

Lakeland Industry & Community Association

Cold Lake Monitoring Site
Ambient Air Monitoring Annual Data Report

For
2011

Prepared By:



April 9, 2012

Lakeland Industry & Community Association Ambient Air Monitoring

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Introduction

The following Ambient Air Monitoring report was prepared for:

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Monitoring Location: Cold Lake
Data Period: January 2011 to December 2011

The annual ambient data report:

- Prepared by Lily Lin
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The annual analytical report for passive monitoring:
Authorized by Levi Manchak

Calibration Procedure

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

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

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

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

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

General Continuous Monitoring Annual Summary

Equipment Operation

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

AQM STATION – LICA – COLD LAKE

Sulphur Dioxide (PPB)

- Analyzer make / model – Thermo 43i, S/N: 806528242
 - ❖ The 24- hour objective was changed from 57 ppb to 48 ppb on February 15th as per Alberta Environment guidelines.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on April 29th at 19:00.
 - ❖ The pump was rebuilt following the as found points on June 17th.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on July 26th.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on August 1st.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on October 10th at hour 17.

General Continuous Monitoring Annual Summary

AQM STATION – LICA – COLD LAKE

Total Reduced Sulphur (PPB)

- Analyzer make / model –TEI 450i, S/N: 812728560
- Converter - CD NOVA CDN 101, S/N: 250
 - ❖ A stability issue was noticed when an as found span point was put on January 13th. Troubleshooting was performed on January 13th. A post-repair calibration was performed on January 14th.
 - ❖ The analyzer spanned low on January 16th. Troubleshooting was performed on the 17th. A multi-points calibration was done on the 18th. Data was invalidated back to the last valid calibration, which was January 15th. A total of 105 hours of data were invalidated.
 - ❖ Following the as found points on March 9th, the sample pump was rebuilt, and the glass sleeve inside the permeation oven was replaced.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on April 29th at 19:00.
 - ❖ The converter was replaced after the calibration on June 15th.
 - ❖ The span value went below –10% of limited range on July 19th because the permeation tube needed to be replaced. The perm tube was replaced on July 19th.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on July 26th.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on August 1st.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on October 10th at hour 17.

General Continuous Monitoring Annual Summary

AQM STATION – LICA – COLD LAKE

Total Hydrocarbon (PPM)

- Analyzer make / model -TECO 51C-LT, S/N: 427408718
 - ❖ The pump diaphragm was replaced following as found points on January 13th.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on April 29th at 19:00.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on July 26th.
 - ❖ The analyzer flamed out on July 26th due to a power failure, and it was re-lit two hours later. Two hours of data were invalidated due to this issue.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on August 1st.
 - ❖ A new zero air supply was installed after a removal calibration was performed on September 21st. The analyzer was allowed time to stabilize. An installation calibration was performed on September 21st.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on October 10th at hour 17.
 - ❖ The analyzer spanned high on October 18th due to the high sample flow pressure. On October 20th, troubleshooting was performed following the as found points check. It was noticed that the gas flow system part 81P674 was stuck. Cleaned the part and rebuilt the pump. Data was invalidated back to the last valid daily calibration check, which was October 17th. 75 hours of data were invalidated.
 - ❖ The water knock-out on the zero air supply was broken on November 25th; replaced a temporary one on the 25th. As the daily zero/span results look fine and data look reasonable, all data were kept.
 - ❖ The water knock-out on the zero air supply was replaced before the monthly calibration was started on December 8th.

General Continuous Monitoring Annual Summary

AQM STATION – LICA – COLD LAKE

Nitrogen Dioxide (PPB)

- Analyzer make / model - TECO 42C, S/N: 427408716
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on April 29th at 19:00.
 - ❖ The pump was rebuilt following the as found points on June 15th.
 - ❖ The NO₂ guideline was changed on June 15th: the objective for 1-Hour average concentration was changed from 212 ppb to 159 ppb, the objective for 24-Hour average concentration was removed, and the concentration of 24 ppb for the annual average was added by AE.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on July 26th.
 - ❖ The analyzer spanned low on July 26th. The as found points check was performed on July 27th; the result went outside of 15% range. It was found that the issue was due to low sample flow rate. The sample pump was replaced on July 27th. Data was invalidated back to the last valid daily calibration check, which was July 22nd. A total of 110 hours of data was invalidated.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on August 1st.
 - ❖ The daily span result went outside of –10% of limited range on August 7th because the permeation tube was depleting. The permeation tube was replaced following the as found points check. Time was allowed for the perm tube to stabilize. The expected span value was changed on August 15th.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on October 10th at hour 17.
 - ❖ The exhausting pump was replaced following the as found points on November 3rd.
 - ❖ Hourly maximum data for NO_x and NO on November 28th at hour 17 went above the full scale (500ppb); the real concentration was likely higher than the recorded.

General Continuous Monitoring Annual Summary

AQM STATION – LICA – COLD LAKE

Ozone (PPB)

- Analyzer make / model - API 400A, S/N: 446 and Thermo 49i, S/N: 700419951
 - ❖ The analyzer spanned low on January 21st. It was noticed that the issue was due to a faulty solenoid valve. The issue was fixed on the 21st. Data was invalidated back to the last valid calibration, which was January 20th. A total of 59 hours of data were invalidated.
 - ❖ The Thermo 49i ozone analyzer was installed following a removal calibration was performed on the API 400A ozone analyzer, February 15th.
 - ❖ One hour of maximum data on April 27th at 09:00 was invalidated, as the collection time was less than 100% of an hour; reason unknown.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on April 29th at 19:00.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on July 26th.
 - ❖ One hour of the maximum concentration was invalidated due to a power failure on August 1st.
 - ❖ One hour of the maximum concentration was invalidated due to a small power outage on October 10th at hour 17.
 - ❖ Both the exhausting pump and the zero air pump were replaced following the as found points check on December 8th.
 - ❖ The analyzer had a flow alarm after the calibration on December 8th. It was noticed that the tubing connected with the pump was broken. Fixed the issue and performed an as found points check; the result was good.

General Continuous Monitoring Annual Summary

AQM STATION – LICA – COLD LAKE

Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)

- Analyzer make / model –TEOM1405F, S/N: 1405A201620804
 - ❖ 9 hours of data were invalidated as the data were below $-3.0 \mu\text{g}/\text{m}^3$ in January.
 - ❖ 3 hours of data were invalidated as the data were below $-3.0 \mu\text{g}/\text{m}^3$ in February.
 - ❖ One hour of data was invalidated as the data was below $-3.0 \mu\text{g}/\text{m}^3$ in March.
 - ❖ 12 hours of data were invalidated as the data were below $-3.0 \mu\text{g}/\text{m}^3$ in April.
 - ❖ The Teom flow was changed from “Standard” to “Actual” as per an AE requirement on April 4th.
 - ❖ 2 hours of data were invalidated as the data were below $-3.0 \mu\text{g}/\text{m}^3$ in May.
 - ❖ Two hours of data were invalidated as the data were above $-3 \mu\text{g}/\text{m}^3$ in June.
 - ❖ One 24-Hour average contravention was recorded and reported to AE this month; reading of $47.5 \mu\text{g}/\text{m}^3$ on June 7th, Ref # 248167.
 - ❖ Four hours of data were invalidated as the data were below $-3 \mu\text{g}/\text{m}^3$ in July.
 - ❖ Nineteen hours of data were invalidated as the data were below $-3 \mu\text{g}/\text{m}^3$ in August.
 - ❖ Both the Teom filter and the FDMS filter were changed, the sample pump was rebuilt, the inline flow filters (main, bypass and water knock off) were replaced, and a leak check was performed on September 22nd. Temperature, barometric pressure and flows were calibrated on September 22nd.
 - ❖ Thirteen hours of data were invalidated as the data were below $-3 \mu\text{g}/\text{m}^3$ in September.
 - ❖ One hour of data was invalidated as the data was below $-3 \mu\text{g}/\text{m}^3$ in October.
 - ❖ Five hours of data were invalidated as the data were below $-3 \mu\text{g}/\text{m}^3$ in November.
 - ❖ Six hours of data were invalidated as the data were below $-3 \mu\text{g}/\text{m}^3$ in December.

General Continuous Monitoring Annual Summary

AQM STATION – LICA – COLD LAKE

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

- System make / model – Met One 50.5, S/N: F1644 and RM Young, S/N: 46553
 - ❖ One hour of the maximum wind speed was invalidated due to a power failure on July 26th.
 - ❖ One hour of the maximum wind speed was invalidated due to a power failure on August 1st.
 - ❖ One hour of the WS maximum reading was invalidated due to a small power outage on October 10th at hour 17.

Relative Humidity (PERCENT)

- System make / model - Rotronic Hygroclip-S3
 - ❖ The RH sensor was working well throughout the year.

Ambient Temperature (DEGC)

- System make / model - Rotronic Hygroclip-S3
 - ❖ The temperature was calibrated using Total IMM Hg thermometer, S/N 96-3470, on September 22nd.

Trailer Temperature (DEGC)

- System make / model - R&R 61
 - ❖ The station temperature was checked against Hg IMM thermometer, S/N 96-3470, on September. The result was good; measured 12.2 degree Celsius, DAS read 12.15 degree Celsius.

Datalogger

- System make / model - ESC 8832, S/N: 263
- Software make / version - ESC v 5.51a

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

Trailer

No issue was observed this year.

Continuous Monitoring

Annual Summaries, Graphs & Wind Roses

Sulphur Dioxide

Current Date : 04/02/12
Current Time : 07:02

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : SO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	708	0	5	1
February	672	638	0	4	1
March	744	707	0	4	1
April	720	685	0	4	0
May	744	708	0	2	0
June	720	683	0	2	0
July	744	708	0	2	0
August	744	709	0	1	0
September	720	683	0	2	0
October	744	707	0	1	0
November	720	685	0	2	0
December	744	707	0	3	0
Yearly Total	8760	8328	0	5	0

SO₂ Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	SO2 ppb Peak Reading
January	4
February	4
March	4
April	4
May	2
June	2
July	2
August	1
September	2
October	1
November	2
December	3
ANNUAL PEAK	4

LICA
SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	2.82	5.54	5.64	3.17	6.58	5.89	13.15	3.45	3.15	4.43	12.10	13.62	9.70	4.54	3.78	2.35	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.82	5.54	5.64	3.17	6.58	5.89	13.15	3.45	3.15	4.43	12.10	13.62	9.70	4.54	3.78	2.35	

Calm : .00 %

Total # Operational Hours : 8276

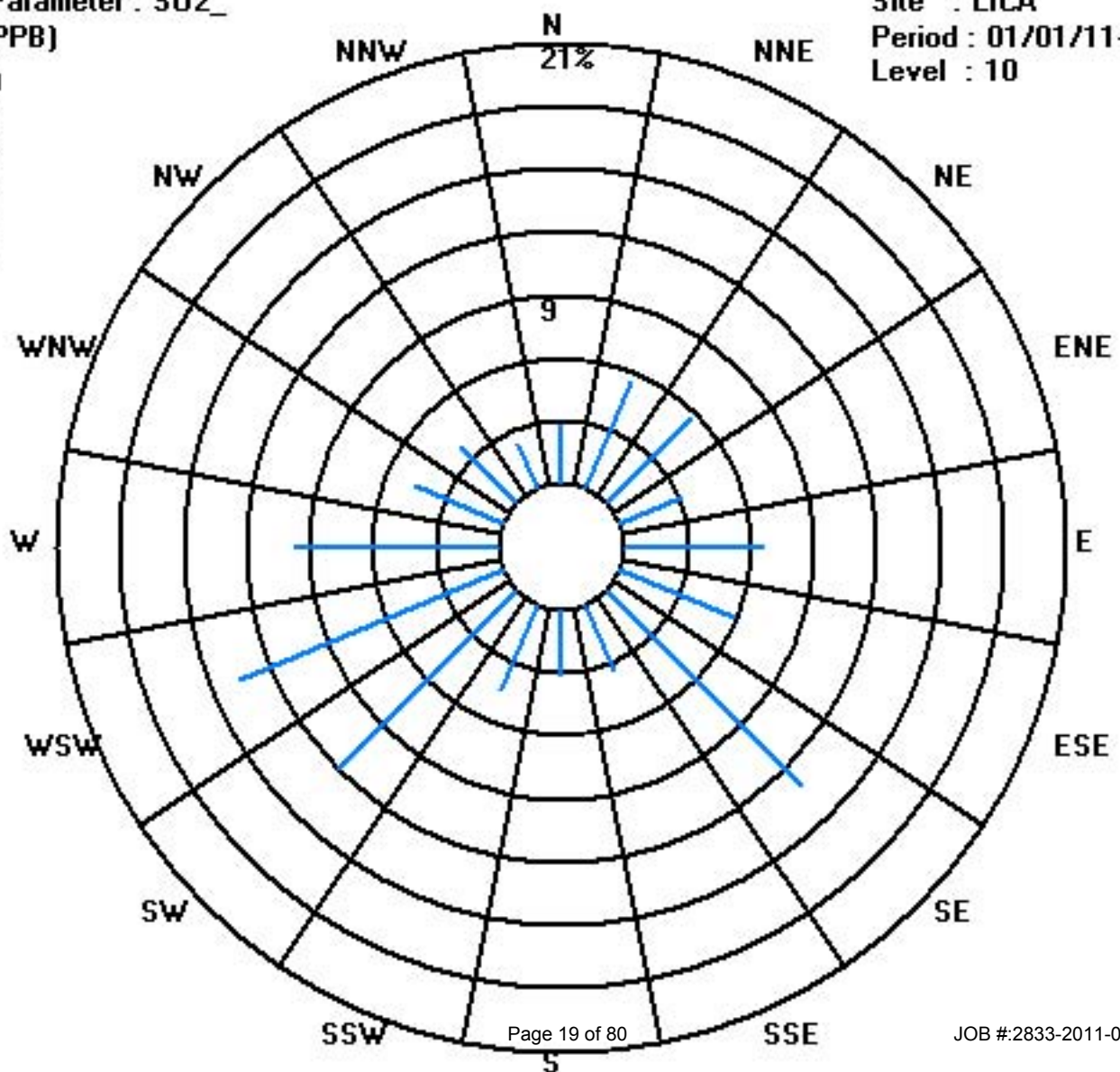
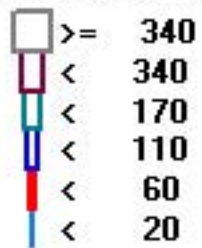
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	234	459	467	263	545	488	1089	286	261	367	1002	1128	803	376	313	195	8276
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	234	459	467	263	545	488	1089	286	261	367	1002	1128	803	376	313	195	

Calm : .00 %

Total # Operational Hours : 8276

Class Limits (PPB)



Total Reduced Sulphur

Current Date : 04/02/12
Current Time : 07:02

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : TRS_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	720	622	0	1	0
February	672	638	0	1	0
March	744	702	0	1	1
April	720	684	0	1	1
May	744	707	0	1	1
June	720	677	0	1	0
July	744	696	0	3	0
August	744	708	0	2	0
September	720	682	0	0	0
October	744	705	0	0	0
November	720	682	0	0	0
December	744	706	0	0	0
Yearly Total	8736	8209	0	3	0

TRS Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: Cold Lake South

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppb TRS)				TRS ppb Monthly Average
			0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb	
January	621	89.1	100.0%	0.0%	0.0%	0.0%	0.00
February	638	99.9	100.0%	0.0%	0.0%	0.0%	0.27
March	702	99.7	100.0%	0.0%	0.0%	0.0%	0.78
April	684	100.0	100.0%	0.0%	0.0%	0.0%	0.95
May	707	99.9	100.0%	0.0%	0.0%	0.0%	0.88
June	673	99.6	100.0%	0.0%	0.0%	0.0%	0.04
July	696	99.5	100.0%	0.0%	0.0%	0.0%	0.04
August	708	99.9	100.0%	0.0%	0.0%	0.0%	0.02
September	682	99.9	100.0%	0.0%	0.0%	0.0%	0.00
October	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
November	682	99.9	100.0%	0.0%	0.0%	0.0%	0.00
December	706	100.0	100.0%	0.0%	0.0%	0.0%	0.00
						Annual Average	0.25

* Valid readings do not include daily and monthly calibration hours and downtime hours

TRS Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: Cold Lake South

Month	TRS ppb Peak Reading
January	1
February	1
March	1
April	1
May	1
June	3
July	3
August	2
September	0
October	0
November	0
December	0
ANNUAL PEAK	3

LICA
 TRS_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	2.77	5.36	5.49	3.12	6.62	5.92	13.19	3.45	3.13	4.45	12.27	13.62	9.74	4.58	3.87	2.34	99.97
< 10	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.02
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.77	5.36	5.49	3.13	6.62	5.92	13.19	3.45	3.13	4.45	12.27	13.62	9.75	4.58	3.87	2.34	

Calm : .00 %

Total # Operational Hours : 8157

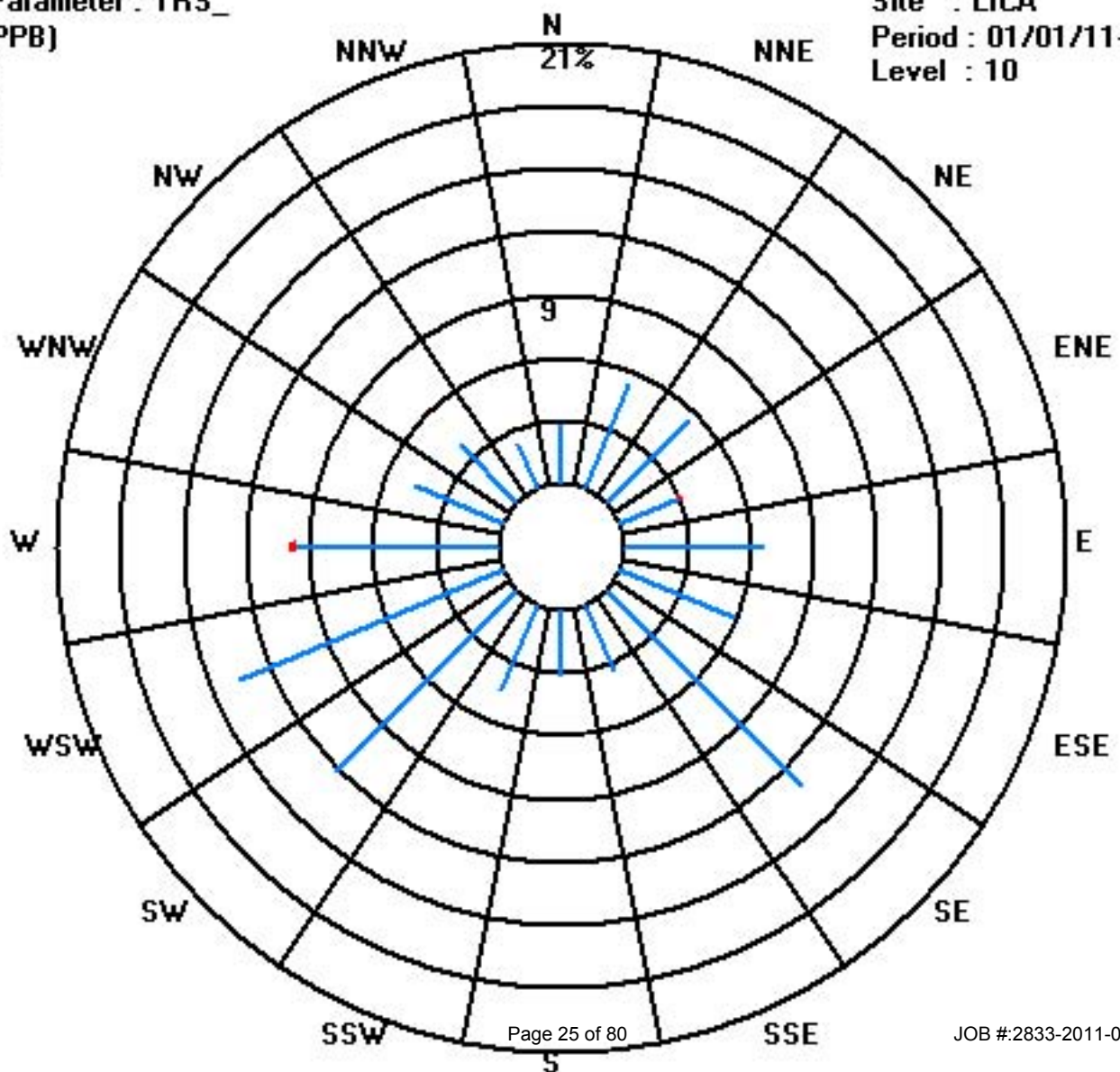
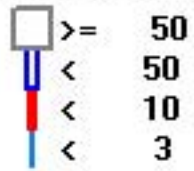
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	226	438	448	255	540	483	1076	282	256	363	1001	1111	795	374	316	191	8155
< 10				1									1				2
< 50																	
>= 50																	
Totals	226	438	448	256	540	483	1076	282	256	363	1001	1111	796	374	316	191	

Calm : .00 %

Total # Operational Hours : 8157

Class Limits (PPB)



Total Hydrocarbons

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	700	1.8	3.4	2.2
February	672	638	1.8	4.5	2.2
March	744	706	1.9	3.7	2.2
April	720	685	1.9	3.2	2.1
May	744	707	1.9	3.3	2.1
June	720	682	1.8	3	2
July	744	703	1.8	3.4	2.1
August	744	707	1.9	4	2.3
September	720	678	1.8	4.9	2.4
October	720	624	1.9	3.7	2.2
November	720	681	1.9	5.4	2.3
December	744	706	1.9	4	2.2
Yearly Total	8736	8217	1.8	5.4	2.2

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm THC)				THC ppm Monthly Average
			0 to 3 ppm	4 to 10 ppm	11 to 50 ppm	>50 ppm	
January	700	99.5	96.7%	3.3%	0.0%	0.0%	2.19
February	638	99.9	96.4%	3.6%	0.0%	0.0%	2.24
March	706	99.9	95.8%	4.2%	0.0%	0.0%	2.21
April	685	100.0	99.6%	0.4%	0.0%	0.0%	2.14
May	707	99.9	99.3%	0.7%	0.0%	0.0%	2.07
June	682	99.9	99.7%	0.3%	0.0%	0.0%	2.03
July	703	99.6	97.0%	3.0%	0.0%	0.0%	2.14
August	707	99.9	91.7%	8.3%	0.0%	0.0%	2.33
September	678	99.7	88.1%	11.9%	0.0%	0.0%	2.37
October	623	89.1	95.7%	4.3%	0.0%	0.0%	2.21
November	681	99.6	94.0%	6.0%	0.0%	0.0%	2.30
December	706	100.0	97.6%	2.4%	0.0%	0.0%	2.22
						Annual Average	2.20

* Valid readings do not include daily and monthly calibration hours and downtime hours

THC Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	THC ppm Peak Reading
January	3.4
February	4.5
March	3.7
April	3.2
May	3.3
June	3.0
July	3.4
August	4.0
September	4.9
October	3.7
November	5.4
December	4
ANNUAL PEAK	5.4

LICA
 THC / WD Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WD
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	2.74	5.58	5.63	3.03	6.36	5.71	12.65	3.15	2.84	4.09	11.64	12.57	9.27	4.42	3.74	2.32	95.82
< 10.0	.09	.03	.03	.14	.25	.22	.51	.29	.28	.37	.50	.89	.34	.08	.06	.02	4.17
< 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	2.84	5.62	5.67	3.18	6.62	5.93	13.16	3.45	3.12	4.47	12.14	13.47	9.61	4.50	3.80	2.35	

Calm : .00 %

Total # Operational Hours : 8165

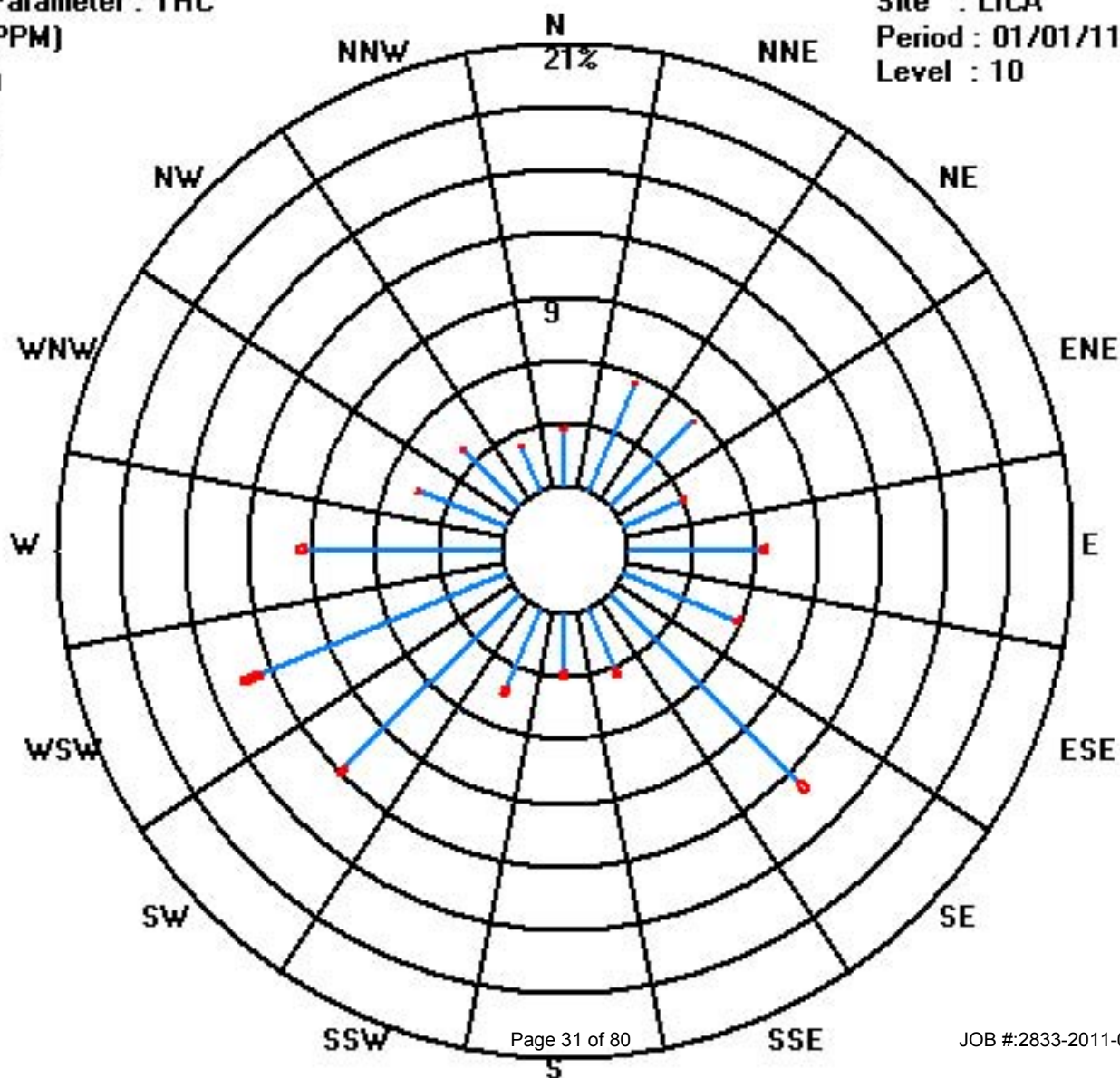
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	224	456	460	248	520	467	1033	258	232	334	951	1027	757	361	306	190	7824
< 10.0	8	3	3	12	21	18	42	24	23	31	41	73	28	7	5	2	341
< 50.0																	
>= 50.0																	
Totals	232	459	463	260	541	485	1075	282	255	365	992	1100	785	368	311	192	

Calm : .00 %

Total # Operational Hours : 8165

Class Limits (PPM)



Particulate Matter 2.5

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : PM2 Units : UG/M3

	Readings	Valid Readings	Min	Max	Mean
January	744	733	0	24	4.5
February	672	668	0	23.5	5
March	744	737	0	25.9	7.1
April	720	707	0	29	5
May	744	740	0	29.5	7
June	720	716	0	187.5	10.8
July	744	739	0	20.7	4.3
August	744	722	0	16.5	4.6
September	720	702	0	20.8	5
October	744	741	0	22	4.3
November	720	714	0	21	6
December	744	736	0	20	4.9
Yearly Total	8760	8655	0	187.5	5.7

PM 2.5 Monthly Averages and Frequency Distributions of Daily Average Readings - 2011

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	Valid Readings* Hours	Operational Time (%)	% Readings in Concentration Range (ug/m ³)						Total Daily Readings > 30 ug/m ³	PM2.5 ug/m ³ Monthly Average
			≤ 30 ug/m ³	30 < C ≤ 60 ug/m ³	60 < C ≤ 80 ug/m ³	80 < C ≤ 120 ug/m ³	120 < C ≤ 240 ug/m ³	> 240 ug/m ³		
January	733	98.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.48
February	668	99.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.04
March	737	99.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	7.14
April	707	98.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.02
May	740	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	6.95
June	716	99.7	96.4%	1.8%	0.6%	0.7%	0.6%	0.0%	1	10.81
July	739	99.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.34
August	722	97.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.64
September	702	98.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.98
October	741	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.28
November	714	99.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.99
December	736	99.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.88
									Annual Average	5.71

* Valid readings - does not include calibration hours and downtime hours

PM 2.5 Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	PM 2.5 (ug/m3) Peak Reading
January	24
February	24
March	26
April	29
May	30
June	188
July	21
August	17
September	21
October	22
November	21
December	20
ANNUAL PEAK	188

LICA
 PM2 / WD Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WD
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30.0	2.76	5.45	5.64	3.21	6.48	5.99	13.18	3.58	3.12	4.44	12.05	13.47	9.68	4.52	3.73	2.33	99.69
< 60.0	.04	.02	.02	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.01	.02	.15
< 80.0	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01	.04
< 120.0	.00	.02	.01	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01	.05
< 240.0	.01	.02	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04
>= 240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.83	5.53	5.69	3.21	6.48	5.99	13.21	3.58	3.12	4.44	12.05	13.47	9.68	4.52	3.75	2.38	

Calm : .00 %

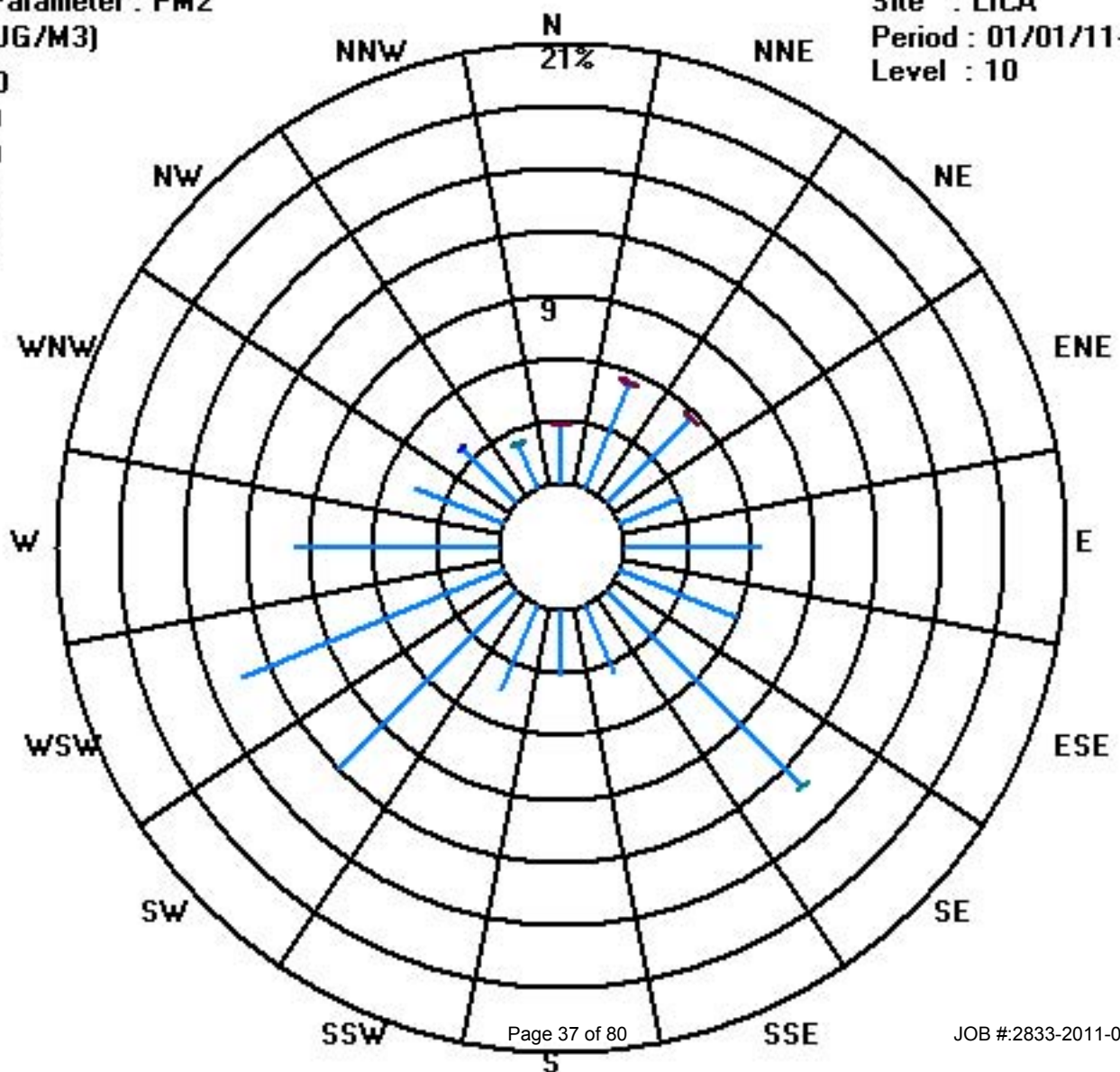
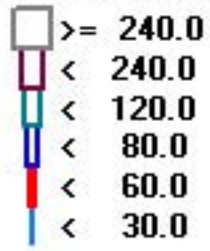
Total # Operational Hours : 8603

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 30.0	238	469	486	277	558	516	1134	308	269	382	1037	1159	833	389	321	201	8577
< 60.0	4	2	2				2								1	2	13
< 80.0	1	1													1	1	4
< 120.0		2	1				1									1	5
< 240.0	1	2	1														4
>= 240.0																	
Totals	244	476	490	277	558	516	1137	308	269	382	1037	1159	833	389	323	205	

Calm : .00 %

Total # Operational Hours : 8603



Nitrogen Dioxide

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : NO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	705	1	32	8
February	672	636	0	43	7
March	744	704	1	34	5
April	720	683	1	23	3
May	744	705	0	15	2
June	720	679	0	9	2
July	648	595	0	5	2
August	744	704	0	6	2
September	720	683	0	11	2
October	744	703	0	21	4
November	720	681	0	37	5
December	744	705	1	22	5
Yearly Total	8664	8183	0	43	4

NO₂ Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO ₂)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO ₂ ppm Monthly Average	
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm				
January	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.01	
February	636	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.01	
March	704	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
April	683	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
June	679	99.6	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
July	594	85.2	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
August	704	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
September	683	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
October	703	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00	
November	681	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.01	
December	705	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.01	
							Annual Average	0.00		

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO₂ Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	NO2 ppb Peak Reading
January	31
February	43
March	34
April	23
May	15
June	9
July	5
August	6
September	11
October	21
November	37
December	22
ANNUAL PEAK	43

LICA
 NO2_ / WD Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 01
 Site Name : LICA
 Parameter : NO2_
 Units : PPB

