, S/N: 436609738, analyzer was replaced with the Thermo 51C, S/N: 436609739, analyzer on December 2 for maintenance purposes. Twenty four hours of data were discarded due to this event. Eleven hours of data were further discarded as the zero air generator failed again on December 13. The issue was fixed on the same day.

NITROGEN DIOXIDE (NO2)

January	The analog output calibration was performed on January 15.
February	The analyzer was put into Maintenance mode on February 19 at hour 12 while the case fan was being replaced.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.

June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 at hour 15 was invalidated as the analyzer was recovering from a power outage.
July	Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	The LICA-owned API 200E, S/N: 593, analyzer was replaced with the Maxxam-supplied API 200A, S/N: 1899 on August 13 for maintenance purposes. The pump was rebuilt on August 27. Thirty hours of data are invalid due to these events.
September	The LICA-owned API 200E, S/N: 593, analyzer was installed back on site on September 15 after maintenance was performed at Maxxam shop. The ozone scrubber material was renewed, the NO2 converter was changed, and the pump and perm tube were replaced prior to installation. Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	The routine annual internal quality audit was completed on November 17.
December	No issues were identified.

WIND SPEED (WS)

January	Five hourly maximum data collected on January 7 at hour 1 and hour 6 and January 11 from hour 8 to hour 10 were invalidated due to spikes.
February	Hourly maximum data collected on February 21 at hour 23 was invalidated due to a spike: Reason unknown.
March	Hourly maximum data collected on March 4 between hour 1 and hour 3 and at hour 7 were invalidated due to a spike. Reason unknown.
April	No issues were identified.
May	No issues were identified.
June	Three hourly maximum data collected on June 16 at hour 15 and hour 16 and on June 25 at hour 16 were invalidated due to spikes. Reason unknown. Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer. Hourly maximum data collected on June 21 at hour 15 was invalidated as the analyzer was recovering from a power outage.
July	Hourly maximum data collected on July 4 at hour 17 was invalidated due to a spike. Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	No issues were identified.
September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	No issues were identified.
December	No issues were identified.

RELATIVE HUMIDITY (RH)

January	No issues were identified.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.
July	Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	No issues were identified.
September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	No issues were identified.
December	No issues were identified.

BAROMETRIC PRESSURE (BP)

January	No issues were identified.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.
July	Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	No issues were identified.
September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	No issues were identified.
December	No issues were identified.

PRECIPITATION

January	No issues were identified.
February	No issues were identified.
March	The rain guage seasonal verification/maintenance was performed on March 24.
April	No issues were identified.
May	No issues were identified.
June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.
July	Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	No issues were identified.
September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	The routine annual internal quality audit was completed on November 17.
December	No issues were identified.

AMBIENT TEMPERATURE (TPX)

No issue was identified this year.

January	No issues were identified.
February	No issues were identified.
March	No issues were identified.
April	No issues were identified.
May	No issues were identified.
June	Hourly data collected on June 29 at hour 5 was invalidated as the logger time was being adjusted to match the time on the polling computer.
July	Twelve hours of data are missing on July 9 from hour 8 to hour 19 due to a power supply maintenance that was performed by IOR operator.
August	No issues were identified.
September	Three hours of data collected on September 1 at hour 10 and on September 16 from hour 20 to hour 21 were invalidated due to power failures.
October	No issues were identified.
November	No issues were identified.
December	No issues were identified.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

All data collected during the monitoring period were within the objectives as outlined in the AAAQOs.

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

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

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

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

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

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

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

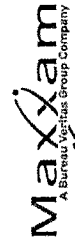
Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB-SO2)							OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE (PPB)
			≤ 20 ppb	20 < C ≤ 60 ppb	60 < C ≤ 110 ppb	110 < C ≤ 170 ppb	170 < C ≤ 340 ppb	340 ppb	1-HR	24-HR	1-HR	24-HR		
January	704	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	1.0
February	638	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.8
March	705	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.7
April	684	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.6
May	708	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.6
June	683	99.9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.9
July	675	98.4	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	1.1
August	662	95.2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.8
September	682	99.6	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.3
October	708	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.8
November	683	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.7
December	704	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.4
											ANNUAL AVERAGE		0.7	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives/Annual Average*	8.0	PPB
Annual Average for 2015	0.7	PPB



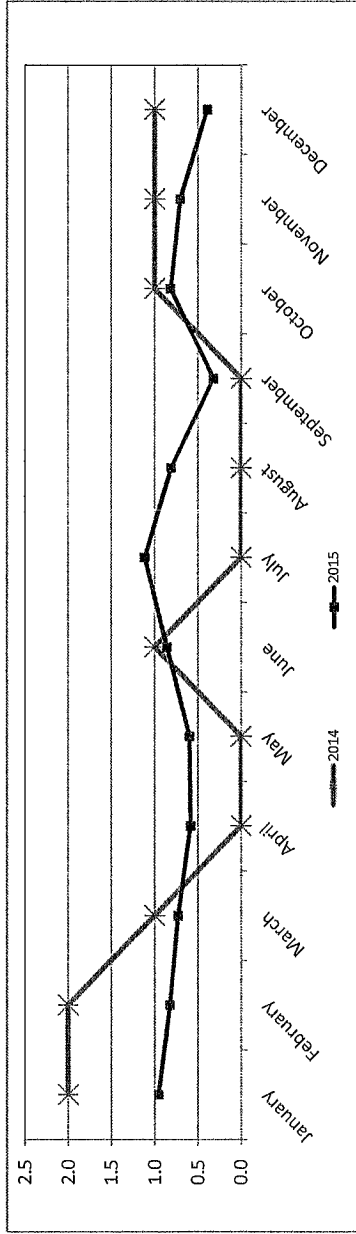
SULPHUR DIOXIDE (SO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	2.0	0	19		1.0	0	14		1.04
February	2.0	0	27		0.8	0	17		1.17
March	1.0	0	23		0.7	0	18		0.27
April	0.0	0	11		0.6	0	8		-0.59
May	0.0	0	8		0.6	0	9		-0.60
June	1.0	0	17		0.9	0	8		0.14
July	0.0	0	11		0.4	0	10		-1.12
August	0.0	0	4		0.8	0	11		-0.82
September	0.0	0	5		0.3	0	5		-0.32
October	1.0	0	8		0.8	0	12		0.18
November	1.0	0	11		0.7	0	7		0.29
December	1.0	0	13		0.4	0	14		0.60

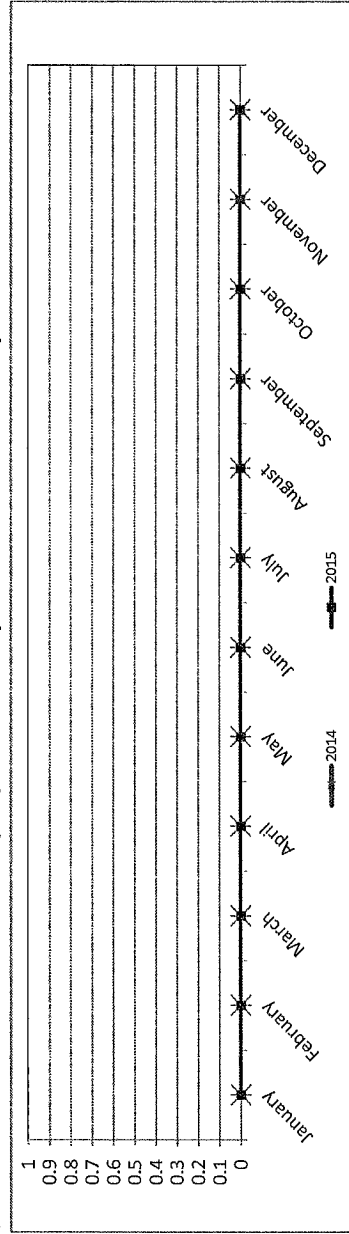
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

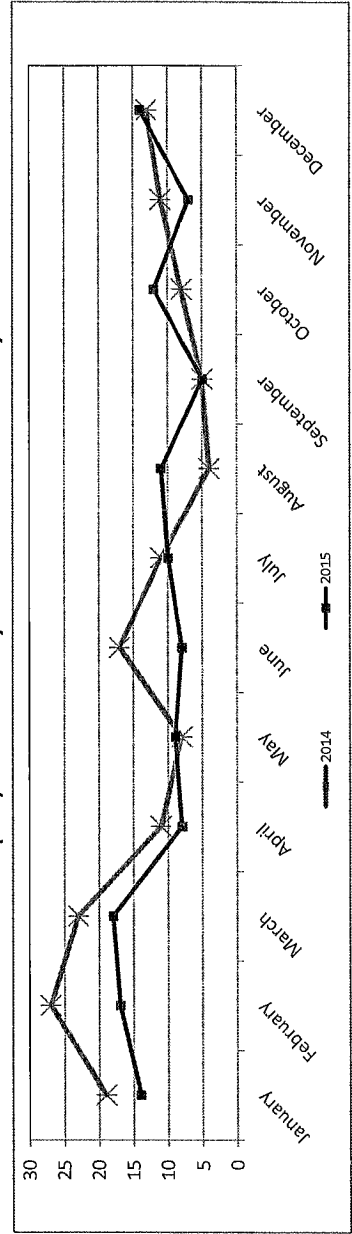
SULPHUR DIOXIDE (SO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA30
 SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20.0	4.55	5.93	7.45	5.80	4.07	4.56	5.19	4.05	5.11	13.57	12.10	5.12	5.77	7.64	4.79	4.21	100.00
< 60.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.55	5.93	7.45	5.80	4.07	4.56	5.19	4.05	5.11	13.57	12.10	5.12	5.77	7.64	4.79	4.21	

Calm : .00 %

Total # Operational Hours : 8236

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20.0	375	489	614	478	336	376	428	334	421	1118	997	422	476	630	395	347	8236
< 60.0																	
< 110.0																	
< 170.0																	
< 340.0																	
>= 340.0																	
Totals	375	489	614	478	336	376	428	334	421	1118	997	422	476	630	395	347	

Calm : .00 %

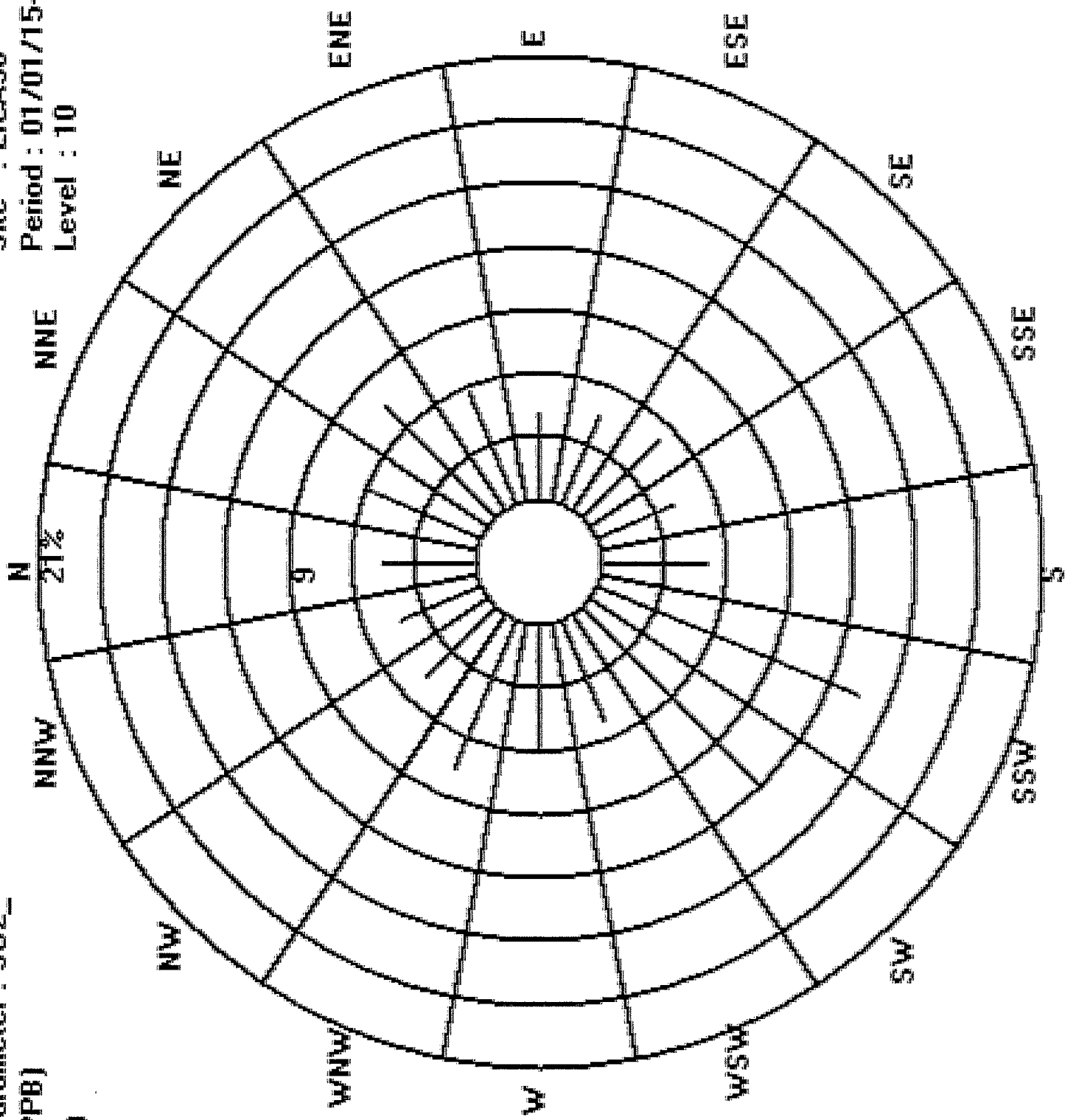
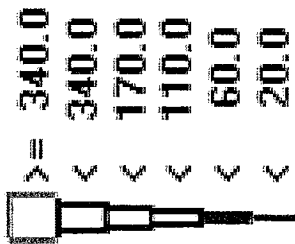
Total # Operational Hours : 8236

Logger : 30 Parameter : SO2_

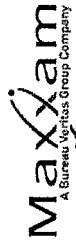
Site : LICA30

Class Limits (PPB)

Period : 01/01/15-12/31/15
Level : 10



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE (H2S) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (PPB H2S)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 3 ppb	4 < C ≤ 10 ppb	11 < C ≤ 50 ppb	> 50 ppb	1-HR	24-HR	1-HR	24-HR	
January	699	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
February	608	97.8	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
March	706	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
April	684	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
May	708	100.0	99.72%	0.28%	0.00%	0.00%	10	3	0	0	0
June	683	99.9	99.85%	0.15%	0.00%	0.00%	10	3	0	0	0
July	691	98.4	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
August	707	100.0	99.72%	0.28%	0.00%	0.00%	10	3	0	0	0
September	682	99.6	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
October	708	100.0	99.58%	0.42%	0.00%	0.00%	10	3	0	0	0
November	682	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
December	667	95.2	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
N/D - Valid Data Not Available											
*Number of Readings - included calibration hours											
**if Alberta Ambient Air Quality Objectives are not available, N/D is used.											
Alberta Ambient Air Quality Objectives/Annual Average*							1-HR		24-HR		ANNUAL AVERAGE
Annual Average for 2015							10		3		0

Alberta Ambient Air Quality Objectives/Annual Average*	N/D	PPB
Annual Average for 2015	0	PPB



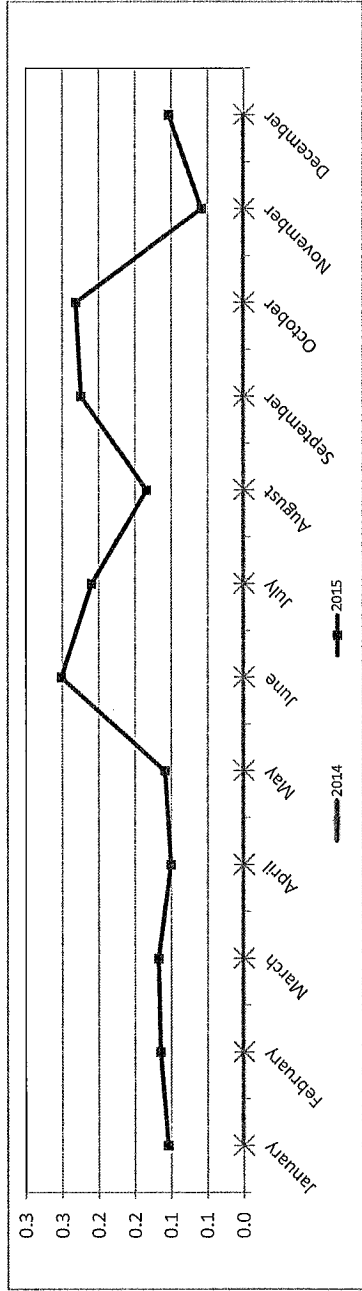
HYDROGEN SULPHIDE (H2S) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	0.0	0	2		0.1	0	2		-0.10
February	0.0	0	7		0.1	0	1		-0.12
March	0.0	0	2		0.1	0	1		-0.12
April	0.0	0	2		0.1	0	1		-0.10
May	0.0	0	1		0.1	0	4		-0.11
June	0.0	0	3		0.3	0	8		-0.25
July	0.0	0	9		0.2	0	3		-0.21
August	0.0	0	6		0.1	0	5		-0.13
September	0.0	0	13		0.2	0	3		-0.22
October	0.0	0	4		0.2	0	7		-0.23
November	0.0	0	2		0.1	0	1		-0.06
December	0.0	0	2		0.1	0	1		-0.10

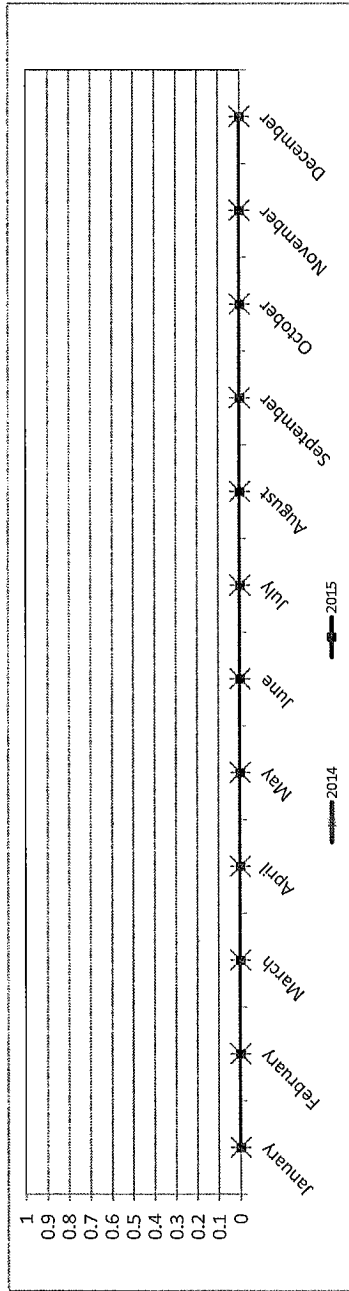
N/D - Valid Data Not Available

* Annual peak is bolded and highlighted.

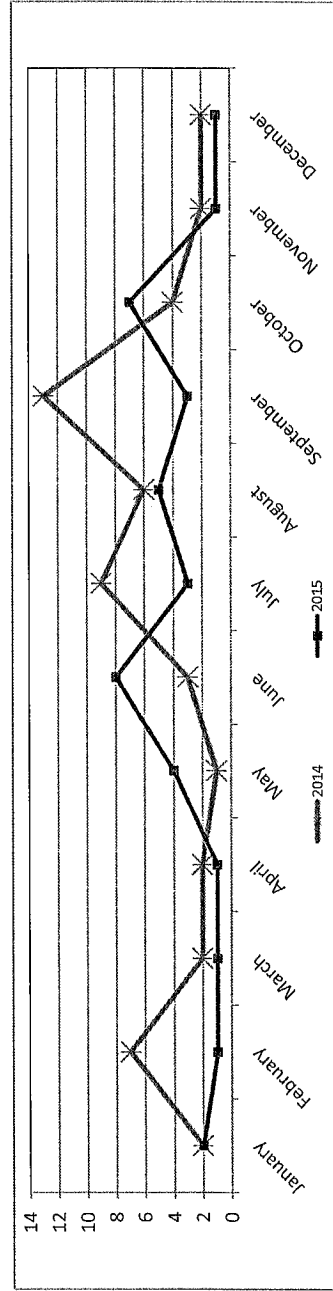
HYDROGEN SULPHIDE (H2S) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



HYDROGEN SULPHIDE (H2S) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



HYDROGEN SULPHIDE (H2S) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA30
H2S_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	4.41	5.88	7.45	5.90	4.15	4.48	5.17	4.13	5.15	13.55	12.13	5.09	5.77	7.73	4.66	4.09	99.82
< 10.0	.00	.01	.00	.02	.01	.06	.03	.00	.00	.02	.00	.00	.00	.00	.00	.00	.17
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.41	5.89	7.45	5.93	4.17	4.54	5.21	4.13	5.15	13.58	12.13	5.09	5.77	7.73	4.66	4.09	

Calm : .00 %

Total # Operational Hours : 8225

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	363	484	613	486	342	369	426	340	424	1115	998	419	475	636	384	337	8211
< 10.0	1	2	1	2	1	5	3		2								14
< 50.0																	
>= 50.0																	
Totals	363	485	613	488	343	374	429	340	424	1117	998	419	475	636	384	337	

Calm : .00 %

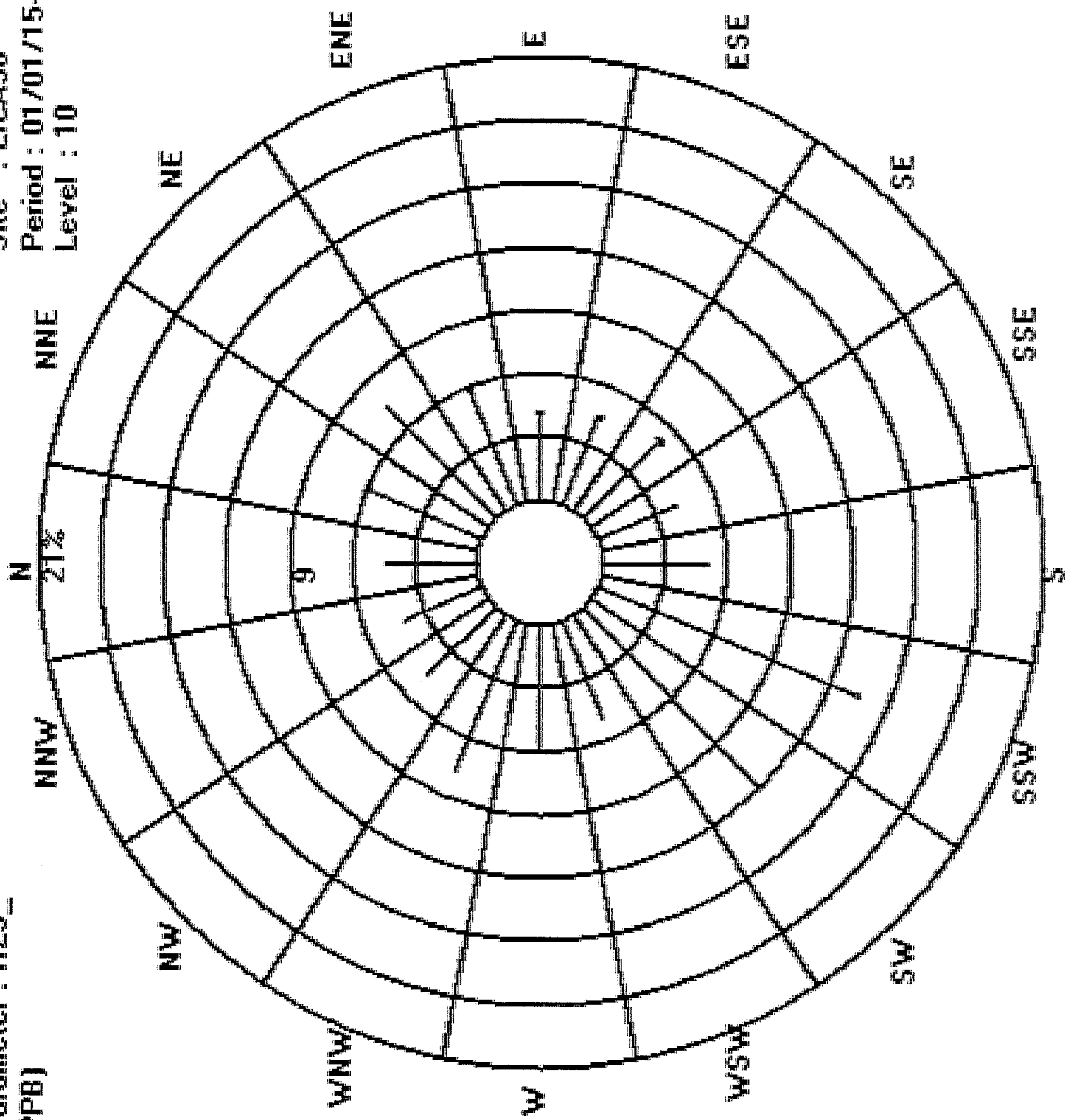
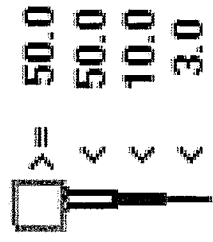
Total # Operational Hours : 8225

Logger : 30 Parameter : H25_

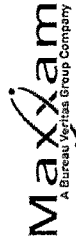
Site : LICA30

Class Limits (PPB)

Period : 01/01/15-12/31/15
Level : 10



TOTAL HYDROCARBON



TOTAL HYDROCARBONS (THC) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPM) (THC)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE	
			≤ 3.0 ppm	3.1 < C ≤ 10.0 ppm	10.1 < C ≤ 50.0 ppm	> 50.0 ppm	1-HR	24-HR	1-HR		24-HR
January	708	100.0	94.21%	5.79%	0.00%	0.00%	-	-	-	-	2.4
February	634	99.7	99.84%	0.16%	0.00%	0.00%	-	-	-	-	2.2
March	705	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.2
April	684	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.1
May	708	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.1
June	683	99.9	99.71%	0.29%	0.00%	0.00%	-	-	-	-	2.1
July	693	98.4	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.1
August	708	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.1
September	682	99.6	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.1
October	708	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.1
November	675	98.9	95.41%	4.59%	0.00%	0.00%	-	-	-	-	2.2
December	666	95.2	93.39%	6.61%	0.00%	0.00%	-	-	-	-	2.3
N/D - Valid Data Not Available										ANNUAL AVERAGE	2.2

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives/Annual Average**	N/D	PPM
Annual Average for 2015	2.2	PPM



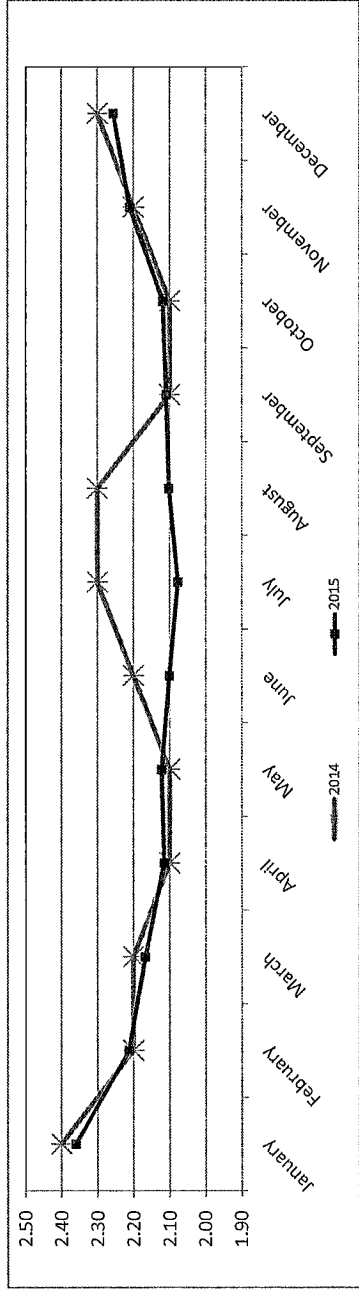
TOTAL HYDROCARBONS (THC) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPM

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	MEAN		
January	2.30	1.9	5.72	2.36	2.0	5.1	2.36	0.04	
February	2.20	1.9	4.7	2.21	1.9	8.5	2.21	-0.01	
March	2.20	1.6	3.6	2.17	1.9	2.9	2.17	0.03	
April	2.10	1.9	3.5	2.12	2.0	2.6	2.12	-0.02	
May	2.10	1.9	2.6	2.12	2.0	2.7	2.12	-0.02	
June	2.20	1.9	4.9	2.10	1.9	5.3	2.10	0.10	
July	2.30	1.9	3.1	2.08	1.9	2.7	2.08	0.22	
August	2.30	1.9	3.6	2.10	1.9	2.9	2.10	0.20	
September	2.10	1.8	3.3	2.11	1.9	2.6	2.11	-0.01	
October	2.10	1.9	2.8	2.12	1.9	2.8	2.12	-0.02	
November	2.20	1.6	3.5	2.21	1.9	4.0	2.21	-0.01	
December	2.30	1.9	3.4	2.26	1.7	4.2	2.26	0.04	

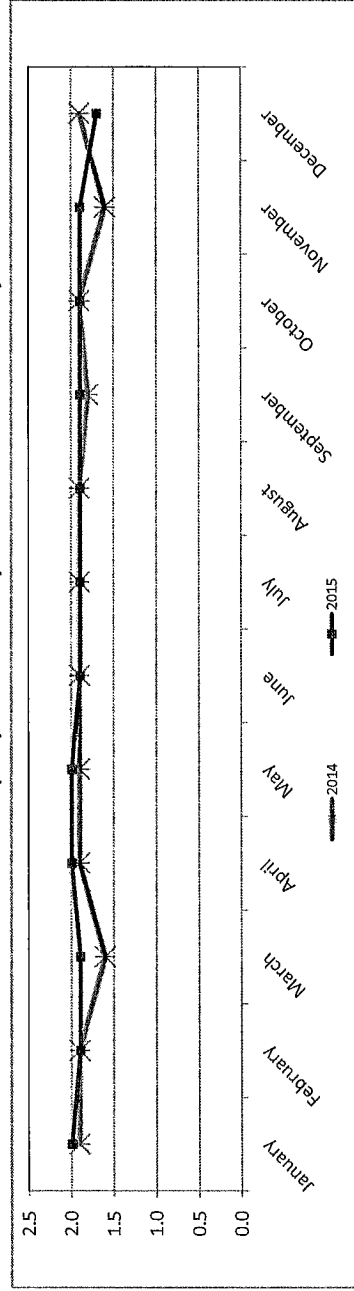
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

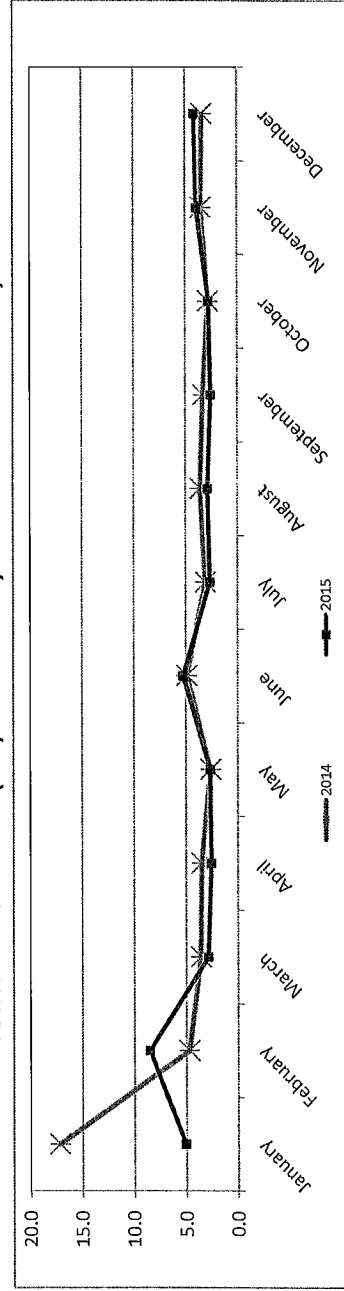
TOTAL HYDROCARBONS (THC) 2014 Monthly Mean vs. 2015 Monthly Mean in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPM



LICA30
 THC / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
 Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	4.49	5.90	7.43	5.83	3.97	4.48	5.19	4.13	5.02	13.08	11.32	4.96	5.77	7.57	4.82	4.17	98.21
< 10.0	.02	.03	.06	.02	.06	.06	.07	.02	.06	.47	.69	.10	.02	.03	.01	.01	1.78
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.51	5.93	7.49	5.86	4.03	4.54	5.27	4.15	5.08	13.55	12.01	5.07	5.80	7.60	4.83	4.19	

Calm : .00 %

Total # Operational Hours : 8254

Distribution By Samples

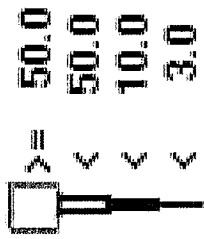
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	371	487	614	482	328	370	429	341	415	1080	935	410	477	625	398	345	8107
< 10.0	2	3	5	2	5	5	6	2	5	39	57	9	2	3	1	1	147
< 50.0																	
>= 50.0																	
Totals	373	490	619	484	333	375	435	343	420	1119	992	419	479	628	399	346	

Calm : .00 %

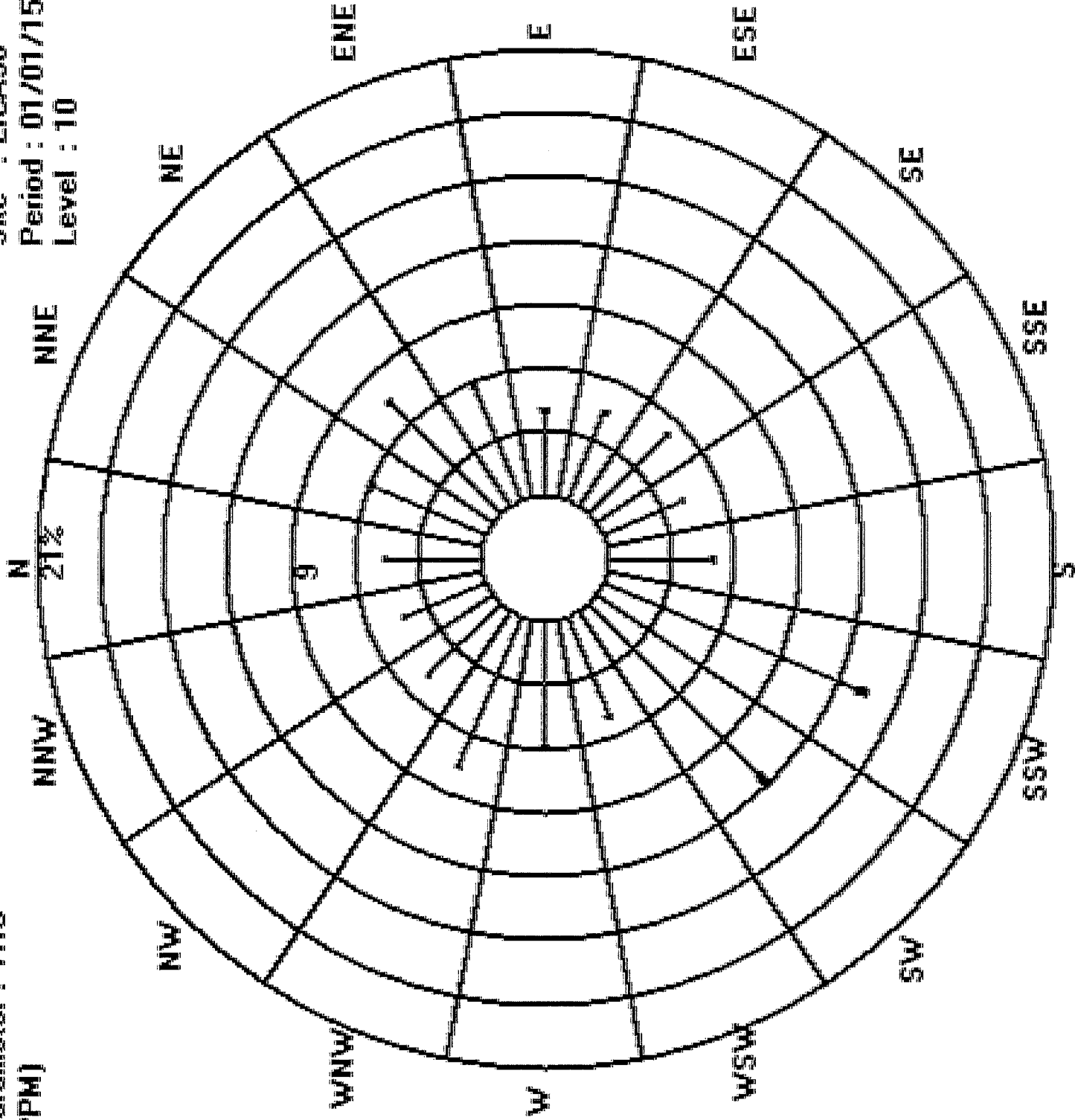
Total # Operational Hours : 8254

Logger : 30 Parameter : THC

Class Limits (PPM)



Site : LICA30
Period : 01/01/15-12/31/15
Level : 10



OXIDES OF NITROGEN

OXIDES OF NITROGEN (NOx) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB-NOx)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	678	100.0	98.67%	1.33%	0.00%	0.00%	-	-	-	-	9.5
February	628	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	-	5.0
March	680	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	3.5
April	678	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.0
May	677	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.7
June	679	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.8
July	661	98.4	100.00%	0.00%	0.00%	0.00%	-	-	-	-	3.2
August	614	96.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	3.0
September	654	99.4	100.00%	0.00%	0.00%	0.00%	-	-	-	-	3.0
October	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	3.9
November	679	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	5.5
December	681	100.0	99.56%	0.44%	0.00%	0.00%	-	-	-	-	7.4
										ANNUAL AVERAGE	4.2

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average	N/D	PPB
Annual Average for 2015	4.2	PPB



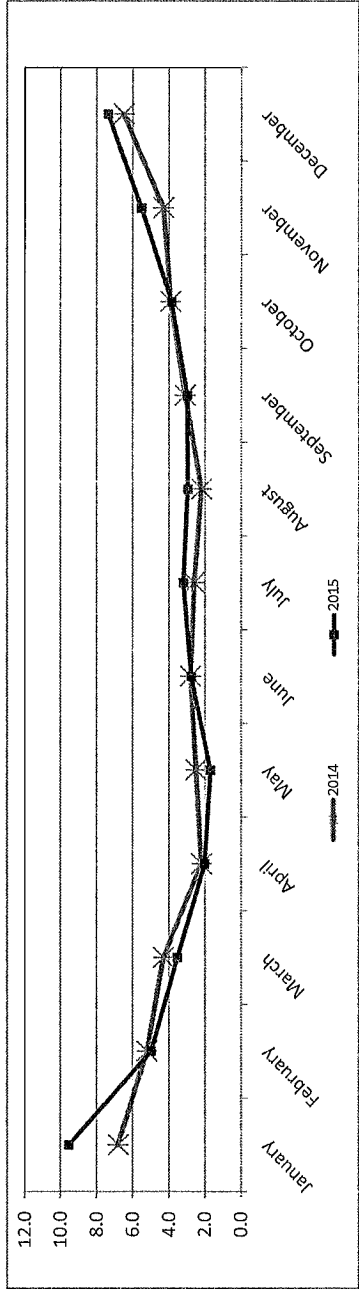
OXIDES OF NITROGEN (NOx) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	6.8	0.0	37.6	9.5	0.0	68.2	-2.7
February	5.2	0.0	50.2	5.0	0.0	32.0	0.2
March	4.3	0.0	38.2	3.5	0.0	36.9	0.8
April	2.2	0.0	20.5	2.0	0.0	26.0	0.2
May	2.5	0.0	20.0	1.7	0.0	17.7	0.8
June	2.8	0.0	33.8	2.8	0.0	24.1	0.0
July	2.6	0.0	22.3	3.2	0.0	28.3	-0.6
August	2.2	0.0	19.8	3.0	0.0	36.3	-0.8
September	3.1	0.0	32.6	3.0	0.0	26.2	0.1
October	3.9	0.0	85.6	3.9	0.0	29.2	0.0
November	4.3	0.0	35.8	5.5	0.0	40.8	-1.2
December	6.5	0.5	48.8	7.4	0.0	53.0	-0.87

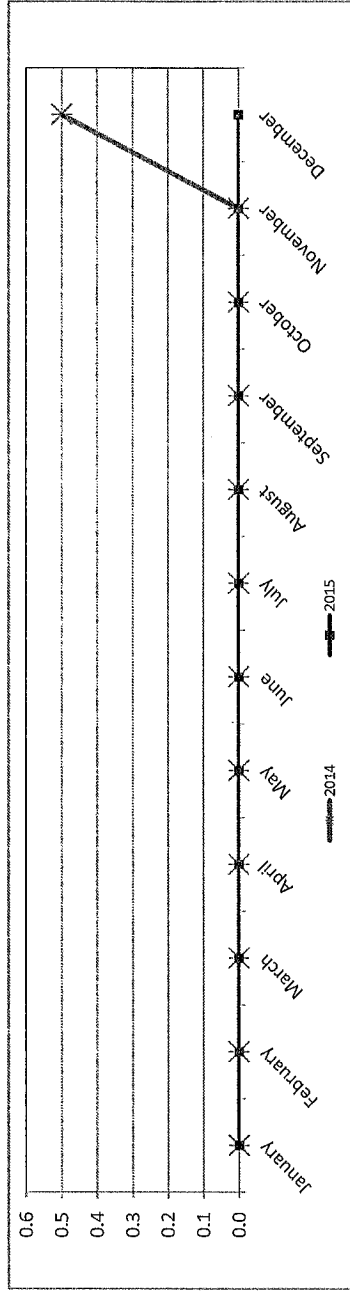
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

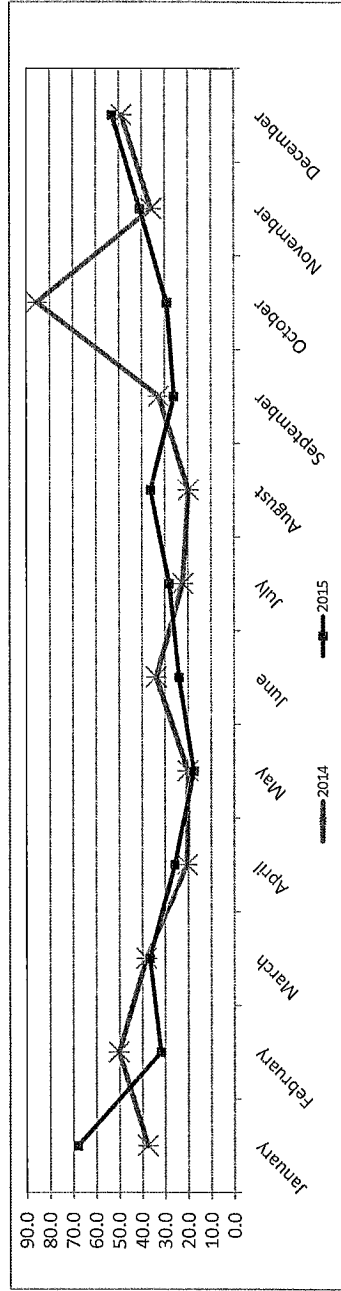
OXIDES OF NITROGEN (NOx) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



NOX_ / WDR Joint Frequency Distribution (Percent)

LICA30

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 30
 Site Name : LICA30
 Parameter : NOX
 Units : PPF

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	4.55	5.96	7.30	5.88	4.11	4.55	5.22	4.13	5.13	13.46	12.06	5.10	5.75	7.54	4.83	4.18	99.84
< 110.0	.00	.00	.02	.00	.01	.01	.00	.00	.00	.01	.04	.00	.00	.01	.01	.02	.15
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.55	5.96	7.32	5.88	4.12	4.56	5.22	4.13	5.13	13.47	12.11	5.10	5.75	7.56	4.84	4.21	

Calm : .00 %

Total # Operational Hours : 8146

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	371	486	595	479	335	371	426	337	418	1097	983	416	469	615	394	341	8133
< 110.0		2			1	1				1	4			1	1	2	13
< 210.0																	
>= 210.0																	
Totals	371	486	597	479	336	372	426	337	418	1098	987	416	469	616	395	343	

Calm : .00 %

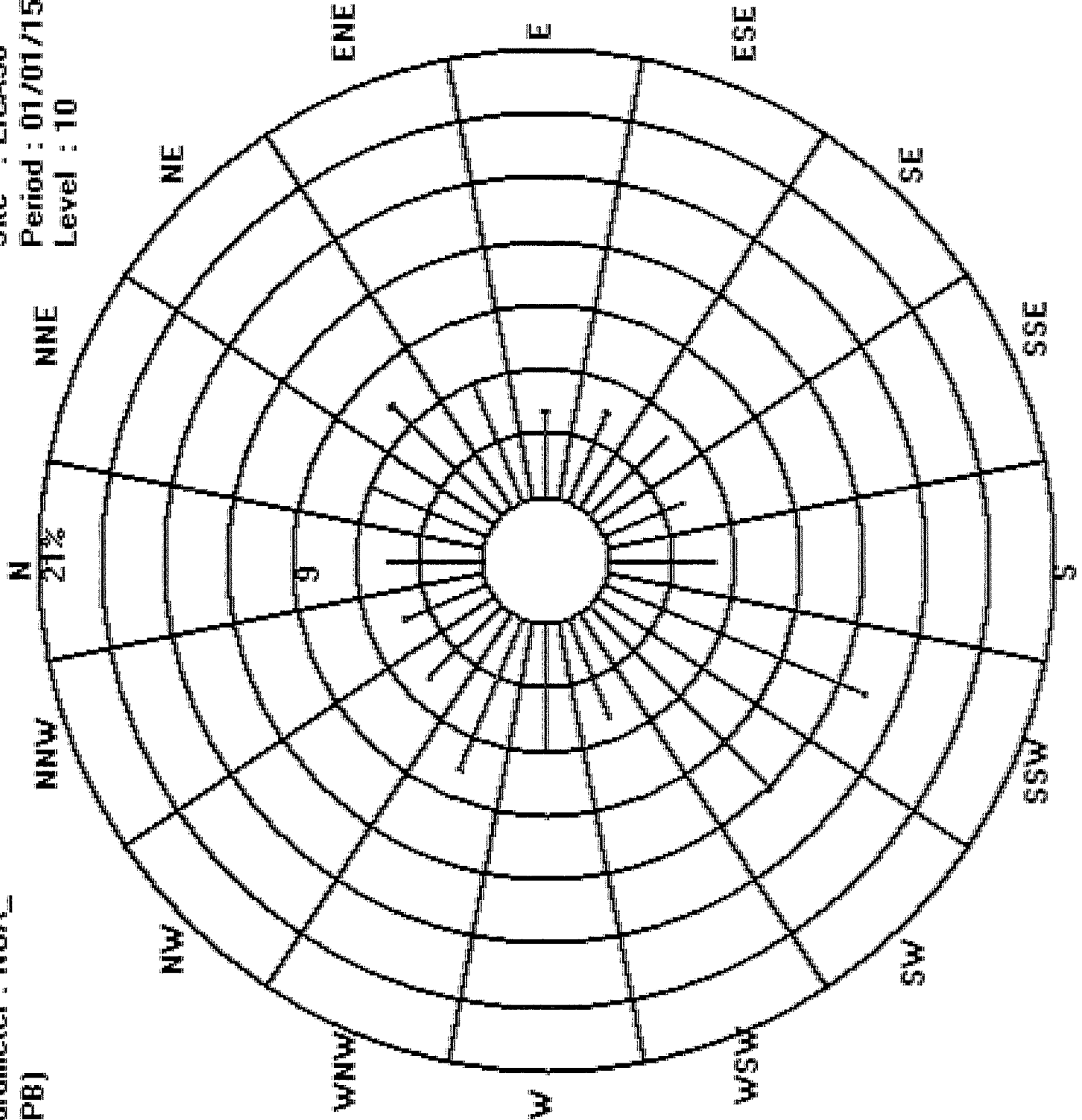
Total # Operational Hours : 8146

Logger : 30 Parameter : NOX_

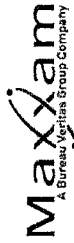
Class Limits (PPB)



Site : LICA30
Period : 01/01/15-12/31/15
Level : 10



NITRIC OXIDES



NITRIC OXIDE (NO) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB:NO)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	678	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.7
February	628	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.1
March	680	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.8
April	678	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.3
May	677	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.2
June	679	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.5
July	661	98.4	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.7
August	614	96.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.7
September	654	99.4	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.5
October	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.6
November	679	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.4
December	681	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.0
ANNUAL AVERAGE											1.0

