Lakeland Industry & Community Association

Cold Lake Monitoring Site
Ambient Annual Data Report

For
2009

Prepared By:

Maxxam Analytics Inc

Driven by Service and Science

January 18, 2010

Lakeland Industry & Community Association
Ambient Air Monitoring

Table of Contents

Introduction

The following Ambient Air Monitoring report was prepared for:

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Monitoring Location: Cold Lake
Data Period: January 2009 to December 2009

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

The monthly 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 Annual Summary - Cold Lake

Equipment Operation

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

AQM STATION – LICA – COLD LAKE
A trailer audit was performed by Alberta Environment on November 3rd, 2009.

Sulphur Dioxide (PPB)

- Analyzer make / model - Thermo 43i
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure event.
  - Two hours of data on September 16th were invalidated due to a power failure event.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.

Total Reduced Sulphur (PPB)

- Analyzer make / model -TEI 43A replaced to TEI 450i
- Converter - CD NOVA CDN 101
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - The daily span had drifter 10% low on April 29th. It was suspected a fluctuation in the permeation system, but no critical issue was noticed.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure event.
  - Two hours of data on September 16th were invalidated due to a power failure event.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Nitrogen Dioxide (PPB)

- Analyzer make / model - TECO 42C
  - The NO2 pump was replaced following the as found points on March 4th. The pump that was in use with the analyzer had failed prematurely on 2 occasions. The pump diaphragm in the zero span system was replaced, and a new NO2 permeation tube was installed on March 4th.
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - The analyzer spanned 10% low on May 27th. After putting the as found points, it was noticed that ozone is getting through the exhaust scrubber, that was refilled on November 13th, 2008, and damaged the rubber components inside the pump. The scrubbing material was changed on May 28th.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure event.
  - Two hours of data on September 16th were invalidated due to a power failure event.
  - A Maxxam-supplied scrubber for the daily zero calibration was installed on October 1st.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Total HydroCarbon (PPM)

- Analyzer make / model -TECO 51C-LT
  - The monthly calibration using propane gas only was performed on February 2nd. A multi-point as found calibration on the analyzer and post adjust calibration were performed using a new Methane/Propane blended cylinder of calibration gas on February 27th.
  - The pump diaphragm was replaced following the as found points on March 3rd.
  - The analyzer was flamed-out on March 23rd, and it was re-lit on March 24th. A total of 24 hours of data was invalidated due to this issue.
  - Two hours of data were invalidated for an unknown episode causing the analyzer flamed-out on March 23rd.
  - A multi-points as found point calibration was performed on April 20th, and the result of the calibration showed linearity poor. After the flows measurement, it was noticed that this is an early warning sign that the FID air regulator is going to fail and needs replacement. A FID rebuild was performed. A post rebuild calibration was performed on April 21st, and the linearity was much better. A post “burn-in” calibration was performed on April 23rd.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure.
  - After the power failure on June 3rd, the analyzer flamed-out, it was re-lit manually after 3 hours of the event.
  - Two hours of data on September 16th were invalidated due to a power failure event. After the power failure, the analyzer flamed-out, it was re-lit manually on September 17th. A total of 33 hours of data was invalidated.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.
  - The analyzer failed after the power failure on December 16th, and it was relit on December 17th. 18 hours of data were invalidated.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Ozone (PPB)

- Analyzer make / model - TECO 49I
  - The analyzer spanned 40% low on January 31st after daily calibration. The issue was fixed on February 1st. Data was invalidated back to the last valid calibration, which is January 30th. 44 hours of data were invalidated.
  - The daily span dropped down to 40% low on February 3rd. Performed the ozone scrubber test; this test indicated a bad sample valve. It was suspected a bad solenoid valve. A new valve was then installed. A post repair calibration then was performed on February 5th. Due to this issue, a total of 33 hours of data was invalidated.
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - A Teflon inlet bulkhead fitting with a stainless steel fitting was replaced due to damages on the old Teflon fitting on April 23rd.
  - A daily calibration program was run on the analyzer to ensure that nothing had happened to the exhaust lines in the pump closet during the changes to the scrubber due to the issue occurred on the NO2 analyzer on May 28th. No issue was discovered.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure event.
  - Two hours of data on September 16th were invalidated due to a power failure event.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Particulate Matter 2.5 (ug/m^3)

- Analyzer make / model –TEOM 1400A and TEOM1405F
  - A removal audit of the Maxxam-Supplied TEOM 1400A was performed on January 12th. An installation audit was performed on January 13th. A total of 27 hours of data was invalidated due to this maintenance.
  - One-hour data was invalidated as it was below –3.0 ug/m^3 in January
  - Seven-hour data were invalidated as it was below –3.0 ug/m^3 in February.
  - A removal audit on the 1405F was performed on March 26th; the unit was being shipped to distributor for a manufacturer recall repair. A replacement 1405F was installed on the same day. The replacement has been through a manufacturers recall and has had the latest version of firmware installed. A new TEOM and 47mm FDMS filters was installed, and a leak check was performed on March 26th. The analyzer was put in the Maintenance mode overnight for it stability. An installation audit was performed on March 27th. 18 hours of data were invalidated during this maintenance.
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - 40 hours of data were invalidated as it was below –3.0 ug/m^3 in March.
  - No data was invalidated as it was below –3.0 ug/m^3 in April.
  - It was noticed that the Teom took a long time to stabilize following the audit on May 21st; was negative for a while. The analyzer was left in maintenance mode until stable.
  - Several high readings were recorded on May 26th. It is likely due to apartment fire making a lot of smoke near the station.
  - Five hours of data were invalidated as it was below –3.0 ug/m^3in May.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure.
  - Two hours of data were invalidated as it was below –3.0 ug/m^3 in June.
  - Nine hours of data were invalidated as it was below –3.0 ug/m^3 in July.

(To Be Continued…)

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Particulate Matter 2.5 (ug/m^3)

- (Continued) Sixteen hours of data were invalidated as it was below –3.0 ug/m^3 in August.
- Two hours of data on September 16th were invalidated due to a power failure event.
- Thirty hours of data were invalidated as it was below –3.0 ug/m^3 in September.
- An intermittent warning for pump pressure was observed during the trip of October 1st. An audit including a leak check was performed; no issues were discovered. The pump was rebuilt on October 8th. Request firmware upgrade from the manufacturer. This issue did not affect data quality.
- One hour of data is missing on October 27th.
- Four hours of data were invalidated as it was below –3.0 ug/m^3 in October.
- 17 hours of data were invalidated as it was below –3.0 ug/m^3 in November.
- One hour of data was invalidated due to a power failure on December 16th.
- 5 hours of data were invalidated as it was below –3.0 ug/m^3 in December.

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

- System make / model – Met One 50.5
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure event.
  - Two hours of data on September 16th were invalidated due to a power failure event.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Relative Humidity (PERCENT)

- System make / model - Rotronic Hygroclip-S3
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure event.
  - Two hours of data on September 16th were invalidated due to a power failure event.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.

Ambient Temperature (DEGC)

- System make / model - Rotronic Hygroclip-S3
  - Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
  - A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
  - An hour of data on June 3rd was also invalidated due to a power failure event.
  - Two hours of data on September 16th were invalidated due to a power failure event.
  - One hour of data is missing on October 27th.
  - One hour of data was invalidated due to a power failure on December 16th.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Trailer Temperature (DEGC)

- System make / model - R&R 61
- ❖ Two hours of data were invalidated for an unknown episode causing the analyzer instability on March 23rd.
- ❖ A hardware modification and software upgrade were performed on June 17th, which caused one hour data invalidated.
- ❖ An hour of data on June 3rd was also invalidated due to a power failure event.
- ❖ Two hours of data on September 16th were invalidated due to a power failure event.
- ❖ One hour of data is missing on October 27th.
- ❖ One hour of data was invalidated due to a power failure on December 16th.

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.

Trailer

- ❖ The manifold was cleaned on July 13th.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Air Quality Index (AQI)

- All AQI values recorded in January were within the good range.
- All AQI values recorded in February were within the good range.
- 39 hours of fair AQI values recorded in March 2009; 35 hours of fair AQI values were due to Ozone and 2 hours were due to PM2.5.
- 39 hours of fair AQI values recorded in April 2009, and all fair AQI values were due to Ozone.
- 79 hours of fair AQI values recorded in May 2009, and 76 hours of fair AQI were due to Ozone, and three hours of fair AQI were due to PM2.5.
- 37 hours of fair AQI values recorded in June 2009, and 35 hours of fair AQI were due to Ozone, and 2 hours of fair AQI were due to PM2.5.
- All AQI values recorded in July were within the good range.
- 13 hours of fair AQI values recorded in August 2009, and all were due to Ozone.
- 37 hours of fair AQI values recorded in September 2009, and 35 hours of fair AQI were due to Ozone, and 2 hours of fair AQI were due to PM2.5.
- All data were within the good range in October.
- All data were within the Good range in November.

General Annual Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Passive Network

- During the trip in May, it was noticed that the post and samplers at the Foster Creek station (CASA#12) were on the ground, the samplers had fallen out of the weather shield. Also, the Medley Martineau site (CASA#23) was leaning over and the post is now bent. The ozone and NO2 samplers had fallen out and were found on the ground. The post was removed then pounded back into the ground so it will stand upright. This post requires replacement to ensure the samplers don't fall out again. Added a passive sampler shelter to this site.
- The original Cold Lake South Site (CASA#22) was decommissioned at clients request in May.
- The original Cold Lake South site (CASA#22) was put back at clients request. In July.
- The St. Lina site (CASA#32) was added in July.
- The SO2 and SO2 duplicate at Frog Lake site (CASA#18) were damaged in July.
- Station # 34: Portable station was installed this month in November.

Continuous Monitoring

Annual Summaries & Wind Roses

Sulphur Dioxide

Current Date : 01/15/10
Current Time : 14:08

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	709	0	5	0
February	672	635	0	4	0
March	744	704	0	6	0
April	720	685	0	1	0
May	744	702	0	4	0
June	720	683	0	1	0
July	744	703	0	2	0
August	744	707	0	3	0
September	720	680	0	1	0
October	744	707	0	4	0
November	720	682	0	2	0
December	744	707	0	6	0
Yearly Total	8760	8304	0	6	0

SO_2 Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: COLD LAKE SOUTH

Month	Valid Readings* Hours	% 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	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
February	635	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
March	704	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
April	685	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
May	702	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
June	683	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
July	703	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
August	707	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
September	680	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
October	707	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
November	682	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
December	707	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
C - Concentration								Annual Average		**0.00**

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

SO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: COLD LAKE SOUTH

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

LICA
SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.81	4.68	5.29	4.17	7.55	8.16	9.89	2.97	3.16	3.93	12.45	11.64	7.81	5.64	6.26	3.50	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.81	4.68	5.29	4.17	7.55	8.16	9.89	2.97	3.16	3.93	12.45	11.64	7.81	5.64	6.26	3.50	

Calm : .00 %

Total # Operational Hours : 8304

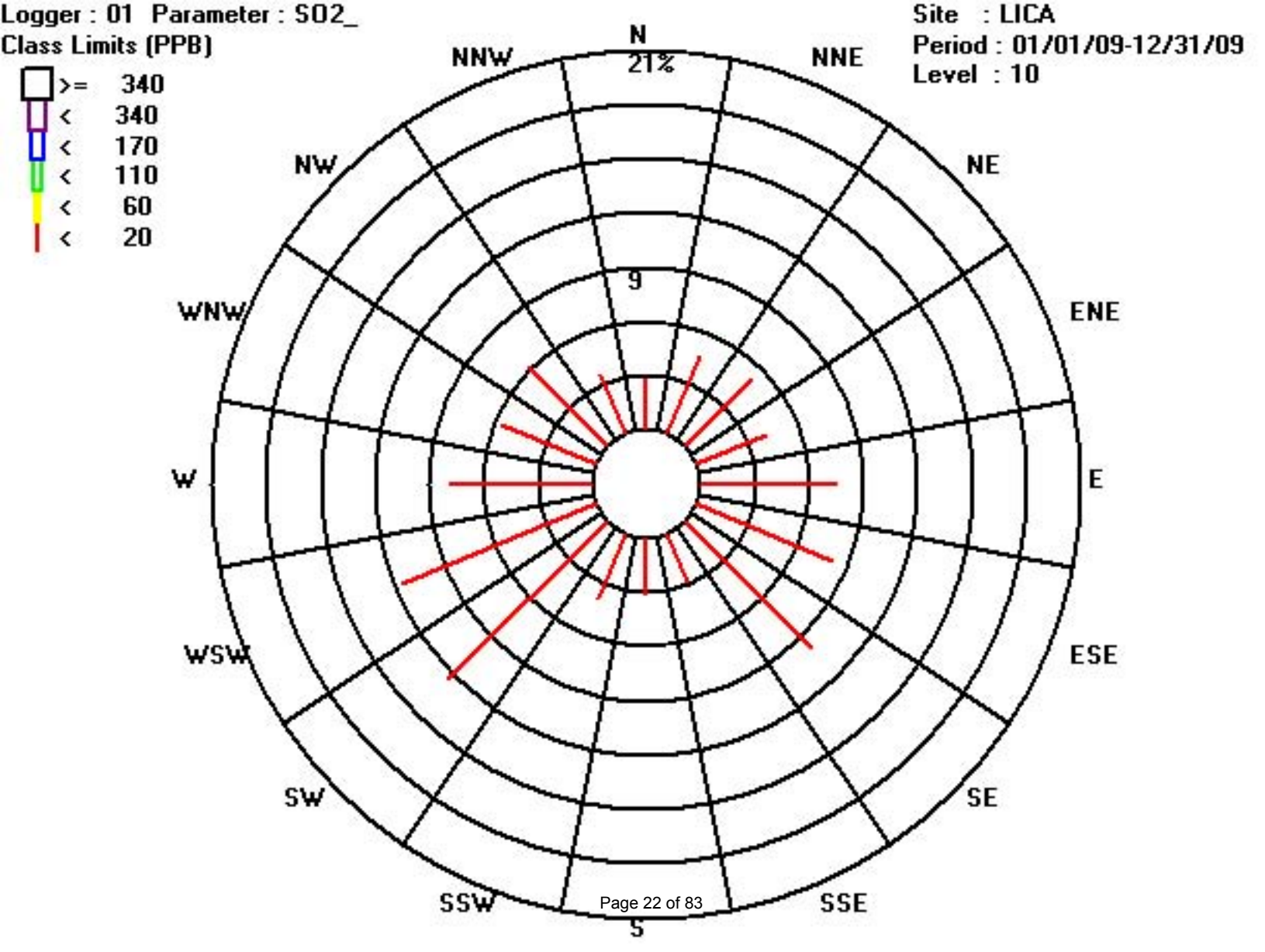
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	234	389	440	347	627	678	822	247	263	327	1034	967	649	469	520	291	8304
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	234	389	440	347	627	678	822	247	263	327	1034	967	649	469	520	291	

Calm : .00 %

Total # Operational Hours : 8304


Logger : 01 Parameter : SO2_
Class Limits (PPB)
>= 340
< 340
< 170
< 110
< 60
< 20
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Total Reduced Sulphur

Current Date : 01/15/10
Current Time : 14:08

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	709	0	0	0
February	672	635	0	0	0
March	744	705	0	0	0
April	720	683	0	0	0
May	744	706	0	0	0
June	720	684	0	0	0
July	744	707	0	9	0
August	744	707	0	6	0
September	720	682	0	6	0
October	744	708	0	0	0
November	720	682	0	0	0
December	744	707	0	0	0
Yearly Total	8760	8315	0	9	0

TRS Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: Cold Lake South

Month	Number of Readings	% Readings in Concentration Range (ppb TRS)				TRS ppb Monthly Average (ppb)
		0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb	
January	709	100.0%	0.0%	0.0%	0.0%	0.00
February	635	100.0%	0.0%	0.0%	0.0%	0.00
March	705	100.0%	0.0%	0.0%	0.0%	0.00
April	683	100.0%	0.0%	0.0%	0.0%	0.00
May	706	100.0%	0.0%	0.0%	0.0%	0.00
June	684	100.0%	0.0%	0.0%	0.0%	0.00
July	707	100.0%	0.0%	0.0%	0.0%	0.03
August	707	100.0%	0.0%	0.0%	0.0%	0.03
September	682	100.0%	0.0%	0.0%	0.0%	0.02
October	708	100.0%	0.0%	0.0%	0.0%	0.00
November	682	100.0%	0.0%	0.0%	0.0%	0.00
December	707	100.0%	0.0%	0.0%	0.0%	0.00
					Annual Average	**0.01**

TRS Peak Reading of One Hour Averages for 2009

Plant Operator: LICA

Plant Location: Cold Lake South

Month	TRS ppb Peak Reading
January	0
February	0
March	0
April	0
May	0
June	0
July	9
August	6
September	6
October	0
November	0
December	0

ANNUAL PEAK	**9**

LICA
TRS_ / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : TRS_
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
< 3	2.82	4.66	5.27	4.13	7.54	8.17	9.88	2.97	3.17	3.93	12.42	11.61	7.80	5.64	6.28	3.52	99.89
< 10	.00	.00	.00	.00	.00	.00	.00	.01	.00	.02	.01	.02	.00	.01	.02	.00	.10
< 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	2.82	4.66	5.27	4.13	7.54	8.17	9.88	2.98	3.17	3.95	12.43	11.64	7.80	5.65	6.31	3.52	

Calm : .00 %

Total # Operational Hours : 8315

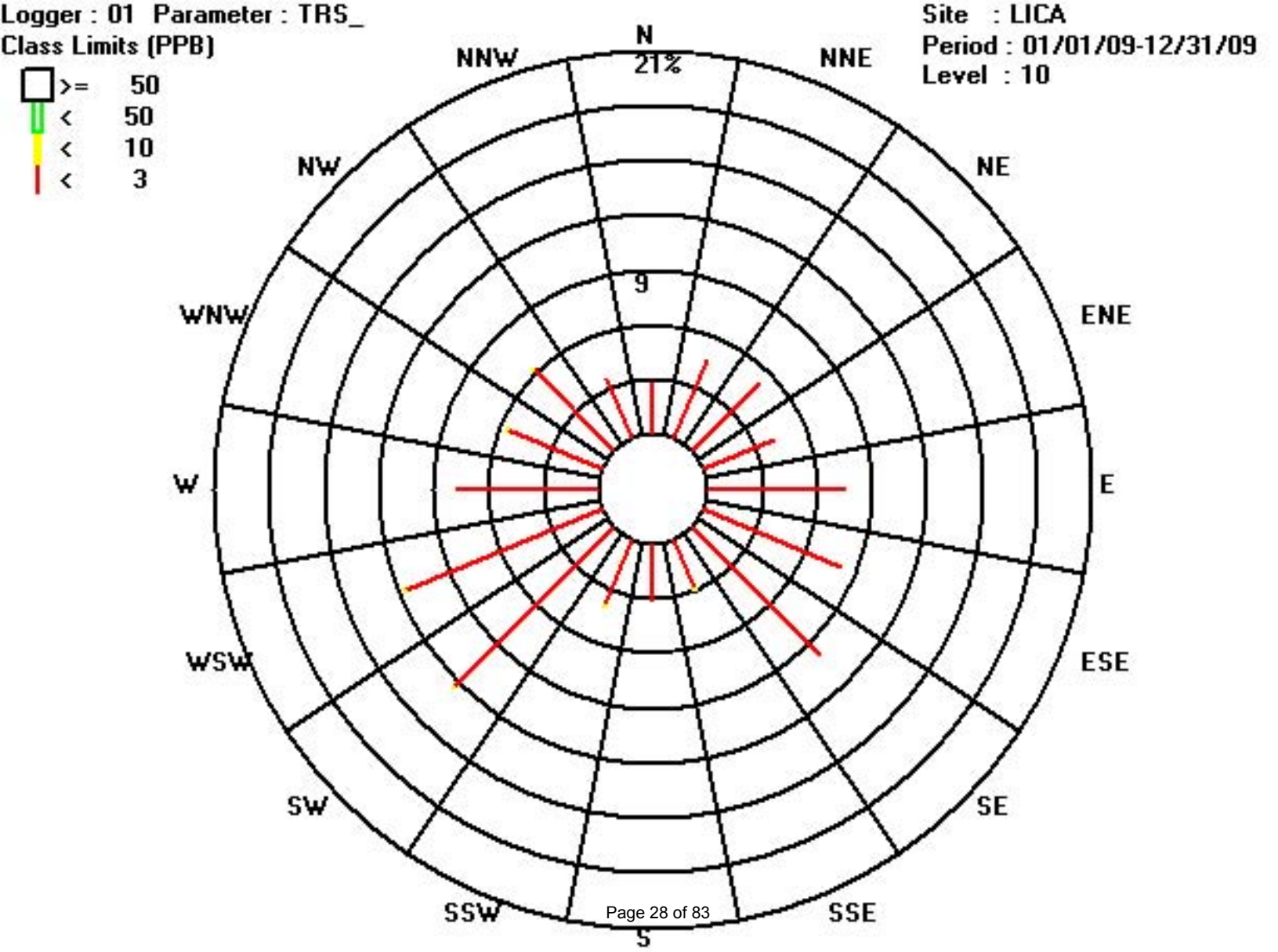
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	235	388	439	344	627	680	822	247	264	327	1033	966	649	469	523	293	8306
< 10								1		2	1	2		1	2		9
< 50																	
>= 50																	
Totals	235	388	439	344	627	680	822	248	264	329	1034	968	649	470	525	293	

Calm : .00 %

Total # Operational Hours : 8315


Logger : 01 Parameter : TRS_
Class Limits (PPB)
>= 50
< 50
< 10
< 3
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Total Hydrocarbons

Current Date : 01/15/10
Current Time : 14:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	708	1.6	3.1	2
February	672	628	1.7	3.6	2
March	744	674	1.5	3	1.8
April	720	666	1.5	2.9	1.7
May	744	705	1.8	3.2	2
June	720	679	1.8	3	2
July	744	708	1.8	3.4	2
August	744	706	1.8	3.6	2.1
September	720	645	1.8	3.1	2
October	744	707	1.8	3.1	2
November	720	682	1.8	3.6	2.2
December	744	690	2	4.9	2.4
Yearly Total	8760	8198	1.5	4.9	2

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: COLD LAKE SOUTH

Month	Number of Readings	% 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	708	99.7%	2.5%	0.0%	0.0%	2.04
February	628	97.5%	2.5%	0.0%	0.0%	2.08
March	674	99.6%	0.4%	0.0%	0.0%	1.84
April	666	100.0%	0.0%	0.0%	0.0%	1.79
May	705	99.4%	0.6%	0.0%	0.0%	2.01
June	679	99.9%	0.1%	0.0%	0.0%	2.04
July	708	99.4%	0.6%	0.0%	0.0%	2.09
August	706	99.0%	1.0%	0.0%	0.0%	2.14
September	645	99.8%	0.2%	0.0%	0.0%	2.03
October	707	99.9%	0.1%	0.0%	0.0%	2.01
November	682	98.8%	1.2%	0.0%	0.0%	2.21
December	690	86.4%	13.6%	0.0%	0.0%	2.48
					Annual Average	**2.06**

THC Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: COLD LAKE SOUTH

Month	THC ppm Peak Reading
January	3.1
February	3.6
March	3.0
April	2.9
May	3.2
June	3.0
July	3.4
August	3.6
September	3.1
October	3.1
November	3.6
December	4.9

ANNUAL PEAK	**4.9**

LICA
THC / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.84	4.61	5.20	4.09	7.17	8.14	9.86	2.93	3.14	3.84	12.12	11.23	7.67	5.61	6.24	3.51	98.28
<	10.0	.00	.02	.03	.06	.09	.06	.12	.03	.06	.14	.29	.48	.21	.03	.01	.02	1.71
<	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	4.63	5.24	4.15	7.27	8.20	9.99	2.97	3.20	3.98	12.41	11.72	7.89	5.64	6.25	3.53	