Wind Parameter : WD
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	2.86	5.64	5.70	3.19	6.64	5.85	13.29	3.39	3.16	4.39	12.06	13.39	9.66	4.50	3.83	2.38	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.86	5.64	5.70	3.19	6.64	5.85	13.29	3.39	3.16	4.39	12.06	13.39	9.66	4.50	3.83	2.38	

Calm : .00 %

Total # Operational Hours : 8131

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	233	459	464	260	540	476	1081	276	257	357	981	1089	786	366	312	194	8131
< 110																	
< 210																	
>= 210																	
Totals	233	459	464	260	540	476	1081	276	257	357	981	1089	786	366	312	194	

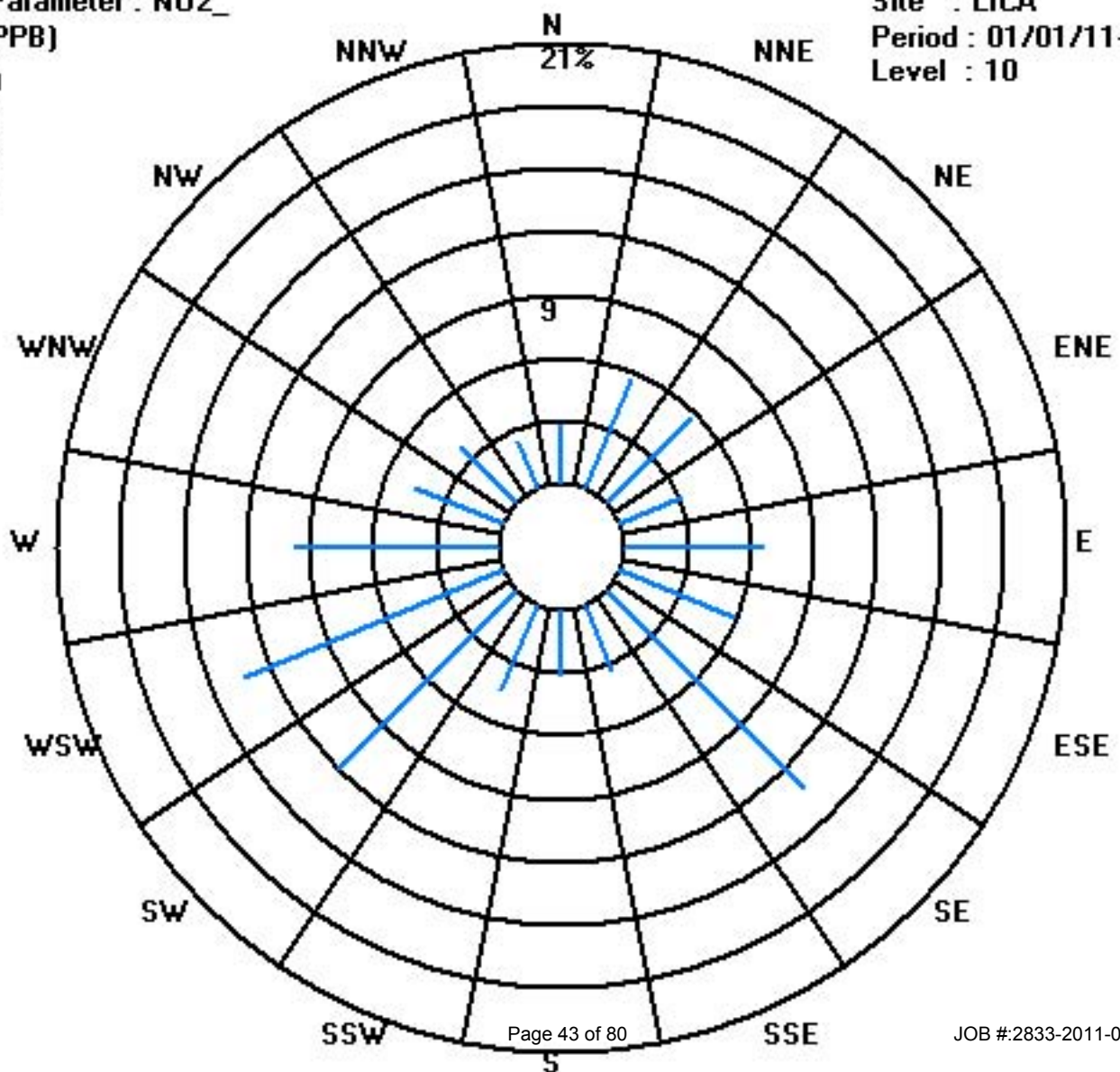
Calm : .00 %

Total # Operational Hours : 8131

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Nitric Oxide

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : NO_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	705	0	76	2
February	672	636	0	81	2
March	744	704	0	25	1
April	720	683	0	33	0
May	744	705	0	18	0
June	720	679	0	5	0
July	648	595	0	4	0
August	744	704	0	17	0
September	720	683	0	30	1
October	744	703	0	63	1
November	720	681	0	54	2
December	744	705	0	32	1
Yearly Total	8664	8183	0	81	1

NO Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: COLD LAKE SOUTH

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO)				NO ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	705	99.9	99.7%	0.3%	0.0%	0.0%	0.00
February	636	99.9	99.8%	0.2%	0.0%	0.0%	0.00
March	704	99.9	100.0%	0.0%	0.0%	0.0%	0.00
April	683	100.0	100.0%	0.0%	0.0%	0.0%	0.00
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
June	679	99.6	100.0%	0.0%	0.0%	0.0%	0.00
July	594	85.2	100.0%	0.0%	0.0%	0.0%	0.00
August	704	99.7	100.0%	0.0%	0.0%	0.0%	0.00
September	683	99.9	100.0%	0.0%	0.0%	0.0%	0.00
October	703	99.9	99.7%	0.3%	0.0%	0.0%	0.00
November	681	99.9	99.9%	0.1%	0.0%	0.0%	0.00
December	705	100.0	100.0%	0.0%	0.0%	0.0%	0.00
						Annual Average	0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO Peak reading of One Hour Averages for 2011

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	NO ppb Peak Reading
January	75
February	81
March	25
April	33
May	18
June	5
July	4
August	17
September	30
October	63
November	54
December	32
ANNUAL PEAK	81

LICA
 NO_ / WD Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WD
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	2.86	5.64	5.70	3.19	6.61	5.84	13.28	3.39	3.16	4.39	12.06	13.39	9.66	4.50	3.83	2.38	99.95
< 110	.00	.00	.00	.00	.02	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.86	5.64	5.70	3.19	6.64	5.85	13.29	3.39	3.16	4.39	12.06	13.39	9.66	4.50	3.83	2.38	

Calm : .00 %

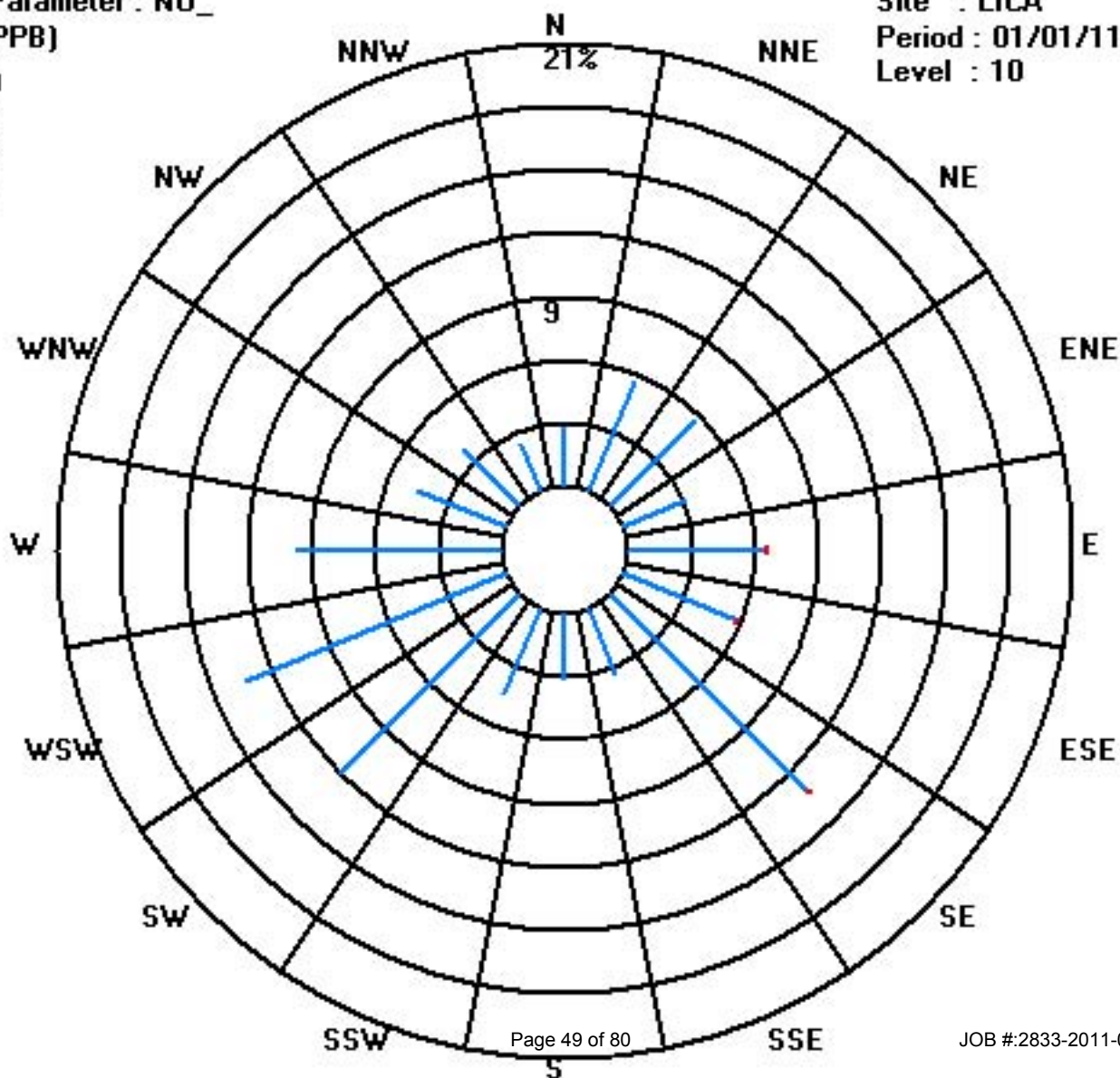
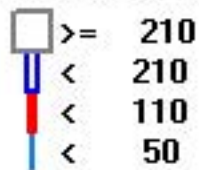
Total # Operational Hours : 8131

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	233	459	464	260	538	475	1080	276	257	357	981	1089	786	366	312	194	8127
< 110					2	1	1										4
< 210																	
>= 210																	
Totals	233	459	464	260	540	476	1081	276	257	357	981	1089	786	366	312	194	

Calm : .00 %

Total # Operational Hours : 8131



Oxides of Nitrogen

Current Date : 04/02/12
Current Time : 07:02

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	705	1	108	10
February	672	636	0	124	8
March	744	704	1	56	6
April	720	683	0	56	4
May	744	705	0	33	2
June	720	679	0	13	2
July	648	594	0	7	2
August	744	704	0	23	2
September	720	683	0	40	3
October	744	703	0	80	5
November	720	681	0	83	7
December	744	705	1	53	6
Yearly Total	8664	8182	0	124	5

NO_x Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	NOx ppb Peak Reading
January	107
February	124
March	56
April	56
May	33
June	13
July	7
August	23
September	40
October	80
November	83
December	53
ANNUAL PEAK	124

LICA
 NOX_ / WD Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WD
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	2.85	5.64	5.70	3.17	6.58	5.81	13.25	3.39	3.16	4.37	12.06	13.37	9.64	4.48	3.83	2.38	99.76
< 110	.01	.00	.00	.02	.04	.03	.03	.00	.00	.01	.00	.02	.01	.01	.00	.00	.22
< 210	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.86	5.64	5.70	3.19	6.64	5.85	13.29	3.39	3.16	4.39	12.06	13.39	9.65	4.50	3.83	2.38	

Calm : .00 %

Total # Operational Hours : 8130

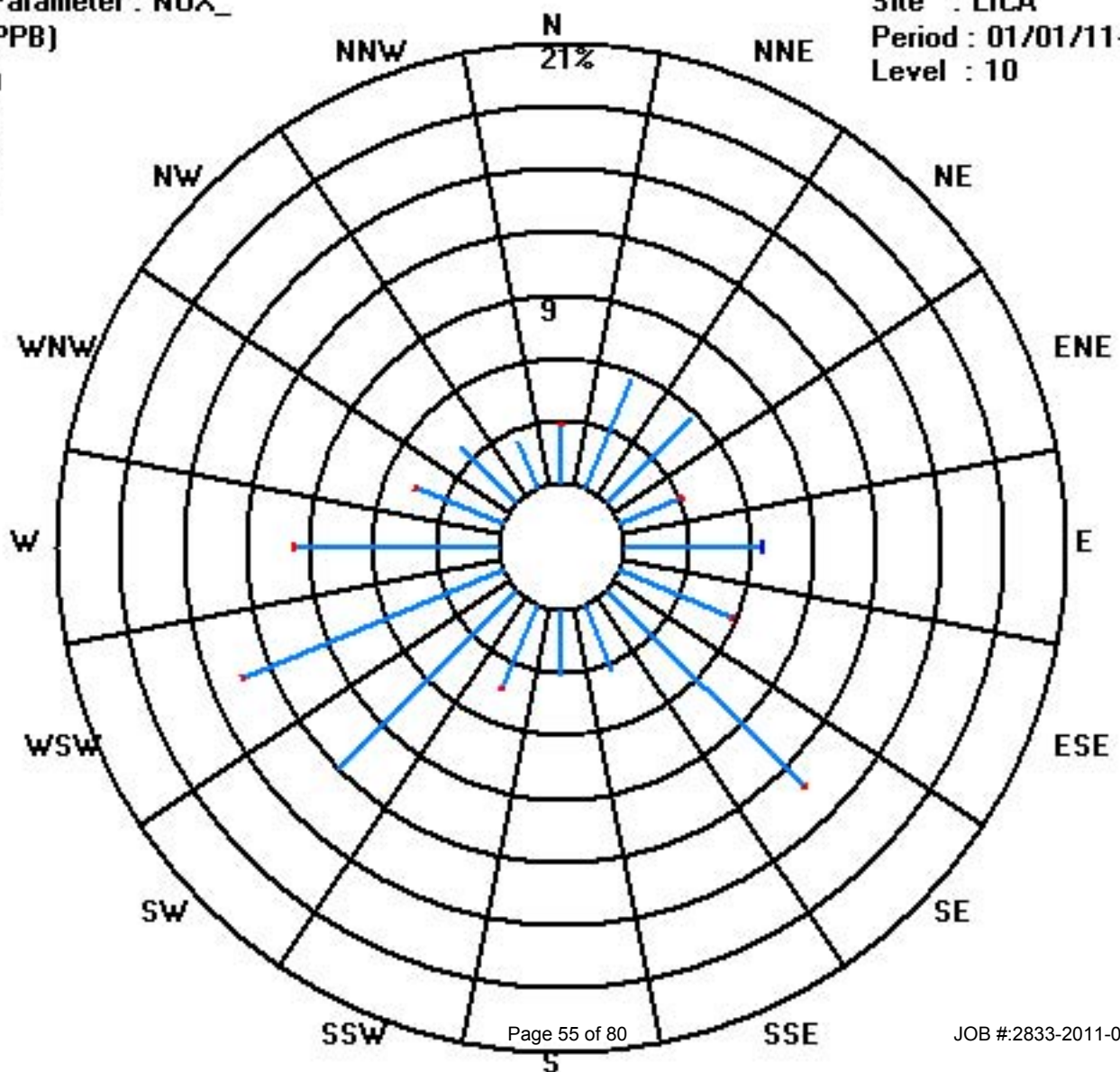
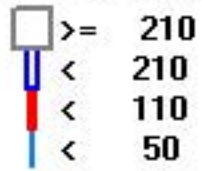
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	232	459	464	258	535	473	1078	276	257	356	981	1087	784	365	312	194	8111
< 110	1			2	4	3	3			1		2	1	1			18
< 210					1												1
>= 210																	
Totals	233	459	464	260	540	476	1081	276	257	357	981	1089	785	366	312	194	

Calm : .00 %

Total # Operational Hours : 8130

Class Limits (PPB)



Ozone

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : O3_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	696	639	1	43	23
February	672	635	0	43	28
March	744	705	4	55	38
April	720	686	2	60	38
May	744	708	2	62	37
June	720	683	1	62	30
July	744	708	1	50	20
August	744	708	1	47	18
September	720	684	1	55	20
October	744	707	0	38	18
November	720	685	0	38	20
December	744	700	0	39	24
Yearly Total	8712	8248	0	62	26

O3 Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: _____ COLD LAKE SOUTH _____

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm O3)				O3 ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	639	90.9	100.0%	0.0%	0.0%	0.0%	0.02
February	635	99.7	100.0%	0.0%	0.0%	0.0%	0.03
March	705	99.9	89.9%	10.1%	0.0%	0.0%	0.04
April	686	100.0	86.7%	13.3%	0.0%	0.0%	0.04
May	708	100.0	84.9%	15.1%	0.0%	0.0%	0.04
June	683	100.0	94.0%	6.0%	0.0%	0.0%	0.03
July	708	100.0	100.0%	0.0%	0.0%	0.0%	0.02
August	708	100.0	100.0%	0.0%	0.0%	0.0%	0.02
September	684	99.9	98.7%	1.3%	0.0%	0.0%	0.02
October	707	100.0	100.0%	0.0%	0.0%	0.0%	0.02
November	685	100.0	100.0%	0.0%	0.0%	0.0%	0.02
December	700	99.7	100.0%	0.0%	0.0%	0.0%	0.02
						Annual Average	0.03

* Valid readings do not include daily and monthly calibration hours and downtime hours

O3 Peak Reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Station: _____ COLD LAKE SOUTH _____

Month	O3 ppb Peak Reading
January	42
February	43
March	55
April	60
May	62
June	62
July	50
August	47
September	55
October	38
November	38
December	39
ANNUAL PEAK	62

LICA
O3_ / WD Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : O3_
Units : PPB

Wind Parameter : WD
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	2.53	5.16	5.22	3.14	6.31	5.41	11.98	3.31	2.98	4.25	11.55	13.40	9.42	4.46	3.66	2.30	95.16
< 110	.12	.28	.30	.03	.25	.48	1.27	.17	.19	.20	.68	.30	.26	.06	.10	.07	4.83
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.65	5.44	5.53	3.18	6.56	5.89	13.26	3.48	3.18	4.46	12.23	13.71	9.69	4.52	3.77	2.37	

Calm : .00 %

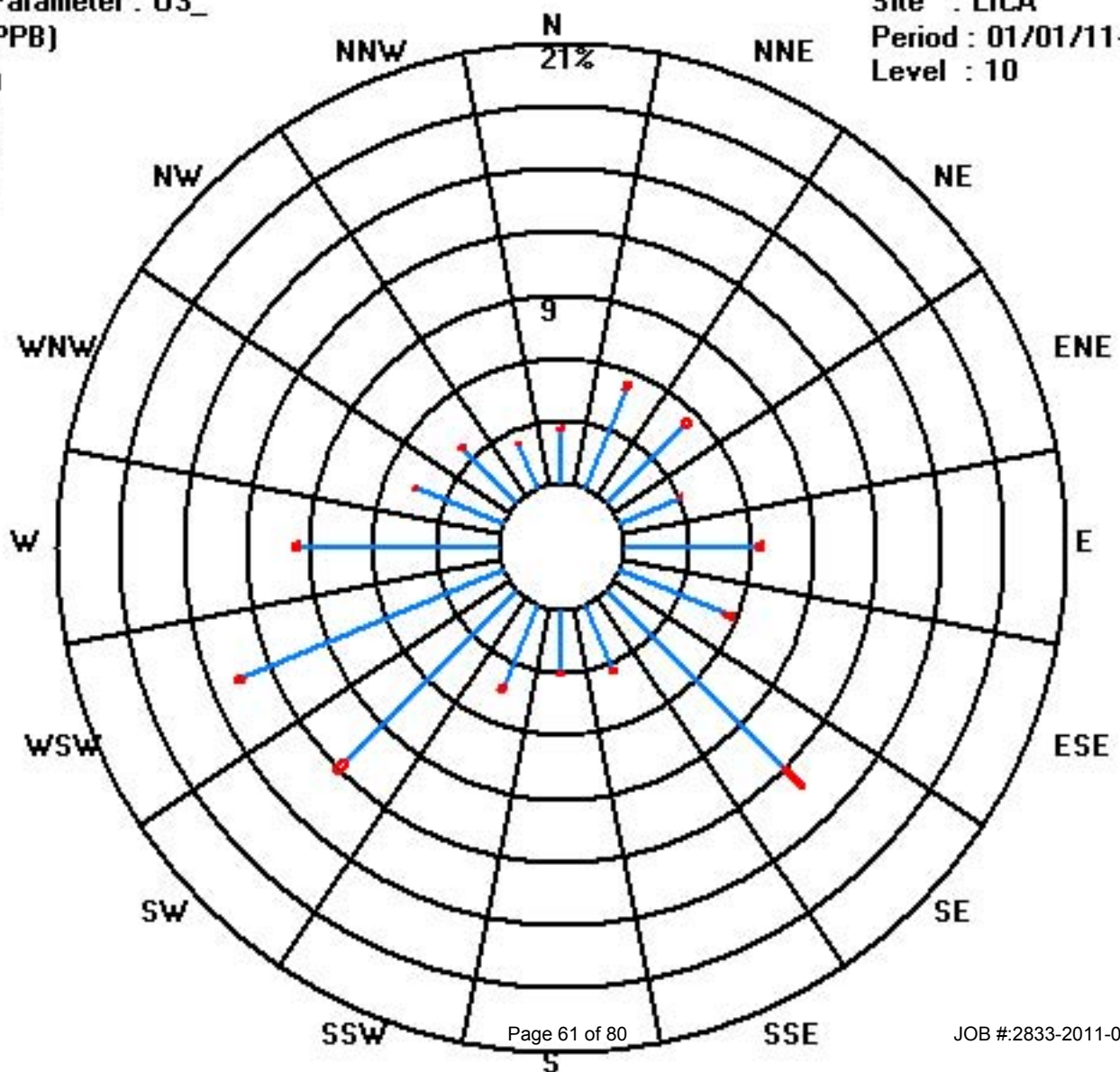
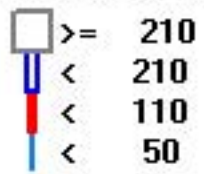
Total # Operational Hours : 8204

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	208	424	429	258	518	444	983	272	245	349	948	1100	773	366	301	189	7807
< 110	10	23	25	3	21	40	105	14	16	17	56	25	22	5	9	6	397
< 210																	
>= 210																	
Totals	218	447	454	261	539	484	1088	286	261	366	1004	1125	795	371	310	195	

Calm : .00 %

Total # Operational Hours : 8204



Ambient Temperature

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : TPX Units : DGC

	Readings	Valid Readings	Min	Max	Mean
January	744	741	-35.5	5	-15.2
February	672	672	-37	6.9	-13.9
March	744	744	-35.3	9.1	-9.1
April	720	720	-7.8	16.4	2.9
May	744	744	-3.2	26.1	12.1
June	720	720	-3.2	26.7	14.6
July	744	744	5.6	28.2	16.8
August	744	744	4.9	28.3	16.3
September	720	720	-3.8	30.6	12.7
October	744	744	-7.8	16.9	5.3
November	720	720	-23.9	8.6	-6.1
December	744	744	-23.5	5.5	-5.6
Yearly Total	8760	8757	-37	30.6	2.7

Temperature - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	Operational Time (%)	Monthly Averages (Deg.C)	Maximum Hourly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	99.6	-15.20	4.9	-35.4	1.1
February	100.0	-13.88	6.9	-37.0	2.1
March	100.0	-9.13	9.1	-35.3	3.5
April	100.0	2.92	16.4	-7.8	8.6
May	100.0	12.07	26.1	-3.2	18.3
June	100.0	14.62	26.7	-3.2	21.0
July	100.0	16.81	28.2	5.6	20.8
August	100.0	16.25	28.3	4.9	20.3
September	100.0	12.72	30.6	-3.8	20.1
October	100.0	5.29	16.9	-7.8	11.8
November	100.0	-6.08	8.6	-23.9	1.6
December	100.0	-5.65	5.5	-23.5	1.2
ANNUAL AVERAGE		2.56	-	-	-

Relative Humidity

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA Logger Id : 01 Parameter : RH Units : %FS

	Readings	Valid Readings	Min	Max	Mean
January	744	741	50	95	76
February	672	672	41	96	70
March	744	744	26	95	69
April	720	720	19	98	62
May	744	744	12	94	49
June	720	720	23	100	72
July	744	744	32	99	74
August	744	744	33	98	72
September	720	720	23	98	65
October	744	744	29	100	71
November	720	720	32	98	75
December	744	744	35	94	74
Yearly Total	8760	8757	12	100	69

Relative Humidity - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	MonthlyAverages (%)	Maximum Hourly Average (%)	Maximum Daily Average (%)
January	75.22	94	88.3
February	70.49	96	88.5
March	68.67	95	89.8
April	62.32	98	89.1
May	49.43	94	73.3
June	71.59	100	94.9
July	74.22	99	92.0
August	72.28	98	94.1
September	65.49	98	85.6
October	71.30	100	91.8
November	74.67	98	96.3
December	73.78	94	90.3
ANNUAL AVERAGE	69.12	-	-

Vector Wind Speed

Current Date : 04/02/12
Current Time : 07:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	720	689	0	38.7	5.3
February	672	672	0.2	18.2	5.9
March	744	744	0.2	16	6.4
April	720	720	0.1	18.4	6.3
May	744	744	0.1	25.2	6.9
June	720	720	0.1	18.6	5.6
July	744	744	0	17.8	6.2
August	744	744	0.1	19.9	5.2
September	720	720	0.1	18.1	5.2
October	744	744	0.1	17.6	5.5
November	720	720	0.1	19.1	5.9
December	744	744	0.1	24.8	6.3
Yearly Total	8736	8705	0	38.7	5.9

LICA
WSP / WD Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	1.49	2.09	2.61	2.22	3.13	3.33	5.68	2.88	2.63	3.94	8.02	7.86	3.46	1.81	1.36	.88	53.47
< 12.0	.98	3.03	2.45	.74	2.80	2.06	5.50	.43	.27	.29	3.73	5.13	4.38	1.88	1.48	.98	36.22
< 20.0	.25	.35	.51	.10	.35	.27	1.76	.01	.00	.00	.19	.33	1.75	.80	.80	.44	7.98
< 29.0	.00	.00	.00	.00	.03	.02	.11	.00	.00	.00	.00	.00	.00	.03	.08	.01	.29
< 39.0	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.73	5.47	5.59	3.07	6.32	5.70	13.08	3.33	2.90	4.23	11.95	13.33	9.61	4.53	3.73	2.33	

Calm : 1.99 %

Total # Operational Hours : 8705

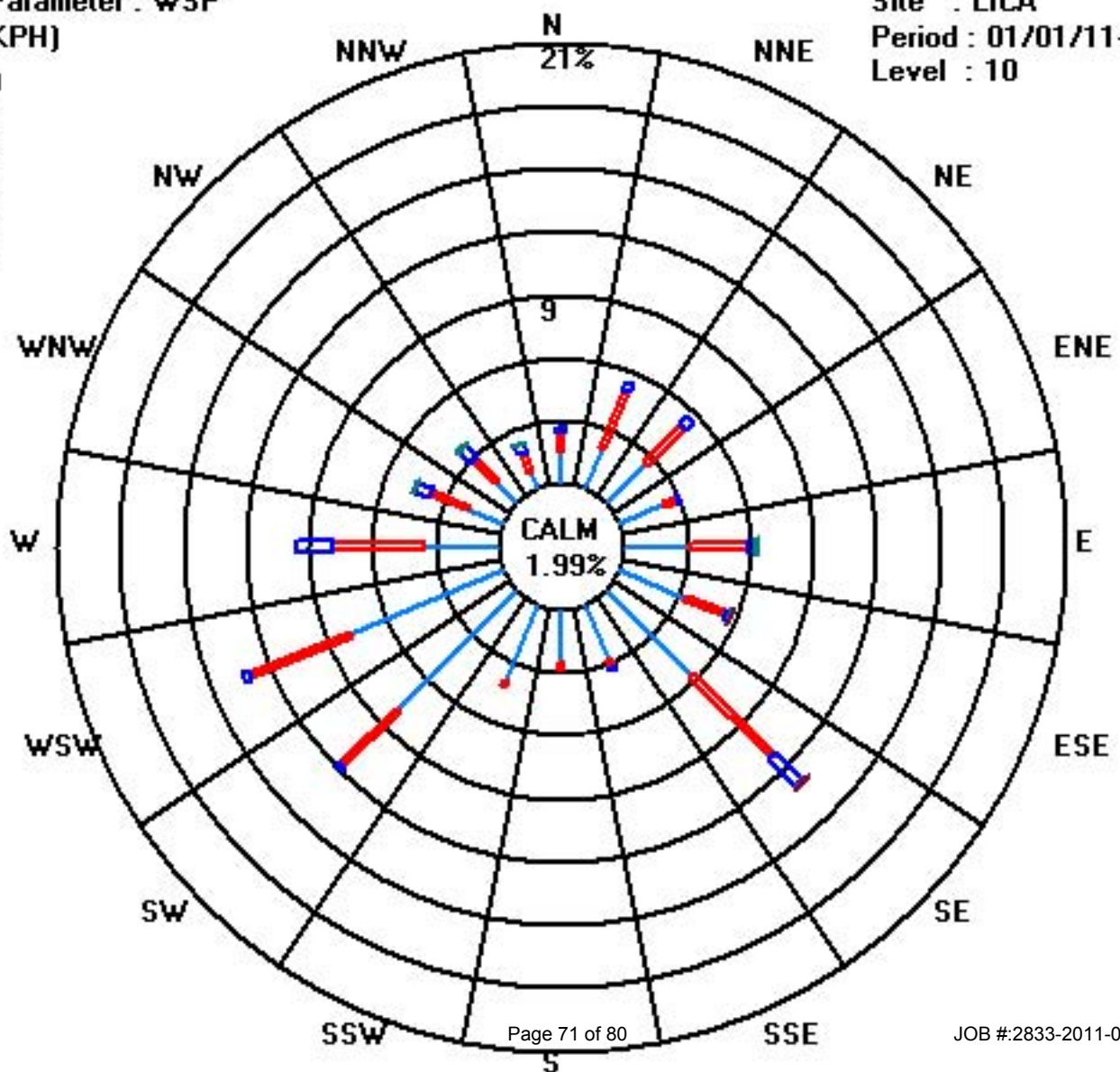
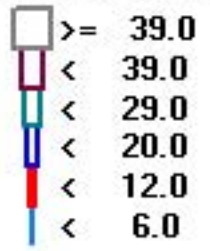
Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	130	182	228	194	273	290	495	251	229	343	699	685	302	158	119	77	4655
< 12.0	86	264	214	65	244	180	479	38	24	26	325	447	382	164	129	86	3153
< 20.0	22	31	45	9	31	24	154	1			17	29	153	70	70	39	695
< 29.0					3	2	10							3	7	1	26
< 39.0						1	1										2
>= 39.0																	
Totals	238	477	487	268	551	497	1139	290	253	369	1041	1161	837	395	325	203	

Calm : 1.99 %

Total # Operational Hours : 8705

Class Limits (KPH)



Passive Monitoring Annual Summaries

Sulphur Dioxide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Company

LICA Airshed

Project Number

LICA Airshed

Location

12/30/2010

Date Samples Start

12/29/2011

Date Sampled End

SO2 (ppb)														
Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
2	0.6	0.4	0.4	0.2	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.2	0.3	0.6
2 DUP	NA	0.5	NA	0.2	NA	<0.1	NA	<0.1	NA	<0.1	NA	NA	0.4	0.5
3	<0.1	1.3	0.9	0.2	0.1	0.1	0.2	0.1	0.3	0.1	0.2	0.5	0.4	1.3
3 DUP	0.8	NA	0.8	NA	0.1	NA	0.1	NA	0.3	0.2	NA	NA	0.4	0.8
4	1	1.3	0.8	0.3	0.4	0.1	0.2	0.2	0.4	0.2	0.3	1.2	0.5	1.3
4 DUP	NA	1.2	NA	0.3	NA	0.2	NA	0.2	NA	0.3	NA	NA	0.4	1.2
5	0.9	1.1	0.8	0.3	0.3	0.2	0.3	0.2	0.4	0.3	0.3	0.5	0.5	1.1
5 DUP	1	NA	0.9	NA	0.2	NA	0.2	NA	0.4	NA	0.3	NA	0.5	1.0
6	0.8	0.9	0.7	0.3	<0.1	0.2	0.6	0.3	0.4	0.2	0.2	0.8	0.5	0.9
6 DUP	NA	1.1	NA	0.3	NA	0.2	NA	0.3	NA	NA	0.2	NA	0.4	1.1
8	1	1	0.7	0.4	0.2	0.2	0.3	0.3	0.3	0.2	0.4	0.5	0.5	1.0
8 DUP	0.8	NA	0.7	NA	0.2	NA	0.3	NA	0.4	NA	0.3	NA	0.5	0.8
9	0.8	1	0.7	0.3	0.2	0.1	0.2	0.1	0.3	0.2	0.2	0.4	0.4	1.0
9 DUP	NA	0.9	NA	0.2	NA	0.1	NA	<0.1	NA	NA	NA	1.4	0.7	1.4
10	0.6	1	0.6	0.2	0.2	0.1	0.2	<0.1	0.3	0.2	0.3	0.6	0.4	1.0
10 DUP	0.6	NA	0.6	NA	0.1	NA	0.1	NA	0.3	NA	NA	0.3	0.3	0.6
11	0.5	NA	0.6	0.2	0.2	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.4	0.3	0.6
11 DUP	NA	NA	0.6	0.2	NA	0.1	NA	<0.1	NA	NA	NA	0.3	0.3	0.6
12	0.7	1	0.5	0.2	0.2	<0.1	<0.1	<0.1	0.3	0.7	0.4	1.5	0.6	1.5
12 (DUP)	0.8	NA	0.6	NA	<0.1	NA	<0.1	NA	0.3	NA	NA	NA	0.6	0.8
13	0.8	1.3	0.7	0.4	<0.1	0.2	0.2	0.2	0.4	0.3	0.4	1.9	0.6	1.9
13 (DUP)	NA	1.2	NA	0.4	NA	0.1	NA	0.2	NA	NA	NA	NA	0.5	1.2
14	1.1	2.2	1.5	0.8	0.3	0.4	0.5	0.7	0.6	1	1.1	1.9	1.0	2.2
14 (DUP)	1.2	NA	1.6	NA	0.4	NA	0.5	NA	0.7	NA	NA	NA	0.9	1.6
15	0.6	1	0.6	0.3	0.1	0.2	0.3	0.1	0.3	0.2	0.3	1.1	0.4	1.1
15 (DUP)	NA	0.9	NA	0.3	NA	0.1	NA	0.2	NA	NA	NA	NA	0.4	0.9
16	1	0.7	0.8	0.3	<0.1	0.2	<0.1	0.2	0.4	0.2	0.3	0.3	0.4	1.0
16 (DUP)	0.8	NA	0.7	NA	<0.1	NA	0.1	NA	0.3	NA	NA	NA	0.5	0.8
17	0.9	1.3	0.8	0.4	0.1	0.3	0.3	0.3	0.5	0.2	0.3	0.5	0.5	1.3
17 (DUP)	NA	1.3	NA	0.3	NA	0.3	NA	0.5	NA	NA	NA	NA	0.6	1.3
18	0.6	0.8	0.5	0.2	0.3	<0.1	0.1	<0.1	0.2	0.1	0.2	0.4	0.3	0.8
18 (DUP)	0.6	NA	0.6	NA	0.1	NA	0.1	NA	0.7	NA	NA	NA	0.4	0.7
19	0.8	1	0.6	0.3	<0.1	0.1	0.2	0.2	0.7	0.1	0.3	0.5	0.4	1.0
19 (DUP)	NA	1	NA	0.2	NA	<0.1	NA	0.1	NA	NA	NA	NA	0.4	1.0
22	0.5	1.3	0.5	0.3	<0.1	0.1	0.2	0.1	0.4	0.2	0.2	0.4	0.4	1.3
23	0.5	0.5	0.4	0.2	<0.1	<0.1	0.1	<0.1	0.1	NA	0.2	0.3	0.3	0.5
23 (DUP)	0.4	NA	0.5	NA	<0.1	NA	0.2	NA	0.3	NA	NA	NA	0.4	0.5
24	0.7	1	0.7	0.4	0.1	0.2	0.2	0.2	0.3	0.2	0.3	1.4	0.5	1.4
24 (DUP)	NA	0.9	NA	0.4	NA	0.2	NA	0.2	NA	NA	NA	NA	0.4	0.9
25	0.8	1.4	0.6	0.4	0.5	0.5	0.1	0.1	0.3	0.2	0.5	0.6	0.5	1.4
25 (DUP)	0.8	NA	0.6	NA	0.4	NA	0.1	NA	0.3	NA	NA	NA	0.4	0.8
26	0.8	1.1	1.1	0.4	0.5	0.2	0.4	0.2	0.4	0.3	0.6	0.7	0.6	1.1
26 (DUP)	NA	1.1	NA	0.4	NA	0.2	NA	0.2	NA	NA	NA	NA	0.5	1.1
27	1.2	1.6	1	1	0.2	0.4	1	0.9	1.1	1.1	1.1	1.7	1.0	1.7
27 (DUP)	1.1	NA	1.1	NA	0.2	NA	0.9	NA	1.2	NA	NA	NA	0.9	1.2
28	0.8	1	0.7	0.4	0.3	0.3	0.5	0.4	0.5	0.3	0.3	0.5	0.5	1.0
28 (DUP)	NA	1.1	NA	0.4	NA	0.3	NA	0.4	NA	NA	NA	NA	0.6	1.1
29	0.5	0.9	0.5	0.3	0.1	0.2	0.2	0.1	0.3	0.2	0.3	0.4	0.3	0.9
29 (DUP)	0.6	NA	0.6	NA	<0.1	NA	0.2	NA	0.3	NA	NA	NA	0.4	0.6
32	1.1	1.4	1	0.5	0.3	0.2	0.2	0.2	0.4	0.2	0.4	0.6	0.5	1.4
34	0.7	0.9	0.7	0.4	0.2	0.3	0.2	0.1	0.3	0.2	0.3	0.4	0.4	0.9
Average	0.8	1.1	0.7	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.4	0.7		
Maximum	1.2	2.2	1.6	1.0	0.5	0.5	1.0	0.9	1.2	1.1	1.1	1.9		