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	1.0	PPB



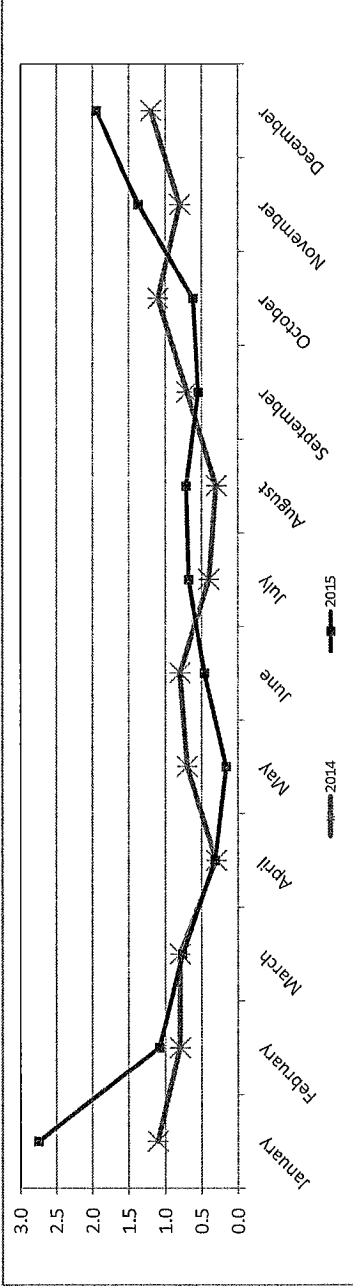
NITRIC OXIDE (NO) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	1.1	0.0	18.5		2.7	0.0	48.1		-1.6
February	0.8	0.0	27.5		1.1	0.0	13.6		-0.3
March	0.8	0.0	20.4		0.8	0.0	16.7		0.0
April	0.3	0.0	10.3		0.3	0.0	9.6		0.0
May	0.7	0.0	10.6		0.2	0.0	4.9		0.5
June	0.8	0.0	22.3		0.5	0.0	12.1		0.3
July	0.4	0.0	11.6		0.7	0.0	16.0		-0.3
August	0.3	0.0	7.9		0.7	0.0	20.9		-0.4
September	0.7	0.0	20.3		0.5	0.0	12.2		0.2
October	1.1	0.0	68.2		0.6	0.0	13.0		0.5
November	0.8	0.0	19.3		1.4	0.0	27.2		-0.6
December	1.2	0.0	18.0		2.0	0.0	36.0		-0.8

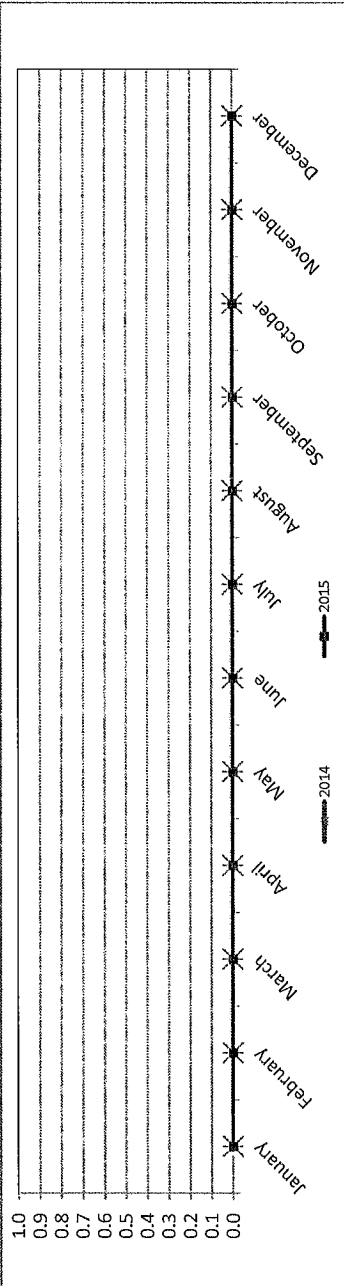
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

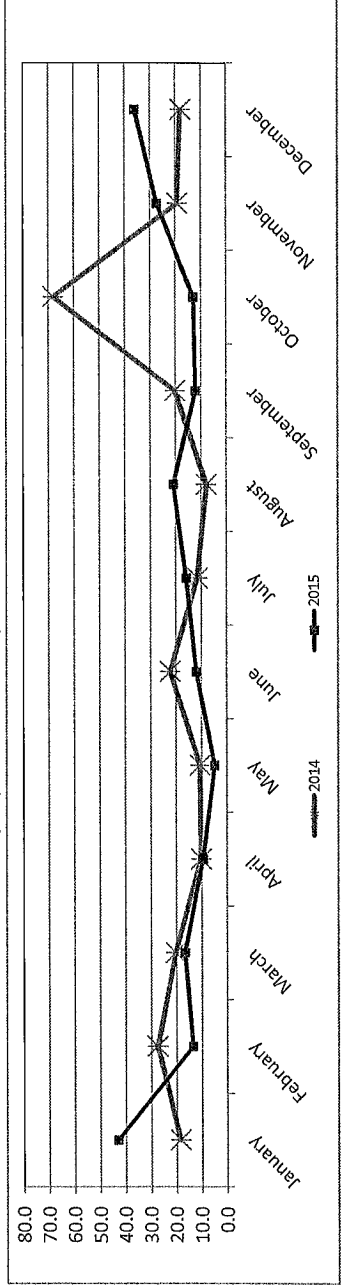
NITRIC OXIDE (NO) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITRIC OXIDE (NO) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITRIC OXIDE (NO) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



NO_ / WDR Joint Frequency Distribution (Percent)
 LIC330

01/01/15 thru 12/31/15
 Distribution By % Of Samples

Logger Id : 30
 Site Name : LIC330
 Parameter : NO
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	4.55	5.96	7.32	5.88	4.12	4.56	5.22	4.13	5.13	13.47	12.11	5.10	5.75	7.56	4.84	4.21	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.55	5.96	7.32	5.88	4.12	4.56	5.22	4.13	5.13	13.47	12.11	5.10	5.75	7.56	4.84	4.21	

Calm : .00 %

Total # Operational Hours : 8146

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	371	486	597	479	336	372	426	337	418	1098	987	416	469	616	395	343	8146
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	371	486	597	479	336	372	426	337	418	1098	987	416	469	616	395	343	

Calm : .00 %

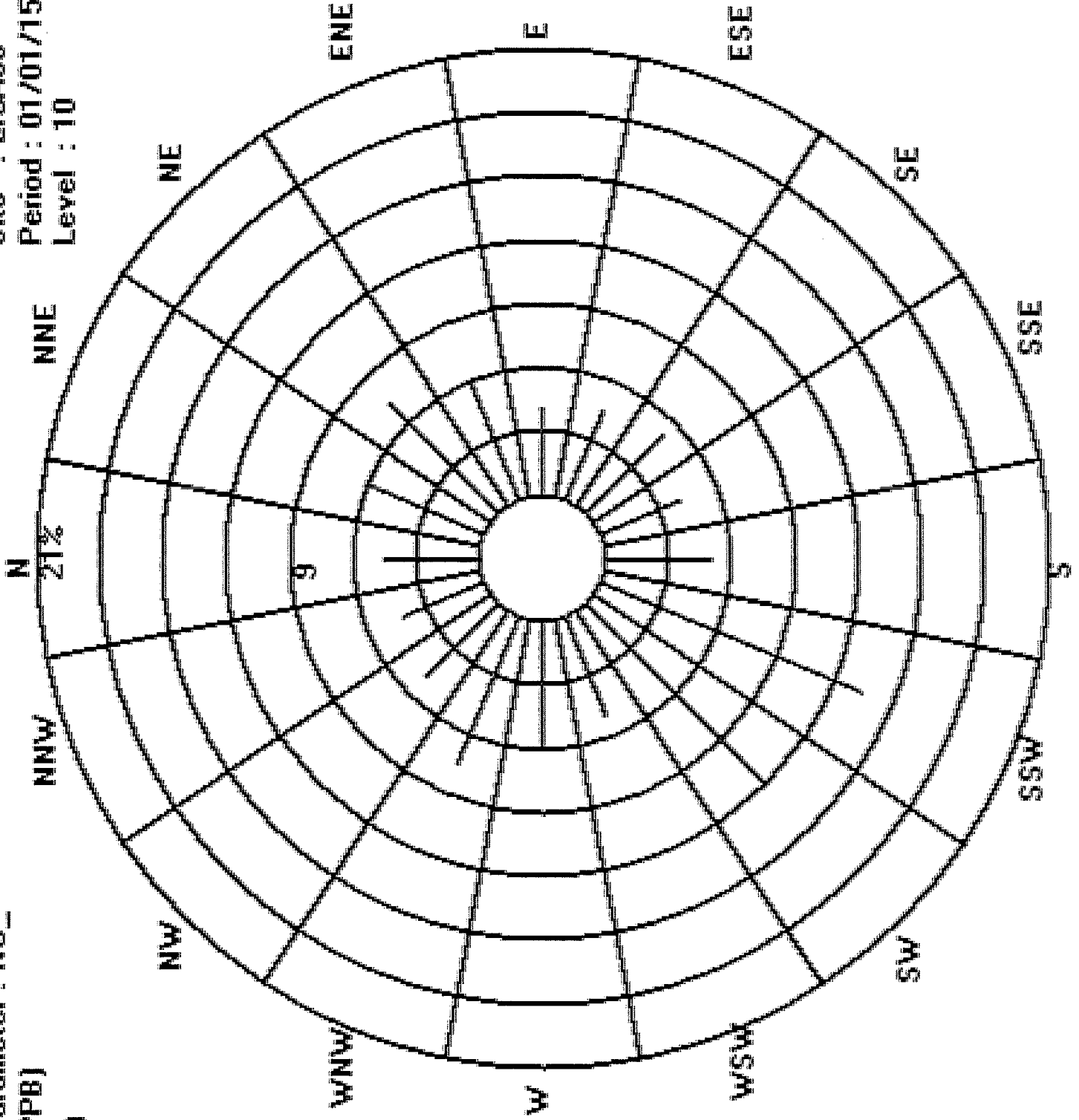
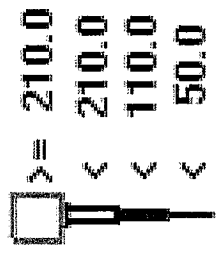
Total # Operational Hours : 8146

Logger : 30 Parameter : NO_

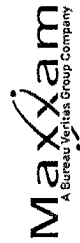
Site : LICA30

Class Limits (PPB)

Period : 01/01/15-12/31/15
Level : 10



NITROGEN DIOXIDE



NITROGEN DIOXIDE (NO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB NO2)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	678	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	6.8
February	628	99.9	100.00%	0.00%	0.00%	0.00%	159	-	0	-	3.9
March	680	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.8
April	678	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.7
May	677	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.6
June	679	99.9	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.3
July	661	98.4	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.5
August	614	96.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.2
September	654	99.4	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.4
October	682	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	3.2
November	679	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	4.2
December	681	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	5.4
										ANNUAL AVERAGE	3.3

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	24	PPB
Annual Average for 2015	3.3	PPB



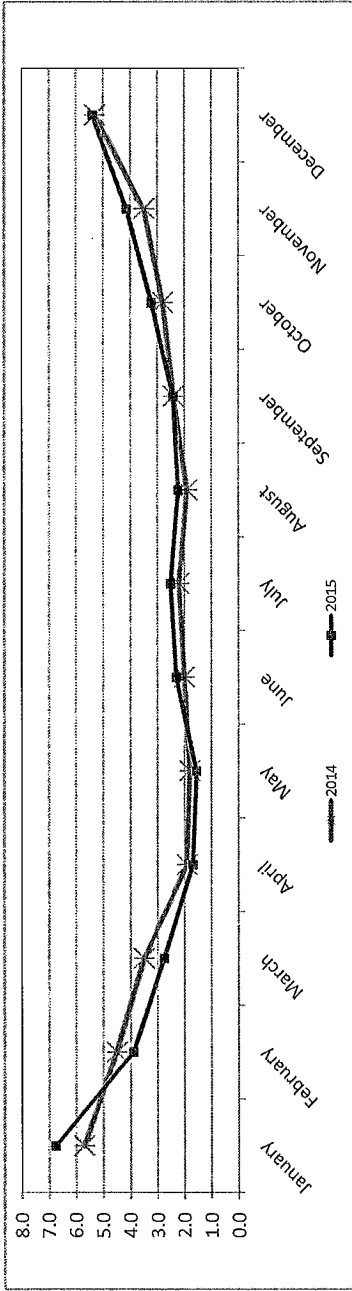
NITROGEN DIOXIDE (NO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	5.7	0.0	30.6		6.8	0.0	31.7		-1.1
February	4.5	0.0	33.7		3.9	0.0	20.2		0.6
March	3.5	0.0	22.9		2.8	0.0	26.5		0.7
April	1.9	0.0	16.6		1.7	0.0	16.4		0.2
May	1.8	0.0	14.5		1.6	0.0	15.2		0.2
June	2.0	0.0	23.3		2.3	0.0	16.0		-0.3
July	2.2	0.0	16.7		2.5	0.0	19.6		-0.3
August	1.9	0.0	13.1		2.2	0.0	22.1		-0.3
September	2.4	0.0	16.9		2.4	0.0	15.3		0.0
October	2.8	0.0	22.2		3.2	0.0	20.7		-0.4
November	3.5	0.0	22.3		4.2	0.0	29.8		-0.7
December	5.3	0.0	34.9		5.4	0.0	31.1		-0.1

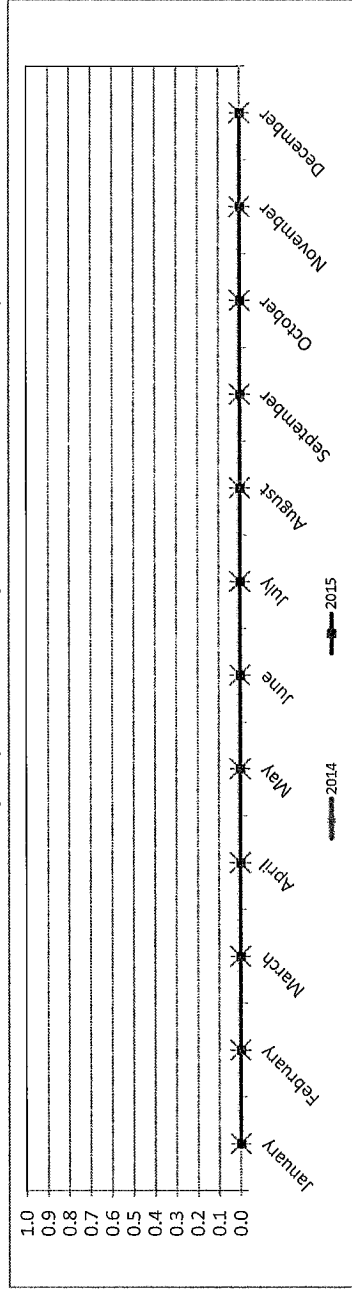
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

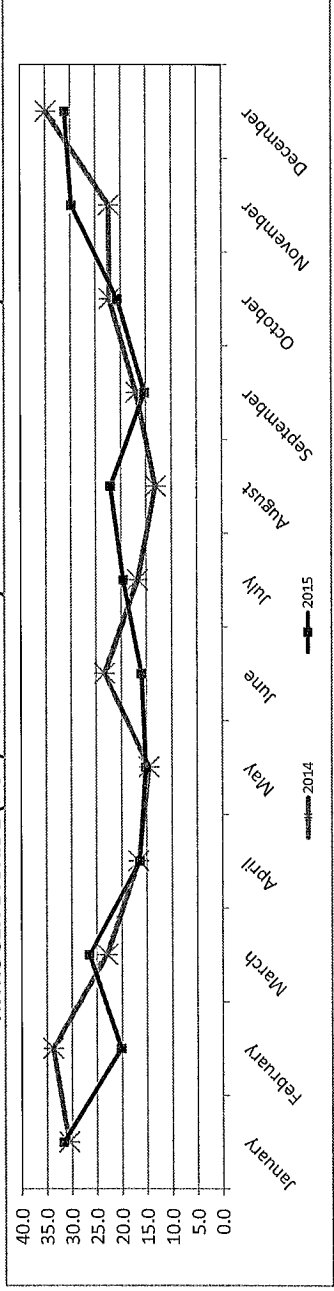
NITROGEN DIOXIDE (NO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA30
 NO2_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
 Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	4.55	5.96	7.32	5.88	4.12	4.56	5.22	4.13	5.13	13.47	12.11	5.10	5.75	7.56	4.84	4.21	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.55	5.96	7.32	5.88	4.12	4.56	5.22	4.13	5.13	13.47	12.11	5.10	5.75	7.56	4.84	4.21	

Calm : .00 %

Total # Operational Hours : 8146

Distribution By Samples





Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 50.0	371	486	597	479	336	372	426	337	418	1098	987	416	469	616	395	343	8146
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	371	486	597	479	336	372	426	337	418	1098	987	416	469	616	395	343	

Calm : .00 %

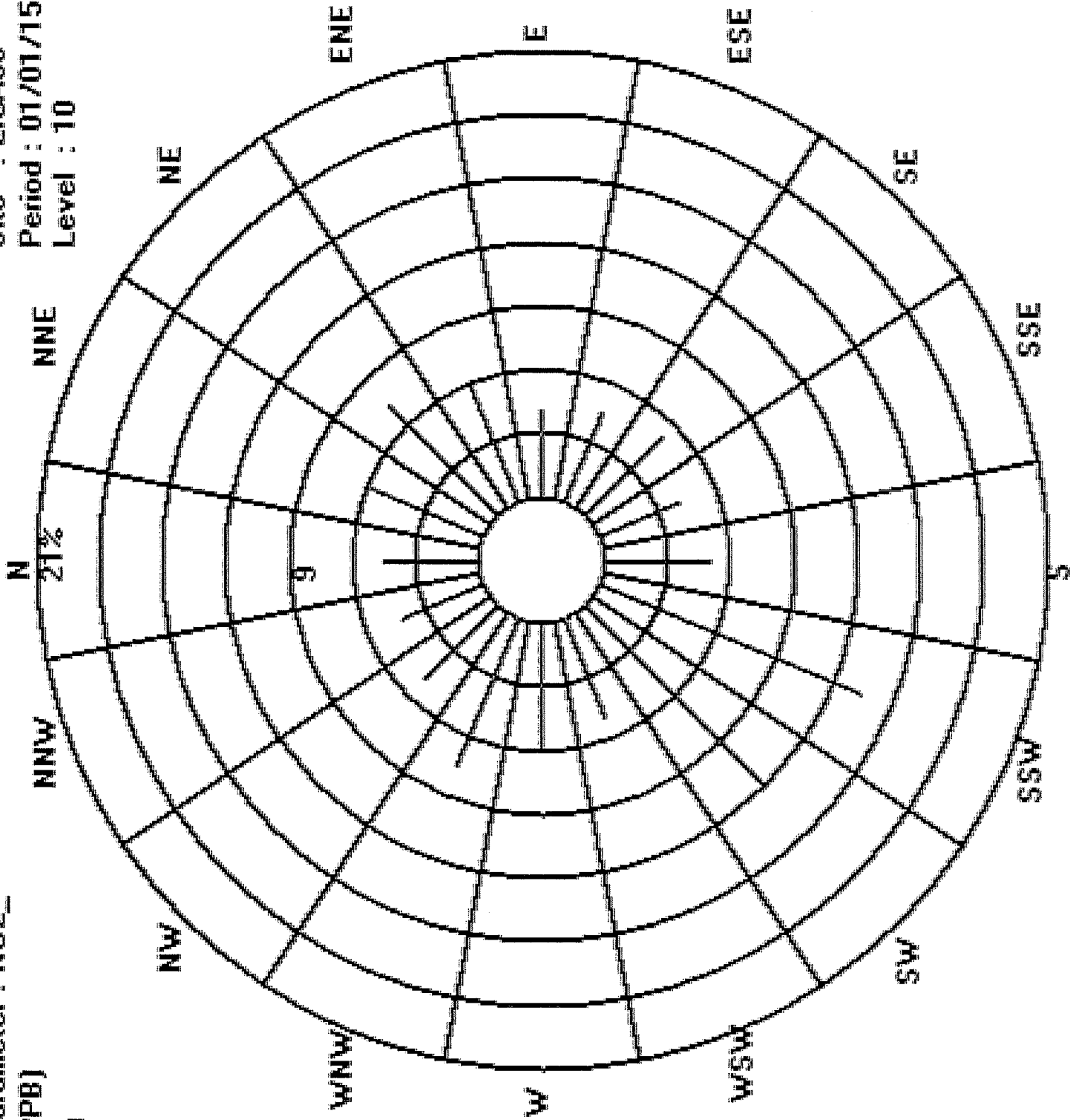
Total # Operational Hours : 8146

Logger : 30 Parameter : NO2_

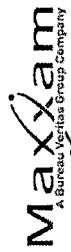
Class Limits (PPB)

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

Site : LICA30
Period : 01/01/15-12/31/15
Level : 10



WIND SPEED



WIND SPEED (WS) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (KPH)	Minimum Hourly Average (KPH)	Maximum Hourly Average (KPH)	Maximum Daily Average (KPH)
January	744	100.0	5.4	0.1	18.4	18.4
February	672	100.0	5.5	0.0	12.7	12.7
March	744	100.0	5.7	0.2	22.4	22.4
April	720	100.0	6.2	0.1	17.3	17.3
May	744	100.0	5.6	0.2	19.2	19.2
June	719	99.9	4.5	0.3	13.9	13.9
July	732	98.4	4.6	0.2	14.9	14.9
August	744	100.0	4.0	0.1	13.0	6.5
September	717	99.6	4.6	0.1	15.5	10.0
October	744	100.0	5.0	0.1	15.6	9.5
November	720	100.0	5.2	0.1	13.2	10.1
December	744	100.0	4.0	0.0	9.3	6.5

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



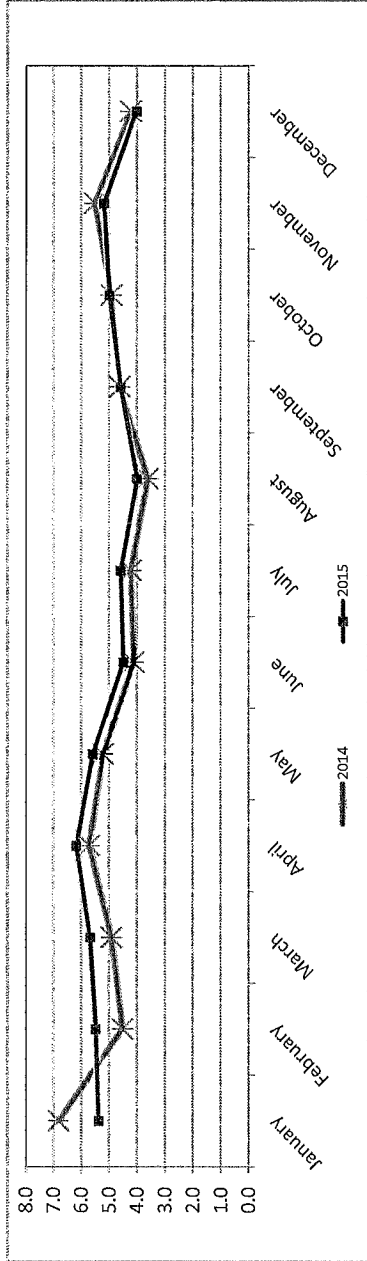
WIND SPEED (WS) 2014 One-Hour Readings vs. 2015 One-Hour Readings in km/hr

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	6.8	0.2	23.3	5.4	0.1	18.4	1.4
February	4.5	0.1	15.4	5.5	0.0	12.7	-1.0
March	4.9	0.0	17.6	5.7	0.2	22.4	-0.8
April	5.7	0.1	16.9	6.2	0.1	17.3	-0.5
May	5.2	0.1	12.4	5.6	0.2	19.2	-0.4
June	4.1	0.1	12.0	4.5	0.3	13.9	-0.4
July	4.2	0.1	13.3	4.6	0.2	14.9	-0.4
August	3.6	0.0	10.0	4.0	0.1	13.0	-0.4
September	4.6	0.0	15.9	4.6	0.1	15.5	0.0
October	4.9	0.1	13.5	5.0	0.1	15.6	-0.1
November	5.5	0.2	16.2	5.2	0.1	13.2	0.3
December	4.2	0.1	9.8	4.0	0.0	9.3	0.2

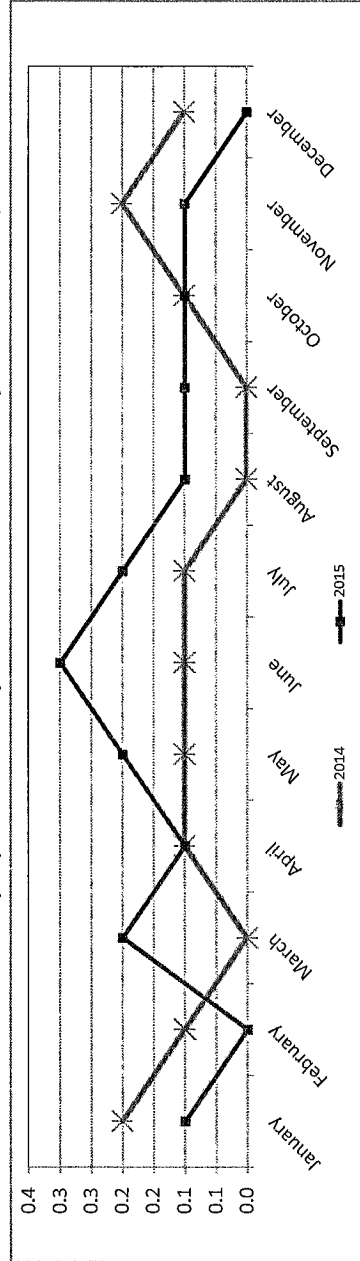
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

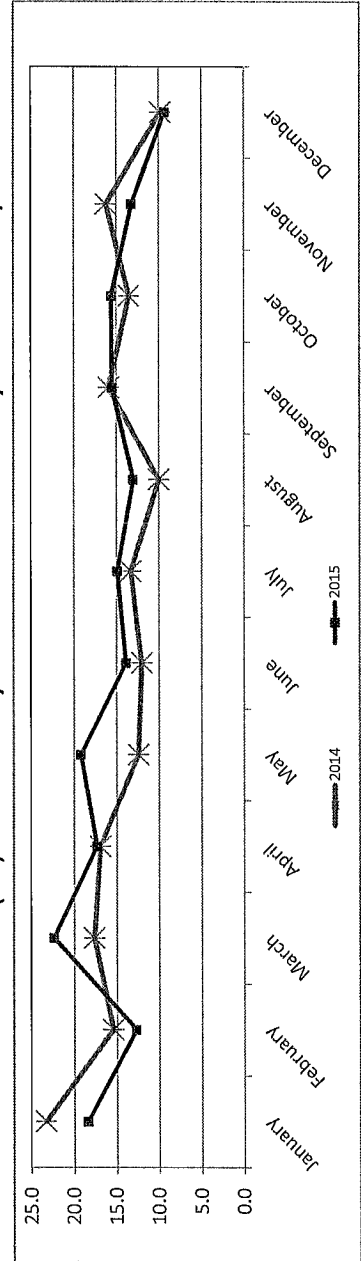
WIND SPEED (WS) 2014 Monthly Mean vs. 2015 Monthly Mean in km/hr



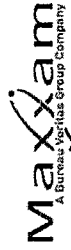
WIND SPEED (WS) 2014 Monthly Minimum vs. 2015 Monthly Minimum in km/hr



WIND SPEED (WS) 2014 Monthly Maximum vs. 2015 Monthly Maximum in km/hr



RELATIVE HUMIDITY



RELATIVE HUMIDITY (RH) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (%)	Minimum Hourly Average (%)	Maximum Daily Average (%)
January	744	100.0	72.0	44.0	90.0
February	672	100.0	67.0	28.0	88.0
March	744	100.0	62.0	21.0	91.0
April	720	100.0	54.0	11.0	91.0
May	744	100.0	52.0	6.0	93.0
June	719	99.9	62.0	22.0	94.0
July	732	98.4	67.0	18.0	94.0
August	744	100.0	71.7	28.0	94.0
September	717	99.6	73.3	28.0	93.0
October	744	100.0	69.4	25.0	92.0
November	720	100.0	74.6	33.0	91.0
December	744	100.0	77.2	44.0	90.0

N/D - Valid Data Not Available

* Annual peak is bolded and highlighted.

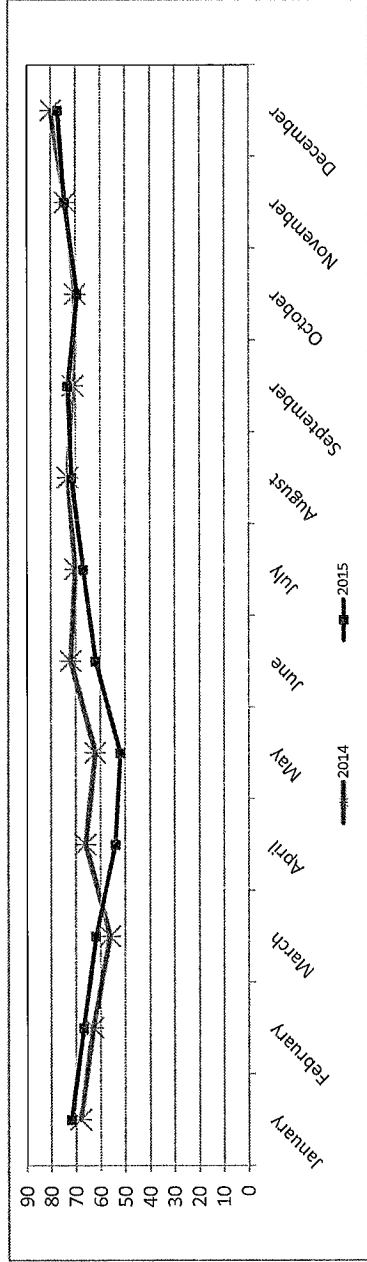
RELATIVE HUMIDITY (RH) 2014 One-Hour Readings vs. 2015 One-Hour Readings in %

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	68	38	89		72	44	90		-4
February	63	18	82		67	28	88		-4
March	56	20	88		62	21	91		-6
April	66	14	91		54	11	91		12
May	62	20	93		52	6	93		10
June	72	27	94		62	22	94		10
July	70	30	94		67	18	94		3
August	73	31	94		72	28	94		1
September	71	25	93		73	28	93		-2
October	70	22	92		69	25	92		1
November	74	35	91		75	33	91		-1
December	80	59	90		77	44	90		3

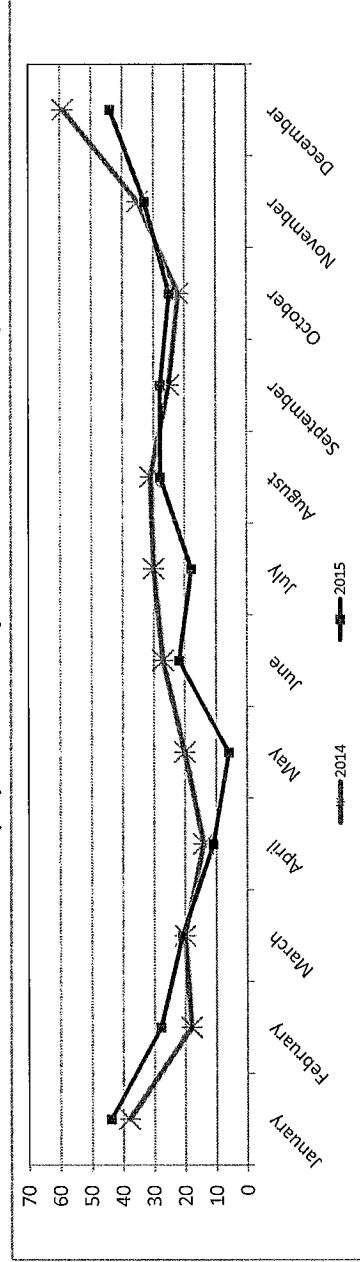
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

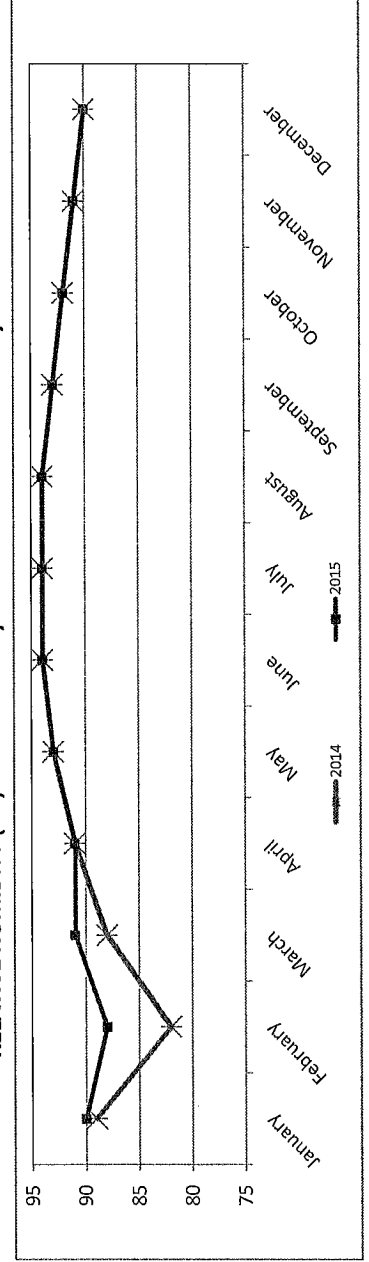
RELATIVE HUMIDITY (RH) 2014 Monthly Mean vs. 2015 Monthly Mean in %



RELATIVE HUMIDITY (RH) 2014 Monthly Minimum vs. 2015 Monthly Minimum in %



RELATIVE HUMIDITY (RH) 2014 Monthly Maximum vs. 2015 Monthly Maximum in %



LICA30
WSP / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	2.91	3.01	4.13	4.49	2.82	3.09	3.70	2.72	3.64	8.32	9.93	4.58	4.62	3.11	2.67	2.83	66.66
< 12.0	1.52	2.13	2.76	1.42	1.26	1.45	1.46	1.34	1.38	5.07	2.08	.50	1.22	3.91	2.05	1.25	30.88
< 20.0	.10	.70	.41	.02	.10	.03	.01	.00	.06	.16	.00	.00	.03	.59	.09	.04	2.39
< 29.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.02
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.54	5.86	7.31	5.94	4.19	4.58	5.18	4.07	5.10	13.56	12.01	5.08	5.87	7.63	4.82	4.13	

Calm : .03 %

Total # Operational Hours : 8744

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	255	264	362	393	247	271	324	238	319	728	869	401	404	272	234	248	5829
< 12.0	133	187	242	125	111	127	128	118	121	444	182	44	107	342	180	110	2701
< 20.0	9	62	36	2	9	3	1		6	14			3	52	8	4	209
< 29.0														2			2
< 39.0																	
>= 39.0																	
Totals	397	513	640	520	367	401	453	356	446	1186	1051	445	514	668	422	362	

Calm : .03 %

Total # Operational Hours : 8744

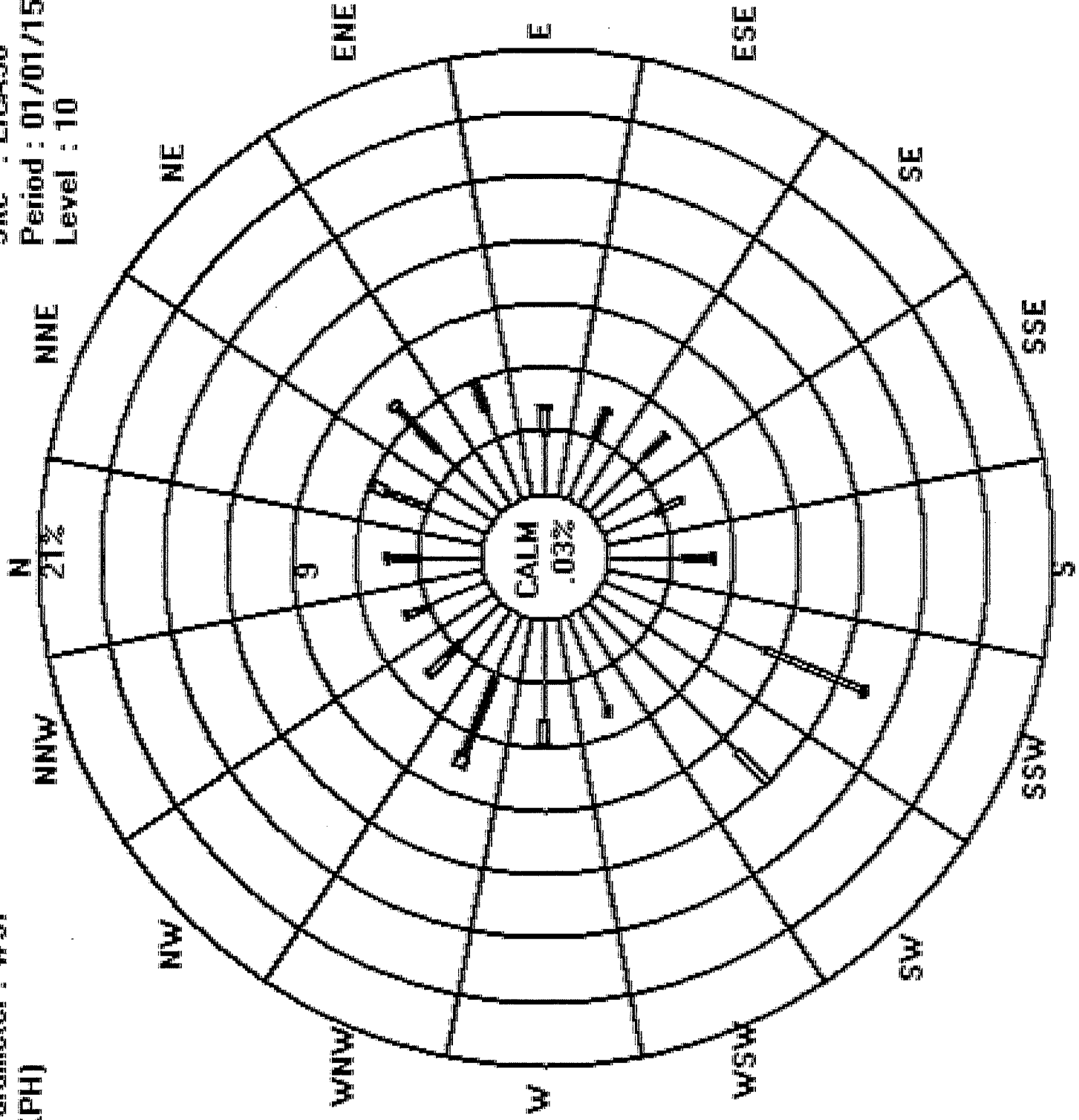
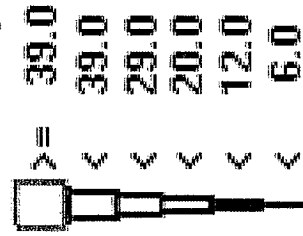
Logger : 30 Parameter : WSP

Site : LICA30

Class Limits (KPH)

Period : 01/01/15-12/31/15

Level : 10



BAROMETRIC PRESSURE



BAROMETRIC PRESSURE (BP) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (milibar)	Minimum Hourly Average (milibar)	Maximum Hourly Average (milibar)	Maximum Daily Average (milibar)
January	744	100.0	943	920	971	965
February	672	100.0	945	926	965	958
March	744	100.0	940	916	956	952
April	720	100.0	939	918	950	947
May	744	100.0	946	932	959	957
June	719	99.9	942	931	951	948
July	732	98.4	939	931	949	947
August	744	100.0	941	925	950	948
September	717	99.6	939	926	949	948
October	744	100.0	940	915	957	95
November	720	100.0	937	913	953	950
December	744	100.0	934	918	955	952

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

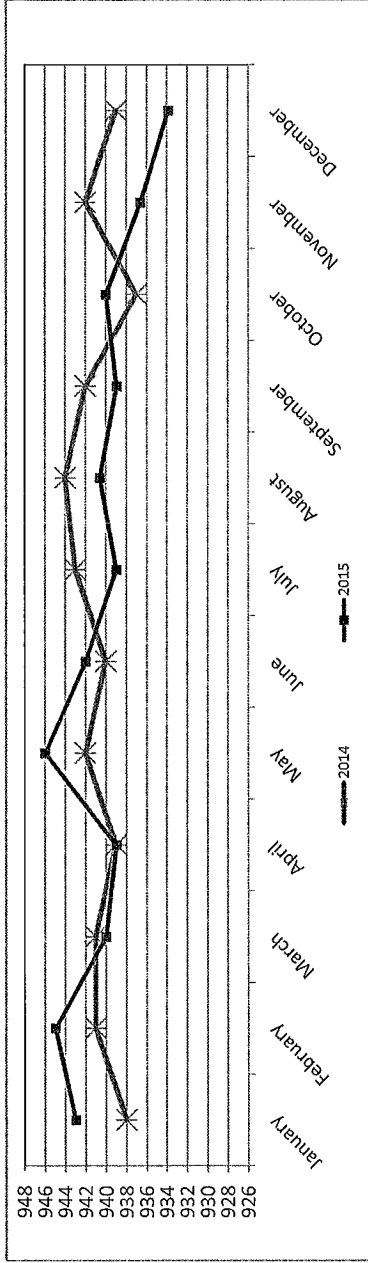
BAROMETRIC PRESSURE (BP) 2014 One-Hour Readings vs. 2015 One-Hour Readings in millibar

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	938	906	965	943	920	973	-5
February	941	917	967	945	926	965	-4
March	941	923	963	940	916	956	1
April	939	926	960	939	918	950	0
May	942	929	959	946	932	959	-4
June	940	930	949	942	931	951	-2
July	943	926	956	939	931	949	4
August	944	930	956	941	925	950	3
September	942	928	962	939	926	949	3
October	937	924	953	940	915	957	-3
November	942	918	965	937	913	953	5
December	939	917	969	934	918	955	5

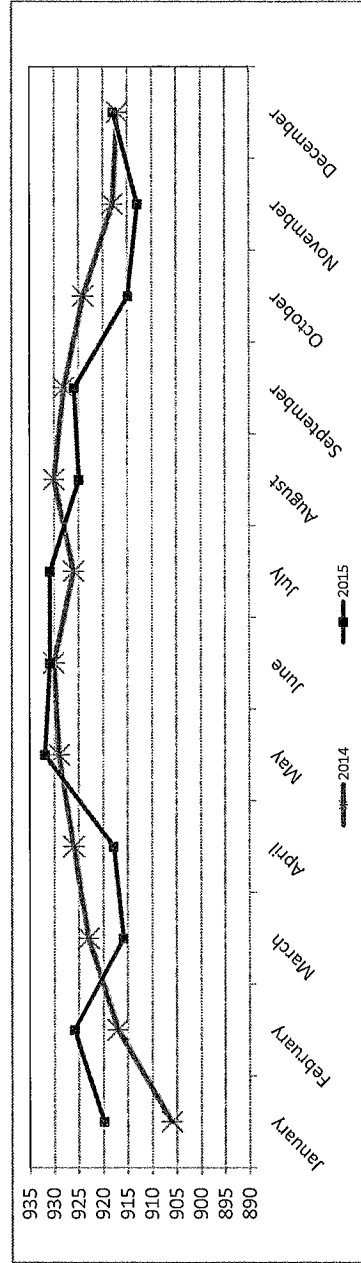
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

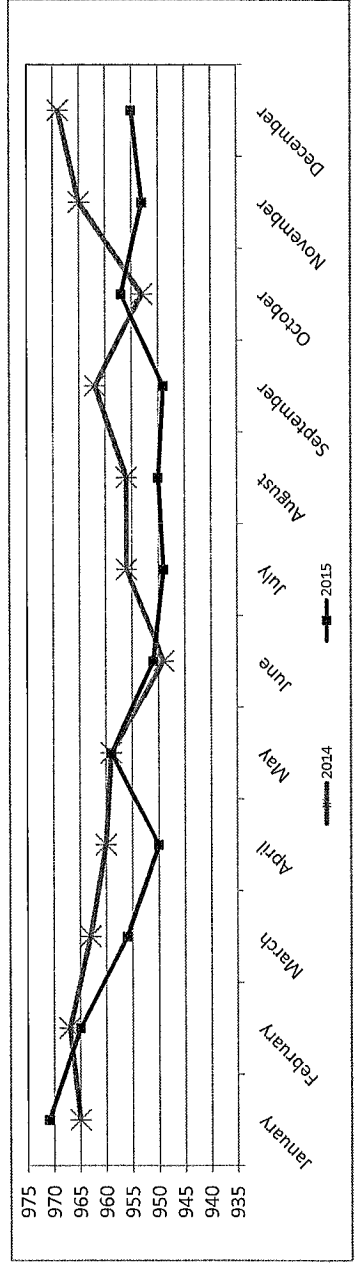
BAROMETRIC PRESSURE (BP) 2014 Monthly Mean vs. 2015 Monthly Mean in millibar



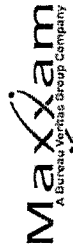
BAROMETRIC PRESSURE (BP) 2014 Monthly Minimum vs. 2015 Monthly Minimum in millibar



BAROMETRIC PRESSURE (BP) 2014 Monthly Maximum vs. 2015 Monthly Maximum in millibar



AMBIENT TEMPERATURE



AMBIENT TEMPERATURE (TPX) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	744	100.0	-11.5	-32.4	10.3	10.3
February	672	100.0	-14.5	-33.0	9.3	9.3
March	744	100.0	-1.5	-34.3	14.9	14.9
April	720	100.0	4.3	-16.4	23.9	23.9
May	744	100.0	10.0	-4.8	28.2	28.2
June	719	99.9	15.9	-0.1	32.5	32.5
July	732	98.4	18.0	4.9	31.1	31.1
August	744	100.0	16.1	-1.3	30.9	22.0
September	717	99.6	9.3	-3.6	25.7	17.4
October	744	100.0	5.6	-6.6	24.2	13.8
November	720	100.0	-3.5	-18.4	7.4	3.2
December	744	100.0	-10.1	-26.7	4.5	-1.6

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



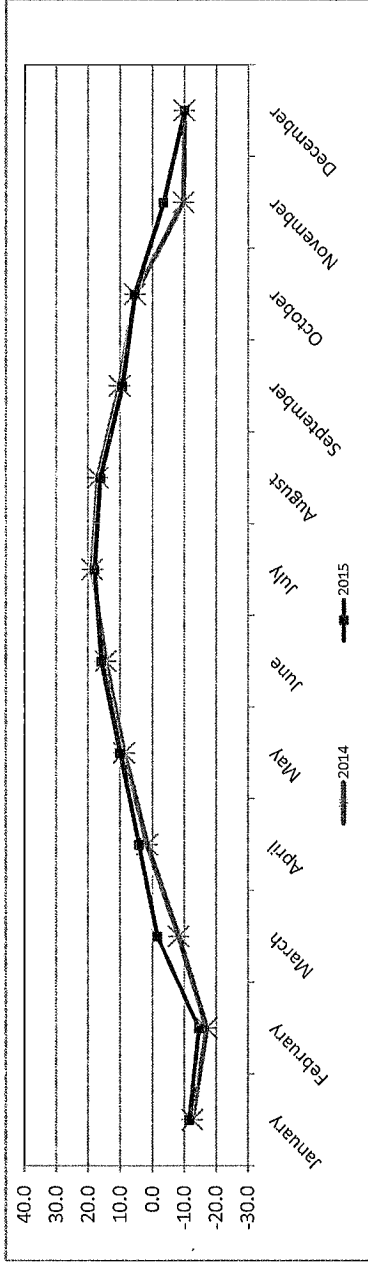
AMBIENT TEMPERATURE (TPX) 2014 One-Hour Readings vs. 2015 One-Hour Readings in Degrees Celsius

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	-13	-33	9	-12	-32	10	-1
February	-17	-34	4	-15	-33	9	-3
March	-8	-37	13	-2	-34	15	-7
April	2	-18	21	4	-16	24	-3
May	9	-6	29	10	-5	28	-1
June	14	1	26	16	0	33	-2
July	19	6	30	18	5	31	1
August	17	1	30	16	-1	31	1
September	10	-4	28	9	-4	26	1
October	5	-5	19	6	-7	24	0
November	-10	-28	11	-3	-18	7	-6
December	-10	-32	7	-10	-27	5	0

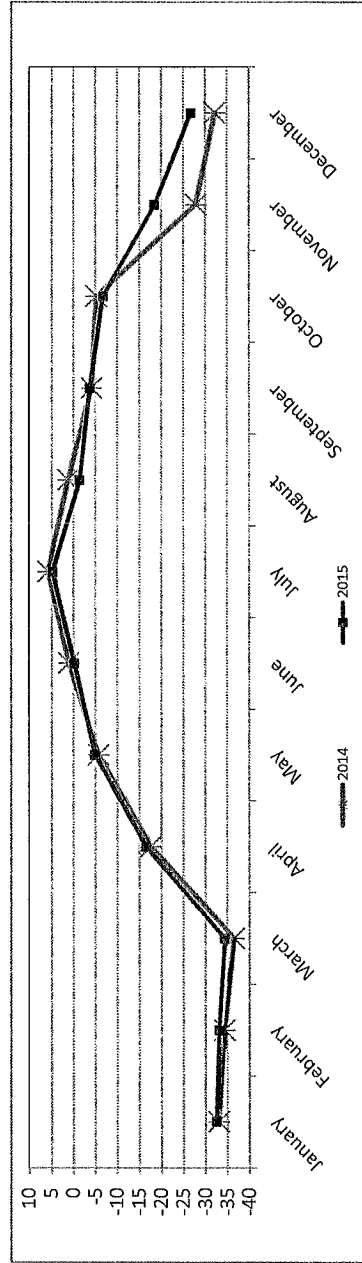
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

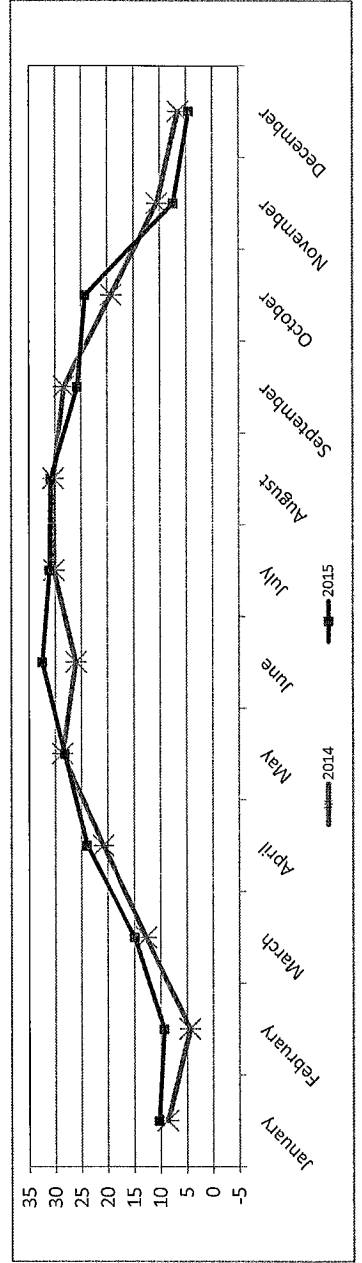
AMBIENT TEMPERATURE (TPX) 2014 Monthly Mean vs. 2015 Monthly Mean in Degrees Celsius



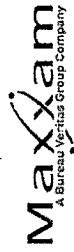
AMBIENT TEMPERATURE (TPX) 2014 Monthly Minimum vs. 2015 Monthly Minimum in Degrees Celsius



AMBIENT TEMPERATURE (TPX) 2014 Monthly Maximum vs. 2015 Monthly Maximum in Degrees Celsius



PRECIPITATION



PRECIPITATION 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (MM)	Monthly Total (MM)	Maximum Hourly Average (MM)	Maximum Daily Average (MM)
January	744	100.0	0.0	0.0	1.6	1.6
February	672	100.0	0.0	0.0	1.0	1.0
March	742	99.7	0.0	0.0	0.6	0.6
April	720	100.0	0.0	0.0	4.6	4.6
May	744	100.0	0.0	0.0	3.3	3.3
June	719	99.9	0.1	0.0	7.4	7.4
July	732	98.4	0.1	0.0	5.4	5.4
August	744	100.0	0.1	61.7	7.6	0.7
September	716	99.4	0.1	65.5	6.9	1.6
October	744	100.0	0.0	17.0	2.1	0.3
November	720	100.0	0.0	11.4	2.1	0.4
December	744	100.0	0.0	8.1	0.8	0.1

N/D - Valid Data Not Available

* Annual peak is bolded and highlighted.