Calm : .00 %

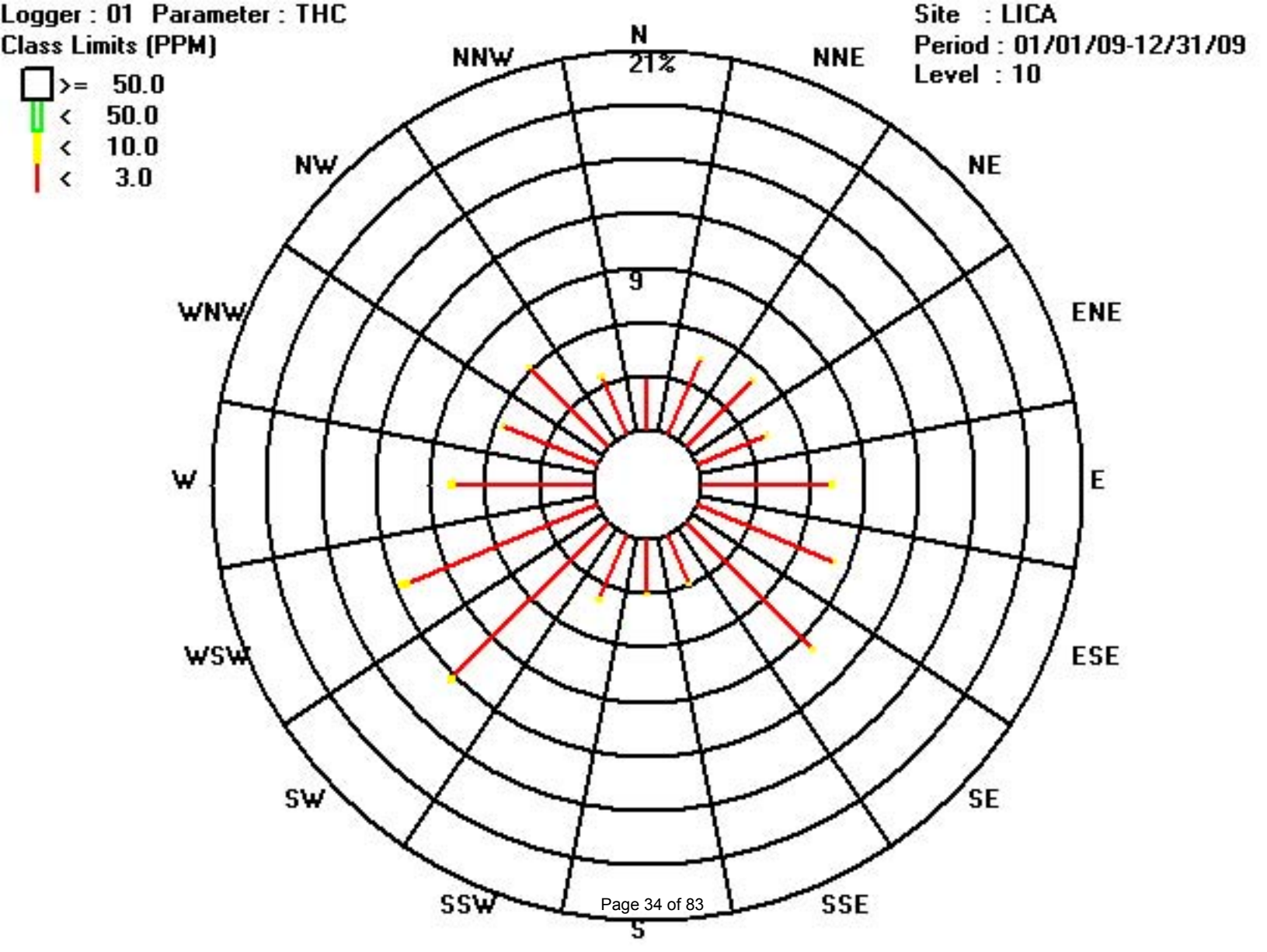
Total # Operational Hours : 8198

Distribution By Samples

		Direction																
	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	3.0	233	378	427	336	588	668	809	241	258	315	994	921	629	460	512	288	8057
<	10.0		2	3	5	8	5	10	3	5	12	24	40	18	3	1	2	141
<	50.0																	
>=	50.0																	
	Totals	233	380	430	341	596	673	819	244	263	327	1018	961	647	463	513	290	

Calm : .00 %

Total # Operational Hours : 8198


Logger : 01 Parameter : THC
Class Limits (PPM)
>= 50.0
< 50.0
< 10.0
< 3.0
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Particulate Matter 2.5

Current Date : 01/15/10
Current Time : 14:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	708	0	25.8	5.3
February	672	655	0	30	7.4
March	744	681	0	39.6	7.1
April	720	717	0	16.2	4.6
May	744	731	0	40.8	5.9
June	720	714	0	54.6	7.7
July	744	730	0	23.4	6
August	744	718	0	27.6	5.4
September	720	682	0	23	4.2
October	744	727	0	14.3	3.3
November	720	693	0	21.5	4.3
December	744	734	0	28.5	6.9
Yearly Total	8760	8490	0	54.6	5.7

PM 2.5 Monthly Averages and Frequency Distributions of Daily Average Readings - 2009

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	Valid Readings* Hours	% Readings in Concentration Range (ug/m^3)						Total Daily Readings > 30 ug/m3	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	> 240 ug/m^3		
January	708	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.34
February	655	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	7.41
March	681	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0	7.15
April	717	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.62
May	731	99.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0	6.00
June	714	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0	7.76
July	730	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	6.09
August	718	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.42
September	682	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.27
October	727	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	3.33
November	693	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	4.37
December	734	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	6.94
							Annual Average		**5.72**

C - Concentration

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

PM 2.5 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA

Plant Location: COLD LAKE SOUTH

Month	PM 2.5 (ug/m3) Peak Reading
January	26
February	30
March	40
April	16
May	41
June	55
July	23
August	28
September	23
October	14
November	22
December	29

ANNUAL PEAK	**55**

LICA
PM2 / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.90	4.62	5.35	4.05	7.49	8.13	9.84	2.97	3.10	4.00	12.41	11.74	7.79	5.59	6.30	3.48	99.85
<	60.0	.00	.00	.00	.01	.00	.01	.01	.00	.02	.00	.02	.01	.02	.02	.00	.00	.14
<	80.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	120.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.90	4.62	5.35	4.06	7.49	8.15	9.85	2.97	3.13	4.00	12.43	11.75	7.82	5.61	6.30	3.48	

Calm : .00 %

Total # Operational Hours : 8490

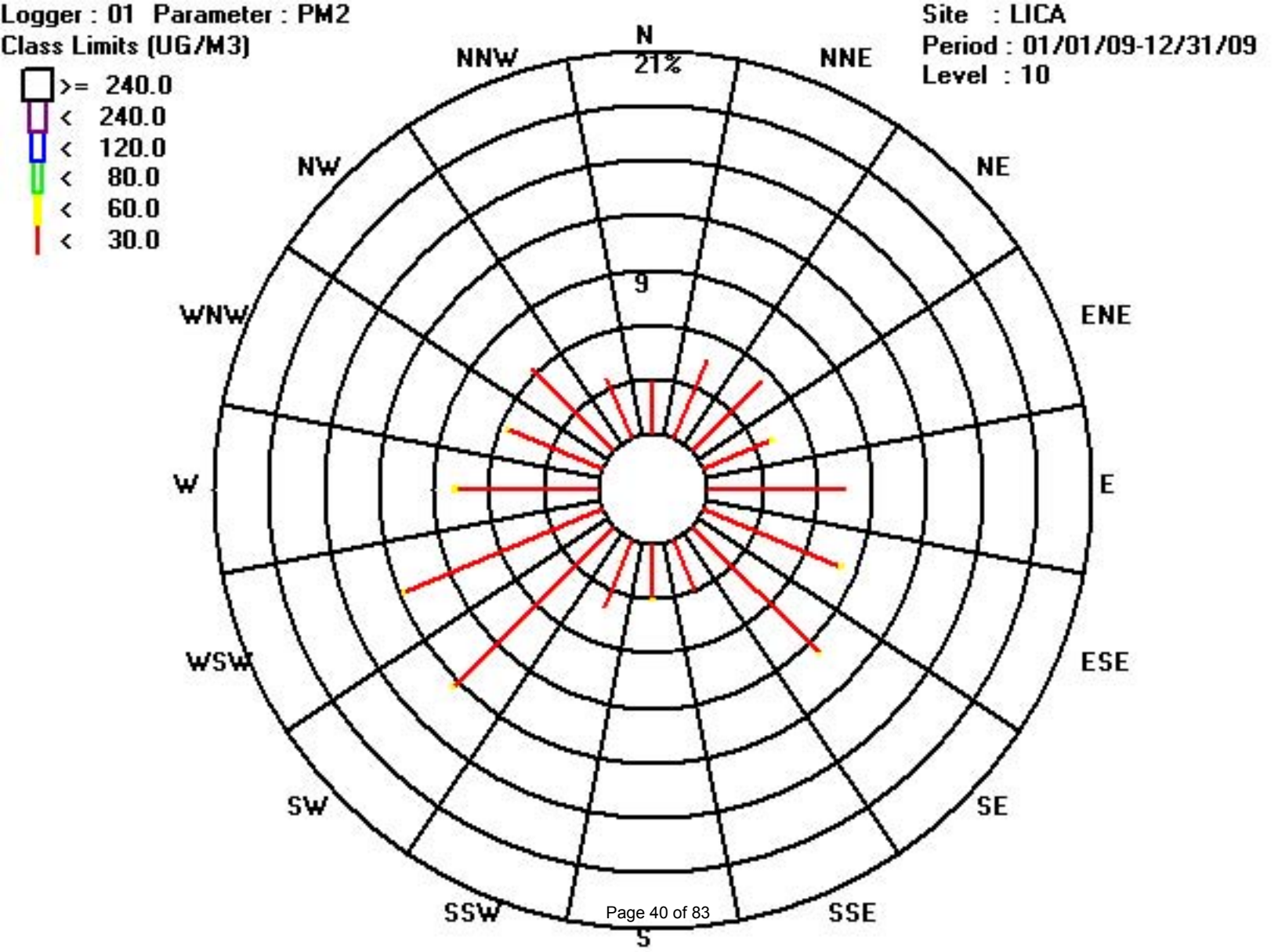
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	30.0	247	393	455	344	636	691	836	253	264	340	1054	997	662	475	535	296	8478
<	60.0				1		1	1		2		2	1	2	2			12
<	80.0																	
<	120.0																	
<	240.0																	
>=	240.0																	
	Totals	247	393	455	345	636	692	837	253	266	340	1056	998	664	477	535	296	

Calm : .00 %

Total # Operational Hours : 8490


Logger : 01 Parameter : PM2
Class Limits (UG/M3)
>= 240.0
< 240.0
< 120.0
< 80.0
< 60.0
< 30.0
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitrogen Dioxide

Current Date : 01/15/10
Current Time : 14:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	706	0	38	8
February	672	632	0	35	9
March	744	701	0	40	5
April	720	682	0	25	3
May	744	693	0	17	1
June	720	680	0	13	1
July	744	704	0	8	1
August	744	704	0	9	1
September	720	679	0	12	1
October	744	705	0	16	2
November	720	678	0	27	6
December	744	704	0	25	8
Yearly Total	8760	8268	0	40	4

NO_2 Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	Number of Readings	% Readings in Concentration Range (ppm NO2)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO2 ppm Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm			
January	706	100.0%	0.0%	0.0%	0.0%	0	0	0.01
February	632	100.0%	0.0%	0.0%	0.0%	0	0	0.01
March	701	100.0%	0.0%	0.0%	0.0%	0	0	0.01
April	682	100.0%	0.0%	0.0%	0.0%	0	0	0.00
May	693	100.0%	0.0%	0.0%	0.0%	0	0	0.00
June	680	100.0%	0.0%	0.0%	0.0%	0	0	0.00
July	704	100.0%	0.0%	0.0%	0.0%	0	0	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0	0	0.00
September	679	100.0%	0.0%	0.0%	0.0%	0	0	0.00
October	705	100.0%	0.0%	0.0%	0.0%	0	0	0.00
November	678	100.0%	0.0%	0.0%	0.0%	0	0	0.01
December	704	100.0%	0.0%	0.0%	0.0%	0	0	0.01
						Annual Average		**0.00**

NO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: COLD LAKE SOUTH

Month	NO2 ppb Peak Reading
January	38
February	35
March	40
April	25
May	17
June	13
July	8
August	9
September	12
October	16
November	27
December	25
ANNUAL PEAK	**40**

LICA
NO2_ / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.80	4.66	5.24	4.18	7.58	8.18	9.86	2.97	3.16	3.94	12.44	11.68	7.77	5.63	6.32	3.49	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.80	4.66	5.24	4.18	7.58	8.18	9.86	2.97	3.16	3.94	12.44	11.68	7.77	5.63	6.32	3.49	

Calm : .00 %

Total # Operational Hours : 8268

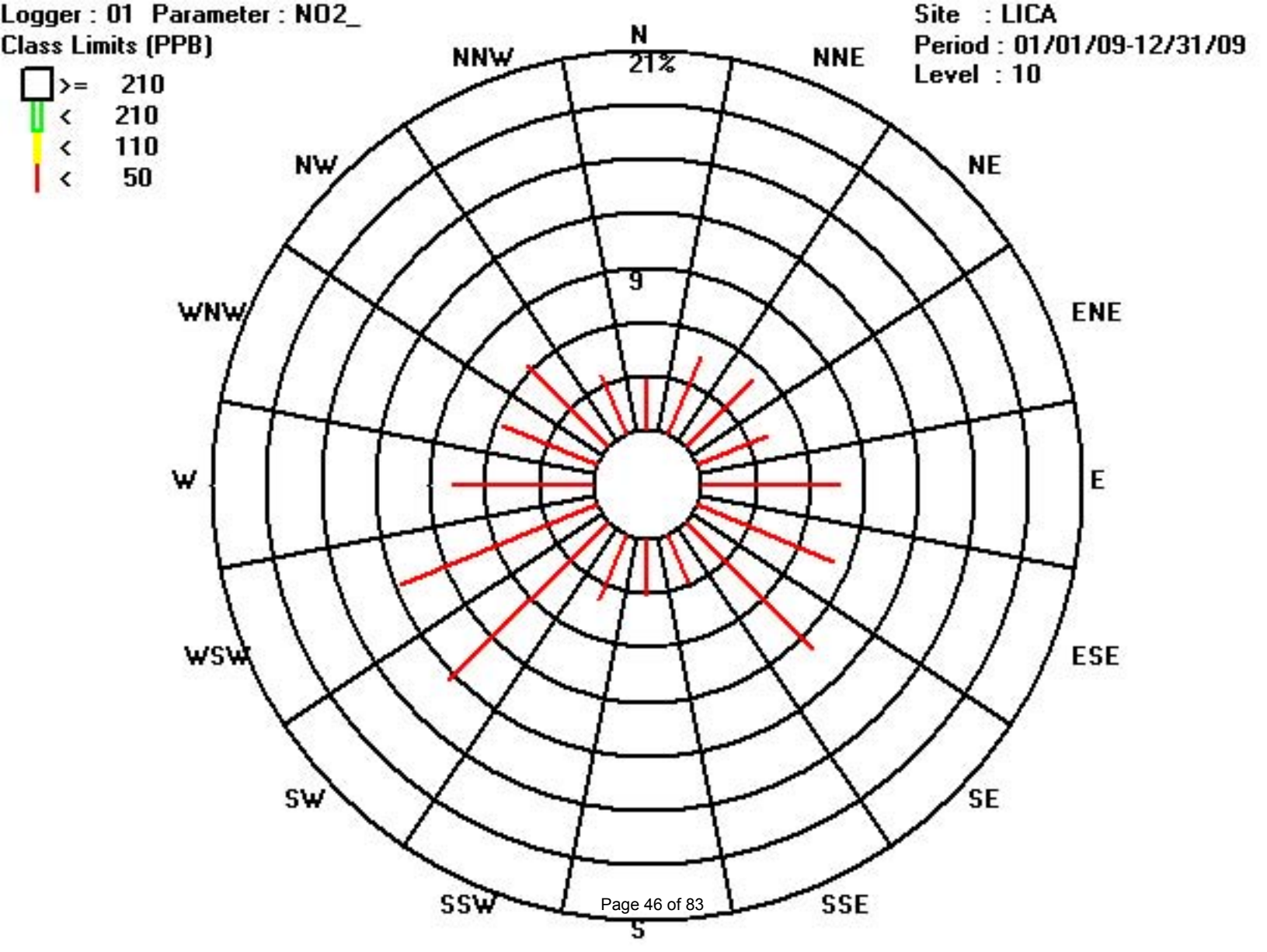
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	232	386	434	346	627	677	816	246	262	326	1029	966	643	466	523	289	8268
< 110																	
< 210																	
>= 210																	
Totals	232	386	434	346	627	677	816	246	262	326	1029	966	643	466	523	289	

Calm : .00 %

Total # Operational Hours : 8268


Logger : 01 Parameter : NO2_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitric Oxide

Current Date : 01/15/10
Current Time : 14:08

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	706	0	73	2
February	672	632	0	73	2
March	744	701	0	77	1
April	720	682	0	39	0
May	744	693	0	22	0
June	720	680	0	10	0
July	744	704	0	7	0
August	744	704	0	18	0
September	720	679	0	25	0
October	744	705	0	36	0
November	720	678	0	60	2
December	744	704	0	44	1
Yearly Total	8760	8268	0	77	1

NO Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	Number of Readings	% 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	706	99.6%	0.4%	0.0%	0.0%	0.00
February	632	99.7%	0.3%	0.0%	0.0%	0.00
March	701	99.4%	0.6%	0.0%	0.0%	0.00
April	682	100.0%	0.0%	0.0%	0.0%	0.00
May	693	100.0%	0.0%	0.0%	0.0%	0.00
June	680	100.0%	0.0%	0.0%	0.0%	0.00
July	704	100.0%	0.0%	0.0%	0.0%	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0.00
September	679	100.0%	0.0%	0.0%	0.0%	0.00
October	705	100.0%	0.0%	0.0%	0.0%	0.00
November	678	99.7%	0.3%	0.0%	0.0%	0.00
December	704	100.0%	0.0%	0.0%	0.0%	0.00
					Annual Average	**0.00**

NO Peak reading of One Hour Averages for 2009

Plant Operator: LICA Station: COLD LAKE SOUTH

Month	NO ppb Peak Reading
January	73
February	73
March	77
April	39
May	22
June	10
July	7
August	18
September	25
October	36
November	60
December	44
TOTAL EXCEED	
ANNUAL PEAK	**77**

LICA
NO_ / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.80	4.65	5.24	4.13	7.54	8.17	9.86	2.97	3.16	3.94	12.44	11.67	7.76	5.63	6.32	3.49	99.86
<	110	.00	.01	.00	.04	.03	.01	.00	.00	.00	.00	.00	.01	.01	.00	.00	.00	.13
<	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	2.80	4.66	5.24	4.18	7.58	8.18	9.86	2.97	3.16	3.94	12.44	11.68	7.77	5.63	6.32	3.49	

Calm : .00 %

Total # Operational Hours : 8268

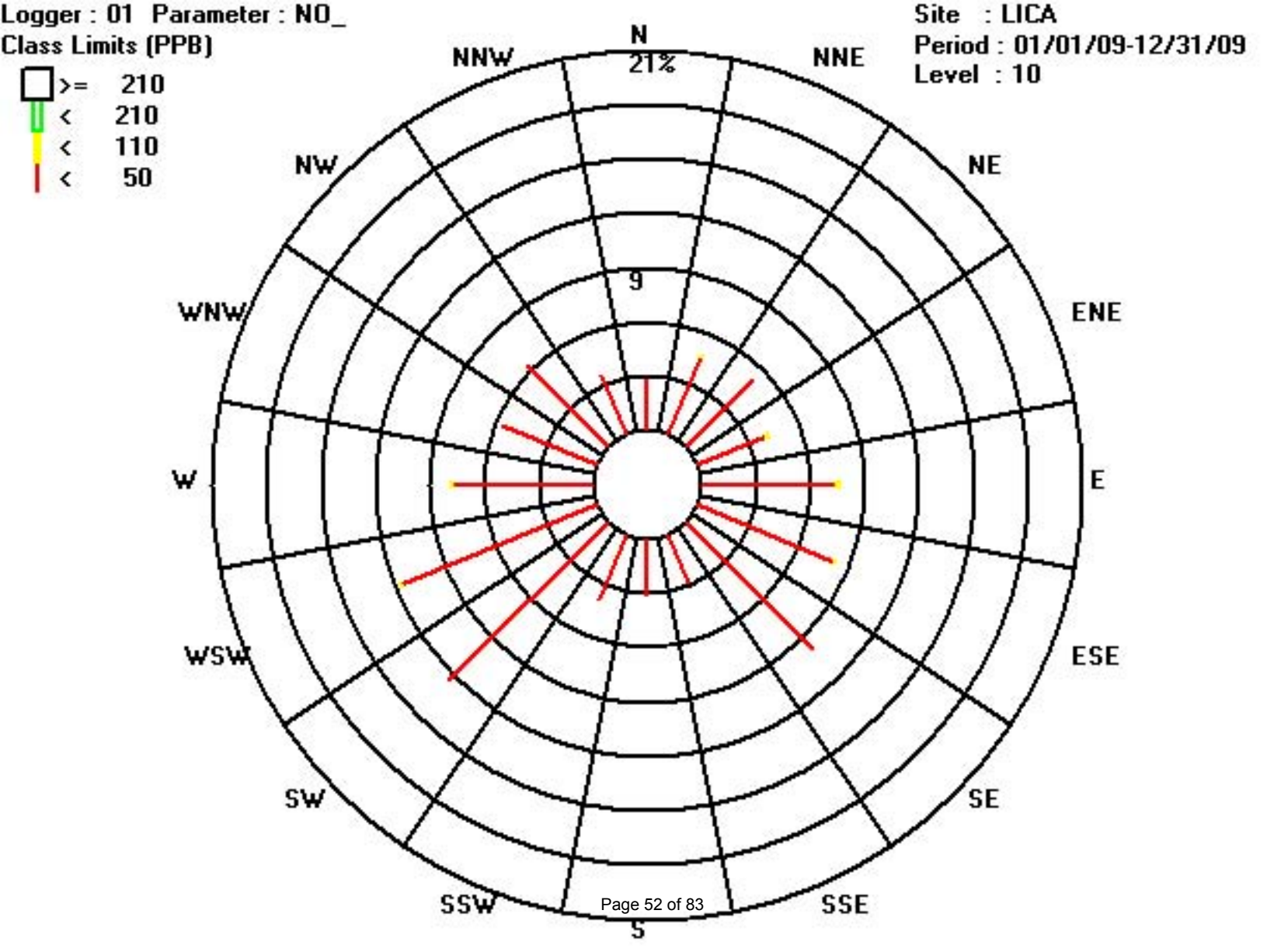
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	232	385	434	342	624	676	816	246	262	326	1029	965	642	466	523	289	8257
<	110		1		4	3	1						1	1				11
<	210																	
>=	210																	
	Totals	232	386	434	346	627	677	816	246	262	326	1029	966	643	466	523	289	

Calm : .00 %

Total # Operational Hours : 8268


Logger : 01 Parameter : NO_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Oxides of Nitrogen

Current Date : 01/15/10
Current Time : 14:08

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	706	0	112	11
February	672	632	1	106	11
March	744	701	0	114	7
April	720	682	0	64	4
May	744	693	0	39	2
June	720	680	0	17	2
July	744	704	0	14	1
August	744	704	0	24	2
September	720	679	0	31	2
October	744	705	0	44	3
November	720	678	0	77	8
December	744	704	0	65	10
Yearly Total	8760	8268	0	114	5

NO_x Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	Number of Readings	% Readings in Concentration Range (ppm NOx)				NOx ppm Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	706	97.9%	2.0%	0.1%	0.0%	0.01
February	632	98.6%	1.4%	0.0%	0.0%	0.01
March	701	98.6%	1.3%	0.1%	0.0%	0.01
April	682	99.9%	0.1%	0.0%	0.0%	0.00
May	693	100.0%	0.0%	0.0%	0.0%	0.00
June	680	100.0%	0.0%	0.0%	0.0%	0.00
July	704	100.0%	0.0%	0.0%	0.0%	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0.00
September	679	100.0%	0.0%	0.0%	0.0%	0.00
October	705	100.0%	0.0%	0.0%	0.0%	0.00
November	678	98.2%	1.8%	0.0%	0.0%	0.01
December	704	99.1%	0.9%	0.0%	0.0%	0.01
					Annual Average	**0.01**