Hydrogen Sulphide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Company

LICA Airshed

Project Number

LICA Airshed

Location

12/30/2010

Date Samples Start

12/29/2011

Date Sampled End

H2S (ppb)														
Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
3	0.03	0.19	0.14	0.09	0.11	0.17	0.26	0.26	0.15	0.16	0.12	0.13	0.15	0.26
3 DUP	NA	0.17	NA	0.08	NA	0.16	NA	0.32	NA	0.13	NA	NA	0.17	0.32
5	0.19	0.2	0.12	0.1	0.15	0.24	0.26	0.38	0.34	0.17	0.14	0.15	0.20	0.38
5 DUP	0.17	NA	0.12	NA	0.16	NA	0.26	NA	0.19	0.19	NA	NA	0.18	0.26
10	0.16	0.19	0.11	0.1	0.1	0.15	0.18	0.21	0.19	0.11	0.11	0.11	0.14	0.21
10 DUP	0.13	NA	0.11	NA	0.09	NA	0.2	NA	0.18	NA	0.13	NA	0.14	0.2
11	0.12	NA	0.14	0.06	0.04	0.08	0.1	0.08	0.05	0.11	0.1	0.09	0.09	0.14
11 DUP	NA	NA	0.12	0.05	NA	0.07	NA	0.04	NA	NA	0.09	NA	0.07	0.12
12	0.12	0.17	0.09	0.06	0.05	0.08	0.1	0.08	0.11	0.15	0.11	0.11	0.10	0.17
12 DUP	0.12	NA	0.11	NA	0.06	NA	0.09	NA	0.13	NA	NA	0.1	0.10	0.13
13	0.13	0.19	0.11	0.05	0.04	0.07	0.08	0.07	0.09	0.07	0.12	0.13	0.10	0.19
13 DUP	NA	0.16	NA	0.05	NA	0.07	NA	0.09	NA	NA	NA	0.11	0.10	0.16
14	0.16	0.2	0.13	0.12	0.16	0.19	0.17	0.18	0.19	0.15	0.18	0.16	0.17	0.2
14 (DUP)	0.15	NA	0.15	NA	0.16	NA	0.24	NA	0.2	NA	NA	NA	0.18	0.24
16	0.2	0.2	0.14	0.09	0.06	0.14	0.18	0.19	0.17	0.12	0.15	0.16	0.15	0.2
16 (DUP)	NA	0.2	NA	0.1	NA	0.13	NA	0.23	NA	NA	NA	NA	0.17	0.23
17	0.2	0.24	0.17	0.08	0.19	0.25	0.43	0.67	0.35	0.22	0.38	0.15	0.28	0.67
17 (DUP)	0.21	NA	0.18	NA	0.15	NA	0.48	NA	0.44	NA	NA	NA	0.29	0.48
18	0.16	0.18	0.12	0.07	0.05	0.1	0.13	0.11	0.12	0.11	0.11	0.11	0.11	0.18
18 (DUP)	NA	0.17	NA	0.05	NA	0.11	NA	0.12	NA	NA	NA	NA	0.11	0.17
22	0.15	0.19	0.1	0.08	0.1	0.14	0.22	0.23	0.12	0.11	0.14	0.11	0.14	0.23
24	0.2	0.21	0.15	0.1	0.08	0.14	0.22	0.21	0.2	0.13	0.14	0.14	0.16	0.22
24 (DUP)	0.18	NA	0.15	NA	0.1	NA	0.19	NA	0.18	NA	NA	NA	0.16	0.19
25	0.12	0.17	0.09	0.04	0.04	0.04	0.1	0.08	0.07	0.09	0.14	0.1	0.09	0.17
25 (DUP)	NA	0.18	NA	0.06	NA	0.05	NA	0.08	NA	NA	NA	NA	0.09	0.18
26	0.2	0.25	0.14	0.12	0.2	0.13	0.2	0.15	0.16	0.12	NA	0.18	0.17	0.25
26 (DUP)	0.19	NA	0.15	NA	0.17	NA	0.19	NA	0.15	NA	NA	NA	0.17	0.19
27	0.17	0.29	0.15	0.29	0.13	0.3	1.12	0.71	0.8	0.79	0.73	0.21	0.47	1.12
27 (DUP)	NA	0.3	NA	0.28	NA	0.32	NA	0.73	NA	NA	NA	NA	0.41	0.73
29	0.17	0.2	0.11	0.1	0.09	0.12	0.25	0.2	0.16	0.13	0.15	0.13	0.15	0.25
29 (DUP)	0.16	NA	0.12	NA	0.09	NA	0.25	NA	0.18	NA	NA	NA	0.16	0.25
32	0.18	0.17	0.14	0.09	0.1	0.12	0.17	0.19	0.18	0.22	0.15	0.13	0.15	0.22
34	0.19	0.2	0.11	0.09	0.14	0.16	0.29	0.25	0.24	0.17	0.16	0.12	0.18	0.29
Average	0.16	0.20	0.13	0.10	0.11	0.14	0.24	0.23	0.21	0.17	0.18	0.13		
Maximum	0.21	0.30	0.18	0.29	0.20	0.32	1.12	0.73	0.80	0.79	0.73	0.21		

Nitrogen Dioxide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Company

LICA Airshed

Project Number

LICA Airshed

Location

12/30/2010

Date Samples Start

12/29/2011

Date Sampled End

NO2 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
2	2.5	1.1	0.6	0.4	0.3	0.4	0.3	0.3	0.6	1	1.2	1.5	0.9	2.5
2 DUP	NA	0.9	NA	0.3	NA	0.4	NA	0.3	NA	1	NA	NA	0.6	1
3	2.4	1.4	0.4	0.5	0.6	0.8	0.4	0.5	1.1	1.2	1.4	2.6	1.1	2.6
3 DUP	2.8	NA	0.3	NA	0.6	NA	0.4	NA	0.8	1.3	NA	NA	1.0	2.8
4	2.2	1.2	0.2	0.5	0.8	1.1	0.5	0.4	0.8	1.3	1.4	1.6	1.0	2.2
4 DUP	NA	1	NA	0.5	NA	0.9	NA	0.4	NA	NA	1.7	NA	0.9	1.7
5	2.1	1.4	0.3	0.4	0.2	0.7	0.4	0.4	1	1.1	1.9	2.1	1.0	2.1
5 DUP	2.2	NA	0.5	NA	0.2	NA	0.3	NA	0.7	NA	1.8	NA	1.0	2.2
6	3.5	1.6	0.6	0.8	0.8	1.2	0.6	0.8	1.4	2	3.4	2.5	1.6	3.5
6 DUP	NA	1.7	NA	0.6	NA	1.6	NA	0.8	NA	NA	NA	2.6	1.5	2.6
8	2.4	0.9	0.2	0.3	0.1	0.5	0.3	0.5	0.6	1.1	1.3	1.6	0.8	2.4
8 DUP	1.9	NA	0.1	NA	0.4	NA	0.3	NA	0.7	NA	NA	3.1	1.1	3.1
9	3	1.6	0.6	0.4	0.4	0.7	0.4	0.6	1.2	1.9	1.9	2.1	1.2	3
9 (DUP)	NA	1.8	NA	0.5	NA	1	NA	0.6	NA	NA	NA	NA	1.0	1.8
10	5.6	2.9	0.6	1.5	0.9	1.2	1.1	1.4	2.1	3.3	2.9	3.5	2.3	5.6
10 (DUP)	5.6	NA	0.7	NA	0.7	NA	0.9	NA	2.2	NA	NA	NA	2.0	5.6
11	1.2	NA	0.1	0.2	<0.1	0.3	0.2	0.2	0.4	0.8	1.1	1.1	0.6	1.2
11 (DUP)	NA	NA	0.3	0.3	NA	0.3	NA	0.3	NA	NA	NA	NA	0.3	0.3
12	1.8	1.5	0.2	0.5	0.3	0.5	0.2	0.6	1	0.9	1.3	2.3	0.9	2.3
12 (DUP)	2	NA	0.1	NA	0.1	NA	0.2	NA	0.7	NA	NA	NA	0.6	2
13	2.1	1.2	0.2	0.5	<0.1	0.2	0.2	0.5	0.5	0.9	1.9	1.8	0.9	2.1
13 (DUP)	NA	1.1	NA	0.4	NA	0.3	NA	0.6	NA	NA	NA	NA	0.6	1.1
14	2.4	2.1	0.6	0.9	<0.1	0.5	0.7	0.9	0.9	1.1	3	2.7	1.4	3
14 (DUP)	2.1	NA	NA	NA	<0.1	NA	0.6	NA	0.9	NA	NA	NA	1.2	2.1
15	2.4	1.8	0.2	0.9	0.2	0.6	0.4	0.9	0.9	1.4	1.5	1.8	1.1	2.4
15 (DUP)	NA	1.7	NA	0.6	NA	0.5	NA	0.9	NA	NA	NA	NA	0.9	1.7
16	3.1	1.9	0.8	0.9	0.3	0.6	0.7	0.8	1.3	1.7	2.5	3	1.5	3.1
16 (DUP)	2.6	NA	0.5	NA	0.5	NA	0.5	NA	1.3	NA	NA	NA	1.1	2.6
17	3.5	2.5	1.3	1	0.9	1.3	0.9	1.1	1.5	1.7	2.2	3.1	1.8	3.5
17 (DUP)	NA	2.4	NA	0.9	NA	1.5	NA	1.2	NA	NA	NA	NA	1.5	2.4
18	1.6	1.4	0.3	0.2	0.2	0.3	0.4	0.8	1.1	1.1	1.6	2.2	0.9	2.2
18 (DUP)	1.6	NA	0.3	NA	0.1	NA	0.3	NA	1.2	NA	NA	NA	0.7	1.6
19	1.8	0.9	0.3	0.3	0.2	0.6	0.3	0.5	0.6	0.8	1.2	2.3	0.8	2.3
19 (DUP)	NA	1.2	NA	0.3	NA	0.4	NA	0.5	NA	NA	NA	NA	0.6	1.2
22	3.7	2.1	0.4	1	0.3	0.5	0.5	0.8	1.1	2.8	2.5	2.7	1.5	3.7
23	1	0.9	<0.1	0.1	<0.1	<0.1	0.1	0.2	0.2	NA	0.5	0.8	0.5	1
23 (DUP)	1	NA	<0.1	NA	<0.1	NA	<0.1	NA	0.2	NA	NA	NA	0.6	1
24	3.7	1.9	0.8	1.2	0.9	1.1	0.8	1.3	1.8	2.5	2.7	3.3	1.8	3.7
24 (DUP)	NA	2.5	NA	0.9	NA	1.2	NA	1.5	NA	NA	NA	NA	1.5	2.5
28	9.6	6.1	3.8	2.4	1.7	1.8	1.7	1.9	2.6	4.3	5	6.2	3.9	9.6
28 (DUP)	12.9	NA	4.4	NA	1.6	NA	1.4	NA	2.8	NA	NA	NA	4.6	12.9
29	4.6	3	0.8	0.9	0.3	0.5	0.4	0.8	1	1.9	2.9	4.7	1.8	4.7
29 (DUP)	NA	2.8	NA	1	NA	0.5	NA	0.8	NA	NA	NA	NA	1.3	2.8
32	2.3	1.4	0.5	0.5	0.3	0.2	0.2	0.5	0.5	0.7	1.2	1.5	0.8	2.3
34	4.3	2.3	0.9	1	0.5	1	0.6	1	1.5	1.8	2.2	6.9	2.0	6.9
Average	3.2	1.8	0.7	0.7	0.5	0.7	0.5	0.7	1.1	1.6	2.0	2.7		
Maximum	12.9	6.1	4.4	2.4	1.7	1.8	1.7	1.9	2.8	4.3	5.0	6.9		

Ozone

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Company

LICA Airshed

Project Number

LICA Airshed

Location

12/30/2010

Date Samples Start

12/29/2011

Date Sampled End

O3 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
2	21.8	28.8	30.4	34.6	29.8	23	13.6	11.9	15.5	11.6	15.6	18.9	21.3	34.6
2 DUP	NA	28.9	NA	31.8	NA	25.9	NA	12.4	NA	12.1	NA	NA	22.2	31.8
3	28.8	35	40.2	36.2	37.1	30.4	20.9	17.6	19.5	17.9	21.9	24.8	27.5	40.2
3 DUP	28.2	NA	38.1	NA	38.6	NA	21.2	NA	18.7	17.5	NA	NA	27.1	38.6
4	31.9	38.3	38.4	40	37.7	29.2	21.6	20	22.5	20.5	24.5	28.6	29.4	40.0
4 DUP	NA	37.6	NA	39.2	NA	28.5	NA	19.9	NA	NA	30.1	NA	31.1	39.2
5	28	36.2	42.6	38.5	32.6	27.5	21.3	18.5	21.7	20.5	22	23.5	27.7	42.6
5 DUP	30	NA	45.6	NA	34.3	NA	20.4	NA	22.1	NA	22.6	NA	29.2	45.6
6	30.1	35.7	40.8	38.2	30.7	28.6	20.6	16.8	16.8	18.1	21.7	21.5	26.6	40.8
6 DUP	NA	36.5	NA	35.8	NA	28.6	NA	18.3	NA	NA	NA	21.7	28.2	36.5
8	33.3	35	42.8	37.9	38.2	27	20.4	19.1	20.6	21.1	27.4	27	29.2	42.8
8 DUP	33.2	NA	42	NA	35.9	NA	21.8	NA	21.8	NA	NA	26.2	30.2	42.0
9	28.4	36.2	37.2	39.5	32.1	28.5	18.1	17.9	19.2	18.1	23.4	22.9	26.8	39.5
9 (DUP)	NA	39.6	NA	36.8	NA	29.7	NA	18.1	NA	NA	NA	NA	31.1	39.6
10	23.6	31.4	34.4	33.9	31.8	25	16.7	15.8	16	13.9	22.2	17.7	23.5	34.4
10 (DUP)	24.1	NA	32.7	NA	32.2	NA	15.6	NA	16.6	NA	NA	NA	24.2	32.7
11	22.6	NA	27.5	31.1	30.9	22.8	14.4	17.7	13.5	11.5	19.8	21.1	21.2	31.1
11 (DUP)	NA	NA	28.2	30.6	NA	23.5	NA	16.5	NA	NA	NA	NA	24.7	30.6
12	27.2	33.6	33.3	33.4	36	25.6	18.5	17	19	14	21.5	21.1	25.0	36.0
12 (DUP)	30.5	NA	36.5	NA	31.8	NA	18.6	NA	17.2	NA	NA	NA	26.9	36.5
13	28.9	33.3	36.5	35.9	38.1	28.7	19.3	17.6	20.8	19	22.1	23.8	27.0	38.1
13 (DUP)	NA	37.3	NA	38.9	NA	30.9	NA	19.1	NA	NA	NA	NA	31.6	38.9
14	26.4	31.9	34.2	39.1	38.6	30.2	25.6	21.7	21.2	19.1	23.2	21.8	27.8	39.1
14 (DUP)	26.1	NA	35.5	NA	35.1	NA	23.6	NA	21.8	NA	NA	NA	28.4	35.5
15	25.5	39.8	32.2	35.6	32.8	30	17.9	15.2	17.5	16.7	21.3	23.2	25.6	39.8
15 (DUP)	NA	40.7	NA	34.6	NA	29.5	NA	17	NA	NA	NA	NA	30.5	40.7
16	27.4	34.6	36.3	35	35	28.4	20.9	16.6	17.8	17.4	20.6	22	26.0	36.3
16 (DUP)	28.3	NA	37.6	NA	34.6	NA	20.7	NA	19.3	NA	NA	NA	28.1	37.6
17	28.2	35.5	40.3	37	34.8	29.3	20	17.2	21.6	19.1	24.1	23.3	27.5	40.3
17 (DUP)	NA	36.9	NA	35.7	NA	28.1	NA	18.4	NA	NA	NA	NA	29.8	36.9
18	26.7	32.6	35.1	32.7	30	23	16.6	13.3	16.2	16.5	21.1	22.2	23.8	35.1
18 (DUP)	27.7	NA	35.7	NA	28	NA	16.5	NA	14.8	NA	NA	NA	24.5	35.7
19	29	37.5	40.1	34.8	33.4	28.8	18.7	18.6	21	18.6	26.3	26.7	27.8	40.1
19 (DUP)	NA	37	NA	33.7	NA	27.7	NA	18.9	NA	NA	NA	NA	29.3	37.0
22	24.5	32.1	34.7	32.7	37	30.2	19.4	17	17.9	15.1	24.9	21.3	25.6	37.0
23	21.8	27.9	31.2	32.5	29.4	24.3	13.6	12.8	6.7	NA	20.7	20.4	21.9	32.5
23 (DUP)	22.6	NA	29.4	NA	33.1	NA	14.6	NA	NA	NA	NA	NA	24.9	33.1
24	27.3	33.9	35.4	34.7	35.9	29.4	21.6	18.4	22.4	17.1	22	21.2	26.6	35.9
24 (DUP)	NA	34.7	NA	35.5	NA	27.5	NA	20.2	NA	NA	NA	NA	29.5	35.5
28	21.4	30.3	31.9	34.8	33.9	28.1	21.6	17.6	21.1	15.8	19.9	19	24.6	34.8
28 (DUP)	22.4	NA	29.1	NA	31.3	NA	21.2	NA	19.6	NA	NA	NA	24.7	31.3
29	22.9	31.8	36.4	36.7	36.3	30.5	22.5	19.5	22.6	17.3	19.2	21.7	26.5	36.7
29 (DUP)	NA	28.9	NA	34.9	NA	30.1	NA	20.9	NA	NA	NA	NA	28.7	34.9
32	30	34.1	37.4	41.6	42	34.9	28.8	25.5	30.1	25	28.4	29.1	32.2	42.0
34	27	37.1	36.4	42.5	35.3	32.1	23.5	23.3	23.4	17.6	22.2	19.4	28.3	42.5
Average	26.9	34.6	35.9	35.9	34.2	28.2	19.7	17.9	19.3	17.2	22.6	22.7		
Maximum	33.3	40.7	45.6	42.5	42.0	34.9	28.8	25.5	30.1	25.0	30.1	29.1		

Lakeland Industry & Community Association

Maskwa Monitoring Site
Ambient Annual Data Report

For
2011

Prepared By:



April 9, 2012

Lakeland Industry & Community Association Ambient Air Monitoring Maskwa

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Introduction

The following Ambient Air Monitoring report was prepared for:

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

Monitoring Location: Maskwa
Data Period: January 2011 to December 2011

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

Calibration Procedure

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

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

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

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

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

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

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

General Summary

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

AQM STATION – LICA - Maskwa

Sulphur Dioxide (PPB)

- Analyzer make / model - API 100E, S/N: 508
 - ❖ The analyzer spanned low on January 6th. It was determined that the permeation tube needed to be replaced, and it was replaced on January 6th. The perm tube was allowed time to stabilize and then the expected value was adjusted on January 10th.
 - ❖ Following the as found points on February 9th, the sample pump was rebuilt, and a UV lamp calibration was performed.
 - ❖ Hourly maximum data at hour 3 on August 5th was invalidated due to a small power outage.
 - ❖ Following the as found points check performed on December 12th, the UV lamp was peaked.

Hydrogen Sulphide (PPB)

- Analyzer make / model - API 101E, S/N: 511
 - ❖ Following the as found points on February 9th, the sample pump was rebuilt, and the SO₂ scrubber bead was replaced.
 - ❖ There were two 1-Hour contraventions this month; reading of 12ppb on March 26th, hour of 23, reference # 247635, and reading of 12ppb on March 27th, hour of 0, reference # 247636.
 - ❖ Data for both hourly and hourly maximum between hour 13 and hour 23 on August 11th are missing, reason unknown.
 - ❖ Hourly maximum data at hour 3 on August 5th was invalidated due to a small power outage.
 - ❖ The box fan for the analyzer was replaced on September 6th.
 - ❖ Following the as found points on November 1st, the exhaust pump was replaced. A multi-points calibration was performed after. It was noticed that the replaced pump failed after the daily calibration on November 1st. The pump was removed and a new pump was installed on November 2nd. The analyzer was allowed time to stabilize. A post-repair calibration was then performed. 11 hours of data were invalidated.
 - ❖ Following the as found points check performed on December 9th, the SO₂ scrubber material was replaced, the UV lamp was peaked and a new exhausting pump was installed.

General Summary

AQM STATION – LICA - Maskwa

Nitrogen Dioxide (PPB)

- Analyzer make / model - API 200E, S/N: 594
 - ❖ The daily span result went above full scale on June 11th due to a loosing wire. The wire was tightened and a daily calibration check was run on June 11th. The result was OK. Data between June 10th at 15:00 and June 11th at 7:00 were invalidated.
 - ❖ The NO2 guideline was changed on June 15th: the objective for 1-Hour average concentration was changed from 212 ppb to 159 ppb, the objective for 24-Hour average concentration was removed, and the concentration of 24 ppb for the annual average was added by AE.
 - ❖ The sample pump was rebuilt following the as found points on July 12th.
 - ❖ Hourly maximum data at hour 3 on August 5th was invalidated due to a small power outage.
 - ❖ The analyzer spanned low, starting December 29th due to permeation tube depleting. The perm tube was replaced on January 1st, 2012.

Total HydroCarbon (PPM)

- Analyzer make / model - TECO 51C-LT, S/N: 436609738
 - ❖ Following the as found points on February 9th, the zero air supply pump was rebuilt, the diaphragm and valves on the internal pump in the analyzer was replaced, and the cut-in/cut-out pressures on the zero air supply was set.
 - ❖ The analyzer flamed out on March 8th due to running out the H2 gas. The H2 gas cylinder was replaced on March 8th. Four hours of data were invalidated.
 - ❖ The maximum concentration reported on April 21st at 10:00, 12:00 and 13:00 may be lower than actual due to the analyzer going above the maximum scale.
 - ❖ Hourly maximum data at hour 3 on August 5th was invalidated due to a small power outage.
 - ❖ It was noticed that the zero air supply pump was noisy on September 22nd. The zero air pump was replaced with a Maxxam-Supplied temporary pump following the as found points on September 22nd.

General Summary

AQM STATION – LICA - Maskwa

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

- System make / model - Met One 50.5H, S/N: H10703 and RM Young 5103VK, S/N: 46553
 - ❖ 7 hours of data for wind speed maximum were invalidated in January as they went full scale. It is likely due to frost.
 - ❖ 7 hours of data for wind speed maximum were invalidated in February as they went full scale.
 - ❖ The Met One wind system was removed, and a temporary RM Young wind system was installed and calibrated on March 10th. The Met One wind system was sent to the factory for calibration.
 - ❖ 2 hours of data for wind speed maximum were invalidated in March as they went full scale. The values for wind speed maximum before the Met One system removed (between March 1st and March 10th) look higher than the expected. According to the manufacturer calibration result released in September, part of the array was bent. Data during this period of time was kept, but should be used with caution.
 - ❖ The RM Young wind system was removed and the recently factory calibrated MetOne 50.5 was installed on May 12th. When the MetOne was installed, the span test was performed at the site, and the result was good. The zero test was unable to be performed as it was too windy during the installation. On June 13th, it was noticed that the wind speed seemed to be reading high (20-26KHP), but the observed wind conditions were low (3-8KPH). The zero and span checks as per manual instructions. The span check result was OK, but the zero check failed; the measured voltage was 0.0-0.14vdc, should be 0.0vdc steady. Contacted manufacturer and was advised to return the wind system to them for service. A replacement RM Young 5103 VK wind system was installed following an installation calibration on June 15th. As a result, 839 hours of data between May 12th and June 16th were invalidated.
 - ❖ Hourly maximum data for WS at hour 3 on August 5th was invalidated due to a small power outage.
 - ❖ The Maxxam-Supplied RM Young wind system was removed and a LICA-Supplied MetOne 50.5 wind system was installed on September 27th. The MetOne 50.5 wind system was sent to the factory for repair: they determined that part of the array was bent. The MetOne was factory repaired and was recalibrated on July 21st. During the wind system installation on September 27th, both zero and span check were performed, and the results were fine.
 - ❖ The wind system failed on November 5th. A temporary wind system was installed on following an installation calibration November 7th. The range for the wind speed was changed to 0 –200 KPH. 55 hours of data between November 5th at hour 9 and November 7th at hour 14 were invalidated.
 - ❖ The MetOne wind system was sent back to the manufacturer for repair in November.

General Summary

AQM STATION – LICA - Maskwa

Relative Humidity (PERCENT)

- System make / model - Met One 083
 - ❖ The RH sensor was working well throughout the year.

Barometric Pressure (inHG)

- System make / model - Met One 092
 - ❖ The BP sensor was checked and compared to Bios DC-2, S/N: 1193, on May 12th. The Bios reading was 950.6mBar; the DAS reading was 951.3 mBar.

Precipitation (MM)

- System make / model - Met One 387
 - ❖ The tipping bucket was checked and cleaned on May 12th. The screens were installed after cleaning.
 - ❖ The tipping bucket operation was checked on August 12th; the result was good.

Ambient Temperature (DEGC)

- System make / model - Met One 060
 - ❖ The temperature sensor was checked against Maxxam Hg thermometer, ID 4274, S/N: 96-3470, on May 12th. The thermometer reading was 18.9 degree Celsius; the DAS reading was 19.4 degree Celsius.
 - ❖

Trailer Temperature (DEG C)

- System make / model – R&R 61
 - ❖ The temperature sensor was working well throughout the year.

General Summary

AQM STATION – LICA - Maskwa

Datalogger

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

No issue was recorded this year.

Trailer

No issue was recorded this year.

Continuous Monitoring

Sulphur Dioxide

Current Date : 04/02/12
Current Time : 07:04

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	702	0	18	1
February	672	632	0	21	1
March	744	707	0	20	1
April	720	683	0	10	0
May	744	707	0	17	0
June	720	682	0	8	0
July	744	707	0	9	0
August	744	707	0	13	0
September	720	685	0	12	0
October	744	706	0	18	0
November	720	683	0	16	1
December	744	706	0	26	1
Yearly Total	8760	8307	0	26	1

SO₂ Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA Plant Location MASKWA

Month	Valid Readings* Hours	Operational Time (%)	% Readings in Concentration Range (ppm SO ₂)						24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	SO ₂ ppm Monthly Average
			≤ 0.02 ppm	0.02 < C ≤ 0.06 ppm	0.06 < C ≤ 0.11 ppm	0.11 < C ≤ 0.17 ppm	0.17 < C ≤ 0.34 ppm	> 0.34 ppm			
January	702	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
February	632	99.7	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
March	707	99.9	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
April	683	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
May	707	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
June	682	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
July	707	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
August	707	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
September	685	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
October	706	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
November	683	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
December	706	100.0	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
									Annual Average	0.00	

C - Concentration

* Valid readings - does not include calibration hours and downtime hours

SO₂ Peak Reading of One Hour Averages for 2011

Plant Operator: LICA Plant Location: MASKWA

Month	SO2 ppb Peak Reading
January	18
February	21
March	20
April	10
May	17
June	8
July	9
August	13
September	12
October	18
November	16
December	26
ANNUAL PEAK	26

LICA30
 SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	4.06	5.75	6.42	4.76	3.81	4.69	5.52	4.44	5.64	13.53	11.60	5.64	7.23	7.91	5.46	3.30	99.85
< 60	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.04	.09	.00	.14
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.06	5.75	6.42	4.76	3.81	4.69	5.52	4.45	5.64	13.53	11.60	5.64	7.23	7.95	5.55	3.30	

Calm : .00 %

Total # Operational Hours : 7452

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	303	429	479	355	284	350	412	331	421	1009	865	421	539	590	407	246	7441
< 60								1						3	7		11
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	303	429	479	355	284	350	412	332	421	1009	865	421	539	593	414	246	

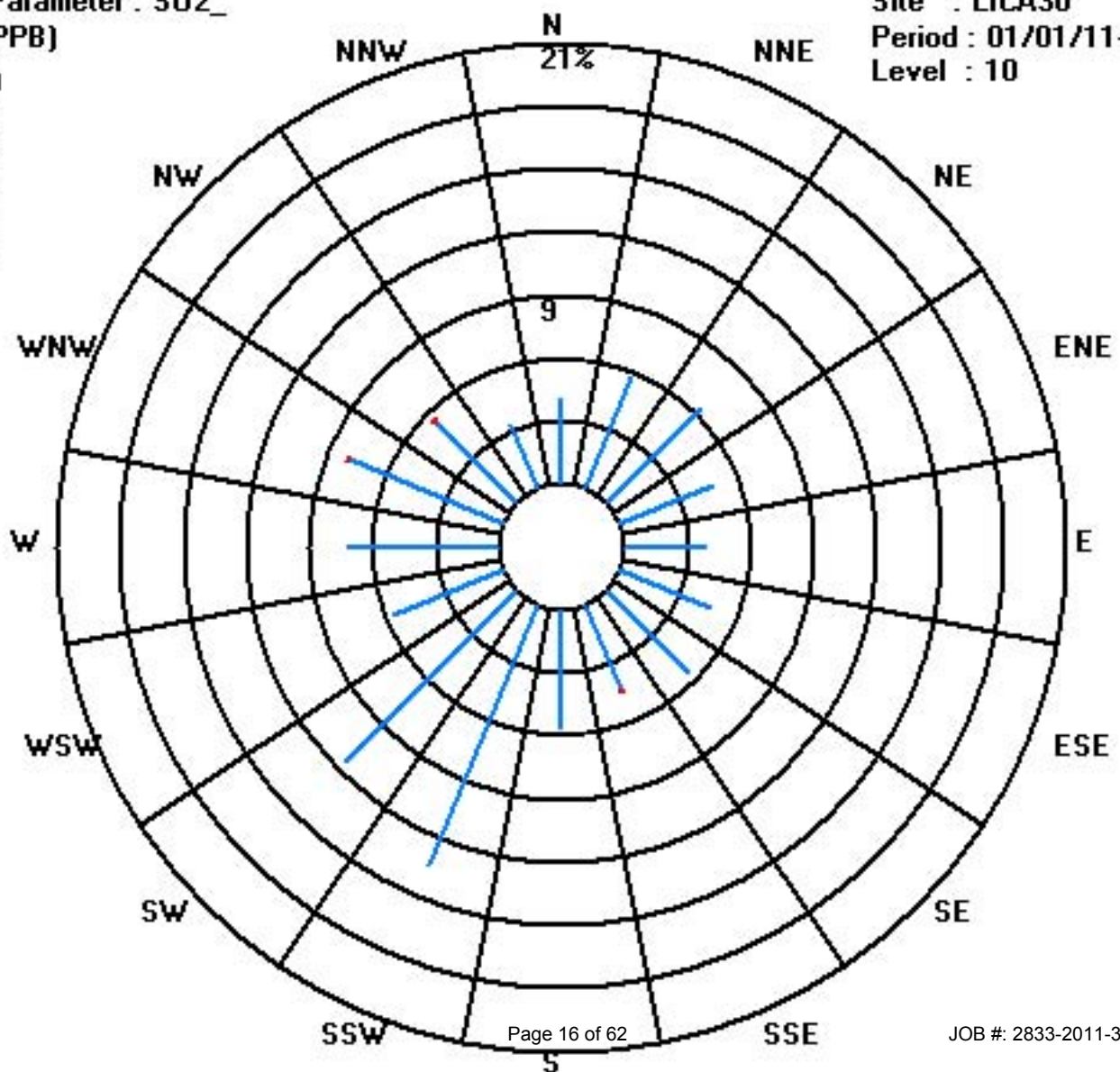
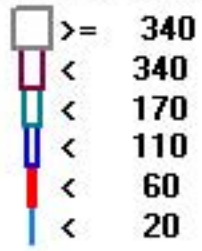
Calm : .00 %

Total # Operational Hours : 7452

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Hydrogen Sulphide

Current Date : 04/02/12
Current Time : 07:04

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : H2S_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	707	0	3	0
February	672	634	0	2	0
March	744	706	0	1	0
April	720	684	0	1	0
May	744	707	0	12	0
June	720	683	0	5	0
July	744	706	0	4	0
August	744	708	0	2	0
September	720	684	0	4	0
October	744	706	0	3	0
November	720	666	0	4	0
December	744	704	0	2	0
Yearly Total	8760	8295	0	12	0

H₂S Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: MASKWA

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppb H ₂ S)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	H ₂ S ppb Monthly Average
			0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb			
January	707	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.02
February	634	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.08
March	706	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.03
April	684	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.05
May	707	99.9	99.4%	0.3%	0.3%	0.0%	0	2	0.22
June	683	99.7	99.7%	0.3%	0.0%	0.0%	0	0	0.19
July	706	100.0	99.9%	0.1%	0.0%	0.0%	0	0	0.26
August	708	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.34
September	684	99.9	99.9%	0.1%	0.0%	0.0%	0	0	0.26
October	706	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.14
November	666	98.1	99.7%	0.3%	0.0%	0.0%	0	0	0.16
December	704	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.25
							Annual Average		0.17

* Valid readings - does not include calibration hours and downtime hours.