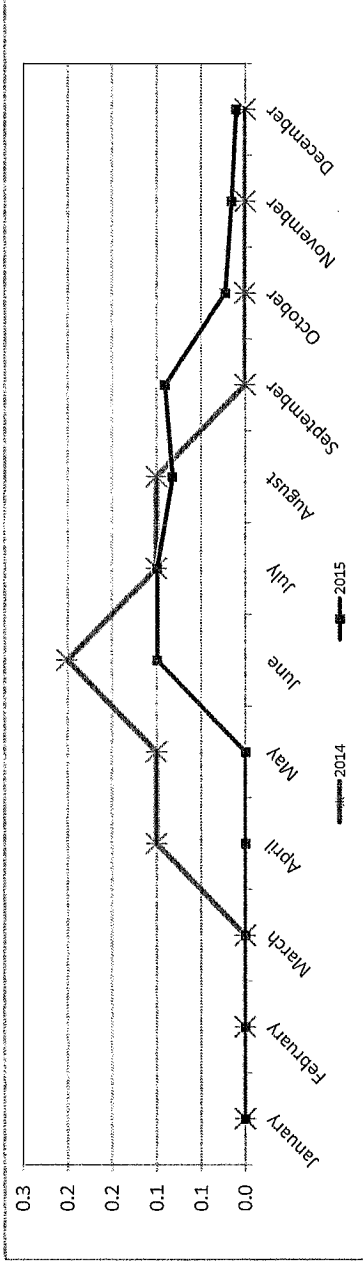
PRECIPITATION 2014 One-Hour Readings vs. 2015 One-Hour Readings in MM

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	0.0	0.0	2.0	0.0	0.0	1.6	0.0
February	0.0	0.0	2.0	0.0	0.0	1.0	0.0
March	0.0	0.0	0.2	0.0	0.0	0.6	0.0
April	0.1	0.0	1.9	0.0	0.0	4.6	0.1
May	0.1	0.0	6.2	0.0	0.0	3.3	0.1
June	0.2	0.0	7.1	0.1	0.0	7.4	0.1
July	0.1	0.0	21.9	0.1	0.0	5.4	0.0
August	0.1	0.0	8.4	0.1	0.0	7.5	0.0
September	0.0	0.0	6.8	0.1	0.0	6.9	-0.1
October	0.0	0.0	1.2	0.0	0.0	2.1	0.0
November	0.0	0.0	1.5	0.0	0.0	2.1	0.0
December	0.0	0.0	2.9	0.0	0.0	0.8	0.0

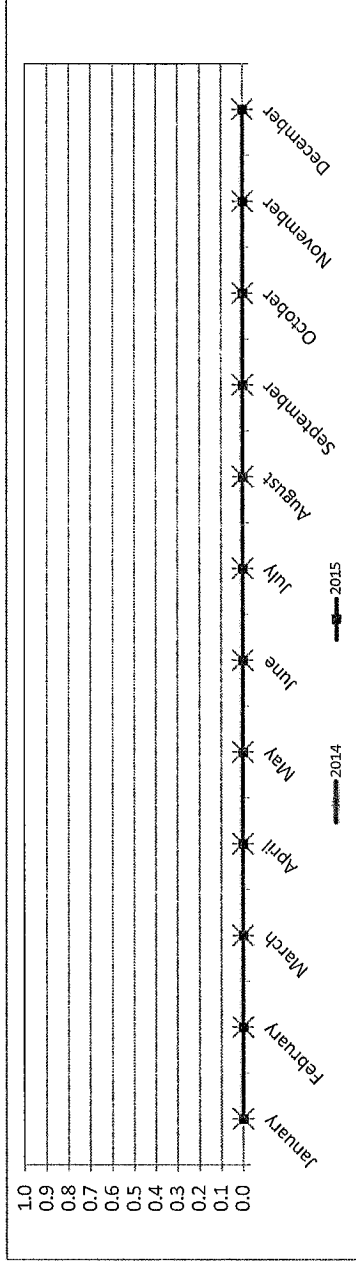
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

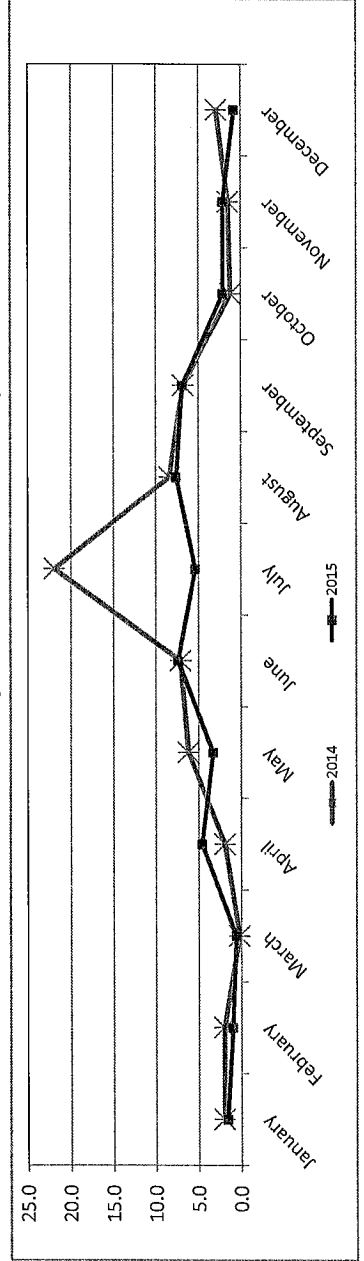
PRECIPITATION 2014 Monthly Mean vs. 2015 Monthly Mean in MM



PRECIPITATION 2014 Monthly Minimum vs. 2015 Monthly Minimum in MM



PRECIPITATION 2014 Monthly Maximum vs. 2015 Monthly Maximum in MM



APPENDIX II
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
Yes	—
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry and Community Association	Maskwa Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Adekanmbi, Klunmi	Project Manager Assistant
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
—	—
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
—	—

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.

Adekanmbi

Signature of the Representative of the Person Responsible / External Person Certifying the Report

28 - Jan - 16

Report Issued Date (dd-mm-yyyy)



maxxam.ca

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

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

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

JOB #:2833-2015-31- A

**JANUARY - DECEMBER
2015**

Prepared for:

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

Attention: MIKE BISAGA

DATE: **February 3, 2016**

Prepared by:

Ernestine Tangang, B.Sc., M.Sc.
Team Leader, Customer Service

Reviewed by:

for Lily Lin, B.Sc.
Senior Project Manager, Air Services

SUMMARY

The Maxxam Analytics Air Services Group conducted an Ambient Air monitoring program between January 2015 and December 2015 on the St. Lina Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the Project Coordinator.

A total of five 24-hr contraventions for PM_{2.5} were recorded in 2015. One 24-hr contravention was recorded in May: concentration of 42 ug/m³ on May 23. AE Reference number: 298624. Four 24-hr contraventions were recorded in July: concentrations of 34 ug/m³ on July 1, 55 ug/m³ on July 4, 114 ug/m³ on July 10 and 81 ug/m³ on July 11. AE Reference numbers: 300252, 300394, 300694 and 300800 respectively.

All monitoring analyzers and meteorological systems met the 90% operational uptime requirements during the monitoring period except PM 2.5 which was 78.6% in January; AE Reference Number: 296041, 82.6% in February; AE Reference Number: 296041 and 81.7% in August; AE Reference Number: 303701.

Data presented in this report has undergone the Post-Final Validation Procedures, which include a cursory inspection of annual charts. If errors or omissions in the data are suspected or discovered after the initial submittal of data (monthly report), the post-validation step serves to re-evaluate the affected data. The report certification form is also included in this report to verify that the annual validation review has been completed, as per the Reporting Chapter (Chapter 9) of the Air Monitoring Directive (AMD).

The summary of basic statistics includes monthly mean, maximum, and minimum values as well as comparisons to the historical mean, maximum and minimum values from the previous calendar year are presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods during the monitoring period are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, St. Lina Site.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3689 or toll-free at 1-800-386-7247.

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	Total Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Ozone
	Particulate Matter 2.5
	Wind Speed
	Relative Humidity
	Barometric Pressure
	Ambient Temperature
	Precipitation
Appendix II	Report Certification Form

1.0 Discussion

This annual validation report consists of data for parameters Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Wind Speed (WS), Relative Humidity, Barometric Pressure, Precipitation and Ambient Temperature.

The air monitoring trailer was located at Latitude 54°13'00.0"N, and Longitude 111°30'08.3"W during the monitoring period.

The monitoring methods and equipment met all AMD requirements.

All monitoring analyzers and meteorological systems met the 90% operational uptime requirements during the monitoring period except PM 2.5 which was 78.6% in January; AE Reference Number: 296041, 82.6% in February; AE Reference Number: 296041 and 81.7% in August; AE Reference Number: 303701.

All data collected during the monitoring period, with the exception of PM_{2.5} for May and July, were within the objectives outlined in the Alberta Ambient Air Quality Objectives and Guidelines Summary (AAAQOs). A total of five 24-hr contraventions for were recorded for PM_{2.5} in 2015. One 24-hr contravention was recorded in May: concentration of 42 ug/m³ on May 23. Four 24-hr contraventions were recorded in July: concentrations of 34 ug/m³ on July 1, 55 ug/m³ on July 4, 114 ug/m³ on July 10 and 81 ug/m³ on July 11.

An annual ambient air monitoring station audit was performed by a Maxxam field specialist on November 18.

The summaries of the monthly maintenance report for the monitoring period are presented below:

SULPHUR DIOXIDE (SO2)

January	The analyzer spanned high on January 14 due to a UV filter failure. On January 14 the UV filter was changed, the sample filter was replaced, an analog output calibration was performed, and the pump was rebuilt. Twenty hours of data were invalidated due to this event.
February	No issue was identified.
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	Hourly maximum data collected on April 26 at hour 4 was invalidated as the analyzer was recovering from a small power outage.
May	The analyzer started spanning low on May 15 due to a depleted perm tube. The perm tube was changed on May 22 following an as found points check. No data was discarded due to this event. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.
June	Hourly maximum data collected on June 1 at hour 10 and on June 20 at hour 12 were invalidated as the analyzer was recovering from power outages.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 at hour 0 and July 16 at hour 5 were invalidated as the analyzer was recovering from short power outages.
August	Hourly maximum data collected on August 3 at hour 22 and August 31 at hour 12 were invalidated as the analyzer was recovering from small power outages.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	No issue was identified.
December	No issue was identified.

HYDROGEN SULPHIDE (H2S)

January	Some daily span results went below the +/- 10% acceptance limit because the expected span value was set too low after the monthly calibration in December 2014. This issue did not affect data quality.
February	No issue was identified.
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	Hourly maximum data collected on April 26 at hour 4 was invalidated as the analyzer was recovering from a small power outage.
May	A removal calibration was performed on the Maxxam-supplied API 101E, S/N: 722, analyzer on May 13 and the LICA-owned, API 101E, S/N: 509, was installed. Twenty hours of data are invalid while the analyzer was stabilizing prior to installation calibration. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.
June	Hourly maximum data collected on June 1 at hour 10 and on June 20 at hour 12 were invalidated as the analyzer was recovering from power outages.

July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 at hour 0 and July 16 at hour 5 were invalidated as the analyzer was recovering from short power outages.
August	Hourly maximum data collected on August 3 at hour 22 and August 31 at hour 12 were invalidated as the analyzer was recovering from small power outages.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	Hourly data started to record higher than historical on October 17. As a precaution, a full calibration was performed on October 23. The result was good. There was a zero drift after the calibration on October 23. The drift was within acceptance limits. Maintenance was performed on October 28 following an as found points check. As the zero drift continued, the analyzer was attempted to be replaced on October 29. However, the replacement analyzer did not respond properly. The original API 101E, S/N: 509, analyzer was therefore reinstalled on October 30, following a pump replacement. Twenty-one hours of data are invalid during this service.
November	The LICA-owned API 101E, S/N: 509, analyzer was replaced with the Maxxam-supplied API 100A, S/N: 375, analyzer on November 4 to fix the zero drift issue. 19 hours of data are invalid due to this maintenance event. Hourly maximum data collected on November 19 at hour 4 was invalidated due to a spike.
December	The LICA-owned API 101E, S/N: 509, analyzer was installed back on site on December 10 following maintenance at the Maxxam shop. The analyzer spanned low on December 24. An as found points check was performed on December 30 to ensure the analyzer's functionality, and the result was good. No data was discarded due to this issue.

TOTAL HYDROCARBONS (THC)

January	The channel was put into maintenance mode on January 16 for the hydrogen cylinder change out.
February	No issue was identified.
March	The span gas and the hydrogen gas were replaced on March 6 and March 16 respectively. Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	Twenty three hours of data collected between April 21 at hour 11 and April 22 at hour 9 were discarded due to the analyzer flaming out. Data collected on April 26 at hour 4 to hour 5 and hourly maximum data collected at hour 4 to hour 6 were invalidated as the analyzer was recovering from a small power outage.
May	Data collected on May 6 at hour 11 were invalidated as the analyzer was recovering from a small power outage.
June	The analyzer spanned low on June 5. Following a removal calibration on June 6, the Thermo 51C S/N: 436609739 was replaced with Thermo 51C S/N: 51CLT-77021-384. Both analyzers are LICA-owned. Eighteen hours of data are invalid during the time the analyzer was stabilizing prior to installation calibration. Hourly maximum data collected on June 1 at hour 10 and on June 20 at hour 12 were invalidated as the analyzer was recovering from power outages.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 at hour 0 and July 16 at hour 5 were invalidated as the analyzer was recovering from short power outages.

August	Hourly maximum data collected on August 3 at hour 22 and August 31 at hour 12 were invalidated as the analyzer was recovering from small power outages.
September	The gas cylinders were replaced on September 3, September 8 and September 21. Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power
October	No issue was identified.
November	No issue was identified.
December	No issue was identified.

NITROGEN DIOXIDE (NO2)

January	The API 200E S/N: 592 analyzer was replaced with the API 200E S/N: 594 analyzer on January 14. Two hours of data are invalid during the replacement.
February	No issue was identified
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	The analyzer was put into maintenance mode on April 14 while reference points were being generated for ozone calibration. Hourly maximum data collected on April 26 at hour 4 was invalidated as the analyzer was recovering from a small power outage.
May	The analyzer was put into maintenance mode on May 12 while reference points were being generated for ozone calibration. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.
June	Hourly maximum data collected on June 1 at hour 10 and on June 20 at hour 12 were invalidated as the analyzer was recovering from power outages.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 at hour 0 and July 16 at hour 5 were invalidated as the analyzer was recovering from short power outages.
August	Hourly maximum data collected on August 3 at hour 22 and August 31 at hour 12 were invalidated as the analyzer was recovering from small power outages.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	No issue was identified.
December	No issue was identified.

OZONE (O3)

January	No issue was identified.
February	No issue was identified.
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	The analyzer was put into Maintenance mode on April 13 at hour 14 during SO2 calibration, as both analyzers are on the same relay. Hourly maximum data collected on April 26 at hour 4 was invalidated as the analyzer was recovering from a small power outage.
May	Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.
June	Hourly maximum data collected on June 1 at hour 10 and on June 20 at hour 12 were invalidated as the analyzer was recovering from power outages.

July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 at hour 0 and July 16 at hour 5 were invalidated as the analyzer was recovering from short power outages.
August	Hourly maximum data collected on August 3 at hour 22 and August 31 at hour 12 were invalidated as the analyzer was recovering from small power outages.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	Thirteen hours of data are invalid during the time the analyzer was stabilizing after the sample pump was rebuilt on November 3. The analyzer started drifting high on November 7, as the pump for the zero/span system required maintenance. The pump was rebuilt following an as found points check on November 9. As the analyzer passed the as found points check, no data was discarded due to this event.
December	No issue was identified.

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

January	The Teom unit failed a leak check on February 5. Data was invalidated back to the January 25 audit. One hundred and fifty four hours of data were discarded in January due to this event. Five hours of data were invalidated in January as the data were below -3 ug/m^3 . One hour of data collected on January 26 at hour 14 was invalidated due to a spike: Reason unknown.
February	Data was invalidated back to the January 25 audit due to the leak check failure that occurred on February 5. One hundred and ten hours of data were discarded in February due to this event. Seven hours of data were invalidated in February as the data were below -3 ug/m^3 .
March	Five hours of data were invalidated in March as the data were below -3 ug/m^3 . Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	Data collected on April 26 at hour 4 was invalidated as the unit was recovering from a small power outage. Four hours of data were invalidated in April as the data were below -3 ug/m^3 .
May	Seventeen hours of data were discarded on May 31 due to the Teom unit malfunctioning. Maintenance was performed on June 1 and the issue was fixed. Nine hours of data were invalidated in May as the data were below -3 ug/m^3 .
June	Twelve hours of data collected on June 1 from hour 0 to hour 11 were discarded due to the malfunction that occurred on May 31. One hour of data was invalidated in June as the data was below -3 ug/m^3 .
July	The Teom unit malfunctioned on July 17. Troubleshooting was performed by restarting the Teom unit prior to audit on July 17. Thirteen hours of data were discarded due to this issue. Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. No hourly data was invalidated in July as all hourly data were above -3 ug/m^3 .
August	The switching valve started functioning incorrectly following a power outage on August 3. A Teom check was performed on August 4. The valve was replaced on August 6. Seventy four hours of data were invalid due to this event. The unit started recording many negative readings towards the middle of the month. The switching valve was replaced again on August 24. Sixty two hours of data were invalidated in August as the data were below -3 ug/m^3 .

September	Thirty six hours of data were invalidated in September as the data were below -3 ug/m^3 . Two hours of data collected on September 8 from hour 20 to hour 21 were invalidated due to a power outage.
October	Twenty-one hours of data were invalidated in October as the data were below -3 ug/m^3 .
November	Three hours of data were invalidated in November as the data were below -3 ug/m^3 .
December	One hour of data was invalidated in December as the data were below -3 ug/m^3 .

WIND SPEED (WS)

January	No issue was identified.
February	No issue was identified.
March	The wind system was put into Maintenance mode on March 12 for three hours in order to check the setting on the wind system. Data collected on March 16 at hour 11 was invalidated due to a small power outage. Hourly maximum data collected on March 31 at hour 23 was invalidated due to a spike; reason unknown.
April	Hourly maximum data collected on April 26 at hour 4 was invalidated as the analyzer was recovering from a small power outage.
May	Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.
June	Hourly maximum data collected on June 1 hour 10 and on June 20 hour 12 were invalidated as the analyzer was recovering from power outages.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures. Hourly maximum data collected on July 11 at hour 0 and July 16 at hour 5 were invalidated as the analyzer was recovering from short power outages.
August	Hourly maximum data collected on August 3 at hour 22 and August 31 at hour 12 were invalidated as the analyzer was recovering from small power outages.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	The wind system failed on November 1 from hour 2 to hour 7 and on November 3 from hour 5 to hour 16, due to extreme weather conditions that caused the system to freeze. The heater on the wind system was checked on November 4 to ensure its functionality. Nineteen hours of data were discarded due to this event.
December	No issue was identified.

RELATIVE HUMIDITY (RH)

January	No issue was identified.
February	No issue was identified.
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	No issue was identified.
May	No issue was identified.
June	No issue was identified.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.

August	No issue was identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	No issue was identified.
December	No issue was identified.

BAROMETRIC PRESSURE (BP)

January	No issue was identified.
February	No issue was identified.
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	No issue was identified.
May	No issue was identified.
June	Data collected on June 13 at hour 4 was invalidated due to the malfunctioning of the pressure sensor at that hour.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.
August	No issue was identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	No issue was identified.
December	No issue was identified.

PRECIPITATION

January	No issue was identified.
February	No issue was identified.
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	No issue was identified. A rain guage screen was installed on April 10.
May	Three hours of data collected on May 24 at hour 12 and on May 27 at hour 13 and hour 14 were invalidated due to spikes: reason unknown. The system was verified on May 25 and no issues were identified.
June	Data collected on June 7 at hour 13 was invalidated due to a spike. A precipitation sensor check was completed on June 10 in order to investigate any potential issues that caused the spike that was recorded on June 7. No obvious issues were found.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.
August	No issue was identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	No issue was identified.
December	Both the rain gauge system and heating system were checked on December 11.

AMBIENT TEMPERATURE (TPX)

No issue was identified this year.

January	No issue was identified.
February	No issue was identified.
March	Data collected on March 16 at hour 11 was invalidated due to a small power outage.
April	No issue was identified.
May	No issue was identified.
June	No issue was identified.
July	Six hours of data are missing on July 5 from hour 13 to hour 14 and July 14 from hour 14 to hour 17 due to power failures.
August	No issue was identified.
September	Two hours of data collected on September 16 from hour 20 to hour 21 were invalidated due to a power outage.
October	No issue was identified.
November	No issue was identified.
December	No issue was identified.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM2.5.

A total of five 24-hr contraventions for PM2.5 were recorded in 2015. One 24-hr contravention was recorded in May: concentration of 42 ug/m³ on May 23. AE Reference number: 298624. Four 24-hr contraventions were recorded in July: concentrations of 34 ug/m³ on July 1, 55 ug/m³ on July 4, 114 ug/m³ on July 10 and 81 ug/m³ on July 11. AE Reference numbers: 300252, 300394, 300694 and 300800 respectively.

The operational uptime for all analyzers and meteorological system were above the 90% requirement except PM 2.5 which was 78.6% in January; AE Reference Number: 296041, 82.6% in February; AE Reference Number: 296041 and 81.7% in August; AE Reference Number: 303701.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 100A UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Teom Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Met One Unit
- Precipitation - Met One Unit
- Datalogger - ESC 8832

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE



SULPHUR DIOXIDE (SO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings**	Operational Time (%)	% Readings in Concentration Range (PPB SO2)						OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE (PPB)
			≤20 ppb	20 < C ≤ 60 ppb	60 < C ≤ 110 ppb	110 < C ≤ 170 ppb	170 < C ≤ 340 ppb	> 340 ppb	1-HR	24-HR	1-HR	24-HR	
January	687	97.3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.3
February	632	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
March	706	99.9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.2
April	683	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
May	698	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
June	683	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
July	699	99.2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
August	707	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
September	680	99.4	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
October	705	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
November	679	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.2
December	694	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
ANNUAL AVERAGE											0.1		

N/D - Valid Data Not Available
 **Number of Readings - included calibration hours
 ***if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	8.0	PPB
Annual Average for 2015	0.1	PPB

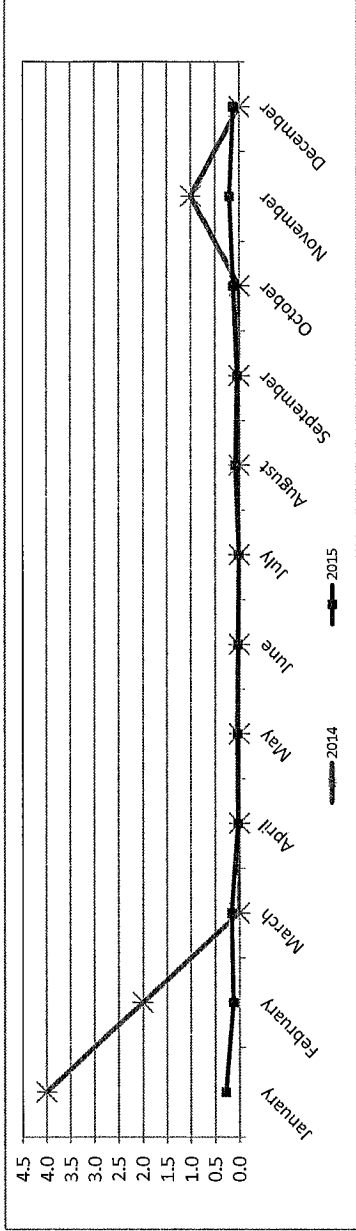
SULPHUR DIOXIDE (SO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	0.0	0	14	0.0	0	4	3.7
February	2.0	0	8	0.1	0	3	1.9
March	0.0	0	27	0.2	0	4	-0.2
April	0.0	0	3	0.0	0	2	0.0
May	0.0	0	3	0.0	0	1	0.0
June	0.0	0	2	0.0	0	2	0.0
July	0.0	0	8	0.0	0	1	0.0
August	0.0	0	4	0.1	0	2	-0.1
September	0.0	0	1	0.0	0	3	0.0
October	0.0	0	3	0.1	0	6	-0.1
November	1.0	0	5	0.2	0	3	0.8
December	0.0	0	6	0.1	0	3	-0.1

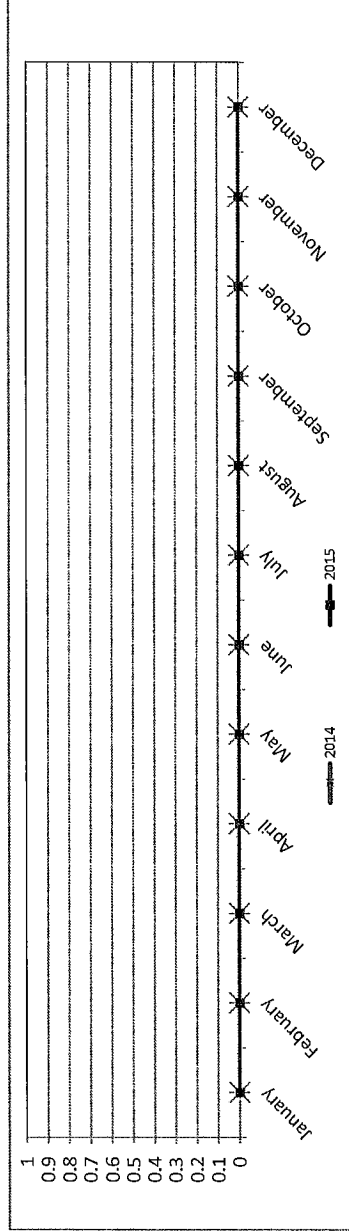
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

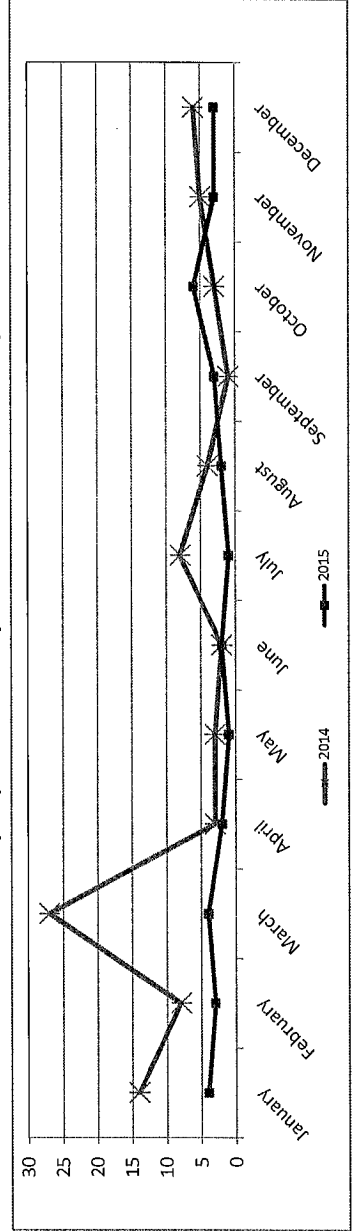
SULPHUR DIOXIDE (SO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA31
 SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
 Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : SO2_ Wind Parameter : WDR
 Units : PFB Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20.0	3.20	2.78	4.30	5.78	4.28	3.85	4.31	5.73	9.48	8.79	8.65	9.23	8.65	9.65	6.87	4.38	100.00
< 60.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.20	2.78	4.30	5.78	4.28	3.85	4.31	5.73	9.48	8.79	8.65	9.23	8.65	9.65	6.87	4.38	

Calm : .00 %

Total # Operational Hours : 8231

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20.0	264	229	354	476	353	317	355	472	781	724	712	760	712	795	566	361	8231
< 60.0																	
< 110.0																	
< 170.0																	
< 340.0																	
>= 340.0																	
Totals	264	229	354	476	353	317	355	472	781	724	712	760	712	795	566	361	

Calm : .00 %

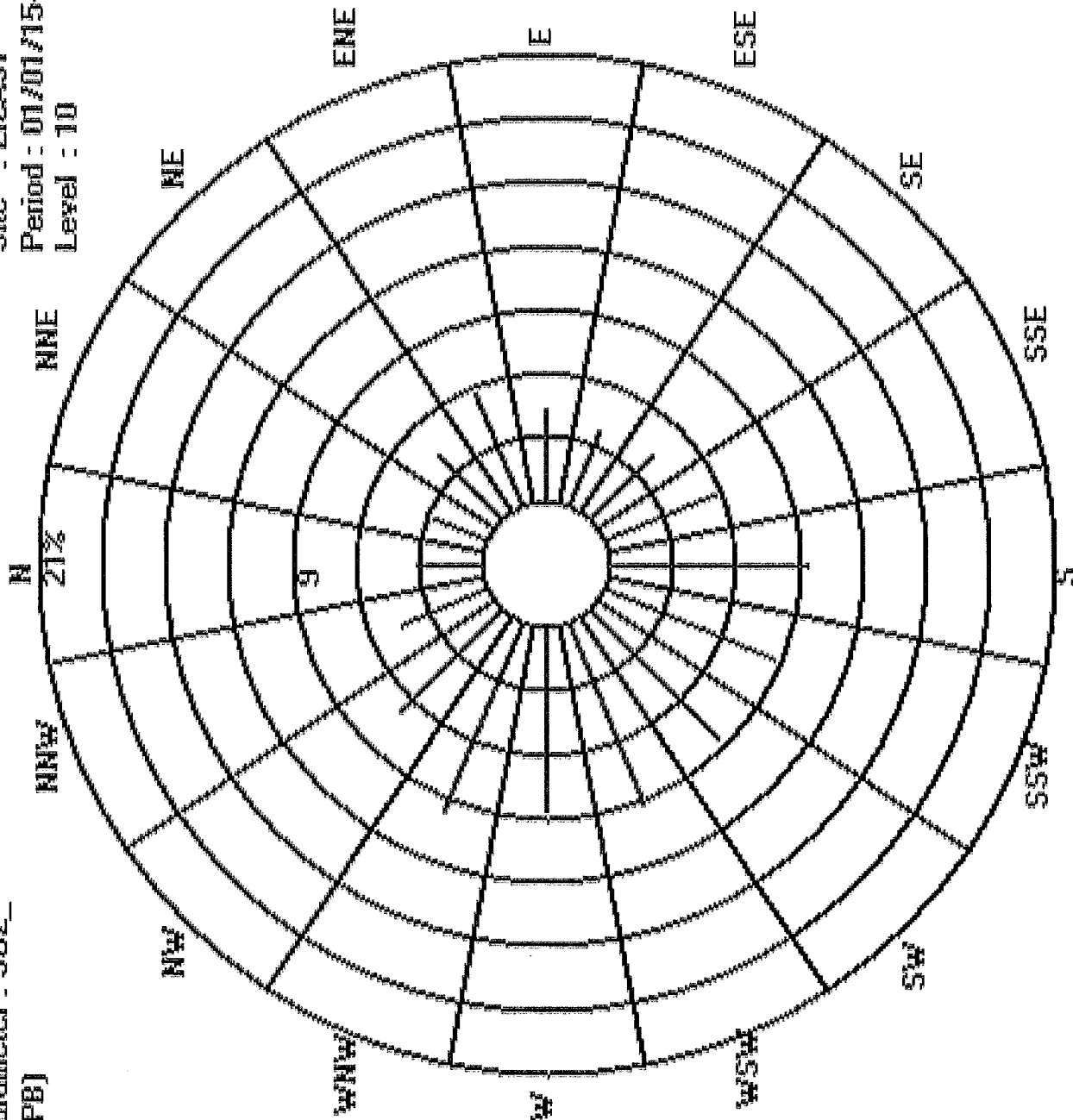
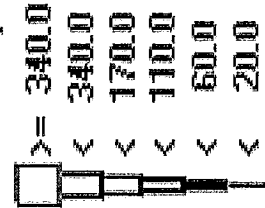
Total # Operational Hours : 8231

Logger : 31 Parameter : SO2_

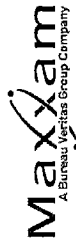
Site : LIC431

Class Limits (PPB)

Period : 01/01/15-12/31/15



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE (H2S) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB/H2S)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 3 ppb	4 < C ≤ 10 ppb	11 < C ≤ 50 ppb	> 50 ppb	1-HR	24-HR	1-HR	24-HR	
January	695	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
February	637	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
March	693	99.9	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
April	684	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
May	682	97.3	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
June	684	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
July	700	99.2	99.71%	0.29%	0.00%	0.00%	10	3	0	0	0
August	708	100.0	99.86%	0.14%	0.00%	0.00%	10	3	0	0	1
September	682	99.7	100.00%	0.00%	0.00%	0.00%	10	3	0	0	1
October	667	97.2	100.00%	0.00%	0.00%	0.00%	10	3	0	0	1
November	660	97.4	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
December	699	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0
										ANNUAL AVERAGE	0

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives/Annual Average**	N/D	PPB
Annual Average for 2015	0	PPB

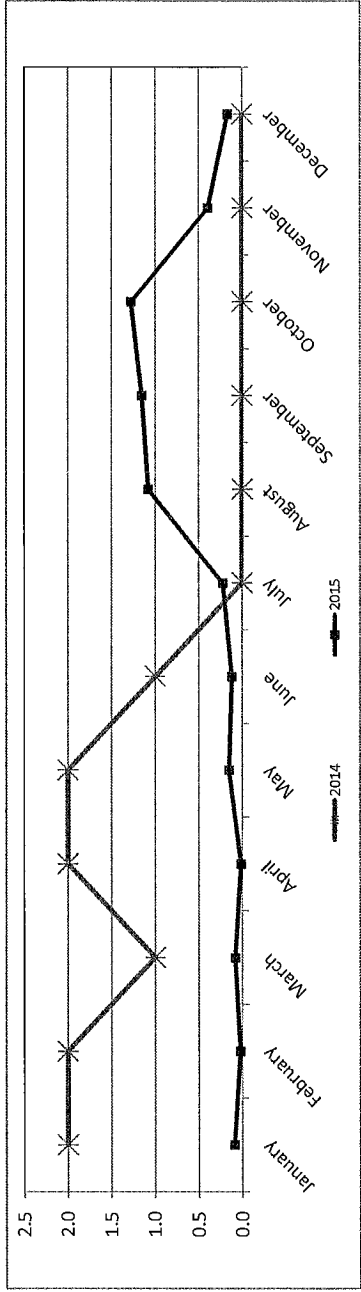
HYDROGEN SULPHIDE (H2S) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	2.0	0	4		0.1	0	1		1.9
February	2.0	1	4		0.0	0	1		2.0
March	1.0	0	3		0.1	0	1		0.9
April	2.0	0	6		0.0	0	1		2.0
May	2.0	0	4		0.2	0	2		1.8
June	1.0	0	4		0.1	0	3		0.9
July	0.0	0	2		0.2	0	4		-0.2
August	0.0	0	3		1.1	0	2		-1.1
September	0.0	0	2		1.2	0	2		-1.2
October	0.0	0	1		1.3	0	3		-1.3
November	0.0	0	2		0.4	0	2		-0.4
December	0.0	0	1		0.2	0	1		-0.2

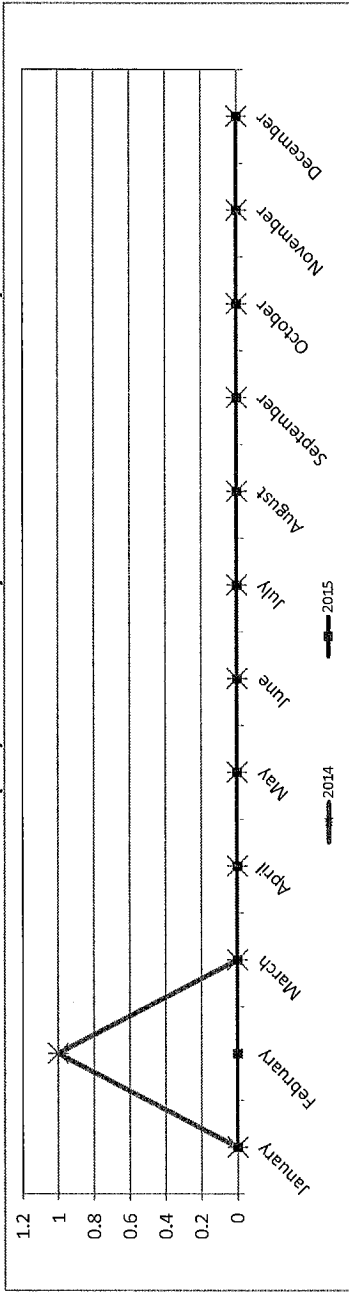
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

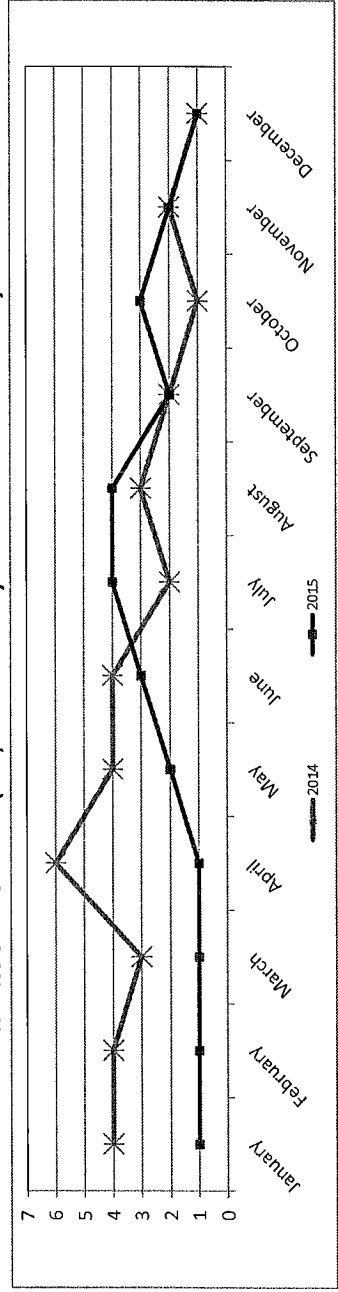
HYDROGEN SULPHIDE (H2S) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



HYDROGEN SULPHIDE (H2S) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



HYDROGEN SULPHIDE (H2S) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



H2S / WDR Joint Frequency Distribution (Percent)

LICA31

01/01/15 thru 12/31/15

Distribution By % of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : H2S
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	3.24	2.82	4.36	5.89	4.33	3.89	4.14	5.72	9.21	8.56	8.63	9.33	8.71	9.64	6.95	4.42	99.92
< 10.0	.00	.00	.00	.00	.00	.00	.00	.00	.01	.06	.00	.00	.00	.00	.00	.00	.07
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.24	2.82	4.36	5.89	4.33	3.89	4.14	5.72	9.21	8.57	8.70	9.33	8.71	9.64	6.95	4.42	

Calm : .00 %

Total # Operational Hours : 8172

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	265	231	357	482	354	318	339	468	753	700	706	763	712	788	568	362	8166
< 10.0										1	5						6
< 50.0																	
>= 50.0																	
Totals	265	231	357	482	354	318	339	468	753	701	711	763	712	788	568	362	

Calm : .00 %

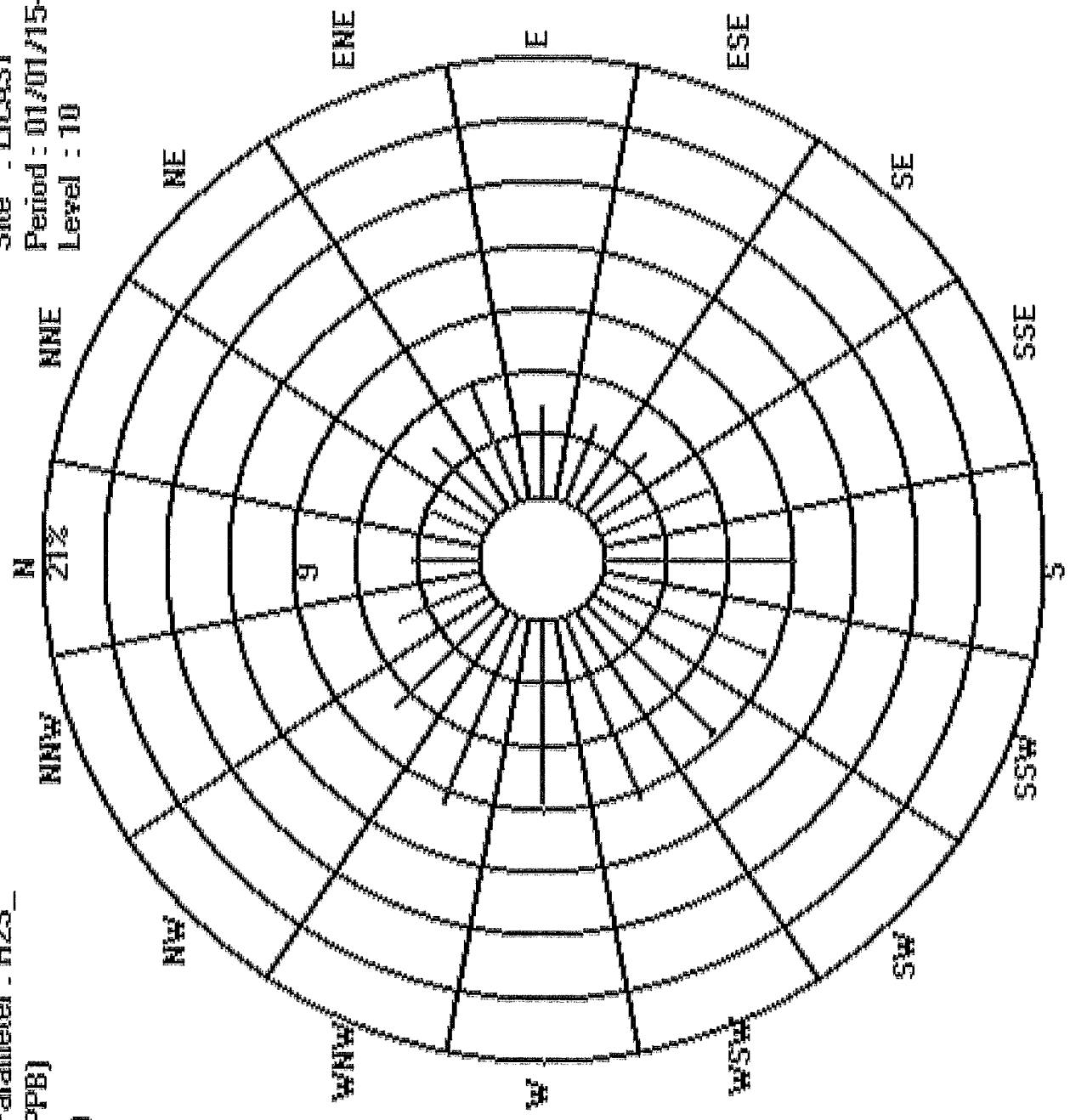
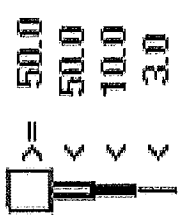
Total # Operational Hours : 8172

Logger : 31 Parameter : H2S_

Site : LIC431

Class Limits (PPB)

Period : 01/01/15-12/31/15
Level : 10



TOTAL HYDROCARBON

TOTAL HYDROCARBONS (THC) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

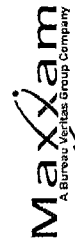
Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (PPM THC)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			< 3.0 ppm	3.1 < C ≤ 10.0 ppm	10.1 < C ≤ 50.0 ppm	> 50.0 ppm	1-HR	24-HR	1-HR	24-HR	
January	704	99.7	99.57%	0.43%	0.00%	0.00%	-	-	-	-	2.2
February	639	100.0	99.84%	0.16%	0.00%	0.00%	-	-	-	-	2.2
March	707	99.9	99.86%	0.14%	0.00%	0.00%	-	-	-	-	2.1
April	653	96.3	99.85%	0.15%	0.00%	0.00%	-	-	-	-	2.0
May	707	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.0
June	662	97.5	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.8
July	697	99.2	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.8
August	706	99.7	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.8
September	678	99.7	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.8
October	707	100.0	99.43%	0.57%	0.00%	0.00%	-	-	-	-	1.9
November	684	100.0	99.56%	0.44%	0.00%	0.00%	-	-	-	-	2.0
December	707	100.0	97.60%	2.40%	0.00%	0.00%	-	-	-	-	2.2
ANNUAL AVERAGE:										2.0	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPM
Annual Average for 2015	2.0	PPM



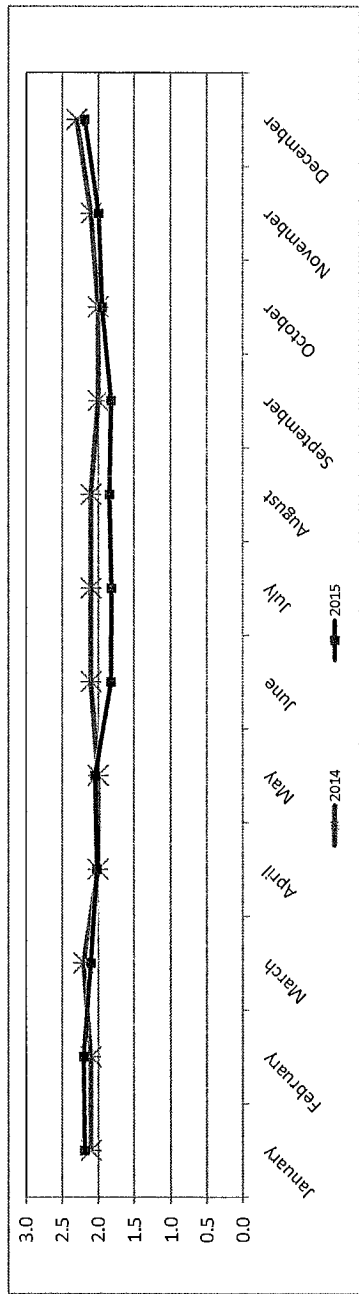
TOTAL HYDROCARBONS (THC) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPM

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	Difference		
January	2.1	1.7	3.4	2.2	1.8	3.6	-0.1		
February	2.1	1.9	3.2	2.2	1.8	3.1	-0.1		
March	2.2	1.6	3.9	2.1	1.7	3.1	0.1		
April	2.0	1.7	2.7	2.0	1.5	3.3	0.0		
May	2.0	1.7	2.9	2.0	1.8	2.8	0.0		
June	2.1	1.9	3.4	1.8	1.6	2.7	0.3		
July	2.1	1.8	2.8	1.8	1.5	3.0	0.3		
August	2.1	1.6	3.2	1.8	1.6	2.5	0.3		
September	2.0	1.6	2.8	1.8	1.6	2.6	0.2		
October	2.0	1.6	2.8	1.9	1.6	3.2	0.1		
November	2.1	1.5	3.2	2.0	1.8	4.7	0.1		
December	2.3	1.7	3.7	2.2	1.8	4.5	0.1		