NO_x Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: COLD LAKE SOUTH

Month	NOx ppb Peak Reading
January	112
February	106
March	114
April	64
May	39
June	17
July	14
August	24
September	31
October	44
November	77
December	65
ANNUAL PEAK	**114**

LICA
NOX_ / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.79	4.63	5.20	4.10	7.45	8.11	9.82	2.97	3.13	3.94	12.39	11.64	7.70	5.63	6.31	3.49	99.35
< 110	.01	.02	.04	.08	.13	.07	.04	.00	.03	.00	.04	.03	.06	.00	.01	.00	.61
< 210	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.02
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	2.80	4.66	5.24	4.18	7.58	8.18	9.86	2.97	3.16	3.94	12.44	11.68	7.77	5.63	6.32	3.49	

Calm : .00 %

Total # Operational Hours : 8268

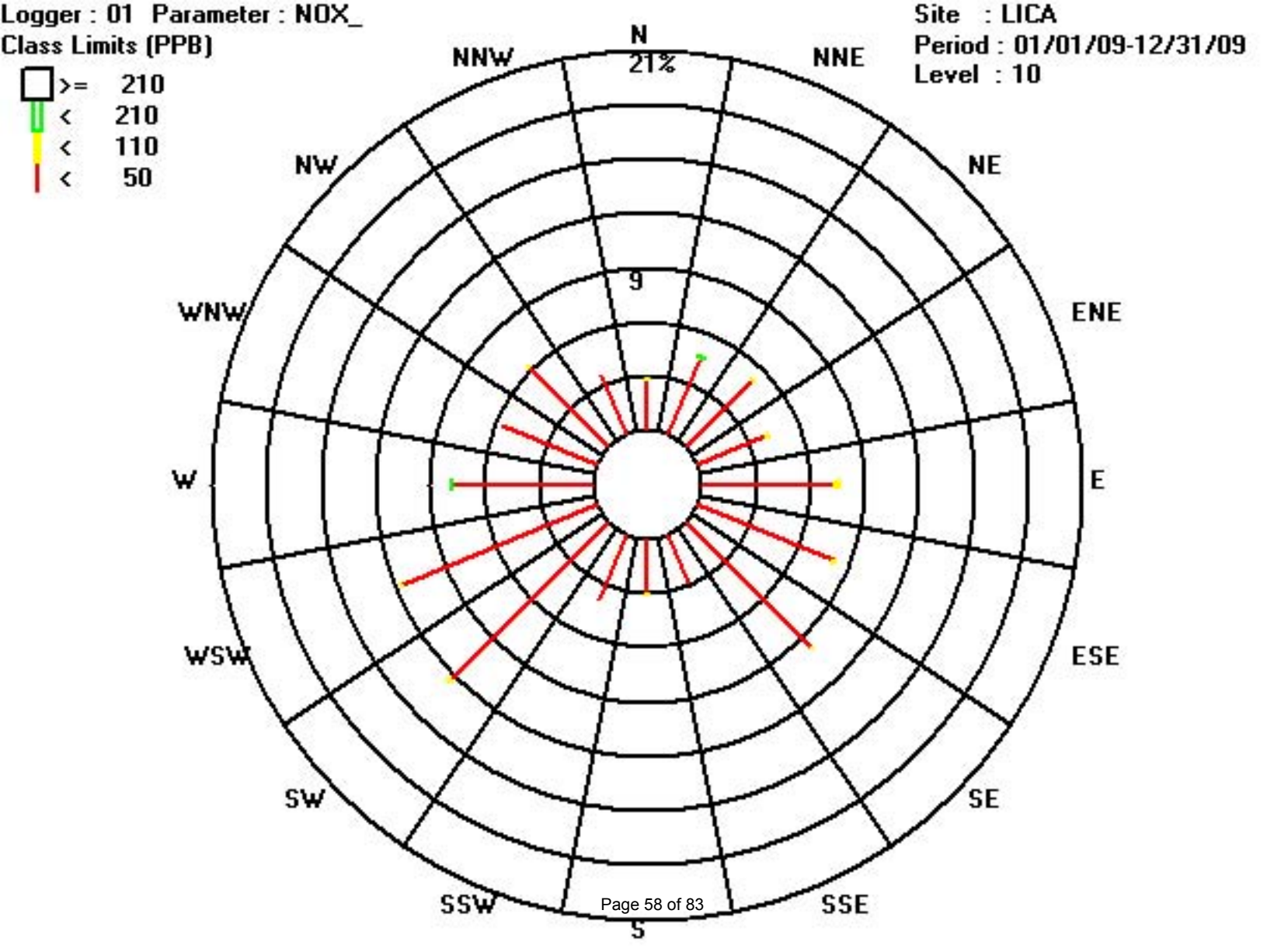
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	231	383	430	339	616	671	812	246	259	326	1025	963	637	466	522	289	8215
< 110	1	2	4	7	11	6	4		3		4	3	5		1		51
< 210		1											1				2
>= 210																	
Totals	232	386	434	346	627	677	816	246	262	326	1029	966	643	466	523	289	

Calm : .00 %

Total # Operational Hours : 8268


Logger : 01 Parameter : NOX_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Ozone

Current Date : 01/15/10
Current Time : 14:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	720	665	0	39	21
February	672	594	0	42	25
March	744	707	0	59	35
April	720	681	1	60	36
May	744	704	1	63	35
June	720	684	0	62	30
July	744	709	0	49	21
August	744	707	0	55	18
September	720	683	0	50	21
October	744	704	0	36	15
November	720	681	0	38	17
December	744	708	0	38	18
Yearly Total	8736	8227	0	63	24

O3 Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA

Station: COLD LAKE SOUTH

Month	Number of Readings	% 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	665	100.0%	0.0%	0.0%	0.0%	0.02
February	594	100.0%	0.0%	0.0%	0.0%	0.03
March	707	94.8%	5.2%	0.0%	0.0%	0.04
April	681	85.2%	14.8%	0.0%	0.0%	0.04
May	704	89.1%	10.9%	0.0%	0.0%	0.04
June	684	94.7%	5.3%	0.0%	0.0%	0.03
July	709	100.0%	0.0%	0.0%	0.0%	0.02
August	707	98.0%	2.0%	0.0%	0.0%	0.02
September	683	100.0%	0.0%	0.0%	0.0%	0.02
October	704	100.0%	0.0%	0.0%	0.0%	0.02
November	681	100.0%	0.0%	0.0%	0.0%	0.02
December	708	100.0%	0.0%	0.0%	0.0%	0.02
					Annual Average	**0.02**

O3 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: COLD LAKE SOUTH

Month	O3 ppb Peak Reading
January	39
February	42
March	59
April	60
May	63
June	62
July	49
August	55
September	50
October	36
November	38
December	38
ANNUAL PEAK	**63**

LICA
O3_ / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.80	4.41	5.09	4.08	7.43	8.04	9.66	2.84	3.00	3.74	11.74	11.35	7.24	5.29	5.95	3.43	96.17
< 110	.08	.26	.20	.07	.13	.21	.34	.13	.20	.20	.61	.32	.42	.25	.24	.08	3.82
< 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	2.89	4.67	5.29	4.15	7.57	8.26	10.00	2.97	3.20	3.95	12.36	11.68	7.66	5.55	6.19	3.52	

Calm : .00 %

Total # Operational Hours : 8227

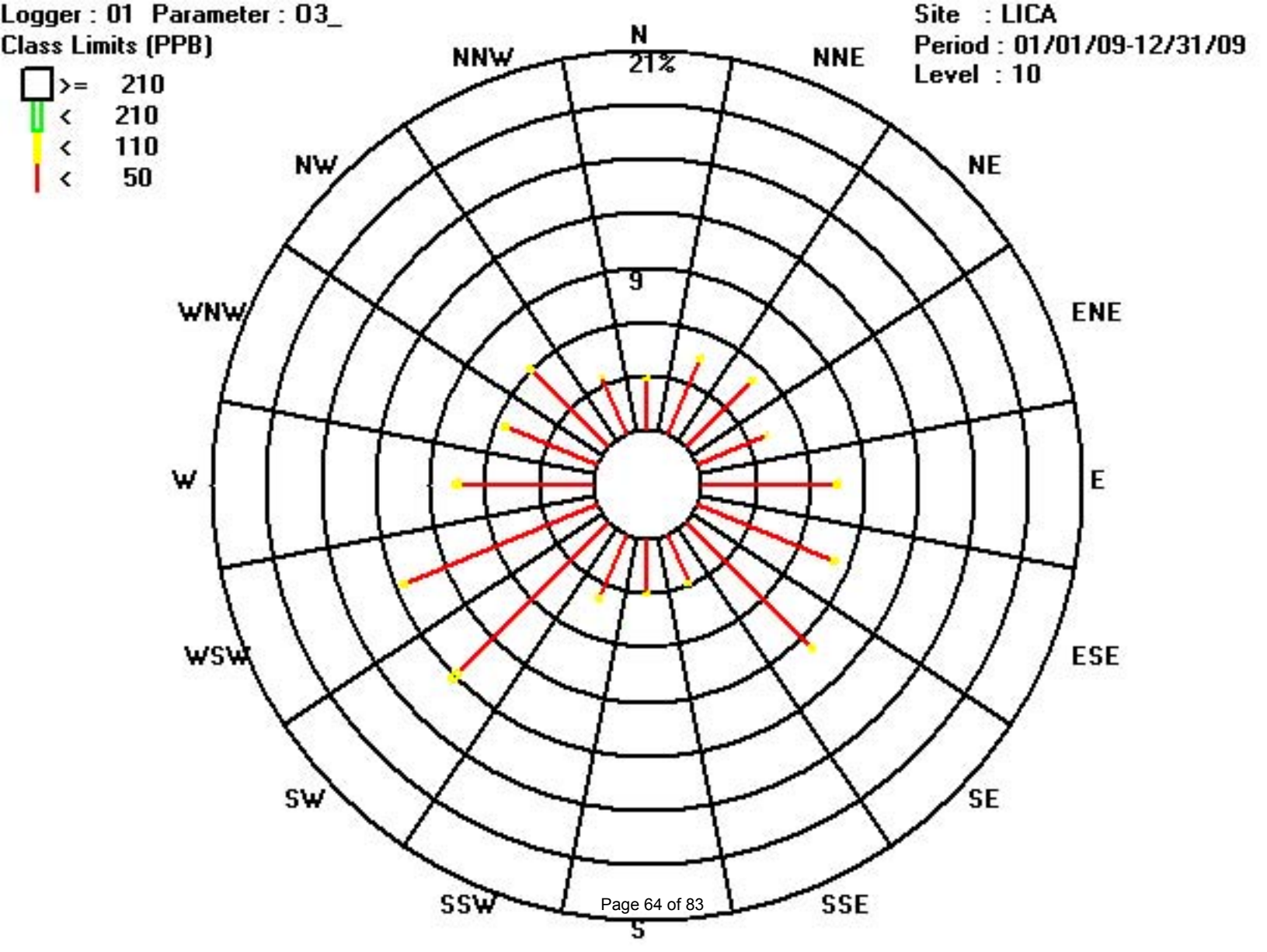
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	231	363	419	336	612	662	795	234	247	308	966	934	596	436	490	283	7912
< 110	7	22	17	6	11	18	28	11	17	17	51	27	35	21	20	7	315
< 210																	
>= 210																	
Totals	238	385	436	342	623	680	823	245	264	325	1017	961	631	457	510	290	

Calm : .00 %

Total # Operational Hours : 8227


Logger : 01 Parameter : 03_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Ambient Temperature

Current Date : 01/15/10
Current Time : 14:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	744	-40	8.1	-16.1
February	672	672	-38.8	7.7	-13.7
March	744	742	-40	8.8	-10.1
April	720	720	-8.9	13.6	2.4
May	744	744	-3.6	24.5	8.4
June	720	718	-1.8	28.9	14
July	744	744	2.4	29.5	16
August	744	744	2.5	28.7	15.3
September	720	718	-1.7	29.4	14.2
October	744	743	-9.4	13.6	1.2
November	720	720	-12.1	15.7	-1.5
December	744	743	-37.7	0	-18.6
Yearly Total	8760	8752	-40	29.5	1

Temperature - Monthly Averages for 2009

Plant Operator: LICA Plant: Cold Lake South

Month	Monthly Averages (Deg.C)	Maximum Hourly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	-16.10	8.1	-40.0	3.2
February	-13.79	7.7	-38.8	0.1
March	-10.18	8.8	-40.0	2.8
April	2.40	13.6	-8.9	6.1
May	8.44	24.5	-3.6	15.8
June	14.07	28.9	-1.8	20.9
July	16.09	29.5	2.4	22.6
August	15.34	28.7	2.5	19.4
September	14.25	29.4	-1.7	21.9
October	1.23	13.6	-9.4	6.3
November	-1.50	15.7	-12.1	6.3
December	-18.62	-2.1	-37.7	-4.8
ANNUAL AVERAGE	**0.97**	**-**	**-**	-

Relative Humidity

Current Date : 01/15/10
Current Time : 14:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	744	35	96	69
February	672	672	34	90	71
March	744	742	21	94	65
April	720	720	17	98	62
May	744	744	12	97	52
June	720	718	19	98	62
July	744	744	30	99	69
August	744	744	27	99	72
September	720	718	18	99	68
October	744	743	34	98	79
November	720	720	25	97	70
December	744	743	53	92	74
Yearly Total	8760	8752	12	99	68

Relative Humidity - Monthly Averages for 2009

Plant Operator: LICA Plant Location: COLD LAKE SOUTH

Month	Monthly Averages (%)	Maximum Hourly Average (%)	Maximum Daily Average (%)
January	70.44	96	83.8
February	71.62	91	85.2
March	65.86	95	85.0
April	62.53	98	93.7
May	52.90	98	78.8
June	62.09	98	89.7
July	69.24	99	88.1
August	72.76	99	83.2
September	68.40	99	83.0
October	79.45	98	92.5
November	70.46	97	83.9
December	74.68	92	86.2
ANNUAL AVERAGE	**68.37**	**-**	**-**

Vector Wind Speed

Current Date : 01/18/10
Current Time : 09:58

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	744	744	0	23.8	5.5
February	672	672	0	18.3	4.3
March	744	742	0.1	19.3	6.3
April	720	720	0	19.8	5.6
May	744	744	0	19.7	6.7
June	720	718	0	21.1	5.5
July	744	744	0.1	20.3	5.3
August	744	744	0.1	20	4.1
September	720	718	0	21.1	6.3
October	744	743	0.1	17.8	5.5
November	720	720	0	20.6	4.9
December	744	743	0	18.5	4.7
Yearly Total	8760	8752	0	23.8	5.4

LICA
WSP / WD Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	1.27	2.13	2.83	3.09	3.94	4.98	5.99	2.42	2.61	3.25	7.52	6.78	3.85	2.22	1.65	1.14	55.75
<	12.0	1.11	2.05	2.05	.68	2.89	2.53	3.07	.25	.23	.38	4.41	4.09	2.67	1.96	2.79	1.34	32.58
<	20.0	.35	.35	.30	.03	.41	.28	.46	.00	.00	.00	.11	.51	.98	1.15	1.74	.93	7.66
<	29.0	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.03	.05	.01	.00	.12
<	39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.75	4.54	5.19	3.81	7.24	7.80	9.56	2.67	2.85	3.64	12.05	11.39	7.54	5.40	6.21	3.42	

Calm : 3.86 %

Total # Operational Hours : 8752

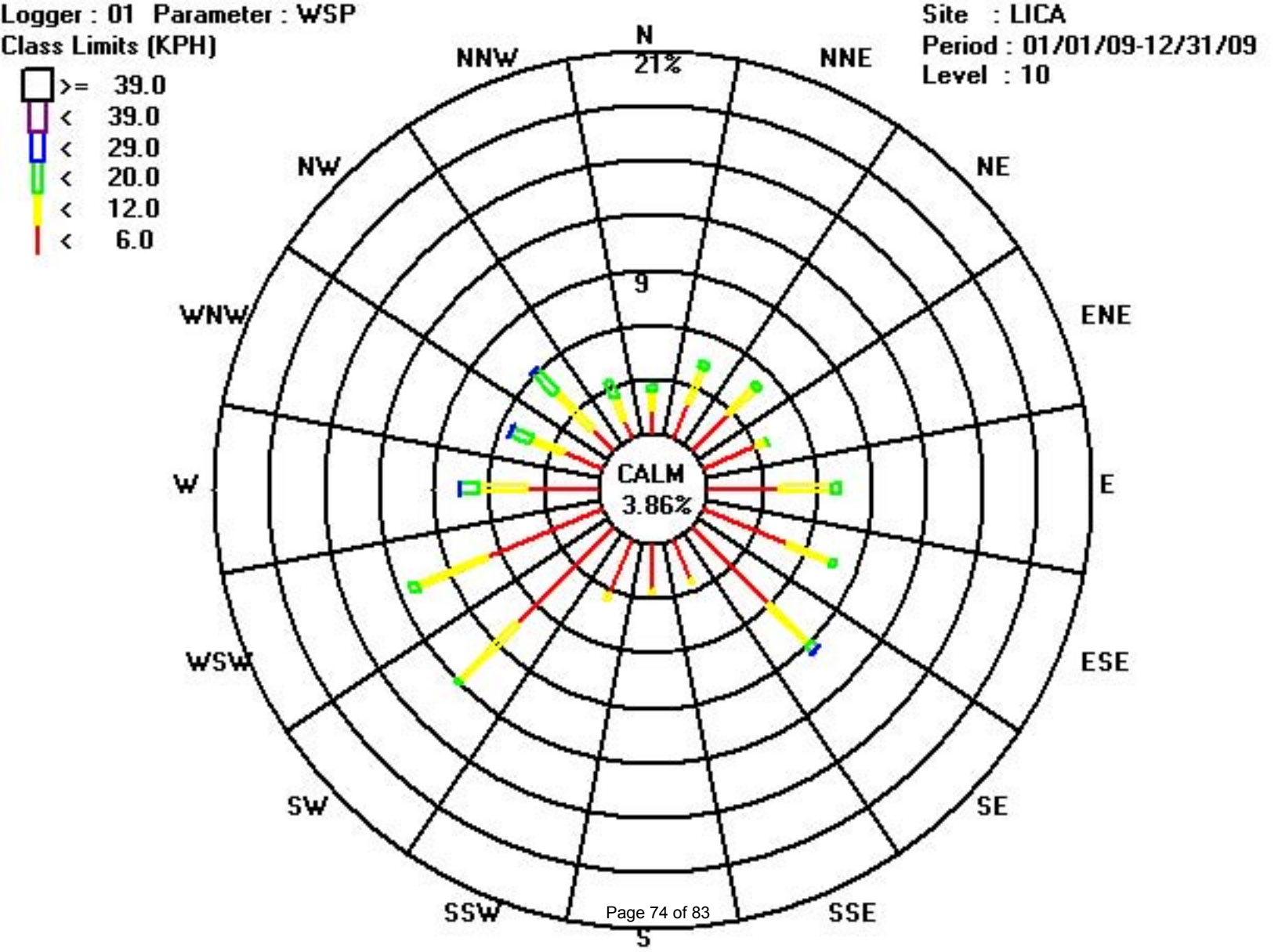
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	112	187	248	271	345	436	525	212	229	285	659	594	337	195	145	100	4880
<	12.0	98	180	180	60	253	222	269	22	21	34	386	358	234	172	245	118	2852
<	20.0	31	31	27	3	36	25	41				10	45	86	101	153	82	671
<	29.0							2						3	5	1		11
<	39.0																	
>=	39.0																	
	Totals	241	398	455	334	634	683	837	234	250	319	1055	997	660	473	544	300	

Calm : 3.86 %

Total # Operational Hours : 8752


Logger : 01 Parameter : WSP
Class Limits (KPH)
>= 39.0
< 39.0
< 29.0
< 20.0
< 12.0
< 6.0
Site : LICA
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9
CALM
3.86%

Passive Monitoring Annual Summary

Sulphur Dioxide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION — Company

BONNYVILLE — Project Number

BONNYVILLE — ***Location***

01/01/2009 — ***Date Samples Start***

Date Sampled End

SO2 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
1	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.40**	**0.4**
2	0.9	0.5	0.4	0.2	0.2	0.2	0.1	<0.1	0.1	0.1	0.1	0.3	**0.28**	**0.9**
2A (DUP)	NA	NA	NA	NA	NA	0.2	NA	<0.1	NA	0.2	NA	NA	**0.20**	**0.2**
3	1.3	0.6	0.9	0.2	0.3	0.2	0.1	0.2	0.3	0.2	0.4	0.5	**0.43**	**1.3**
3A (DUP)	NA	NA	NA	NA	0.2	NA	0.1	NA	0.2	NA	0.4	NA	**0.23**	**0.4**
4	1.1	0.7	0.8	0.2	0.2	0.3	0.2	0.2	0.4	0.3	0.4	1	**0.48**	**1.1**
4A (DUP)	NA	NA	NA	NA	NA	0.3	NA	0.3	NA	0.3	NA	1	**0.48**	**1**
5	1.2	0.7	0.8	0.2	0.2	0.4	0.4	0.4	0.4	0.2	0.4	0.8	**0.51**	**1.2**
5A (DUP)	NA	NA	NA	0.2	NA	NA	0.3	NA	0.4	NA	0.5	NA	**0.35**	**0.5**
6	NA	0.6	0.7	0.2	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.7	**0.36**	**0.7**
6A (DUP)	NA	NA	NA	NA	NA	0.4	NA	0.3	NA	0.2	NA	0.7	**0.40**	**0.7**
7	0.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.90**	**0.9**
8	1	0.9	0.8	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.6	0.6	**0.48**	**1**
8A (DUP)	NA	NA	NA	NA	NA	NA	0.2	NA	0.4	NA	0.6	NA	**0.40**	**0.6**
9	0.9	0.6	0.9	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	**0.41**	**0.9**
9A (DUP)	NA	NA	NA	NA	NA	0.2	NA	0.2	NA	0.3	NA	0.5	**0.30**	**0.5**
10	0.8	0.8	0.8	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.1	0.4	**0.37**	**0.8**
10A (DUP)	NA	NA	NA	NA	0.2	NA	0.1	NA	0.3	NA	0.3	NA	**0.23**	**0.3**
11	1.1	0.4	0.7	0.2	0.2	0.1	<0.1	<0.1	0.2	0.3	0.1	0.4	**0.37**	**1.1**
11A (DUP)	NA	NA	NA	NA	NA	0.2	NA	<0.1	NA	0.3	NA	0.4	**0.30**	**0.4**
12	1.2	0.9	0.8	0.3	NA	0.2	0.2	0.1	0.2	0.4	0.5	0.8	**0.51**	**1.2**
12A (DUP)	NA	NA	NA	NA	NA	NA	0.2	NA	0.3	NA	0.5	NA	**0.33**	**0.5**
13	2.2	1	0.8	0.3	0.2	0.3	0.1	0.2	0.4	0.3	0.7	0.8	**0.61**	**2.2**
13A (DUP)	2.1	NA	NA	NA	NA	0.2	NA	0.2	NA	0.4	NA	0.9	**0.76**	**2.1**
14	0.9	1.7	1.2	0.9	0.5	0.6	0.7	0.4	0.8	0.8	0.8	1.2	**0.88**	**1.7**
14A (DUP)	NA	NA	NA	NA	NA	NA	0.7	NA	0.9	NA	0.8	NA	**0.80**	**0.9**
15	1.1	0.5	0.8	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.4	**0.40**	**1.1**
15A (DUP)	NA	NA	NA	NA	NA	0.2	NA	0.2	NA	0.3	NA	0.5	**0.30**	**0.5**
16	1	0.7	0.7	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.7	**0.43**	**1**
16A	NA	NA	0.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.80**	**0.8**
16A (DUP)	NA	NA	NA	NA	NA	NA	0.1	NA	0.4	NA	0.3	NA	**0.27**	**0.4**
17	1.3	0.7	0.8	0.2	0.3	0.5	0.3	0.3	0.3	0.4	0.4	1	**0.54**	**1.3**
17A (DUP)	NA	NA	0.9	NA	NA	0.3	NA	0.3	NA	0.3	NA	0.8	**0.52**	**0.9**
18	0.8	0.8	0.8	0.1	0.2	0.2	NA	0.1	0.2	0.2	0.3	0.4	**0.37**	**0.8**
18A (DUP)	NA	0.7	NA	NA	NA	NA	NA	NA	0.1	NA	0.3	NA	**0.37**	**0.7**
19	0.9	0.6	0.8	0.2	0.4	0.2	0.1	0.1	0.2	0.3	0.4	0.8	**0.42**	**0.9**
19A (DUP)	1	NA	NA	NA	NA	0.2	NA	0.1	NA	0.4	NA	0.7	**0.48**	**1**
20	0.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.70**	**0.7**
21	1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.10**	**1.1**
22	1	0.9	0.7	0.2	0.2	NA	0.2	0.3	0.3	0.3	0.2	0.5	**0.44**	**1**
23	1.4	0.5	0.5	0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.2	0.2	0.4	**0.44**	**1.4**
23A (DUP)	NA	NA	NA	NA	NA	NA	0.1	NA	0.1	NA	0.2	NA	**0.13**	**0.2**
24	2.6	0.5	0.8	0.2	0.3	0.3	0.2	0.2	0.2	0.4	0.4	0.6	**0.56**	**2.6**
24A (DUP)	NA	NA	NA	0.2	NA	0.2	NA	0.3	NA	0.5	NA	0.6	**0.36**	**0.6**
25	0.9	0.8	0.9	0.2	0.2	0.2	0.1	<0.1	0.2	0.3	0.5	1.4	**0.52**	**1.4**
25A (DUP)	NA	NA	NA	NA	NA	NA	0.1	NA	0.2	NA	0.5	NA	**0.27**	**0.5**
26	0.8	1.1	0.9	0.7	0.3	0.3	0.3	0.2	0.4	0.4	0.6	0.7	**0.56**	**1.1**
26A (DUP)	NA	NA	NA	NA	NA	0.3	NA	0.2	NA	0.6	NA	0.7	**0.45**	**0.7**
27	NA	1.4	1.3	0.5	0.4	0.5	0.6	0.4	0.7	0.5	1.5	1.6	**0.85**	**1.6**
27A (DUP)	NA	NA	NA	NA	NA	NA	0.6	NA	0.6	NA	1.5	NA	**0.90**	**1.5**
28	NA	0.7	0.9	0.7	0.4	0.4	0.3	0.5	0.7	0.5	0.4	0.5	**0.55**	**0.9**
28A (DUP)	NA	NA	NA	NA	NA	0.4	NA	0.4	NA	0.5	NA	0.5	**0.45**	**0.5**
29	NA	0.8	0.8	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	**0.35**	**0.8**
29A (DUP)	NA	0.7	NA	NA	NA	NA	0.2	NA	0.2	NA	0.3	NA	**0.35**	**0.7**
32	NA	NA	NA	NA	NA	NA	0.2	0.2	0.4	0.3	0.7	1.2	**0.50**	**1.2**
34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.4	0.5	**0.45**	**0.5**
Average	**1.1**	**0.8**	**0.8**	**0.3**	**<0.3**	**0.3**	**<0.2**	**<0.2**	**<0.3**	**0.3**	**0.5**	**0.7**		
Maximum	**2.6**	**1.7**	**1.3**	**0.9**	**0.5**	**0.6**	**0.7**	**0.5**	**0.9**	**0.8**	**1.5**	**1.6**		