H2S Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: MASKWA

Month	H2S ppb Peak Reading
January	3
February	1
March	1
April	1
May	12
June	5
July	4
August	2
September	4
October	3
November	4
December	2
ANNUAL PEAK	12

LICA30
H2S_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 30
Site Name : LICA30
Parameter : H2S_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 3	4.08	5.72	6.41	4.73	3.73	4.54	5.59	4.53	5.78	13.44	11.48	5.61	7.19	7.98	5.56	3.30	99.73	
< 10	.00	.00	.01	.01	.04	.17	.01	.00	.00	.00	.00	.00	.00	.01	.00	.00	.26	
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
Totals	4.08	5.72	6.42	4.74	3.77	4.71	5.60	4.53	5.78	13.44	11.48	5.61	7.19	7.99	5.56	3.30		

Calm : .00 %

Total # Operational Hours : 7439

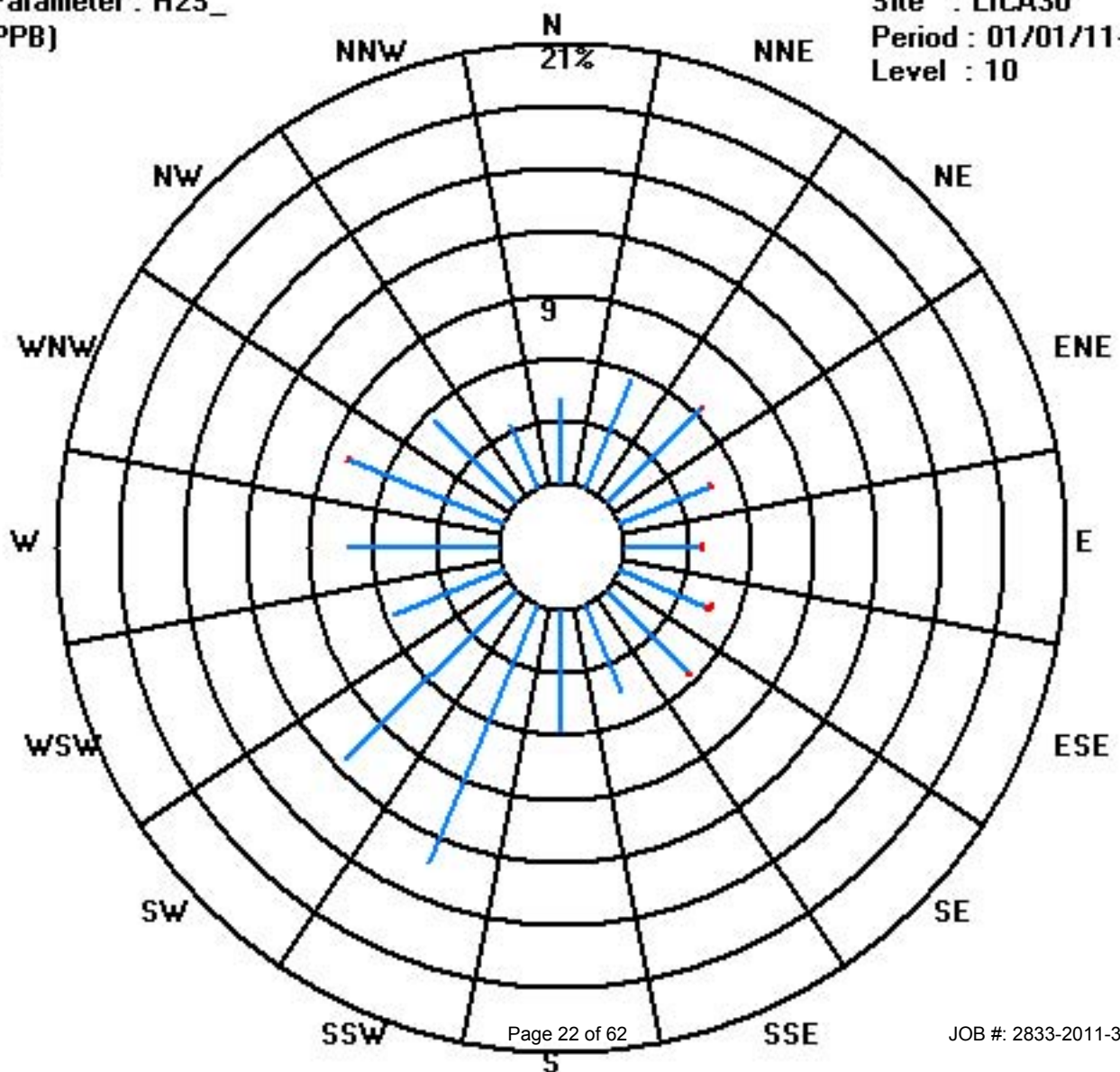
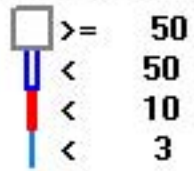
Distribution By Samples

		Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq	
< 3	304	426	477	352	278	338	416	337	430	1000	854	418	535	594	414	246	7419	
< 10			1	1	3	13	1							1			20	
< 50																		
>= 50																		
Totals	304	426	478	353	281	351	417	337	430	1000	854	418	535	595	414	246		

Calm : .00 %

Total # Operational Hours : 7439

Class Limits (PPB)



Total Hydrocarbons

Current Date : 04/02/12
Current Time : 07:04

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	705	1.8	3.7	2.2
February	672	634	1.9	3.3	2.2
March	744	701	2	4.4	2.3
April	720	684	2	6.3	2.1
May	744	706	1.9	3.2	2.1
June	720	682	1.8	2.8	2
July	744	707	1.9	2.9	2.1
August	744	708	1.9	5.9	2.2
September	720	676	1.8	3	2.2
October	744	706	1.9	3.3	2.1
November	720	684	1.9	3.3	2.2
December	744	707	1.9	3.3	2.2
Yearly Total	8760	8300	1.8	6.3	2.2

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: MASKWA

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm THC)				THC ppm Monthly Average
			0 to 3 ppm	4 to 10 ppm	11 to 50 ppm	>50 ppm	
January	705	99.9	97.9%	2.1%	0.0%	0.0%	2.15
February	634	99.7	99.5%	0.5%	0.0%	0.0%	2.22
March	701	99.3	94.9%	5.1%	0.0%	0.0%	2.28
April	684	100.0	98.7%	1.3%	0.0%	0.0%	2.15
May	706	99.7	99.6%	0.4%	0.0%	0.0%	2.09
June	682	99.7	100.0%	0.0%	0.0%	0.0%	2.03
July	707	100.0	100.0%	0.0%	0.0%	0.0%	2.06
August	708	99.9	98.6%	1.4%	0.0%	0.0%	2.18
September	676	99.7	99.7%	0.3%	0.0%	0.0%	2.15
October	706	100.0	99.3%	0.7%	0.0%	0.0%	2.13
November	684	99.9	99.6%	0.4%	0.0%	0.0%	2.20
December	707	100.0	98.9%	1.1%	0.0%	0.0%	2.19
						Annual Average	2.15

* Valid readings do not include daily and monthly calibration hours and downtime hours

THC Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: MASKWA

Month	THC ppm Peak Reading
January	3.7
February	3.3
March	4.4
April	6.3
May	3.2
June	2.8
July	2.9
August	5.9
September	3.0
October	3.3
November	3.3
December	3.3
ANNUAL PEAK	6.3

LICA30
 THC / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	4.08	5.66	6.39	4.75	3.82	4.65	5.50	4.44	5.49	12.90	11.41	5.59	7.22	7.98	5.51	3.27	98.75
< 10.0	.00	.02	.04	.02	.04	.06	.04	.04	.20	.56	.12	.02	.01	.00	.02	.01	1.24
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.08	5.69	6.43	4.78	3.86	4.72	5.54	4.48	5.69	13.46	11.53	5.62	7.23	7.98	5.54	3.28	

Calm : .00 %

Total # Operational Hours : 7447

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	304	422	476	354	285	347	410	331	409	961	850	417	538	595	411	244	7354
< 10.0		2	3	2	3	5	3	3	15	42	9	2	1		2	1	93
< 50.0																	
>= 50.0																	
Totals	304	424	479	356	288	352	413	334	424	1003	859	419	539	595	413	245	

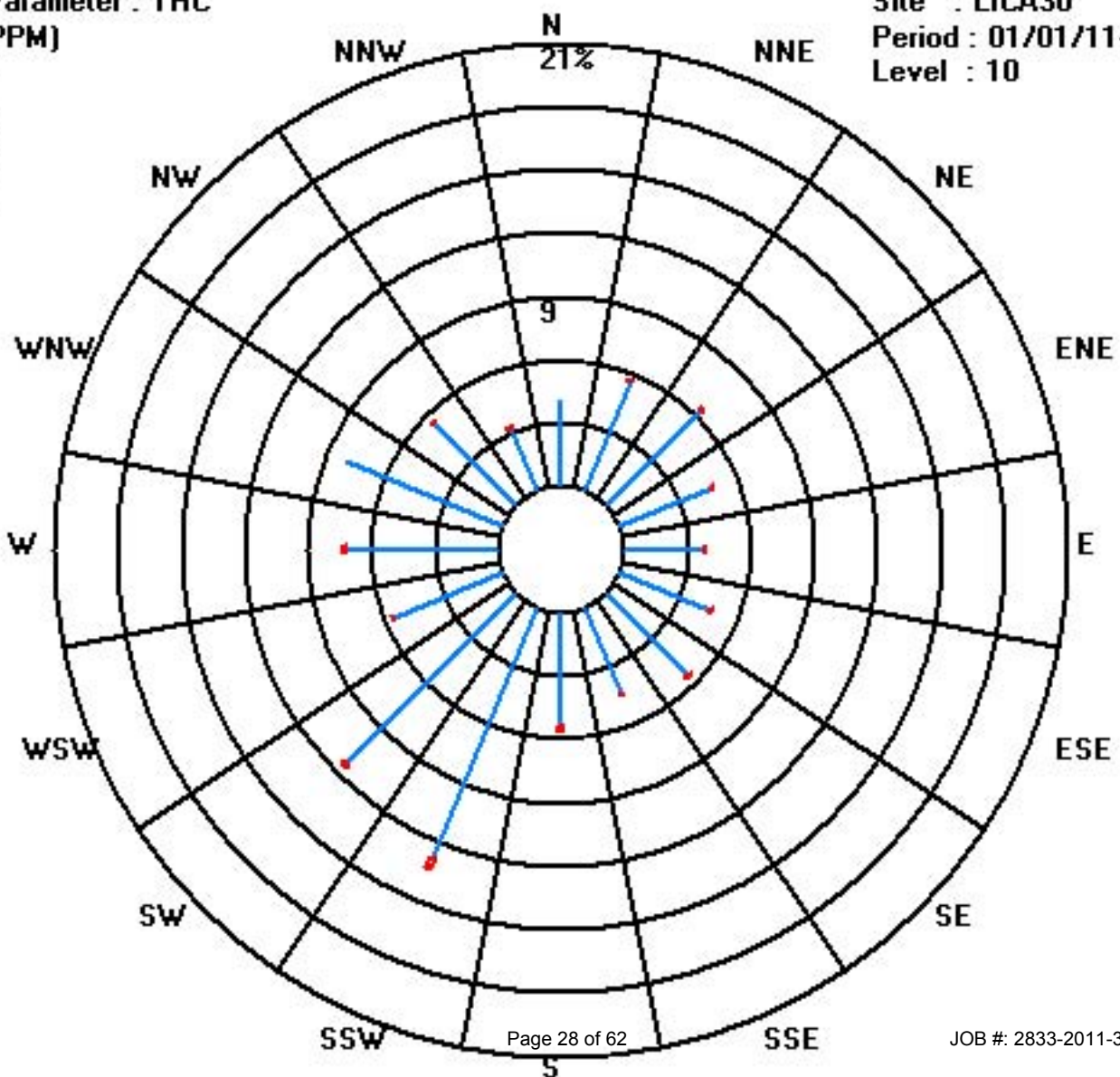
Calm : .00 %

Total # Operational Hours : 7447

Class Limits (PPM)

Period : 01/01/11-12/31/11

Level : 10



Nitrogen Dioxide

Current Date : 04/02/12
Current Time : 07:04

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : NO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	705	0	25	5
February	672	636	0	17	5
March	744	704	0	49	3
April	720	681	0	21	2
May	744	705	0	17	2
June	720	663	0	15	1
July	744	700	0	15	2
August	744	705	0	17	2
September	720	681	0	18	2
October	744	705	0	21	2
November	720	681	0	18	4
December	744	705	0	20	5
Yearly Total	8760	8271	0	49	3

NO₂ Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: LICA

Station: MASKWA

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm N ₂)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO ₂ ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm			
January	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
February	636	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.00
March	704	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
April	681	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.00
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
June	663	97.2	100.0%	0.0%	0.0%	0.0%	0	0	0.00
July	700	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.00
August	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
September	681	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
October	705	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.00
November	681	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.00
December	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
							Annual Average		0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO₂ Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: MASKWA

Month	NO2 ppb Peak Reading
January	24
February	17
March	49
April	21
May	17
June	15
July	15
August	17
September	18
October	21
November	18
December	20
ANNUAL PEAK	49

LICA30
 NO2_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 30
 Site Name : LICA30
 Parameter : NO2_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	4.07	5.64	6.42	4.76	3.81	4.72	5.54	4.53	5.77	13.55	11.47	5.60	7.20	8.00	5.55	3.29	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.07	5.64	6.42	4.76	3.81	4.72	5.54	4.53	5.77	13.55	11.47	5.60	7.20	8.00	5.55	3.29	

Calm : .00 %

Total # Operational Hours : 7435

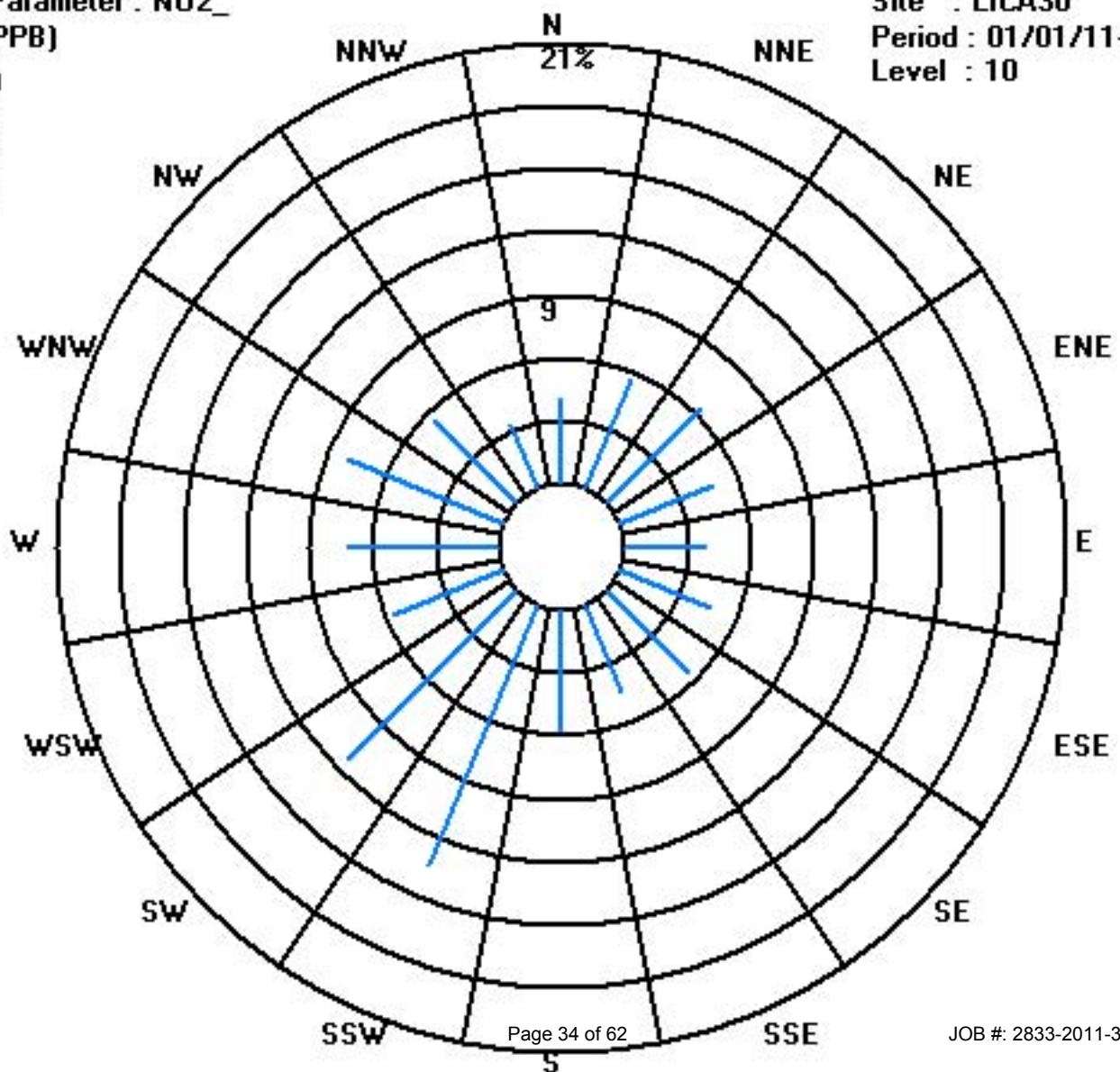
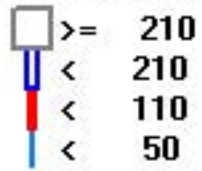
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	303	420	478	354	284	351	412	337	429	1008	853	417	536	595	413	245	7435
< 110																	
< 210																	
>= 210																	
Totals	303	420	478	354	284	351	412	337	429	1008	853	417	536	595	413	245	

Calm : .00 %

Total # Operational Hours : 7435

Class Limits (PPB)



Nitric Oxide

Current Date : 04/02/12
Current Time : 07:04

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : NO_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	705	0	20	1
February	672	636	0	18	1
March	744	704	0	64	1
April	720	681	0	19	1
May	744	705	0	9	0
June	720	663	0	10	0
July	744	700	0	8	0
August	744	705	0	16	1
September	720	681	0	18	0
October	744	705	0	16	1
November	720	681	0	17	1
December	744	705	0	12	1
Yearly Total	8760	8271	0	64	1

NO Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: _____ MASKWA _____

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO)				NO ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
February	636	100.0	100.0%	0.0%	0.0%	0.0%	0.00
March	704	99.9	99.9%	0.1%	0.0%	0.0%	0.00
April	681	100.0	100.0%	0.0%	0.0%	0.0%	0.00
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
June	663	97.2	100.0%	0.0%	0.0%	0.0%	0.00
July	700	99.7	100.0%	0.0%	0.0%	0.0%	0.00
August	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
September	681	99.9	100.0%	0.0%	0.0%	0.0%	0.00
October	705	100.0	100.0%	0.0%	0.0%	0.0%	0.00
November	681	99.7	100.0%	0.0%	0.0%	0.0%	0.00
December	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
						Annual Average	0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO Peak reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Station: _____ MASKWA _____

Month	NO ppb Peak Reading
January	20
February	18
March	64
April	19
May	9
June	10
July	8
August	16
September	18
October	16
November	17
December	12
ANNUAL PEAK	64

LICA30
 NO_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	4.07	5.64	6.42	4.76	3.81	4.72	5.54	4.53	5.77	13.55	11.47	5.60	7.20	7.98	5.55	3.29	99.98
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.01
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.07	5.64	6.42	4.76	3.81	4.72	5.54	4.53	5.77	13.55	11.47	5.60	7.20	8.00	5.55	3.29	

Calm : .00 %

Total # Operational Hours : 7435

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	303	420	478	354	284	351	412	337	429	1008	853	417	536	594	413	245	7434
< 110														1			1
< 210																	
>= 210																	
Totals	303	420	478	354	284	351	412	337	429	1008	853	417	536	595	413	245	

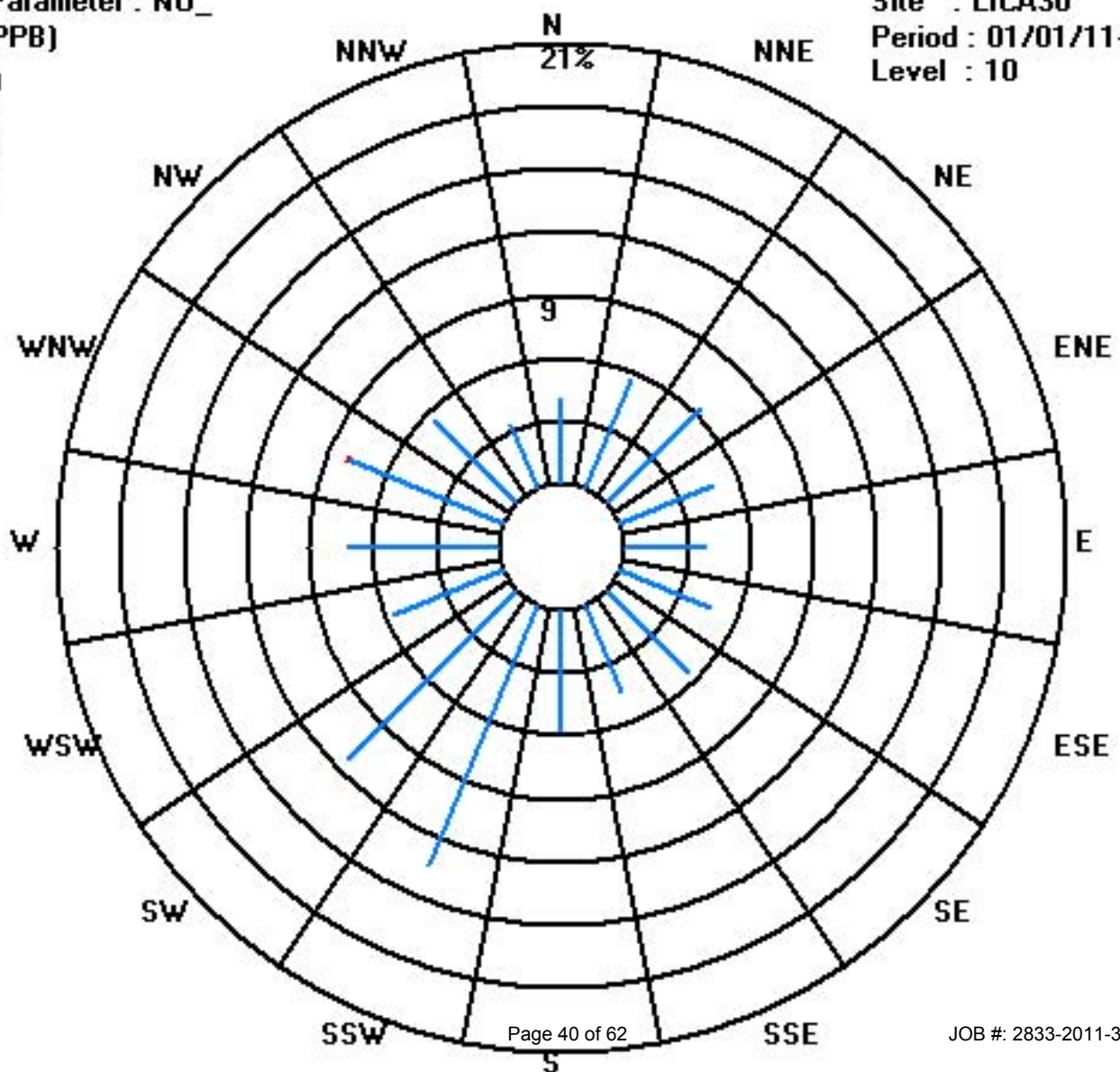
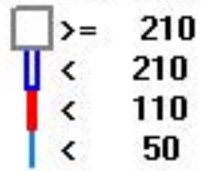
Calm : .00 %

Total # Operational Hours : 7435

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Oxides of Nitrogen

Current Date : 04/02/12
Current Time : 07:04

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : NOX_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	705	0	44	6
February	672	636	0	60	6
March	744	704	0	113	4
April	720	681	0	37	3
May	744	705	0	26	1
June	720	663	0	19	2
July	744	700	0	20	2
August	744	705	0	26	3
September	720	681	0	27	3
October	744	705	0	35	3
November	720	681	0	27	5
December	744	705	0	30	6
Yearly Total	8760	8271	0	113	3

NO_x Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: _____ MASKWA _____

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO _x)				NO _x ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	705	99.9	100.0%	0.0%	0.0%	0.0%	0.01
February	636	100.0	99.8%	0.2%	0.0%	0.0%	0.01
March	704	99.9	99.7%	0.1%	0.0%	0.0%	0.00
April	681	100.0	100.0%	0.0%	0.0%	0.0%	0.00
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
June	663	97.2	100.0%	0.0%	0.0%	0.0%	0.00
July	700	99.7	100.0%	0.0%	0.0%	0.0%	0.00
August	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
September	681	99.9	100.0%	0.0%	0.0%	0.0%	0.00
October	705	100.0	100.0%	0.0%	0.0%	0.0%	0.00
November	681	99.7	100.0%	0.0%	0.0%	0.0%	0.01
December	705	99.9	100.0%	0.0%	0.0%	0.0%	0.01
						Annual Average	0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO_x Peak Reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Station: _____ MASKWA _____

Month	NO _x ppb Peak Reading
January	43
February	60
March	113
April	37
May	26
June	19
July	20
August	26
September	27
October	35
November	27
December	30
ANNUAL PEAK	113

LICA30
 NOX_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	4.07	5.64	6.42	4.76	3.81	4.72	5.54	4.53	5.77	13.54	11.47	5.60	7.20	7.97	5.55	3.29	99.95
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.01	.00	.00	.02
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.01
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.07	5.64	6.42	4.76	3.81	4.72	5.54	4.53	5.77	13.55	11.47	5.60	7.20	8.00	5.55	3.29	

Calm : .00 %

Total # Operational Hours : 7435

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	303	420	478	354	284	351	412	337	429	1007	853	417	536	593	413	245	7432
< 110										1				1			2
< 210														1			1
>= 210																	
Totals	303	420	478	354	284	351	412	337	429	1008	853	417	536	595	413	245	

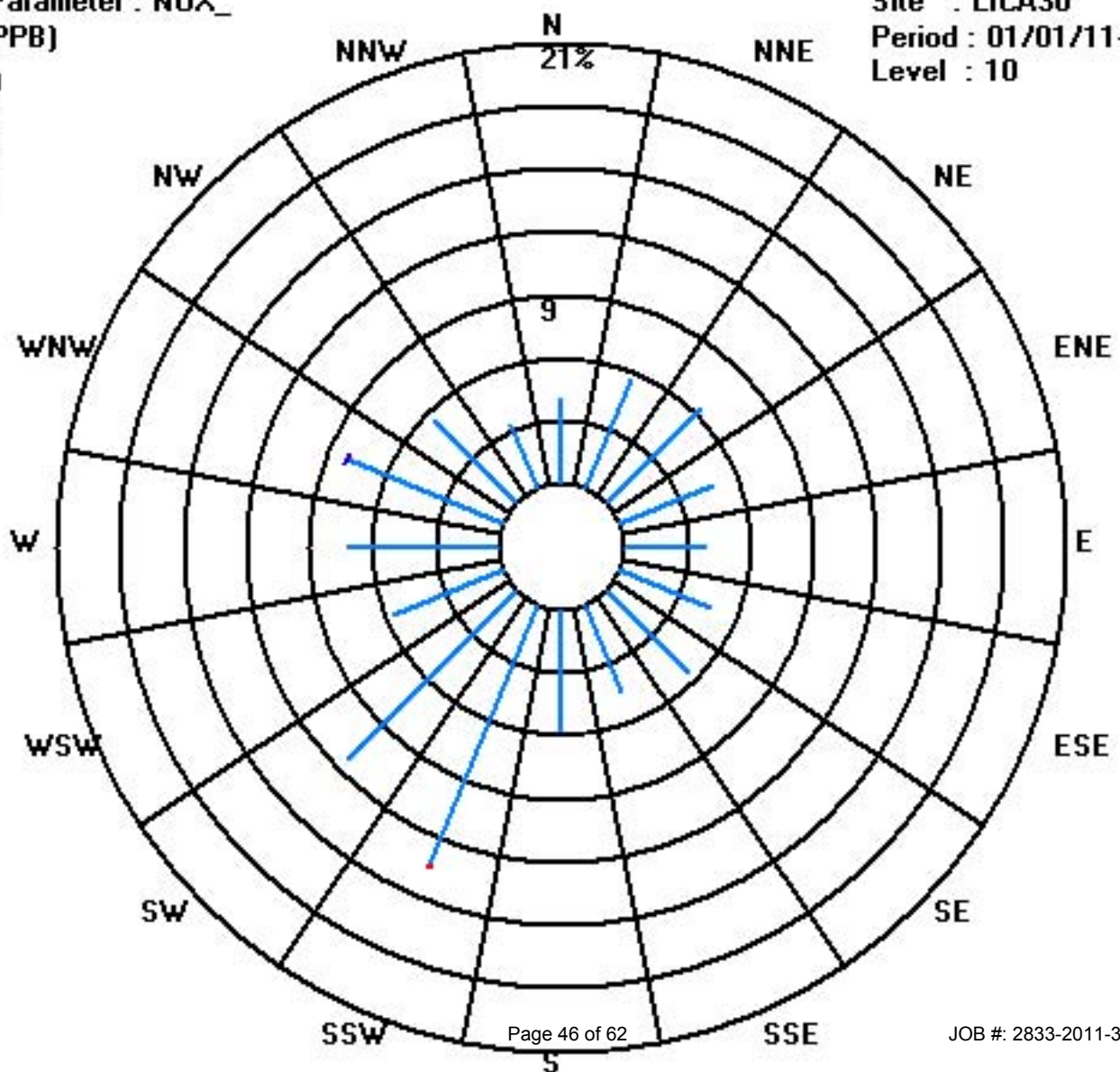
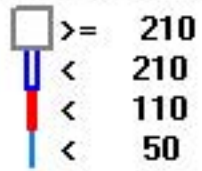
Calm : .00 %

Total # Operational Hours : 7435

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Temperature

Current Date : 04/02/12
Current Time : 07:05

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : TPX Units : DGC

	Readings	Valid Readings	Min	Max	Mean
January	744	744	-34.6	5	-15
February	672	672	-36.6	8.1	-13.4
March	744	744	-33.6	11.3	-8.7
April	720	720	-10.3	16.6	2.9
May	744	744	-3.2	27.6	12.1
June	720	720	-3.7	27.7	14.3
July	744	744	5.7	28.5	16.7
August	744	744	5.1	28.6	15.9
September	720	720	-4.8	31.9	12.7
October	744	744	-4.8	16.2	5.1
November	720	720	-24	8.9	-6.1
December	744	744	-24.1	5.9	-6.1
Yearly Total	8760	8760	-36.6	31.9	2.6

Temperature - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: MASKWA

Month	Operational Time (%)	Monthly Average (Deg.C)	Maximum Hourly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	100.0	-14.99	4.9	-34.5	1.6
February	100.0	-13.40	8.1	-36.6	2.3
March	100.0	-8.70	11.3	-33.6	4.9
April	100.0	2.85	16.6	-10.3	8.1
May	100.0	12.10	27.6	-3.2	19.0
June	100.0	14.31	27.7	-3.7	20.9
July	100.0	16.74	28.5	5.7	20.3
August	100.0	15.91	28.6	5.1	19.9
September	100.0	12.71	31.9	-4.8	20.1
October	100.0	5.12	16.2	-4.8	10.7
November	100.0	-6.14	8.9	-24.0	1.5
December	100.0	-6.05	5.9	-24.1	0.7
ANNUAL AVERAGE	-	2.54	-	-	-

Precipitation

Current Date : 04/02/12
Current Time : 07:05

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : PRECIP Units : MM

	Readings	Valid Readings	Min	Max	Mean
January	744	744	0	0.8	0
February	672	672	0	1.2	0
March	744	744	0	0.7	0
April	720	720	0	3.2	0
May	744	743	0	4.5	0
June	720	720	0	23	0.3
July	744	744	0	28.2	0.2
August	744	744	0	7.8	0.1
September	720	720	0	4.6	0
October	744	744	0	4.6	0
November	720	720	0	0.6	0
December	744	744	0	0.2	0
Yearly Total	8760	8759	0	28.2	0.1

PRECIPITATION - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: MASKWA

Month	Operational Time (%)	Monthly Averages (MM)	Maximum Hourly Average (MM)	Maximum Daily Average (MM)	Monthly Total (MM)
January	NA	NA	NA	NA	NA
February	100.0	0.02	1.2	3.8	12.5
March	100.0	0.01	0.7	1.2	6.1
April	100.0	0.04	3.2	10.7	26.8
May	99.9	0.02	4.5	8.2	12.2
June	100.0	0.29	23.0	37.3	211.9
July	100.0	0.17	28.2	29.8	127.1
August	100.0	0.06	7.8	16.0	47.0
September	100.0	0.02	4.6	11.5	15.2
October	100.0	0.04	4.6	11.3	32.7
November	100.0	0.01	0.6	3.0	5.2
December	100.0	0.00	0.2	0.5	0.6
ANNUAL AVERAGE	-	0.06	-	-	-

Relative Humidity

Current Date : 04/02/12
Current Time : 07:05

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : RH Units : %

	Readings	Valid Readings	Min	Max	Mean
January	744	744	47	89	71
February	672	672	35	89	66
March	744	744	27	88	64
April	720	720	19	91	60
May	744	744	9	91	49
June	720	720	23	93	71
July	744	744	31	93	71
August	744	744	32	93	71
September	720	720	23	93	64
October	744	744	34	93	71
November	720	720	39	91	72
December	744	744	37	87	72
Yearly Total	8760	8760	9	93	67

Relative Humidity - Monthly Averages for 2011

Plant Operator: LICA Plant Location: MASKWA

Month	Operational Time (%)	Monthly Average (%)	Maximum Hourly Average (%)	Maximum Daily Average (%)
January	100.0	70.79	89	83.8
February	100.0	65.77	89	83.5
March	100.0	63.79	88	82.4
April	100.0	60.08	91	86.0
May	100.0	48.61	91	73.3
June	100.0	70.55	93	88.8
July	100.0	71.22	93	86.2
August	100.0	71.07	93	89.0
September	100.0	64.27	93	83.9
October	100.0	70.85	93	88.9
November	100.0	71.99	91	89.2
December	100.0	71.92	87	81.8
ANNUAL AVERAGE	-	66.74	-	-

Barometric Pressure

Current Date : 04/02/12
Current Time : 07:05

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA30 Logger Id : 30 Parameter : BP Units : MB

	Readings	Valid Readings	Min	Max	Mean
January	744	744	921	966	942
February	672	672	912	962	938
March	744	744	926	957	942
April	720	720	925	952	937
May	744	744	929	962	943
June	720	720	923	950	937
July	744	744	921	951	939
August	744	744	929	951	940
September	720	720	926	958	942
October	744	744	926	951	938
November	720	720	908	956	934
December	744	744	917	958	937
Yearly Total	8760	8760	908	966	939

BAROMETRIC PRESSURE - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: MASKWA

Month	Operational Time (%)	Monthly Average (millibar)	Maximum Hourly Average (millibar)	Maximum Daily Average (millibar)
January	100.0	941	966	964.1
February	100.0	938	962	958.3
March	100.0	942	957	955.3
April	100.0	937	952	950.8
May	100.0	943	962	959.3
June	100.0	937	950	947.7
July	100.0	939	951	948.8
August	100.0	940	951	948.3
September	100.0	942	958	956.0
October	100.0	938	951	947.5
November	100.0	934	956	950.5
December	100.0	937	958	955.2
ANNUAL AVERAGE	-	939	-	-