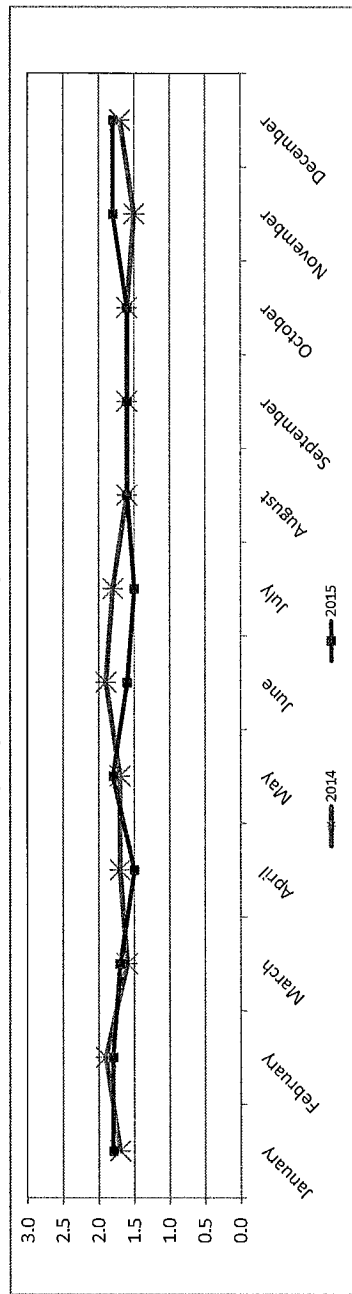
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

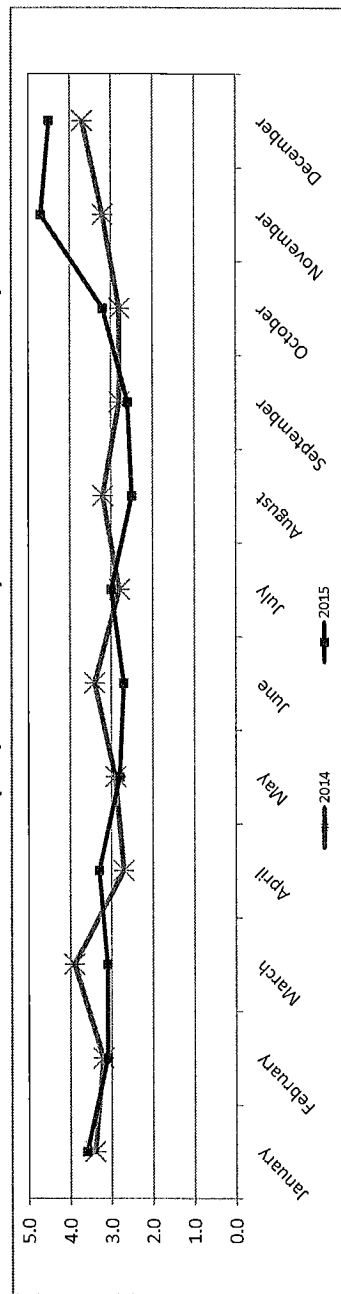
TOTAL HYDROCARBONS (THC) 2014 Monthly Mean vs. 2015 Monthly Mean in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPM



LICA31
THC / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % of Samples

Logger Id : 31
Site Name : LICA31
Parameter : THC
Units : PPM
Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 3.0	3.15	2.74	4.18	5.56	4.26	3.92	4.42	5.71	9.49	8.74	8.64	9.39	8.60	9.49	6.85	4.35	99.55	
< 10.0	.00	.03	.09	.02	.01	.02	.02	.02	.01	.02	.04	.01	.02	.02	.04	.01	.44	
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	3.15	2.78	4.27	5.58	4.27	3.94	4.44	5.73	9.50	8.77	8.68	9.40	8.62	9.51	6.90	4.36		

Calm : .00 %

Total # Operational Hours : 8229

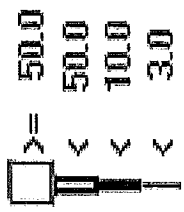
Distribution By Samples

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 3.0	260	226	344	458	351	323	364	470	781	720	711	773	708	781	564	358	8192	
< 10.0	3	8	2	2	1	2	2	2	1	2	4	1	2	2	4	1	37	
< 50.0																		
>= 50.0																		
Totals	260	229	352	460	352	325	366	472	782	722	715	774	710	783	568	359		

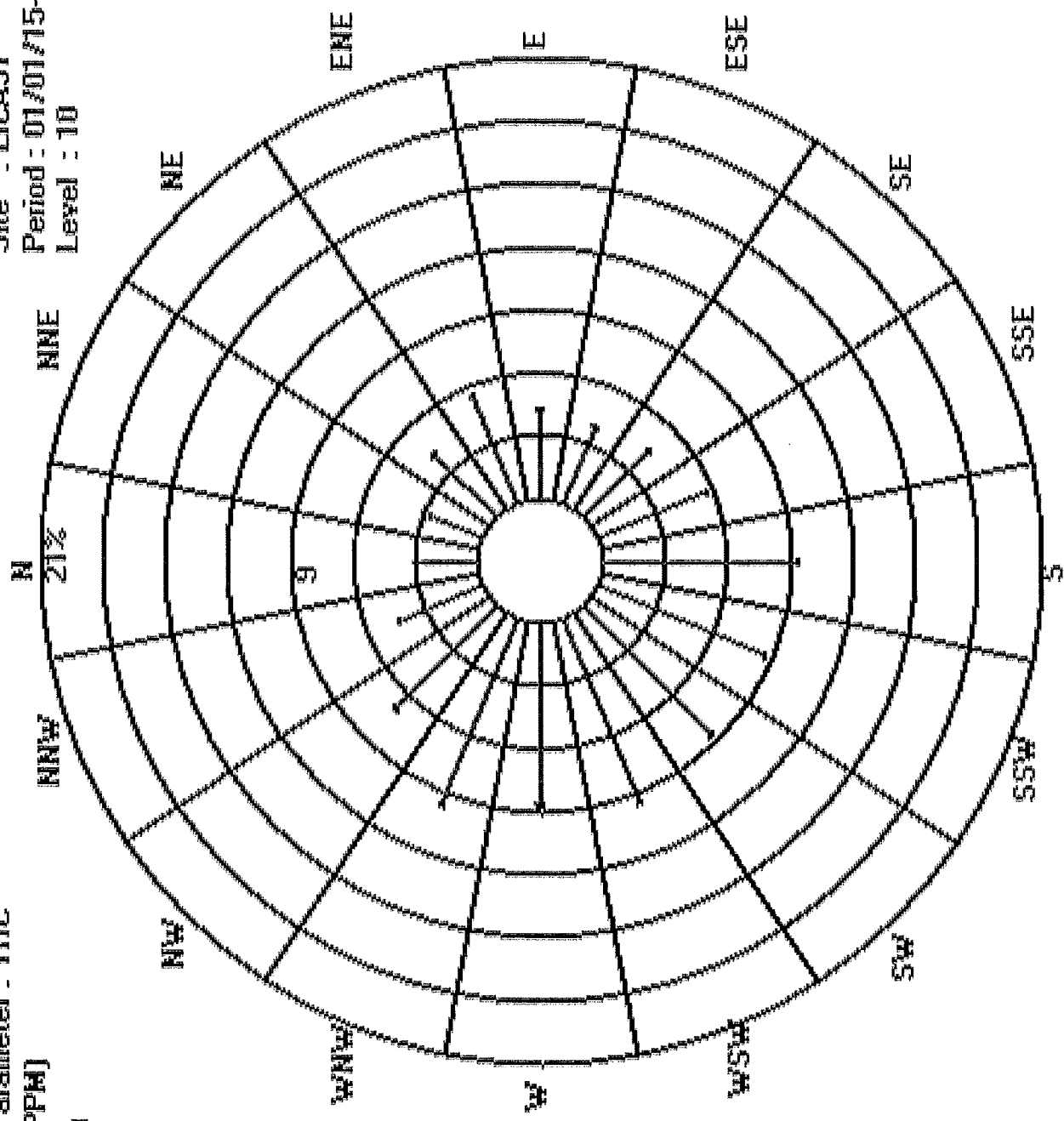
Calm : .00 %

Total # Operational Hours : 8229

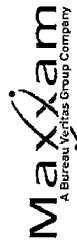
Logger : 31 Parameter : THC
Class Limits (PPM)



Site : LIC431
Period : 01/01/15-12/31/15
Level : 10



OXIDES OF NITROGEN



OXIDES OF NITROGEN (NOx) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB NOx)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	669	99.7	100.00%	0.00%	0.00%	0.00%	-	-	-	-	4.2
February	635	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	2.6
March	682	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.9
April	677	99.4	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.3
May	670	99.6	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.3
June	681	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.4
July	675	99.2	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.0
August	680	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.3
September	677	99.7	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.5
October	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.9
November	674	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	3.7
December	673	100.0	99.85%	0.15%	0.00%	0.00%	-	-	-	-	6.4
										ANNUAL AVERAGE	2.4

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	2.4	PPB



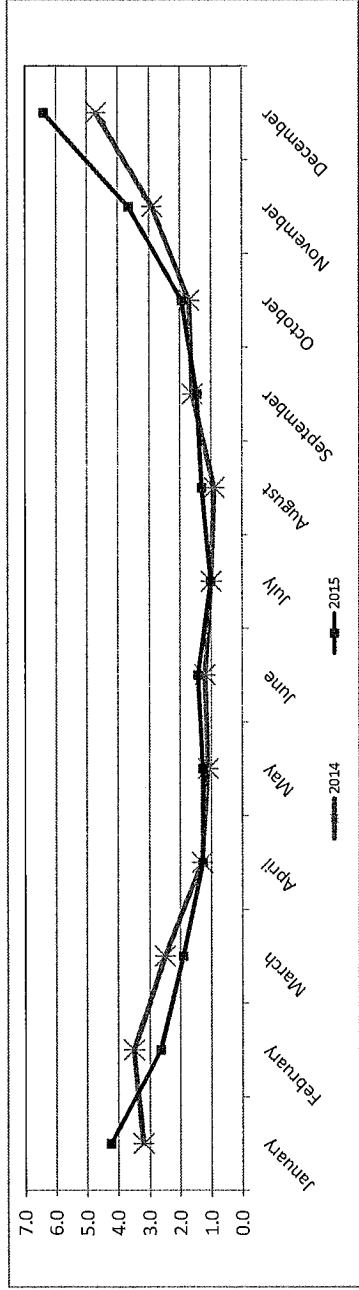
OXIDES OF NITROGEN (NOx) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	3.2	0.0	23.7		4.2	0.1	37.2		-1.0
February	3.5	0.0	23.0		2.6	0.0	17.7		0.9
March	2.5	0.0	13.1		1.9	0.0	14.3		0.6
April	1.3	0.0	6.8		1.3	0.0	16.3		0.0
May	1.1	0.0	10.2		1.3	0.0	11.7		-0.2
June	1.2	0.0	6.2		1.4	0.0	7.3		-0.2
July	1.0	0.0	10.0		1.0	0.0	6.7		0.0
August	0.9	0.0	11.8		1.3	0.0	10.5		-0.4
September	1.6	0.0	11.2		1.5	0.0	8.7		0.1
October	1.7	0.0	9.5		1.9	0.0	16.7		-0.2
November	2.9	0.0	23.1		3.7	0.0	31.5		-0.8
December	1.7	0.0	26.9		6.4	0.0	50.5		-1.7

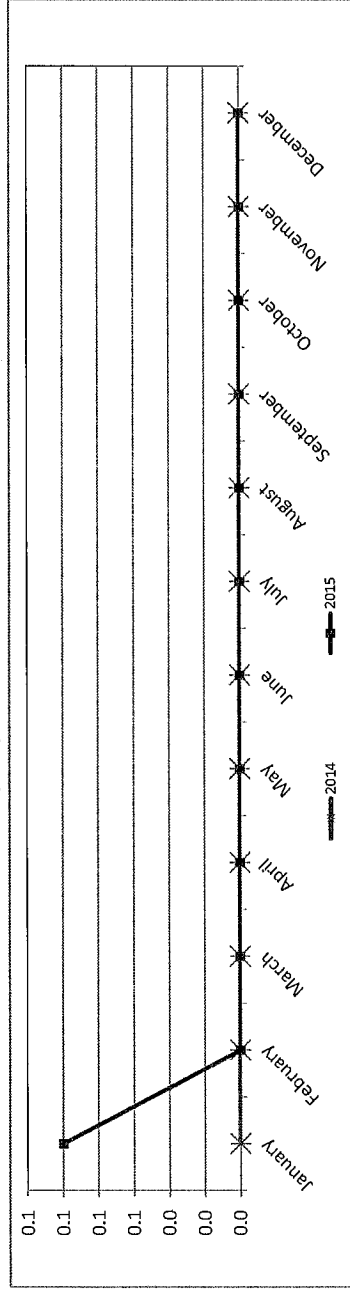
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

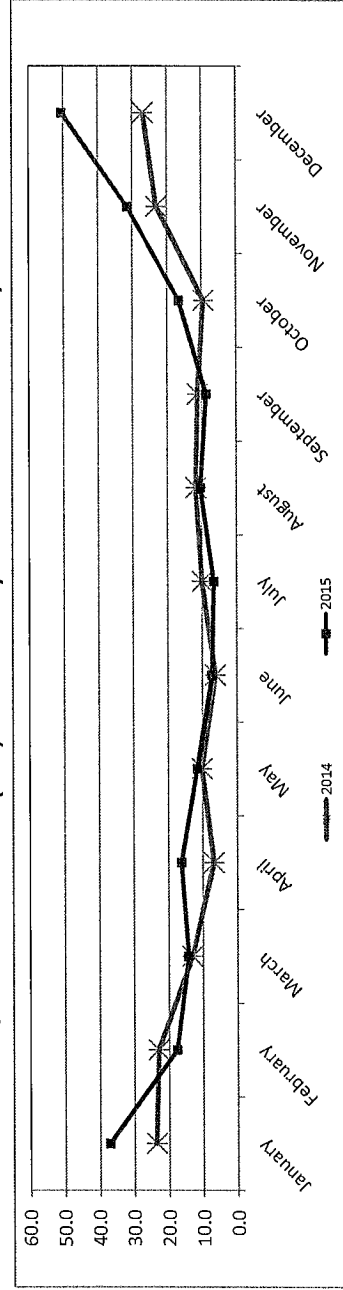
OXIDES OF NITROGEN (NOx) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LJCA31
 NOX_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 31
 Site Name : LJCA31
 Parameter : NOX
 Units : PPS

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	3.22	2.81	4.32	5.71	4.28	3.80	4.22	5.70	9.52	8.82	8.64	9.33	8.65	9.61	6.88	4.40	99.98
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.01
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.22	2.81	4.32	5.71	4.28	3.80	4.22	5.70	9.52	8.82	8.64	9.34	8.65	9.61	6.88	4.40	

Calm : .00 %

Total # Operational Hours : 8217

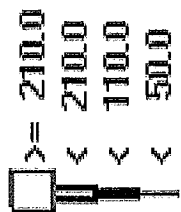
Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	265	231	355	470	352	313	347	469	783	725	710	767	711	790	566	362	8216
< 110.0																	1
< 210.0																	
>= 210.0																	
Totals	265	231	355	470	352	313	347	469	783	725	710	768	711	790	566	362	

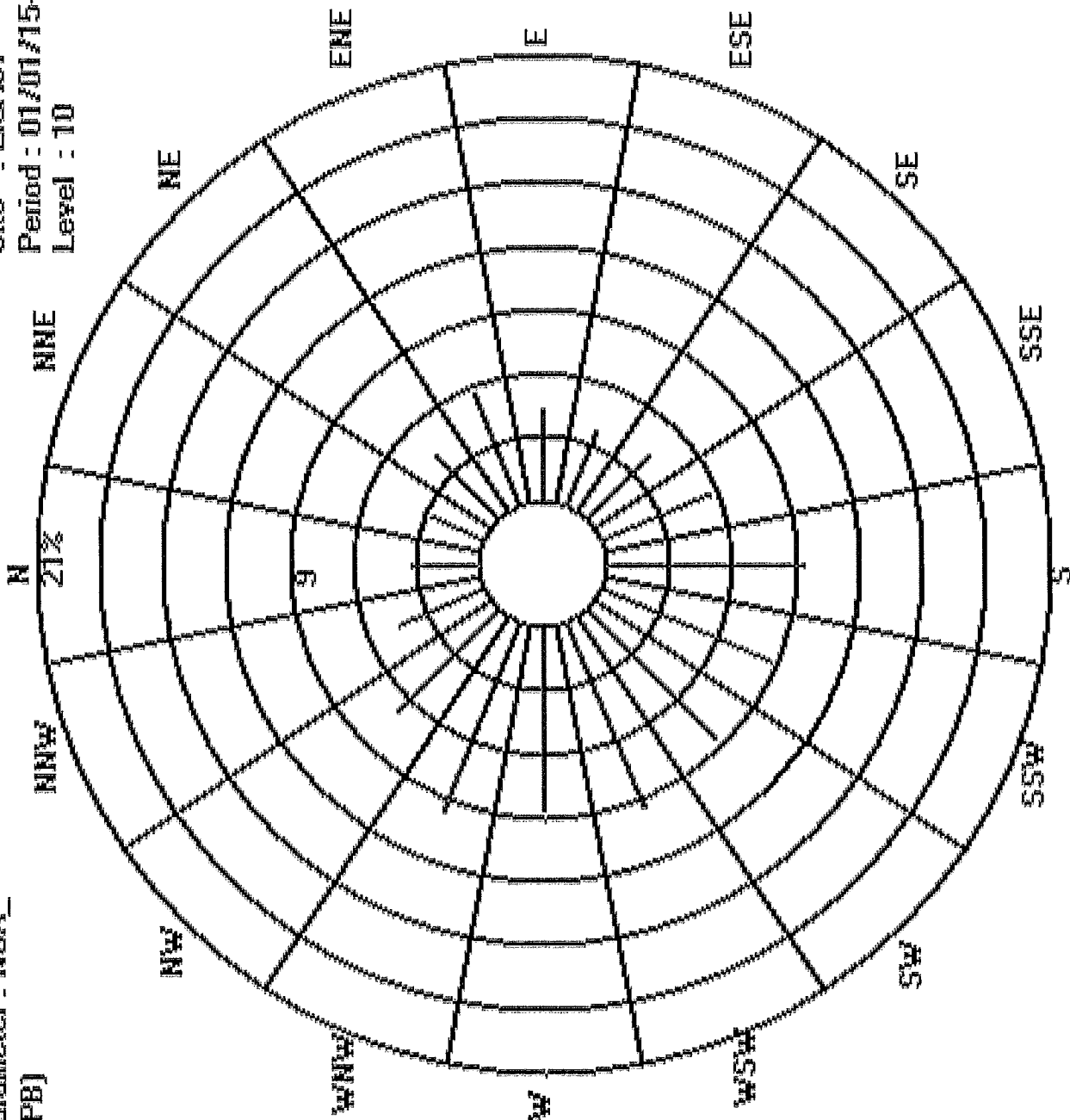
Calm : .00 %

Total # Operational Hours : 8217

Logger : 31 Parameter : NDX_
Class Limits (PPB)



Site : LIC&31
Period : 01/01/15-12/31/15
Level : 10



NITRIC OXIDES



NITRIC OXIDE (NO) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB:NO)				OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	669	99.7	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.5
February	635	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.6
March	682	99.9	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.1
April	677	99.4	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.1
May	670	99.6	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.2
June	681	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.1
July	675	99.2	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.1
August	680	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.1
September	677	99.7	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.1
October	682	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.0
November	674	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	0.4
December	673	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	-	1.1
ANNUAL AVERAGE										0.3	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	0.3	PPB

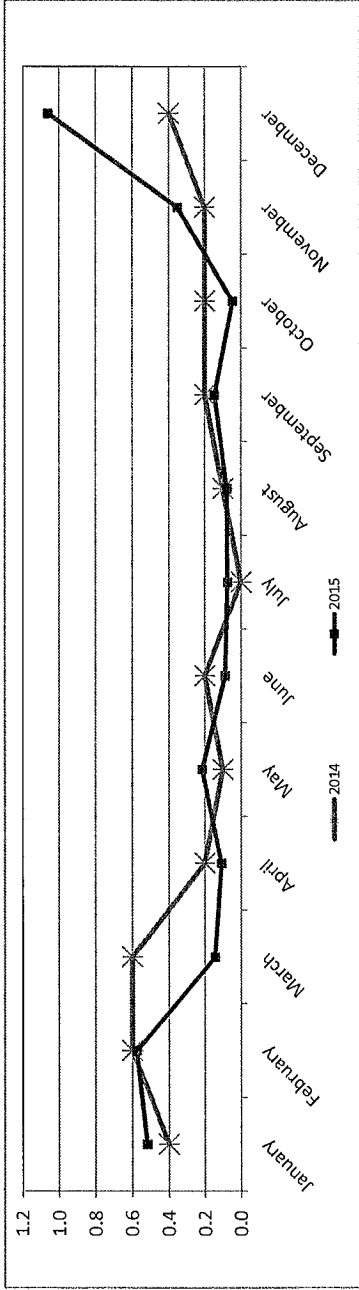


NITRIC OXIDE (NO) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

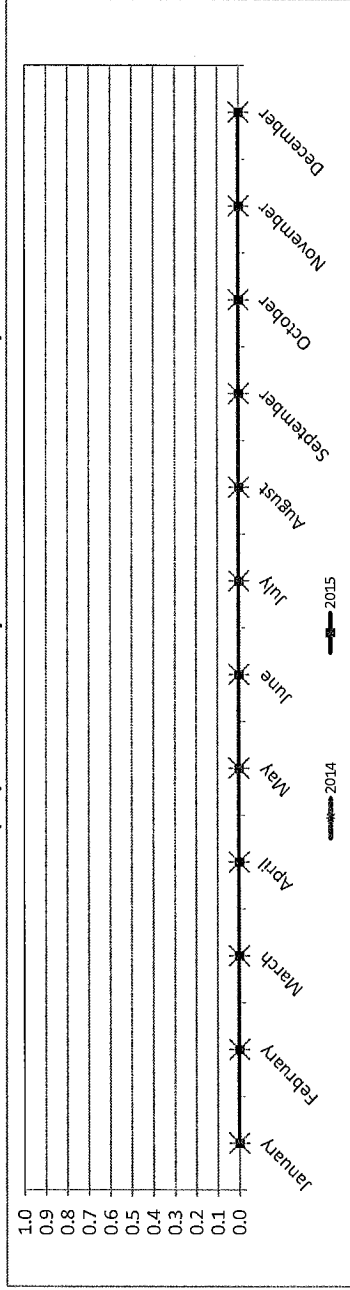
Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	0.4	0.0	5.1		0.5	0.0	10.1		-0.1
February	0.6	0.0	15.6		0.6	0.0	6.6		0.0
March	0.6	0.0	5.5		0.1	0.0	3.4		0.5
April	0.2	0.0	1.2		0.1	0.0	6.6		0.1
May	0.1	0.0	1.3		0.2	0.0	1.9		-0.1
June	0.2	0.0	1.5		0.1	0.0	2.3		0.1
July	0.0	0.0	1.8		0.1	0.0	2.7		-0.1
August	0.1	0.0	2.0		0.1	0.0	1.5		0.0
September	0.2	0.0	4.6		0.1	0.0	2.6		0.1
October	0.2	0.0	3.9		0.0	0.0	1.5		0.2
November	0.2	0.0	3.1		0.4	0.0	11.0		-0.2
December	0.4	0.0	11.3		1.1	0.0	78.5		-0.7

N/D - Valid Data Not Available
 *Annual peak is bolded and highlighted.

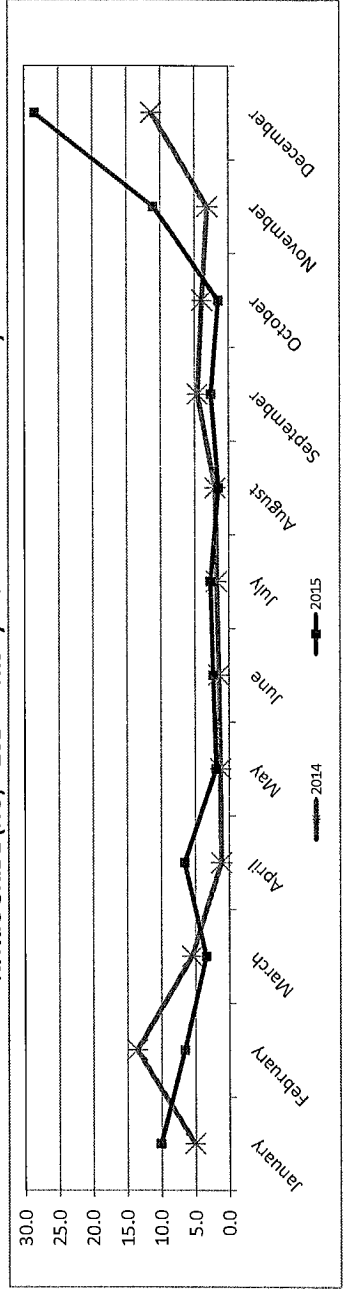
NITRIC OXIDE (NO) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITRIC OXIDE (NO) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITRIC OXIDE (NO) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA31
 NO_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : NO
 Units : PPE

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	3.22	2.81	4.32	5.71	4.28	3.80	4.22	5.70	9.52	8.82	8.64	9.34	8.65	9.61	6.88	4.40	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.22	2.81	4.32	5.71	4.28	3.80	4.22	5.70	9.52	8.82	8.64	9.34	8.65	9.61	6.88	4.40	

Calm : .00 %

Total # Operational Hours : 8217

Distribution By Samples

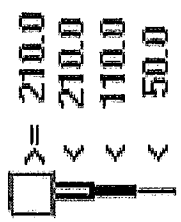
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	265	231	355	470	352	313	347	469	783	725	710	768	711	790	566	362	8217
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	265	231	355	470	352	313	347	469	783	725	710	768	711	790	566	362	

Calm : .00 %

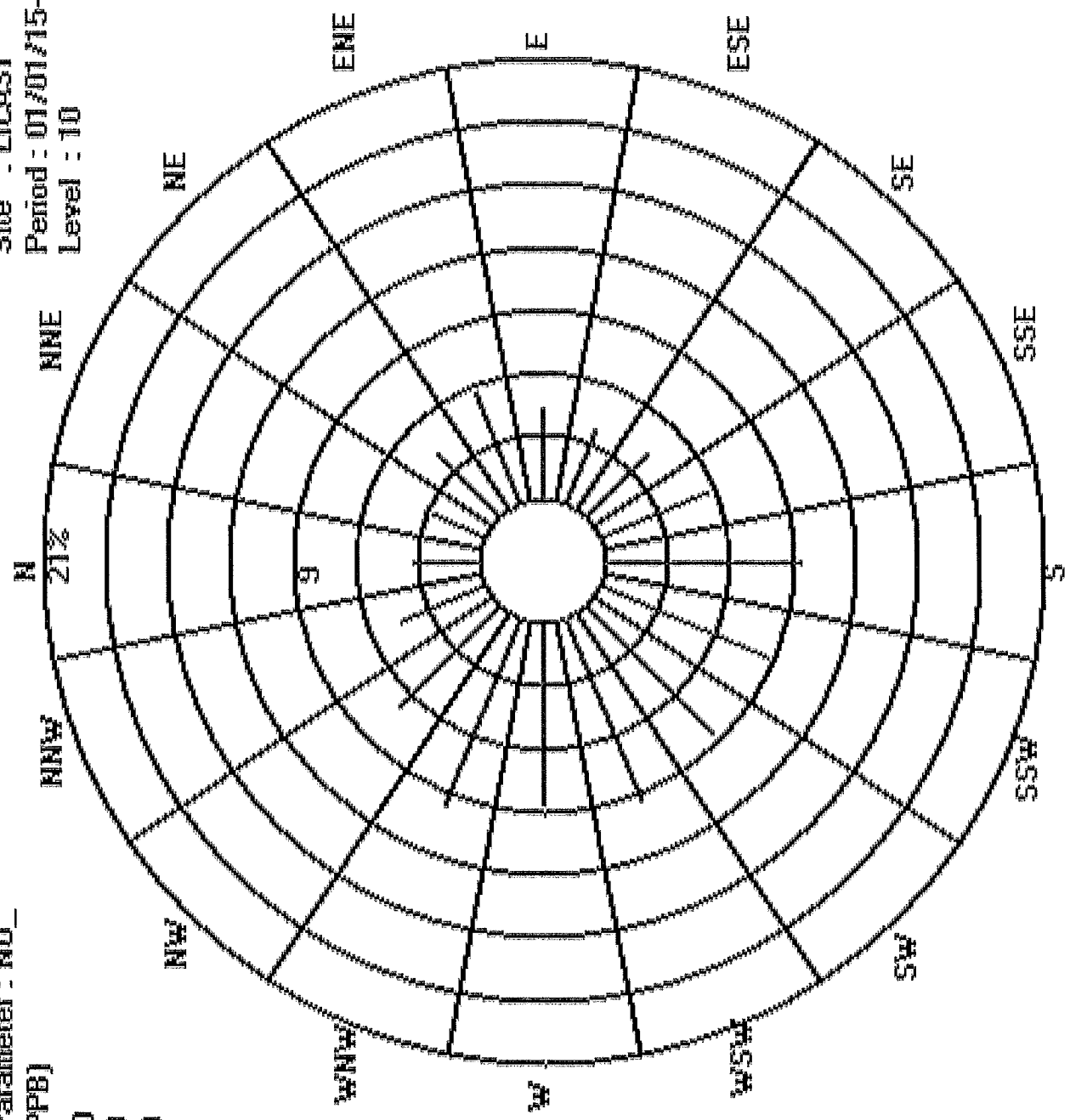
Total # Operational Hours : 8217

Logger : 31 Parameter : NO_

Class Limits (PPB)



Site : LIC&31
Period : 01/01/15-12/31/15
Level : 10



NITROGEN DIOXIDE



NITROGEN DIOXIDE (NO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (ppb NO2)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE	
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR		24-HR
January	669	99.7	100.00%	0.00%	0.00%	0.00%	159	-	0	-	3.7
February	635	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	2.1
March	682	99.9	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.8
April	677	99.4	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.2
May	670	99.6	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.1
June	681	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.3
July	675	99.2	100.00%	0.00%	0.00%	0.00%	159	-	0	-	0.9
August	680	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.2
September	677	99.7	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.3
October	682	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	1.9
November	674	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	3.3
December	673	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	5.3
N/D - Valid Data Not Available										ANNUAL AVERAGE	2.1

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	24	PPB
Annual Average for 2015	2.1	PPB



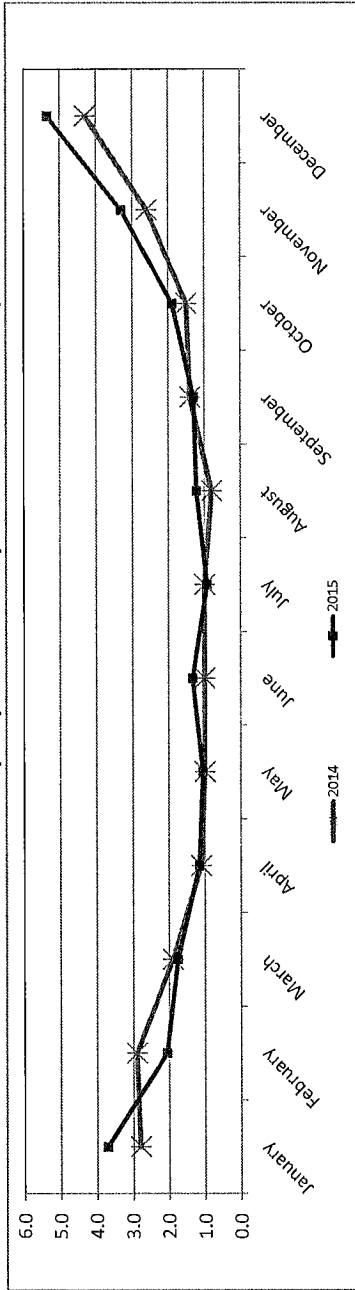
NITROGEN DIOXIDE (NO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	2.8	0.0	22.1	3.7	0.0	31.4	-0.9
February	2.9	0.0	16.4	2.1	0.0	17.4	0.8
March	1.9	0.0	12.7	1.8	0.0	14.3	0.1
April	1.1	0.0	6.5	1.2	0.0	9.7	-0.1
May	1.0	0.0	10.1	1.1	0.0	10.3	-0.1
June	1.0	0.0	5.0	1.3	0.0	7.0	-0.3
July	1.0	0.0	9.4	0.9	0.0	4.6	0.1
August	0.8	0.0	10.6	1.2	0.0	10.5	-0.4
September	1.4	0.0	10.3	1.3	0.0	8.7	0.1
October	1.5	0.0	8.2	1.9	0.0	16.7	-0.4
November	2.6	0.0	22.5	3.3	0.0	28.0	-0.7
December	4.3	0.0	26.3	5.3	0.0	39.0	-1.0

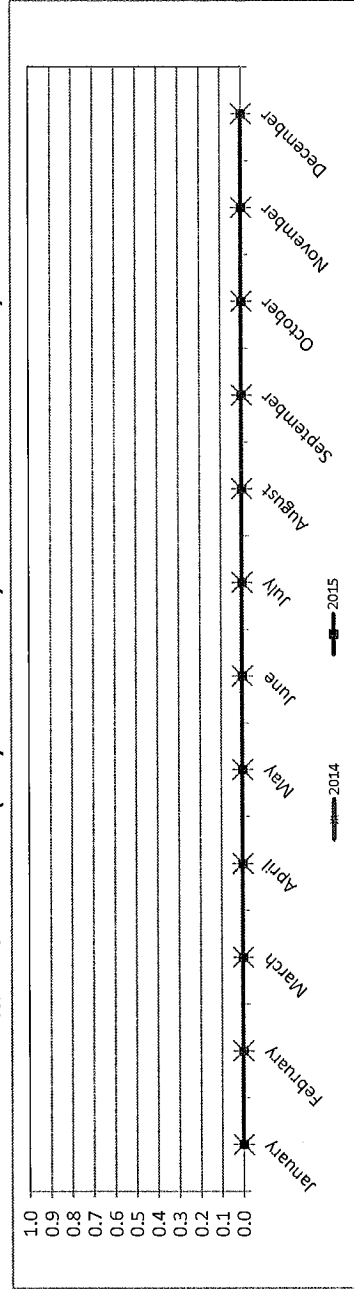
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

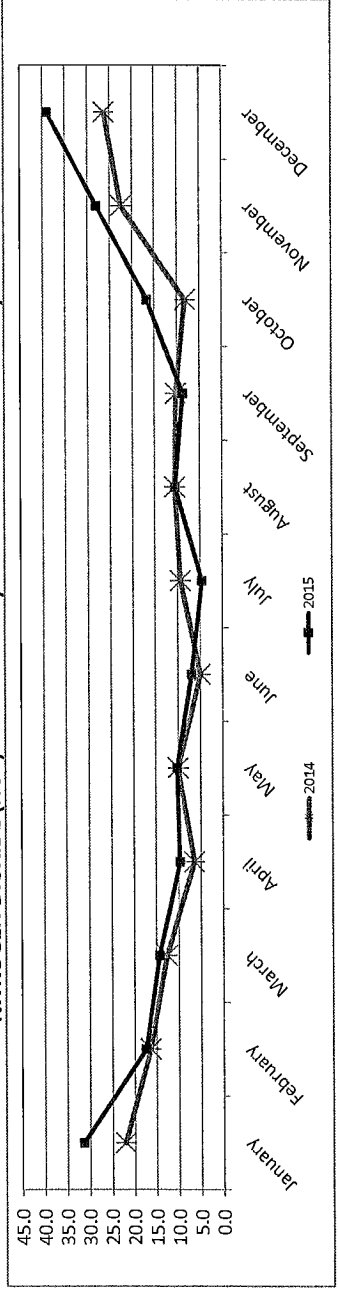
NITROGEN DIOXIDE (NO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



NO2_ / WDR Joint Frequency Distribution (Percent)

LICA31

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : NO2_

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	3.22	2.81	4.32	5.71	4.28	3.80	4.22	5.70	9.52	8.82	8.64	9.34	8.65	9.61	6.88	4.40	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.22	2.81	4.32	5.71	4.28	3.80	4.22	5.70	9.52	8.82	8.64	9.34	8.65	9.61	6.88	4.40	

Calm : .00 %

Total # Operational Hours : 8217

Distribution By Samples

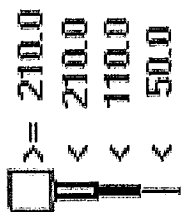
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	265	231	355	470	352	313	347	469	783	725	710	768	711	790	566	362	8217
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	265	231	355	470	352	313	347	469	783	725	710	768	711	790	566	362	

Calm : .00 %

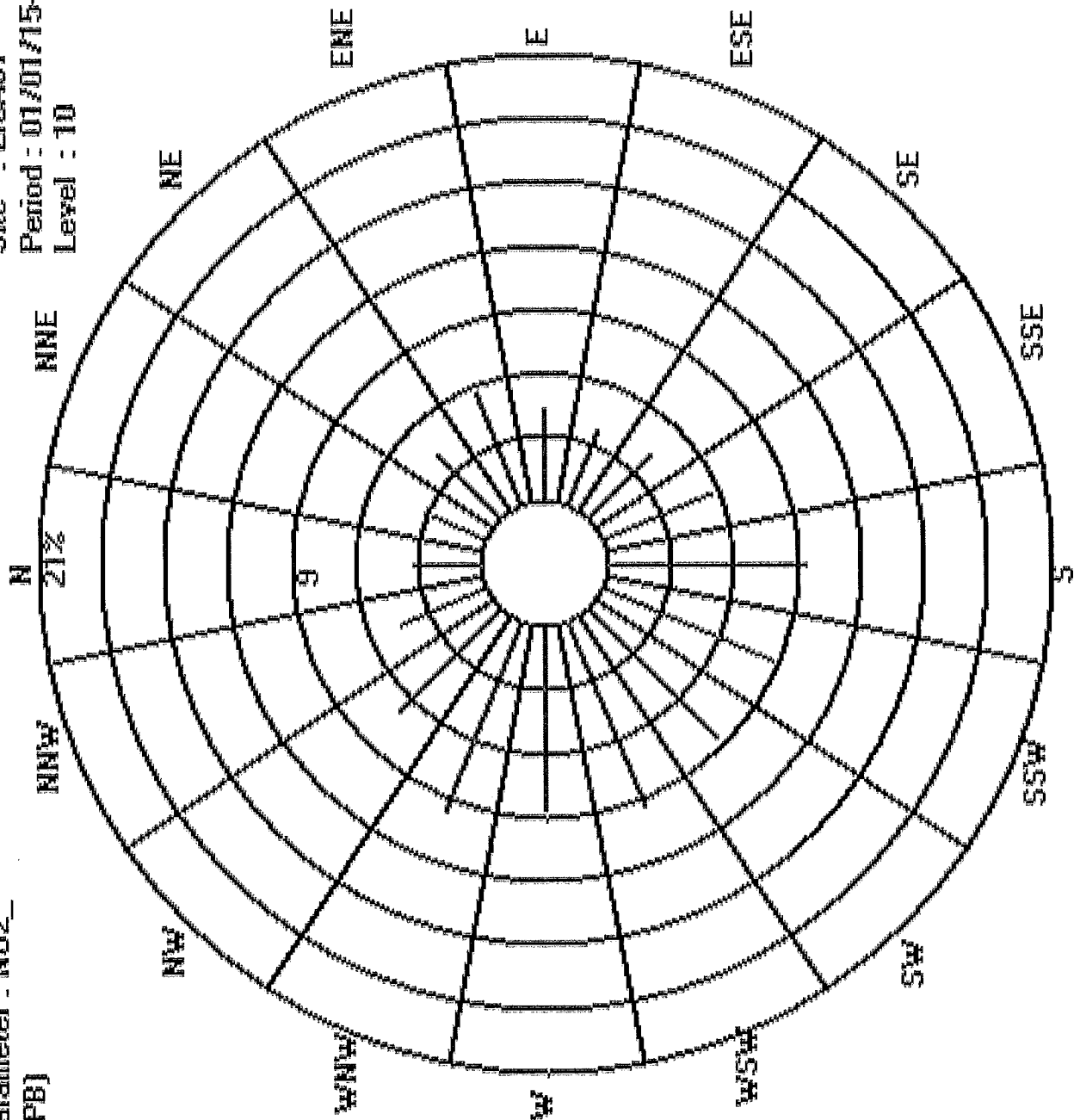
Total # Operational Hours : 8217

Logger : 31 Parameter : ND2_

Class Limits (PPB)



Site : LICA31
Period : 01/01/15-12/31/15
Level : 10



OZONE



OZONE (O3) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB O3)				OBJECTIVES**			EXCEEDENCES			MONTHLY AVERAGE
			≤ 50 ppb	51 ≤ C ≤ 110 ppb	111 ≤ C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	1-HR	24-HR	
January	684	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	0	-	31
February	635	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	0	-	34
March	682	99.9	99.85%	0.15%	0.00%	0.00%	82	-	0	-	0	-	38
April	679	99.4	95.43%	4.57%	0.00%	0.00%	82	-	0	-	0	-	39
May	676	100.0	72.19%	27.81%	0.00%	0.00%	82	-	0	-	0	-	44
June	682	100.0	92.82%	7.18%	0.00%	0.00%	82	-	0	-	0	-	36
July	677	99.2	94.98%	5.02%	0.00%	0.00%	82	-	0	-	0	-	31
August	683	100.0	97.22%	2.78%	0.00%	0.00%	82	-	0	-	0	-	28
September	681	99.7	100.00%	0.00%	0.00%	0.00%	82	-	0	-	0	-	23
October	681	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	0	-	28
November	662	98.2	100.00%	0.00%	0.00%	0.00%	82	-	0	-	0	-	25
December	679	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	0	-	19
												ANNUAL AVERAGE	31

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	31	PPB



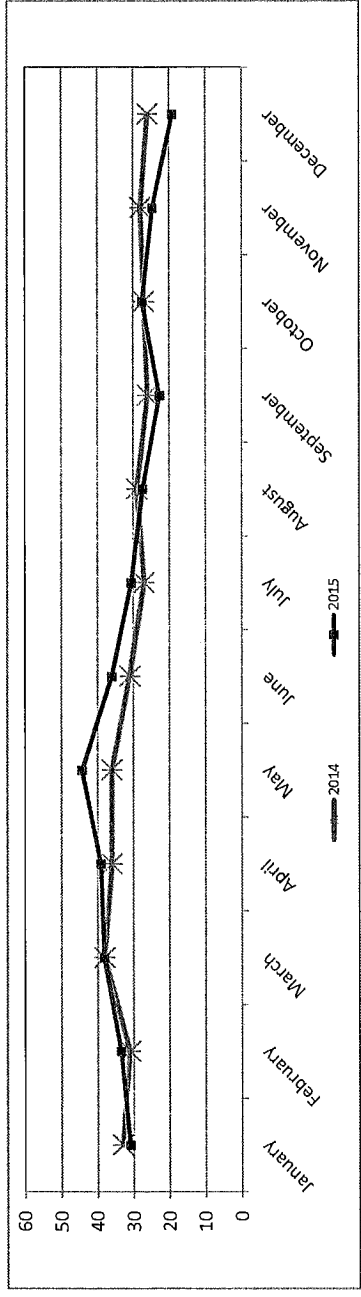
OZONE (O3) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	Difference		
January	33	8	48	31	0	46	2		
February	31	13	43	34	8	45	-3		
March	38	19	53	38	18	51	0		
April	36	17	57	39	20	54	-3		
May	36	10	60	44	19	74	-8		
June	31	13	58	36	11	64	-5		
July	27	6	55	31	8	71	-4		
August	29	4	59	28	4	60	1		
September	26	4	51	23	6	47	3		
October	27	7	43	28	6	45	-1		
November	28	4	42	25	5	40	3		
December	26	5	44	19	1	40	7		

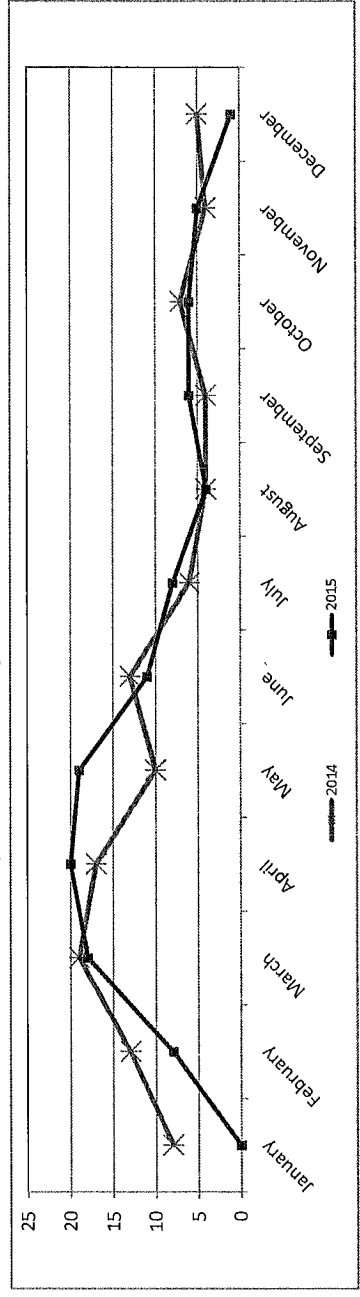
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

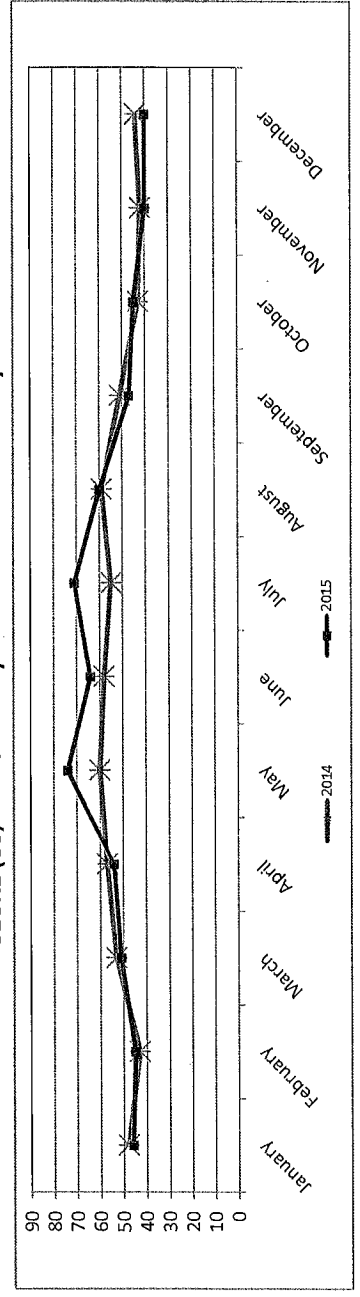
OZONE (O3) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



OZONE (O3) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



OZONE (O3) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA31
 O3_ / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : O3
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	3.09	2.67	4.16	5.71	4.18	3.61	3.78	5.31	8.76	8.26	8.31	9.10	8.44	9.37	6.63	4.26	95.72
< 110.0	.03	.10	.09	.09	.09	.35	.59	.38	.66	.40	.37	.33	.25	.18	.18	.09	4.27
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.13	2.77	4.26	5.81	4.28	3.96	4.38	5.70	9.43	8.66	8.69	9.44	8.70	9.55	6.82	4.35	

Calm : .00 %

Total # Operational Hours : 8238

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	255	220	343	471	345	298	312	438	722	681	685	750	696	772	547	351	7886
< 110.0	3	9	8	8	8	29	49	32	55	33	31	28	21	15	15	8	352
< 210.0																	
>= 210.0																	
Totals	258	229	351	479	353	327	361	470	777	714	716	778	717	787	562	359	