Hydrogen Sulphide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION		***BONNYVILLE***
Company		Project Number
BONNYVILLE	01/01/2009	12/29/2009
Location	***Date Samples Start***	***Date Sampled End***

H2S (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
2	0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.22**	**0.22**
3	NA	0.14	0.19	0.07	0.05	0.14	0.14	0.17	0.18	0.11	0.09	0.19	**0.13**	**0.19**
3A (DUP)	NA	NA	NA	NA	0.05	0.14	NA	0.15	NA	0.12	NA	0.2	**0.13**	**0.2**
4	0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.23**	**0.23**
5	NA	0.14	0.13	0.1	0.14	0.61	0.82	0.47	0.49	0.15	0.09	0.19	**0.30**	**0.82**
5A (DUP)	NA	NA	NA	0.1	NA	NA	0.78	NA	0.49	NA	0.08	NA	**0.36**	**0.78**
9	0.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.19**	**0.19**
10	0.15	0.15	0.17	0.12	0.08	0.25	0.19	0.29	0.26	0.11	0.03	0.2	**0.17**	**0.29**
10A (DUP)	NA	NA	NA	NA	0.07	NA	0.19	NA	0.27	NA	<0.02	NA	**0.18**	**0.27**
11	0.21	0.12	0.16	0.05	0.03	0.07	0.13	0.07	0.11	0.08	0.06	0.15	**0.10**	**0.21**
11A (DUP)	NA	NA	NA	NA	NA	0.06	NA	<0.02	NA	0.07	NA	0.15	**0.09**	**0.15**
12	0.2	0.11	0.11	0.05	NA	0.1	0.11	0.13	0.1	0.09	0.05	0.17	**0.11**	**0.2**
12A (DUP)	NA	NA	NA	NA	NA	NA	0.11	NA	0.1	NA	0.08	NA	**0.10**	**0.11**
13	0.29	0.14	0.12	0.05	0.03	0.06	0.1	0.09	0.12	0.07	0.11	0.16	**0.11**	**0.29**
13A (DUP)	0.32	NA	NA	NA	NA	0.06	NA	0.09	NA	0.08	NA	0.16	**0.14**	**0.16**
14	NA	0.18	0.17	0.12	0.11	0.14	0.13	0.16	0.19	0.1	0.11	0.3	**0.16**	**0.3**
14A (DUP)	NA	NA	NA	NA	NA	NA	0.17	NA	0.21	NA	0.11	NA	**0.16**	**0.21**
15	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.20**	**0.2**
16	0.23	0.17	0.14	0.08	0.07	0.14	0.2	0.22	0.23	0.14	0.1	0.2	**0.16**	**0.23**
16A (DUP)	NA	NA	0.15	NA	NA	0.16	NA	0.23	NA	0.12	NA	0.19	**0.17**	**0.23**
17	0.15	0.2	0.15	0.1	0.11	0.35	0.54	0.54	0.48	0.14	0.09	0.26	**0.26**	**0.54**
17A (DUP)	NA	NA	0.16	NA	NA	NA	0.53	NA	0.47	NA	0.1	NA	**0.32**	**0.53**
18	NA	0.13	0.1	0.05	0.05	0.11	0.12	0.11	0.17	0.08	0.08	0.16	**0.11**	**0.17**
18A (DUP)	NA	0.13	NA	NA	NA	0.1	NA	0.1	NA	0.08	NA	0.23	**0.13**	**0.23**
19	0.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.19**	**0.19**
19A (DUP)	0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.23**	**0.23**
21	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.21**	**0.21**
22	0.18	0.15	0.14	0.05	0.05	NA	0.25	0.29	0.25	0.07	0.04	0.17	**0.15**	**0.29**
23	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.21**	**0.21**
24	0.25	0.14	0.13	0.08	0.08	0.17	0.24	0.22	0.24	0.12	0.06	0.24	**0.16**	**0.25**
24A	NA	NA	NA	0.08	NA	NA	NA	NA	NA	NA	0.11	NA	**0.10**	**0.11**
24A (DUP)	NA	NA	NA	NA	NA	NA	0.24	NA	0.24	NA	NA	NA	**0.24**	**0.24**
25	NA	0.13	0.12	0.05	0.03	0.06	0.1	0.09	0.11	0.07	0.07	0.15	**0.09**	**0.15**
25A (DUP)	NA	NA	NA	NA	NA	0.06	NA	0.09	NA	0.08	NA	0.14	**0.09**	**0.14**
26	0.19	0.17	0.16	0.07	0.06	0.14	0.16	0.14	0.16	0.12	0.09	0.19	**0.14**	**0.19**
26A (DUP)	NA	NA	NA	NA	NA	NA	0.15	NA	0.16	NA	0.11	NA	**0.14**	**0.16**
27	NA	0.16	0.17	0.07	0.07	0.21	0.18	0.27	0.28	0.09	0.16	0.2	**0.17**	**0.28**
27A (DUP)	NA	NA	NA	NA	NA	0.21	NA	0.26	NA	0.11	NA	0.21	**0.20**	**0.26**
29	NA	0.15	0.14	0.07	0.04	0.16	0.21	0.35	0.27	0.08	0.07	0.16	**0.15**	**0.35**
29A (DUP)	NA	NA	NA	NA	NA	NA	0.2	NA	0.28	NA	0.09	NA	**0.19**	**0.28**
32	NA	NA	NA	NA	NA	NA	0.21	0.19	0.28	0.1	0.1	0.19	**0.18**	**0.28**
34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1	0.21	**0.16**	**0.21**
Average	**0.21**	**0.15**	**0.15**	**0.08**	**0.07**	**0.16**	**0.25**	**<0.20**	**0.25**	**0.1**	**<0.08**	**0.19**		
Maximum	**0.32**	**0.2**	**0.19**	**0.12**	**0.14**	**0.61**	**0.82**	**0.54**	**0.49**	**0.15**	**0.16**	**0.3**		

Nitrogen Dioxide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION — Company

BONNYVILLE — Project Number

BONNYVILLE — ***Location***

01/01/2009 — ***Date Samples Start***

Date Sampled End

NO2 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
1	2.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.9**	**2.9**
2	4.3	2.2	1.2	0.9	0.8	1.1	0.7	0.5	0.9	1.1	1.7	2.6	**1.5**	**4.3**
2A (DUP)	NA	NA	NA	NA	NA	1.1	NA	0.5	NA	1.2	NA	NA	**0.9**	**1.2**
3	3.7	2.6	1.3	1.4	1.2	1.8	1.3	1.3	1.4	1.6	2.1	4.6	**2.0**	**4.6**
3A (DUP)	NA	NA	NA	NA	1.3	NA	1.1	NA	1.5	NA	1.8	NA	**1.4**	**1.8**
4	5	2	1.4	0.9	0.8	2.5	1.1	1.1	1.5	1.3	3.4	3.6	**2.1**	**5**
4A (DUP)	NA	NA	NA	NA	NA	2.2	NA	1.3	NA	1.6	NA	3	**2.0**	**3**
5	4.4	2.8	1.2	1	0.8	1	0.8	0.9	1	1.3	3.9	2.5	**1.8**	**4.4**
5A (DUP)	NA	NA	NA	0.7	NA	NA	0.8	NA	1.1	NA	2.9	NA	**1.4**	**2.9**
6	NA	3.9	2.2	2.3	2.2	2.4	1.4	1.7	1.9	2.4	2.3	3.8	**2.4**	**3.9**
6A (DUP)	NA	NA	NA	NA	NA	2.5	NA	1.5	NA	2.2	NA	3.5	**2.4**	**3.5**
7	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.0**	**3**
8	4	2	1.1	0.9	0.9	0.8	0.8	0.9	0.9	1.1	2.2	2.8	**1.5**	**4**
8A (DUP)	NA	NA	NA	NA	NA	NA	0.8	NA	0.9	NA	1.8	NA	**1.2**	**1.8**
9	4.4	2.8	1.5	1.5	1.3	1.6	1	1.3	1.2	1.9	3.1	3.4	**2.1**	**4.4**
9A (DUP)	NA	NA	NA	NA	NA	1.4	NA	1.4	NA	2	NA	4.1	**2.2**	**4.1**
10	2	4.3	2.2	2	1.8	2.1	1.6	2	1.9	2.2	4.7	5	**2.7**	**5**
10A (DUP)	NA	NA	NA	NA	1.8	NA	1.6	NA	2	NA	3.6	NA	**2.3**	**3.6**
11	6.4	1.3	0.9	0.6	0.4	0.4	0.5	0.4	0.6	0.6	1.1	1.8	**1.3**	**6.4**
11A (DUP)	NA	NA	NA	NA	NA	0.4	NA	0.5	NA	0.8	NA	1.7	**0.9**	**1.7**
12	2.9	3.5	2.1	2.4	NA	1	0.5	0.9	0.7	0.9	1.9	2.4	**1.7**	**3.5**
12A (DUP)	NA	NA	NA	NA	NA	NA	0.5	NA	0.6	NA	2	NA	**1.0**	**2**
13	6.1	1.8	1.1	1.1	0.6	0.8	0.5	0.7	0.8	0.8	1.5	2.1	**1.5**	**6.1**
13A (DUP)	5.6	NA	NA	NA	NA	0.5	NA	0.6	NA	0.9	NA	1.9	**1.9**	**5.6**
14	3.5	3.2	2.2	1.6	1.3	1	1.2	1.5	2	2.3	3.6	3.8	**2.3**	**3.8**
14A (DUP)	NA	NA	NA	NA	NA	NA	1.4	NA	2	NA	4.2	NA	**2.5**	**4.2**
15	3.9	2.6	1.4	1.2	0.9	0.9	0.9	1.1	0.9	1.1	2.7	4.2	**1.8**	**4.2**
15A (DUP)	NA	NA	NA	NA	NA	1	NA	0.9	NA	1.3	NA	3	**1.6**	**3**
16	3.7	3	1.7	1.7	1	1.2	1.1	1.3	1.4	1.9	2.6	3.4	**2.0**	**3.7**
16A (DUP)	NA	NA	2.2	NA	NA	NA	1.2	NA	1.7	NA	3.9	NA	**2.3**	**3.9**
17	3.5	3.6	2.5	2.7	2.1	2.6	1.8	1.8	2.5	2.5	2.8	4.1	**2.7**	**4.1**
17A (DUP)	NA	NA	2.4	NA	NA	2.4	NA	2	NA	2.4	NA	4	**2.6**	**4**
18	2.4	2	1.4	1.1	0.8	0.8	0.6	0.8	1.1	1.3	2.2	2	**1.4**	**2.4**
18A (DUP)	NA	1.9	NA	NA	NA	NA	0.8	NA	1.2	NA	2	NA	**1.5**	**2**
19	7.2	1.6	1.4	0.9	0.7	1.2	0.7	0.8	0.9	1.2	1.5	2	**1.7**	**7.2**
19A (DUP)	5.9	NA	NA	NA	NA	1.1	NA	1	NA	1.4	NA	2	**2.3**	**5.9**
20	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.6**	**1.6**
21	5.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.6**	**5.6**
22	NA	5	3.2	2.9	1.6	NA	1.3	1.3	1.7	2.4	6.2	5.9	**3.2**	**6.2**
23	NA	1.1	0.8	0.4	NA	0.4	0.3	0.2	0.3	0.6	0.7	1.3	**0.6**	**1.3**
23A (DUP)	NA	NA	NA	NA	NA	NA	0.3	NA	0.2	NA	0.7	NA	**0.4**	**0.7**
24	NA	4.2	3.3	2.9	2.4	2.4	2.2	2.7	2.4	2.6	4.5	3.9	**3.0**	**4.5**
24A (DUP)	NA	NA	NA	3.1	NA	2.3	NA	2.4	NA	2.8	NA	3.6	**2.8**	**3.6**
25	10.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**10.6**	**10.6**
26	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**7.0**	**7**
28	NA	9.2	8.2	6.9	3.7	3.6	2.7	3.3	3.1	4.7	6.7	9.3	**5.6**	**9.3**
28A (DUP)	NA	NA	NA	NA	NA	NA	2.6	NA	3.6	NA	5.8	NA	**4.0**	**5.8**
29	NA	5.6	3.6	3	1.8	1.2	1	1.3	1.4	2.3	4.7	4.1	**2.7**	**5.6**
29A (DUP)	NA	5.3	NA	NA	NA	1.1	NA	1.2	NA	2.3	NA	5.7	**3.1**	**5.7**
32	NA	NA	NA	NA	NA	NA	0.5	0.8	0.8	1.2	2.7	3	**1.5**	**3**
34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6	8.4	**7.0**	**8.4**
Average	**4.6**	**3.2**	**2.1**	**1.8**	**1.4**	**1.5**	**1.1**	**1.2**	**1.4**	**1.7**	**3**	**3.6**		
Maximum	**10.6**	**9.2**	**8.2**	**6.9**	**3.7**	**3.6**	**2.7**	**3.3**	**3.6**	**4.7**	**6.7**	**9.3**		

Ozone

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION — Company

BONNYVILLE — Project Number

BONNYVILLE — ***Location***

01/01/2009 — ***Date Samples Start***

Date Sampled End

O3 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
1	28.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**28.3**	**28.3**
2	31.2	29.3	32.3	29.2	26	20.8	14.7	13	19	12.7	13.3	17.4	**21.6**	**32.3**
2A (DUP)	NA	NA	NA	NA	NA	22	NA	15.1	NA	12.9	NA	NA	**16.7**	**22**
3	33.7	38.6	36.5	33.4	30.1	29.2	21.8	17.8	21.3	14.2	20	20.6	**26.4**	**38.6**
3A (DUP)	NA	NA	NA	NA	31.9	NA	18	NA	25	NA	18.4	NA	**23.3**	**31.9**
4	29.8	33.1	47.5	38.1	32.8	27.8	21.3	22.2	26	18.8	21.3	22.1	**28.4**	**47.5**
4A (DUP)	NA	NA	NA	NA	NA	28.7	NA	22.1	NA	16.9	NA	23.5	**22.8**	**28.7**
5	30.6	37.9	35.3	36.9	30.9	27.7	22.2	20	23.9	17.3	22.6	20.5	**27.2**	**37.9**
5A (DUP)	NA	NA	NA	35.3	NA	NA	20.3	NA	23	NA	21.5	NA	**25.0**	**35.3**
6	NA	35.3	43.6	38.2	28.8	28.3	20.5	17.1	21.8	16.1	20.9	21.9	**26.6**	**43.6**
6A (DUP)	NA	NA	NA	NA	NA	28.2	NA	18.1	NA	15.8	NA	20.6	**20.7**	**28.2**
7	31.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**31.5**	**31.5**
8	30.7	33.2	38.1	38.6	32.8	26.2	22.6	21.5	26.7	17.7	23.4	25.6	**28.1**	**38.6**
8A (DUP)	NA	NA	NA	NA	NA	NA	23.2	NA	24.5	NA	25.6	NA	**24.4**	**25.6**
9	26.5	36.2	42.6	39.1	30.9	24.9	21.3	17.8	24.7	15.2	19.1	21.5	**26.7**	**42.6**
9A (DUP)	NA	NA	NA	NA	NA	26.9	NA	18.6	NA	15.6	NA	22.3	**20.9**	**26.9**
10	28	30.3	38.2	37.9	28.9	28	24.7	21.2	24.2	14.9	15.4	18	**25.8**	**38.2**
10A	NA	NA	NA	NA	29.5	NA	NA	NA	NA	NA	NA	NA	**29.5**	**29.5**
10A (DUP)	NA	NA	NA	NA	NA	NA	21.3	NA	19.5	NA	15.7	NA	**18.8**	**21.3**
11	23.8	27.6	29.2	30.2	25.5	19.7	14.9	12.8	17.5	12	16	17.8	**20.6**	**30.2**
11A (DUP)	NA	NA	NA	NA	NA	22.1	NA	13.3	NA	11.9	NA	20.7	**17.0**	**22.1**
12	30.1	34.3	29.3	46	NA	24.1	18.6	15.3	19.1	14.6	22.5	19.8	**24.9**	**46**
12A (DUP)	NA	NA	NA	NA	NA	NA	17.8	NA	18.7	NA	21	NA	**19.2**	**21**
13	26.2	34.5	36.5	36.3	33.9	26.6	24.4	18.8	23.9	17.1	25.2	23.3	**27.2**	**36.5**
13A (DUP)	26.1	NA	NA	NA	NA	29.3	NA	19.4	NA	17.5	NA	21.8	**22.8**	**29.3**
14	29.4	30.4	35.4	34.8	32.5	27.5	24.1	21.8	23.3	15.5	21.2	18.3	**26.2**	**35.4**
14A (DUP)	NA	NA	NA	NA	NA	NA	24.5	NA	23.7	NA	19.7	NA	**22.6**	**24.5**
15	26.7	34.4	42.3	31.9	30.4	24	18.8	15.5	21.3	14.1	16.8	17.8	**24.5**	**42.3**
15A (DUP)	NA	NA	NA	NA	NA	28.3	NA	16	NA	15.4	NA	19	**19.7**	**28.3**
16	33.8	33.1	36.7	34.9	34.5	26.7	20.5	18.3	23.4	15.5	18.3	19.6	**26.3**	**36.7**
16A (DUP)	NA	NA	41.8	NA	NA	NA	20	NA	25.1	NA	18.1	NA	**26.3**	**41.8**
17	26.5	34.4	46.5	37.3	31.3	29.4	22.2	21.4	23.5	15.1	18.5	20.2	**27.2**	**46.5**
17A (DUP)	NA	NA	50.6	NA	NA	29.2	NA	20.2	NA	15.1	NA	20.9	**27.2**	**50.6**
18	30.8	36.2	33.4	30.4	29.6	23.8	16.5	13.8	16.7	14.4	19.2	19.3	**23.7**	**36.2**
18A (DUP)	NA	30.2	NA	NA	NA	NA	14.8	NA	17.6	NA	18.2	NA	**20.2**	**30.2**
19	24.8	35.1	41.7	34.3	31.9	26.9	23.1	18.5	22.7	18.3	24	22.4	**27.0**	**41.7**
19A (DUP)	25.3	NA	NA	NA	NA	25	NA	19.2	NA	17.1	NA	26.6	**22.6**	**26.6**
20	23.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**23.6**	**23.6**
21	28.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**28.8**	**28.8**
22	NA	31.8	32.6	31	27	NA	17.4	14.7	20.6	14.7	15.6	17.3	**22.3**	**32.6**
23	NA	28.7	32.6	28	NA	20.9	16.7	14.4	17.5	13.6	16.4	18.2	**20.7**	**32.6**
23A (DUP)	NA	NA	NA	NA	NA	NA	18.1	NA	17.2	NA	16.1	NA	**17.1**	**18.1**
24	NA	34.6	40.5	33.4	28	26.2	23.4	19.6	21.7	15	17.7	19.8	**25.4**	**40.5**
24A (DUP)	NA	NA	NA	31.2	NA	24.7	NA	20.6	NA	15.5	NA	19.1	**22.2**	**31.2**
25	24.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**24.6**	**24.6**
26	23.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**23.8**	**23.8**
28	NA	29.8	37.7	32.5	26.7	26.7	21.4	18.4	19.8	12.5	14.4	14.8	**23.2**	**37.7**
28A (DUP)	NA	NA	NA	NA	NA	NA	24	NA	21.5	NA	15.4	NA	**20.3**	**24**
29	NA	28.5	40	32.4	30.3	30	22.4	19.7	22.8	14.9	17.8	18.9	**25.2**	**40**
29A (DUP)	NA	29.7	NA	NA	NA	29.5	NA	20.2	NA	14.6	NA	16.8	**22.2**	**29.7**
32	NA	NA	NA	NA	NA	NA	30.6	28.6	32	18.9	24.7	26.3	**26.9**	**32**
34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.6	18.5	**19.6**	**20.6**
Average	**28.1**	**32.8**	**38.4**	**34.6**	**30.2**	**26.2**	**20.8**	**18.4**	**22.1**	**15.3**	**19.3**	**20.3**		
Maximum	**33.8**	**38.6**	**50.6**	**46**	**34.5**	**30**	**30.6**	**28.6**	**32**	**18.9**	**25.6**	**26.6**		

Lakeland Industry & Community Association

Maskwa Monitoring Site
Ambient Annual Data Report

For
2009

Prepared By:

Maxxam Analytics Inc

Driven by Service and Science

January 13, 2010

Lakeland Industry & Community Association
Ambient Air Monitoring
Maskwa

Table of Contents

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: April 2009 to December 2009

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 Monthly 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

A trailer audit was performed by Alberta Environment on November 4th, 2009.