Vector Wind Speed

Current Date : 04/02/12
Current Time : 07:04

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	744	0.1	19.7	5.2
February	672	672	0	14.5	5.9
March	744	739	0.1	15.4	6.2
April	720	720	0	19.6	5.8
May	288	275	0.3	16.2	5.6
June	360	347	0	17.2	5.8
July	744	744	0.1	15.3	4.8
August	744	744	0.1	14	4
September	720	718	0	14.6	4.5
October	744	744	0.3	13.9	5.3
November	696	664	0	18	5.5
December	744	744	0	17.2	5.7
Yearly Total	7920	7855	0	19.7	5.3

LICA30
WSP / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	2.55	2.24	3.79	3.33	2.44	2.68	3.08	2.50	3.70	7.95	9.39	4.93	4.71	2.95	3.16	2.34	61.82
< 12.0	1.41	2.59	2.12	1.28	1.32	1.87	2.36	1.93	1.79	5.27	2.25	.61	2.35	4.22	2.15	.87	34.46
< 20.0	.07	.89	.49	.01	.08	.14	.10	.02	.15	.34	.01	.00	.10	.87	.19	.05	3.56
< 29.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.04	5.72	6.41	4.63	3.85	4.69	5.55	4.46	5.65	13.57	11.66	5.55	7.16	8.05	5.51	3.27	

Calm : .15 %

Total # Operational Hours : 7855

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 6.0	201	176	298	262	192	211	242	197	291	625	738	388	370	232	249	184	4856
< 12.0	111	204	167	101	104	147	186	152	141	414	177	48	185	332	169	69	2707
< 20.0	6	70	39	1	7	11	8	2	12	27	1		8	69	15	4	280
< 29.0																	
< 39.0																	
>= 39.0																	
Totals	318	450	504	364	303	369	436	351	444	1066	916	436	563	633	433	257	

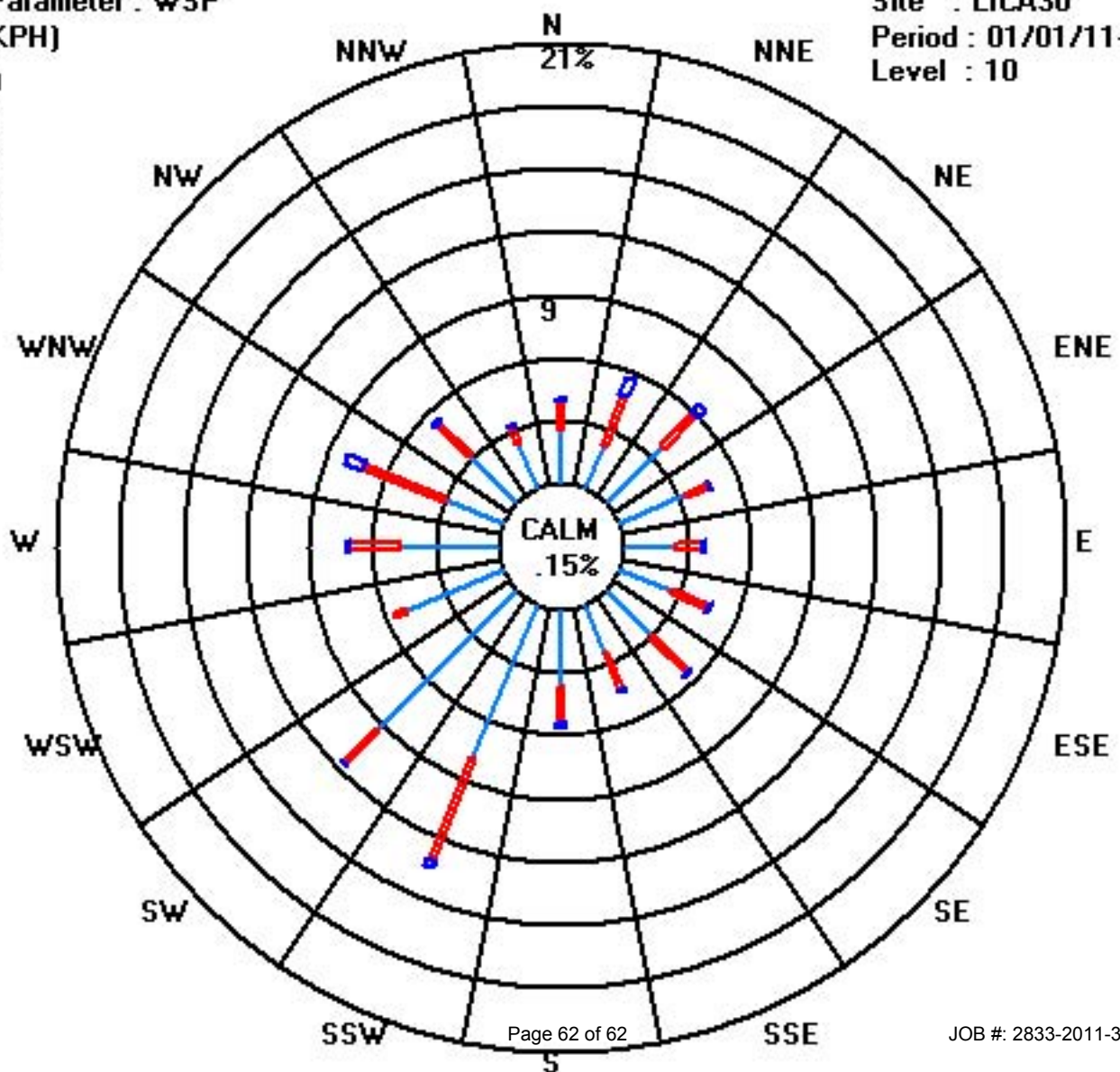
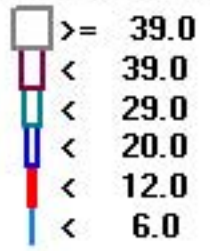
Calm : .15 %

Total # Operational Hours : 7855

Class Limits (KPH)

Period : 01/01/11-12/31/11

Level : 10



Lakeland Industry & Community Association

Portable / Devon Wellsite 13-16-62-5 W4M Monitoring Site
Ambient Annual Data Report

For
2011

Prepared By:



April 9, 2012

Lakeland Industry & Community Association Portable / Devon Wellsite 13-16-62-5 W4M Ambient Air Monitoring

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Introduction

The following Ambient Air Monitoring report was prepared for:

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

Monitoring Location: Portable / Devon Wellsite 13-16-62-5 W4M
Data Period: January 2011 to December 2011

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

Calibration Procedure

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

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

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

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

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

General Summary

Equipment Operation

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

AQM STATION – LICA – PORTABLE

Sulphur Dioxide (PPB)

- Analyzer make / model - API 100E, S/N: 467
 - ❖ The 24-hour objective was changed from 57 ppb to 48 ppb on February 15th as per Alberta Environment guidelines.
 - ❖ Following the as found points performed on March 9th, the pump was rebuilt, the UV lamp was peaked, and both lamp cal and factory cal were performed.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on May 23rd at 04:00.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on June 22nd at 14:00.
 - ❖ Three hour of the maximum reading were invalidated due to power failures in July.
 - ❖ Hourly data on August 29th at hour 20 and 21 were invalidated due to a power failure. After the power failure, a circuit breaker for the SO₂ pump was tripped. Reset the circuit breaker and then ran daily calibration on August 30th. The zero air scrubber material was changed on August 30th. A total of 10 hours of data was invalidated.
 - ❖ The maximum concentration on September 22nd at hour 12 was invalidated due to a small power outage.
 - ❖ The zero-air filter for the daily calibration system was replaced on November 11th.
 - ❖ The electrical power for the monitoring station was cut on December 8th. The station will be relocated to a new location in early year of 2012. No multi-point calibration was performed in December.

General Summary

AQM STATION – LICA – PORTABLE

Hydrogen Sulphide (PPB)

- Analyzer make / model - API 101E, S/N: 509
 - ❖ The scrubber material was replaced and the pump on the analyzer was rebuilt following the as found points on January 12th.
 - ❖ Following the as found points performed on March 9th, a lamp cal and a factory cal were performed, and the slope and offset were adjusted.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on May 23rd at 04:00.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on June 22nd at 14:00.
 - ❖ Three hour of the maximum reading were invalidated due to power failures in July.
 - ❖ The pump was replaced following the as found points check on August 25th.
 - ❖ Hourly data on August 29th at hour 20 and 21 were invalidated due to a power failure.
 - ❖ The analyzer spanned low on September 3rd. It was found that the exhaust tubing connecting the pump had a leak. The issue was fixed on September 3rd. Data was invalidated back to the last valid daily calibration, which was September 2nd. A total of 26 hours of data was invalidated.
 - ❖ The zero air scrubber material for the daily calibration system was replaced on September 19th.
 - ❖ The maximum concentration on September 22nd at hour 12 was invalidated due to a small power outage.
 - ❖ The zero-air filter for the daily calibration system was replaced on November 11th.
 - ❖ The electrical power for the monitoring station was cut on December 8th. The station will be relocated to a new location in early year of 2012. No multi-point calibration was performed in December.

General Summary

AQM STATION – LICA – PORTABLE

Nitrogen Dioxide (PPB)

- Analyzer make / model - API 200E, S/N: 593
 - ❖ Following the as found points performed on March 9th, a new sample pump was installed; the old pump was rebuilt for spare. A factory cal was performed and the slope and the offset were adjusted as well as the inlet filter was replaced.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on May 23rd at 04:00.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on June 22nd at 14:00.
 - ❖ The NO₂ guideline was changed on June 15th: the objective for 1-Hour average concentration was changed from 212 ppb to 159 ppb, the objective for 24-Hour average concentration was removed, and the concentration of 24 ppb for the annual average was added by AE.
 - ❖ Three hour of the maximum reading were invalidated due to power failures in July.
 - ❖ Hourly data on August 29th at hour 20 and 21 were invalidated due to a power failure.
 - ❖ The flow control orifice, sintered filter and O-rings in the sample flow orifice holder were replaced following the as found points on September 26th. A factory calibration was also performed to normalize the detector.
 - ❖ The maximum concentration on September 22nd at hour 12 was invalidated due to a small power outage.
 - ❖ The electrical power for the monitoring station was cut on December 8th. The station will be relocated to a new location in early year of 2012. No multi-point calibration was performed in December.

General Summary

AQM STATION – LICA – PORTABLE

Ozone (PPB)

- Analyzer make / model - API 700, S/N: 446 and Thermo 49i, S/N: 1002240372
 - ❖ The pump on the zero/span system started failing on January 3rd. The pump was replaced following the as points on January 8th.
 - ❖ The gauge on the internal regulator was replaced on January 11th. The post-repair calibration was performed on January 12th.
 - ❖ The analyzer read 4 ppb since 9:00am on February 9th. It was found that the analog output from the analyzer was stuck. Performed troubleshooting by cycling the power of the analyzer on February 10th. Data was invalidated back to the last valid daily calibration, which was February 9th. 28 hours of data between February 9th and 10th were invalidated.
 - ❖ The analyzer spanned high on April 11th. It was noticed that the zero/span pump was failed. The pump was replaced on April 11th, and a post-repair calibration was performed on April 13th.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on May 23rd at 04:00.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on June 22nd at 14:00.
 - ❖ Three hour of the maximum reading were invalidated due to power failures in July.
 - ❖ Hourly data on August 29th at hour 20 and 21 were invalidated due to a power failure.
 - ❖ It was noticed that the ozone exhaust pump was shorted on August 30th. As a result, the pump was replaced on August 30th. A total of 10 hours of data was invalidated.
 - ❖ The maximum concentration on September 22nd at hour 12 was invalidated due to a small power outage.
 - ❖ A new exhaust pump was installed following the as found point check on November 11th.
 - ❖ It was noticed that the daily span result went above the +10% of limited range on November 18th, likely due to faulty span pump. The span pump was rebuilt following the as found point check on November 19th.
 - ❖ Hourly maximum data on November 30th at hour 20 was invalidated as less than 100% of the data was collected during that hour; reason unknown.
 - ❖ The electrical power for the monitoring station was cut on December 8th. The station will be relocated to a new location in early year of 2012. No multi-point calibration was performed in December.

General Summary

AQM STATION – LICA – PORTABLE

Particulate Matter 2.5 (ug/m³)

- Analyzer make / model – TEOM1400A, S/N: 140AB2207400101 replaced to TEOM 1405F , S/N: 1405A207691003
 - ❖ 68 hours of data were invalidated as they were below -3.0 ug/m^3 in January.
 - ❖ 54 hours of data were invalidated as they were below -3.0 ug/m^3 in February.
 - ❖ 36 hours of data were invalidated as they were below -3.0 ug/m^3 in March.
 - ❖ 26 hours of data were invalidated as they were below -3.0 ug/m^3 in April.
 - ❖ The Teom flow was changed from “Standard” to “Actual” as per an AE requirement on April 4th.
 - ❖ 12 hours of data were invalidated as they were below -3.0 ug/m^3 in May.
 - ❖ 8 hours of data were invalidated as they were below -3.0 ug/m^3 in June.
 - ❖ Two 24-Hour average contraventions were recorded this month; reading of 34.3 ug/m^3 on June 3rd, Ref # 248008, and reading of 43.5 ug/m^3 on June 7th, Ref# 248167.
 - ❖ 12 hours of data were invalidated as they were below -3.0 ug/m^3 in July.
 - ❖ 10 hours of data were invalidated as they were below -3.0 ug/m^3 in August.
 - ❖ Hourly data on August 29th at hour 20 and 21 were invalidated due to a power failure.
 - ❖ 9 hours of data were invalidated as they were below -3.0 ug/m^3 in September.
 - ❖ The maximum concentration on September 22nd at hour 12 was invalidated due to a small power outage.
 - ❖ 30 hours of data were invalidated as they were below -3.0 ug/m^3 in October.
 - ❖ The flow audit was failed on November 11th. It was noticed that the V-ring seal for the mass transducer was damaged. Performed the troubleshooting on November 15th. Since the flow check failed during the first audit, data between the last flow audit, which was October 18th, and November 15th may not present the cutoff of 2.5 ug/m^3 of particulate matter.
 - ❖ 47 hours of data were invalidated as they were below -3.0 ug/m^3 in November.
 - ❖ 24 hours of data were invalidated as they were below -3.0 ug/m^3 in December.
 - ❖ The electrical power for the monitoring station was cut on December 8th for the trailer relocation. No monthly audit was performed in December.

General Summary

AQM STATION – LICA – PORTABLE

THC (PPM)

- Analyzer make / model – TECO 51C, S/N: 04366-09739
 - ❖ Following the as found points performed on March 9th, the H2 gas cylinder was replaced and the gas pressures were optimized.
 - ❖ The inside pump was rebuilt following the as found point on May 11th.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on May 23rd at 04:00.
 - ❖ Three hours of THC maximum reading were recorded as 54.1 ppm in May, which were above the full scale. The actual concentrations for these three hours may be higher than they were recorded.
 - ❖ One hour of the maximum reading was invalidated due to a small power outage on June 22nd at 14:00.
 - ❖ Two hours of THC maximum reading were recorded as 54.1 ppm in June, which were above the full scale. The actual concentrations for these three hours could be higher than they were recorded.
 - ❖ Three hour of the maximum reading were invalidated due to power failures in July.
 - ❖ Hourly data on August 29th at hour 20 and 21 were invalidated due to a power failure.
 - ❖ One hour of the maximum reading was recorded above the full scale in August. It is likely the actual ambient concentration was greater than the reading we recorded.
 - ❖ The maximum concentration recorded on September 5th at hour 2 went above the full scale. The real concentration may be higher than what we recorded.
 - ❖ The maximum concentration on September 22nd at hour 12 was invalidated due to a small power outage.
 - ❖ Maximum concentration recorded on October 8th at hour 18 went above the full scale. The actual concentration for that hour is likely higher than the recorded value.
 - ❖ The electrical power for the monitoring station was cut on December 8th. The station will be relocated to a new location in early year of 2012. No multi-point calibration was performed in December.

General Summary

AQM STATION – LICA – PORTABLE

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

- System make / model – RM Young 5103VK, S/N: 41334 and S/N: 43708
 - ❖ One hour of the WS maximum reading was invalidated due to a small power outage on May 23rd at 04:00.
 - ❖ One hour of the maximum wind speed reading was invalidated due to a small power outage on June 22nd at 14:00.
 - ❖ Data between 17:00 and 19:00 on July 3rd had flags of “Overrange” and “Invalid”, but no flag attached on the maximum reading during the same period of time. After reviewing minute data, no issue was noticed. It is likely due to faulty flags. Removed the flags and considered data as valid readings.
 - ❖ Hourly data on August 29th at hour 20 and 21 were invalidated due to a power failure.
 - ❖ The maximum WS reading on September 22nd at hour 12 was invalidated due to a small power outage.
 - ❖ A removal calibration was performed on November 24th for the 2-Year audit/calibration, and a replacement wind system was installed. During the wind system removal calibration, we discovered that the configuration for the wind speed had been altered as far back to December 2010 with an incorrect maximum 180kph, instead of 200kph. As indicated by the calibration, 10% error in the wind speed was noticed. The correct wind speed range was input following the removal calibration.
 - ❖ The electrical power for the monitoring station was cut on December 8th for the trailer relocation.

Datalogger

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

The ESC 8832 is connected to a modem with DSL for continuous connection with the base computer. No issue was recorded this year.

Trailer

- ❖ The H2 sensor calibration was performed on May 25th; the sensor responded at 705ppm while it was targeted at 732 ppm. The sensor than was adjusted.
- ❖ The electrical power for the monitoring station was cut on December 8th for the trailer relocation. It was reported to AE on January 9th, 2012, reference number is 254904.

Continuous Monitoring

Annual Summaries Graphs & Wind Roses

Sulphur Dioxide

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : SO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	707	0	5	1
February	672	639	0	6	0
March	744	701	0	7	0
April	720	685	0	3	0
May	744	707	0	1	0
June	720	684	0	4	0
July	744	706	0	1	0
August	744	692	0	2	0
September	720	685	0	2	0
October	744	708	0	3	0
November	720	683	0	3	0
December	192	165	0	1	0
Yearly Total	8208	7762	0	7	0

SO₂ Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: PORTABLE

Month	Valid Readings* Hours	Operational Time (%)	% Readings in Concentration Range (ppm SO ₂)						24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	SO ₂ ppm Monthly Average
			≤ 0.02 ppm	0.02 < C ≤ 0.06 ppm	0.06 < C ≤ 0.11 ppm	0.11 < C ≤ 0.17 ppm	0.17 < C ≤ 0.34 ppm	> 0.34 ppm			
January	707	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
February	639	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
March	701	99.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
April	685	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
May	707	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
June	684	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
July	706	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
August	692	98.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
September	685	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
October	708	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
November	683	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
December	165	23.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
Annual Average										0.00	

C - Concentration

* Valid readings - does not include calibration hours and downtime hours

SO₂ Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: PORTABLE

Month	SO2 ppb Peak Reading
January	5
February	6
March	7
April	3
May	1
June	4
July	1
August	2
September	2
October	3
November	3
December	1
ANNUAL PEAK	7

LICA33
SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
Site Name : LICA33
Parameter : SO2_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	3.23	3.69	4.56	5.24	9.70	5.45	6.36	5.63	4.22	3.53	10.41	9.36	10.10	10.65	4.34	3.47	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.23	3.69	4.56	5.24	9.70	5.45	6.36	5.63	4.22	3.53	10.41	9.36	10.10	10.65	4.34	3.47	

Calm : .00 %

Total # Operational Hours : 7761

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	251	287	354	407	753	423	494	437	328	274	808	727	784	827	337	270	7761
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	251	287	354	407	753	423	494	437	328	274	808	727	784	827	337	270	

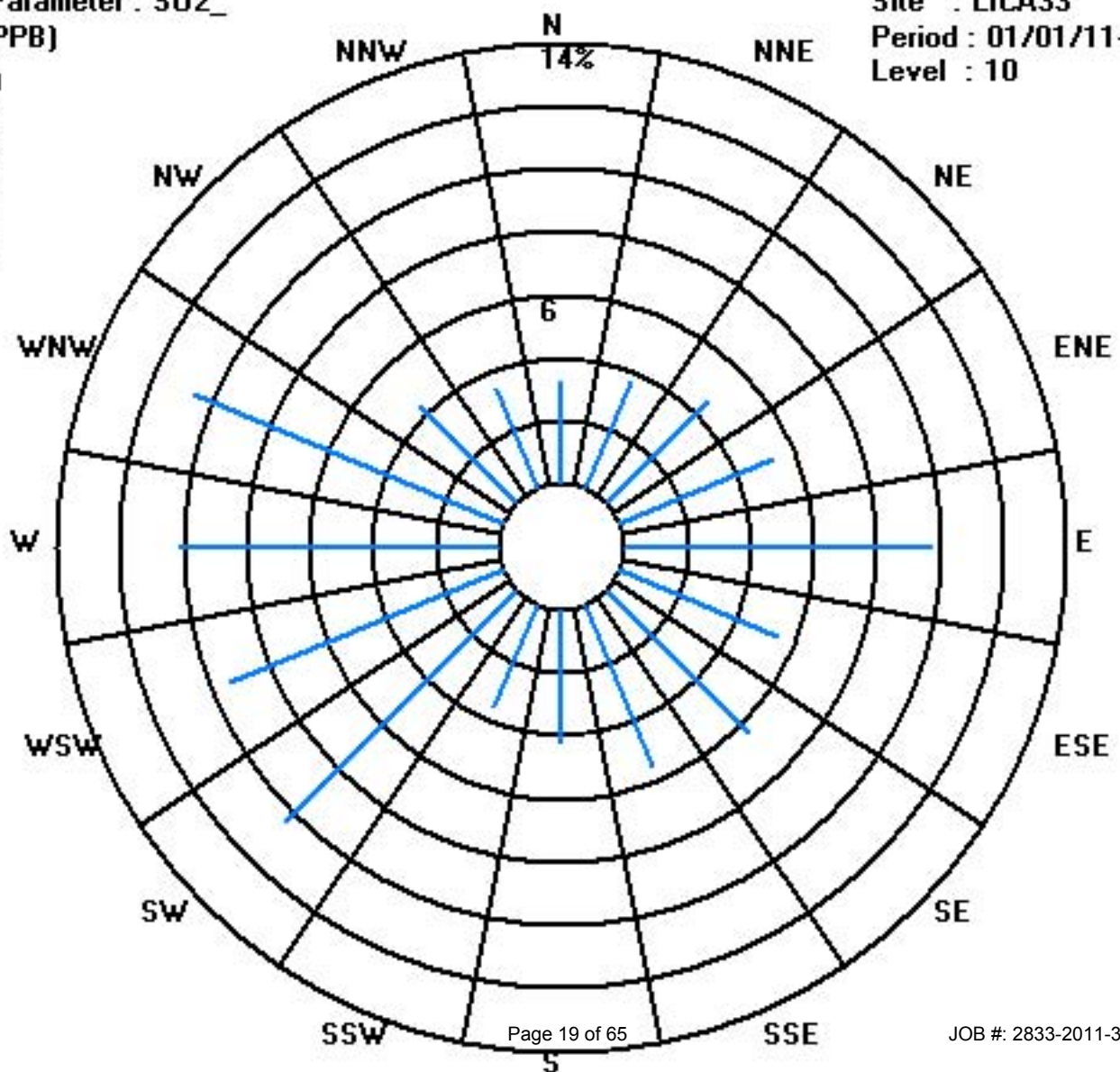
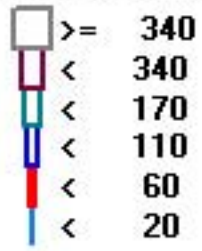
Calm : .00 %

Total # Operational Hours : 7761

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Hydrogen Sulphide

Current Date : 04/04/12
Current Time : 09:36

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : H2S_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	702	0	2	1
February	672	638	0	5	0
March	744	703	0	2	0
April	720	687	0	1	0
May	744	706	0	3	0
June	720	684	0	3	0
July	744	706	0	8	0
August	744	704	0	7	0
September	720	657	0	2	0
October	744	707	0	2	0
November	720	684	0	1	0
December	192	165	0	1	0
Yearly Total	8208	7743	0	8	0

H₂S Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: PORTABLE

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppb H ₂ S)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	H ₂ S ppb Monthly Average
			0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb			
January	702	99.6	100.0%	0.0%	0.0%	0.0%	0	0	0.17
February	638	99.9	99.8%	0.2%	0.0%	0.0%	0	0	0.10
March	703	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.14
April	687	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.04
May	706	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.04
June	684	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.06
July	706	99.9	99.4%	0.6%	0.0%	0.0%	0	0	0.17
August	704	99.5	99.6%	0.4%	0.0%	0.0%	0	0	0.12
September	657	96.1	100.0%	0.0%	0.0%	0.0%	0	0	0.10
October	707	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.06
November	684	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.02
December	165	23.3	100.0%	0.0%	0.0%	0.0%	0	0	0.17
							Annual Average		0.10

* Valid readings - does not include calibration hours and downtime hours.

H2S Peak Reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Plant Location: _____ PORTABLE _____

Month	H2S ppb Peak Reading
January	1
February	5
March	2
April	1
May	3
June	3
July	8
August	7
September	2
October	2
November	1
December	1
ANNUAL PEAK	8

LICA33
H2S_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
Site Name : LICA33
Parameter : H2S_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	3.24	3.69	4.54	5.33	9.62	5.41	6.35	5.64	4.22	3.52	10.42	9.39	10.02	10.63	4.32	3.38	99.78
< 10	.00	.00	.01	.00	.01	.05	.06	.02	.01	.01	.00	.00	.01	.00	.01	.00	.21
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.24	3.69	4.55	5.33	9.63	5.46	6.41	5.67	4.23	3.53	10.42	9.39	10.03	10.63	4.33	3.38	

Calm : .00 %

Total # Operational Hours : 7742

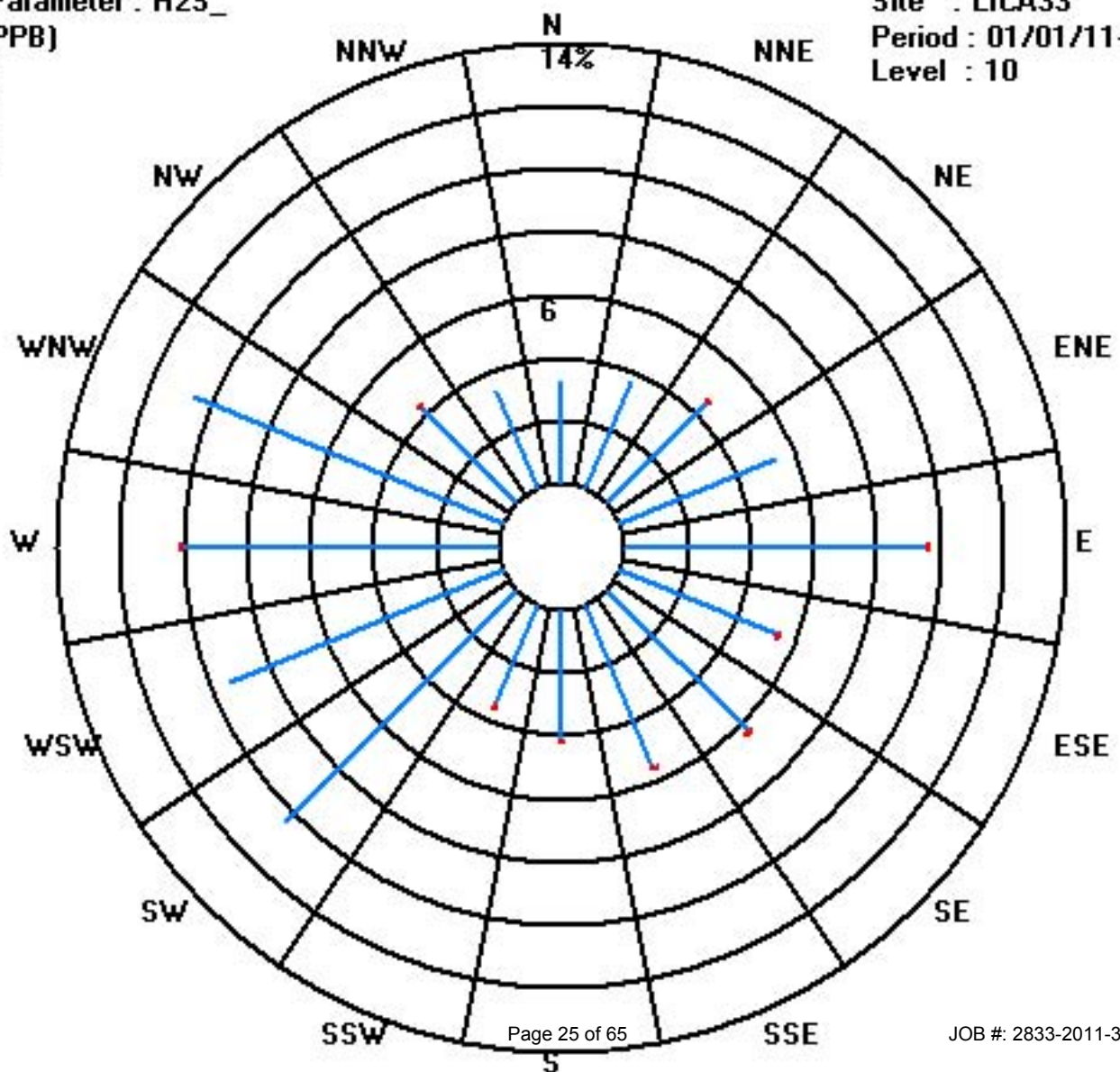
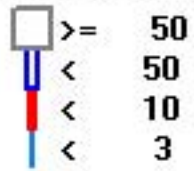
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	251	286	352	413	745	419	492	437	327	273	807	727	776	823	335	262	7725
< 10			1		1	4	5	2	1	1			1		1		17
< 50																	
>= 50																	
Totals	251	286	353	413	746	423	497	439	328	274	807	727	777	823	336	262	

Calm : .00 %

Total # Operational Hours : 7742

Class Limits (PPB)



Particulate Matter 2.5

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : PM2 Units : UG/M3

	Readings	Valid Readings	Min	Max	Mean
January	744	674	0	33.2	4.5
February	672	616	0	32.2	5.6
March	744	706	0	42.7	7.9
April	720	693	0	24.3	4.8
May	744	729	0	41.1	6.6
June	720	710	0	262.7	11
July	744	731	0	21.3	3.4
August	744	730	0	11.8	4
September	720	708	0	18.3	4.6
October	744	713	0	18.8	3.4
November	720	654	0	28.8	6.6
December	192	149	0	20.8	4.7
Yearly Total	8208	7813	0	262.7	5.7

PM 2.5 Monthly Averages and Frequency Distributions of Daily Average Readings - 2011

Plant Operator: LICA

Plant Location: PORTABLE

Month	Valid Readings* Hours	Operational Time (%)	% Readings in Concentration Range (ug/m ³)						Total Daily Readings > 30 ug/m ³	PM2.5 ug/m ³ Monthly Average
			≤ 30 ug/m ³	30 < C ≤ 60 ug/m ³	60 < C ≤ 80 ug/m ³	80 < C ≤ 120 ug/m ³	120 < C ≤ 240 ug/m ³	> 240 ug/m ³		
January	674	90.9	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0	4.51
February	616	92.0	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0	5.63
March	706	95.2	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0	7.94
April	693	96.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.83
May	729	98.4	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0	6.62
June	709	98.9	94.6%	3.2%	0.7%	0.7%	0.6%	0.1%	2	11.04
July	731	98.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	3.35
August	730	98.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.00
September	708	98.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.62
October	691	96.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	3.39
November	630	91.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	6.60
December	149	20.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.71
									Annual Average	5.60

C - Concentration

* Valid readings - does not include calibration hours and downtime hours

PM 2.5 Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: PORTABLE

Month	PM 2.5 (ug/m3) Peak Reading
January	33
February	32
March	43
April	24
May	41
June	263
July	21
August	12
September	18
October	19
November	29
December	21
ANNUAL PEAK	263

LICA33
PM2 / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
Site Name : LICA33
Parameter : PM2
Units : UG/M3

Wind Parameter : WDR
Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30.0	3.03	3.48	4.42	5.27	9.70	5.46	6.38	5.77	4.31	3.57	10.63	9.39	9.98	10.35	4.21	3.32	99.35
< 60.0	.03	.11	.01	.00	.01	.01	.02	.01	.05	.03	.02	.00	.01	.01	.02	.05	.44
< 80.0	.01	.01	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.06
< 120.0	.00	.01	.02	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.06
< 240.0	.01	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.05
>= 240.0	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
Totals	3.11	3.62	4.49	5.31	9.71	5.47	6.41	5.78	4.36	3.61	10.66	9.39	9.99	10.36	4.23	3.41	

Calm : .00 %

Total # Operational Hours : 7811

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30.0	237	272	346	412	758	427	499	451	337	279	831	734	780	809	329	260	7761
< 60.0	3	9	1		1	1	2	1	4	3	2		1	1	2	4	35
< 80.0	1	1	2													1	5
< 120.0		1	2	1												1	5
< 240.0	1			2												1	4
>= 240.0	1																1
Totals	243	283	351	415	759	428	501	452	341	282	833	734	781	810	331	267	

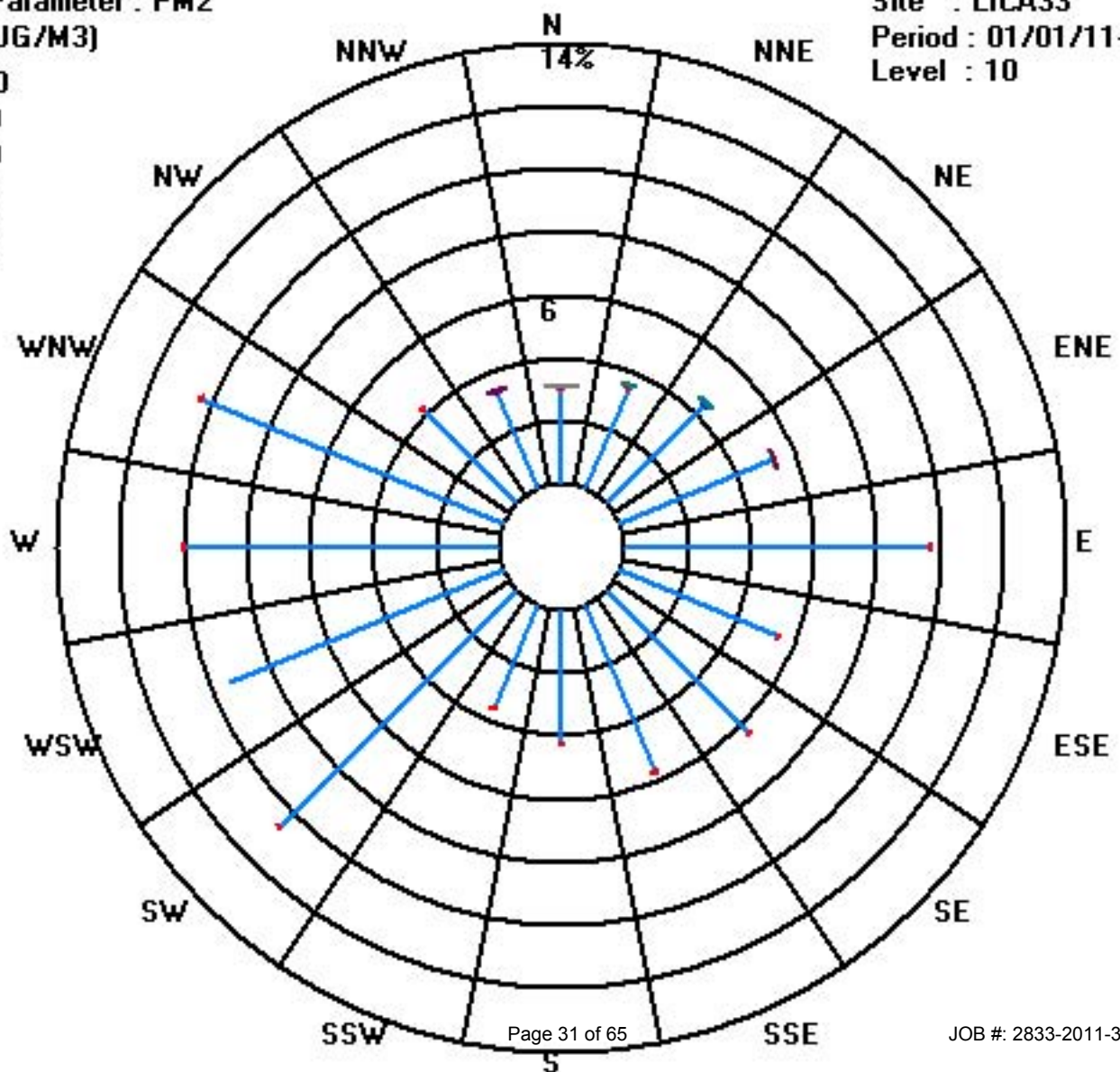
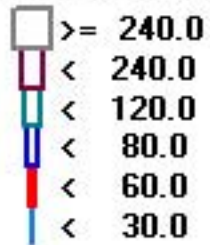
Calm : .00 %

Total # Operational Hours : 7811

Class Limits (UG/M3)

Period : 01/01/11-12/31/11

Level : 10



Nitrogen Dioxide

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : NO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	29	6
February	672	634	0	32	5
March	744	699	0	30	6
April	720	683	0	18	3
May	744	705	0	20	3
June	720	681	0	19	3
July	744	703	0	9	2
August	744	705	0	11	2
September	720	670	0	20	3
October	744	705	0	17	4
November	720	682	0	16	4
December	192	165	0	17	3
Yearly Total	8208	7736	0	32	4

NO₂ Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: _____ PORTABLE _____

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO ₂)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO ₂ ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm			
January	704	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.01
February	634	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.01
March	699	99.6	100.0%	0.0%	0.0%	0.0%	0	0	0.01
April	683	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.00
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
June	681	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
July	703	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
August	705	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.00
September	670	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.00
October	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
November	682	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.00
December	165	23.3	100.0%	0.0%	0.0%	0.0%	0	0	0.00
							Annual Average		0.00

* Valid readings - does not include calibration hours and downtime hours.