Calm : .00 %

Total # Operational Hours : 8238

Logger : 31 Parameter : O3

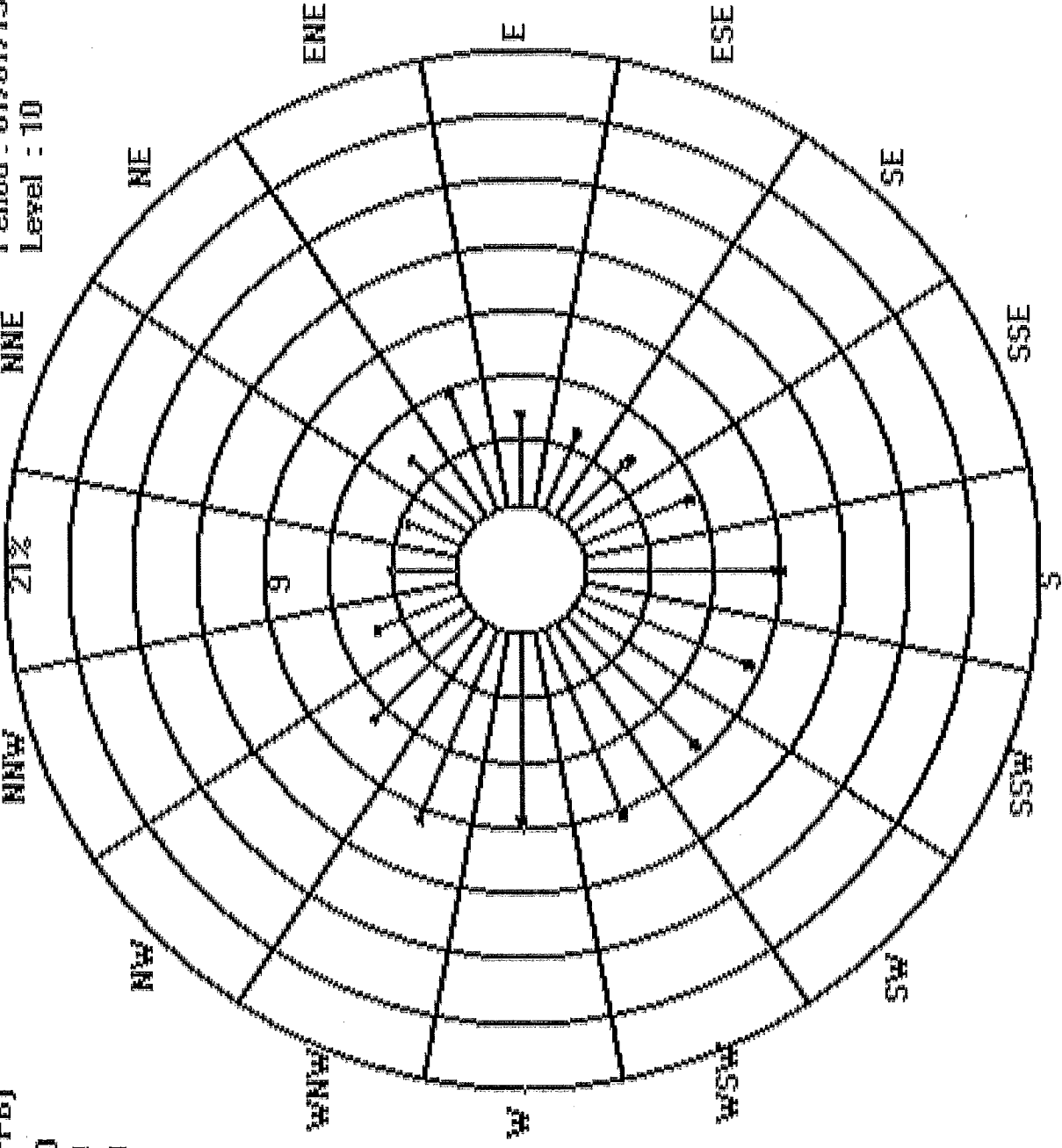
Site : LICA31

Class Limits (PPB)

Period : 01/01/15-12/31/15



Level : 10



PARTICULATE MATTER 2.5

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Ranges (ug/m3 PM2.5)						OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE	
			≤ 30 ug/m3	31 < C ≤ 60 ug/m3	61 < C ≤ 80 ug/m3	81 < C ≤ 120 ug/m3	121 < C ≤ 240 ug/m3	> 240 ug/m3	1-HR	24-HR	1-HR	24-HR		
January	581	78.6	98.80%	1.20%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	0	9
February	551	82.6	99.64%	0.36%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	0	9
March	733	99.1	99.59%	0.41%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	0	9
April	712	99.3	99.86%	0.00%	0.14%	0.00%	0.00%	0.00%	-	30	-	0	0	7
May	714	96.5	97.76%	0.98%	0.42%	0.42%	0.42%	0.00%	-	30	-	1	0	8
June	705	98.2	97.45%	2.27%	0.28%	0.00%	0.00%	0.00%	-	30	-	0	0	6
July	723	97.4	88.11%	5.81%	1.66%	1.52%	2.90%	0.00%	-	30	-	4	0	15
August	598	81.7	99.00%	0.50%	0.17%	0.33%	0.00%	0.00%	-	30	-	0	0	3
September	679	94.7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	0	2
October	721	97.2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	0	3
November	712	99.6	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	0	6
December	741	99.9	99.60%	0.40%	0.00%	0.00%	0.00%	0.00%	-	30	-	0	0	9
ANNUAL AVERAGE:													7	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives - Annual Average**	N/D	ug/m3
Annual Average for 2015	7	ug/m3

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 One-Hour Readings vs. 2015 One-Hour Readings in ug/m3

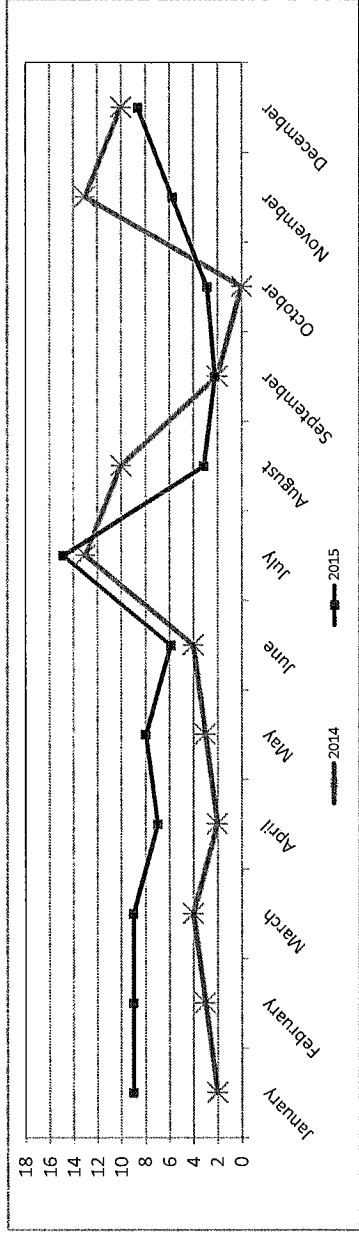
Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	2	0	17	9	0	39	-7
February	3	0	19	9	0	36	-6
March	4	0	39	9	0	36	-5
April	2	0	14	7	0	64	-5
May	3	0	11	8	0	169	-5
June	4	0	53	5.9	0	75	-2
July	13	0	157	10.9	0	216	-2
August	10	0	96	3.2	0	118	7
September	2	0	16	2.2	0	15	0
October	N/D	N/D	N/D	2.9	0	13	N/D
November	13	0	105	5.8	0	25	7
December	10	0	52	8.6	0	33	1

N/D - Valid Data Not Available

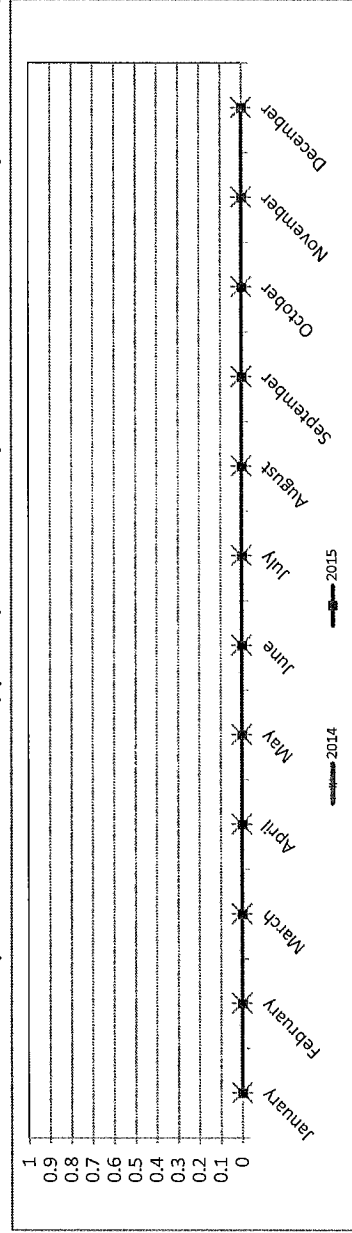
No data was collected in October 2014 as the Teom unit was out for repair from September 11 to November 6, 2014.

*Annual peak is bolded and highlighted.

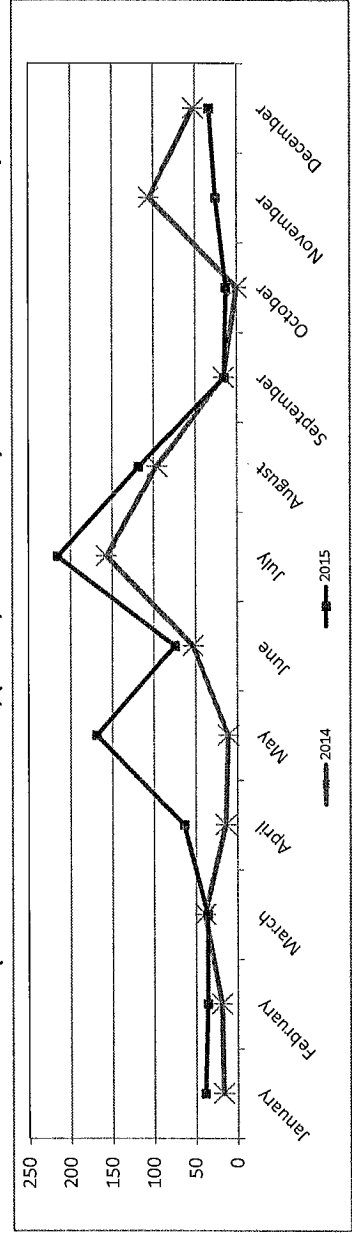
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Mean vs. 2015 Monthly Mean in ug/m3



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Minimum vs. 2015 Monthly Minimum in ug/m3



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Maximum vs. 2015 Monthly Maximum in ug/m3



LICA31
 PM2 / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 30.0	2.99	2.44	3.75	5.49	4.17	4.03	4.54	5.82	9.49	8.83	8.49	9.48	8.47	9.38	6.51	4.20	98.17	
< 60.0	.03	.06	.06	.03	.01	.02	.01	.01	.06	.12	.11	.06	.17	.18	.07	.04	1.09	
< 80.0	.00	.01	.01	.07	.00	.01	.01	.04	.02	.00	.00	.01	.00	.00	.02	.00	.23	
< 120.0	.00	.00	.04	.06	.00	.02	.01	.00	.00	.00	.00	.00	.01	.03	.00	.00	.19	
< 240.0	.00	.06	.07	.09	.03	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01	.30	
>= 240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	3.03	2.57	3.95	5.76	4.22	4.11	4.57	5.89	9.58	8.95	8.60	9.55	8.66	9.60	6.62	4.27		

Calm : .00 %

Total # Operational Hours : 8149

Distribution By Samples

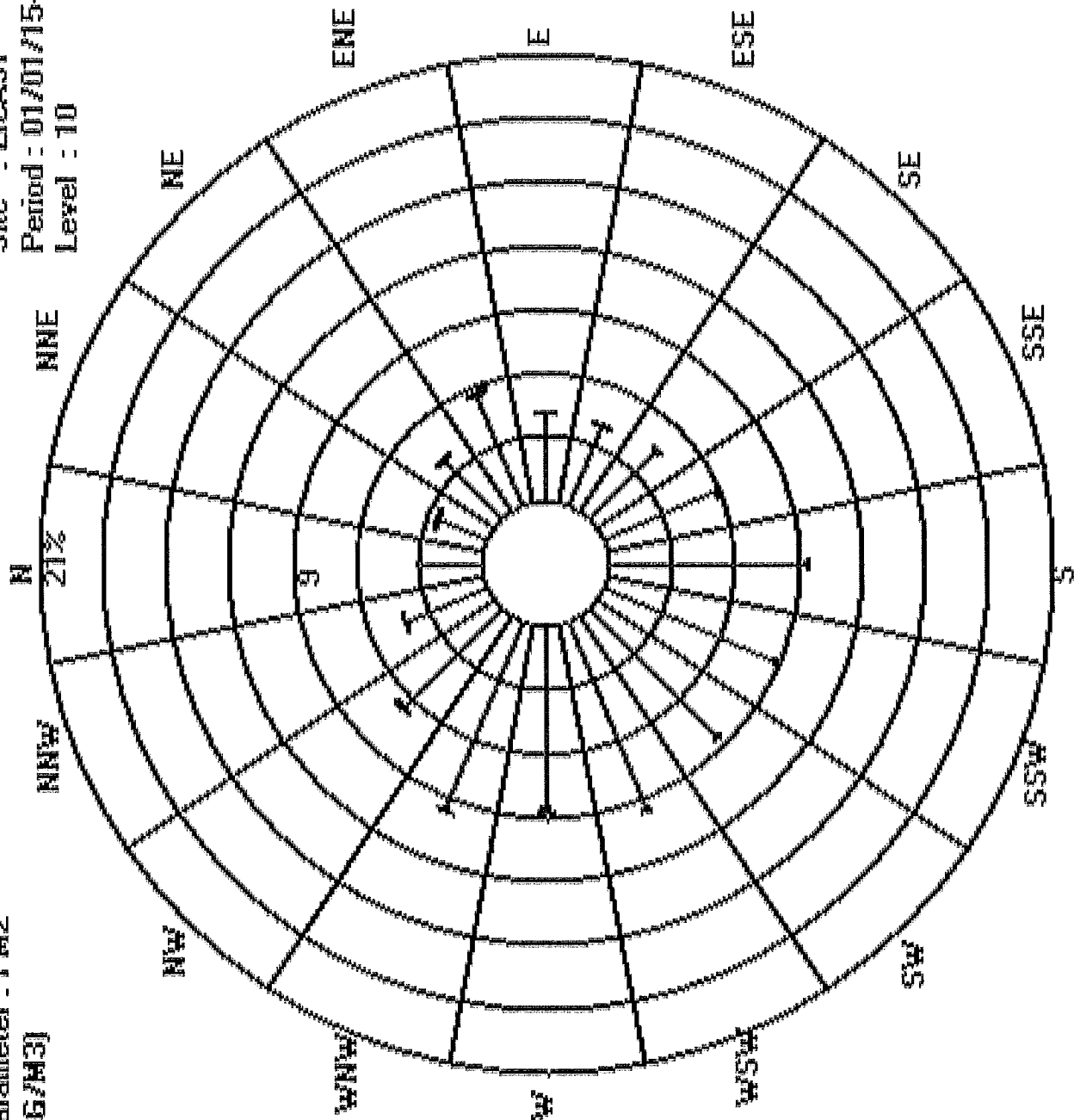
Limit	Direction																NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< 30.0	244	199	306	448	340	329	370	475	774	720	692	773	691	765	531	343	8000	
< 60.0	3	5	5	3	1	2	1	1	5	10	9	5	14	15	6	4	89	
< 80.0		1	1	6	1	1	1	4	2		1			2			19	
< 120.0			4	5	2	2	1						1	3			16	
< 240.0		5	6	8	3	1									1	1	25	
>= 240.0																		
Totals	247	210	322	470	344	335	373	480	781	730	701	779	706	783	540	348		

Calm : .00 %

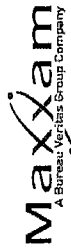
Total # Operational Hours : 8149

Site : LICA31
 Period : 01/01/15-12/31/15
 Level : 10

Logger : 31 Parameter : PM2
 Class Limits (UG/M3)



WIND SPEED



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 St. Lina Site - 2015
 JOB # 2833-2015-31- A

WIND SPEED (WS) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (KPH)	Minimum Hourly Average (KPH)	Maximum Hourly Average (KPH)	Maximum Daily Average (KPH)
January	744	100.0	11.6	0.7	28.8	17.4
February	672	100.0	11.3	1.6	26.6	20.2
March	740	99.5	11.2	1.5	34.5	20.0
April	720	100.0	12.4	1.0	31.4	20.5
May	744	100.0	9.9	0.7	32.5	23.9
June	720	100.0	8.0	0.2	22.7	11.8
July	738	99.2	9.0	1.5	22.9	13.1
August	744	100.0	7.6	0.9	17.3	11.0
September	718	99.7	8.5	0.6	29.0	14.5
October	744	100.0	10.5	0.7	27.5	16.3
November	701	97.4	11.2	0.4	26.4	17.7
December	744	100.0	8.9	0.3	24.4	16.4

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



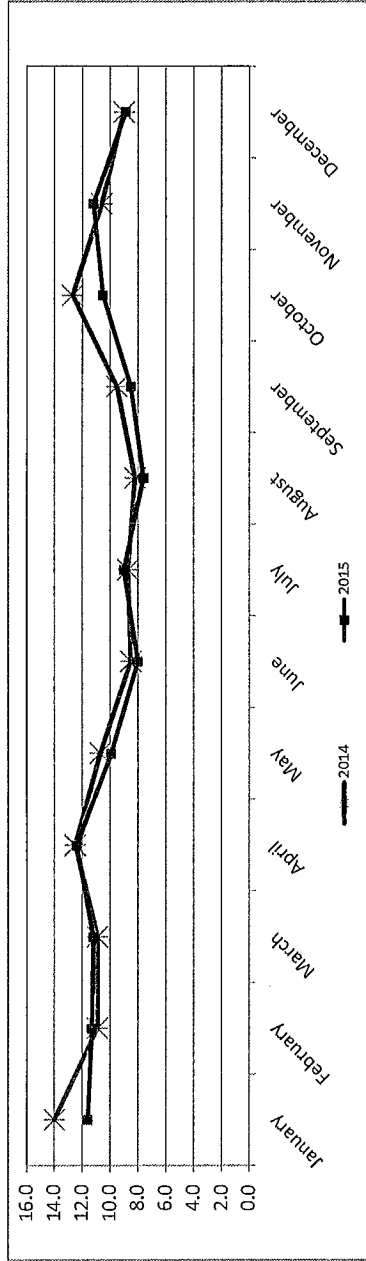
WIND SPEED (WS) 2014 One-Hour Readings vs. 2015 One-Hour Readings in km/hr

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	Difference		
January	10.0	0.8	30.5	11.6	0.7	28.8	2.4		
February	10.9	0.3	30.5	11.3	1.6	26.6	-0.4		
March	10.9	0.8	36.6	11.2	1.5	34.5	-0.3		
April	12.5	0.2	32.8	12.4	1.0	31.4	0.1		
May	10.7	0.6	32.6	9.9	0.7	32.5	0.8		
June	8.5	0.9	21.2	8.0	0.2	22.7	0.5		
July	8.7	0.2	39.6	9.0	1.5	22.9	-0.3		
August	8.2	0.6	22.1	7.6	0.9	17.3	0.6		
September	9.5	1.3	29.8	8.5	0.6	29.0	1.0		
October	12.7	1.1	29.3	10.5	0.7	27.5	2.2		
November	10.6	0.4	29.9	11.2	0.4	26.4	-0.6		
December	9.0	0.3	30.7	8.9	0.3	24.4	0.1		

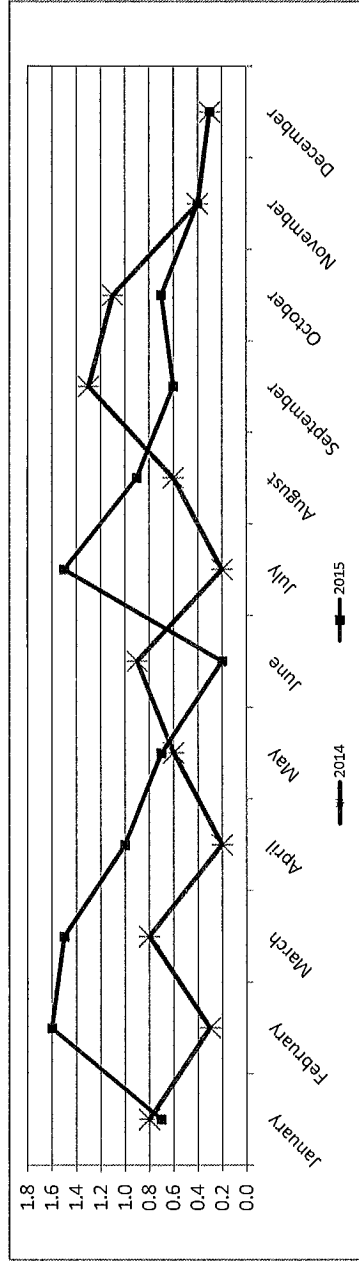
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* Annual peak is bolded and highlighted.

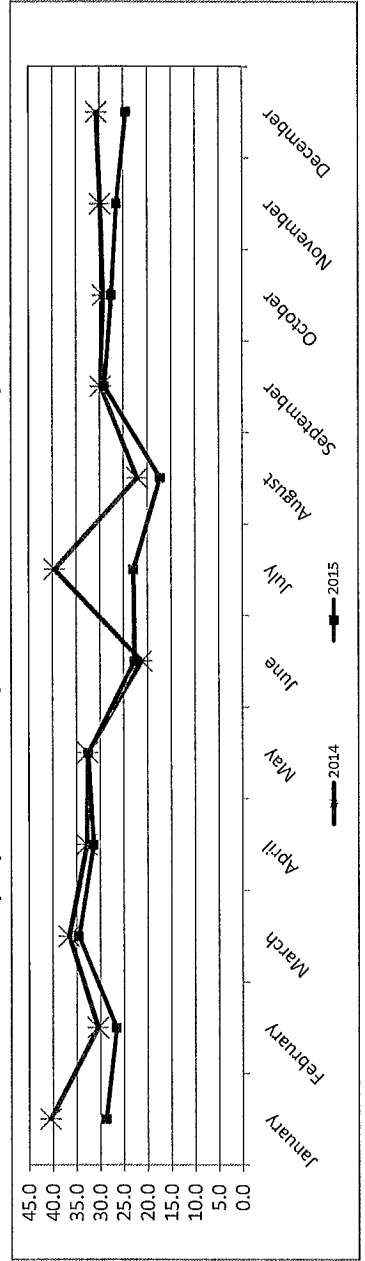
WIND SPEED (WS) 2014 Monthly Mean vs. 2015 Monthly Mean in km/hr



WIND SPEED (WS) 2014 Monthly Minimum vs. 2015 Monthly Minimum in km/hr



WIND SPEED (WS) 2014 Monthly Maximum vs. 2015 Monthly Maximum in km/hr



LICA31
WSP / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 31
Site Name : LICA31
Parameter : WSP
Units : KPH

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	1.11	.95	1.08	.99	.79	.61	.53	.74	1.43	1.75	1.55	.99	1.32	1.43	1.44	1.13	17.91
< 12.0	1.42	1.27	1.86	2.48	2.40	2.44	2.88	3.17	5.44	5.60	4.63	4.58	4.82	5.01	3.25	2.10	53.41
< 20.0	.60	.45	1.15	1.69	.91	.87	.92	1.74	2.44	1.34	2.31	3.19	2.07	2.72	1.51	1.01	24.99
< 29.0	.03	.08	.14	.59	.09	.12	.00	.01	.09	.06	.17	.50	.34	.41	.58	.11	3.37
< 39.0	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.05	.03	.00	.00	.00	.10
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.17	2.76	4.26	5.78	4.20	4.05	4.35	5.67	9.40	8.76	8.68	9.33	8.60	9.58	6.79	4.37	

Calm : .18 %

Total # Operational Hours : 8729

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	97	83	95	87	69	54	47	65	125	153	136	87	116	125	126	99	1564
< 12.0	124	111	163	217	210	213	252	277	475	489	405	400	421	438	284	184	4663
< 20.0	53	40	101	148	80	76	81	152	213	117	202	279	181	238	132	89	2182
< 29.0	3	7	13	52	8	11		1	8	6	15	44	30	36	51	10	295
< 39.0												5	3				9
>= 39.0																	
Totals	277	241	372	505	367	354	380	495	821	765	758	815	751	837	593	382	

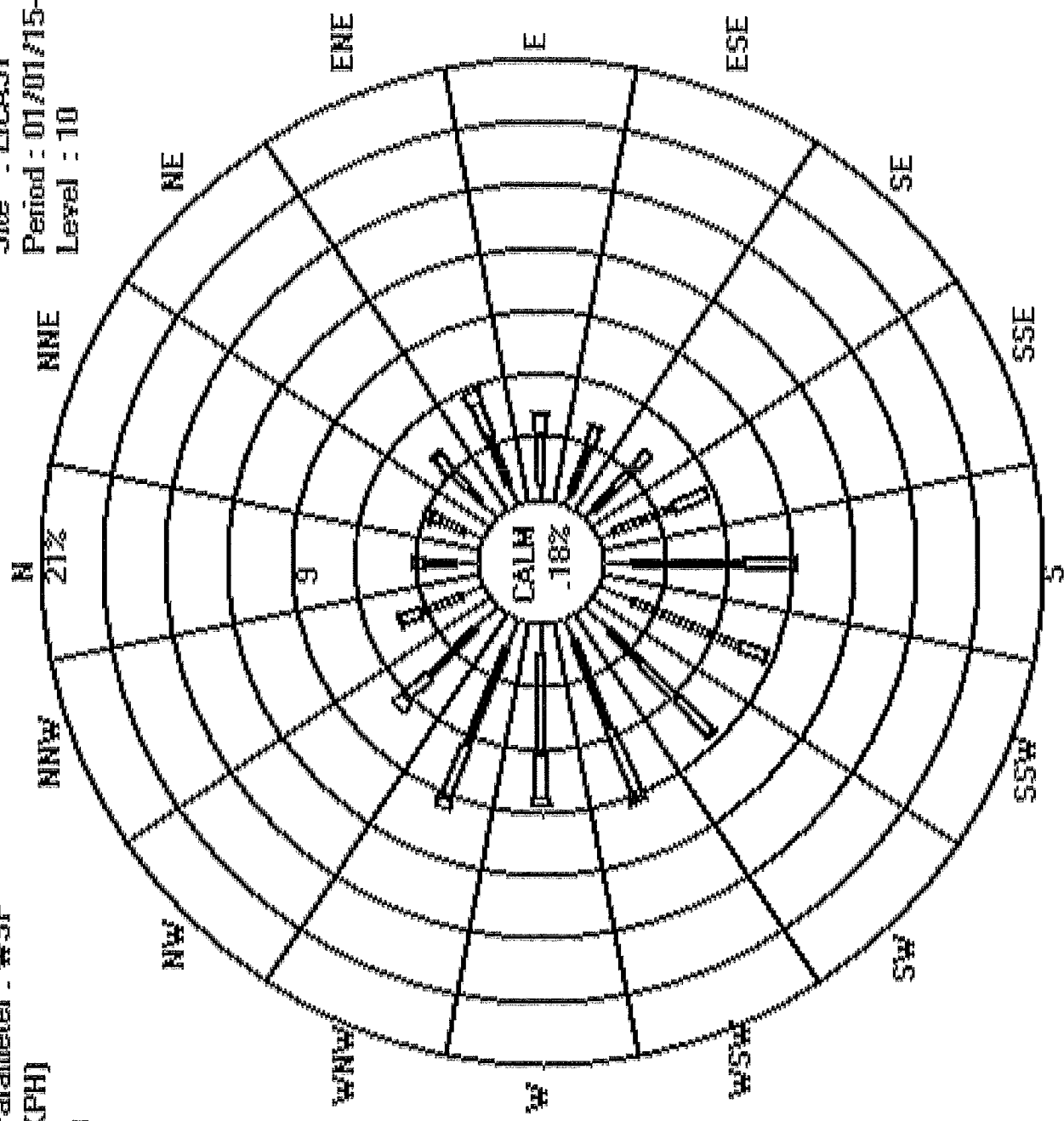
Calm : .18 %

Total # Operational Hours : 8729

Logger : 31 Parameter : WSP
 Class Limits (KPH)



Site : LIC&31
 Period : 01/01/15-12/31/15
 Level : 10



RELATIVE HUMIDITY



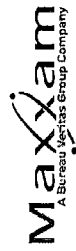
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 St. Lina Site - 2015
 JOB # 2833-2015-31-A

RELATIVE HUMIDITY (RH) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (%)	Minimum Hourly Average (%)	Maximum Daily Average (%)
January	744	100.0	71	38	86
February	672	100.0	68	30	78
March	743	99.9	64	24	83
April	720	100.0	50	8	83
May	744	100.0	46	10	85
June	720	100.0	59	20	81
July	738	99.2	62	22	87
August	744	100.0	64	22	89
September	718	99.7	70	30	88
October	744	100.0	62	23	84
November	720	100.0	72	34	88
December	744	100.0	75	45	87

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



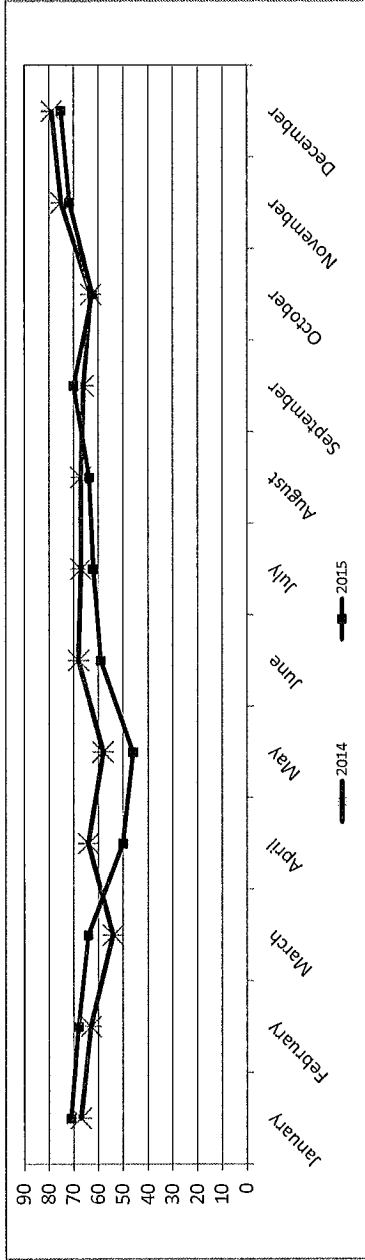
RELATIVE HUMIDITY (RH) 2014 One-Hour Readings vs. 2015 One-Hour Readings in %

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	67	34	87	71	38	89	-4
February	63	15	82	68	30	89	-5
March	54	22	86	64	24	89	-10
April	64	12	91	50	8	90	14
May	58	15	91	46	10	90	12
June	68	31	97	59	20	91	9
July	67	35	97	62	22	91	5
August	67	31	97	64	22	97	3
September	66	20	97	70	30	91	-4
October	63	22	91	62	23	91	1
November	75	38	90	72	34	90	3
December	79	52	89	75	45	88	4

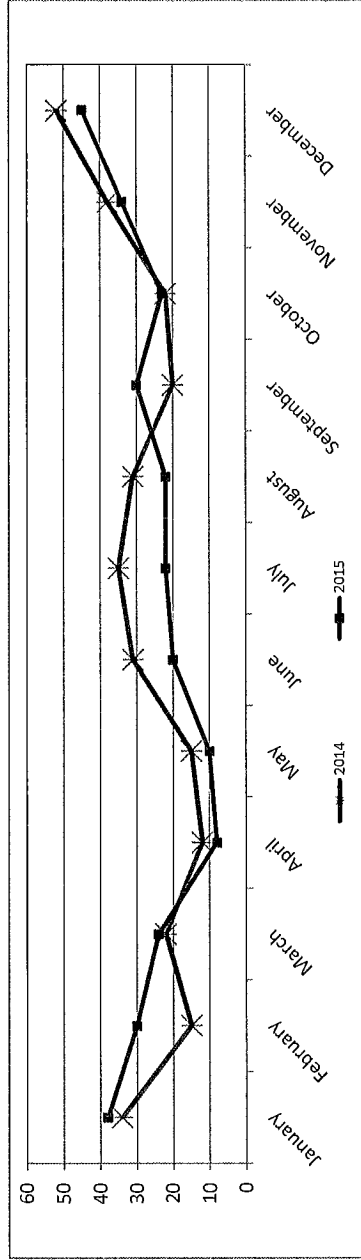
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*Annual peak is bolded and highlighted.

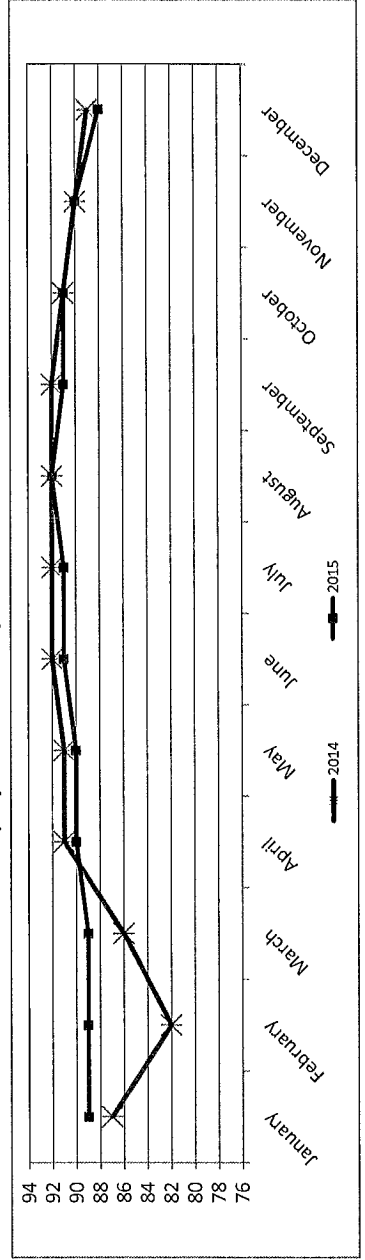
RELATIVE HUMIDITY (RH) 2014 Monthly Mean vs. 2015 Monthly Mean in %



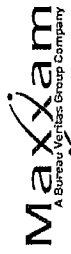
RELATIVE HUMIDITY (RH) 2014 Monthly Minimum vs. 2015 Monthly Minimum in %



RELATIVE HUMIDITY (RH) 2014 Monthly Maximum vs. 2015 Monthly Maximum in %



BAROMETRIC PRESSURE



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION SOCIATION
 St. Lina Site - 2015
 JOB # 2833-2015-31-A

BAROMETRIC PRESSURE (BP) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (millibar)	Minimum Hourly Average (millibar)	Maximum Hourly Average (millibar)	Maximum Daily Average (millibar)
January	744	100.0	929	908	954	949
February	672	100.0	931	909	946	943
March	743	99.9	927	905	943	940
April	720	100.0	928	907	939	936
May	744	100.0	935	921	947	945
June	719	99.9	933	922	941	938
July	738	99.2	930	921	941	938
August	744	100.0	930	915	939	937
September	718	99.7	928	915	938	936
October	744	100.0	928	903	945	942
November	720	100.0	924	901	938	936
December	744	100.0	920	904	939	937

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



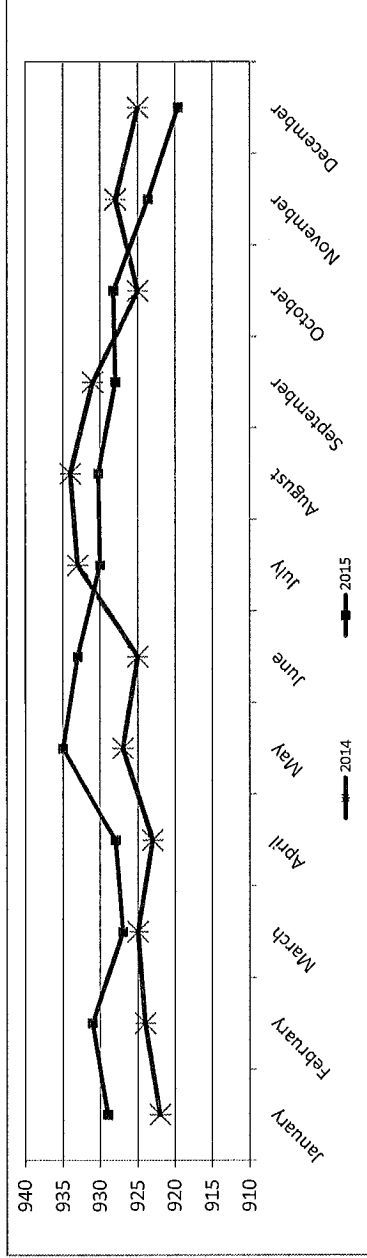
BAROMETRIC PRESSURE (BP) 2014 One-Hour Readings vs. 2015 One-Hour Readings in millibar

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	922	889	947	929	908	950	-7
February	924	900	950	931	909	946	-7
March	925	908	943	927	905	943	-2
April	923	910	944	928	907	939	-5
May	927	915	943	935	921	947	-8
June	925	916	933	933	922	941	-8
July	933	915	946	930	921	941	3
August	934	920	946	930	915	939	4
September	931	917	950	928	915	938	3
October	925	912	939	928	903	945	-3
November	928	902	951	924	901	938	4
December	925	905	950	920	904	939	5

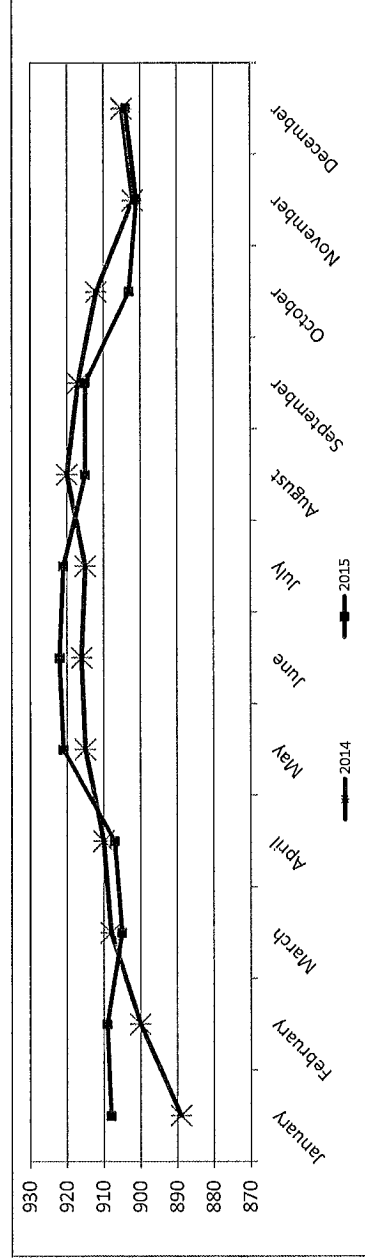
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

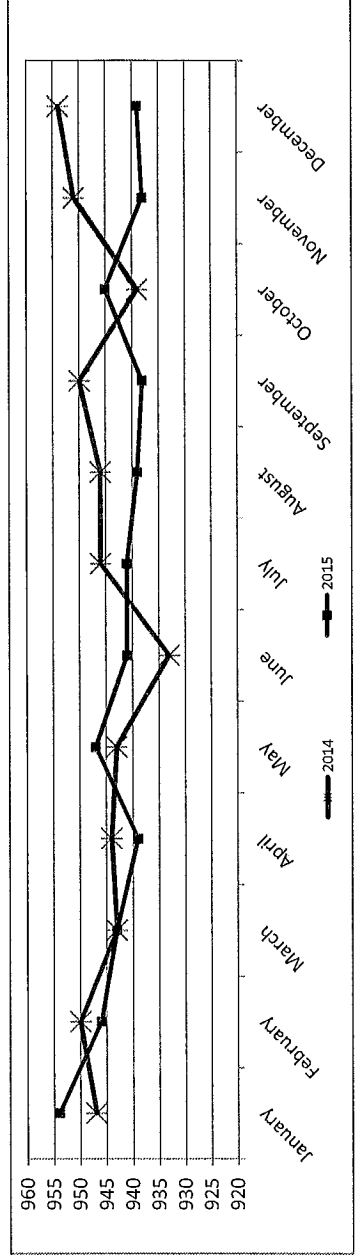
BAROMETRIC PRESSURE (BP) 2014 Monthly Mean vs. 2015 Monthly Mean in millibar



BAROMETRIC PRESSURE (BP) 2014 Monthly Minimum vs. 2015 Monthly Minimum in millibar



BAROMETRIC PRESSURE (BP) 2014 Monthly Maximum vs. 2015 Monthly Maximum in millibar



AMBIENT TEMPERATURE



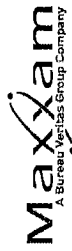
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 St. Lina Site - 2015
 JOB # 2833-2015-31-A

AMBIENT TEMPERATURE (TPX) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	744	100.0	-9.9	-31.0	10.4	5.1
February	672	100.0	-12.5	-26.4	8.9	3.3
March	743	99.9	-0.6	-24.8	14.9	8.6
April	720	100.0	5.6	-7.4	23.7	16.6
May	744	100.0	11.4	-2.5	27.8	20.4
June	720	100.0	16.5	2.8	31.3	25.3
July	738	99.2	18.8	8.5	33.0	24.8
August	744	100.0	17.3	4.4	30.9	24.0
September	718	99.7	10.1	-3.1	26.8	17.9
October	744	100.0	7.0	-4.1	24.8	16.9
November	720	100.0	-2.8	-16.3	9.4	4.6
December	744	100.0	-9.1	-23.2	4.6	0.8

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



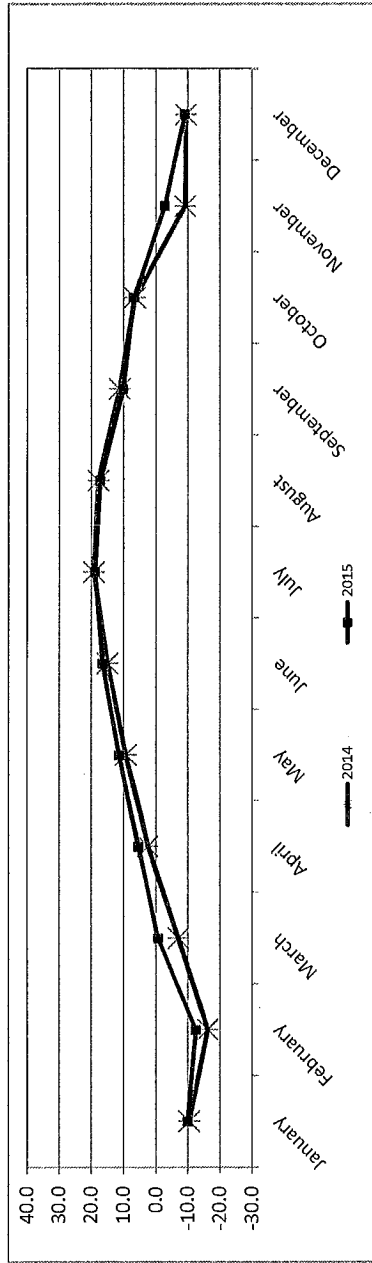
AMBIENT TEMPERATURE (TPX) 2014 One-Hour Readings vs. 2015 One-Hour Readings in Degrees Celsius

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	-10.4	-33.2	8.9	-9.9	-31.0	10.4	-0.5
February	-16.2	-30.1	4.2	-12.5	-26.4	8.9	-3.7
March	-7.0	-32.7	10.3	-0.6	-24.8	14.9	-6.4
April	2.6	-12.1	20.8	5.6	-7.4	23.7	-3.0
May	9.4	-4.3	27.5	11.4	-2.5	27.8	-2.0
June	15.0	2.4	27.1	16.5	2.8	31.3	-1.5
July	19.2	9.8	30.9	18.8	8.5	33.0	0.4
August	17.8	6.4	29.3	17.3	4.4	30.9	0.5
September	11.2	-3.0	30.5	10.1	-3.1	26.8	1.1
October	6.6	-4.5	20.5	7.0	-4.1	24.8	-0.4
November	-9.2	-27.7	10.0	-2.8	-16.3	9.4	-6.4
December	-9.4	-26.9	7.8	-9.1	-23.2	4.6	-0.3

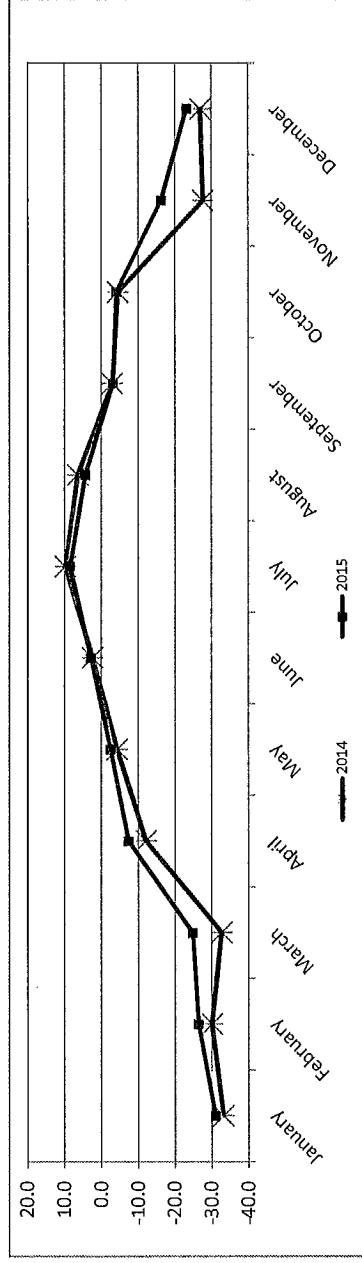
N/D - Valid Data Not Available

* Annual peak is bolded and highlighted.

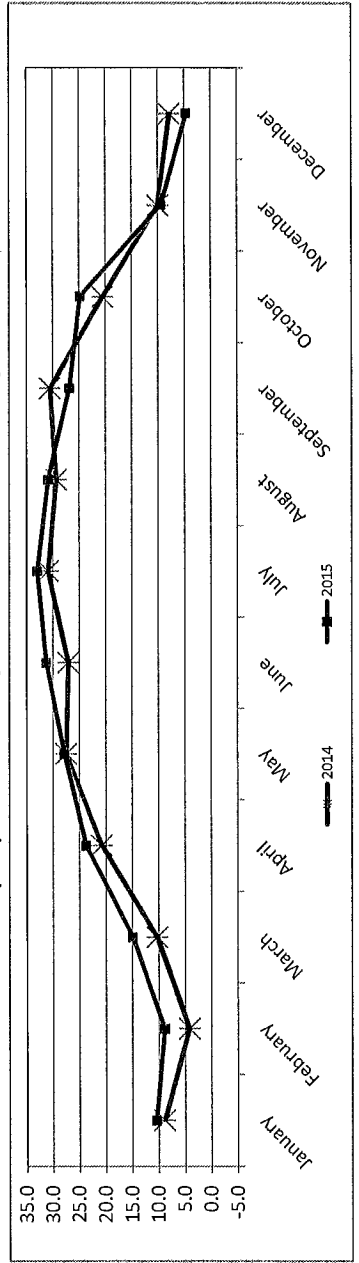
AMBIENT TEMPERATURE (TPX) 2014 Monthly Mean vs. 2015 Monthly Mean in Degrees Celsius



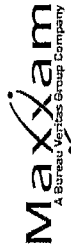
AMBIENT TEMPERATURE (TPX) 2014 Monthly Minimum vs. 2015 Monthly Minimum in Degrees Celsius



AMBIENT TEMPERATURE (TPX) 2014 Monthly Maximum vs. 2015 Monthly Maximum in Degrees Celsius



PRECIPITATION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
 St. Lina Site - 2015
 JOB # 2833-2015-3I-A

PRECIPITATION 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (MM)	Monthly Total (MM)	Maximum Hourly Average (MM)	Maximum Daily Average (MM)
January	744	100.0	0.0	12.0	2.1	0.1
February	672	100.0	0.0	12.4	1.2	0.2
March	742	99.7	0.0	19.2	4.0	0.2
April	720	100.0	0.0	23.7	3.7	0.4
May	740	99.5	0.1	42.3	12.7	0.9
June	714	99.2	0.1	66.9	12.9	1.0
July	738	99.2	0.1	91.0	7.5	1.6
August	744	100.0	0.0	28.5	2.8	0.7
September	718	99.7	0.1	98.6	5.6	2.3
October	744	100.0	0.0	21.3	2.4	0.3
November	720	100.0	0.0	20.3	2.2	0.5
December	743	99.9	0.0	6.3	0.8	0.1

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



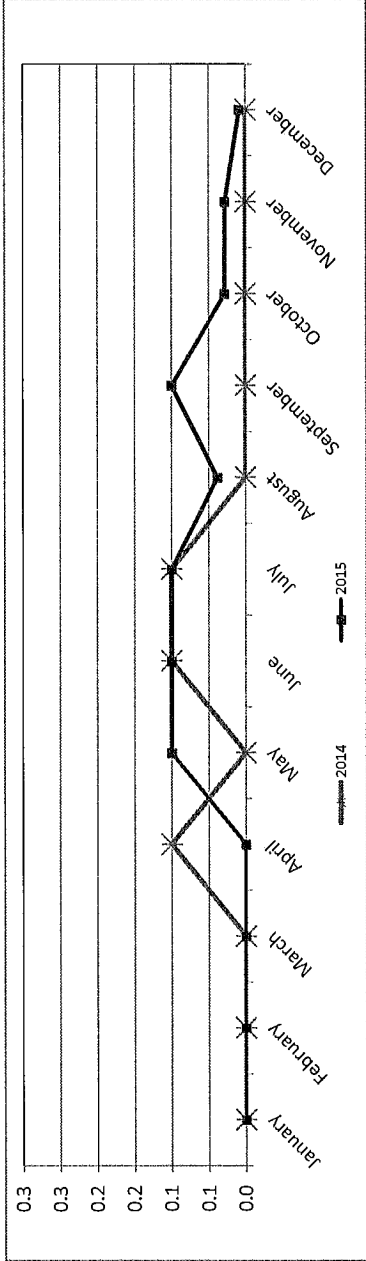
PRECIPITATION 2014 One-Hour Readings vs. 2015 One-Hour Readings in MM

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	MEAN		
January	0.0	0.0	0.5	0.0	0.0	2.1	0.0	0.0	
February	0.0	0.0	1.0	0.0	0.0	1.2	0.0	0.0	
March	0.0	0.0	0.3	0.0	0.0	4.0	0.0	0.0	
April	0.1	0.0	4.3	0.0	0.0	3.7	0.0	0.1	
May	0.0	0.0	0.4	0.1	0.0	12.7	0.0	-0.1	
June	0.1	0.0	5.4	0.1	0.0	7.5	0.0	0.0	
July	0.1	0.0	8.2	0.1	0.0	2.8	0.0	0.0	
August	0.0	0.0	4.9	0.1	0.0	5.6	0.0	-0.1	
September	0.0	0.0	0.7	0.0	0.0	2.4	0.0	0.0	
October	0.0	0.0	1.6	0.0	0.0	2.2	0.0	0.0	
November	0.0	0.0	2.7	0.0	0.0	0.8	0.0	0.0	
December	0.0	0.0		0.0	0.0		0.0	0.0	

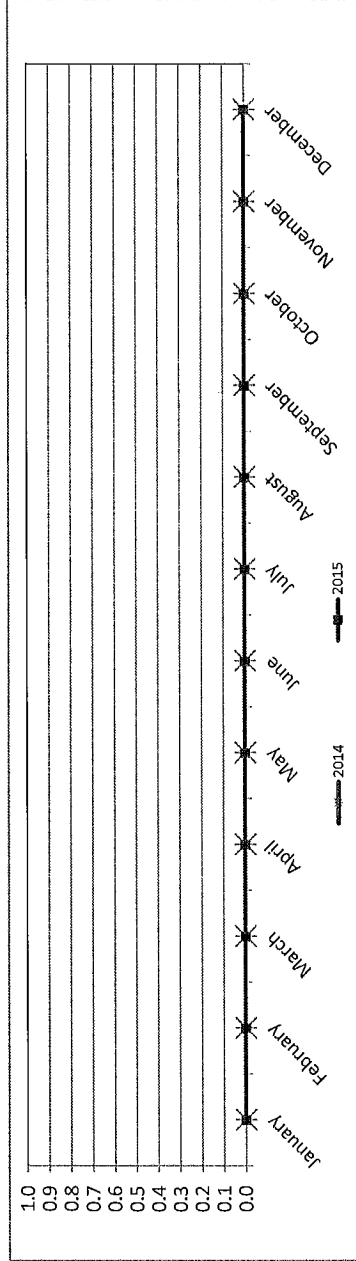
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

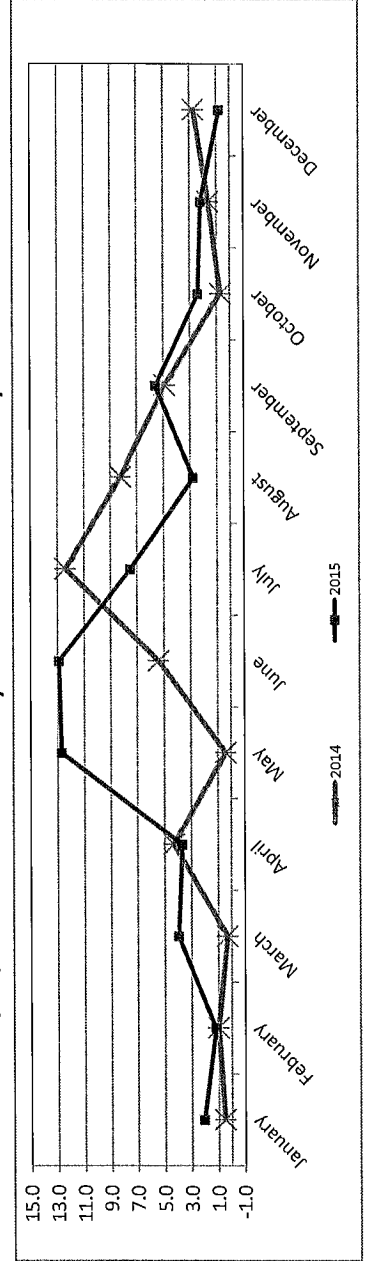
PRECIPITATION 2014 Monthly Mean vs. 2015 Monthly Mean in MM



PRECIPITATION 2014 Monthly Minimum vs. 2015 Monthly Minimum in MM



PRECIPITATION 2014 Monthly Maximum vs. 2015 Monthly Maximum in MM

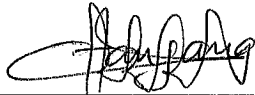


APPENDIX II
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
Yes	—
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry & Community Association	ST Lina Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Tangara Ernestine	Team Lead, Air Services
Is an External Party Certifying the Report? (If "Yes", fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
—	—
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
—	—

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.