Sulphur Dioxide (PPB)

- Analyzer make / model - API 100E
  - A new UV lamp and a driver board were installed in March. Since that, the UV lamp voltage has dropped by 10% as the lamp "burn-in", which is normal.
  - A polling computer switch occurred on June 1st, hour of 9.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated. The span expected value were lost after the software upgrade on June 16th and was reset on June 17th.
  - The analyzer spanned lower than –10% of control range on July 6th and July 7th due to the permeation tube failure. The perm tube was replaced on July 8th.
  - An auto daily calibration was not done on July 15th and 16th due to a Modbus installation. After the installation, the expected span value was incorrect, and the error was corrected on July 19th. An alarm test was performed on July 9th, the triggered and was received by the control room, but did not cancel. The problem was rectified after the Modbus installation.
  - One hour of data is missing on October 27th.
  - Three hours of data were invalidated due to a power failure on November 5th.
  - The analyzer spanned high on November 16th. Troubleshooting was performed on November 18th.
  - The analyzer was put into the "Maintenance" mode for two hours on November 20th for the wind system replacement.
  - The analyzer was removed to the new trailer following a removal calibration on November 30th.
  - The analyzer was installed following an installation calibration on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Hydrogen Sulphide (PPB)

- Analyzer make / model - API 101E
  - The analyzer failed on June 1st. It was noticed that there were numerous warnings upon the arrival on June 1st. All warnings were cleared after troubleshooting on June 1st., except the UV lamp warnin. The UV lamp was replaced with a new one and a temporary UV lamp driver board was installed. It was also noticed that the straylight and offset values were getting high. Thus, the UV lamp filter was replaced. A total of 10 hours of data was invalidated.
  - A polling computer switch occurred on June 1st, hour of 9.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated. The span expected value were lost after the software upgrade on June 16th and was reset on June 17th.
  - The temporary UV lamp driver board was replaced with a new (latest revision "Yellow Dot") UV lamp driver board from API and the permeation tube were replaced following the as found point on July 9th. .
  - An auto daily calibration was not done on July 15th and 16th due to a Modbus installation. After the installation, the expected span valued was incorrect, and the error was corrected on July 19th and readjusted on July 20th.
  - One hour of data is missing on October 27th.
  - Three hours of data were invalidated due to a power failure on November 5th.
  - The analyzer was put into the "Maintenance" mode for two hours on November 20th for the wind system replacement.
  - The analyzer was removed to the new trailer following a removal calibration on November 30th.
  - The analyzer was installed following an installation calibration on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Nitrogen Dioxide (PPB)

- Analyzer make / model - API 200E
  - The pump was replaced, and a new exhaust scrubber was installed following the as found points on May 19th.
  - A polling computer switch occurred on June 1st, hour of 9. Due to the system switch, the daily calibration on June 1st ran twice, at 5:00 and 19:00. There was no daily calibration performed on June 2nd. The daily calibration schedule was set 23-hour interval on June 3rd.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated. The span expected value were lost after the software upgrade on June 16th and was reset on June 17th.
  - The DFU filter and the permeation tube were replaced following the as found points on July 9th.
  - An auto daily calibration was not done on July 15th and 16th due to a Modbus installation. After the installation, the expected span valued was incorrect, and the error was corrected on July 19th.
  - One hour of data is missing on October 27th.
  - Three hours of data were invalidated due to a power failure on November 5th.
  - The analyzer was put into the “Maintenance” mode for two hours on November 20th for the wind system replacement.
  - The analyzer was removed to the new trailer following a removal calibration on November 30th.
  - The analyzer was installed following an installation calibration on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Total HydroCarbon (PPM)

- Analyzer make / model - TECO 51-LT and TECO 51C-LT
  - ❖ Alarms were observed for “Flow Reg Fail”, +15 voltage and –15 voltage upon arrival on April 22nd. Following the pump rebuild, the analyzer had difficulty regulating. After troubleshooting, the analyzer still could be calibrated, and it still operates fine. The pump diaphragm was replaced following the as found points on April 22nd.
  - ❖ The THC analyzer span gas ran out on May 3rd causing the daily span readings to go outside the control range on May 3rd and 4th. The gas cylinder was changed on May 4th. No issue was discovered during the trip. The monthly calibration was performed on May 20th. It was noticed that there was still alarms present for “Flow Reg Fail” and 15-volt power supply. Removed the pump, disassembled, and inspected the diaphragm. Replaced the diaphragm and re-assembled, re-lit analyzer and allowed time to stabilize. After the troubleshooting, flow regulation issue had gone and 15-volt power supply alarm had gone as well.
  - ❖ A polling computer switch occurred on June 1st, hour of 9. Due to the system switch, the daily calibration on June 2nd ran at 00:00am. The daily calibration schedule was set 23-hour interval on June 3rd.
  - ❖ A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated. The span expected value were lost after the software upgrade on June 16th and was reset on June 17th.
  - ❖ The THC analyzer span gas ran out on June 21st causing the daily span readings to go outside the control range. The gas cylinder was replaced on June 24th.
  - ❖ A Coalescer and H2O knock-out valve in the zero air supply were replaced following the as found points on July 10th. A tee and single stage regulator were added to the zero air line going from the supply to the analyzer, and the regulator was connected to the zero air port on the analyzer.
  - ❖ An auto daily calibration was not done on July 15th and 16th due to a Modbus installation. After the installation, the expected span valued was incorrect, and the error was corrected on July 19th.
  - ❖ The analyzer flamed out on August 26th, hour of 19:00, and it was relit on August 27th. A total of 13 hours of data was invalidated.
  - ❖ One hour of data is missing on October 27th.
  - ❖ Three hours of data were invalidated due to a power failure on November 5th.
  - ❖ The analyzer was put into the “Maintenance” mode for two hours on November 20th for the wind system replacement.

(To Be Continued.)

General Monthly Summary

AQM STATION – LICA - Maskwa

Total HydroCarbon (PPM)

- Analyzer make / model - TECO 51-LT and TECO 51C-LT
  - (Continuing…) The analyzer was removed to the new trailer following a removal calibration on November 30th.
  - The analyzer was installed following an installation calibration on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

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

- System make / model - Climatronics MIII and Met One 50.5
  - A polling computer switch occurred on June 1st, hour of 9.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated.
  - The wind system channel was put in the “Maintenance” mode due to the Modbus installation for 10 hours in July.
  - One hour of data is missing on October 27th.
  - Three hours of data for both wind speed and wind direction were invalidated due to a power failure on November 5th.
  - It was noticed the wind speed sensor was stuck at around zero on November 19th. The wind system was replaced with the new LICA-supplied Met One 50.5 on November 20th. The new wind system was calibration by the manufacturer on February 4th, 2009. A total of 35 hours of data for wind speed was invalidated.
  - The wind system was disconnected and moved to the new trailer on November 30th.
  - The analyzer was installed following an installation calibration on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Relative Humidity (PERCENT)

- System make / model - Met One 083
  - A polling computer switch occurred on June 1st, hour of 9.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated.
  - The RH channel was put in the " Maintenance" mode due to the Modbus installation for 14 hours in July.
  - The RH sensor was checked on August 26th. The sensor was working properly.
  - One hour of data is missing on October 27th.
  - Two hours of data were invalidated due to a power failure on November 5th.
  - The RH sensor was disconnected and moved to the new trailer on November 30th.
  - The analyzer was installed to the new trailer on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Trailer Temperature (DEG C)

- System make / model – R&R 61
  - A polling computer switch occurred on June 1st, hour of 9.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated.
  - The Trailer Temperature channel was put in the “maintenance” mode due to the Modbus installation for 10 hours this month.
  - One hour of data is missing on October 27th.
  - Two hours of data were invalidated due to a power failure on November 5th.
  - The Temperature sensor was disconnected and moved to the new trailer on November 30th.
  - The analyzer was installed to the new trailer on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Ambient Temperature (DEGC)

- System make / model - Met One 060
  - ❖ A polling computer switch occurred on June 1st, hour of 9.
  - ❖ A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated.
  - ❖ The Ambient Temperature channel was put in the “maintenance” mode due to the Modbus installation for 10 hours in July. After the installation on July 15th, the configuration was incorrect. The error was corrected on July 21st. A total of 146 hours of data was invalidated.
  - ❖ The sensor was checked using Hg thermometer (S/N #: 2178). The sensor was working correctly.
  - ❖ One hour of data is missing on October 27th.
  - ❖ Two hours of data were invalidated due to a power failure on November 5th.
  - ❖ The Temperature sensor was disconnected and moved to the new trailer on November 30th.
  - ❖ The analyzer was installed to the new trailer on December 2nd.
  - ❖ One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Precipitation (MM)

- System make / model - Met One 387
  - A polling computer switch occurred on June 1st, hour of 9.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated.
  - The Precipitation channel was put in the “maintenance” mode due to the Modbus installation for 9 hours in July. After the installation on July 15th, the configuration was incorrect. The error was corrected on July 16th. A total of 16 hours of data was invalidated.
  - The tipping bucket was cleaned and the operation was checked on August 26th. The sensor was working correctly.
  - One hour of data is missing on October 27th.
  - One hour of was invalidated due to a power failure on November 5th.
  - The Precipitation equipment was disconnected and moved to the new trailer on November 30th.
  - No data for precipitation was collected in December; waiting for the electricians to complete the trench/wiring to the new station.

General Monthly Summary

AQM STATION – LICA - Maskwa

Barometric Pressure (inHG)

- System make / model - Met One 092
  - A polling computer switch occurred on June 1st, hour of 9.
  - An hour data is missing after the system switched on June 1st.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused two hours of data invalidated.
  - The BP channel was put in the “maintenance” mode due to the Modbus installation for 7 hours in July. After the installation on July 15th, the configuration was incorrect. The error was corrected on July 16th. A total of 23 hours of data was invalidated.
  - The BP sensor was checked using Bios 1193. The sensor was working properly (0.1% difference).
  - One hour of data is missing on October 27th.
  - Two hours of data were invalidated due to a power failure on November 5th.
  - The BP sensor was disconnected and moved to the new trailer on November 30th.
  - The analyzer was installed to the new trailer on December 2nd.
  - One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Standard Deviation Wind Direction (DEG)

- System make / model – Climatronics MIII
  - ❖ The wind system channel was put in the “Maintenance” mode due to the Modbus installation for 10 hours this month. As a result, the data for the standard deviation wind direction was flagged as “Maintenance” the same time as the wind system was.
  - ❖ One hour of data is missing on October 27th.
  - ❖ Three hours of data for both wind speed and wind direction were invalidated due to a power failure on November 5th.
  - ❖ The wind system was put into the “Maintenance” mode for three hours for the wind system replacement on November 20th.
  - ❖ The wind system was disconnected and moved to the new trailer on November 30th.
  - ❖ The analyzer was installed to the new trailer on December 2nd.
  - ❖ One-minute data between December 30th at 7:12 and December 31st at 7:18 is missing due to incorrect configuration setup. The error was fixed on December 31st.

General Monthly Summary

AQM STATION – LICA - Maskwa

Datalogger

- System make / model - ESC 8832
- Software make/version - ESC v 5.51a
  - ❖ Data of standard deviation wind direction started to be recorded on June 3rd, hour of 7.
  - ❖ A Modbus installation was performed on July 15th to July 17th.
  - ❖ The Datalogger was disconnected and moved to the new trailer on November 30th.
  - ❖ The analyzer was installed to the new trailer on December 2nd.

Trailer

- ❖ The ambient air monitoring results stopped reporting to Imperial oil in June. All results start submitting to Lakeland Industry & Community Associate (LICA) in June.
- ❖ The manifold and inlet tubing were cleaned on July 10th.
- ❖ All analyzers, equipments, sensors and the Datalogger were moved to the new trailer on November 30th.
- ❖ All analyzers, equipments, sensors and the Datalogger were installed to the new trailer on December 2nd.

Continuous Monitoring

Sulphur Dioxide

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	679	0	6	0
July	744	687	0	9	0
August	744	708	0	5	0
September	720	683	0	9	0
October	744	702	0	6	0
November	720	660	0	9	0
December	720	675	0	11	0
Yearly Total	5112	4794	0	11	0

SO_2 Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: MASKWA

Month	Valid Readings* Hours	% 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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May	704	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
June	679	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
July	687	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
August	708	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
September	683	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
October	702	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
November	660	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
December	675	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

SO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: MASKWA

Month	SO2 ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	5
June	6
July	9
August	5
September	9
October	6
November	9
December	11
ANNUAL PEAK	**11**

LICA30
SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	5.96	3.83	5.57	5.32	3.50	3.69	5.88	5.04	5.52	12.35	12.30	5.90	7.05	6.88	5.57	5.57	100.00
< 60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	5.96	3.83	5.57	5.32	3.50	3.69	5.88	5.04	5.52	12.35	12.30	5.90	7.05	6.88	5.57	5.57	

Calm : .00 %

Total # Operational Hours : 4793

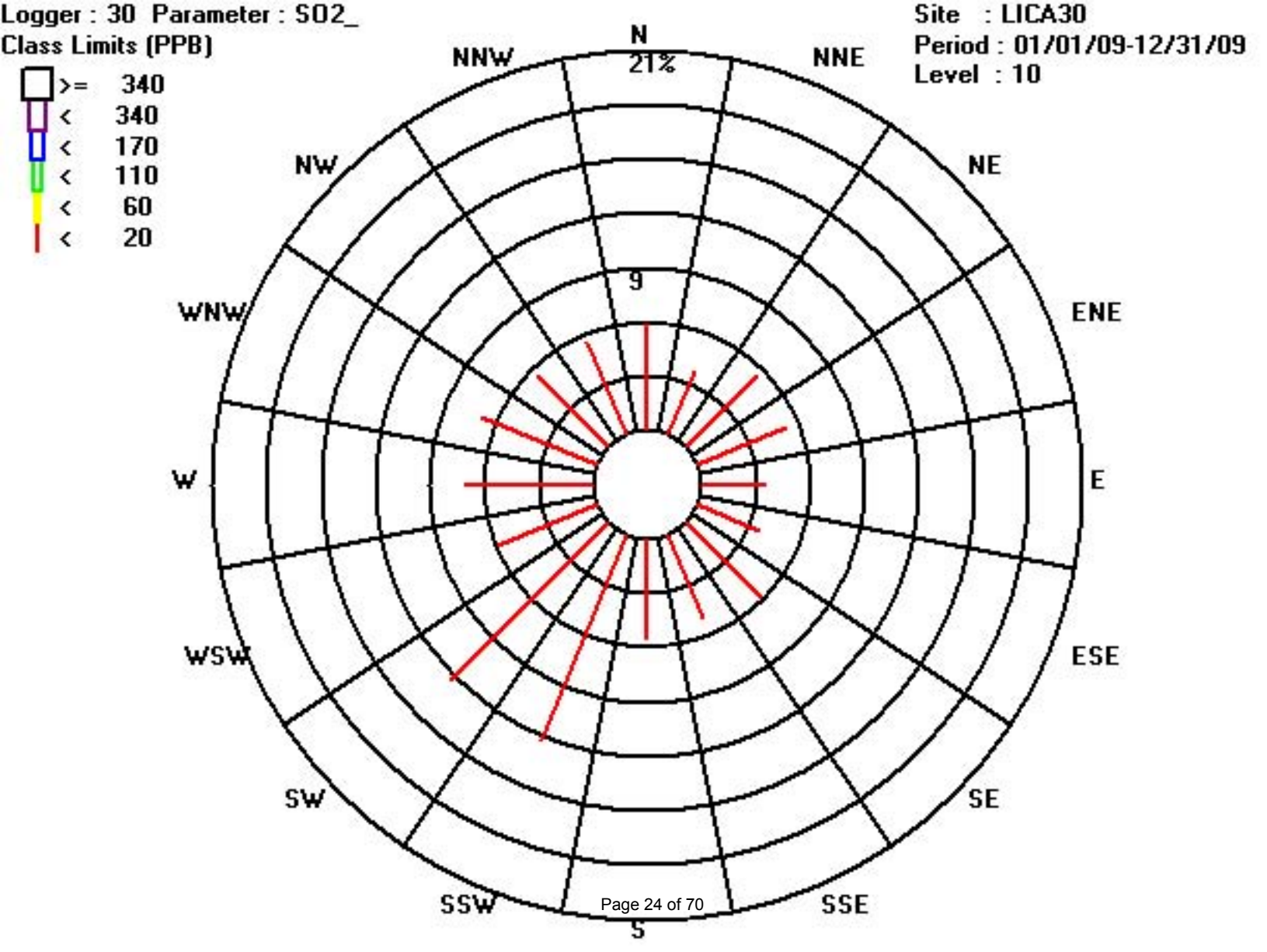
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 20	286	184	267	255	168	177	282	242	265	592	590	283	338	330	267	267	4793
< 60																	
< 110																	
< 170																	
< 340																	
>= 340																	
Totals	286	184	267	255	168	177	282	242	265	592	590	283	338	330	267	267	

Calm : .00 %

Total # Operational Hours : 4793


Logger : 30 Parameter : SO2_
Class Limits (PPB)
>= 340
< 340
< 170
< 110
< 60
< 20
Site : LICA30
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Hydrogen Sulphide

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	696	652	0	2	0
July	744	692	0	2	0
August	744	703	0	2	0
September	720	684	0	2	0
October	744	701	0	0	0
November	720	665	0	1	0
December	720	678	0	3	0
Yearly Total	5088	4775	0	3	0

H_2S Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: MASKWA

Month	Number of Readings	% Readings in Concentration Range (ppb H2S)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines
		0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb		
January	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA
May	707	100.0%	0.0%	0.0%	0.0%	0	0
June	652	100.0%	0.0%	0.0%	0.0%	0	0
July	692	100.0%	0.0%	0.0%	0.0%	0	0
August	703	100.0%	0.0%	0.0%	0.0%	0	0
September	684	100.0%	0.0%	0.0%	0.0%	0	0
October	701	100.0%	0.0%	0.0%	0.0%	0	0
November	665	100.0%	0.0%	0.0%	0.0%	0	0
December	678	100.0%	0.0%	0.0%	0.0%	0	0
						Annual Average	

H2S Peak Reading of One Hour Averages for 2009

Plant Operator: LICA

Plant Location: MASKWA

Month	H2S ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	3
June	2
July	2
August	2
September	2
October	0
November	1
December	3

ANNUAL PEAK	**3**

LICA30
H2S_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	5.76	3.81	5.52	5.34	3.51	3.68	5.90	5.06	5.50	12.40	12.23	5.99	7.08	7.01	5.59	5.48	99.93
< 10	.00	.00	.00	.00	.00	.02	.00	.00	.02	.00	.00	.00	.02	.00	.00	.00	.06
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	5.76	3.81	5.52	5.34	3.51	3.70	5.90	5.06	5.52	12.40	12.23	5.99	7.10	7.01	5.59	5.48	

Calm : .00 %

Total # Operational Hours : 4774

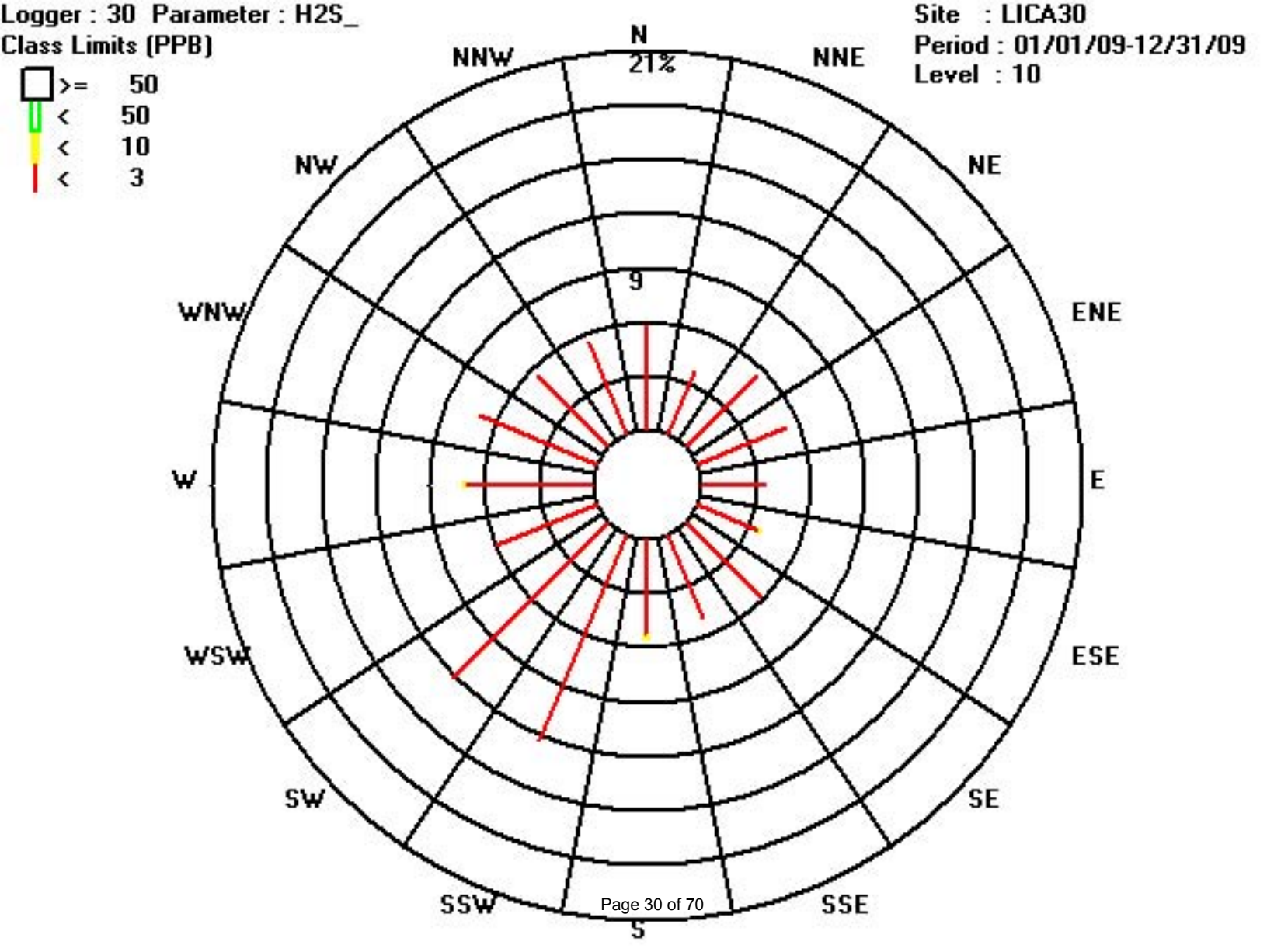
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	275	182	264	255	168	176	282	242	263	592	584	286	338	335	267	262	4771
< 10						1			1				1				3
< 50																	
>= 50																	
Totals	275	182	264	255	168	177	282	242	264	592	584	286	339	335	267	262	

Calm : .00 %

Total # Operational Hours : 4774


Logger : 30 Parameter : H2S_
Class Limits (PPB)
>= 50
< 50
< 10
< 3
Site : LICA30
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Total Hydrocarbons

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	681	1.9	3	2.1
July	744	693	1.8	3	2
August	744	693	1.9	3.2	2.1
September	720	684	1.8	2.8	2
October	744	706	1.9	2.9	2.1
November	720	669	1.9	3.3	2.2
December	720	672	1.9	3.7	2.2
Yearly Total	5112	4798	1.8	3.7	2.1

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: MASKWA

Month	Number of Readings	% 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	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	705	99.9%	0.1%	0.0%	0.0%	2.07
June	681	99.4%	0.6%	0.0%	0.0%	2.10
July	693	99.9%	0.1%	0.0%	0.0%	2.09
August	693	99.6%	0.4%	0.0%	0.0%	2.13
September	684	100.0%	0.0%	0.0%	0.0%	2.03
October	706	100.0%	0.0%	0.0%	0.0%	2.11
November	669	99.9%	0.1%	0.0%	0.0%	2.23
December	672	93.3%	6.7%	0.0%	0.0%	2.24
					Annual Average	**2.12**