NO₂ Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: PORTABLE

Month	NO2 ppb Peak Reading
January	29
February	32
March	30
April	18
May	20
June	19
July	9
August	11
September	20
October	17
November	16
December	17
ANNUAL PEAK	32

LICA33
 NO2_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
 Site Name : LICA33
 Parameter : NO2_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	3.25	3.68	4.56	5.31	9.60	5.45	6.43	5.67	4.18	3.51	10.36	9.39	10.08	10.66	4.35	3.42	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.25	3.68	4.56	5.31	9.60	5.45	6.43	5.67	4.18	3.51	10.36	9.39	10.08	10.66	4.35	3.42	

Calm : .00 %

Total # Operational Hours : 7735

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	252	285	353	411	743	422	498	439	324	272	802	727	780	825	337	265	7735
< 110																	
< 210																	
>= 210																	
Totals	252	285	353	411	743	422	498	439	324	272	802	727	780	825	337	265	

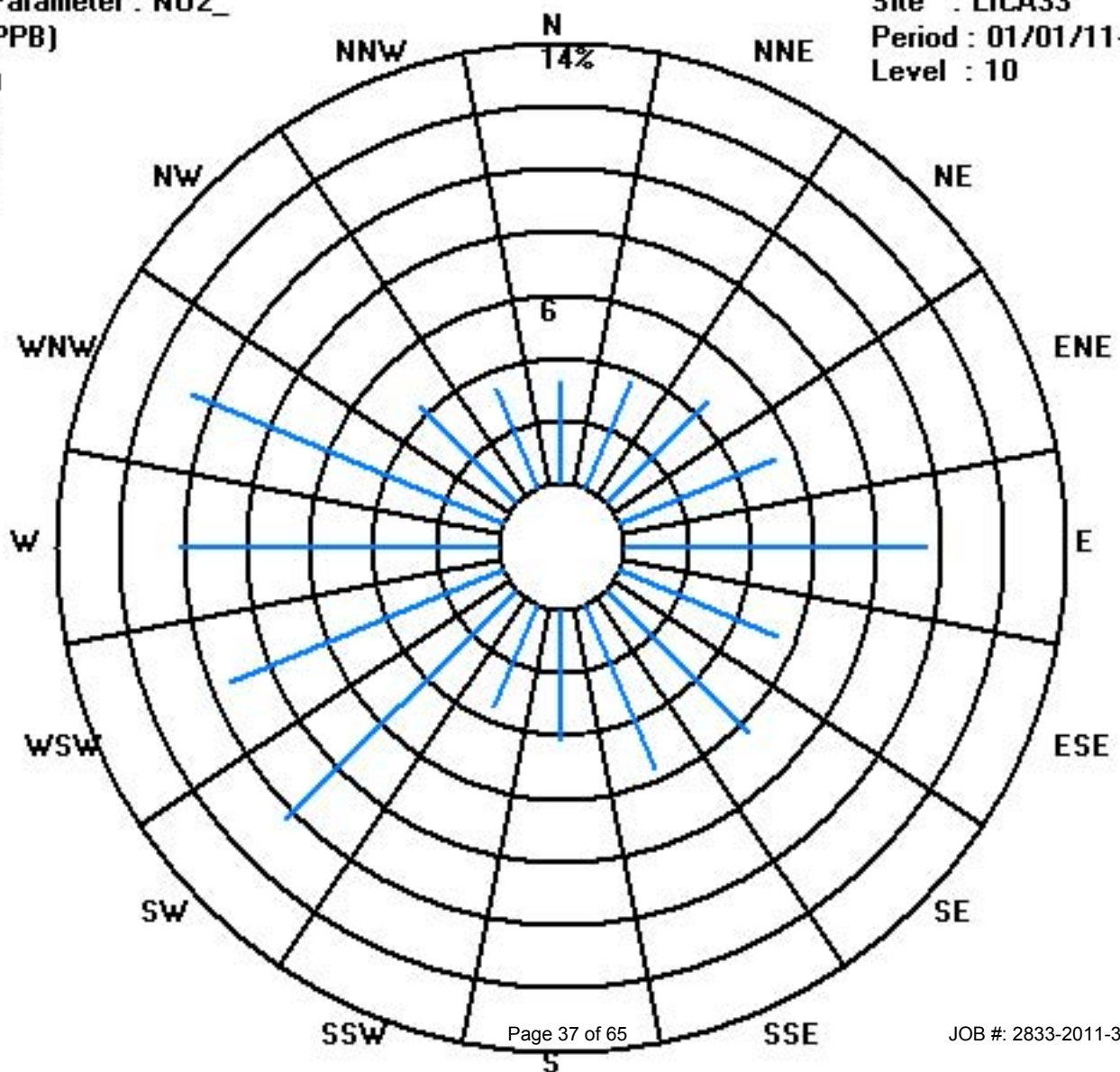
Calm : .00 %

Total # Operational Hours : 7735

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Nitric Oxide

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : NO_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	26	1
February	672	634	0	25	1
March	744	699	0	64	1
April	720	683	0	6	0
May	744	705	0	9	0
June	720	681	0	14	1
July	744	703	0	12	1
August	744	705	0	15	1
September	720	670	0	49	1
October	744	705	0	24	1
November	720	682	0	49	1
December	192	165	0	20	1
Yearly Total	8208	7736	0	64	1

NO Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: _____ PORTABLE _____

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO)				NO ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	704	99.9	100.0%	0.0%	0.0%	0.0%	0.00
February	634	99.9	100.0%	0.0%	0.0%	0.0%	0.00
March	699	99.6	99.9%	0.1%	0.0%	0.0%	0.00
April	683	100.0	100.0%	0.0%	0.0%	0.0%	0.00
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
June	681	99.9	100.0%	0.0%	0.0%	0.0%	0.00
July	703	99.9	100.0%	0.0%	0.0%	0.0%	0.00
August	705	99.7	100.0%	0.0%	0.0%	0.0%	0.00
September	670	99.7	100.0%	0.0%	0.0%	0.0%	0.00
October	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
November	682	100.0	100.0%	0.0%	0.0%	0.0%	0.00
December	165	23.3	100.0%	0.0%	0.0%	0.0%	0.00
						Annual Average	0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO Peak reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Station: _____ PORTABLE _____

Month	NO ppb Peak Reading
January	25
February	25
March	64
April	6
May	9
June	14
July	12
August	15
September	49
October	24
November	49
December	20
ANNUAL PEAK	64

LICA33
 NO_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
 Site Name : LICA33
 Parameter : NO_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	3.25	3.68	4.56	5.31	9.60	5.45	6.42	5.67	4.18	3.51	10.36	9.39	10.08	10.66	4.35	3.42	99.98
< 110	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.25	3.68	4.56	5.31	9.60	5.45	6.43	5.67	4.18	3.51	10.36	9.39	10.08	10.66	4.35	3.42	

Calm : .00 %

Total # Operational Hours : 7735

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	252	285	353	411	743	422	497	439	324	272	802	727	780	825	337	265	7734
< 110							1										1
< 210																	
>= 210																	
Totals	252	285	353	411	743	422	498	439	324	272	802	727	780	825	337	265	

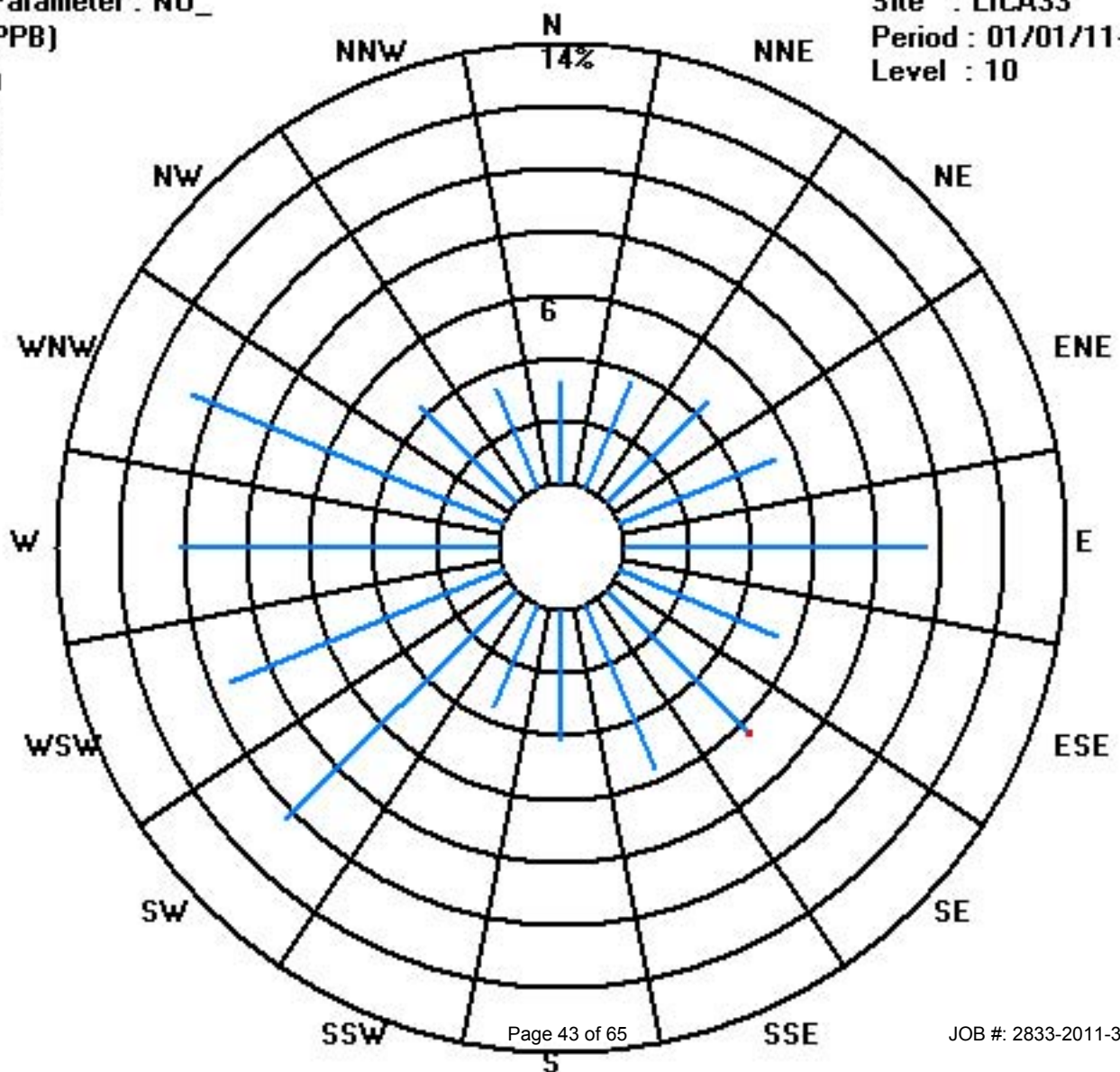
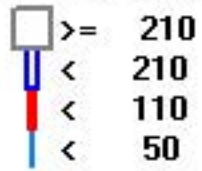
Calm : .00 %

Total # Operational Hours : 7735

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Oxides of Nitrogen

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : NOX_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	47	7
February	672	634	0	43	6
March	744	699	0	92	4
April	720	683	0	19	3
May	744	705	0	24	3
June	720	681	0	28	3
July	744	703	0	15	2
August	744	705	0	19	3
September	720	670	0	69	4
October	744	705	0	31	4
November	720	682	0	62	6
December	192	165	0	36	4
Yearly Total	8208	7736	0	92	4

NO_x Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: LICA

Station: PORTABLE

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO _x)				NO _x ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	704	99.9	100.0%	0.0%	0.0%	0.0%	0.01
February	634	99.9	100.0%	0.0%	0.0%	0.0%	0.01
March	699	99.6	99.7%	0.3%	0.0%	0.0%	0.00
April	683	100.0	100.0%	0.0%	0.0%	0.0%	0.00
May	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
June	681	99.9	100.0%	0.0%	0.0%	0.0%	0.00
July	703	99.9	100.0%	0.0%	0.0%	0.0%	0.00
August	705	99.7	100.0%	0.0%	0.0%	0.0%	0.00
September	670	99.7	99.9%	0.1%	0.0%	0.0%	0.00
October	705	99.9	100.0%	0.0%	0.0%	0.0%	0.00
November	682	100.0	99.9%	0.1%	0.0%	0.0%	0.01
December	165	23.3	100.0%	0.0%	0.0%	0.0%	0.00
Annual Average							0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO_x Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: PORTABLE

Month	NOx ppb Peak Reading
January	46
February	43
March	92
April	19
May	24
June	28
July	15
August	19
September	69
October	31
November	62
December	36
ANNUAL PEAK	92

LICA33
NOX_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
Site Name : LICA33
Parameter : NOX_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	3.25	3.68	4.56	5.31	9.60	5.45	6.39	5.67	4.18	3.51	10.36	9.39	10.08	10.65	4.35	3.42	99.94
< 110	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.01	.00	.00	.05
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.25	3.68	4.56	5.31	9.60	5.45	6.43	5.67	4.18	3.51	10.36	9.39	10.08	10.66	4.35	3.42	

Calm : .00 %

Total # Operational Hours : 7735

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	252	285	353	411	743	422	495	439	324	272	802	727	780	824	337	265	7731
< 110							3							1			4
< 210																	
>= 210																	
Totals	252	285	353	411	743	422	498	439	324	272	802	727	780	825	337	265	

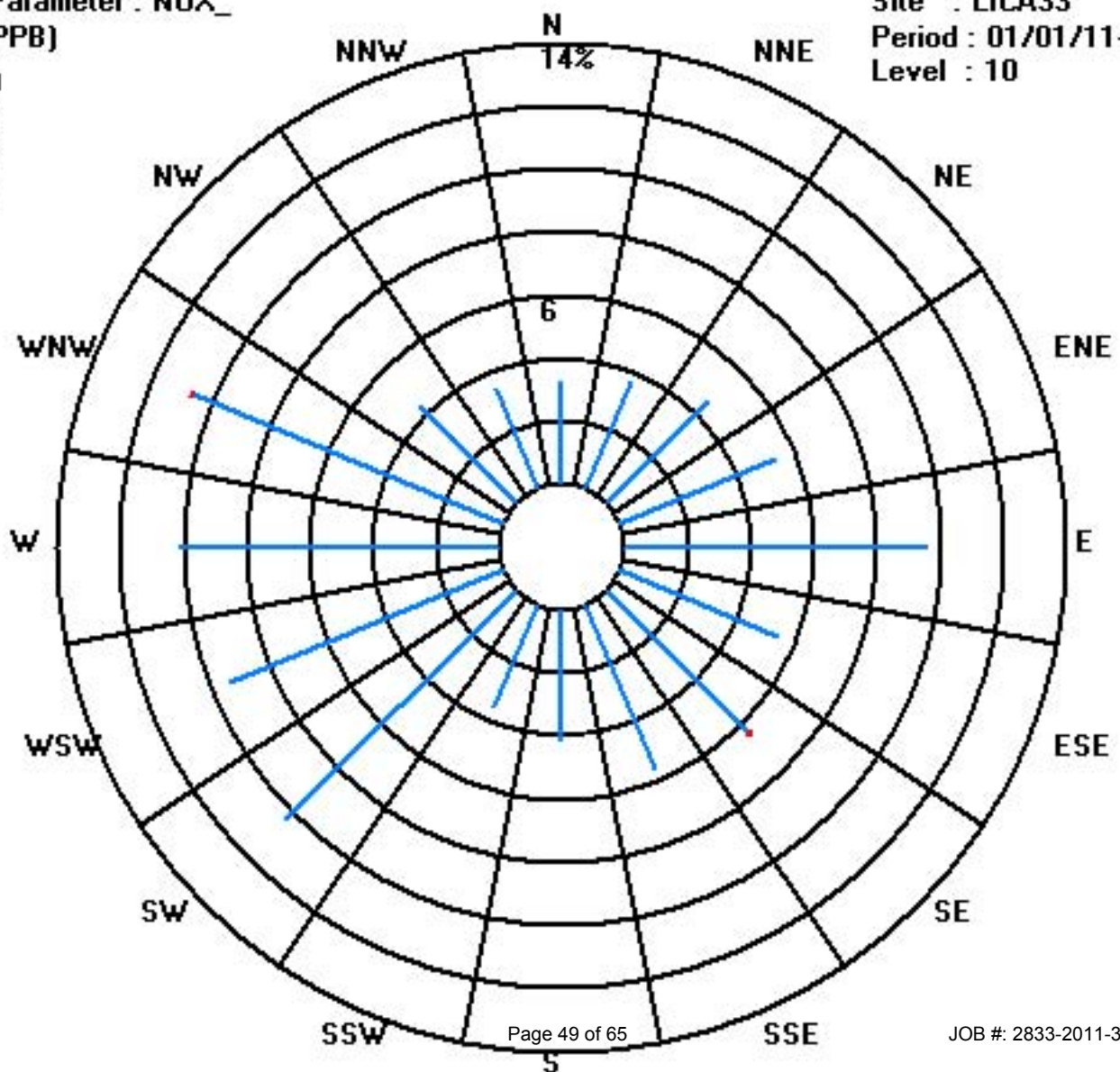
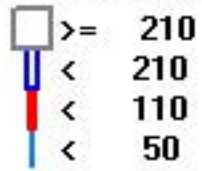
Calm : .00 %

Total # Operational Hours : 7735

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Ozone

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : O3_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	699	1	44	25
February	672	605	1	44	30
March	744	707	10	55	38
April	720	682	11	58	39
May	744	707	3	59	36
June	720	684	2	59	29
July	744	706	0	45	19
August	744	692	0	42	17
September	720	685	0	56	20
October	744	708	0	36	18
November	720	678	0	38	20
December	192	165	10	38	28
Yearly Total	8208	7718	0	59	26

O3 Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: LICA

Station: PORTABLE

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm O3)				O3 ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	699	99.7	100.0%	0.0%	0.0%	0.0%	0.02
February	605	95.4	100.0%	0.0%	0.0%	0.0%	0.03
March	707	100.0	91.2%	8.8%	0.0%	0.0%	0.04
April	682	99.9	90.8%	9.2%	0.0%	0.0%	0.04
May	707	99.9	88.7%	11.3%	0.0%	0.0%	0.04
June	684	100.0	94.9%	5.1%	0.0%	0.0%	0.03
July	706	100.0	100.0%	0.0%	0.0%	0.0%	0.02
August	692	98.1	100.0%	0.0%	0.0%	0.0%	0.02
September	685	100.0	98.2%	1.8%	0.0%	0.0%	0.02
October	708	100.0	100.0%	0.0%	0.0%	0.0%	0.02
November	678	99.7	100.0%	0.0%	0.0%	0.0%	0.02
December	165	23.3	100.0%	0.0%	0.0%	0.0%	0.03
						Annual Average	0.03

* Valid readings do not include daily and monthly calibration hours and downtime hours

O3 Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: PORTABLE

Month	O3 ppb Peak Reading
January	44
February	44
March	55
April	58
May	59
June	59
July	45
August	42
September	56
October	36
November	38
December	38
ANNUAL PEAK	59

LICA33
 O3_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
 Site Name : LICA33
 Parameter : O3_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	3.14	3.62	4.48	5.13	9.38	4.88	5.74	5.10	3.75	3.30	9.97	9.09	9.91	10.41	4.25	3.45	95.68
< 110	.09	.09	.09	.15	.31	.57	.63	.50	.44	.22	.41	.22	.18	.27	.09	.02	4.31
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.23	3.71	4.57	5.28	9.69	5.45	6.37	5.61	4.19	3.52	10.39	9.31	10.09	10.69	4.34	3.48	

Calm : .00 %

Total # Operational Hours : 7717

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	243	280	346	396	724	377	443	394	290	255	770	702	765	804	328	267	7384
< 110	7	7	7	12	24	44	49	39	34	17	32	17	14	21	7	2	333
< 210																	
>= 210																	
Totals	250	287	353	408	748	421	492	433	324	272	802	719	779	825	335	269	

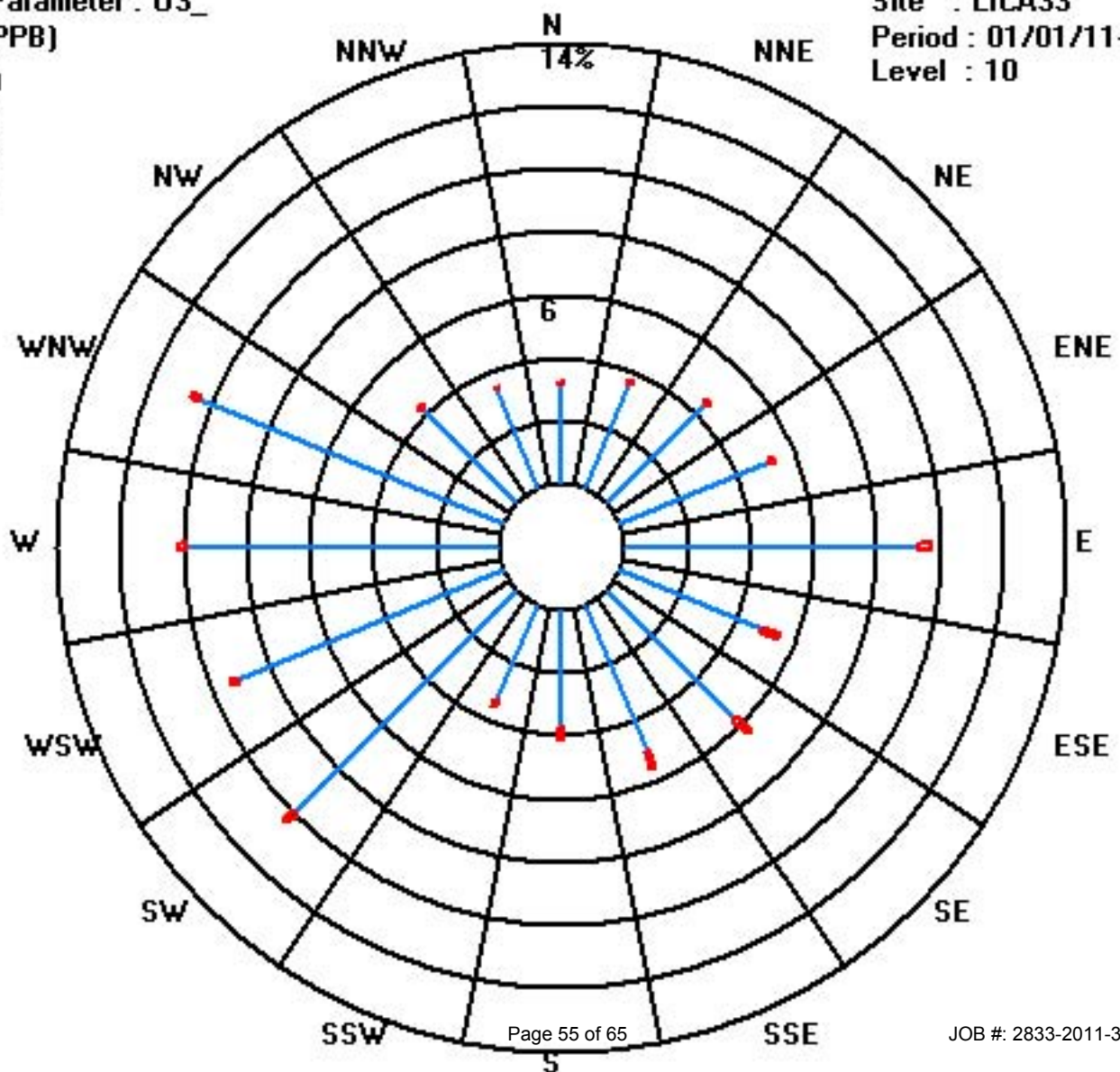
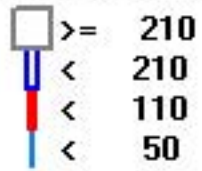
Calm : .00 %

Total # Operational Hours : 7717

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Total Hydrocarbons

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : THC Units : PPM

	Readings	Valid Readings	Min	Max	Mean
January	744	707	1.8	7.7	2.7
February	672	638	1.8	8	2.6
March	744	705	1.9	9.6	2.6
April	720	684	1.8	9.2	2.3
May	744	701	1.8	8.5	2.4
June	720	683	1.7	9.8	2.3
July	744	706	1.7	8	2.3
August	744	706	1.8	10.6	2.4
September	720	682	1.5	10.7	2.5
October	744	704	1.8	11.2	2.5
November	720	685	1.9	15.9	2.6
December	192	165	1.7	3.1	2.1
Yearly Total	8208	7766	1.5	15.9	2.5

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: PORTABLE

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm THC)				THC ppm Monthly Average
			0 to 3 ppm	4 to 10 ppm	11 to 50 ppm	>50 ppm	
January	707	99.9	80.6%	19.4%	0.0%	0.0%	2.63
February	638	99.9	83.5%	16.5%	0.0%	0.0%	2.55
March	705	99.9	80.9%	19.1%	0.0%	0.0%	2.61
April	684	100.0	92.1%	7.9%	0.0%	0.0%	2.27
May	701	99.6	88.4%	11.6%	0.0%	0.0%	2.36
June	683	99.9	88.9%	11.1%	0.0%	0.0%	2.32
July	706	99.9	89.9%	10.1%	0.0%	0.0%	2.26
August	706	99.6	85.3%	14.6%	0.1%	0.0%	2.43
September	682	99.9	84.3%	15.4%	0.3%	0.0%	2.52
October	704	99.9	87.9%	11.8%	0.3%	0.0%	2.49
November	685	100.0	84.1%	15.6%	0.3%	0.0%	2.60
December	165	23.3	98.2%	1.8%	0.0%	0.0%	2.13
						Annual Average	2.43

* Valid readings do not include daily and monthly calibration hours and downtime hours

THC Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: PORTABLE

Month	THC ppm Peak Reading
January	7.7
February	8.0
March	9.6
April	9.2
May	8.5
June	9.8
July	8.0
August	10.6
September	10.7
October	11.2
November	15.9
December	3.1
ANNUAL PEAK	15.9

LICA33
 THC / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
 Site Name : LICA33
 Parameter : THC
 Units : PPM

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	2.20	2.76	3.56	4.05	7.83	4.32	5.47	5.13	3.78	3.25	9.74	8.62	9.27	9.63	3.63	2.64	85.96
< 10.0	1.01	.91	1.01	1.24	1.79	1.10	.90	.50	.39	.27	.64	.74	.83	1.05	.72	.77	13.94
< 50.0	.02	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.01	.00	.01	.09
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.24	3.70	4.58	5.30	9.62	5.43	6.37	5.64	4.18	3.52	10.39	9.38	10.10	10.70	4.35	3.42	

Calm : .00 %

Total # Operational Hours : 7765

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	171	215	277	315	608	336	425	399	294	253	757	670	720	748	282	205	6675
< 10.0	79	71	79	97	139	86	70	39	31	21	50	58	65	82	56	60	1083
< 50.0	2	2										1		1		1	7
>= 50.0																	
Totals	252	288	356	412	747	422	495	438	325	274	807	729	785	831	338	266	

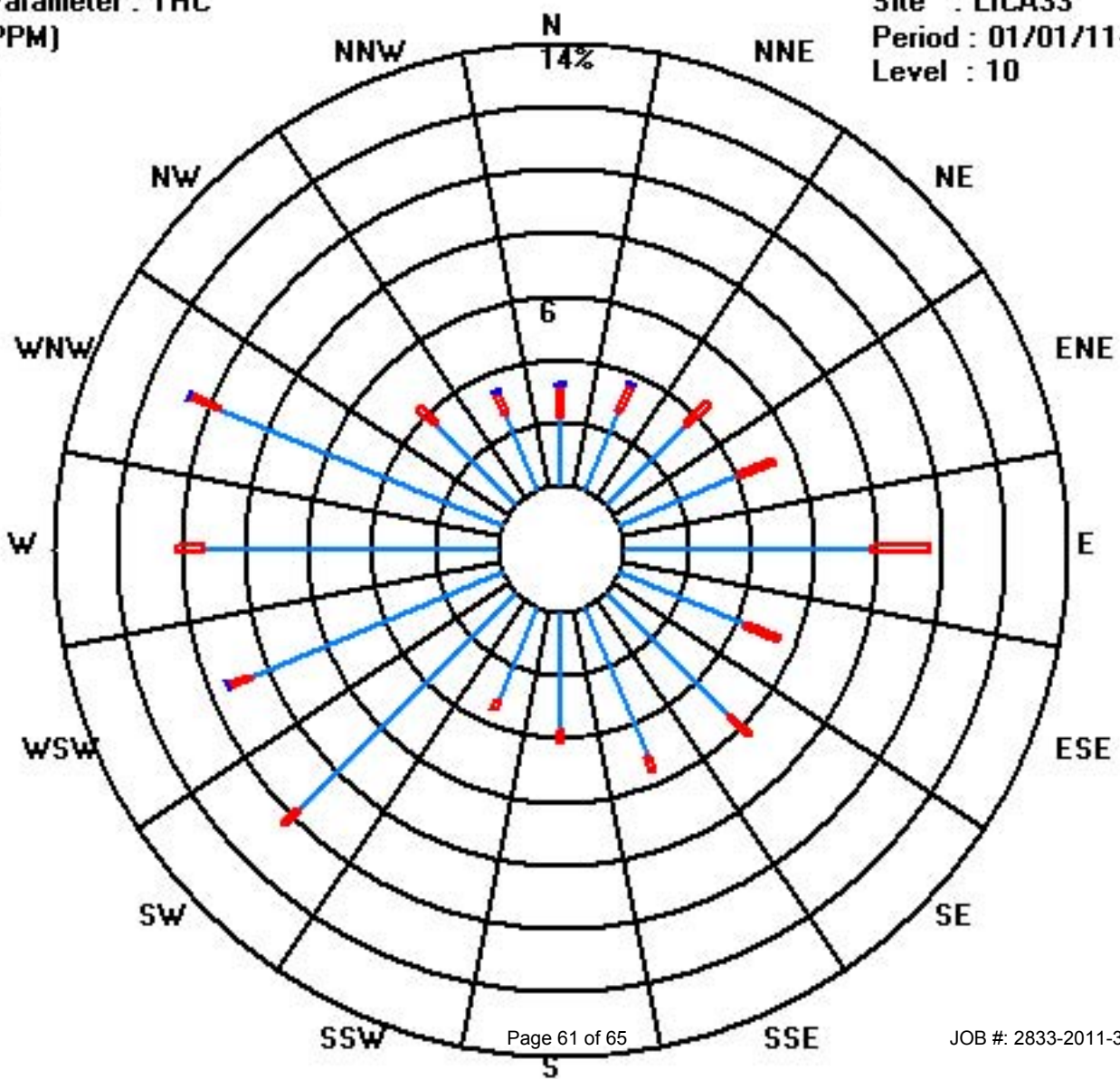
Calm : .00 %

Total # Operational Hours : 7765

Class Limits (PPM)

Period : 01/01/11-12/31/11

Level : 10



Vector Wind Speed

Current Date : 04/04/12
Current Time : 09:37

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA33 Logger Id : 33 Parameter : WSP Units : KPH

	Readings	Valid Readings	Min	Max	Mean
January	744	744	0.3	36.3	8.7
February	672	672	0.3	31.4	9.5
March	744	744	0.2	28.9	10.5
April	720	720	0.3	35.5	10.3
May	744	744	0.3	38.7	12.2
June	720	720	0.2	26.6	9.6
July	744	744	0.2	25.5	9.2
August	744	742	0.1	31.7	7.9
September	720	720	0.1	25.6	8.5
October	744	744	0.4	27.4	9.2
November	720	718	0.2	32.2	9.9
December	192	173	5.3	34.6	15.4
Yearly Total	8208	8185	0.1	38.7	9.7

LICA33
WSP / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 33
Site Name : LICA33
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	1.09	1.22	1.25	1.53	2.24	2.00	2.12	1.85	2.16	2.45	4.10	2.93	2.24	1.88	1.68	1.13	31.96
< 12.0	1.19	1.20	1.51	1.88	3.44	1.77	1.64	1.75	1.47	1.02	4.47	4.50	4.31	3.81	1.57	1.62	37.23
< 20.0	.83	1.18	1.27	1.50	3.13	1.27	1.72	1.42	.52	.04	1.82	1.83	2.95	3.29	.76	.65	24.26
< 29.0	.04	.02	.52	.34	.85	.28	.64	.51	.06	.00	.09	.07	.51	1.38	.20	.03	5.60
< 39.0	.00	.00	.01	.00	.08	.13	.18	.10	.00	.00	.00	.00	.04	.28	.07	.00	.92
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.17	3.64	4.58	5.26	9.77	5.46	6.32	5.66	4.22	3.53	10.49	9.34	10.07	10.65	4.31	3.45	