Signature of the Representative of the Person Responsible / External Person Certifying the Report

03-02-2016

Report Issued Date (dd-mm-yyyy)



maxxam.ca

MAXXAM ANALYTICS
#1 2000 39 Ave. NE, Calgary
AB T2E 6P7

Toll Free 800-366-7247
Fax 403-219-3673

AMBIENT AIR MONITORING ANNUAL REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
ELK POINT AIRPORT SITE

JOB #:2833-2015-35- A

JANUARY - DECEMBER
2015

Prepared for:

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

Attention: MIKE BISAGA

DATE: **January 28, 2016**

Prepared by:

Kim Wilson, Env. Tech
Project Manager, Customer Service - Air Services

Reviewed by:

Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Air Services

SUMMARY

Maxxam Analytics Air Services Group conducted an Ambient Air monitoring program between January 2015 and December 2015 on the Elk Point Airport Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

Data presented in this report has undergone the Post-Final Validation Procedures, which include a cursory inspection of annual charts. If errors or omissions in the data are suspected or discovered after the initial submittal of data (monthly report), the post-validation step serves to re-evaluate the affected data. The report certification form is also included in this report to verify that the annual validation review has been completed, as per the Reporting Chapter (Chapter 9) of the Air Monitoring Directive (AMD).

The summary of basic statistics includes monthly mean, maximum, and minimum values as well as comparisons to the historical mean, maximum and minimum values from the previous calendar year are presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods during the monitoring period are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, Elk Point Airport Site.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-478-9471 or toll-free at 1-800-386-7247.

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3.0 Plant Monthly Required AMD Summary	10
4.0 Calculations and Results	10
5.0 Methods and Procedures	11
Appendix I	Continuous Monitoring Data Results
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Methane
	Non-Methane Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Ozone
	Particulate Matter 2.5
	Wind Speed
Appendix II	Report Certification Form

1.0 Discussion

This annual validation report consists of data for parameters Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Methane (CH₄), Non-Methane Hydrocarbon (NMHC), Oxides of Nitrogen (NO_x), Nitric Oxide (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}) and Wind Speed (WS).

The air monitoring trailer was located at Latitude: 53°53'28.8"N, Longitude: 110°45'51.0"W during the monitoring period.

The monitoring methods and equipment met all AMD requirements.

The operational uptime for all analyzers and meteorological system, with the exception of O₃ in October (88.2%), was above the 90% requirement.

All data collected during the monitoring period were within the objectives outlined in the Alberta Ambient Air Quality Objectives and Guidelines Summary (AAAQOs).

A Maxxam annual internal quality audit was performed on November 19.

The summaries of the monthly maintenance report for the monitoring period are presented below:

SULPHUR DIOXIDE (SO₂)

January	On January 19, hour 13 was invalidated due to a small power outage.
February	Annual maintenance was performed on February 3, followed by a post-repair calibration on February 4. The analyzer started drifting low on February 20. An as found points check was performed on the same day to check the analyzer's functionality. The result was within acceptance limits. Data quality was not affected.
March	Thirteen hours of data are missing due to power failures. On March 10, hour 14 was invalidated as the data was flagged in error during NO ₂ calibration.
April	Hourly maximum data collected on April 3 at hour 15 was invalidated as the analyzer was recovering from a small power outage.
May	Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.
June	The analyzer was recording a zero drift. The LICA-owned API 100A, S/N: 467, analyzer was replaced with the Maxxam-supplied API 100A, S/N: 722, analyzer on June 24 for maintenance purposes. The analyzer was recalibrated on June 25 for precautionary reasons..
July	The LICA-owned API 100E, S/N: 467 analyzer was installed back to the trailer on July 24, after maintenance was completed in the Maxxam shop. The analyzer showed a zero drift after the installation calibration on July 24. An as found points check was performed prior to the analog output calibration on July 28. A 3-point calibration was performed afterwards. No further issues were identified.
August	The analyzer was working well throughout the monitoring period.
September	Two hours of data collected on September 16 were invalidated due to a power outage.
October	The analyzer was working well throughout the monitoring period.
November	The routine annual internal quality audit was completed on November 19.
December	A digital output calibration was performed on December 7.

HYDROGEN SULPHIDE (H2S)

January	Hour 13 on January 19 was invalidated due to a small power outage that affected data quality.
February	Annual maintenance was performed on February 3, followed by a full post-repair calibration on February 4.
March	The analyzer drifted low on March 22. The LICA-owned API 101E analyzer was replaced with the Maxxam-supplied Thermo 450i analyzer on March 23 for maintenance purposes. The analyzer was allowed time to stabilize overnight and an installation calibration was performed on March 24. Data was invalidated back to the last good zero/span check which was on March 21. Forty-two hours of data were invalidated due to this event. Thirteen hours of data are missing in March due to power failures.
April	Hourly maximum data collected on April 3 at hour 15 was invalidated as the analyzer was recovering from a small power outage.
May	The LICA-owned API 101E analyzer was installed back on May 20, after maintenance had been completed. that was brought to Maxxam shop for maintenance. Eighteen hours of data are not valid during the time the analyzer was stabilizing prior to the installation calibration. On May 5, hour 3 data was invalidated as the analyzer was recovering from a power outage.
June	The analyzer was working well throughout the monitoring period.
July	The analyzer was working well throughout the monitoring period.
August	The analyzer was working well throughout the monitoring period.
September	Two hours of data collected on September 16 were invalidated due to a power outage.
October	The analyzer was working well throughout the monitoring period.
November	The routine annual internal quality audit was completed on November 19.
December	The analyzer was working well throughout the monitoring period.

TOTAL HYDROCARBONS (THC), METHANE (CH4) and NON-METHANE HYDROCARBON (NMHC)

January	Data collected on January 19 at hour 13 was invalidated due to a small power outage.
February	The sample pump was changed on February 3. On February 24, the analyzer was moved to a different spot in the trailer to avoid interference with the Teom unit. One hour of data is invalid as the analyzer was being moved.
March	The HC channel was put into Maintenance mode on March 9 at hour 18 while the NOx analyzer was being cleaned as this tend to affect the NMHC. Thirteen hours of data are missing in March due to power failures. Data collected on March 6 at hour 15 was invalidated as the analyzer was recovering from the power failure that occurred on that day.
April	Data collected on April 3 at hour 15 was invalidated as the analyzer was recovering from a small power outage.

May	Hourly data collected on May 5 at hour 4 and hourly maximum data collected on May 5 at hour 3 and hour 4 were invalidated as the analyzer was recovering from a power outage.
June	The analyzer was working well throughout the monitoring period.
July	The analyzer failed an as found points check performed on July 9. Troubleshooting was performed and a post-repair calibration was completed on July 10. Data was invalidated back to the last good calibration, which was on July 7. Sixty-eight hours of data were discarded due to this event.
August	The analyzer was working well throughout the monitoring period.
September	Two hours of data collected on September 16 were invalidated due to a power outage.
October	The analyzer was working well throughout the monitoring period.
November	The routine annual internal quality audit was completed on November 19.
December	The analyzer was working well throughout the month.

NITROGEN DIOXIDE (NO2)

January	The analyzer was put into Maintenance mode on January 13 from hour 9 to hour 11 to generate reference points for O3 calibration. Data collected on January 19 at hour 13 was invalidated due to a small power outage. Hour 13 on January 20 was invalidated due a spike.
February	The analyzer was put into Maintenance mode for a few minutes on February 20 for monitoring purposes. The analyzer was put into Maintenance mode on February 23 and February 24 to generate reference points for O3 calibration.
March	The Maxxam-owned API 200A analyzer was replaced with the LICA-owned API 200E analyzer on March 10. Thirteen hours are missing in March due to power failures.
April	Hourly maximum data collected on April 3 at hour 15 was invalidated as the analyzer was recovering from a small power outage.
May	Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.
June	The analyzer was working well throughout the monitoring period.
July	The analyzer was put into maintenance mode on July 28 to generate reference points for O3 calibration.
August	The pump was replaced on August 18. The analyzer spanned high on August 27, as the zero/span system was due for maintenance. Maintenance was performed in September to correct the unstable span issue.
September	Two hours of data collected on September 16 were invalidated due to a power outage.
October	The analyzer was working well throughout the monitoring period.
November	The routine annual internal quality audit was completed on November 19.
December	A digital output calibration was performed on December 7.

OZONE (O3)

January	The reaction cells were cleaned on January 13. Twenty-eight hours of data were invalidated in January due to the zero/span valve getting stuck. Data on January 19 at hour 13 was invalidated due to a small power outage.
February	The zero/span valve issue continued into February. The valve was reset remotely several times, but this did not fix the issue permanently. The valve was replaced on February 24. Fifty-two hours of data were discarded due to these events. The analyzer was put into Maintenance mode for a few minutes on February 21 for monitoring purposes.
March	The channel was put into Maintenance mode on March 11 for a calibrator check. Eleven hours of data were discarded due to this event. Thirteen hours of data are missing in March due to power failures.
April	Nineteen hours of data were invalidated in April due to the sample valve getting stuck.
May	Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.
June	The analyzer was working well throughout the monitoring period.
July	The sample pump was rebuilt on July 24. The UV lamp was adjusted on July 28. Data collected on July 6 at hour 13 was invalidated due to a spike.
August	The analyzer was working well throughout the monitoring period.
September	Two hours of data collected on September 16 were invalidated due to a power outage.
October	Eighty-five hours of data were discarded in October due to the sample valve getting stuck. On October 22, the zero/span calibration was reconfigured by adding an extra step, "Pause Phase", to avoid any future recurrence of the valve failure. No further issues were identified.
November	The routine annual internal quality audit was completed on November 19.
December	The analyzer was working well throughout the monitoring period.

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

January	Sixty-nine hours of data were invalidated for being below -3 ug/m^3 this month. Data collected on January 19 at hour 13 was invalidated due to a small power outage that affected data quality. Data on January 19 at hour 14 was invalidated as the analyzer was recovering from the power outage.
February	Forty-four hours of data were invalidated for being below -3 ug/m^3 this month.
March	Thirteen hours of data collected are missing in March due to power failures. Twenty-five hours of data were invalidated for being below -3 ug/m^3 this month.
April	Five hours of data were invalidated for being below -3 ug/m^3 this month.
May	Four hours of data were invalidated for being below -3 ug/m^3 this month. Two 24-hr contraventions were recorded this month.
June	Four hours of data were invalidated for being below -3 ug/m^3 this month.
July	The Teom unit had an electrical malfunction on July 4. Troubleshooting was performed on July 6 followed by a post-maintenance audit. Forty-eight hours of data were discarded due to this event. Three hours of data were invalidated for being below -3 ug/m^3 this month. Five 24-hr contraventions were recorded this month.
August	The Teom unit malfunctioned on August 25. Troubleshooting was performed on August 26, followed by a post-repair audit. No further issues were identified. Twenty-seven hours of data are invalid due to this event. Nine hours of data were invalidated for being below -3 ug/m^3 this month.
September	Twenty-one hours of data were invalidated for being below -3 ug/m^3 this month. Two hours of data collected on September 16 were invalidated due to a power outage.
October	The pump was rebuilt on October 22. Eight hours of data were invalidated for being below -3 ug/m^3 this month.
November	The routine annual internal quality audit was completed on November 19. Five hours of data were invalidated for being below -3 ug/m^3 this month.
December	Three hours of data were invalidated for being below -3 ug/m^3 this month.

WIND SPEED (WS)

January	Data collected on January 19 at hour 13 was invalidated due to a small power outage.
February	The wind system was working well throughout the monitoring period.
March	Thirteen hours of data are missing in March due to power failures.
April	The wind system was working well throughout the monitoring period.
May	Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.
June	The wind system was working well throughout the monitoring period.
July	Hourly maximum data collected on July 4 at hour 7 was invalidated as the analyzer was recovering from a power outage.
August	The wind system was working well throughout the monitoring period.
September	Two hours of data collected on September 16 were invalidated due to a power outage.
October	The wind system was working well throughout the monitoring period.
November	The annual audit was completed on November 19. The LICA-owned RM Young, S/N: 56589, unit was replaced with the Maxxam-supplied RM Young, S/N: 110980, unit on November 26 for maintenance purposes.
December	The wind system was working well throughout the monitoring period.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

All data collected during the monitoring period were within the objectives as outlined in the AAAQOs.

The operational uptime for all analyzers and meteorological system, with the exception of O3 in October (88.2%), was above the 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00001 - Methane, Non-Methane Hydrocarbon Analyzer Monitoring
- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Sulphur Dioxide - API 100A UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Hydrogen Sulphide - Thermo 450i UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 55i FID Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Oxides of Nitrogen - API 200A Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Teom Unit
- Wind System - RM Young Unit
- Datalogger - ESC 8832

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE



SULPHUR DIOXIDE (SO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range: (PPB-SO2)							OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE (PPB)
			≤ 20 ppb	20 < C ≤ 60 ppb	60 < C ≤ 110 ppb	110 < C ≤ 170 ppb	170 < C ≤ 340 ppb	> 340 ppb	1-HR	24-HR	1-HR	24-HR		
January	705	99.9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.4
February	621	99.4	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
March	695	98.3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
April	682	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
May	704	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
June	667	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
July	689	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
August	707	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
September	682	99.7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
October	706	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
November	683	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.1
December	700	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	172	48	0	0	0.0
											ANNUAL AVERAGE		0.1	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	8.0	PPB
Annual Average for 2015	0.1	PPB

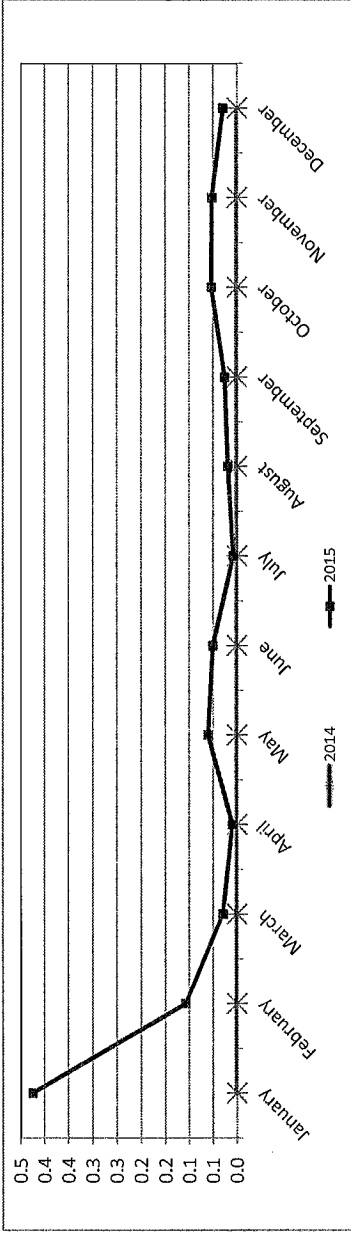
SULPHUR DIOXIDE (SO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	0.0	0	6	0.4	0	3	-0.4
February	0.0	0	4	0.1	0	4	-0.1
March	0.0	0	6	0.0	0	2	0.0
April	0.0	0	2	0.0	0	1	0.0
May	0.0	0	2	0.1	0	2	-0.1
June	0.0	0	2	0.1	0	7	-0.1
July	0.0	0	5	0.0	0	1	0.0
August	0.0	0	2	0.0	0	1	0.0
September	0.0	0	4	0.0	0	1	0.0
October	0.0	0	3	0.1	0	2	-0.1
November	0.0	0	5	0.1	0	2	-0.1
December	0.0	0	3	0.0	0	1	0.0

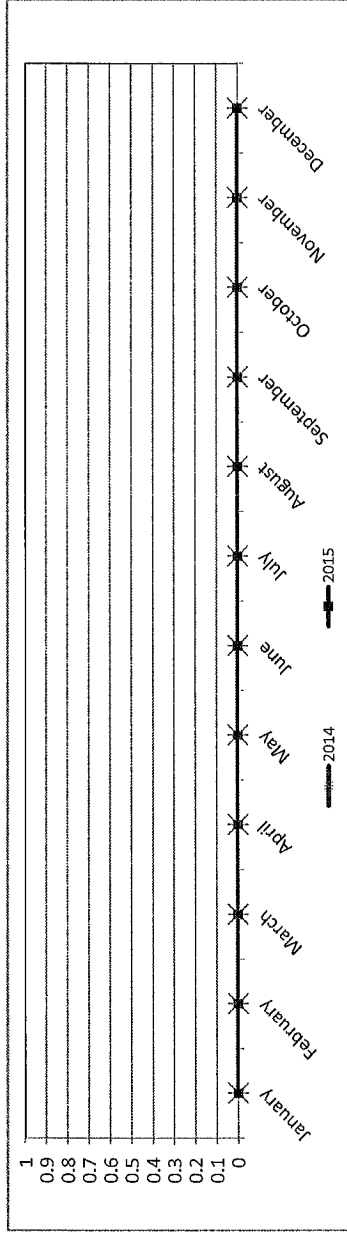
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

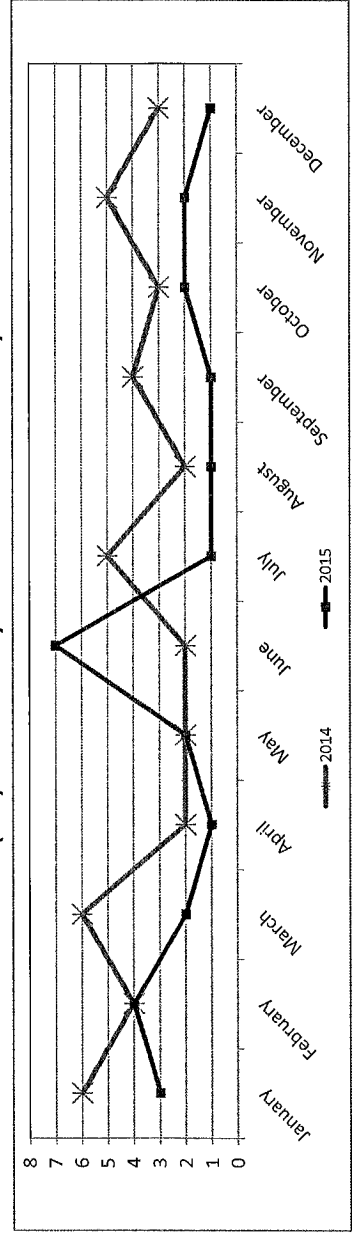
SULPHUR DIOXIDE (SO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



SULPHUR DIOXIDE (SO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



LICA-ELK
 SO2 / WDR Joint Frequency Distribution (Percent)
 01/01/15 thru 12/31/15

Distribution By % Of Samples

Limit	Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNN	NW	NNW	
< 20.0	2.90	2.51	2.44	4.68	9.33	11.74	5.14	2.80	2.50	2.42	3.37	10.16	13.38	12.68	9.59	4.29	100.00
< 60.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.90	2.51	2.44	4.68	9.33	11.74	5.14	2.80	2.50	2.42	3.37	10.16	13.38	12.68	9.59	4.29	

Calm : .00 %

Total # Operational Hours : 8236

Distribution By Samples

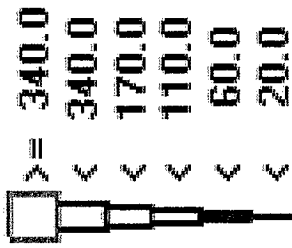
Limit	Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNN	NW	NNW	
< 20.0	239	207	201	386	769	967	424	231	206	200	278	837	1102	1045	790	354	8236
< 60.0																	
< 110.0																	
< 170.0																	
< 340.0																	
>= 340.0																	
Totals	239	207	201	386	769	967	424	231	206	200	278	837	1102	1045	790	354	

Calm : .00 %

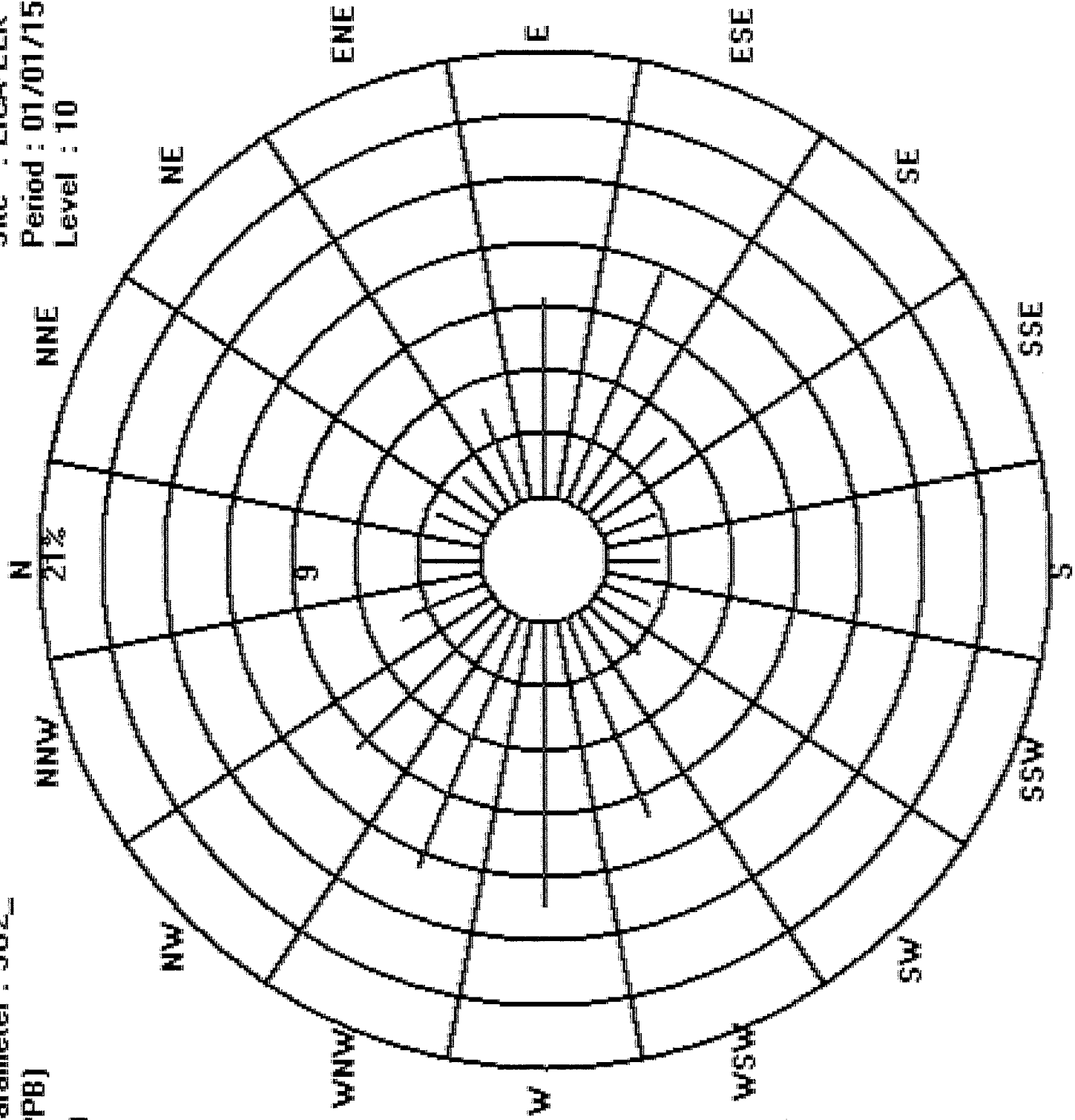
Total # Operational Hours : 8236

Logger : 35 Parameter : SO2_

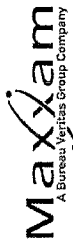
Class Limits (PPB)



Site : LICA-ELK
Period : 01/01/15-12/31/15
Level : 10



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE (H2S) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB-H2S)				OBJECTIVES**			EXCEEDENCES			MONTHLY AVERAGE
			≤ 3 ppb	4 < C ≤ 10 ppb	11 < C ≤ 50 ppb	> 50 ppb	1-HR	24-HR	1-HR	1-HR	24-HR		
January	705	99.9	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
February	628	99.3	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
March	624	90.2	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
April	683	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
May	678	97.6	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
June	679	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
July	706	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
August	706	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
September	684	99.7	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
October	707	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
November	686	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
December	703	100.0	100.00%	0.00%	0.00%	0.00%	10	3	0	0	0	0	0
N/D - Valid Data Not Available												ANNUAL AVERAGE	0

N/D - Valid Data Not Available
 *Number of Readings - Included calibration hours
 **If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average	N/D	PPB
Annual Average for 2015	0	PPB

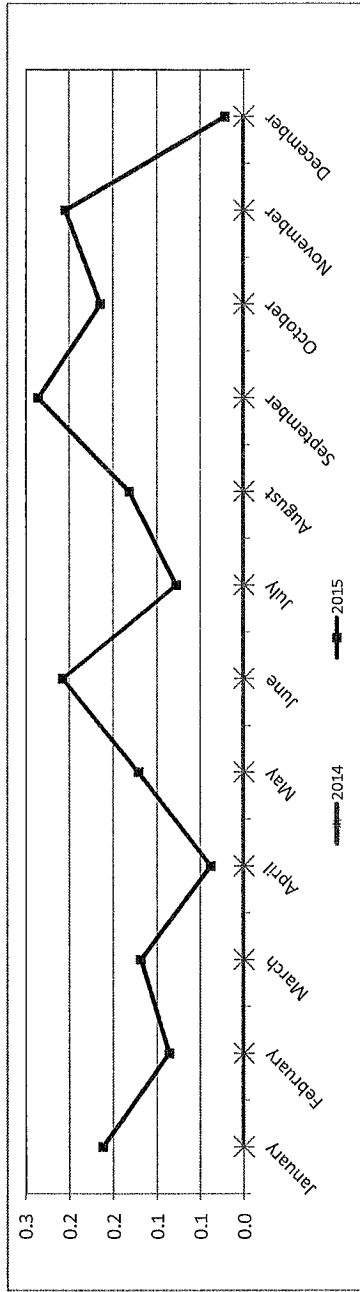
HYDROGEN SULPHIDE (H2S) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	0.0	0	5		0.2	0	2		-0.2
February	0.0	0	1		0.1	0	1		-0.1
March	0.0	0	2		0.1	0	1		-0.1
April	0.0	0	1		0.0	0	1		0.0
May	0.0	0	2		0.1	0	2		-0.1
June	0.0	0	1		0.2	0	2		-0.2
July	0.0	0	2		0.1	0	3		-0.1
August	0.0	0	3		0.1	0	2		-0.1
September	0.0	0	1		0.2	0	2		-0.2
October	0.0	0	1		0.2	0	2		-0.2
November	0.0	0	3		0.2	0	2		-0.2
December	0.0	0	2		0.0	0	1		0.0

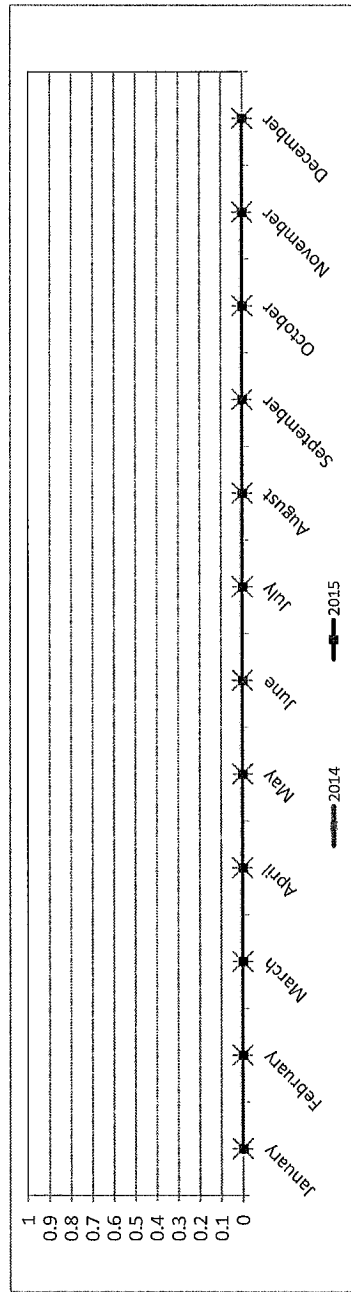
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

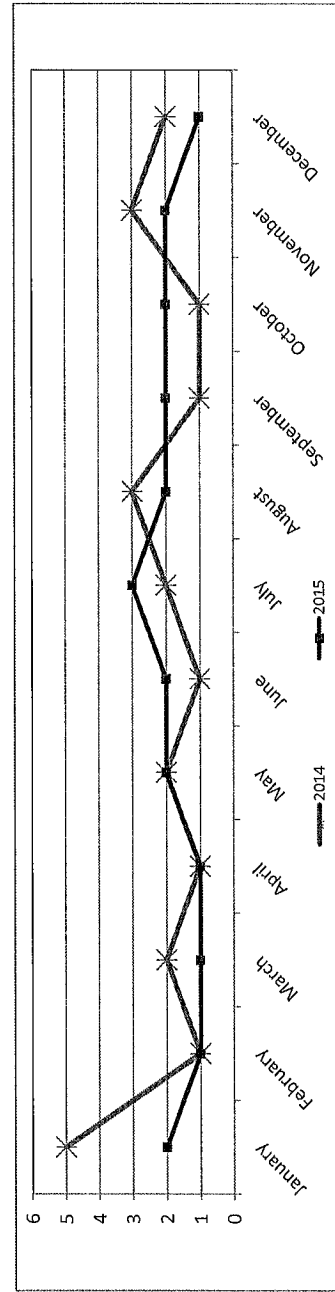
HYDROGEN SULPHIDE (H2S) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



HYDROGEN SULPHIDE (H2S) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



HYDROGEN SULPHIDE (H2S) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



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

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 35

Site Name : LICA-ELK

Parameter : H2S_

Units : PPG

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	2.85	2.48	2.37	4.63	9.35	11.57	5.11	2.67	2.51	2.44	3.42	10.20	13.39	12.81	9.76	4.37	100.00
< 10.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.85	2.48	2.37	4.63	9.35	11.57	5.11	2.67	2.51	2.44	3.42	10.20	13.39	12.81	9.76	4.37	

Calm : .00 %

Total # Operational Hours : 8184

Distribution By Samples

Direction

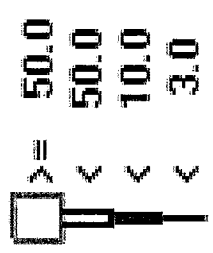
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	234	203	194	379	766	947	419	219	206	200	280	835	1096	1049	799	358	8184
< 10.0																	
< 50.0																	
>= 50.0																	
Totals	234	203	194	379	766	947	419	219	206	200	280	835	1096	1049	799	358	

Calm : .00 %

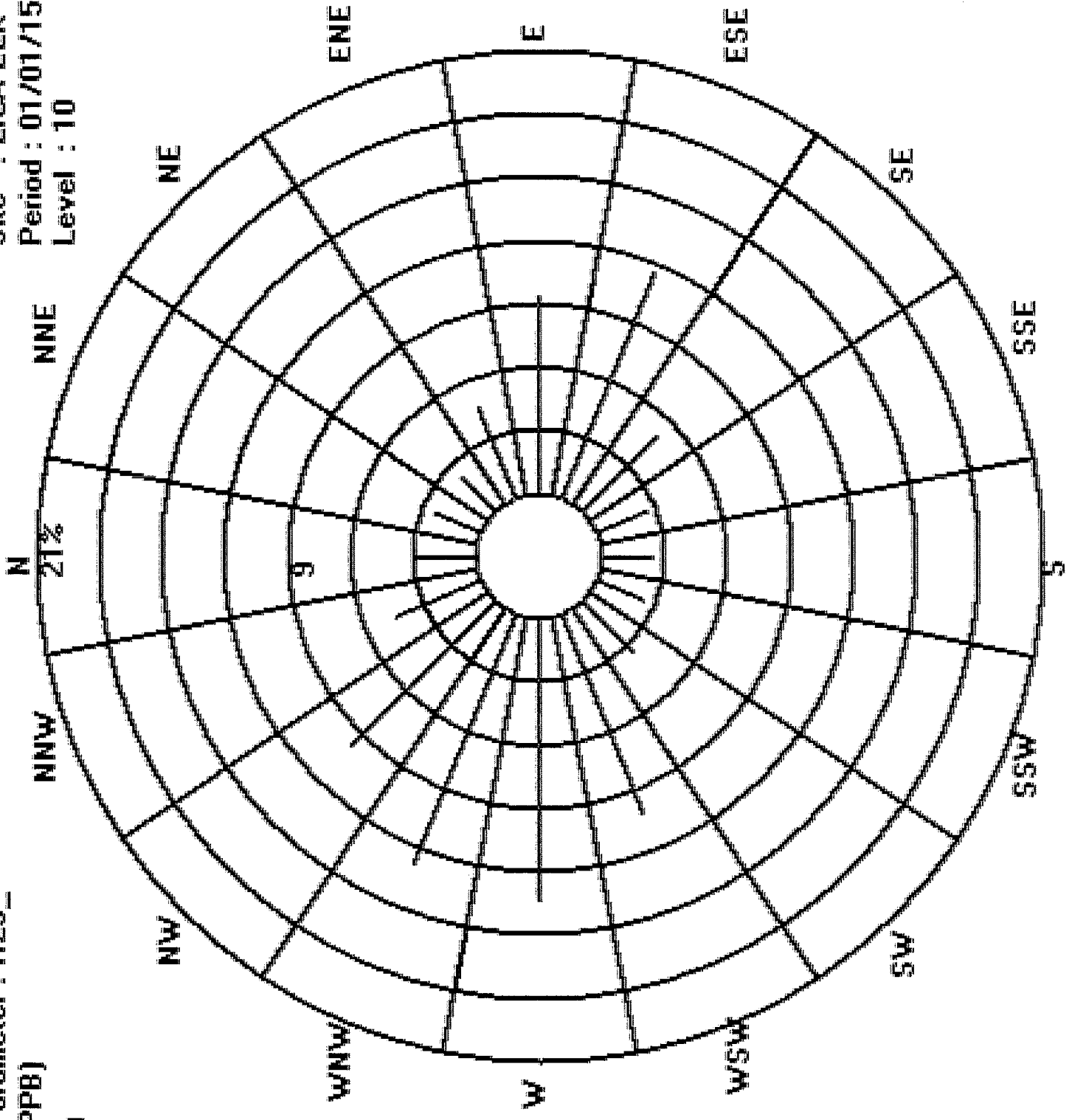
Total # Operational Hours : 8184

Logger : 35 Parameter : H2S_

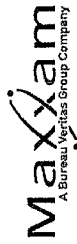
Class Limits (PPB)



Site : LICA-ELK
Period : 01/01/15-12/31/15
Level : 10



TOTAL HYDROCARBON



TOTAL HYDROCARBONS (THC) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPM THC)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 3.0 ppm	3.1 < C ≤ 10.0 ppm	10.1 < C ≤ 50.0 ppm	50.1 > C ppm	1-HR	24-HR	1-HR	
January	701	99.9	80.31%	19.69%	0.00%	0.00%	-	-	-	2.6
February	634	99.7	85.02%	14.98%	0.00%	0.00%	-	-	-	2.4
March	693	98.0	85.43%	14.57%	0.00%	0.00%	-	-	-	2.4
April	682	99.9	88.71%	11.29%	0.00%	0.00%	-	-	-	2.4
May	706	99.9	83.99%	16.01%	0.00%	0.00%	-	-	-	2.4
June	685	100.0	85.11%	14.89%	0.00%	0.00%	-	-	-	2.3
July	632	90.7	89.40%	10.60%	0.00%	0.00%	-	-	-	2.2
August	707	100.0	82.04%	17.96%	0.00%	0.00%	-	-	-	2.5
September	683	99.7	84.19%	15.81%	0.00%	0.00%	-	-	-	2.4
October	707	100.0	79.49%	20.51%	0.00%	0.00%	-	-	-	2.6
November	684	100.0	84.36%	15.64%	0.00%	0.00%	-	-	-	2.6
December	706	100.0	70.40%	29.60%	0.00%	0.00%	-	-	-	3.0
N/D - Valid Data Not Available										
*Number of Readings - included calibration hours										
**if Alberta Ambient Air Quality Objectives are not available, N/D is used.										
ANNUAL AVERAGE										
2.5										

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPM
Annual Average for 2015	2.5	PPM



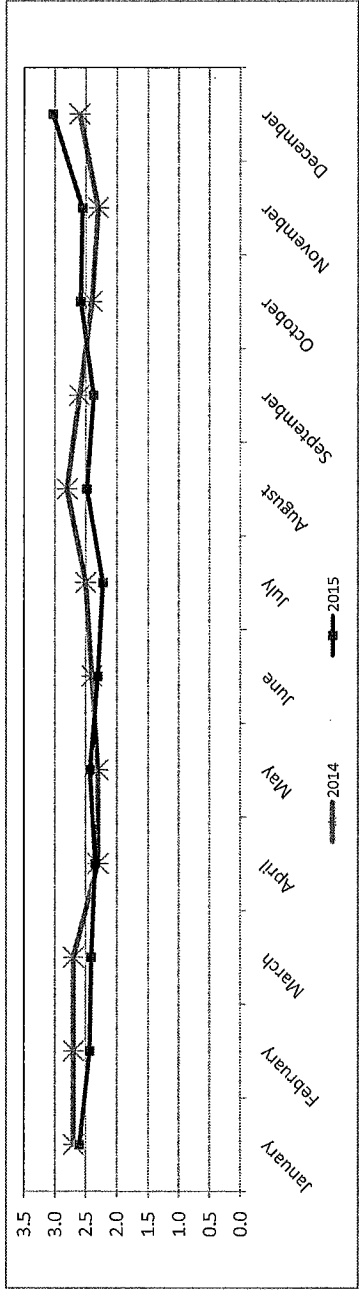
TOTAL HYDROCARBONS (THC) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPM

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	2.7	1.7	10.0		2.6	1.8	8.8		0.1
February	2.7	1.7	8.5		2.4	1.7	7.1		0.3
March	2.7	1.8	8.4		2.4	1.8	5.4		0.3
April	2.3	1.8	7.3		2.4	1.8	6.4		-0.1
May	2.3	1.7	13.5		2.4	1.8	7.2		-0.1
June	2.4	1.8	6.9		2.3	1.8	6.3		0.1
July	2.5	1.8	7.5		2.2	1.8	4.9		0.3
August	2.8	1.8	8.7		2.5	1.8	6.4		0.3
September	2.6	1.8	11.3		2.4	1.8	6.2		0.2
October	2.4	1.8	8.1		2.6	1.8	7.3		-0.2
November	2.3	1.8	7.9		2.6	1.9	8.5		-0.3
December	2.5	1.8	7.9		3.0	1.9	9.4		-0.4

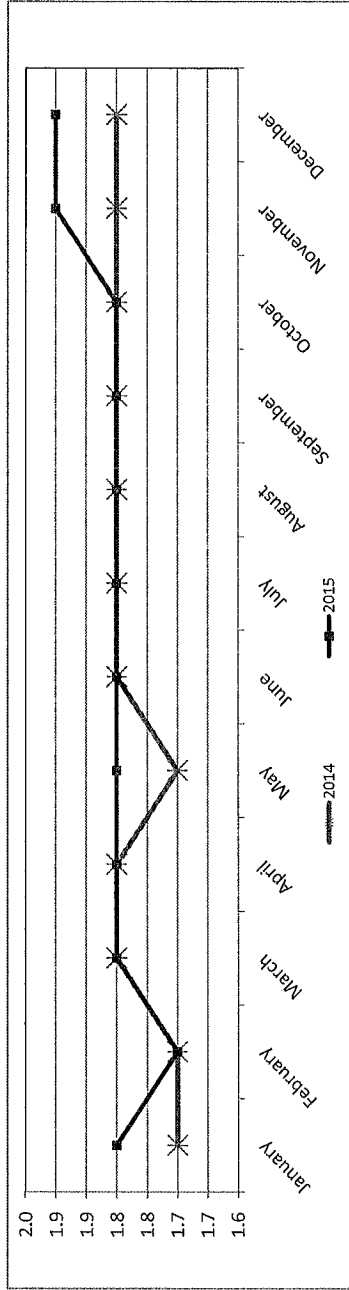
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

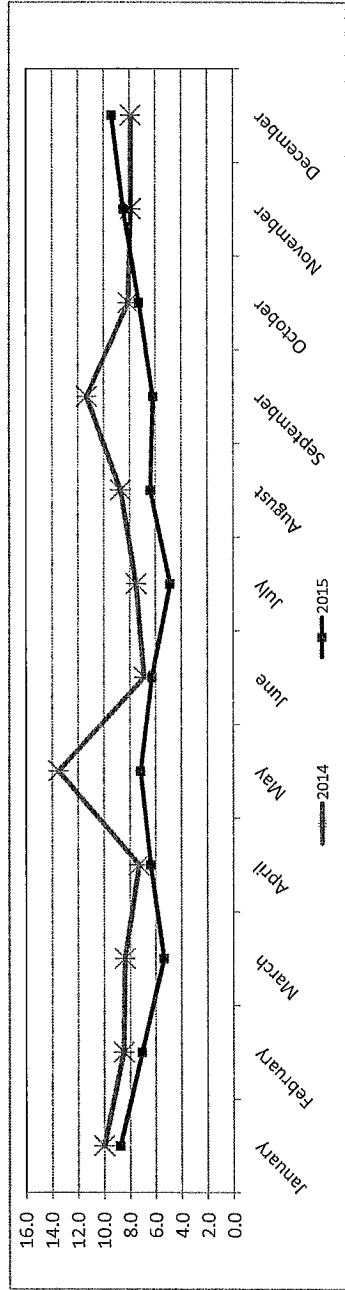
TOTAL HYDROCARBONS (THC) 2014 Monthly Mean vs. 2015 Monthly Mean in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPM



TOTAL HYDROCARBONS (THC) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPM



LIQA35
 THC55 / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15

Distribution By % of Samples

Logger Id : 35
 Site Name : LIQA35
 Parameter : THC55
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	2.65	2.20	2.08	3.65	5.03	8.16	4.32	2.39	2.13	2.03	2.94	8.86	11.84	10.28	8.55	4.05	81.22
< 10.0	.25	.29	.24	1.04	4.22	3.50	.92	.46	.40	.29	.48	1.36	1.65	2.26	1.05	.29	18.77
< 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	2.90	2.49	2.32	4.69	9.26	11.67	5.24	2.86	2.53	2.32	3.43	10.22	13.49	12.55	9.61	4.34	

Calm : .00 %

Total # Operational Hours : 8215

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	218	181	171	300	414	671	355	197	175	167	242	728	973	845	703	333	6673
< 10.0	21	24	20	86	347	288	76	38	33	24	40	112	136	186	87	24	1542
< 50.0																	
>= 50.0																	
Totals	239	205	191	386	761	959	431	235	208	191	282	840	1109	1031	790	357	

Calm : .00 %

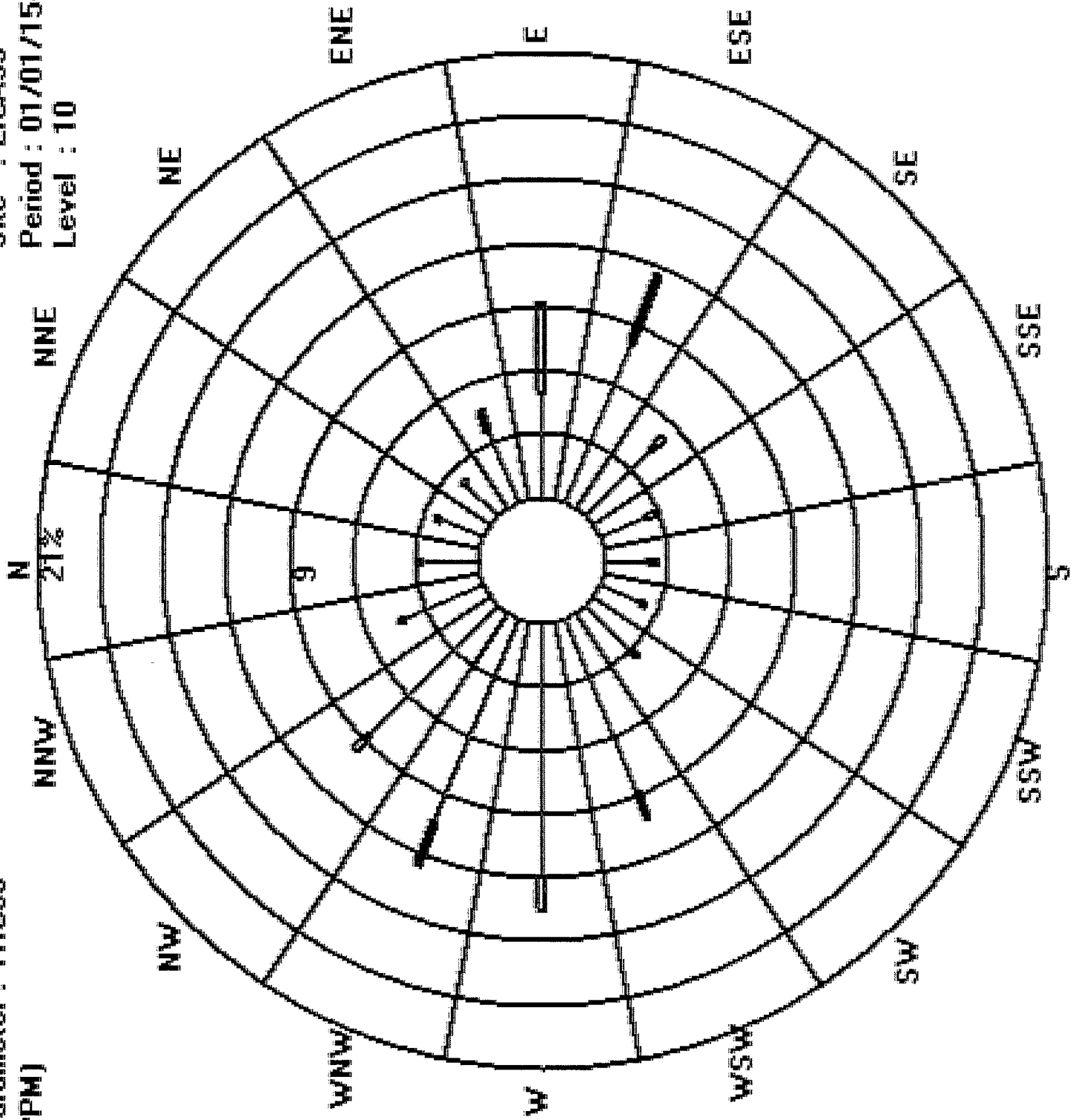
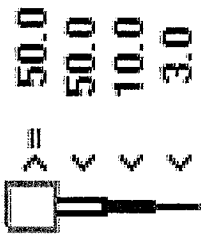
Total # Operational Hours : 8215