THC Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: MASKWA

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

LICA30
THC / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	6.02	3.79	5.44	5.27	3.42	3.60	5.92	4.98	5.46	12.07	11.88	5.86	6.92	6.94	5.54	5.67	98.87
< 10.0	.04	.04	.08	.02	.04	.00	.02	.06	.04	.25	.37	.06	.04	.00	.04	.00	1.12
< 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.07	3.83	5.52	5.29	3.46	3.60	5.94	5.04	5.50	12.32	12.26	5.92	6.96	6.94	5.59	5.67	

Calm : .00 %

Total # Operational Hours : 4794

Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3.0	289	182	261	253	164	173	284	239	262	579	570	281	332	333	266	272	4740
< 10.0	2	2	4	1	2		1	3	2	12	18	3	2		2		54
< 50.0																	
>= 50.0																	
Totals	291	184	265	254	166	173	285	242	264	591	588	284	334	333	268	272	

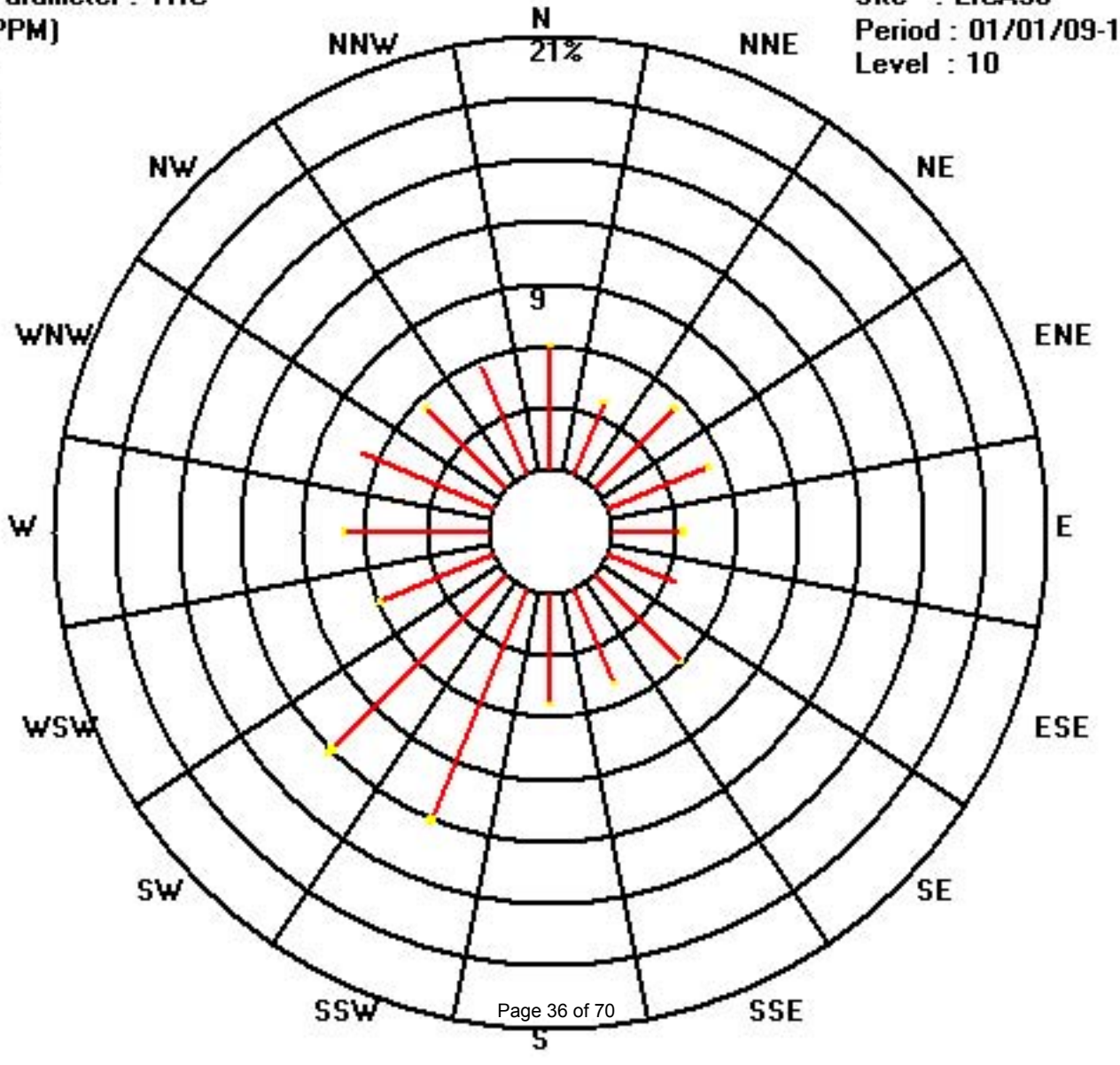
Calm : .00 %

Total # Operational Hours : 4794

Logger : 30 Parameter : THC
Class Limits (PPM)

>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA30
Period : 01/01/09-12/31/09
Level : 10



Nitrogen Dioxide

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	678	0	13	1
July	744	690	0	12	1
August	744	704	0	13	1
September	720	680	0	19	2
October	744	702	0	20	1
November	720	664	0	24	4
December	720	675	0	82	6
Yearly Total	5112	4793	0	82	2

NO_2 Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: MASKWA

Month	Number of Readings	% Readings in Concentration Range (ppm NO2)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO2 ppm Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm			
January	NA	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA	NA
May	701	100.0%	0.0%	0.0%	0.0%	0	0	0.00
June	678	100.0%	0.0%	0.0%	0.0%	0	0	0.00
July	690	100.0%	0.0%	0.0%	0.0%	0	0	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0	0	0.00
September	680	100.0%	0.0%	0.0%	0.0%	0	0	0.00
October	702	100.0%	0.0%	0.0%	0.0%	0	0	0.00
November	664	100.0%	0.0%	0.0%	0.0%	0	0	0.00
December	675	99.6%	0.0%	0.0%	0.0%	0	0	0.01
						Annual Average		**0.00**

NO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: MASKWA

Month	NO2 ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	18
June	13
July	12
August	13
September	19
October	20
November	24
December	82
ANNUAL PEAK	**82**

LICA30
NO2_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	6.09	3.81	5.57	5.32	3.46	3.63	5.88	5.05	5.50	12.29	12.33	5.90	6.96	6.92	5.61	5.55	99.93
<	110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.04	.00	.00	.00	.06
<	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	6.09	3.81	5.57	5.32	3.46	3.63	5.88	5.05	5.50	12.29	12.33	5.92	7.01	6.92	5.61	5.55	

Calm : .00 %

Total # Operational Hours : 4792

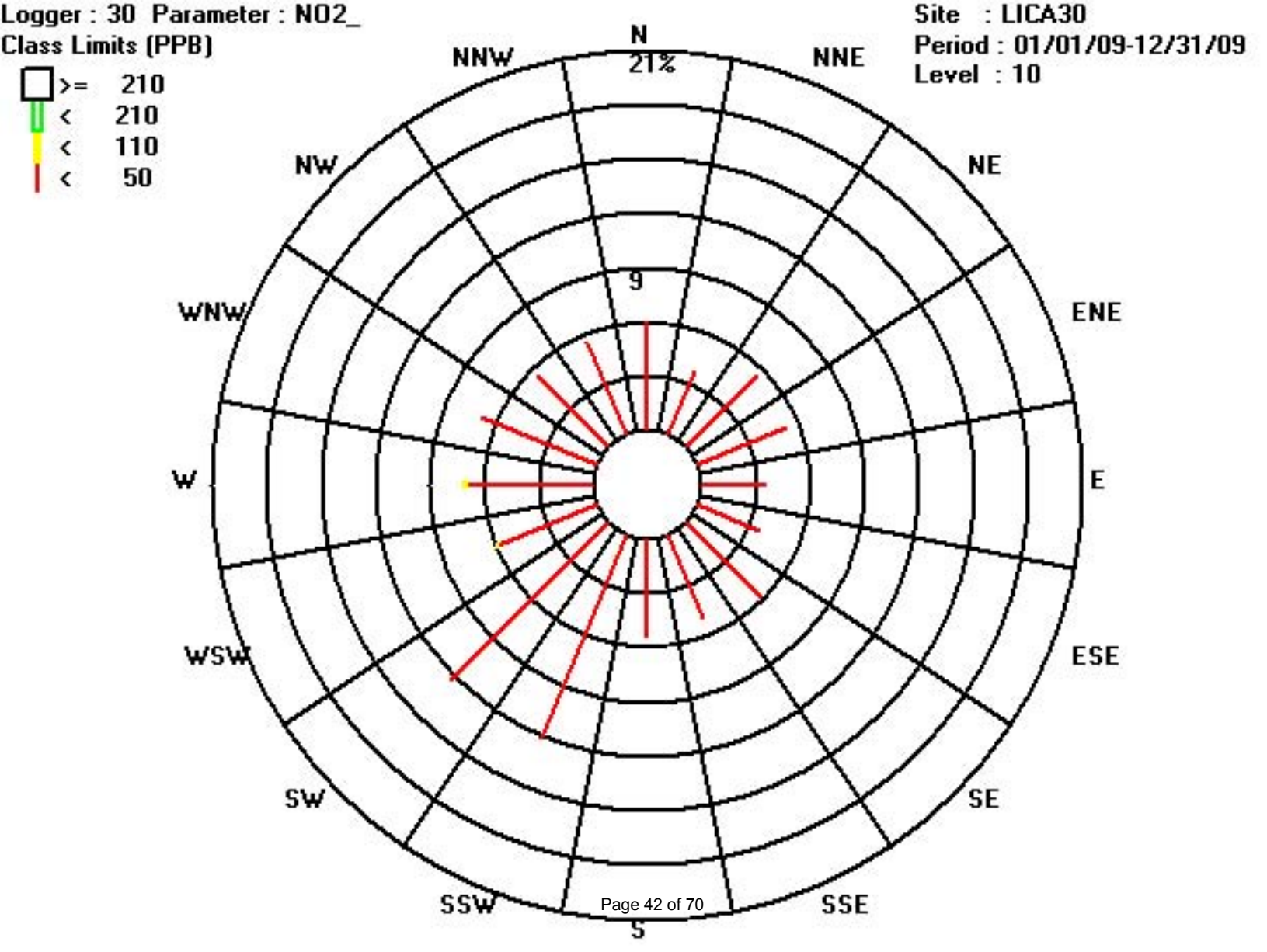
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	292	183	267	255	166	174	282	242	264	589	591	283	334	332	269	266	4789
<	110												1	2				3
<	210																	
>=	210																	
	Totals	292	183	267	255	166	174	282	242	264	589	591	284	336	332	269	266	

Calm : .00 %

Total # Operational Hours : 4792


Logger : 30 Parameter : NO2_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA30
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitric Oxide

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	678	0	7	0
July	744	690	0	13	0
August	744	704	0	21	0
September	720	680	0	12	0
October	744	702	0	40	0
November	720	664	0	12	0
December	720	675	0	87	2
Yearly Total	5112	4793	0	87	0

NO Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: MASKWA

Month	Number of Readings	% 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	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	701	100.0%	0.0%	0.0%	0.0%	0.00
June	678	100.0%	0.0%	0.0%	0.0%	0.00
July	690	100.0%	0.0%	0.0%	0.0%	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0.00
September	680	100.0%	0.0%	0.0%	0.0%	0.00
October	702	100.0%	0.0%	0.0%	0.0%	0.00
November	664	100.0%	0.0%	0.0%	0.0%	0.00
December	675	99.1%	0.9%	0.0%	0.0%	0.00
					Annual Average	**0.00**

NO Peak reading of One Hour Averages for 2009

Plant Operator: LICA Station: MASKWA

Month	NO ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	21
June	7
July	13
August	21
September	12
October	40
November	12
December	87
ANNUAL PEAK	**87**

LICA30
NO_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	6.09	3.81	5.57	5.32	3.46	3.63	5.88	5.05	5.50	12.29	12.33	5.86	6.94	6.92	5.61	5.55	99.87
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.06	.00	.00	.00	.12
< 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	6.09	3.81	5.57	5.32	3.46	3.63	5.88	5.05	5.50	12.29	12.33	5.92	7.01	6.92	5.61	5.55	

Calm : .00 %

Total # Operational Hours : 4792

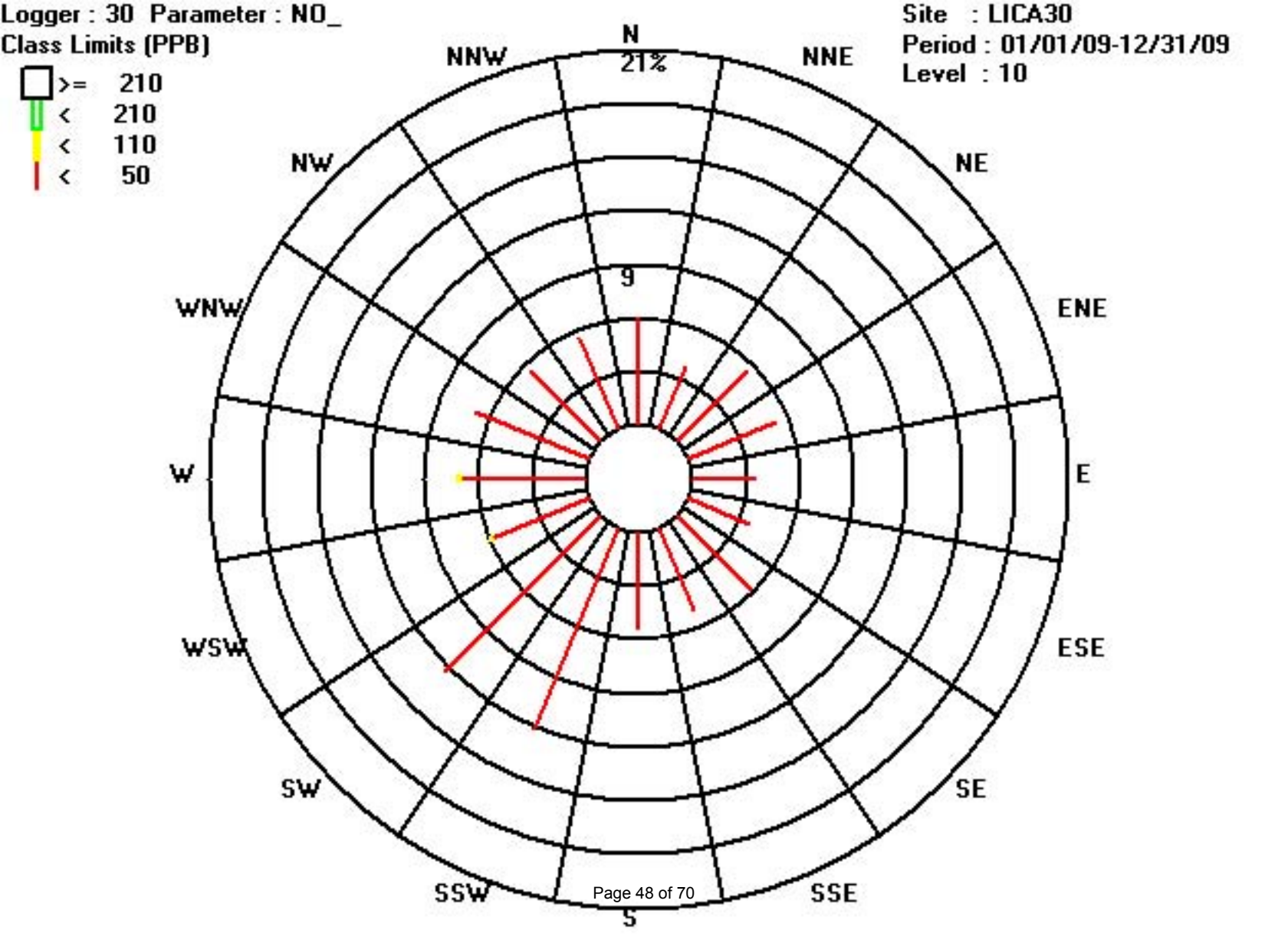
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	292	183	267	255	166	174	282	242	264	589	591	281	333	332	269	266	4786
< 110												3	3				6
< 210																	
>= 210																	
Totals	292	183	267	255	166	174	282	242	264	589	591	284	336	332	269	266	

Calm : .00 %

Total # Operational Hours : 4792


Logger : 30 Parameter : NO_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA30
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Oxides of Nitrogen

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	678	0	21	1
July	744	690	0	22	1
August	744	704	0	28	2
September	720	680	0	24	2
October	744	702	0	60	2
November	720	664	0	33	5
December	720	675	0	170	8
Yearly Total	5112	4793	0	170	3

NO_x Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: MASKWA

Month	Number of Readings	% Readings in Concentration Range (ppm NOx)				NOx ppm Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	701	100.0%	0.0%	0.0%	0.0%	0.00
June	678	100.0%	0.0%	0.0%	0.0%	0.00
July	690	100.0%	0.0%	0.0%	0.0%	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0.00
September	680	100.0%	0.0%	0.0%	0.0%	0.00
October	702	99.9%	0.1%	0.0%	0.0%	0.00
November	664	100.0%	0.0%	0.0%	0.0%	0.01
December	675	97.9%	1.3%	0.0%	0.0%	0.01
					Annual Average	**0.00**

NO_x Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: MASKWA

Month	NOx ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	40
June	21
July	22
August	28
September	24
October	60
November	33
December	170
ANNUAL PEAK	**170**

LICA30
NOX_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	6.09	3.81	5.57	5.32	3.46	3.63	5.88	5.05	5.50	12.22	12.31	5.82	6.88	6.90	5.61	5.55	99.66
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.02	.06	.06	.02	.00	.00	.22
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.06	.00	.00	.00	.10
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	6.09	3.81	5.57	5.32	3.46	3.63	5.88	5.05	5.50	12.29	12.33	5.92	7.01	6.92	5.61	5.55	

Calm : .00 %

Total # Operational Hours : 4792

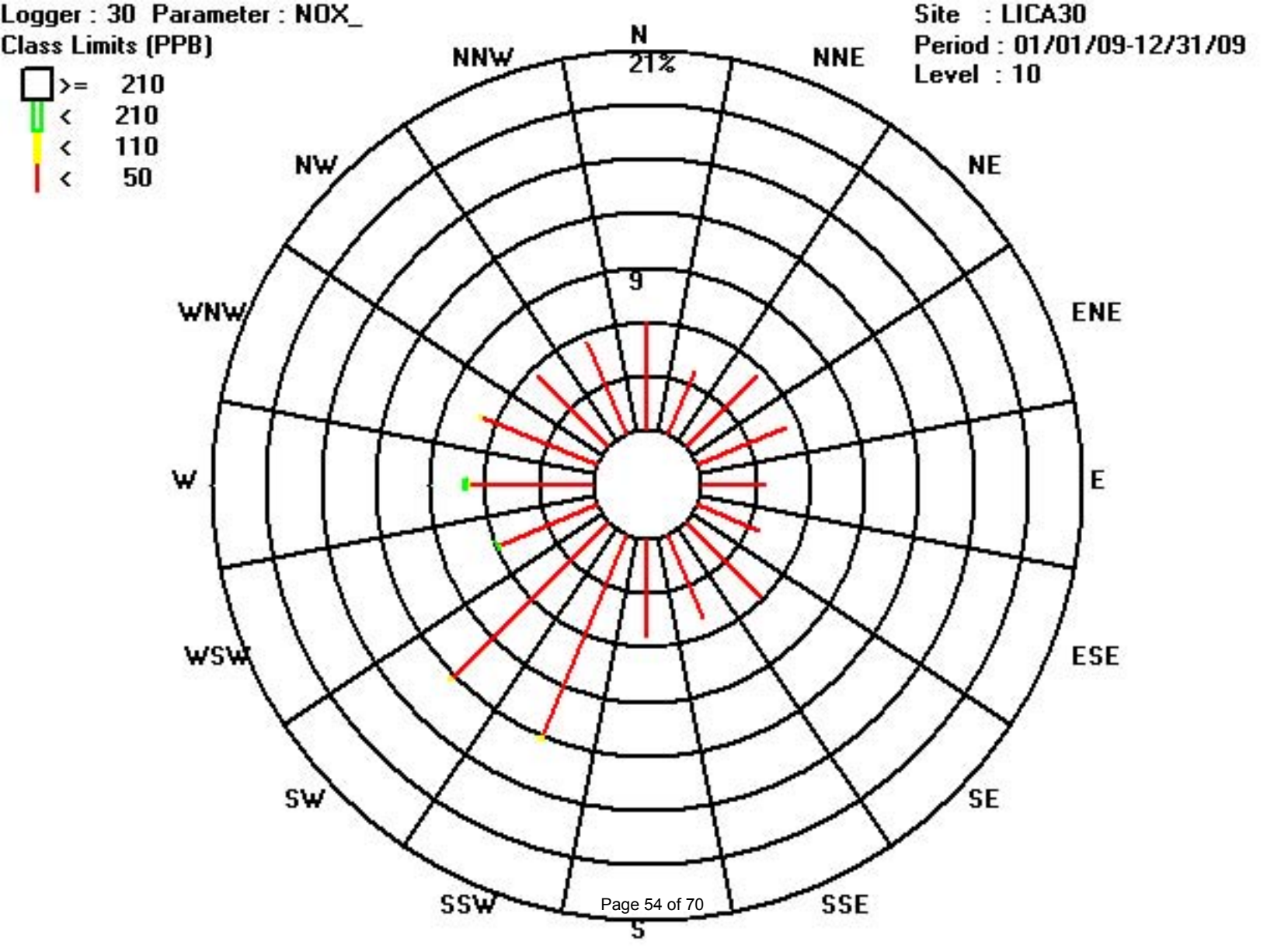
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	292	183	267	255	166	174	282	242	264	586	590	279	330	331	269	266	4776
< 110										3	1	3	3	1			11
< 210												2	3				5
>= 210																	
Totals	292	183	267	255	166	174	282	242	264	589	591	284	336	332	269	266	

Calm : .00 %

Total # Operational Hours : 4792


Logger : 30 Parameter : NOX_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA30
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Temperature

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	717	-4	29.4	14
July	624	593	0.6	29.9	15.5
August	744	743	1.4	28.5	15
September	720	720	-2	29.7	14
October	744	743	-8.7	14.5	0.9
November	720	703	-13.7	13.5	-1.8
December	720	706	-36.9	0	-19.1
Yearly Total	4992	4925	-36.9	29.9	5.3

Temperature - Monthly Averages for 2009

Plant Operator: LICA Plant Location: MASKWA

Month	Monthly Averages (Deg.C)	Maximum Hourly Average (Deg C)	Minimum Hourly Average (Deg C)	Maximum Daily Average (Deg C)
January	NA	NA	NA	NA
February	NA	NA	NA	NA
March	NA	NA	NA	NA
April	NA	NA	NA	NA
May	8.50	24.9	-5.6	15.6
June	14.02	29.4	-4.0	20.3
July	15.58	29.9	0.6	23.0
August	15.05	28.5	1.4	20.0
September	14.05	29.7	-2.0	20.8
October	0.91	14.5	-8.7	6.6
November	-1.81	13.5	-13.7	5.2
December	-19.11	-0.5	-36.9	-6.3
ANNUAL AVERAGE	**5.90**	**-**	**-**	-

Precipitation

Current Date : 01/13/10
Current Time : 13:10

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	717	0	4.6	0
July	744	719	0	17.3	0.1
August	744	744	0	8.3	0
September	720	720	0	1.2	0
October	744	743	0	2.8	0
November	720	710	0	1	0
December	0	0			
Yearly Total	4392	4353	0	17.3	0

PRECIPITATION - Monthly Averages for 2009

Plant Operator: LICA Plant Location: MASKWA

Month	Monthly Averages (MM)	Maximum Hourly Average (MM)	Maximum Daily Average (MM)	Monthly Total (MM)
January	NA	NA	NA	NA
February	NA	NA	NA	NA
March	NA	NA	NA	NA
April	NA	NA	NA	NA
May	0.02	2.2	4.1	18.4
June	0.07	4.6	15.7	49.0
July	0.12	17.3	21.9	83.3
August	0.04	8.3	11.6	27.0
September	0.01	1.2	1.7	4.1
October	0.04	2.80	11.00	32.70
November	0.00	1.00	1.00	1.60
December	NA	NA	NA	NA
ANNUAL AVERAGE	**0.04**	**-**	**-**	-