Calm : .00 %

Total # Operational Hours : 8185

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	90	100	103	126	184	164	174	152	177	201	336	240	184	154	138	93	2616
< 12.0	98	99	124	154	282	145	135	144	121	84	366	369	353	312	129	133	3048
< 20.0	68	97	104	123	257	104	141	117	43	4	149	150	242	270	63	54	1986
< 29.0	4	2	43	28	70	23	53	42	5		8	6	42	113	17	3	459
< 39.0			1		7	11	15	9					4	23	6		76
>= 39.0																	
Totals	260	298	375	431	800	447	518	464	346	289	859	765	825	872	353	283	

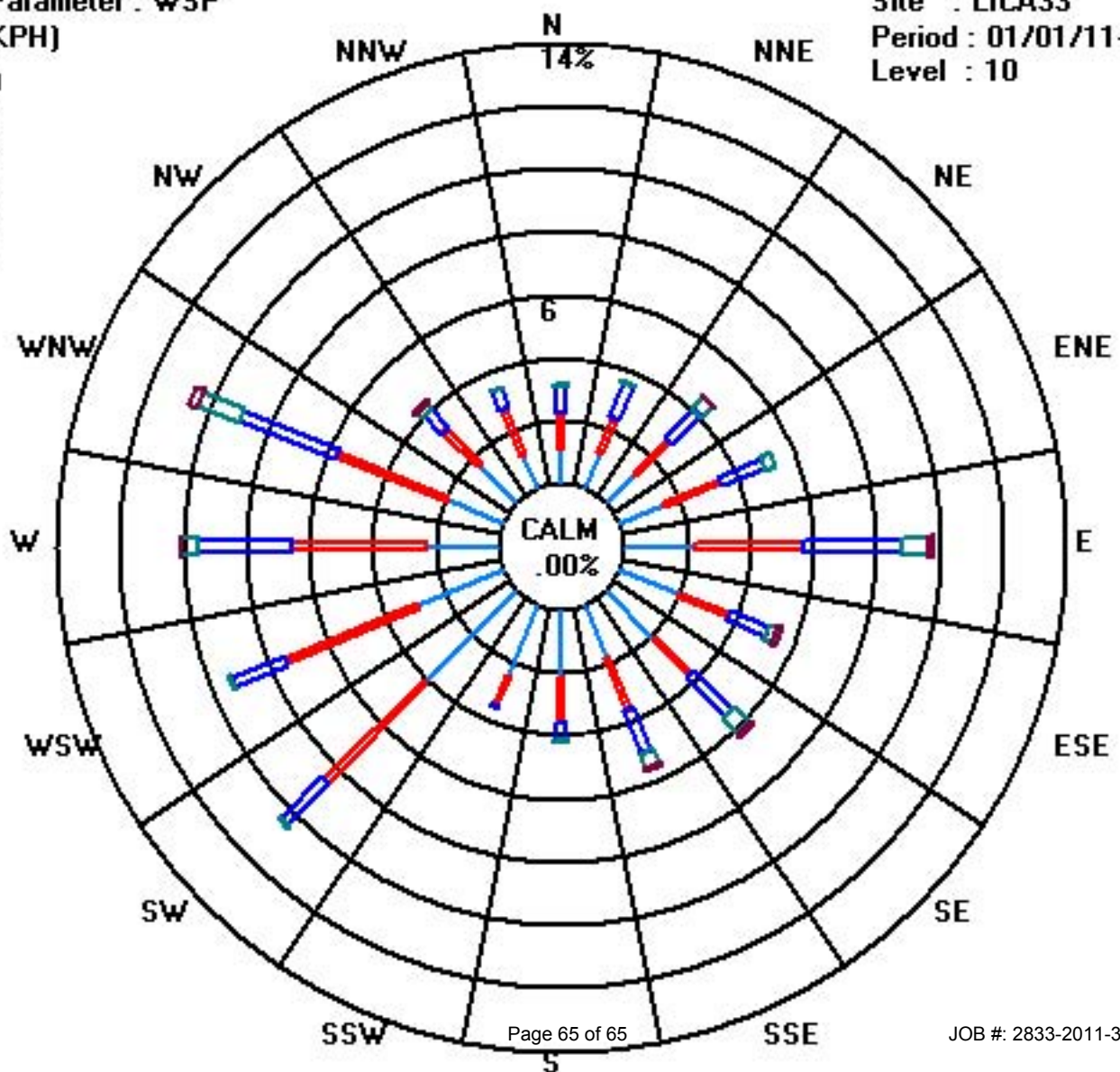
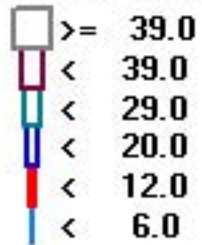
Calm : .00 %

Total # Operational Hours : 8185

Class Limits (KPH)

Period : 01/01/11-12/31/11

Level : 10



Lakeland Industry & Community Association

St. Lina Monitoring Site
Ambient Annual Data Report

For
2011

Prepared By:



April 9, 2012

Lakeland Industry & Community Association

St. Lina

Ambient Air Monitoring

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Introduction

The following Ambient Air Monitoring report was prepared for:

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

Monitoring Location: St. Lina
Data Period: January 2011 to December 2011

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

Calibration Procedure

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

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

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

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

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

General Summary

Equipment Operation

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

AQM STATION – LICA – St. Lina

Sulphur Dioxide (PPB)

- Analyzer make / model - API 100E, S/N: 468
 - ❖ 3 hours of data were missing in January.
 - ❖ The 24-hour objective was changed from 57 ppb to 48 ppb on February 15th as per Alberta Environment guidelines.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ The analyzer spanned high on May 26th. The as found points check was performed on May 28th, and the result was good. The issue was likely because the pump for the sample flow needed to be rebuilt. The pump was rebuilt on May 30th following a post-repair calibration.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.
 - ❖ The permeation tube was changed following the as found points on November 16th. Also, the orifice was cleaned, the UV lamp was peaked, and a factory calibration was done on the same day.

General Summary

AQM STATION – LICA – St. Lina

Hydrogen Sulphide (PPB)

- Analyzer make / model - API 101E, S/N: 510
 - ❖ 3 hours of data were missing in January.
 - ❖ The analyzer spanned high on April 8th. It was noticed that the analyzer had a “system flow warm” on April 9th. Performed troubleshooting by replacing the exhaust pump. Data was invalidated back to the last valid daily calibration, which was April 7th. 35 hours of data were invalidated.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ The analyzer spanned low on May 21st. The as found points check was performed on May 24th, and the result was good. The issue was likely due to a loose signal wire. Data was invalidated back to the last validate daily calibration, which was May 20th. 64 hours of data were invalidated.
 - ❖ The pump was replaced following the as found point performed on June 7th.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.
 - ❖ The scrubber material and the permeation tube were changed following the as found points on November 16th. Also, the orifice was cleaned, a factory calibration was done, and the charcoal for the daily calibration system was replaced on the same day.

Nitrogen Dioxide (PPB)

- Analyzer make / model - API 200E, S/N: 592
 - ❖ 3 hours of data were missing in January.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ The NO₂ guideline was changed on June 15th: the objective for 1-Hour average concentration was changed from 212 ppb to 159 ppb, the objective for 24-Hour average concentration was removed, and the concentration of 24 ppb for the annual average was added by AE.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.
 - ❖ The exhausting scrubber and the exhausting pump were replaced following the as found points check on December 13th.

General Summary

AQM STATION – LICA – St. Lina

Ozone (PPB)

- Analyzer make / model – Thermo 49i, S/N: 1002240371 and Thermo 49C, S/N: 49C-54926-302
 - ❖ 3 hours of data were missing in January.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ One hour of the maximum concentration was invalidated as the analyzer spiked for unknown reason; reading of 115 ppb on May 10th at 06:00.
 - ❖ Three hourly maximum data were invalidated in August because the readings were recorded higher than normal (above 100ppb in an hour). After reviewing minute data, these high readings were likely due to the electronic spikes of the analyzer.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.
 - ❖ The analyzer had an intensity alarm on December 13th. Cleared the alarm and cleaned the cell A and cell B following the ad found points check. The cell A flow rate was still high and could not be adjusted. Suspected the issue was due to faulty flow sensor. The flow sensor was replaced on January 17, 2012.

General Summary

AQM STATION – LICA - St. Lina

Total HydroCarbon (PPM)

- Analyzer make / model - TECO 51C, S/N: 77021-384
 - ❖ 3 hours of data were missing in January.
 - ❖ The analyzer flamed out on April 4th, and it was relit on April 5th. 19 hours of data were invalidated.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ The analyzer flamed out on June 16th due to a power failure. It was re-lit on June 16th. Four hours of data were invalidated.
 - ❖ One maximum hourly concentration went above the full scale on July 26th at hour of 13; the real concentration may be higher than the recorded reading.
 - ❖ The analyzer flamed out from August 3rd, hour 23 to August 4th, hour 7, and from August 29, hour 20 to August 30, hour 6 due to power failures. 20 hours of data were invalidated.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.
 - ❖ The analyzer did not span on September 1st due to run out the span gas. A new span gas was installed on September 2nd.
 - ❖ Following the as found points check on December 13th, both the analyzer inside pump and zero air pump were rebuilt.

General Summary

AQM STATION – LICA – St. Lina

Particulate Matter 2.5 (UG/M3)

- Analyzer make / model – Thermo Scientific Series 1405F, S/N: 1405A208301003
 - ❖ 3 hours of data were missing in January.
 - ❖ Two hours of data were invalidated as the data were below -3 ug/m³ in March.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ The Teom flow was changed from “Standard” to “Actual” as per an AE requirement on April 4th.
 - ❖ Two hours of data were invalidated as the data were above -3 ug/m³ in May.
 - ❖ Four hours of data were invalidated as the data were above -3 ug/m³ in June.
 - ❖ Three 24-Hour average contraventions were recorded and reported to AE this month; reading of 31.2 ug/m³ on June 7th, Ref # 248168, reading of 51.0 ug/m³ on June 26th, Ref # 248924, and reading of 34.2 ug/m³ on June 27th, Ref # 248950.
 - ❖ Five hours of data were invalidated as the data were above -3 ug/m³ in July.
 - ❖ Following the audit on August 11th, the main, bypass and water-knock-off filters were all changed. A leak check was performed, the temperature, pressure, and flows were all calibrated then a second flow audit was conducted on August 11th.
 - ❖ Seven hours of data were invalidated as the data were above -3 ug/m³ in August.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.
 - ❖ Three hours of data were invalidated as the data were above -3 ug/m³ in September.
 - ❖ Sixteen hours of data were invalidated as the data were above -3 ug/m³ in October.
 - ❖ Two hours of data were invalidated as the data were above -3 ug/m³ in November.
 - ❖ Many negative readings were recorded after the maintenance done on December 14th. The Teom unit was checked and noticed that the noise level was higher than normal, but still within the limited range. Both the Teom filter and FDMS filter were replaced again on December 27th. Reason for the negative readings were likely due to new batch filters.
 - ❖ 115 hours of data were invalidated as the data were above -3 ug/m³ in December.

General Summary

AQM STATION – LICA – St. Lina

Temperature (Degree C)

- Analyzer make / model – Met One 060
 - ❖ 3 hours of data were missing in January.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.

Barometric Pressure (Millibar)

- Analyzer make / model - Met One 092
 - ❖ 3 hours of data were missing in January.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.

Relative Humidity (%)

- Analyzer make / model - Met One 083
 - ❖ 3 hours of data were missing in January.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.

Precipitation (MM)

- Analyzer make / model - Met One 387
 - ❖ 3 hours of data were missing in January.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ The tipping bucket was checked before the maintenance was started on August 11th the result was good.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.

General Summary

AQM STATION – LICA – St. Lina

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

- System make / model – Met 50.5, S/N: H12635
 - ❖ 2 hours of data for wind speed maximum were invalidated in January as the data went full scale. It is likely due to instantaneous spike for unknown reason.
 - ❖ One hour of data for wind speed maximum was invalidated in March as the data went above the full scale.
 - ❖ Two hours of data were invalidated due to a power failure on April 3rd.
 - ❖ One hour of the WS maximum reading was invalidated as the reading went above the full scale on May 6th at 17:00.
 - ❖ Three hours of hourly data for the maximum wind speed in July were invalidated because the readings went above the full scale.
 - ❖ One hourly data was invalidated due to a power failure on August 29th.
 - ❖ Both wind speed and wind direction channels were put into the Maintenance mode for a camera installation on September 15th.
 - ❖ Both wind speed and wind direction channels were put into the Maintenance mode for an hour for a new manifold installation on October 21st.

Trailer

- ❖ No issue was recorded this year.

Continuous Monitoring

Annual Summaries Graphs & Wind Roses

Sulphur Dioxide

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	705	0	5	0
February	672	638	0	6	1
March	744	708	0	7	1
April	720	683	0	3	0
May	744	702	0	1	0
June	720	685	0	2	0
July	744	706	0	2	0
August	744	705	0	2	0
September	720	684	0	3	0
October	744	706	0	2	0
November	720	678	0	4	0
December	744	705	0	4	0
Yearly Total	8760	8305	0	7	0

SO₂ Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	Valid Readings* Hours	Operational Time (%)	% Readings in Concentration Range (ppm SO ₂)						24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	SO ₂ ppm Monthly Average
			≤ 0.02 ppm	0.02 < C ≤ 0.06 ppm	0.06 < C ≤ 0.11 ppm	0.11 < C ≤ 0.17 ppm	0.17 < C ≤ 0.34 ppm	> 0.34 ppm			
January	705	99.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
February	638	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
March	708	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
April	683	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
May	702	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
June	685	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
July	706	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
August	705	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
September	684	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
October	706	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
November	678	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
December	705	99.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
								Annual Average			0.00

C - Concentration

* Valid readings - does not include calibration hours and downtime hours

SO₂ Peak Reading of One Hour Averages for 2011

Plant Operator:

LICA

Plant Location

ST. LINA

Month	SO2 ppb Peak Reading
January	4
February	6
March	7
April	3
May	1
June	2
July	2
August	2
September	3
October	2
November	4
December	4
ANNUAL PEAK	7

LICA31
 SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	6.55	4.62	5.66	5.80	6.76	6.44	4.43	4.73	5.55	5.33	6.98	6.07	6.93	9.04	7.87	7.17	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.55	4.62	5.66	5.80	6.76	6.44	4.43	4.73	5.55	5.33	6.98	6.07	6.93	9.04	7.87	7.17	

Calm : .00 %

Total # Operational Hours : 8303

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 20	544	384	470	482	562	535	368	393	461	443	580	504	576	751	654	596	8303
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	544	384	470	482	562	535	368	393	461	443	580	504	576	751	654	596	

Calm : .00 %

Total # Operational Hours : 8303

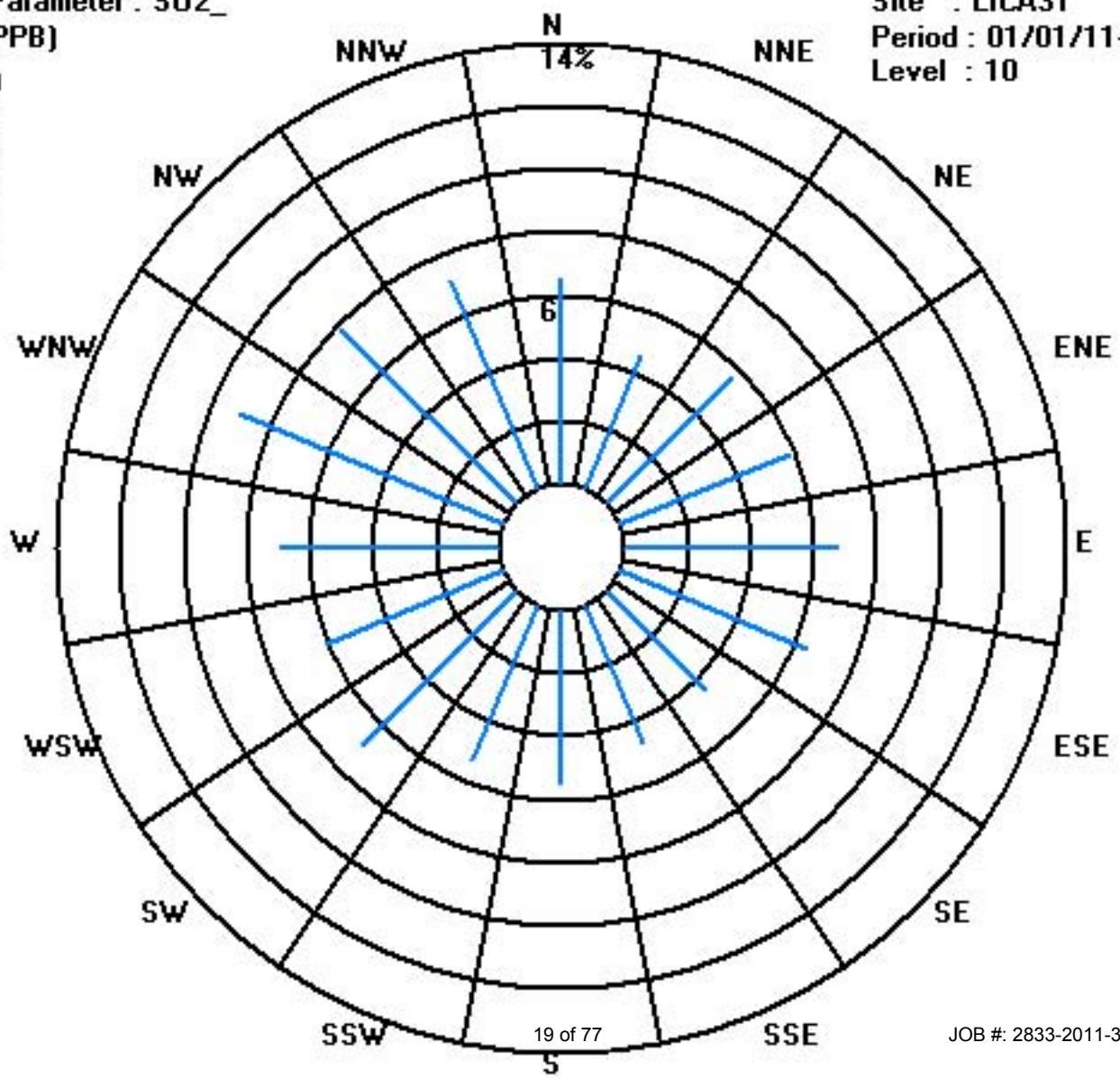
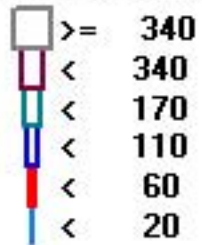
Logger : 31 Parameter : SO2_

Site : LICA31

Class Limits (PPB)

Period : 01/01/11-12/31/11

Level : 10



Hydrogen Sulphide

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : H2S_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	1	0
February	672	639	0	2	0
March	744	707	0	2	0
April	696	647	0	1	0
May	672	606	0	1	0
June	720	683	0	1	0
July	744	705	0	2	0
August	744	705	0	1	0
September	720	683	0	1	0
October	744	704	0	1	0
November	720	673	0	1	0
December	744	706	0	1	0
Yearly Total	8664	8162	0	2	0

H₂S Monthly Averages and Frequency Distributions of One Hour Readings - 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppb H ₂ S)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	H ₂ S ppb Monthly Average
			0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb			
January	704	99.5	100.0%	0.0%	0.0%	0.0%	0	0	0.13
February	639	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.18
March	707	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.03
April	647	94.9	100.0%	0.0%	0.0%	0.0%	0	0	0.05
May	606	85.8	100.0%	0.0%	0.0%	0.0%	0	0	0.05
June	683	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.10
July	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.15
August	705	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.13
September	683	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.12
October	704	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.15
November	673	99.6	100.0%	0.0%	0.0%	0.0%	0	0	0.11
December	706	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.17
							Annual Average	0.11	

* Valid readings do not include daily and monthly calibration hours and downtime hours

H2S Peak Reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Plant Location: _____ ST. LINA _____

Month	H2S ppb Peak Reading
January	1
February	2
March	2
April	1
May	1
June	1
July	2
August	1
September	1
October	1
November	1
December	1
ANNUAL PEAK	2

LICA31
H2S_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 31
Site Name : LICA31
Parameter : H2S_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	6.58	4.64	5.62	5.84	6.83	6.36	4.49	4.79	5.63	5.39	7.07	5.93	6.81	9.08	7.78	7.10	100.00
< 10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.58	4.64	5.62	5.84	6.83	6.36	4.49	4.79	5.63	5.39	7.07	5.93	6.81	9.08	7.78	7.10	

Calm : .00 %

Total # Operational Hours : 8160

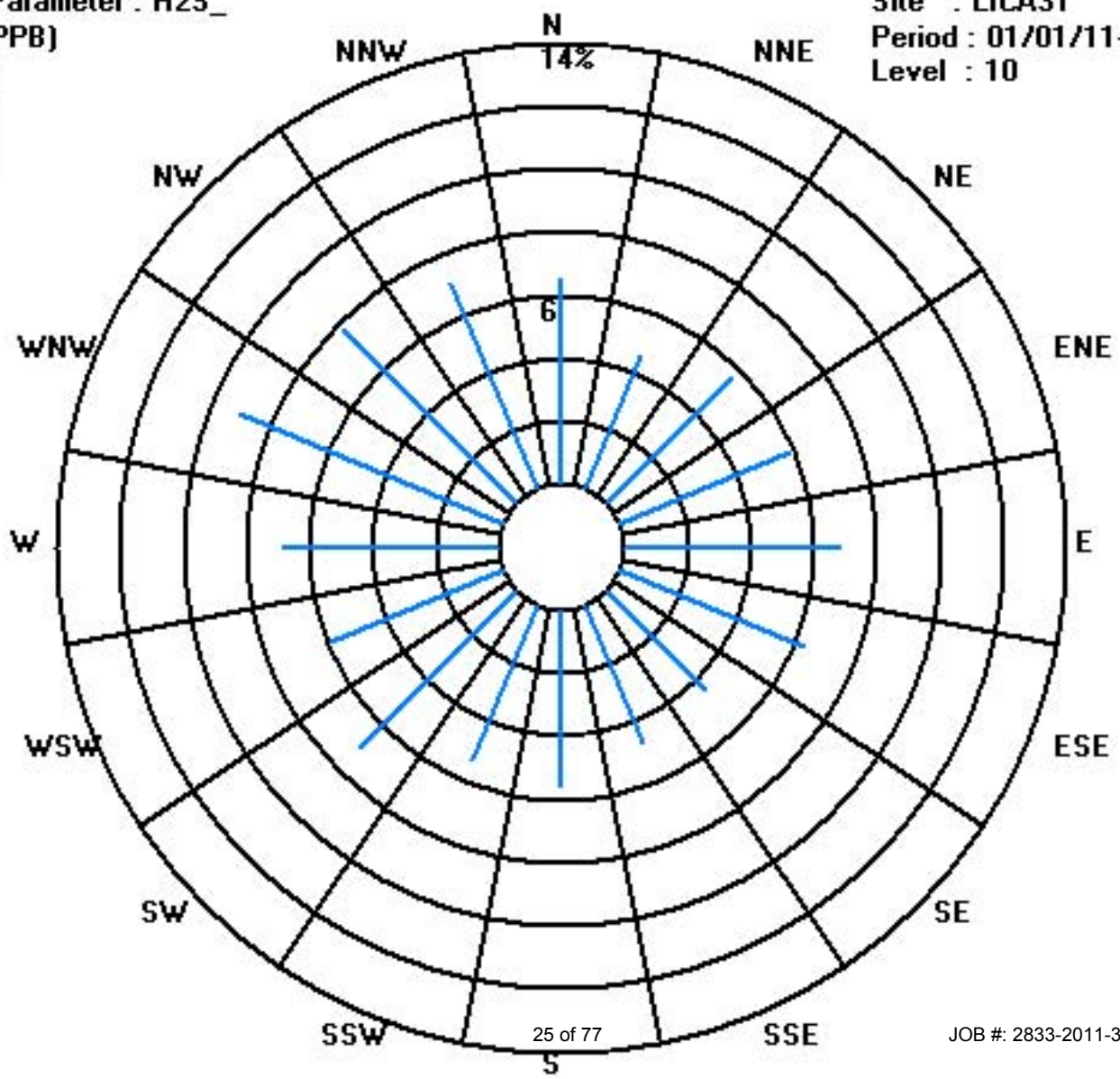
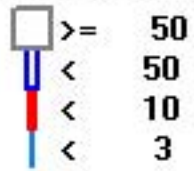
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	537	379	459	477	558	519	367	391	460	440	577	484	556	741	635	580	8160
< 10																	
< 50																	
>= 50																	
Totals	537	379	459	477	558	519	367	391	460	440	577	484	556	741	635	580	

Calm : .00 %

Total # Operational Hours : 8160

Class Limits (PPB)



Total Hydrocarbons

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : THC Units : PPM

	Readings	Valid Readings	Min	Max	Mean
January	744	704	1.9	4.1	2.3
February	672	638	1.9	3.4	2.2
March	744	707	2	3.2	2.3
April	720	662	1.9	2.7	2.1
May	744	709	1.9	4.2	2.1
June	720	679	1.9	2.9	2.1
July	744	706	1.8	5.5	2
August	744	684	1.8	2.6	2.1
September	720	677	1.7	2.7	1.9
October	744	704	1.9	2.6	2.1
November	720	684	1.9	4.1	2.2
December	744	685	1.5	4.6	2.2
Yearly Total	8760	8239	1.5	5.5	2.1

THC Peak Reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Plant Location: _____ ST. LINA _____

Month	THC ppm Peak Reading
January	4.1
February	3.4
March	3.2
April	2.7
May	4.2
June	2.9
July	5.5
August	2.6
September	2.7
October	2.6
November	4.1
December	4.6
ANNUAL PEAK	5.5

LICA31
 THC / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	6.47	4.54	5.57	5.56	6.54	6.47	4.33	4.80	5.59	5.29	6.99	6.13	6.78	8.95	7.64	7.17	98.88
< 10.0	.08	.06	.10	.29	.27	.07	.06	.01	.00	.01	.01	.00	.03	.03	.01	.03	1.11
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.55	4.60	5.68	5.85	6.82	6.54	4.39	4.81	5.59	5.30	7.00	6.13	6.82	8.99	7.66	7.21	

Calm : .00 %

Total # Operational Hours : 8237

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	533	374	459	458	539	533	357	396	461	436	576	505	559	738	630	591	8145
< 10.0	7	5	9	24	23	6	5	1		1	1		3	3	1	3	92
< 50.0																	
>= 50.0																	
Totals	540	379	468	482	562	539	362	397	461	437	577	505	562	741	631	594	

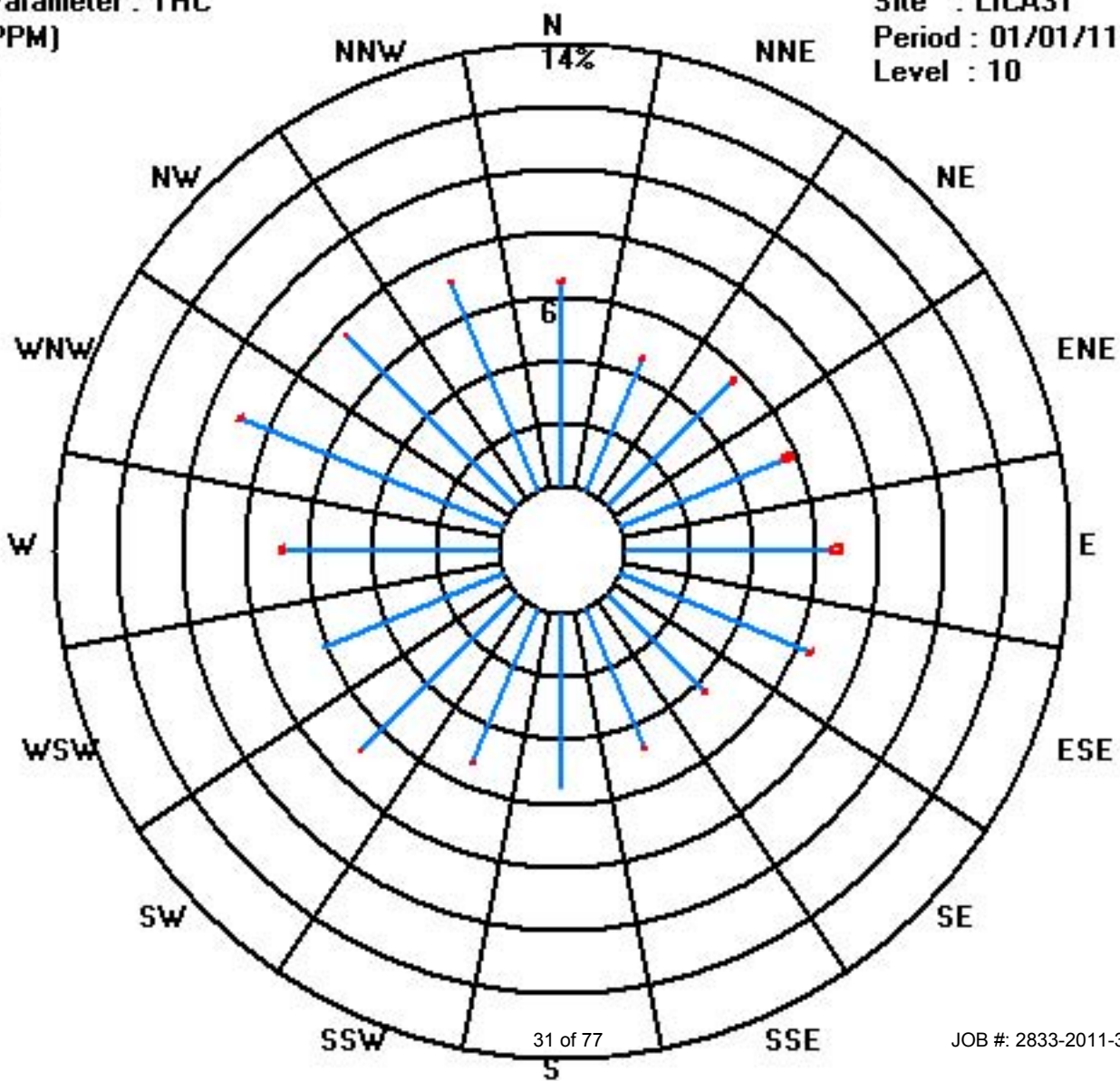
Calm : .00 %

Total # Operational Hours : 8237

Class Limits (PPM)

Period : 01/01/11-12/31/11

Level : 10



Ozone

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : O3_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	705	8	46	29
February	672	638	9	43	32
March	744	708	19	55	40
April	720	683	23	59	43
May	744	707	17	59	41
June	720	685	14	59	34
July	744	706	4	44	23
August	744	705	5	44	22
September	720	684	8	63	26
October	744	706	4	39	23
November	720	684	7	40	22
December	744	702	4	38	26
Yearly Total	8760	8313	4	63	30

O3 Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: _____ ST. LINA _____

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm O3)				O3 ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	705	99.6	100.0%	0.0%	0.0%	0.0%	0.03
February	638	100.0	100.0%	0.0%	0.0%	0.0%	0.03
March	708	100.0	90.8%	9.2%	0.0%	0.0%	0.04
April	683	99.7	85.8%	14.2%	0.0%	0.0%	0.04
May	707	100.0	85.7%	14.3%	0.0%	0.0%	0.04
June	685	100.0	94.0%	6.0%	0.0%	0.0%	0.03
July	706	100.0	100.0%	0.0%	0.0%	0.0%	0.02
August	705	99.9	100.0%	0.0%	0.0%	0.0%	0.02
September	684	100.0	98.5%	1.5%	0.0%	0.0%	0.03
October	706	99.9	100.0%	0.0%	0.0%	0.0%	0.02
November	684	100.0	100.0%	0.0%	0.0%	0.0%	0.02
December	702	99.5	100.0%	0.0%	0.0%	0.0%	0.03
						Annual Average	0.03

* Valid readings do not include daily and monthly calibration hours and downtime hours

O3 Peak Reading of One Hour Averages for 2011

Plant Operator: _____ LICA _____

Station: _____ ST. LINA _____

Month	O3 ppb Peak Reading
January	45
February	43
March	55
April	59
May	59
June	59
July	44
August	44
September	63
October	39
November	40
December	38
ANNUAL PEAK	63

LICA31
O3_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 31
Site Name : LICA31
Parameter : O3_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	6.31	4.41	5.53	5.60	6.44	6.08	4.18	4.39	5.13	4.76	6.65	5.72	6.65	8.66	7.58	6.95	95.12
< 110	.21	.19	.12	.21	.31	.34	.24	.38	.40	.57	.36	.33	.27	.37	.28	.21	4.87
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.53	4.60	5.65	5.82	6.76	6.43	4.42	4.77	5.54	5.34	7.01	6.06	6.93	9.03	7.86	7.17	

Calm : .00 %

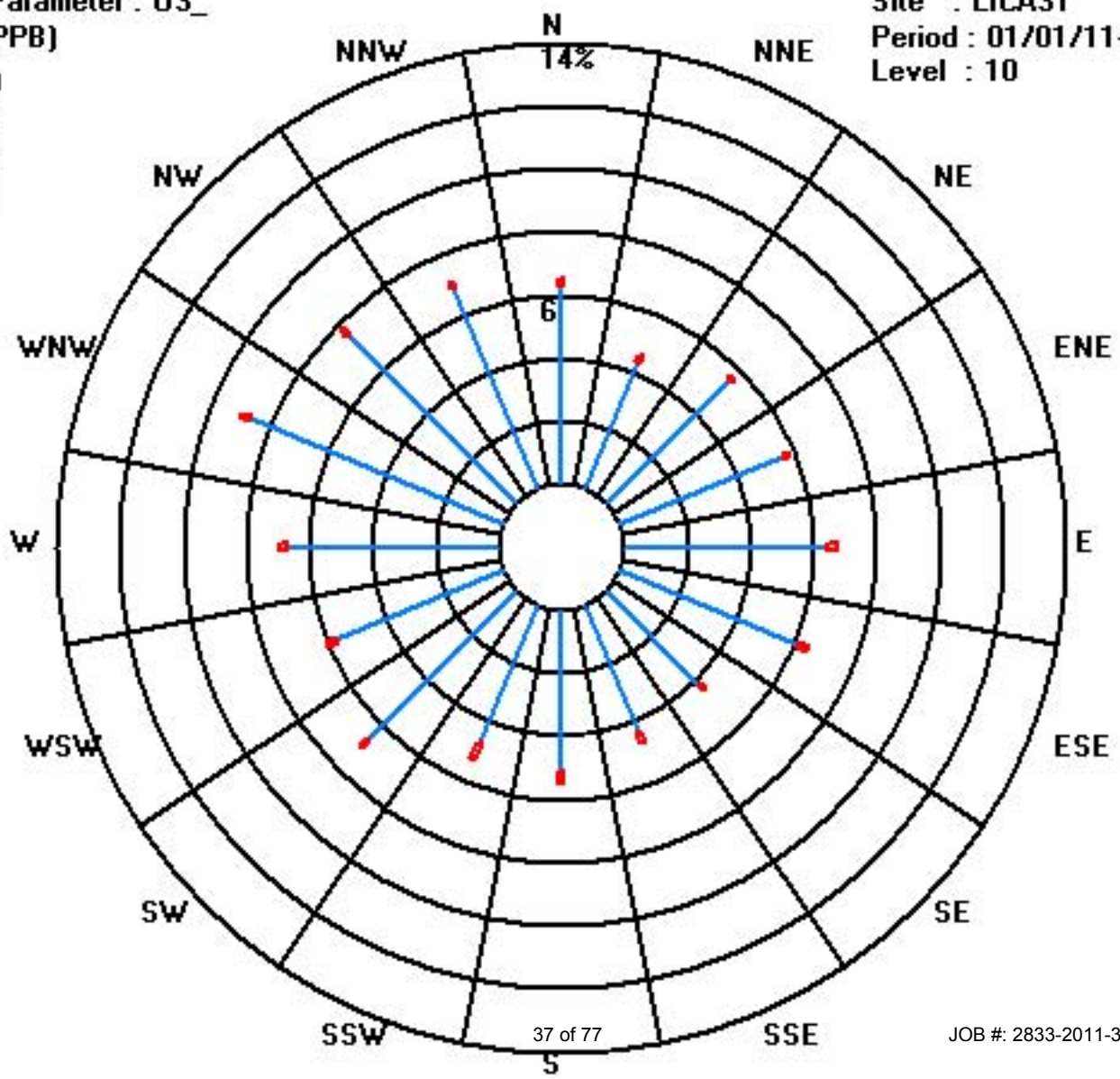
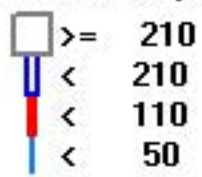
Total # Operational Hours : 8311

Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	525	367	460	466	536	506	348	365	427	396	553	476	553	720	630	578	7906
< 110	18	16	10	18	26	29	20	32	34	48	30	28	23	31	24	18	405
< 210																	
>= 210																	
Totals	543	383	470	484	562	535	368	397	461	444	583	504	576	751	654	596	

Calm : .00 %

Total # Operational Hours : 8311



Nitrogen Dioxide

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : NO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	702	0	20	3
February	672	636	0	22	3
March	744	704	0	11	2
April	720	681	0	5	1
May	744	706	0	6	1
June	720	681	0	5	1
July	744	703	0	10	1
August	744	701	0	5	1
September	720	680	0	6	1
October	744	702	0	8	1
November	720	682	0	14	3
December	744	701	0	16	2
Yearly Total	8760	8279	0	22	2

NO₂ Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: LICA

Station: ST. LINA

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO ₂)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO ₂ ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm			
January	702	99.5	100.0%	0.0%	0.0%	0.0%	0	0	0.00
February	636	100.0	100.0%	0.0%	0.0%	0.0%	0	0	0.00
March	704	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
April	681	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.00
May	706	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
June	681	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
July	703	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
August	701	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
September	680	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
October	702	99.7	100.0%	0.0%	0.0%	0.0%	0	0	0.00
November	682	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
December	701	99.9	100.0%	0.0%	0.0%	0.0%	0	0	0.00
							Annual Average		0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO₂ Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: ST. LINA

Month	NO2 ppb Peak Reading
January	20
February	22
March	11
April	5
May	6
June	5
July	10
August	5
September	6
October	8
November	14
December	16
ANNUAL PEAK	22

LICA31
 NO2_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

Logger Id : 31
 Site Name : LICA31
 Parameter : NO2_
 Units : PPB

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	6.51	4.60	5.67	5.84	6.80	6.52	4.40	4.77	5.53	5.31	7.03	6.06	6.83	9.06	7.81	7.18	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.51	4.60	5.67	5.84	6.80	6.52	4.40	4.77	5.53	5.31	7.03	6.06	6.83	9.06	7.81	7.18	

Calm : .00 %

Total # Operational Hours : 8277

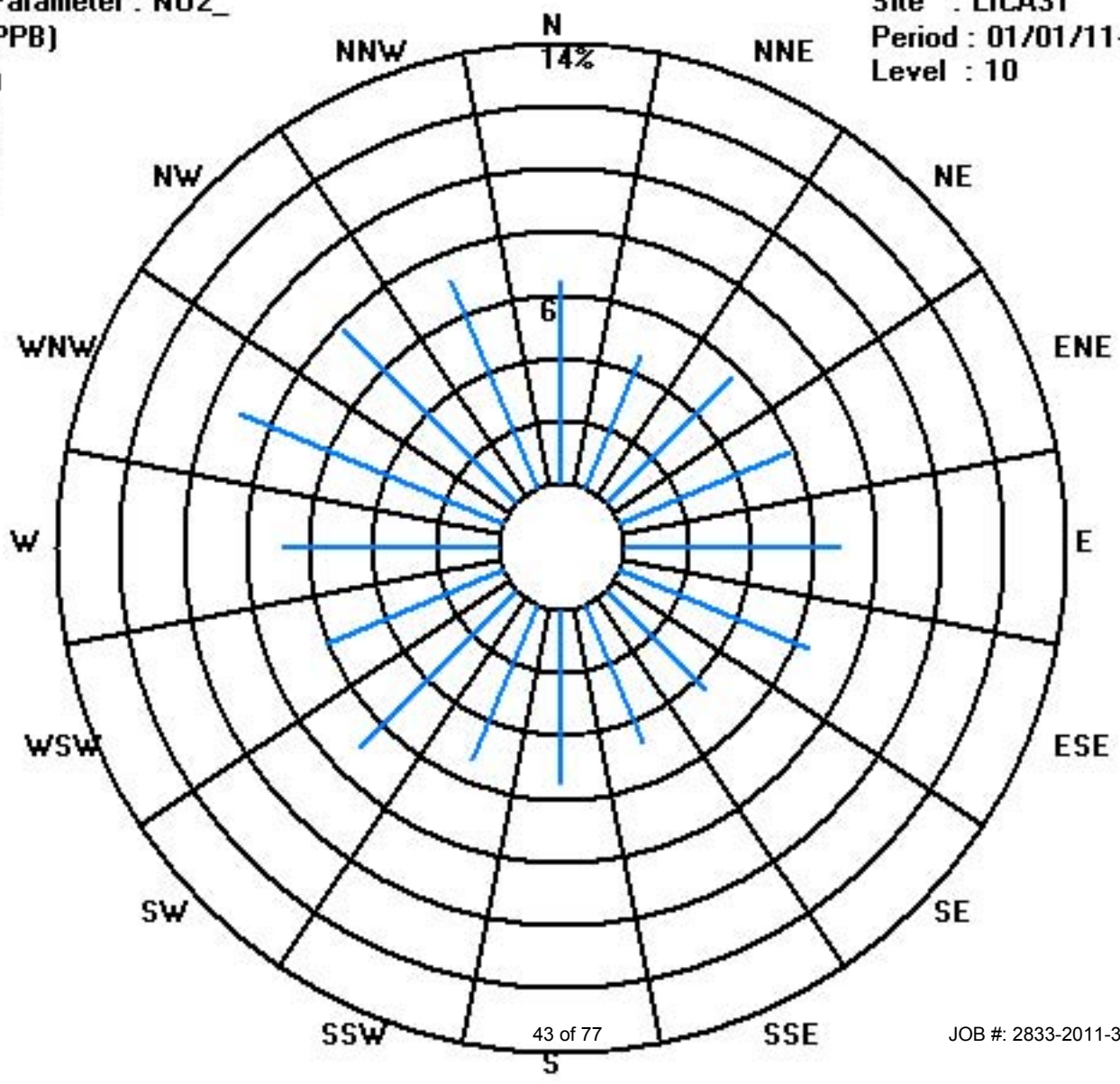
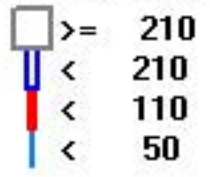
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	539	381	470	484	563	540	365	395	458	440	582	502	566	750	647	595	8277
< 110																	
< 210																	
>= 210																	
Totals	539	381	470	484	563	540	365	395	458	440	582	502	566	750	647	595	

Calm : .00 %

Total # Operational Hours : 8277

Class Limits (PPB)



Nitric Oxide

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : NO_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	702	0	13	0
February	672	636	0	7	0
March	744	704	0	7	0
April	720	681	0	2	0
May	744	706	0	1	0
June	720	681	0	2	0
July	744	703	0	5	0
August	744	701	0	3	0
September	720	680	0	2	0
October	744	702	0	3	0
November	720	682	0	5	1
December	744	701	0	3	0
Yearly Total	8760	8279	0	13	0

NO Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: _____ LICA _____

Station: _____ ST. LINA _____

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO)				NO ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	702	99.5	100.0%	0.0%	0.0%	0.0%	0.00
February	636	100.0	100.0%	0.0%	0.0%	0.0%	0.00
March	704	99.9	100.0%	0.0%	0.0%	0.0%	0.00
April	681	99.7	100.0%	0.0%	0.0%	0.0%	0.00
May	706	99.9	100.0%	0.0%	0.0%	0.0%	0.00
June	681	99.9	100.0%	0.0%	0.0%	0.0%	0.00
July	703	99.9	100.0%	0.0%	0.0%	0.0%	0.00
August	701	99.9	100.0%	0.0%	0.0%	0.0%	0.00
September	680	99.9	100.0%	0.0%	0.0%	0.0%	0.00
October	702	99.7	100.0%	0.0%	0.0%	0.0%	0.00
November	682	99.9	100.0%	0.0%	0.0%	0.0%	0.00
December	701	99.9	100.0%	0.0%	0.0%	0.0%	0.00
						Annual Average	0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO Peak reading of One Hour Averages for 2011

Plant Operator: LICA

Station: ST. LINA

Month	NO ppb Peak Reading
January	13
February	7
March	7
April	2
May	1
June	2
July	5
August	3
September	2
October	3
November	5
December	3
ANNUAL PEAK	13

LICA31
 NO_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	6.51	4.60	5.67	5.84	6.80	6.52	4.40	4.77	5.53	5.31	7.03	6.06	6.83	9.06	7.81	7.18	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.51	4.60	5.67	5.84	6.80	6.52	4.40	4.77	5.53	5.31	7.03	6.06	6.83	9.06	7.81	7.18	

Calm : .00 %

Total # Operational Hours : 8277

Distribution By Samples

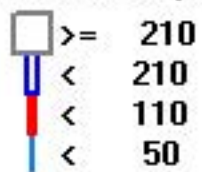
	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	539	381	470	484	563	540	365	395	458	440	582	502	566	750	647	595	8277
< 110																	
< 210																	
>= 210																	
Totals	539	381	470	484	563	540	365	395	458	440	582	502	566	750	647	595	

Calm : .00 %

Total # Operational Hours : 8277

Logger : 31 Parameter : NO_

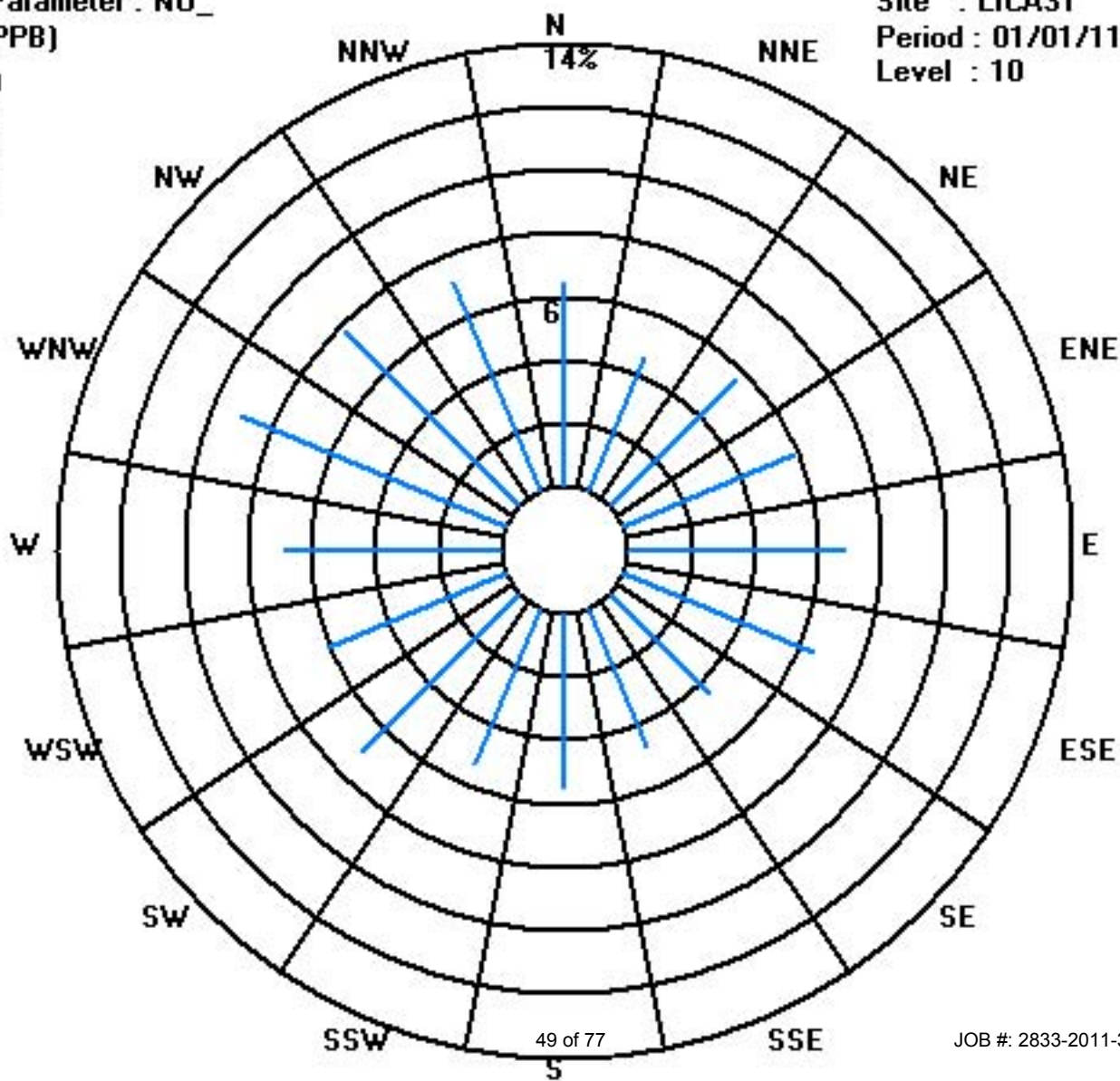
Class Limits (PPB)



Site : LICA31

Period : 01/01/11-12/31/11

Level : 10



JOB #: 2833-2011-31-A

Oxides of Nitrogen

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : NOX_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	702	0	23	3
February	672	636	0	23	4
March	744	704	0	16	3
April	720	681	0	6	1
May	744	706	0	6	1
June	720	681	0	7	2
July	744	703	0	15	1
August	744	701	0	5	1
September	720	680	0	6	1
October	744	702	0	9	2
November	720	682	0	14	3
December	744	701	0	18	3
Yearly Total	8760	8279	0	23	2

NO_x Monthly Averages and Frequency Distributions of One Hour Readings -2011

Plant Operator: LICA

Station: ST. LINA

Month	Number of Readings	Operational Time (%)	% Readings in Concentration Range (ppm NO _x)				NO _x ppm Monthly Average
			0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	702	99.5	100.0%	0.0%	0.0%	0.0%	0.00
February	636	100.0	100.0%	0.0%	0.0%	0.0%	0.00
March	704	99.9	100.0%	0.0%	0.0%	0.0%	0.00
April	681	99.7	100.0%	0.0%	0.0%	0.0%	0.00
May	706	99.9	100.0%	0.0%	0.0%	0.0%	0.00
June	681	99.9	100.0%	0.0%	0.0%	0.0%	0.00
July	703	99.9	100.0%	0.0%	0.0%	0.0%	0.00
August	701	99.9	100.0%	0.0%	0.0%	0.0%	0.00
September	680	99.9	100.0%	0.0%	0.0%	0.0%	0.00
October	702	99.7	100.0%	0.0%	0.0%	0.0%	0.00
November	682	99.9	100.0%	0.0%	0.0%	0.0%	0.00
December	701	99.9	100.0%	0.0%	0.0%	0.0%	0.00
						Annual Average	0.00

* Valid readings do not include daily and monthly calibration hours and downtime hours

NO_x Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Station: ST. LINA

Month	NO _x ppb Peak Reading
January	22
February	23
March	16
April	6
May	6
June	7
July	15
August	5
September	6
October	9
November	14
December	18
ANNUAL PEAK	23

LICA31
NOX_ / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	6.51	4.60	5.67	5.84	6.80	6.52	4.40	4.77	5.53	5.31	7.03	6.06	6.83	9.06	7.81	7.18	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.51	4.60	5.67	5.84	6.80	6.52	4.40	4.77	5.53	5.31	7.03	6.06	6.83	9.06	7.81	7.18	

Calm : .00 %

Total # Operational Hours : 8277

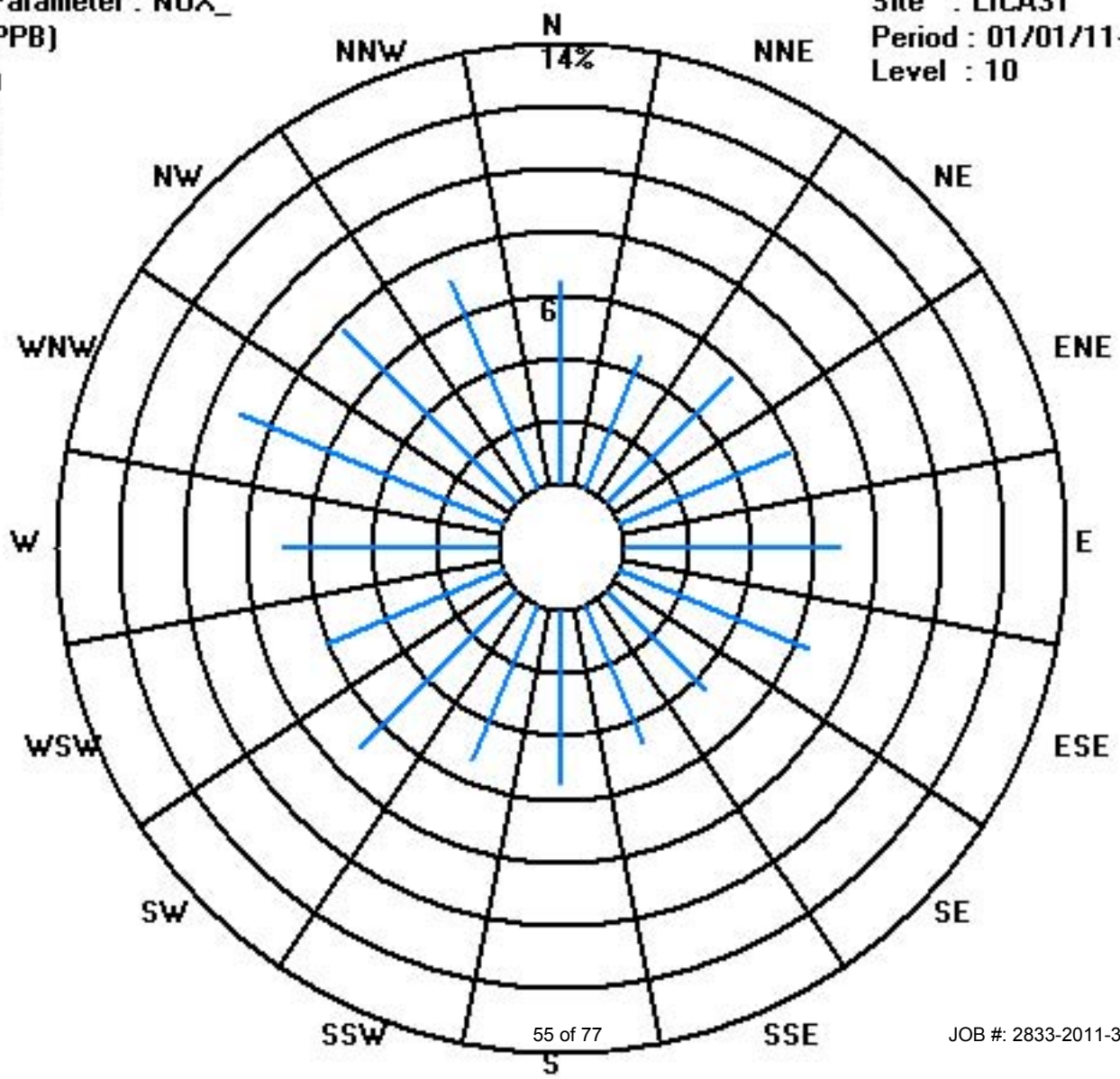
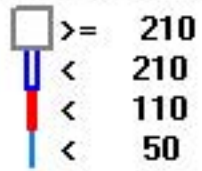
Distribution By Samples

	Direction																
Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	539	381	470	484	563	540	365	395	458	440	582	502	566	750	647	595	8277
< 110																	
< 210																	
>= 210																	
Totals	539	381	470	484	563	540	365	395	458	440	582	502	566	750	647	595	

Calm : .00 %

Total # Operational Hours : 8277

Class Limits (PPB)



Particulate Matter 2.5

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	738	0	34.9	3.9
February	672	670	0	23.7	5.4
March	744	739	0	33.5	8.6
April	720	715	0	23.3	4.7
May	744	739	0	29.3	6.7
June	720	714	0	291	12.1
July	744	737	0	18.2	4.3
August	744	733	0	28.1	5.1
September	720	714	0	15.9	5.2
October	744	725	0	21.8	4.3
November	720	714	0	23.4	5.9
December	744	623	0	35	4.9
Yearly Total	8760	8561	0	291	5.9

PM 2.5 Monthly Averages and Frequency Distributions of Daily Average Readings - 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	Valid Readings* Hours	Operational Time (%)	% Readings in Concentration Range (ug/m ³)						Total Daily Readings > 30 ug/m ³	PM2.5 ug/m ³ Monthly Average
			≤ 30 ug/m ³	30 < C ≤ 60 ug/m ³	60 < C ≤ 80 ug/m ³	80 < C ≤ 120 ug/m ³	120 < C ≤ 240 ug/m ³	> 240 ug/m ³		
January	738	99.6	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0	3.86
February	670	100.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.35
March	739	99.7	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0	8.61
April	715	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.74
May	739	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	6.68
June	714	99.4	93.4%	4.6%	1.1%	0.3%	0.4%	0.1%	3	12.14
July	737	99.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.28
August	733	98.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.10
September	714	99.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.18
October	725	97.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.35
November	714	99.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.94
December	623	84.5	99.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0	4.91
									Annual Average	5.93

* Valid readings - does not include calibration hours and downtime hours

PM 2.5 Peak Reading of One Hour Averages for 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	PM 2.5 (ug/m3) Peak Reading
January	35
February	24
March	34
April	23
May	29
June	291
July	18
August	28
September	16
October	22
November	23
December	35
ANNUAL PEAK	291

LICA31
 PM2 / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

Distribution By % Of Samples

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

Wind Parameter : WDR
 Instrument Height : 10 Meters

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30.0	6.49	4.55	5.66	5.83	6.86	6.55	4.45	4.76	5.43	5.24	7.05	5.92	6.71	8.86	7.86	7.05	99.35
< 60.0	.04	.00	.01	.01	.00	.00	.01	.02	.05	.05	.02	.01	.03	.12	.04	.01	.47
< 80.0	.00	.00	.00	.00	.00	.00	.00	.00	.02	.01	.00	.00	.01	.01	.03	.00	.09
< 120.0	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.01	.02
< 240.0	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.03
>= 240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.01
Totals	6.55	4.55	5.67	5.84	6.86	6.55	4.46	4.80	5.51	5.32	7.09	5.93	6.76	9.01	7.94	7.08	

Calm : .00 %

Total # Operational Hours : 8559

Distribution By Samples

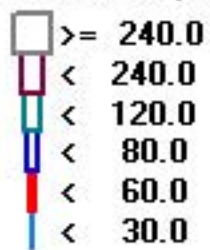
Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 30.0	556	390	485	499	588	561	381	408	465	449	604	507	575	759	673	604	8504
< 60.0	4		1	1			1	2	5	5	2	1	3	11	4	1	41
< 80.0									2	1			1	1	3		8
< 120.0								1								1	2
< 240.0	1									1	1						3
>= 240.0														1			1
Totals	561	390	486	500	588	561	382	411	472	456	607	508	579	772	680	606	

Calm : .00 %

Total # Operational Hours : 8559

Logger : 31 Parameter : PM2

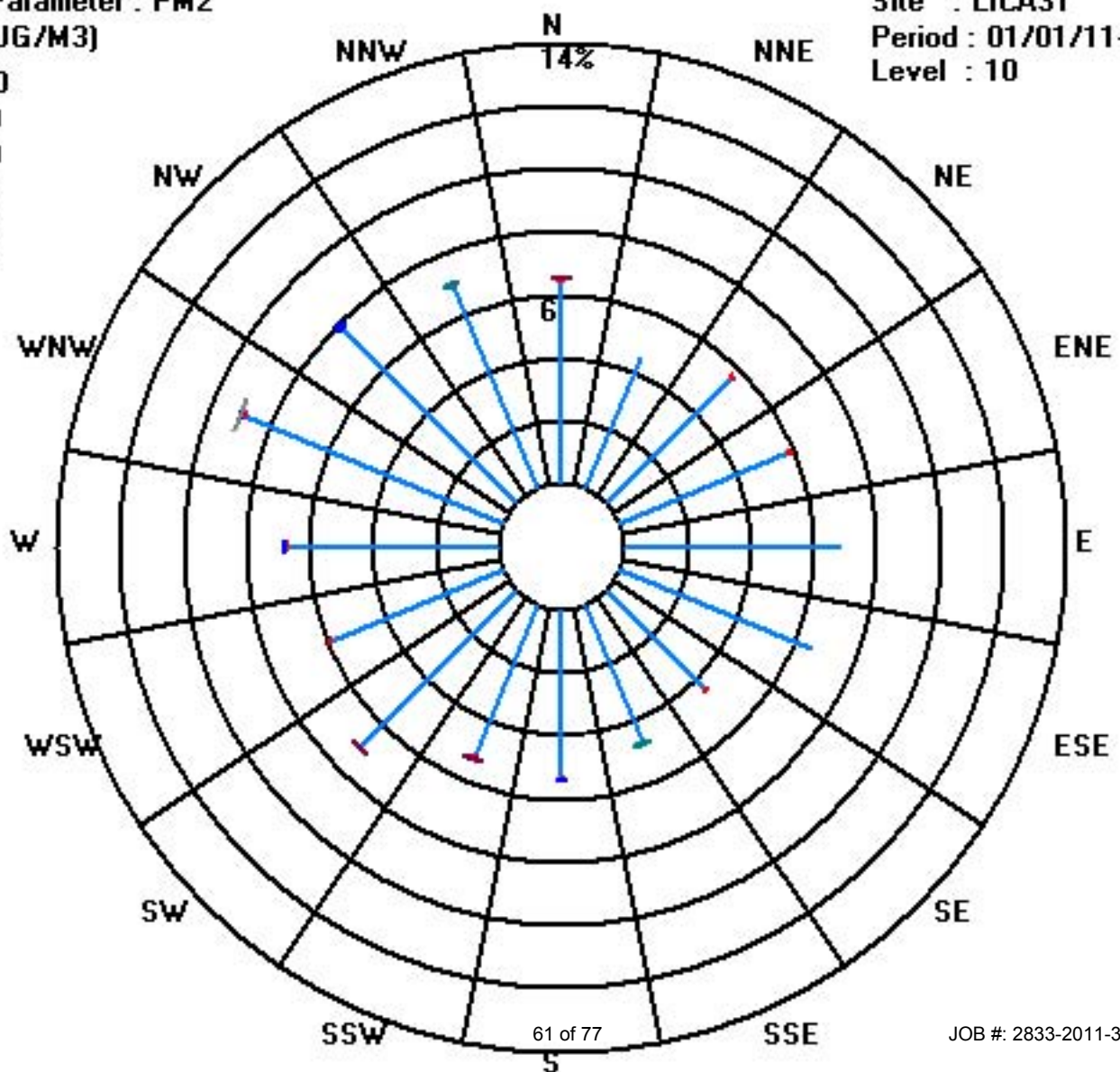
Class Limits (UG/M3)



Site : LICA31

Period : 01/01/11-12/31/11

Level : 10



Temperature

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : TPX Units : DGC

	Readings	Valid Readings	Min	Max	Mean
January	744	741	-28.2	6.2	-13.5
February	672	672	-30.4	7.4	-12.6
March	744	744	-29.7	9.9	-9.2
April	720	718	-5.8	16.3	3.2
May	744	744	-0.5	26.4	12.7
June	720	720	-1	26.2	14.7
July	744	744	7.4	27.4	16.6
August	744	743	4.9	28.2	16.5
September	720	720	-0.7	31.2	14.1
October	744	744	-4.8	15	5.8
November	720	720	-23.4	8.7	-5.6
December	744	744	-19.1	6.8	-4.8
Yearly Total	8760	8754	-30.4	31.2	3.2

Temperature - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	Operational Time (%)	Monthly Average (Deg.C)	Maximum Hourly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	99.6	-13.48	6.1	-28.2	2.5
February	100.0	-12.64	7.4	-30.4	2.5
March	100.0	-9.24	9.9	-29.7	3.9
April	99.7	3.21	16.3	-5.8	8.5
May	100.0	12.75	26.4	-0.5	20.0
June	100.0	14.74	26.2	-1.0	20.4
July	100.0	16.58	27.4	7.4	20.7
August	99.9	16.51	28.2	4.9	21.8
September	100.0	14.06	31.2	-0.7	24.3
October	100.0	5.79	15.0	-4.8	10.7
November	100.0	-5.65	8.7	-23.4	3.8
December	100.0	-4.84	6.8	-19.1	1.5
ANNUAL AVERAGE	-	3.15	-	-	-

Barometric Pressure

Current Date : 04/02/12
Current Time : 07:07

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : BP Units : MB

	Readings	Valid Readings	Min	Max	Mean
January	744	741	910	949	927
February	672	672	898	946	924
March	744	744	912	943	928
April	720	718	913	939	925
May	744	744	918	950	932
June	720	720	913	939	927
July	744	744	911	940	929
August	744	743	920	941	931
September	720	720	915	947	932
October	744	744	914	939	927
November	720	720	895	943	920
December	744	744	902	945	924
Yearly Total	8760	8754	895	950	927

BAROMETRIC PRESSURE - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	Operational Time (%)	Monthly Average (millibar)	Maximum Hourly Average (millibar)	Maximum Daily Average (millibar)
January	99.6	927	948	946.5
February	100.0	924	946	943.0
March	100.0	928	943	939.9
April	99.7	925	939	937.1
May	100.0	932	950	947.4
June	100.0	927	939	937.0
July	100.0	929	940	938.6
August	99.9	931	941	938.3
September	100.0	932	947	944.5
October	100.0	927	939	936.5
November	100.0	920	943	937.5
December	100.0	924	945	941.4
ANNUAL AVERAGE	-	927	-	-

Relative Humidity

Current Date : 04/02/12
Current Time : 07:07

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : RH Units : %FS

	Readings	Valid Readings	Min	Max	Mean
January	744	741	44	88	71
February	672	672	38	90	66
March	744	744	28	87	68
April	720	718	17	91	58
May	744	744	9	92	45
June	720	720	20	92	67
July	744	744	32	92	70
August	744	743	34	91	67
September	720	720	16	91	56
October	744	744	28	92	65
November	720	720	30	90	70
December	744	744	35	87	68
Yearly Total	8760	8754	9	92	64

Relative Humidity - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	Operational Time (%)	Monthly Average (%)	Maximum Hourly Average (%)	Maximum Daily Average (%)
January	99.6	70.35	87	82.1
February	100.0	65.58	90	81.0
March	100.0	68.46	87	83.6
April	99.7	58.21	91	87.8
May	100.0	45.23	92	77.2
June	100.0	66.74	92	87.4
July	100.0	70.21	92	87.5
August	99.9	66.76	91	85.5
September	100.0	56.03	91	80.9
October	100.0	64.76	92	91.0
November	100.0	70.31	90	88.3
December	100.0	68.43	87	79.2
ANNUAL AVERAGE	-	64.26	-	-

Precipitation

Current Date : 04/02/12
Current Time : 07:07

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

Logger Name : LICA31 Logger Id : 31 Parameter : PRECIP Units : MM

	Readings	Valid Readings	Min	Max	Mean
January	744	741	0	0.9	0
February	672	672	0	0.5	0
March	744	744	0	0.4	0
April	720	720	0	1.4	0
May	744	744	0	2.3	0
June	720	720	0	13.4	0.2
July	744	744	0	9.4	0.1
August	744	741	0	35.9	0.1
September	720	720	0	2.8	0
October	744	744	0	1.6	0
November	720	720	0	1.8	0
December	744	744	0	0	0
Yearly Total	8760	8754	0	35.9	0

PRECIPITATION - Monthly Averages for 2011

Plant Operator: LICA

Plant Location: ST. LINA

Month	Operational Time (%)	Monthly Averages (MM)	Maximum Hourly Average (MM)	Maximum Daily Average (MM)	Monthly Total (MM)
January	99.6	0.02	0.9	4.2	17.7
February	100.0	0.01	0.5	2.2	6.0
March	100.0	0.00	0.4	0.9	2.9
April	100.0	0.02	1.4	6.6	15.1
May	100.0	0.01	2.3	2.3	4.4
June	100.0	0.17	13.4	23.4	120.0
July	100.0	0.14	9.4	20.6	107.4
August	99.6	0.08	35.9	38.5	61.2
September	100.0	0.02	2.8	7.1	12.3
October	100.0	0.02	1.6	4.2	14.5
November	100.0	0.02	1.8	7.7	11.3
December	100.0	0.00	0.0	0.0	0.0
ANNUAL AVERAGE	-	0.04	-	-	-

Vector Wind Speed

Current Date : 04/02/12
Current Time : 07:06

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2011

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

	Readings	Valid Readings	Min	Max	Mean
January	744	741	0.7	26.6	10.7
February	672	672	1.1	26.3	10.4
March	744	744	0.3	19.9	9.5
April	720	718	0.4	22.8	9.8
May	744	744	0.4	24.4	10.8
June	720	720	0.7	17.6	9.2
July	744	744	0.5	22.1	9.1
August	744	743	0.6	26.1	9.4
September	720	718	0.7	19.5	9.6
October	744	743	1	21.2	9.4
November	720	720	0.2	22.6	10.5
December	744	744	0.5	30.6	11.3
Yearly Total	8760	8751	0.2	30.6	10

LICA31
WSP / WDR Joint Frequency Distribution (Percent)

01/01/11 thru 12/31/11

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	.84	.90	.97	1.06	1.30	.92	.93	.82	.89	.89	.92	.95	.75	.94	1.10	.94	15.19
< 12.0	3.73	2.62	2.85	3.22	3.81	3.50	2.46	2.28	3.10	3.10	4.06	3.38	4.31	4.89	3.87	4.01	55.28
< 20.0	1.79	.90	1.77	1.46	1.62	1.96	.97	1.53	1.56	1.26	2.04	1.59	1.51	2.74	2.93	2.13	27.83
< 29.0	.10	.13	.00	.03	.03	.06	.00	.12	.01	.01	.01	.07	.22	.42	.02	.04	1.33
< 39.0	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.04
>= 39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.51	4.57	5.59	5.78	6.77	6.46	4.37	4.76	5.57	5.27	7.05	6.02	6.82	9.01	7.94	7.14	

Calm : .29 %

Total # Operational Hours : 8751

Distribution By Samples

Limit	Direction																Freq
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
< 6.0	74	79	85	93	114	81	82	72	78	78	81	84	66	83	97	83	1330
< 12.0	327	230	250	282	334	307	216	200	272	272	356	296	378	428	339	351	4838
< 20.0	157	79	155	128	142	172	85	134	137	111	179	140	133	240	257	187	2436
< 29.0	9	12		3	3	6		11	1	1	1	7	20	37	2	4	117
< 39.0	3													1			4
>= 39.0																	
Totals	570	400	490	506	593	566	383	417	488	462	617	527	597	789	695	625	

Calm : .29 %

Total # Operational Hours : 8751

Class Limits (KPH)