Logger : 35 Parameter : THC55

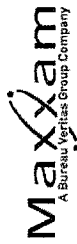
Site : LICA35

Class Limits (PPM)

Period : 01/01/15-12/31/15
Level : 10



METHANE



METHANE (CH4) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPMv CH4)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 3.0 ppm	3.1 < C ≤ 10.0 ppm	10.1 < C ≤ 50.0 ppm	> 50.0 ppm	1-HR	24-HR	1-HR	
January	701	99.9	81.03%	18.97%	0.00%	0.00%	-	-	-	2.6
February	634	99.7	85.17%	14.83%	0.00%	0.00%	-	-	-	2.4
March	693	98.0	85.43%	14.57%	0.00%	0.00%	-	-	-	2.4
April	682	99.9	88.71%	11.29%	0.00%	0.00%	-	-	-	2.4
May	706	99.9	83.99%	16.01%	0.00%	0.00%	-	-	-	2.4
June	685	100.0	86.28%	13.72%	0.00%	0.00%	-	-	-	2.3
July	632	90.7	89.72%	10.28%	0.00%	0.00%	-	-	-	2.2
August	707	100.0	82.74%	17.26%	0.00%	0.00%	-	-	-	2.5
September	683	99.7	84.77%	15.23%	0.00%	0.00%	-	-	-	2.4
October	707	100.0	79.63%	20.37%	0.00%	0.00%	-	-	-	2.6
November	684	100.0	84.36%	15.64%	0.00%	0.00%	-	-	-	2.6
December	706	100.0	70.82%	29.18%	0.00%	0.00%	-	-	-	3.0
N/D - Valid Data Not Available										
*Number of Readings - included calibration hours										
**If Alberta Ambient Air Quality Objectives are not available, N/D is used.										
Alberta Ambient Air Quality Objectives Annual Average**										
Annual Average for 2015										
N/D PPM										
2.5 PPM										

N/D - Valid Data Not Available									
*Number of Readings - included calibration hours									
**If Alberta Ambient Air Quality Objectives are not available, N/D is used.									
Alberta Ambient Air Quality Objectives Annual Average**									
Annual Average for 2015									
N/D PPM									
2.5 PPM									



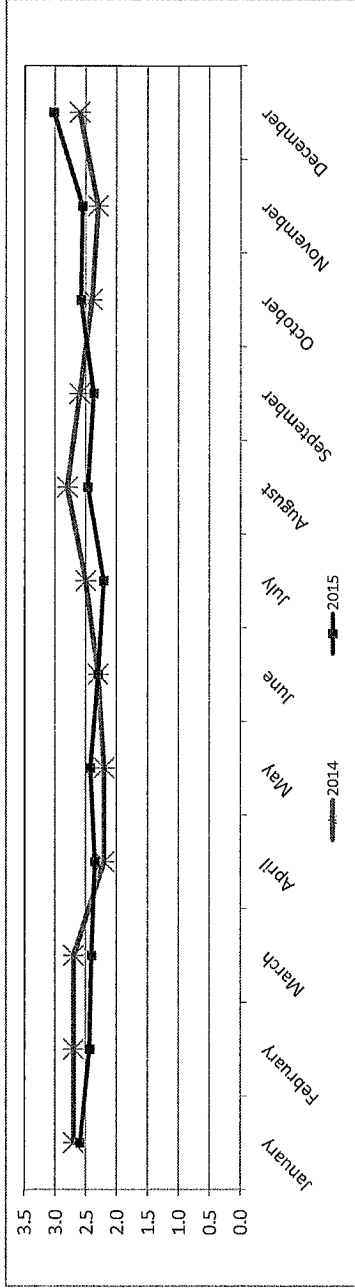
METHANE (CH4) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPM

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	2.7	1.7	9.2		2.6	1.8	8.6		0.1
February	2.7	1.7	8.3		2.4	1.7	6.9		0.3
March	2.7	1.8	8.1		2.4	1.8	5.4		0.3
April	2.2	1.8	7.1		2.4	1.8	6.4		-0.2
May	2.2	1.7	13.1		2.4	1.8	7.0		-0.2
June	2.3	1.8	6.8		2.3	1.8	6.1		0.0
July	2.5	1.8	7.3		2.2	1.8	4.8		0.3
August	2.8	1.8	8.5		2.5	1.8	6.2		0.3
September	2.6	1.8	11.0		2.4	1.8	6.1		0.2
October	2.4	1.8	7.9		2.6	1.8	6.5		-0.2
November	2.3	1.8	7.8		2.6	1.9	8.4		-0.3
December	2.6	1.8	7.7		3.0	1.9	9.0		-0.4

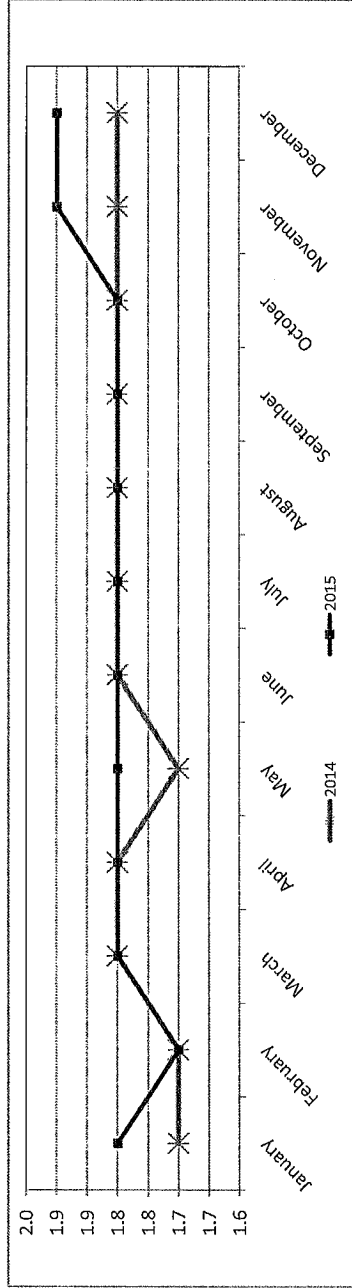
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

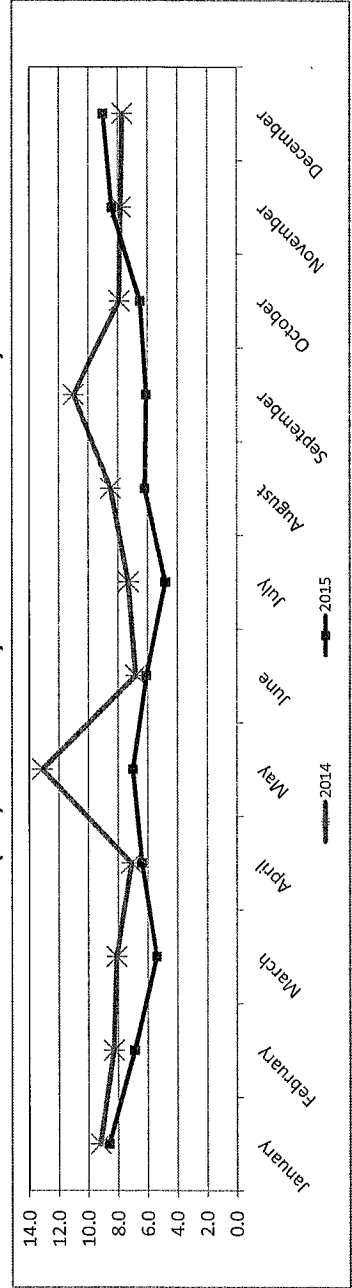
METHANE (CH4) 2014 Monthly Mean vs. 2015 Monthly Mean in PPM



METHANE (CH4) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPM



METHANE (CH4) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPM



LICA35
METHANE / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

Logger Id : 35
Site Name : LICA35
Parameter : METHANE
Units : PPM

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	2.65	2.21	2.09	3.67	5.08	8.18	4.33	2.39	2.13	2.04	2.94	8.89	11.85	10.29	8.59	4.05	81.46
< 10.0	.25	.27	.23	1.02	4.17	3.49	.91	.46	.40	.27	.48	1.32	1.64	2.25	1.02	.29	18.53
< 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	2.90	2.49	2.32	4.69	9.26	11.67	5.24	2.86	2.53	2.32	3.43	10.22	13.49	12.55	9.61	4.34	

Calm : .00 %

Total # Operational Hours : 8215

Distribution By Samples

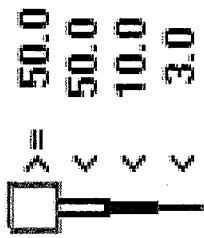
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 3.0	218	182	172	302	418	672	356	197	175	168	242	731	974	846	706	333	6692
< 10.0	21	23	19	84	343	287	75	38	33	23	40	109	135	185	84	24	1523
< 50.0																	
>= 50.0																	
Totals	239	205	191	386	761	959	431	235	208	191	282	840	1109	1031	790	357	

Calm : .00 %

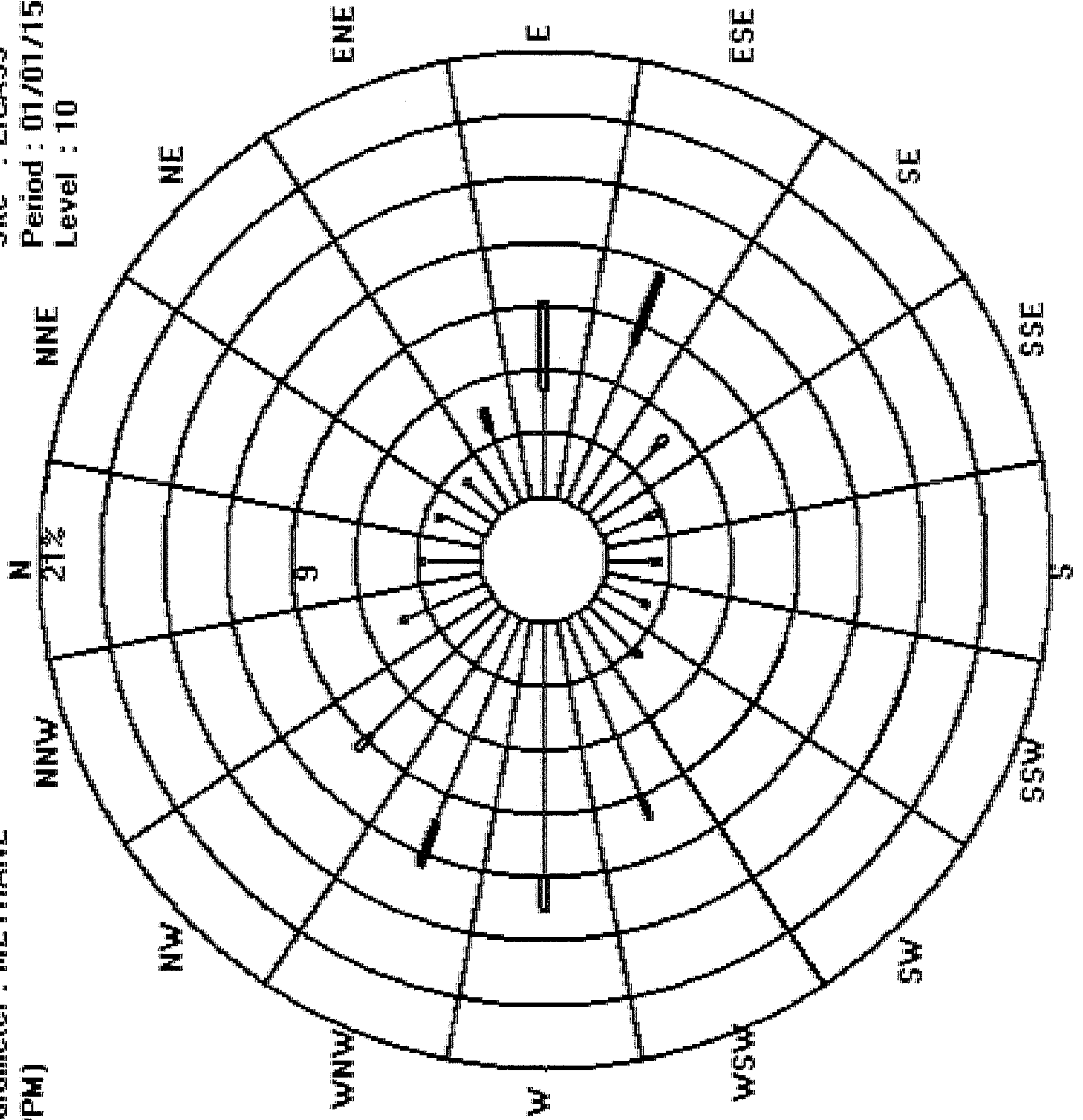
Total # Operational Hours : 8215

Logger : 35 Parameter : METHANE

Class Limits (PPM)



Site : LICA35
Period : 01/01/15-12/31/15
Level : 10



NON-METHANE HYDROCARBON

NON-METHANE HYDROCARBONS (NMHC) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPM, NMHC)							OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 0.20 ppm	0.21 < C ≤ 0.50 ppm	0.51 < C ≤ 1.00 ppm	> 1.01 < C ≤ 2.00 ppm	2.01 < C ≤ 4.00 ppm	> 4.00 ppm	I-HR	24-HR	I-HR	24-HR		
January	701	99.9	99.43%	0.57%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.01
February	634	99.7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.00
March	693	98.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.00
April	682	99.9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.00
May	706	99.9	99.86%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.01
June	685	100.0	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.01
July	632	90.7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.01
August	707	100.0	99.86%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.02
September	683	99.7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.01
October	707	100.0	99.72%	0.00%	0.00%	0.00%	0.14%	0.00%	0.00%	-	-	-	-	0.01
November	684	100.0	99.71%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.01
December	706	100.0	99.72%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	-	-	0.01
ANNUAL AVERAGE													0.01	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPM
Annual Average for 2015	0.01	PPM



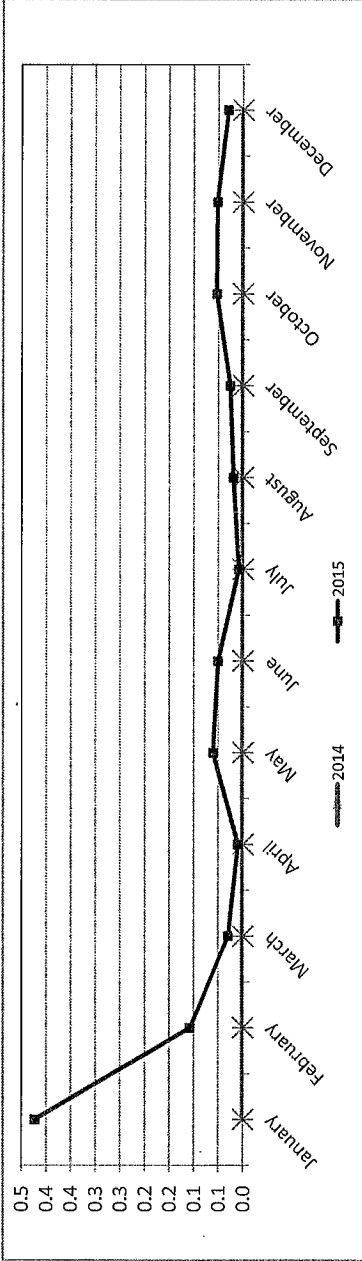
NON-METHANE HYDROCARBONS (NMHC) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPM

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	0.00	0.00	0.30	0.01	0.00	0.30	-0.01
February	0.00	0.00	0.30	0.00	0.00	0.20	0.00
March	0.00	0.00	0.30	0.00	0.00	0.20	0.00
April	0.00	0.00	0.30	0.00	0.00	0.10	0.00
May	0.00	0.00	0.40	0.01	0.00	0.30	-0.01
June	0.00	0.00	0.30	0.01	0.00	0.20	-0.01
July	0.00	0.00	0.30	0.01	0.00	0.20	-0.01
August	0.00	0.00	0.40	0.02	0.00	0.30	-0.02
September	0.00	0.00	0.30	0.01	0.00	0.10	-0.01
October	0.00	0.00	0.20	0.01	0.00	0.90	-0.01
November	0.00	0.00	0.20	0.01	0.00	0.30	-0.01
December	0.00	0.00	0.20	0.01	0.00	0.40	-0.01

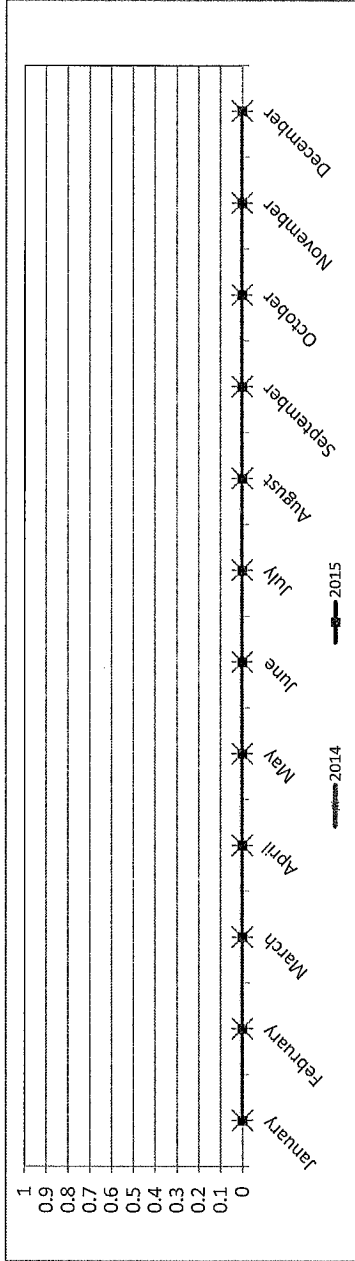
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

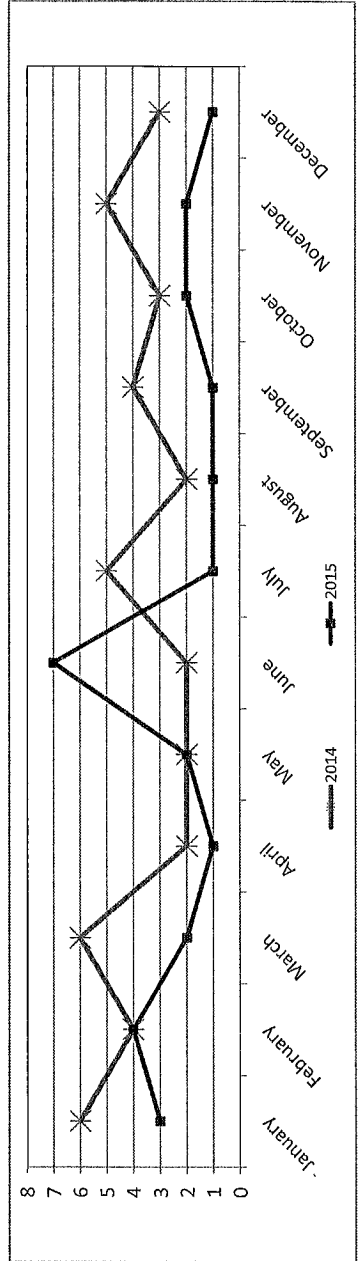
NON-METHANE HYDROCARBONS (NMHC) 2014 Monthly Mean vs. 2015 Monthly Mean in PPM



NON-METHANE HYDROCARBONS (NMHC) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPM



NON-METHANE HYDROCARBONS (NMHC) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPM



L1CA35
NMHC / WDR Joint Frequency Distribution (Percent)

01/01/15 thru 12/31/15
Distribution By % Of Samples

Logger Id : 35
Site Name : L1CA35
Parameter : NMHC
Units : PPM

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< .2	2.89	2.49	2.32	4.69	9.22	11.63	5.23	2.86	2.53	2.32	3.43	10.22	13.47	12.51	9.60	4.34	99.82
< .5	.01	.00	.00	.00	.02	.02	.01	.00	.00	.00	.00	.00	.02	.03	.01	.00	.14
< 1.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 2.0	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
< 4.0	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
>= 4.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.90	2.49	2.32	4.69	9.26	11.67	5.24	2.86	2.53	2.32	3.43	10.22	13.49	12.55	9.61	4.34	

Calm : .00 %

Total # Operational Hours : 8215

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< .2	238	205	191	386	758	956	430	235	208	191	282	840	1107	1028	789	357	8201
< .5	1			2	2	2	1					2	2	3	1		12
< 1.0																	
< 2.0						1											1
< 4.0					1												1
>= 4.0																	
Totals	239	205	191	386	761	959	431	235	208	191	282	840	1109	1031	790	357	

Calm : .00 %

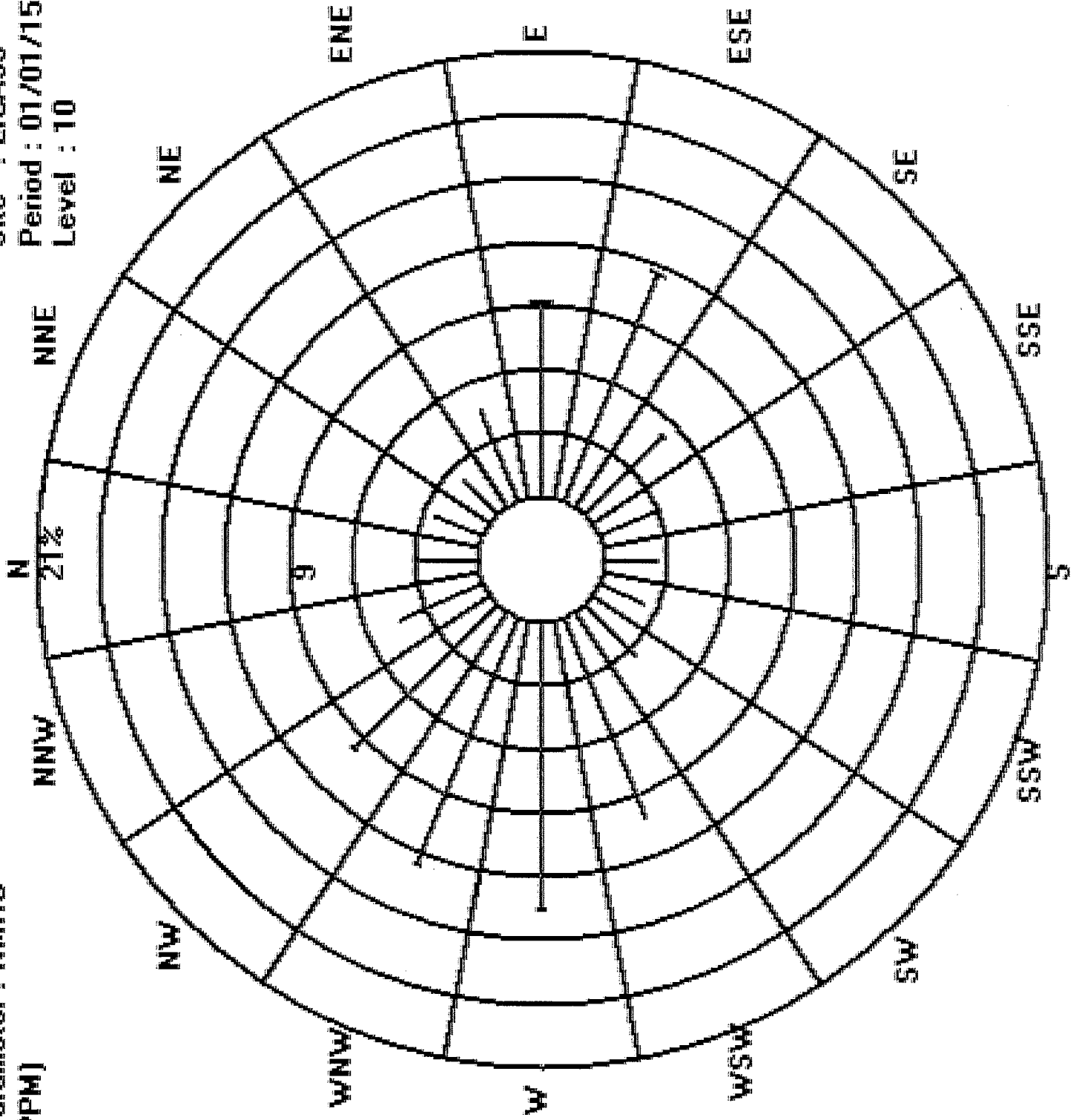
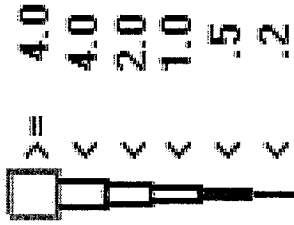
Total # Operational Hours : 8215

Logger : 35 Parameter : NMHC

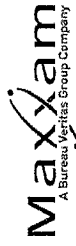
Site : LICA35

Class Limits (PPM)

Period : 01/01/15-12/31/15
Level : 10



OXIDES OF NITROGEN



OXIDES OF NITROGEN (NOx) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (ppb NOx)			OBJECTIVES**			EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	24-HR	
January	677	99.5	93.65%	6.35%	0.00%	0.00%	-	-	-	-	15.4
February	628	99.0	97.29%	2.71%	0.00%	0.00%	-	-	-	-	10.7
March	658	98.3	99.54%	0.46%	0.00%	0.00%	-	-	-	-	9.5
April	674	100.0	98.96%	1.04%	0.00%	0.00%	-	-	-	-	6.5
May	681	100.0	98.83%	1.17%	0.00%	0.00%	-	-	-	-	7.4
June	679	100.0	98.97%	1.03%	0.00%	0.00%	-	-	-	-	8.2
July	674	99.1	99.85%	0.15%	0.00%	0.00%	-	-	-	-	6.5
August	673	100.0	99.41%	0.59%	0.00%	0.00%	-	-	-	-	9.5
September	681	99.7	99.41%	0.59%	0.00%	0.00%	-	-	-	-	9.3
October	682	100.0	98.83%	1.17%	0.00%	0.00%	-	-	-	-	12.2
November	678	100.0	97.05%	2.95%	0.00%	0.00%	-	-	-	-	13.0
December	673	100.0	89.90%	10.10%	0.00%	0.00%	-	-	-	-	19.2
ANNUAL AVERAGE											10.6

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	10.6	PPB

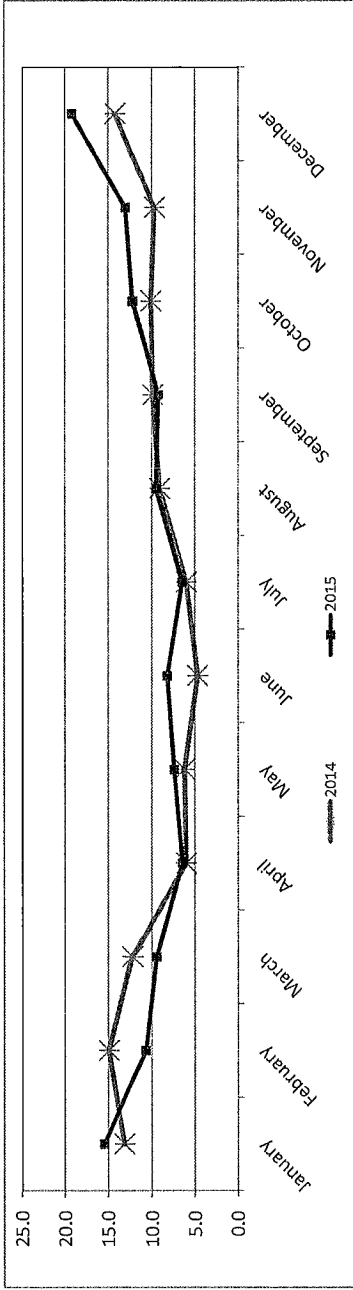
OXIDES OF NITROGEN (NOx) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	13.1	0.1	116.1	15.4	0.0	88.1	-2.3
February	14.9	0.0	90.3	10.7	0.1	96.3	4.2
March	12.2	0.0	120.4	9.5	0.1	61.5	2.7
April	6.0	0.0	95.3	6.5	0.0	79.0	-0.5
May	6.2	0.0	118.1	7.4	0.0	85.5	-1.2
June	4.7	0.0	39.5	8.2	0.1	76.5	-3.5
July	6.0	0.0	46.7	6.5	0.1	53.0	-0.5
August	9.1	0.1	82.2	9.5	0.9	97.6	-0.4
September	9.9	0.0	87.1	9.3	0.6	82.9	0.6
October	10.1	0.1	138.0	12.2	1.5	68.0	-2.1
November	9.7	0.0	117.3	13.0	0.8	103.3	-3.3
December	14.2	0.2	110.4	19.2	1.9	108.8	-5.0

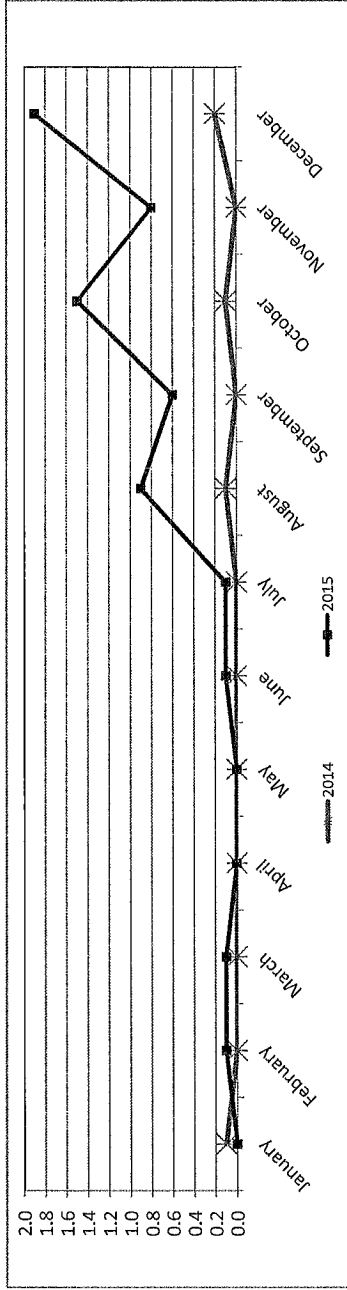
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

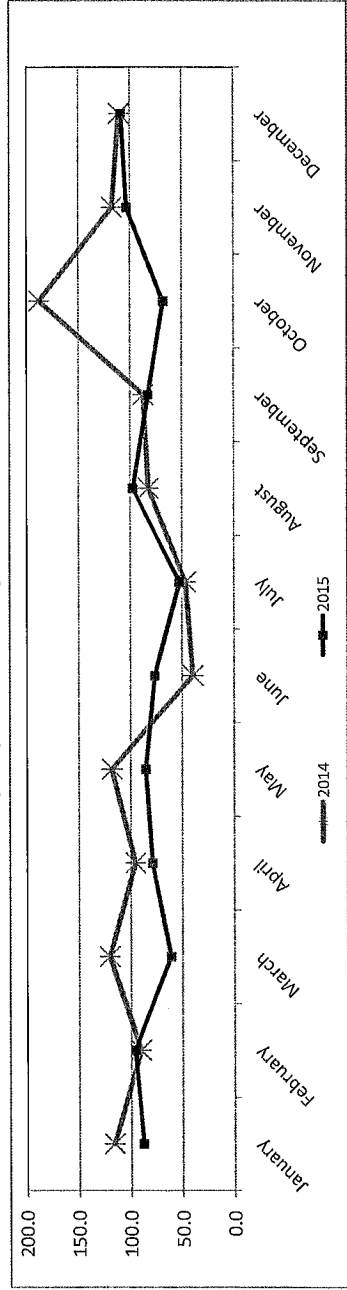
OXIDES OF NITROGEN (NOx) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



OXIDES OF NITROGEN (NOx) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



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

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 35

Site Name : LICA-ELK

Parameter : NOX_

Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 50.0	2.87	2.44	2.38	4.67	8.89	11.33	4.93	2.66	2.44	2.39	3.44	10.10	13.18	12.25	9.32	4.28	97.67			
< 110.0	.01	.07	.03	.48	.48	.34	.15	.10	.07	.08	.01	.07	.23	.35	.18	.06	2.32			
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
Totals	2.88	2.52	2.42	4.71	9.37	11.67	5.09	2.77	2.52	2.48	3.45	10.18	13.42	12.60	9.51	4.34				

Calm : .00 %

Total # Operational Hours : 8211

Distribution By Samples




Limit	Direction																NNW	NW	NNW	Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW				
< 50.0	236	201	196	384	730	931	405	219	201	197	283	830	1083	1006	766	352	8020			
< 110.0	1	6	3	3	40	28	13	9	6	7	1	6	19	29	15	5	191			
< 210.0																				
>= 210.0																				
Totals	237	207	199	387	770	959	418	228	207	204	284	836	1102	1035	781	357				

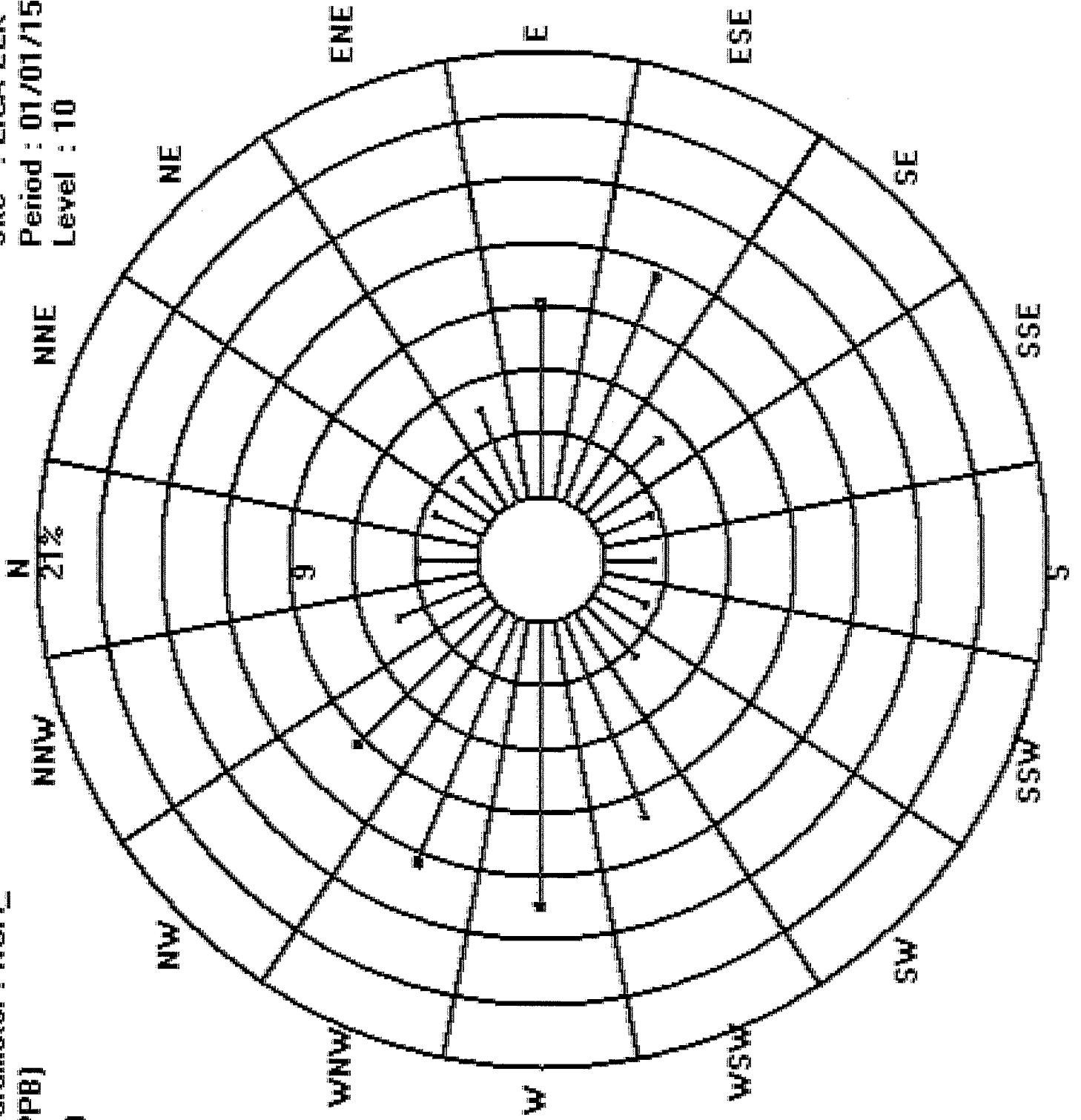
Calm : .00 %

Total # Operational Hours : 8211

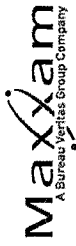
Site : LICA-ELK
Period : 01/01/15-12/31/15
Level : 10

Logger : 35 Parameter : NOX_
Class Limits (PPB)

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



NITRIC OXIDES



NITRIC OXIDE (NO) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB/NO)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	
January	677	99.5	99.70%	0.30%	0.00%	0.00%	-	-	-	4.5
February	628	99.0	99.84%	0.16%	0.00%	0.00%	-	-	-	2.8
March	658	98.3	100.00%	0.00%	0.00%	0.00%	-	-	-	1.5
April	674	100.0	99.55%	0.45%	0.00%	0.00%	-	-	-	1.0
May	681	100.0	99.85%	0.15%	0.00%	0.00%	-	-	-	1.5
June	679	100.0	100.00%	0.00%	0.00%	0.00%	-	-	-	1.8
July	674	99.1	100.00%	0.00%	0.00%	0.00%	-	-	-	1.3
August	673	100.0	99.85%	0.15%	0.00%	0.00%	-	-	-	2.6
September	681	99.7	99.56%	0.44%	0.00%	0.00%	-	-	-	2.6
October	682	100.0	99.71%	0.29%	0.00%	0.00%	-	-	-	3.8
November	678	100.0	98.82%	1.18%	0.00%	0.00%	-	-	-	3.9
December	673	100.0	95.54%	4.46%	0.00%	0.00%	-	-	-	8.5
ANNUAL AVERAGE										3.0

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	3.0	PPB



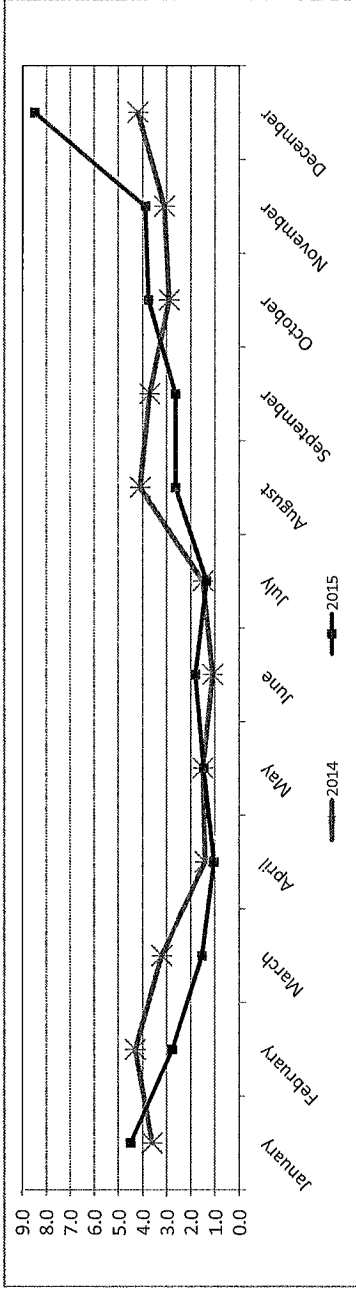
NITRIC OXIDE (NO) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	3.6	0.0	86.4		4.5	0.0	55.5		-0.9
February	4.3	0.0	59.3		2.8	0.0	58.9		1.5
March	3.2	0.0	82.8		1.5	0.0	35.8		1.7
April	1.4	0.0	62.9		1.0	0.0	59.1		0.4
May	1.5	0.0	94.5		1.5	0.0	57.7		0.0
June	1.1	0.0	27.2		1.8	0.0	47.1		-0.7
July	1.5	0.0	35.4		1.3	0.0	35.1		0.2
August	4.1	0.0	75.4		2.6	0.0	65.8		1.5
September	3.7	0.0	75.1		2.6	0.0	69.6		1.1
October	2.9	0.0	64.7		3.8	0.1	53.9		-0.9
November	3.1	0.0	85.2		3.9	0.0	87.8		-0.8
December	4.2	0.0	72.1		8.5	0.0	89.3		-4.3

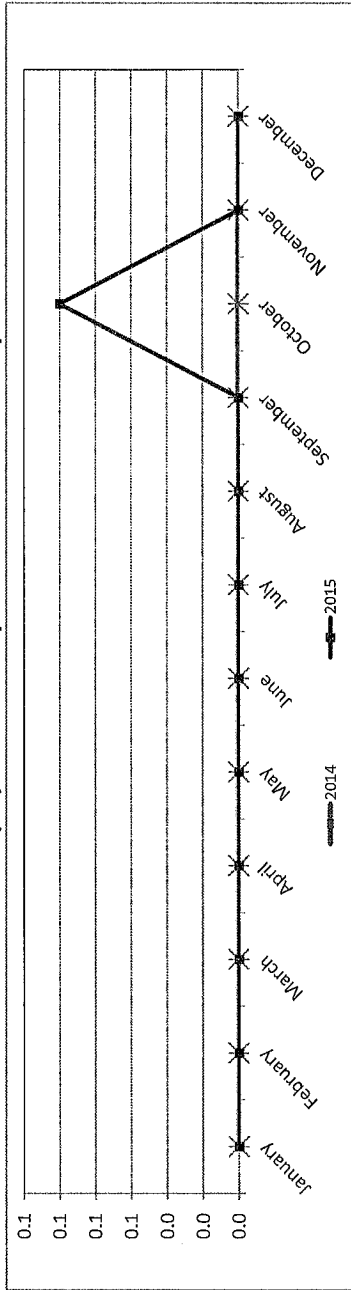
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

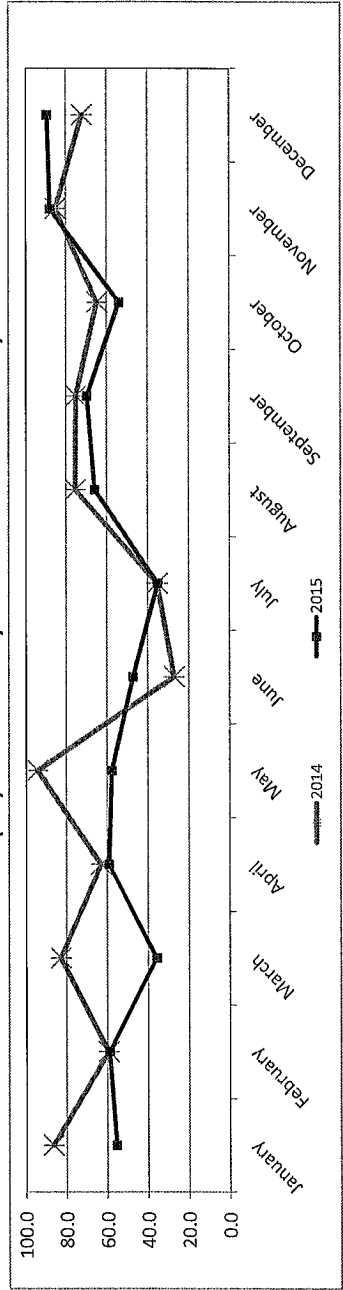
NITRIC OXIDE (NO) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITRIC OXIDE (NO) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITRIC OXIDE (NO) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



NO_ / WDR Joint Frequency Distribution (Percent)

LICA-ELK

01/01/15 thru 12/31/15

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.88	2.49	2.41	4.70	9.21	11.60	5.00	2.75	2.50	2.46	3.45	10.16	13.37	12.51	9.46	4.33	99.36
< 110.0	.00	.02	.01	.01	.15	.07	.08	.02	.01	.02	.00	.01	.04	.08	.04	.01	.63
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.88	2.52	2.42	4.71	9.37	11.67	5.09	2.77	2.52	2.48	3.45	10.18	13.42	12.60	9.51	4.34	

Calm : .00 %

Total # Operational Hours : 8211

Distribution By Samples

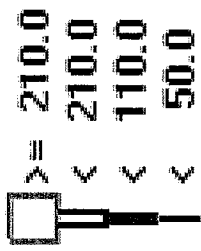
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	237	205	198	386	757	953	411	226	206	202	284	835	1098	1028	777	356	8159
< 110.0	2	1	1	1	13	6	7	2	1	2	1	1	4	7	4	1	52
< 210.0																	
>= 210.0																	
Totals	237	207	199	387	770	959	418	228	207	204	284	836	1102	1035	781	357	

Calm : .00 %

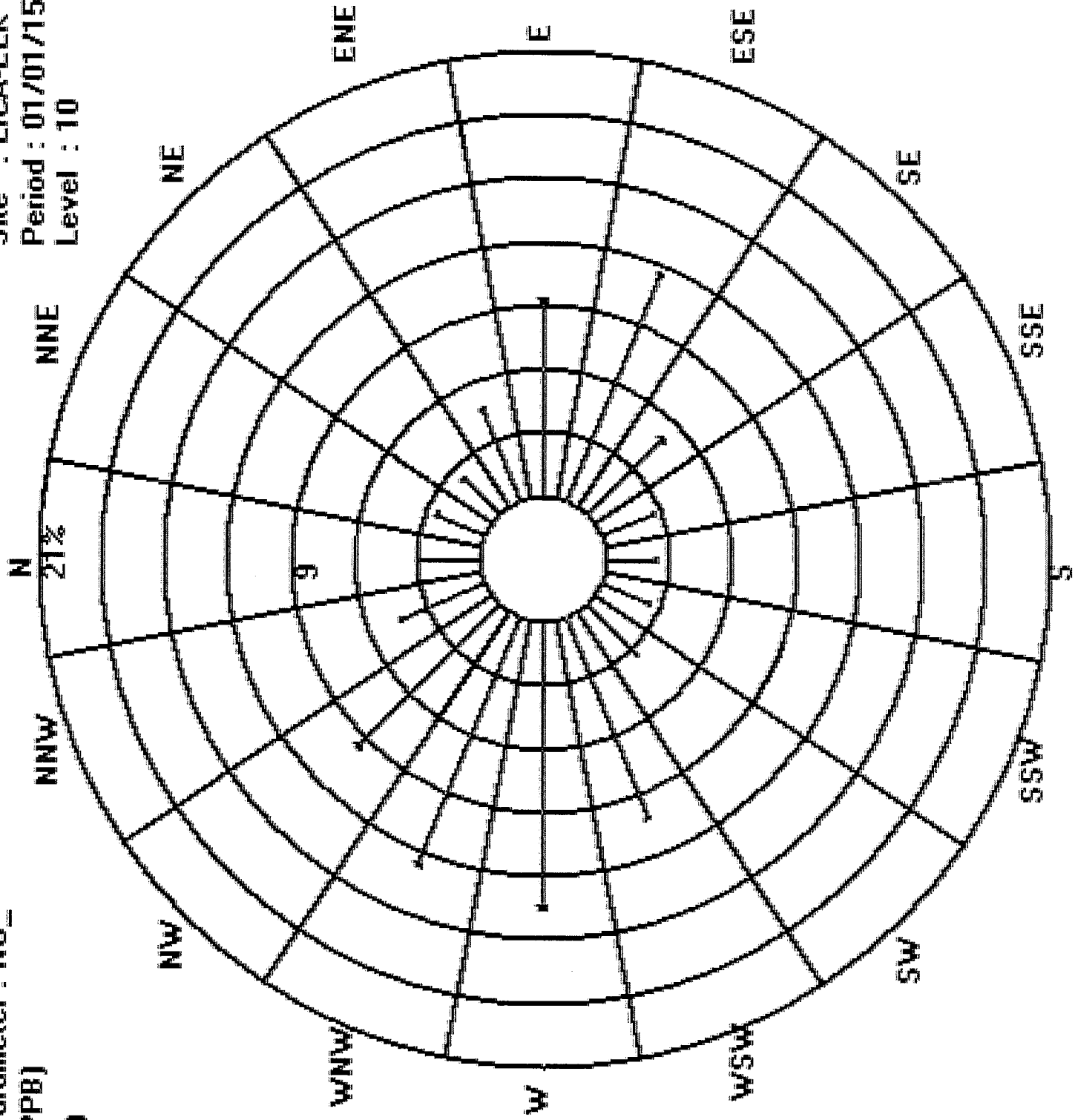
Total # Operational Hours : 8211

Logger : 35 Parameter : NO₂

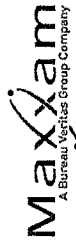
Class Limits (PPB)