Relative Humidity

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	717	19	95	61
July	744	730	28	94	67
August	744	743	29	94	71
September	720	720	19	94	68
October	744	743	34	92	77
November	720	703	31	91	69
December	720	706	47	84	68
Yearly Total	5112	5062	19	95	69

Relative Humidity - Monthly Averages for 2009

Plant Operator: LICA Plant Location: MASKWA

Month	MonthlyAverages (%)	Maximum Hourly Average (%)	Maximum Daily Average (%)
January	NA	NA	NA
February	NA	NA	NA
March	NA	NA	NA
April	NA	NA	NA
May	52.49	94	77.6
June	61.21	95	87.7
July	67.76	94	85.0
August	71.69	94	83.5
September	68.29	94	80.7
October	77.77	92	88.5
November	69.37	91	83.0
December	68.57	84	80.0
ANNUAL AVERAGE	**67.14**	**-**	**-**

Barometric Pressure

Current Date : 01/13/10
Current Time : 13:10

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	716	924	954	938
July	744	714	924	954	944
August	744	744	932	956	943
September	720	720	929	956	941
October	744	743	921	953	941
November	720	703	910	949	932
December	720	706	927	962	944
Yearly Total	5112	5046	910	962	940

BAROMETRIC PRESSURE - Monthly Averages for 2009

Plant Operator: LICA Plant Location MASKWA

Month	Monthly Averages (millibar)	Maximum Hourly Average (millibar)	Maximum Daily Average (millibar)
January	NA	NA	NA
February	NA	NA	NA
March	NA	NA	NA
April	NA	NA	NA
May	938	952	948.7
June	939	954	949.8
July	944	954	951.2
August	943	956	953.3
September	941	956	953.6
October	942	953	952.3
November	933	949	945.2
December	945	962	960.3
ANNUAL AVERAGE	**941**	**-**	-

Vector Wind Speed

Current Date : 01/13/10
Current Time : 13:09

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	720	717	0.1	17.6	5.8
July	744	734	0	20.2	5.3
August	744	744	0	15.7	4.5
September	720	720	0	17.7	6.5
October	744	743	0	14.1	5.4
November	696	664	0.1	17.6	5.7
December	720	709	0.1	14.3	3.9
Yearly Total	5088	5031	0	20.2	5.3

LICA30
WSP / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	2.52	2.34	4.01	4.29	2.60	2.08	3.04	2.60	3.63	7.83	9.08	4.57	4.29	2.56	2.98	2.82	61.29
<	12.0	2.78	1.11	1.35	.79	.93	1.41	2.44	2.26	1.74	4.53	2.96	1.25	2.62	3.33	2.22	2.56	34.34
<	20.0	.73	.27	.15	.01	.03	.19	.37	.15	.09	.13	.00	.05	.15	1.01	.53	.21	4.19
<	29.0	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
<	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	6.06	3.73	5.52	5.10	3.57	3.69	5.86	5.02	5.48	12.50	12.04	5.88	7.07	6.91	5.74	5.60	

Calm : .13 %

Total # Operational Hours : 5031

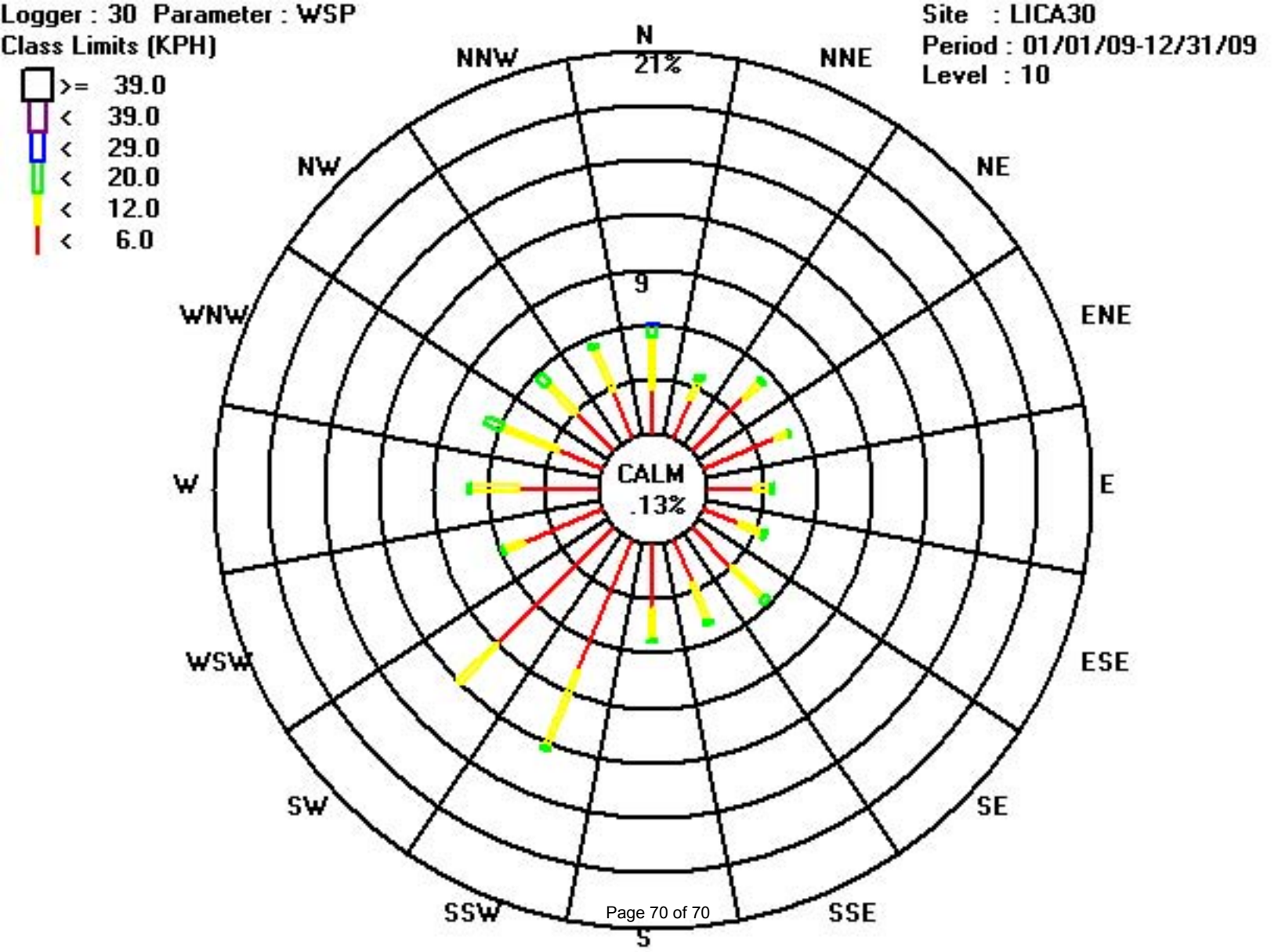
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	127	118	202	216	131	105	153	131	183	394	457	230	216	129	150	142	3084
<	12.0	140	56	68	40	47	71	123	114	88	228	149	63	132	168	112	129	1728
<	20.0	37	14	8	1	2	10	19	8	5	7		3	8	51	27	11	211
<	29.0	1																1
<	39.0																	
>=	39.0																	
	Totals	305	188	278	257	180	186	295	253	276	629	606	296	356	348	289	282	

Calm : .13 %

Total # Operational Hours : 5031


Logger : 30 Parameter : WSP
Class Limits (KPH)
>= 39.0
< 39.0
< 29.0
< 20.0
< 12.0
< 6.0
Site : LICA30
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9
CALM
.13%

Lakeland Industry & Community Association

St. Lina Monitoring Site
Ambient Annual Data Report

For
2009

Prepared By:

Maxxam Analytics Inc

Driven by Service and Science

January 13, 2010

Lakeland Industry & Community Association
St. Lina
Ambient Air Monitoring

Table of Contents

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: June 2009 to December 2009

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

The monthly 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 Monthly Summary

Equipment Operation

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

AQM STATION – LICA – St. Lina

A trailer audit was performed by Alberta Environment on November 5th, 2009.

Sulphur Dioxide (PPB)

- Analyzer make / model - API 100E
  - The analyzer was installed on June 11th.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused three hours of data invalidated.
  - Several power failure events occurred in July that caused 21 hours of data invalidated.
  - After the power failure on July 18th, the analyzer daily zero was reading 7 ppb as a baseline. The analyzer was re-calibrated on July 21st, and no issue was discovered.
  - Upon arrival the station on August 18th, the analyzer had a warning for "Front Panel Display"; this warning indicates a communication problem between the CPU and the front panel. Cleared the warning, no other signs of a problem appeared.
  - An hour of data is missing on August 28th between 22:00 and 22:59.
  - Two hours of data were invalidated due to a power failure event on September 3rd.
  - One hour of data is missing on October 27.
  - Three hours of data are missing in November.

General Monthly Summary

AQM STATION – LICA – St. Lina

Hydrogen Sulphuide (PPB)

- Analyzer make / model - API 101E
  - The analyzer was installed on June 11th, and an installation calibration was performed on June 12th.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused three hours of data invalidated.
  - A maintenance check calibration on the analyzer was performed on June 26th, and no issue was discovered. After the calibration on June 26th, the sample inlet line was left disconnected and sample air was collected from inside the trailer. This issue was noticed and corrected on July 15th. The data was invalidated after the calibration on June 26th till July 15th. 444 hours data was invalidated.
  - Several power failure events occurred in July that caused 20 hours of data invalidated.
  - After the power failure on July 18th, the analyzer daily zero was reading -4 ppb as a baseline. The analyzer was re-calibrated on July 21st, and no issue was discovered.
  - An hour of data is missing on August 28th between 22:00 and 22:59.
  - Two hours of data were invalidated due to a power failure event on September 3rd.
  - One hour of data is missing on October 27.
  - Three hours of data are missing in November.

Nitrogen Dioxide (PPB)

- Analyzer make / model - TECO 42C
  - The analyzer was installed on June 11th, and an installation calibration was performed on June 12th.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused three hours of data invalidated.
  - Several power failure events occurred in July that caused 22 hours of data invalidated.
  - An hour of data is missing on August 28th between 22:00 and 22:59.
  - Two hours of data were invalidated due to a power failure event on September 3rd.
  - One hour of data is missing on October 27.
  - Three hours of data are missing in November.

General Monthly Summary

AQM STATION – LICA – St. Lina

Total HydroCarbon (PPM)

- Analyzer make / model -TECO 51C-LT
  - The analyzer was installed following an installation on June 11th.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused three hours of data invalidated.
  - The THC analyzer Hydrogen gas ran out on June 25th, the gas cylinder was replaced on June 26th. 22 hours of data were invalidated.
  - A new single stage regulator was installed on the daily calibration zero air port on the read bulkhead of the analyzer following the as found points on July 15th. The zero air from the station zero air supply was tee'ed at the FID air port on the rear bulkhead and a line was installed going to the new regulator.
  - The analyzer flamed out following a power failure on July 16th, and it was re-lit on July 17th. Another power failure event occurred on July 18th causing the analyzer to flame out, and it was re-lit on July 20th.
  - A total of 21 hours of data was invalidated in July due to power failures. 17 hours of data on July 16th and 16 hours of data on July 19th were invalidated due to the power failures causing the analyzer to flame out.
  - An hour of data is missing on August 28th between 22:00 and 22:59.
  - Two hours of data were invalidated due to a power failure event on September 3rd.
  - The analyzer flamed out after the power failure on September 3rd, and it was re-lit 6 hours later.
  - One hour of data is missing on October 27.
  - Three hours of data are missing in November.

General Monthly Summary

AQM STATION – LICA – St. Lina

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

- System make / model – Met One 50.5
  - The wind system was installed on June 12th.
  - A hardware modification and software upgrade were performed on June 16th and June 17th, which caused three hours of data invalidated.
  - The wind system was checked on July 15th.
  - An hour of data is missing on August 28th between 22:00 and 22:59.
  - Two hours of data were invalidated due to a power failure event on September 3rd.
  - One hour of data is missing on October 27.
  - Three hours of data are missing in November.

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.

- A hardware modification and software upgrade were performed on June 16th and June 17th.
- One-minute data between July 1st and July 5th is missing because of communication difficulty.

Trailer (54°12’59”N, 111°30’1”E, elevation 695M ASL)

- The trailer was installed on June 11th.
- The manifold was cleaned during the trip on August 18th.
- The Manifold and inlets were cleaned on October 14th.

Continuous Monitoring

Annual Summaries Graphs & Wind Roses

Sulphur Dioxide

Current Date : 01/13/10
Current Time : 09:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	480	440	0	2	0
July	744	681	0	3	0
August	744	706	0	3	0
September	720	681	0	4	0
October	744	704	0	2	0
November	720	681	0	3	0
December	744	707	0	8	0
Yearly Total	4896	4600	0	8	0

SO_2 Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: ST. LINA

Month	Valid Readings* Hours	% 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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
June	440	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
July	681	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
August	706	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
September	681	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
October	704	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
November	681	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
December	707	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
C - Concentration								Annual Average		**0.00**

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

SO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: ST. LINA

Month	SO2 ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	2
July	3
August	3
September	4
October	2
November	3
December	8
ANNUAL PEAK	**8**

LICA31
SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	20	3.32	3.73	3.23	4.61	4.93	3.86	4.74	5.48	8.37	7.38	7.03	8.74	8.59	10.29	10.57	5.04	100.00
<	60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	3.32	3.73	3.23	4.61	4.93	3.86	4.74	5.48	8.37	7.38	7.03	8.74	8.59	10.29	10.57	5.04	

Calm : .00 %

Total # Operational Hours : 4575

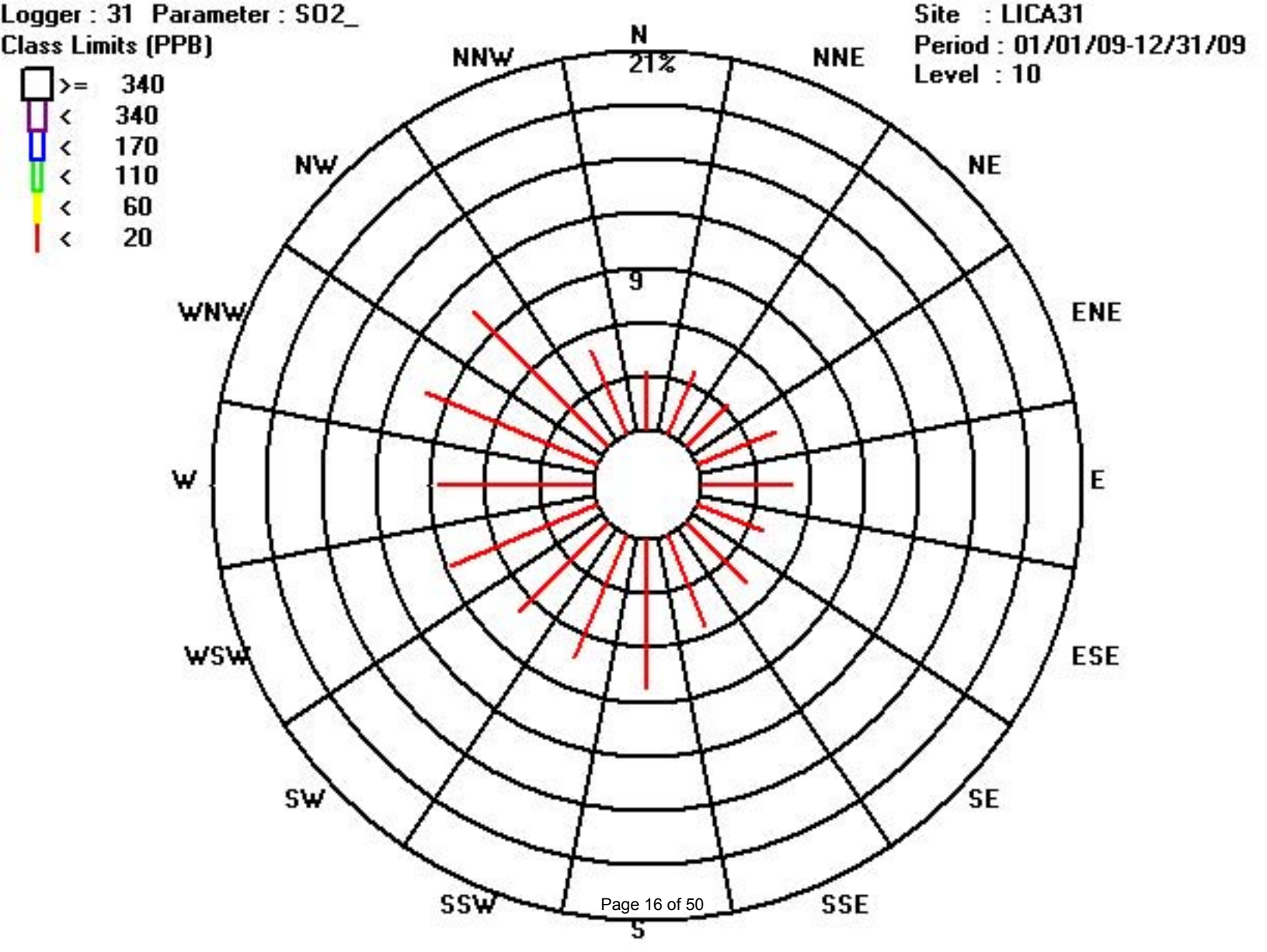
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	20	152	171	148	211	226	177	217	251	383	338	322	400	393	471	484	231	4575
<	60																	
<	110																	
<	170																	
<	340																	
>=	340																	
	Totals	152	171	148	211	226	177	217	251	383	338	322	400	393	471	484	231	

Calm : .00 %

Total # Operational Hours : 4575


Logger : 31 Parameter : SO2_
Class Limits (PPB)
>= 340
< 340
< 170
< 110
< 60
< 20
Site : LICA31
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Hydrogen Sulphuide

Current Date : 01/13/10
Current Time : 09:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	360	322	0	4	0
July	408	354	0	1	0
August	744	706	0	1	0
September	720	683	0	3	0
October	744	704	0	1	0
November	720	676	0	1	0
December	744	708	0	0	0
Yearly Total	4440	4153	0	4	0

H_2S Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: ST. LINA

Month	Number of Readings	% Readings in Concentration Range (ppb H2S)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines
		0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb		
January	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA	NA
June	321	99.7%	0.3%	0.0%	0.0%	0	0
July	354	100.0%	0.0%	0.0%	0.0%	0	0
August	706	100.0%	0.0%	0.0%	0.0%	0	0
September	683	100.0%	0.0%	0.0%	0.0%	0	0
October	704	100.0%	0.0%	0.0%	0.0%	0	0
November	676	100.0%	0.0%	0.0%	0.0%	0	0
December	708	100.0%	0.0%	0.0%	0.0%	0	0
						Annual Average	

H2S Peak Reading of One Hour Averages for 2009

Plant Operator: LICA

Plant Location: ST. LINA

Month	H2S ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	4
July	1
August	1
September	3
October	1
November	1
December	0

ANNUAL PEAK	**4**

LICA31
H2S_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	3.32	3.83	3.35	3.97	4.84	3.78	4.67	5.57	8.73	7.79	7.09	8.70	8.61	10.44	10.46	4.72	99.95
< 10	.00	.00	.00	.02	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.04
< 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	3.32	3.83	3.35	4.00	4.84	3.78	4.67	5.57	8.73	7.81	7.09	8.70	8.61	10.44	10.46	4.72	

Calm : .00 %

Total # Operational Hours : 4146

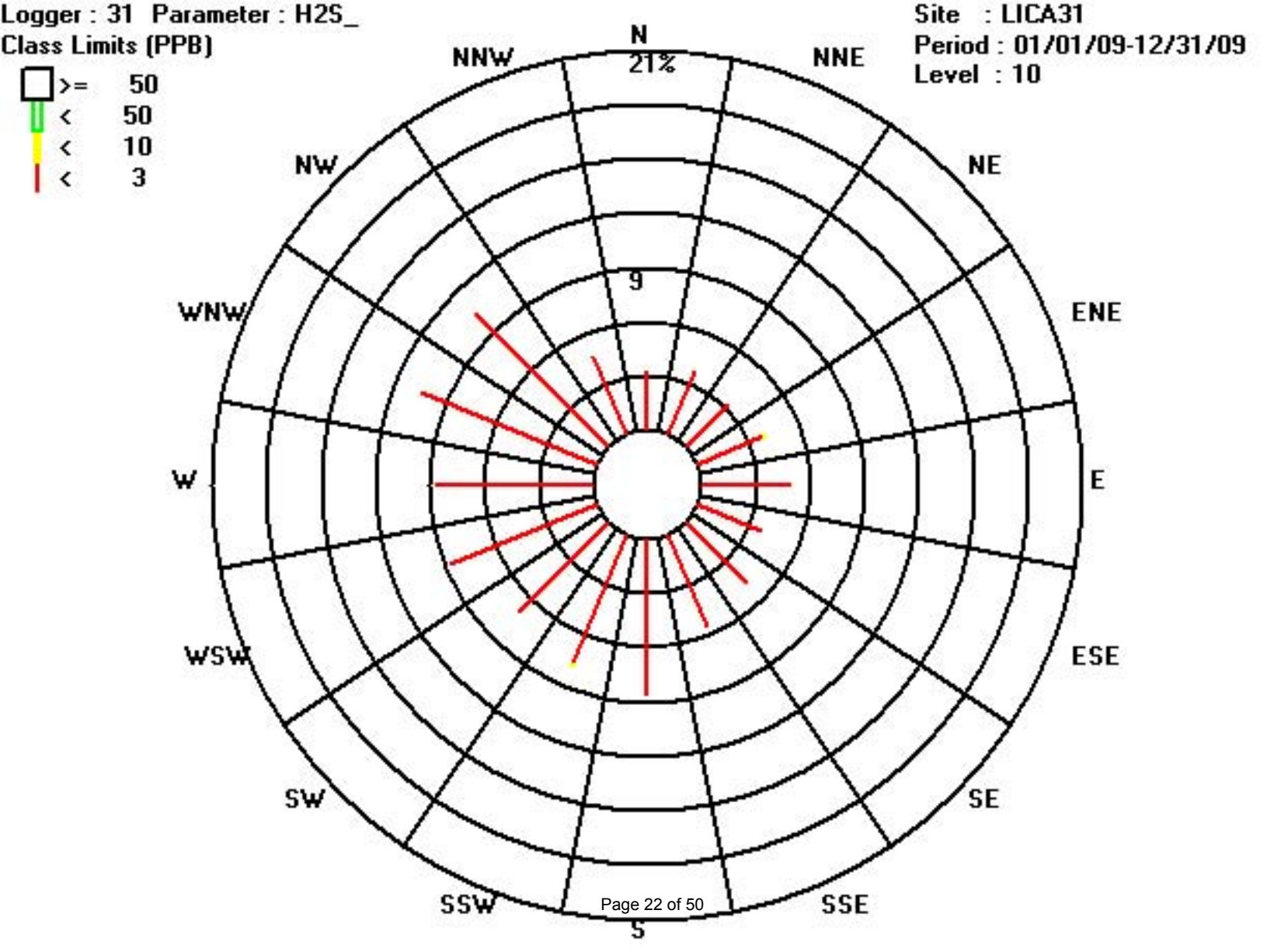
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	138	159	139	165	201	157	194	231	362	323	294	361	357	433	434	196	4144
< 10				1						1							2
< 50																	
>= 50																	
Totals	138	159	139	166	201	157	194	231	362	324	294	361	357	433	434	196	

Calm : .00 %

Total # Operational Hours : 4146


Logger : 31 Parameter : H2S_
Class Limits (PPB)
>= 50
< 50
< 10
< 3
Site : LICA31
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Total Hydrocarbons

Current Date : 01/13/10
Current Time : 09:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	480	414	1.9	2.5	1.9
July	720	651	1.8	5.4	2
August	744	707	1.8	3.9	2
September	720	676	1.9	2.9	2
October	744	705	1.8	3	2
November	720	680	1.9	2.9	2
December	744	709	2	4.3	2.3
Yearly Total	4872	4542	1.8	5.4	2