Site : LICA-ELK
Period : 01/01/15-12/31/15
Level : 10



NITROGEN DIOXIDE

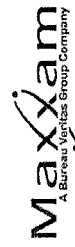


NITROGEN DIOXIDE (NO2) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppb NO2)				OBJECTIVES**			EXCEEDENCES			MONTHLY AVERAGE
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR	1-HR	24-HR		
January	677	99.5	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	10.9	
February	628	99.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	7.9	
March	658	98.3	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	7.9	
April	674	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	5.4	
May	681	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	6.0	
June	679	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	6.4	
July	674	99.1	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	5.1	
August	673	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	6.9	
September	681	99.7	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	6.6	
October	682	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	8.8	
November	678	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	9.1	
December	673	100.0	100.00%	0.00%	0.00%	0.00%	159	-	0	-	-	10.7	
ANNUAL AVERAGE												7.6	

N/D - Valid Data Not Available
 *Number of Readings - included calibration hours
 **If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	24	PPB
Annual Average for 2015	7.6	PPB



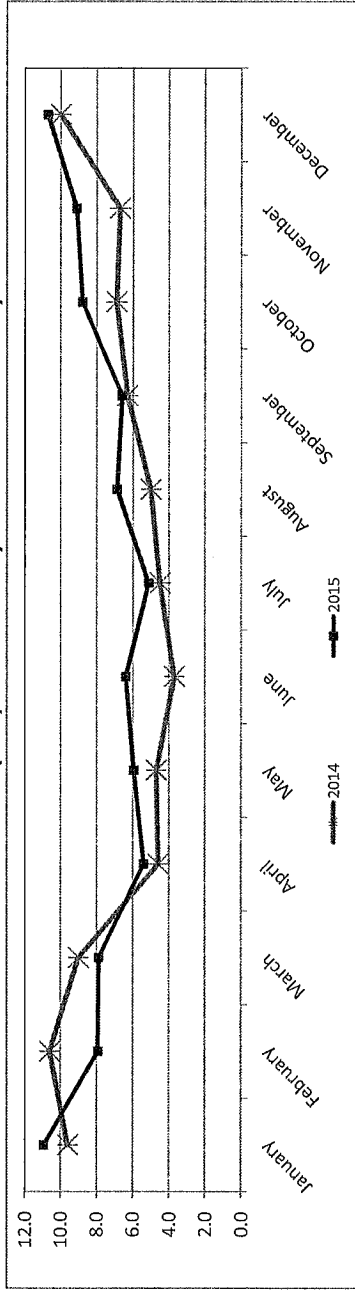
NITROGEN DIOXIDE (NO2) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014				2015				Difference
	MEAN	MINIMUM	MAXIMUM		MEAN	MINIMUM	MAXIMUM		
January	9.6	0.1	36.7		10.9	0.0	36.3		-1.3
February	10.6	0.0	38.9		7.9	0.0	41.4		2.7
March	9.0	0.0	39.6		7.9	0.2	35.3		1.1
April	4.6	0.0	32.6		5.4	0.0	26.0		-0.8
May	4.7	0.0	36.7		6.0	0.0	34.4		-1.3
June	3.7	0.0	20.1		6.4	0.1	30.0		-2.7
July	4.5	0.0	22.8		5.1	0.1	23.3		-0.6
August	5.0	0.0	21.5		6.9	0.9	31.8		-1.9
September	6.3	0.0	40.1		6.6	1.3	19.1		-0.3
October	6.9	0.1	33.3		8.8	1.0	25.1		-1.9
November	6.7	0.0	35.4		9.1	0.8	27.9		-2.4
December	10.0	0.2	39.7		10.7	1.0	27.1		-0.7

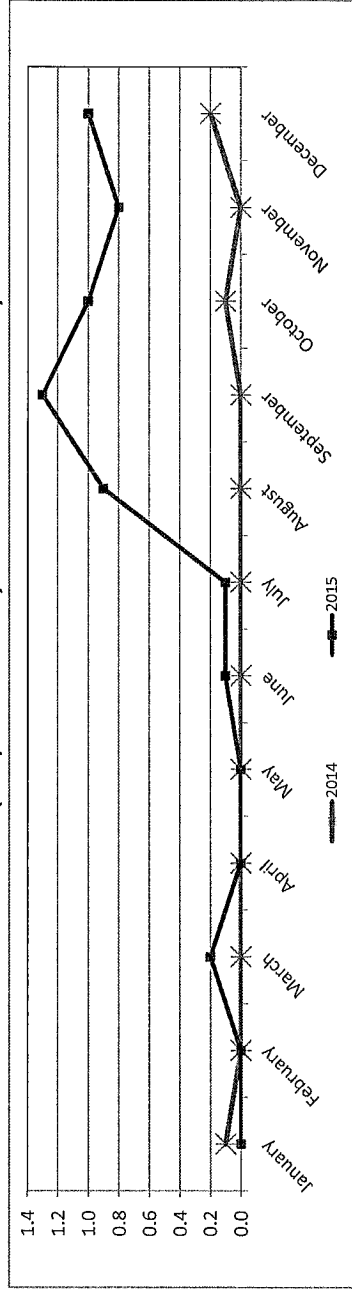
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

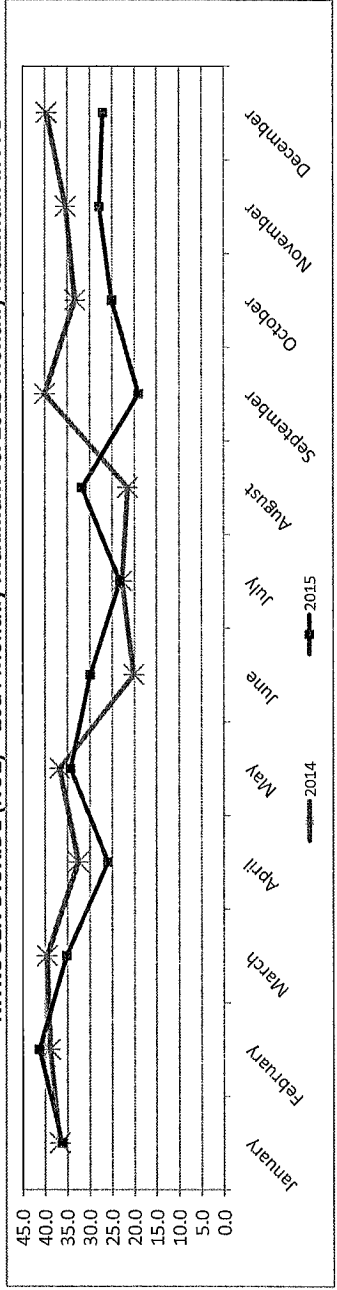
NITROGEN DIOXIDE (NO2) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



NITROGEN DIOXIDE (NO2) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



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

01/01/15 thru 12/31/15

Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : NO2
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction													NNW	Freq		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W			WNW	NW
< 50.0	2.88	2.52	2.42	4.71	9.37	11.67	5.09	2.77	2.52	2.48	3.45	10.18	13.42	12.60	9.51	4.34	100.00
< 110.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.88	2.52	2.42	4.71	9.37	11.67	5.09	2.77	2.52	2.48	3.45	10.18	13.42	12.60	9.51	4.34	

Calm : .00 %

Total # Operational Hours : 8211

Distribution By Samples

Limit	Direction													NNW	Freq		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W			WNW	NW
< 50.0	237	207	199	387	770	959	418	228	207	204	284	836	1102	1035	781	357	8211
< 110.0																	
< 210.0																	
>= 210.0																	
Totals	237	207	199	387	770	959	418	228	207	204	284	836	1102	1035	781	357	

Calm : .00 %





Total # Operational Hours : 8211

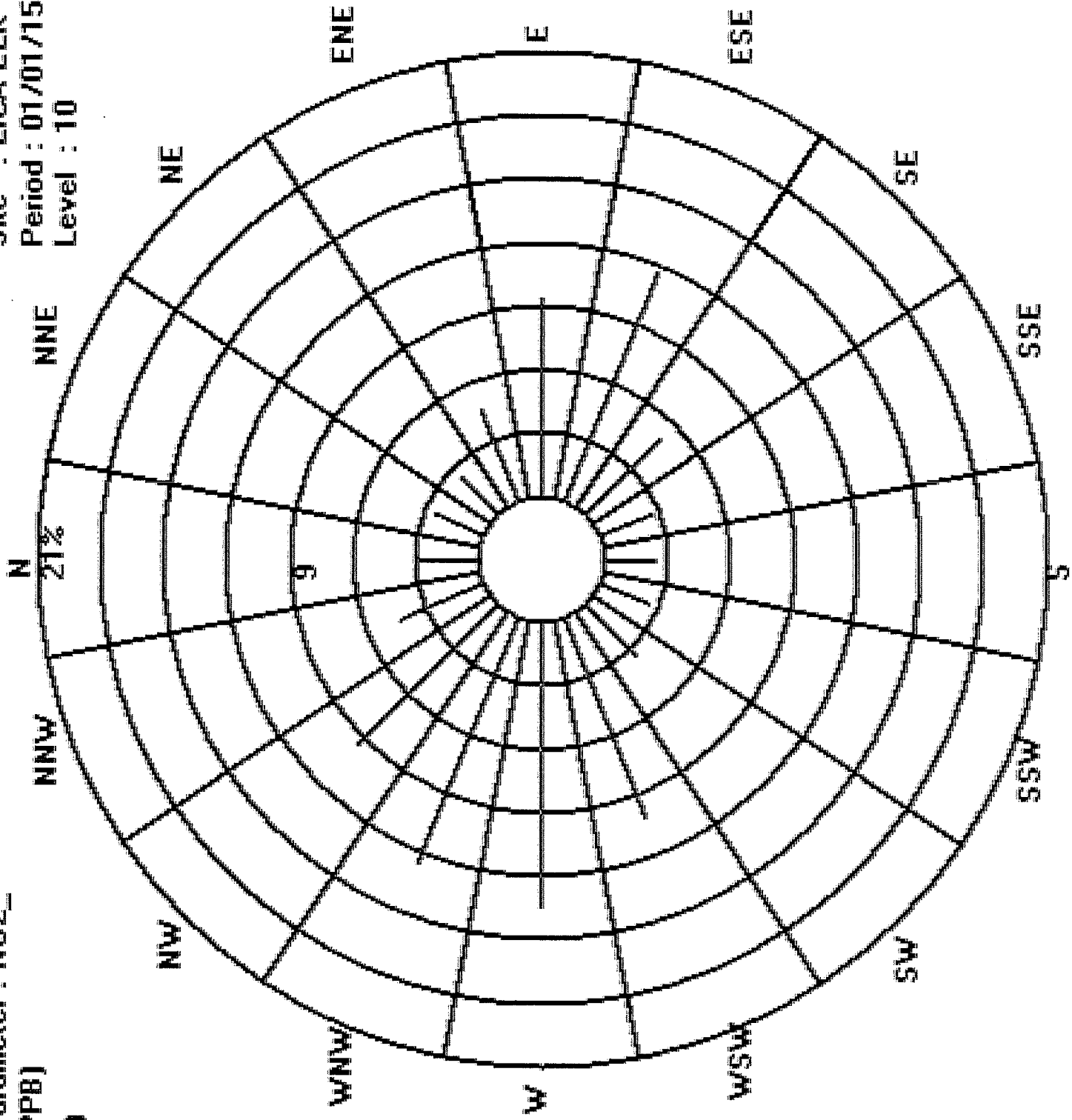
Logger : 35 Parameter : NO2_

Site : LICA-ELK

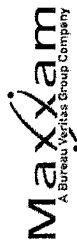
Class Limits (PPB)

Period : 01/01/15-12/31/15
Level : 10

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



OZONE



OZONE (O3) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

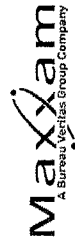
Month	Number of Readings*	Operational Time (%)	% Readings in Concentration Range (PPB, O3)			OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE	
			≤ 50 ppb	51 < C ≤ 110 ppb	111 < C ≤ 210 ppb	> 210 ppb	1-HR	24-HR	1-HR		24-HR
January	652	96.2	100.00%	0.00%	0.00%	0.00%	82	-	0	-	22
February	574	91.7	100.00%	0.00%	0.00%	0.00%	82	-	0	-	23
March	661	96.8	100.00%	0.00%	0.00%	0.00%	82	-	0	-	27
April	663	97.4	96.53%	3.47%	0.00%	0.00%	82	-	0	-	31
May	684	100.0	77.19%	22.81%	0.00%	0.00%	82	-	0	-	37
June	685	100.0	90.07%	9.93%	0.00%	0.00%	82	-	0	-	31
July	666	100.0	96.25%	3.75%	0.00%	0.00%	82	-	0	-	25
August	684	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	17
September	684	99.7	100.00%	0.00%	0.00%	0.00%	82	-	0	-	15
October	593	88.2	100.00%	0.00%	0.00%	0.00%	82	-	0	-	15
November	684	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	13
December	683	100.0	100.00%	0.00%	0.00%	0.00%	82	-	0	-	10
ANNUAL AVERAGE										22	

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**if Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average**	N/D	PPB
Annual Average for 2015	22	PPB



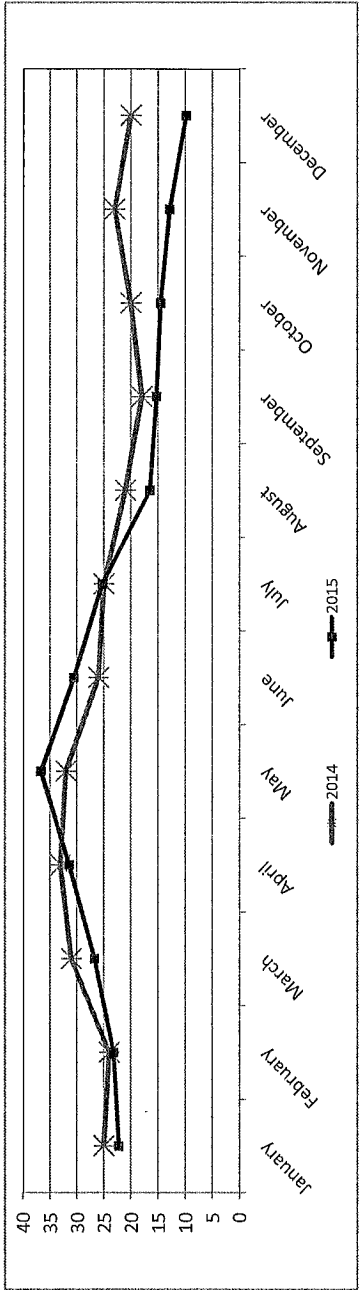
OZONE (O3) 2014 One-Hour Readings vs. 2015 One-Hour Readings in PPB

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	25	0	46	22	0	40	3
February	24	0	41	23	0	41	1
March	31	0	56	27	1	47	4
April	33	0	53	31	0	55	2
May	32	0	63	37	0	70	-5
June	26	0	62	31	1	70	-5
July	25	0	66	25	0	60	0
August	21	0	53	17	0	48	4
September	18	0	50	15	0	44	3
October	20	1	43	15	0	37	5
November	23	0	42	13	0	32	10
December	20	0	41	10	0	30	10

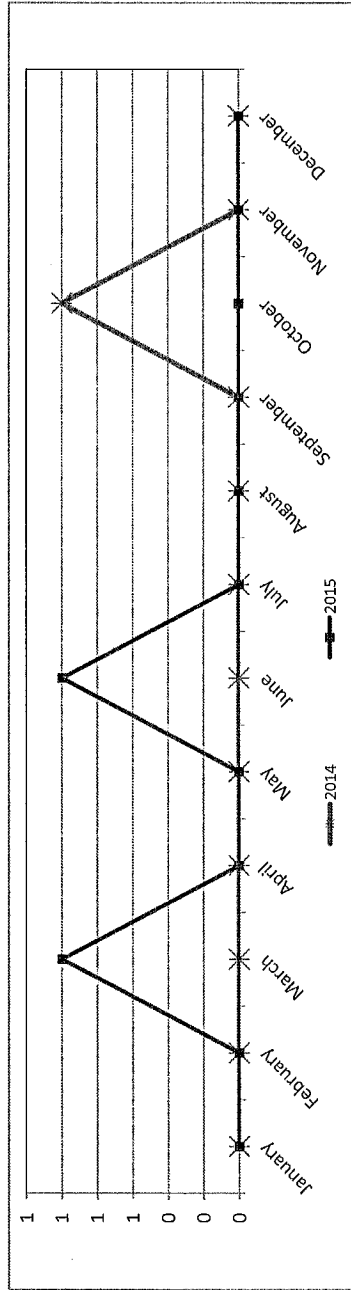
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

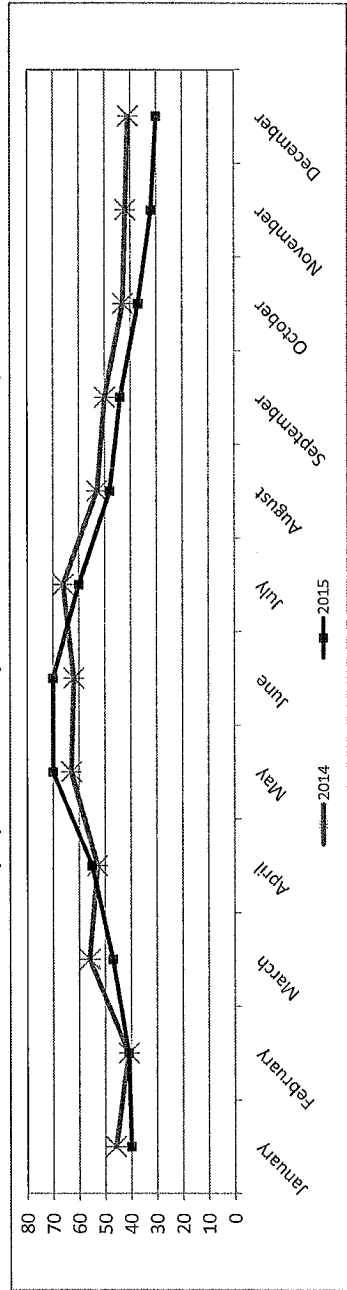
OZONE (O3) 2014 Monthly Mean vs. 2015 Monthly Mean in PPB



OZONE (O3) 2014 Monthly Minimum vs. 2015 Monthly Minimum in PPB



OZONE (O3) 2014 Monthly Maximum vs. 2015 Monthly Maximum in PPB



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

01/01/15 thru 12/31/15
 Distribution By % Of Samples

Logger Id : 35
 Site Name : LICA-ELK
 Parameter : O3
 Units : PPF

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	2.76	2.34	2.34	4.47	9.25	11.11	4.79	2.45	2.18	2.26	3.23	9.92	13.10	12.40	9.43	4.11	96.23
< 110.0	.13	.16	.09	.11	.09	.44	.27	.39	.39	.23	.19	.24	.27	.28	.30	.09	3.76
< 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.90	2.50	2.44	4.58	9.35	11.56	5.07	2.85	2.57	2.50	3.43	10.17	13.37	12.69	9.74	4.21	

Calm : .00 %

Total # Operational Hours : 8067

Distribution By Samples





Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50.0	223	189	189	361	747	897	387	198	176	183	261	801	1057	1001	761	332	7763
< 110.0	11	13	8	9	8	36	22	32	32	19	16	20	22	23	25	8	304
< 210.0																	
>= 210.0																	
Totals	234	202	197	370	755	933	409	230	208	202	277	821	1079	1024	786	340	

Calm : .00 %

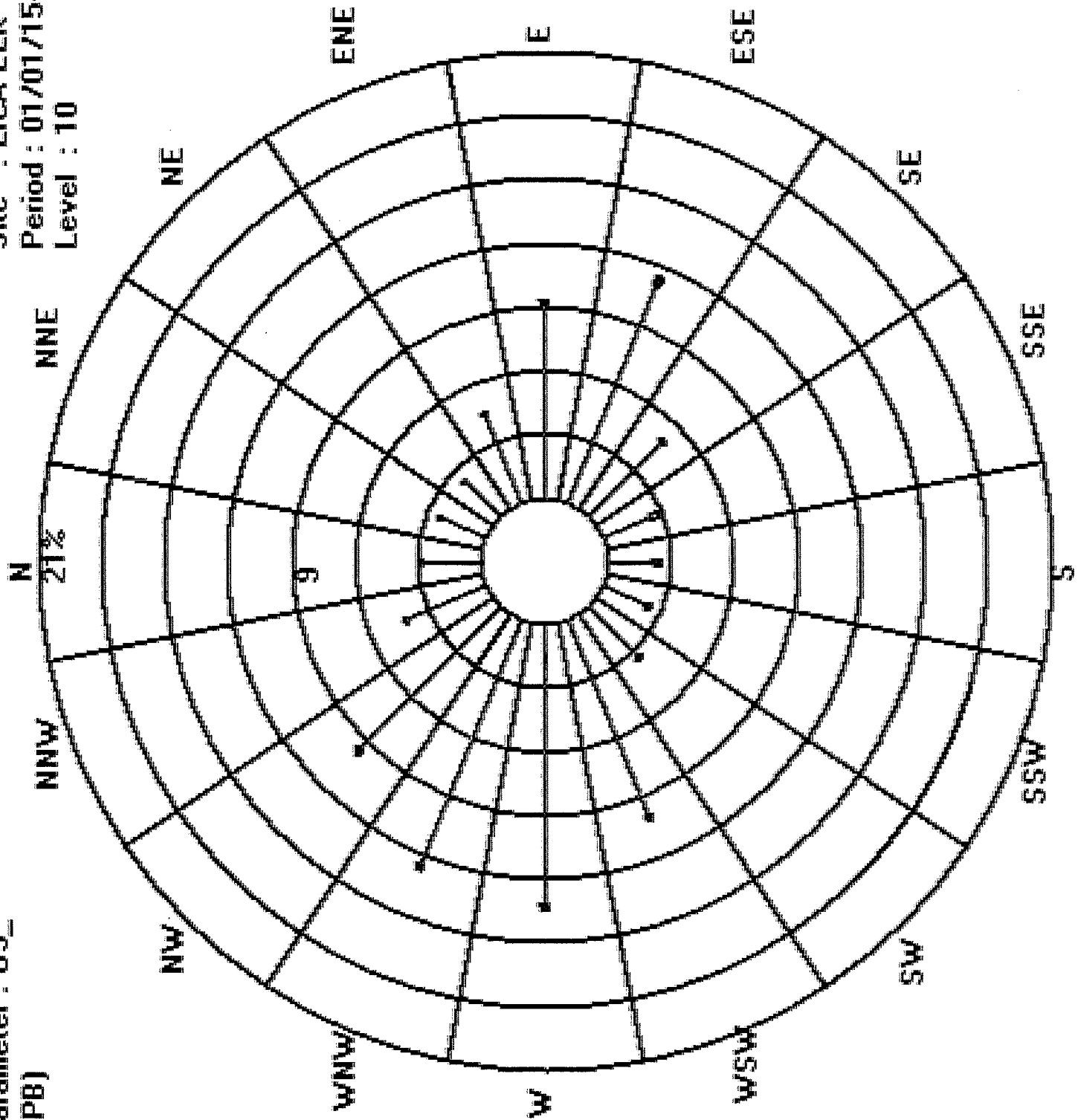
Total # Operational Hours : 8067

Logger : 35 Parameter : O3_

Class Limits (PPB)

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

Site : LICA-ELK
Period : 01/01/15-12/31/15
Level : 10



PARTICULATE MATTER 2.5



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2015 Monthly Averages and Frequency Distributions of One Hour Readings

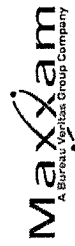
Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ug/m3 PM2.5)						OBJECTIVES**		EXCEEDENCES		MONTHLY AVERAGE			
			≤ 30 ug/m3	31 < C ≤ 60 ug/m3	61 < C ≤ 80 ug/m3	81 < C ≤ 120 ug/m3	121 < C ≤ 240 ug/m3	> 240 ug/m3	1-HR	24-HR	1-HR	24-HR				
January	669	90.5	98.21%	1.64%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	6
February	626	99.5	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	5
March	699	94.9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	6
April	711	99.2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	3
May	735	99.5	97.69%	0.68%	0.41%	1.09%	0.00%	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0	2	8
June	714	99.4	97.34%	1.96%	0.28%	0.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	7
July	687	93.1	88.65%	5.24%	1.02%	1.89%	2.91%	0.00%	0.00%	0.29%	0.00%	0.00%	0.00%	0	5	17
August	706	95.2	98.16%	1.70%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	7
September	694	96.8	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	3
October	734	98.9	99.86%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	4
November	711	99.3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	6
December	739	99.6	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0	0	8
											ANNUAL AVERAGE		7			

N/D - Valid Data Not Available

*Number of Readings - included calibration hours

**If Alberta Ambient Air Quality Objectives are not available, N/D is used.

Alberta Ambient Air Quality Objectives Annual Average*	N/D	ug/m3
Annual Average for 2015	7	ug/m3



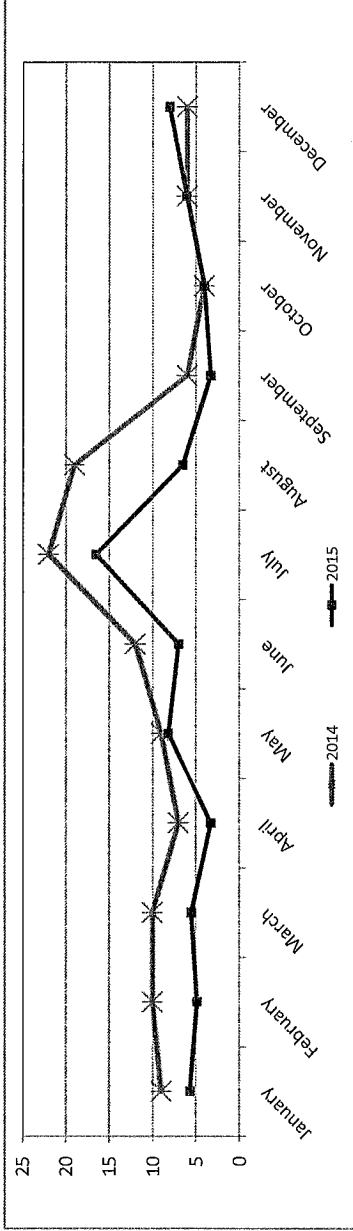
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 One-Hour Readings vs. 2015 One-Hour Readings in ug/m3

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	9	0	80	6	0	65	3
February	10	0	152	5	0	27	5
March	10	0	60	6	0	23	4
April	7	0	42	3	0	22	4
May	9	0	61	8	0	269	1
June	12	0	60	7	0	114	5
July	22	0	88	17	0	246	5
August	19	0	81	7	0	78	12
September	6	0	57	3	0	29	3
October	4	0	21	4	0	44	0
November	6	0	147	6	0	25	0
December	6	0	29	8	0	29	-2

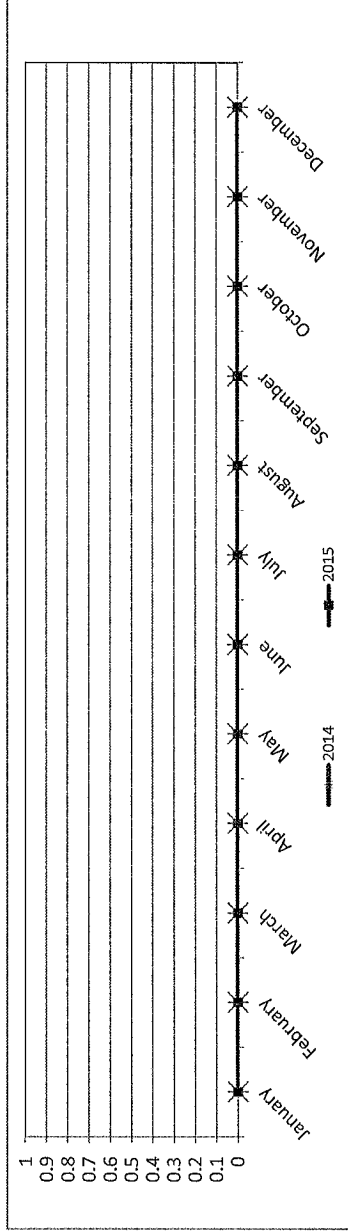
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

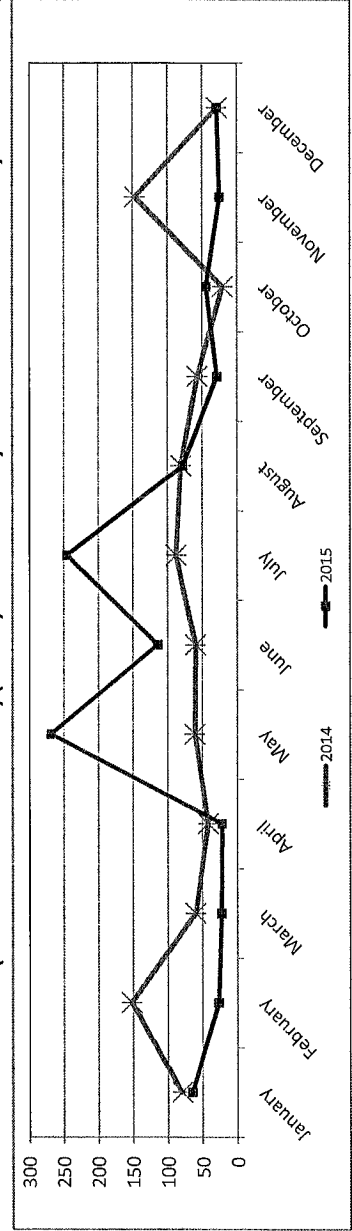
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Mean vs. 2015 Monthly Mean in ug/m3



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Minimum vs. 2015 Monthly Minimum in ug/m3



PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) 2014 Monthly Maximum vs. 2015 Monthly Maximum in ug/m3



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

01/01/15 thru 12/31/15

DISTRIBUTION BY % OF SAMPLES

Logger id : 35
 Site Name : LICA-FLK
 Parameter : PM2
 Units : UG/M3

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30.0	2.74	2.42	2.29	4.64	9.06	11.66	5.41	2.87	2.50	2.44	3.38	9.88	13.04	12.38	9.33	4.18	98.27
< 60.0	.01	.02	.02	.02	.07	.05	.02	.01	.03	.07	.02	.17	.15	.16	.08	.02	.98
< 80.0	.00	.01	.01	.02	.01	.01	.00	.00	.02	.00	.00	.00	.03	.02	.02	.00	.17
< 120.0	.01	.02	.05	.02	.02	.00	.00	.01	.01	.01	.01	.00	.03	.03	.02	.00	.28
< 240.0	.01	.00	.05	.05	.07	.01	.00	.00	.00	.00	.00	.00	.00	.01	.01	.00	.23
>= 240.0	.01	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
Totals	2.79	2.48	2.44	4.77	9.26	11.74	5.43	2.89	2.57	2.52	3.42	10.05	13.26	12.62	9.47	4.20	

Calm : .00 %

Total # Operational Hours : 8420

Distribution By Samples

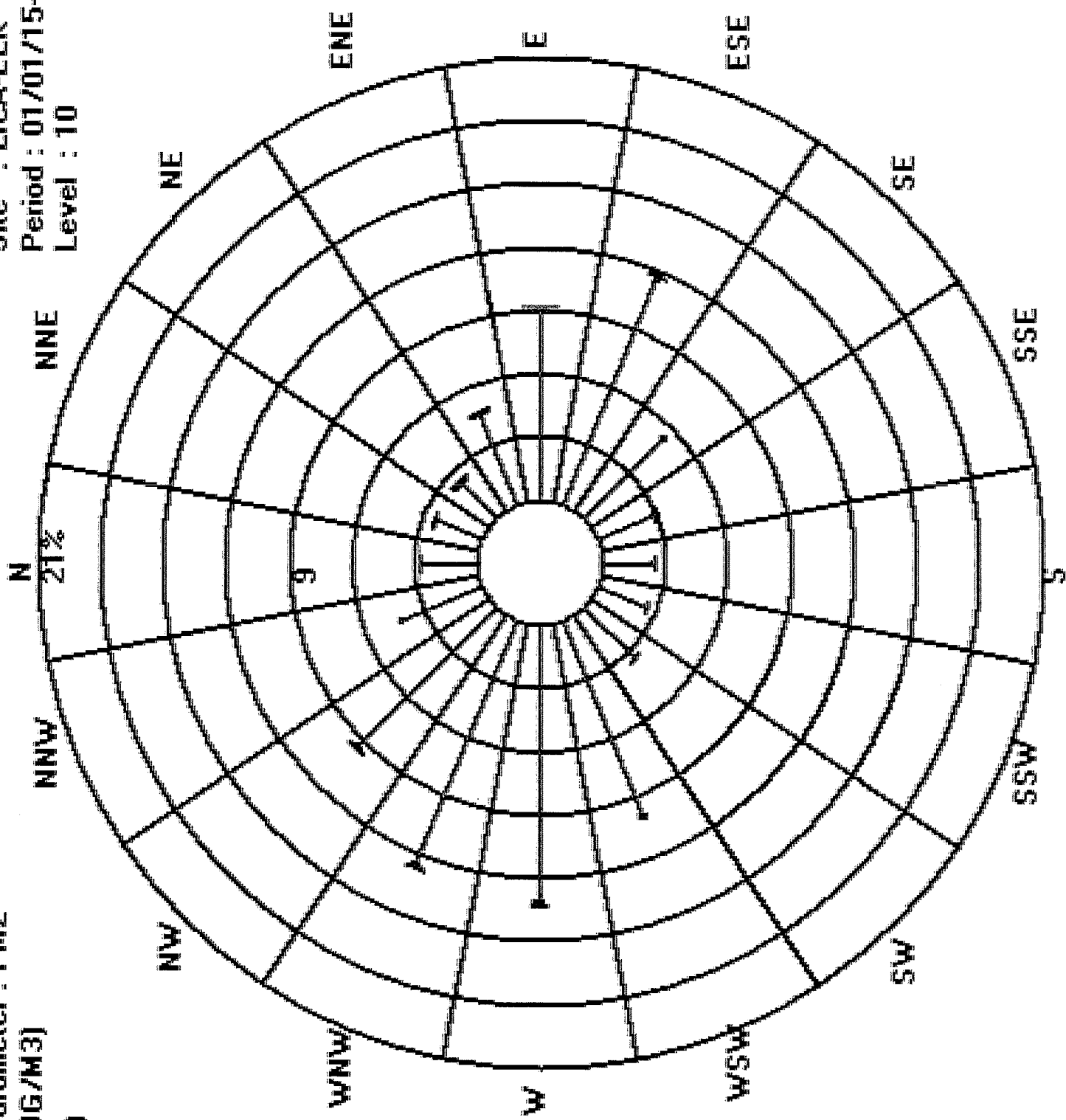
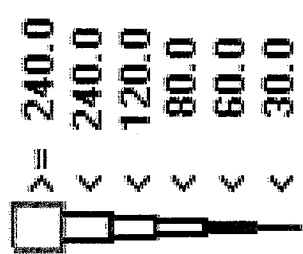
Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30.0	231	204	193	391	763	982	456	242	211	206	285	832	1098	1043	786	352	8275
< 60.0	1	2	2	2	6	5	2	1	3	6	2	15	13	14	7	2	83
< 80.0		1	1	2	1	1			2			3	2	2	2		15
< 120.0	1	2	5	2	2			1	1	1	1	3	3	3	2		24
< 240.0	1	5	5	5	6	1							1	1	1		20
>= 240.0	1			2													3
Totals	235	209	206	402	780	989	456	244	217	213	288	847	1117	1063	798	354	

Calm : .00 %

Total # Operational Hours : 8420

Site : LICA-ELK
 Period : 01/01/15-12/31/15
 Level : 10

Logger : 35 Parameter : PM2
 Class Limits (UG/M3)



WIND SPEED



WIND SPEED (WS) 2015 Monthly Data Summary of One Hour Readings

Month	Number of Readings*	Operational Time (%)	Monthly Average (KPH)	Minimum Hourly Average (KPH)	Maximum Hourly Average (KPH)	Maximum Daily Average (KPH)
January	743	99.9	10.8	0.2	38.4	25.3
February	672	100.0	11.5	0.1	36.0	19.8
March	731	98.3	11.4	0.0	48.6	24.6
April	720	100.0	13.6	0.1	42.5	26.1
May	744	100.0	10.3	0.3	33.9	21.9
June	720	100.0	10.8	0.0	35.9	17.9
July	744	100.0	11.7	0.1	33.1	21.9
August	744	100.0	9.0	0.1	31.9	16.2
September	718	99.7	9.8	0.1	35.5	19.6
October	744	100.0	11.1	0.1	39.0	24.6
November	717	99.6	10.2	0.1	39.7	28.3
December	744	100.0	8.7	0.1	29.7	16.3

N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.



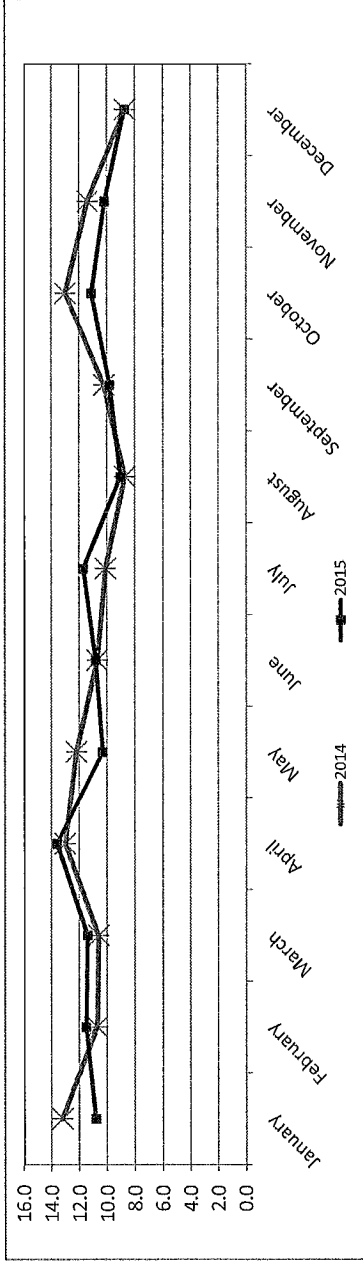
WIND SPEED (WS) 2014 One-Hour Readings vs. 2015 One-Hour Readings in km/hr

Month	2014			2015			Difference
	MEAN	MINIMUM	MAXIMUM	MEAN	MINIMUM	MAXIMUM	
January	13.2	0.1	60.9	10.8	0.2	38.4	2.4
February	10.7	0.0	36.0	11.5	0.1	36.0	-0.8
March	10.6	0.1	37.8	11.4	0.0	48.6	-0.8
April	13.0	0.2	45.1	13.6	0.1	42.5	-0.6
May	12.2	0.2	38.4	10.3	0.3	33.9	1.9
June	10.7	0.2	35.3	10.8	0.0	35.9	-0.1
July	10.1	0.0	36.1	11.7	0.1	33.1	-1.6
August	8.7	0.1	30.6	9.0	0.1	31.9	-0.3
September	10.2	0.1	31.1	9.8	0.1	35.5	0.4
October	13.0	0.3	38.7	11.1	0.1	39.0	1.9
November	11.4	0.1	30.9	10.2	0.1	39.7	1.2
December	8.7	0.0	25.8	8.7	0.1	29.7	0.0

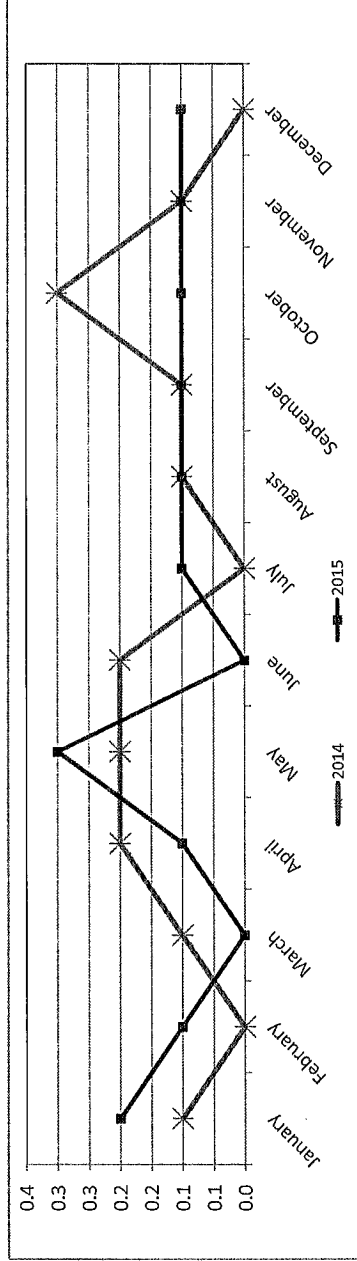
N/D - Valid Data Not Available

*Annual peak is bolded and highlighted.

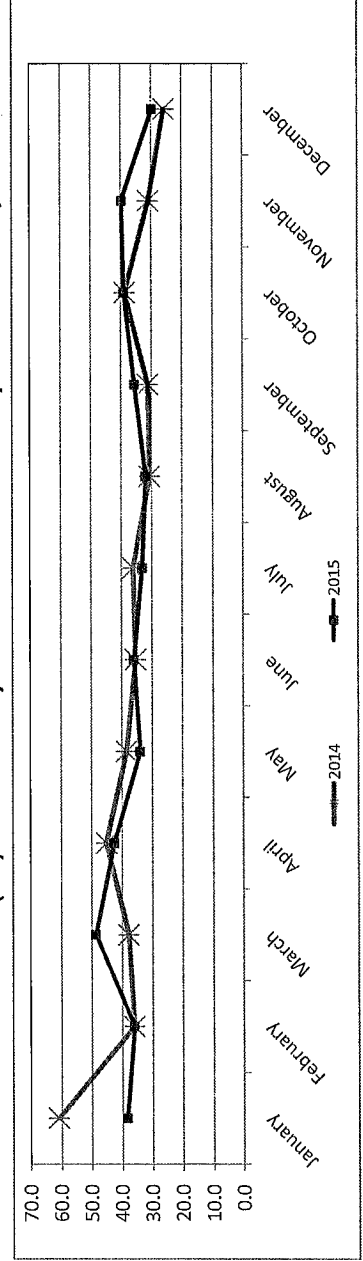
WIND SPEED (WS) 2014 Monthly Mean vs. 2015 Monthly Mean in km/hr



WIND SPEED (WS) 2014 Monthly Minimum vs. 2015 Monthly Minimum in km/hr



WIND SPEED (WS) 2014 Monthly Maximum vs. 2015 Monthly Maximum in km/hr



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

01/01/15 thru 12/31/15

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	.83	.88	.89	2.07	3.93	2.80	1.31	.96	.85	1.05	1.37	2.34	3.24	3.29	1.88	.78	28.55
< 12.0	.88	.78	.97	1.33	3.52	4.00	1.80	1.01	.85	.84	1.60	5.36	5.32	2.98	2.68	1.36	35.37
< 20.0	.89	.68	.48	1.08	1.36	3.51	1.85	.80	.70	.49	.44	2.33	2.86	3.39	3.13	1.29	25.34
< 29.0	.22	.13	.04	.22	.34	.98	.26	.06	.13	.06	.01	.06	1.37	2.01	1.48	.69	8.15
< 39.0	.01	.01	.00	.01	.02	.32	.01	.01	.00	.00	.00	.00	.44	.89	.49	.13	2.36
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.08	.01	.03	.17
Totals	2.84	2.50	2.39	4.73	9.18	11.62	5.25	2.86	2.56	2.46	3.43	10.11	13.29	12.66	9.70	4.31	

Calm : .03 %

Total # Operational Hours : 8739

Distribution By Samples

Limit	Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	73	77	78	181	344	245	115	84	75	92	120	205	284	288	165	69	2495
< 12.0	77	69	85	117	308	350	158	89	75	74	140	469	465	261	235	119	3091
< 20.0	78	60	42	95	119	307	162	70	62	43	39	204	250	297	274	113	2215
< 29.0	20	12	4	20	30	86	23	6	12	6	1	6	120	176	130	61	713
< 39.0	1	1	1	1	2	28	1	1				39	78	43	12	207	
>= 39.0												4	7	1	3	15	
Totals	249	219	209	414	803	1016	459	250	224	215	300	884	1162	1107	848	377	

Calm : .03 %

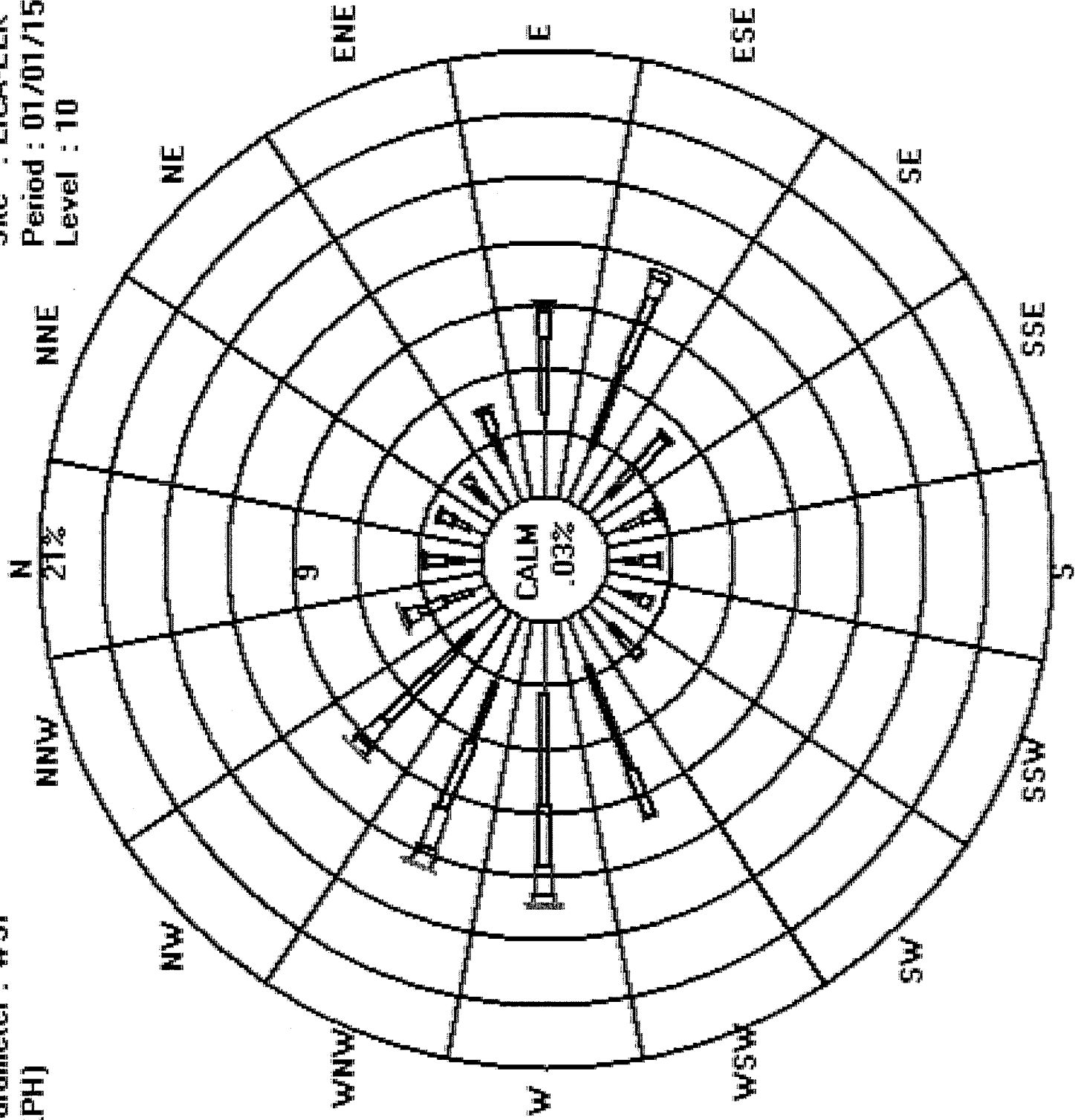
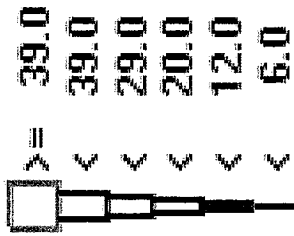
Total # Operational Hours : 8739

Logger : 35 Parameter : WSP

Site : LICA-ELK

Class Limits (KPH)

Period : 01/01/15-12/31/15
Level : 10




APPENDIX II
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
Yes	—
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry + Community Association	Elk Point Airport Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wilson, Kim	Project Manager, Customer Service - Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
—	—
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
—	

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.



Signature of the Representative of the Person
Responsible / External Person Certifying the Report

1- Feb-16

Report Issued Date (dd-mm-yyyy)