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: ST. LINA

Month	Number of Readings	% 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	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA
June	414	100.0%	0.0%	0.0%	0.0%	1.99
July	651	99.1%	0.9%	0.0%	0.0%	2.03
August	707	98.6%	1.4%	0.0%	0.0%	2.02
September	676	100.0%	0.0%	0.0%	0.0%	2.06
October	705	100.0%	0.0%	0.0%	0.0%	2.08
November	680	100.0%	0.0%	0.0%	0.0%	2.07
December	709	95.5%	4.5%	0.0%	0.0%	2.31
					Annual Average	**2.08**

THC Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: ST. LINA

Month	THC ppm Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	2.5
July	5.4
August	3.9
September	2.9
October	3
November	2.9
December	4.3

ANNUAL PEAK	**5.4**

LICA31
THC / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	3.33	3.78	3.25	4.64	4.86	3.76	4.62	5.37	8.07	7.54	6.87	8.51	8.47	9.93	10.50	5.06	98.62
<	10.0	.00	.00	.02	.04	.06	.08	.13	.17	.30	.06	.04	.02	.02	.22	.15	.00	1.37
<	50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	3.33	3.78	3.27	4.68	4.93	3.84	4.75	5.55	8.38	7.60	6.92	8.53	8.49	10.15	10.66	5.06	

Calm : .00 %

Total # Operational Hours : 4521

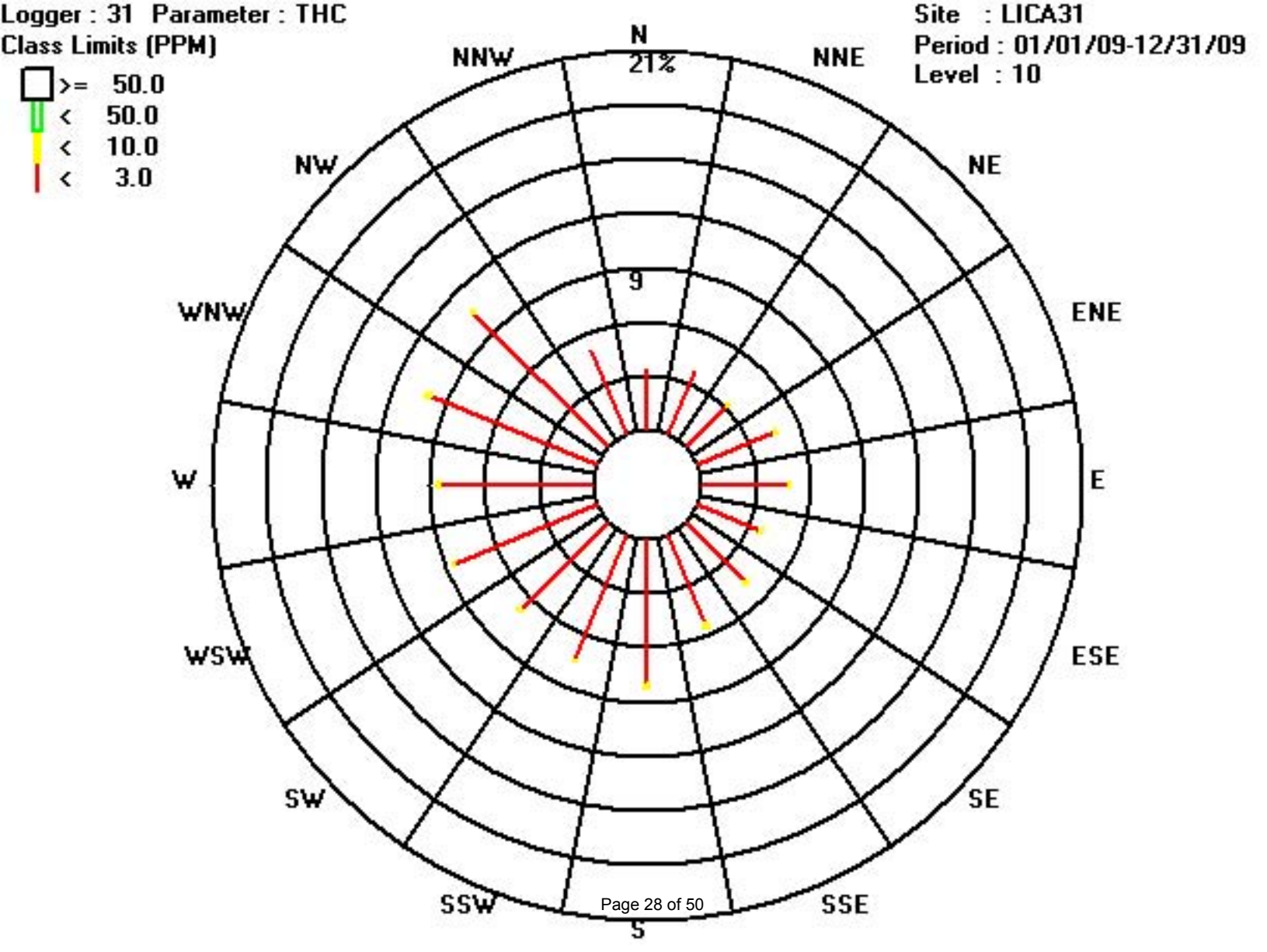
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	3.0	151	171	147	210	220	170	209	243	365	341	311	385	383	449	475	229	4459
<	10.0			1	2	3	4	6	8	14	3	2	1	1	10	7		62
<	50.0																	
>=	50.0																	
	Totals	151	171	148	212	223	174	215	251	379	344	313	386	384	459	482	229	

Calm : .00 %

Total # Operational Hours : 4521


Logger : 31 Parameter : THC
Class Limits (PPM)
>= 50.0
< 50.0
< 10.0
< 3.0
Site : LICA31
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitrogen Dioxide

Current Date : 01/13/10
Current Time : 09:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	456	419	0	5	0
July	744	683	0	6	0
August	744	704	0	6	0
September	720	679	0	6	1
October	744	702	0	8	1
November	720	675	0	21	2
December	744	706	0	35	4
Yearly Total	4872	4568	0	35	1

NO_2 Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: ST. LINA

Month	Number of Readings	% Readings in Concentration Range (ppm NO2)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO2 ppm Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm			
January	NA	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA	NA	NA
June	419	100.0%	0.0%	0.0%	0.0%	0	0	0.00
July	683	100.0%	0.0%	0.0%	0.0%	0	0	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0	0	0.00
September	679	100.0%	0.0%	0.0%	0.0%	0	0	0.00
October	702	100.0%	0.0%	0.0%	0.0%	0	0	0.00
November	675	100.0%	0.0%	0.0%	0.0%	0	0	0.00
December	706	100.0%	0.0%	0.0%	0.0%	0	0	0.00
						Annual Average		**0.00**

NO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: ST. LINA

Month	NO2 ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	5
July	6
August	6
September	6
October	8
November	21
December	35
ANNUAL PEAK	**35**

LICA31
NO2_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	3.32	3.74	3.24	4.62	4.90	3.87	4.75	5.47	8.34	7.35	6.94	8.73	8.58	10.40	10.64	5.05	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.32	3.74	3.24	4.62	4.90	3.87	4.75	5.47	8.34	7.35	6.94	8.73	8.58	10.40	10.64	5.05	

Calm : .00 %

Total # Operational Hours : 4567

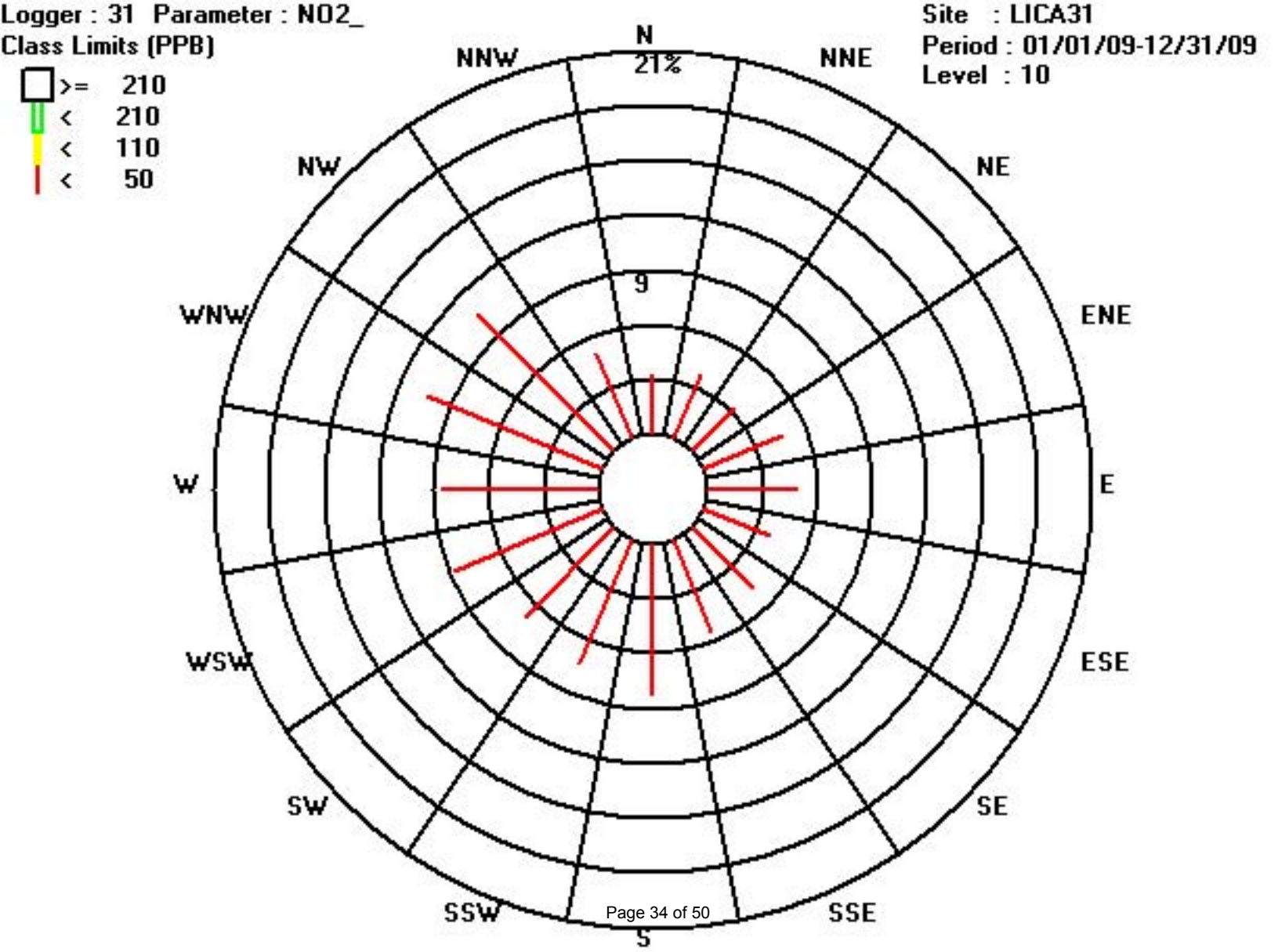
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	152	171	148	211	224	177	217	250	381	336	317	399	392	475	486	231	4567
< 110																	
< 210																	
>= 210																	
Totals	152	171	148	211	224	177	217	250	381	336	317	399	392	475	486	231	

Calm : .00 %

Total # Operational Hours : 4567


Logger : 31 Parameter : NO2_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA31
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitric Oxide

Current Date : 01/13/10
Current Time : 09:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	456	419	0	3	0
July	744	683	0	2	0
August	744	704	0	3	0
September	720	679	0	3	0
October	744	702	0	6	0
November	720	675	0	4	0
December	744	706	0	27	0
Yearly Total	4872	4568	0	27	0

NO Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: ST. LINA

Month	Number of Readings	% 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	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA
June	419	100.0%	0.0%	0.0%	0.0%	0.00
July	683	100.0%	0.0%	0.0%	0.0%	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0.00
September	679	100.0%	0.0%	0.0%	0.0%	0.00
October	702	100.0%	0.0%	0.0%	0.0%	0.00
November	675	100.0%	0.0%	0.0%	0.0%	0.00
December	706	100.0%	0.0%	0.0%	0.0%	0.00
					Annual Average	**0.00**

NO Peak reading of One Hour Averages for 2009

Plant Operator: LICA Station: ST. LINA

Month	NO ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	3
July	2
August	3
September	3
October	6
November	4
December	27
ANNUAL PEAK	**27**

LICA31
NO_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	3.32	3.74	3.24	4.62	4.90	3.87	4.75	5.47	8.34	7.35	6.94	8.73	8.58	10.40	10.64	5.05	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.32	3.74	3.24	4.62	4.90	3.87	4.75	5.47	8.34	7.35	6.94	8.73	8.58	10.40	10.64	5.05	

Calm : .00 %

Total # Operational Hours : 4567

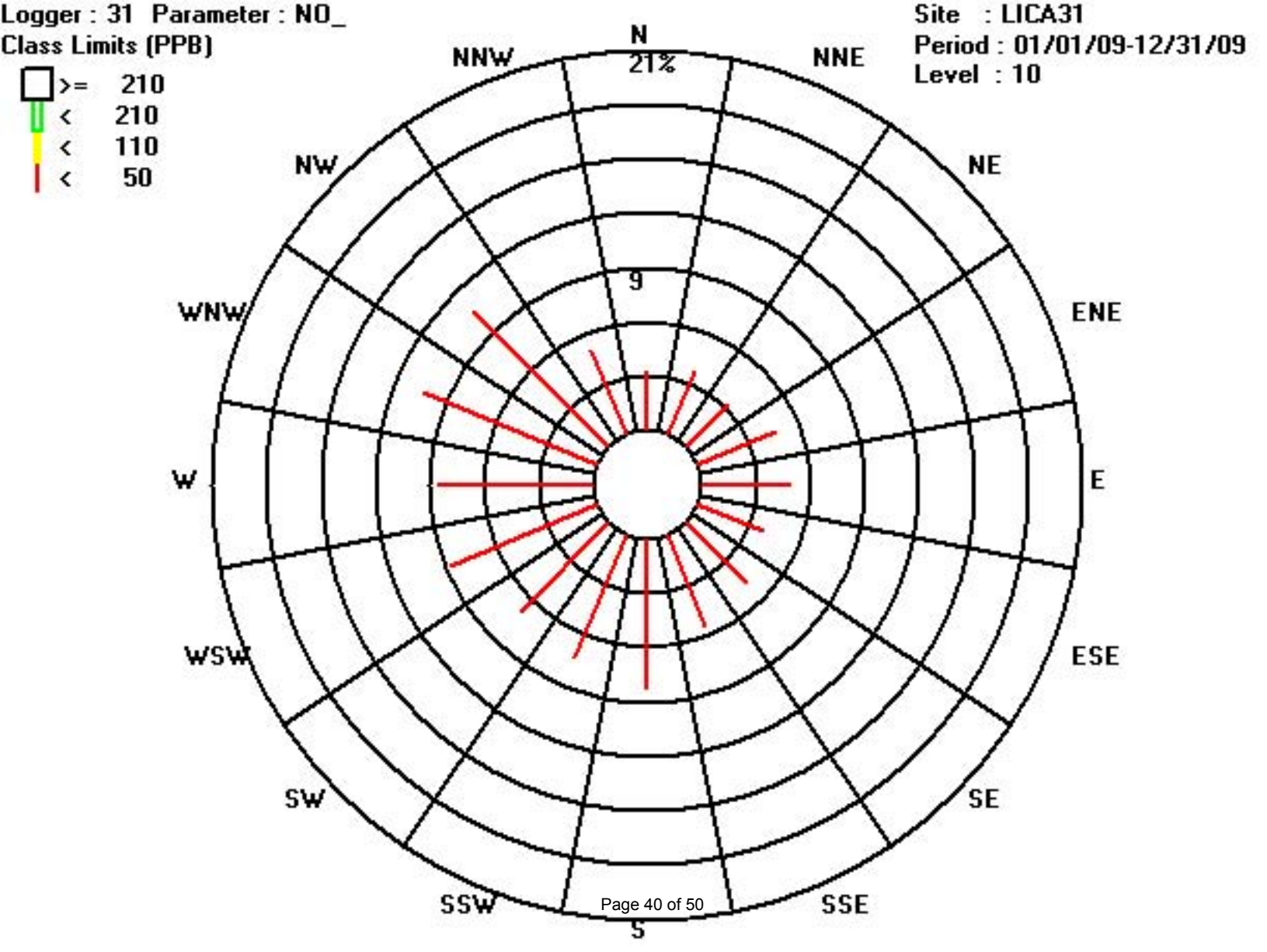
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	152	171	148	211	224	177	217	250	381	336	317	399	392	475	486	231	4567
< 110																	
< 210																	
>= 210																	
Totals	152	171	148	211	224	177	217	250	381	336	317	399	392	475	486	231	

Calm : .00 %

Total # Operational Hours : 4567


Logger : 31 Parameter : NO_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA31
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Oxides of Nitrogen

Current Date : 01/13/10
Current Time : 09:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	456	419	0	7	0
July	744	683	0	7	0
August	744	704	0	10	0
September	720	679	0	6	0
October	744	702	0	12	1
November	720	675	0	23	2
December	744	706	0	61	5
Yearly Total	4872	4568	0	61	1

NO_x Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: ST. LINA

Month	Number of Readings	% Readings in Concentration Range (ppm NOx)				NOx ppm Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA
June	419	100.0%	0.0%	0.0%	0.0%	0.00
July	683	100.0%	0.0%	0.0%	0.0%	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0.00
September	679	100.0%	0.0%	0.0%	0.0%	0.00
October	702	100.0%	0.0%	0.0%	0.0%	0.00
November	675	100.0%	0.0%	0.0%	0.0%	0.00
December	706	99.2%	0.8%	0.0%	0.0%	0.01
					Annual Average	**0.00**

NO_x Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: ST. LINA

Month	NOx ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	7
July	7
August	10
September	6
October	12
November	23
December	61
ANNUAL PEAK	**61**

LICA31
NOX_ / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

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	3.32	3.74	3.24	4.62	4.90	3.87	4.75	5.47	8.34	7.35	6.87	8.67	8.58	10.40	10.64	5.05	99.86
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.06	.00	.00	.00	.00	.13
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	3.32	3.74	3.24	4.62	4.90	3.87	4.75	5.47	8.34	7.35	6.94	8.73	8.58	10.40	10.64	5.05	

Calm : .00 %

Total # Operational Hours : 4567

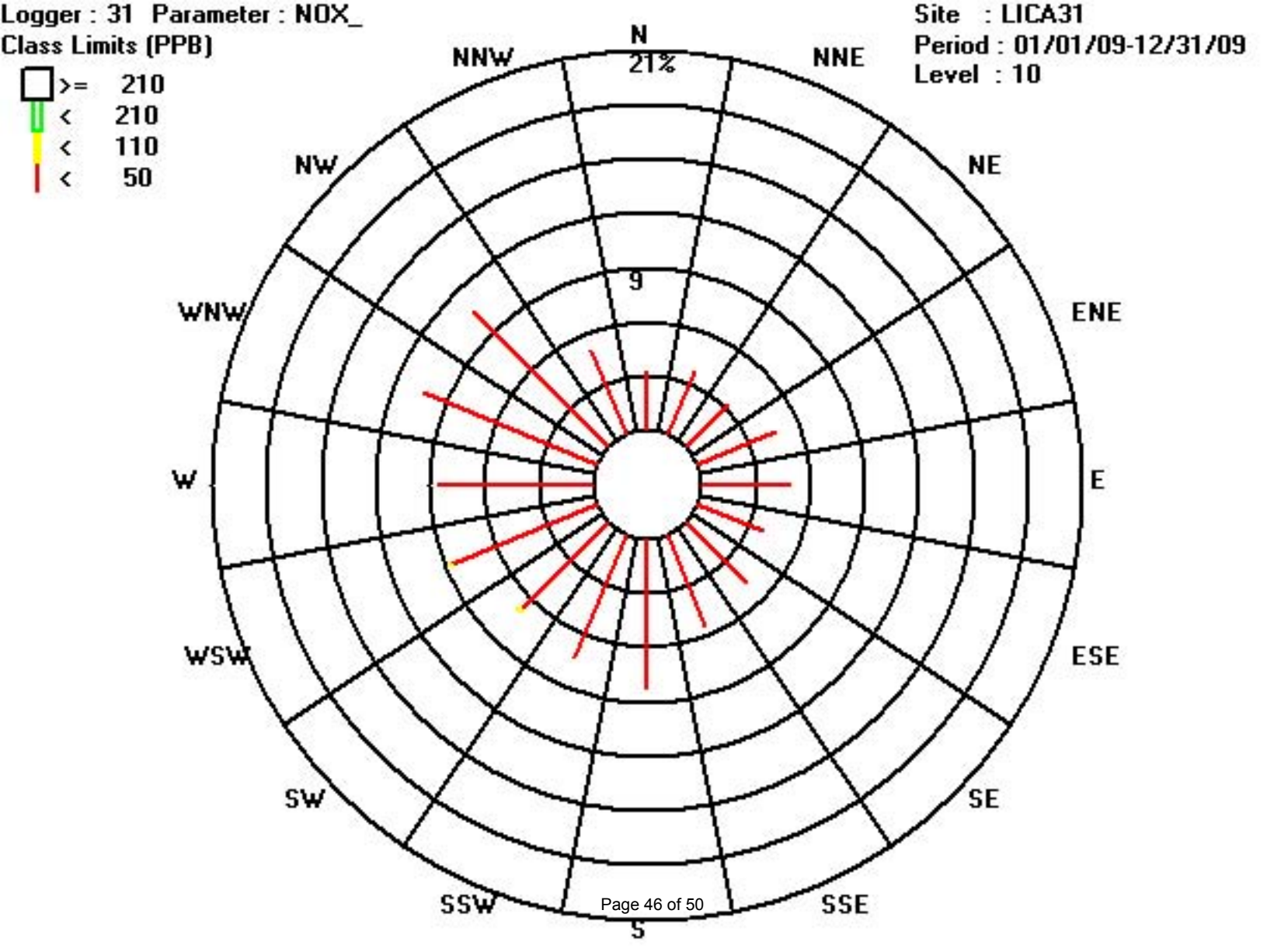
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	152	171	148	211	224	177	217	250	381	336	314	396	392	475	486	231	4561
< 110											3	3					6
< 210																	
>= 210																	
Totals	152	171	148	211	224	177	217	250	381	336	317	399	392	475	486	231	

Calm : .00 %

Total # Operational Hours : 4567


Logger : 31 Parameter : NOX_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA31
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Vector Wind Speed

Current Date : 01/13/10
Current Time : 09:03

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	456	438	0.3	31.1	11.5
July	744	719	0.9	23.3	9.8
August	744	743	0	24.5	8.8
September	720	718	0.7	33.3	12.6
October	744	743	0.8	24	10.1
November	720	717	1.6	32.8	12.4
December	744	744	0.2	30.2	10.2
Yearly Total	4872	4822	0	33.3	10.7

LICA31
WSP / WDR Joint Frequency Distribution (Percent)

01/01/09 thru 12/31/09

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	.97	1.59	1.28	1.01	1.01	.56	.51	.51	.97	.89	1.03	.76	.82	.56	1.07	.97	14.60
<	12.0	1.90	1.92	1.84	2.13	2.17	1.36	1.86	2.28	4.81	4.79	3.83	4.04	5.01	5.01	5.12	1.97	50.13
<	20.0	.26	.16	.18	1.20	1.74	1.38	2.13	2.50	2.53	1.74	1.97	3.02	2.34	3.71	4.06	1.47	30.47
<	29.0	.12	.00	.00	.14	.06	.41	.08	.10	.02	.04	.20	.72	.49	.95	.26	.58	4.23
<	39.0	.00	.00	.00	.00	.00	.18	.02	.00	.00	.04	.00	.12	.00	.00	.00	.00	.37
>=	39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	3.27	3.69	3.31	4.50	4.99	3.92	4.62	5.41	8.33	7.50	7.05	8.69	8.69	10.24	10.53	4.99	

Calm : .18 %

Total # Operational Hours : 4821

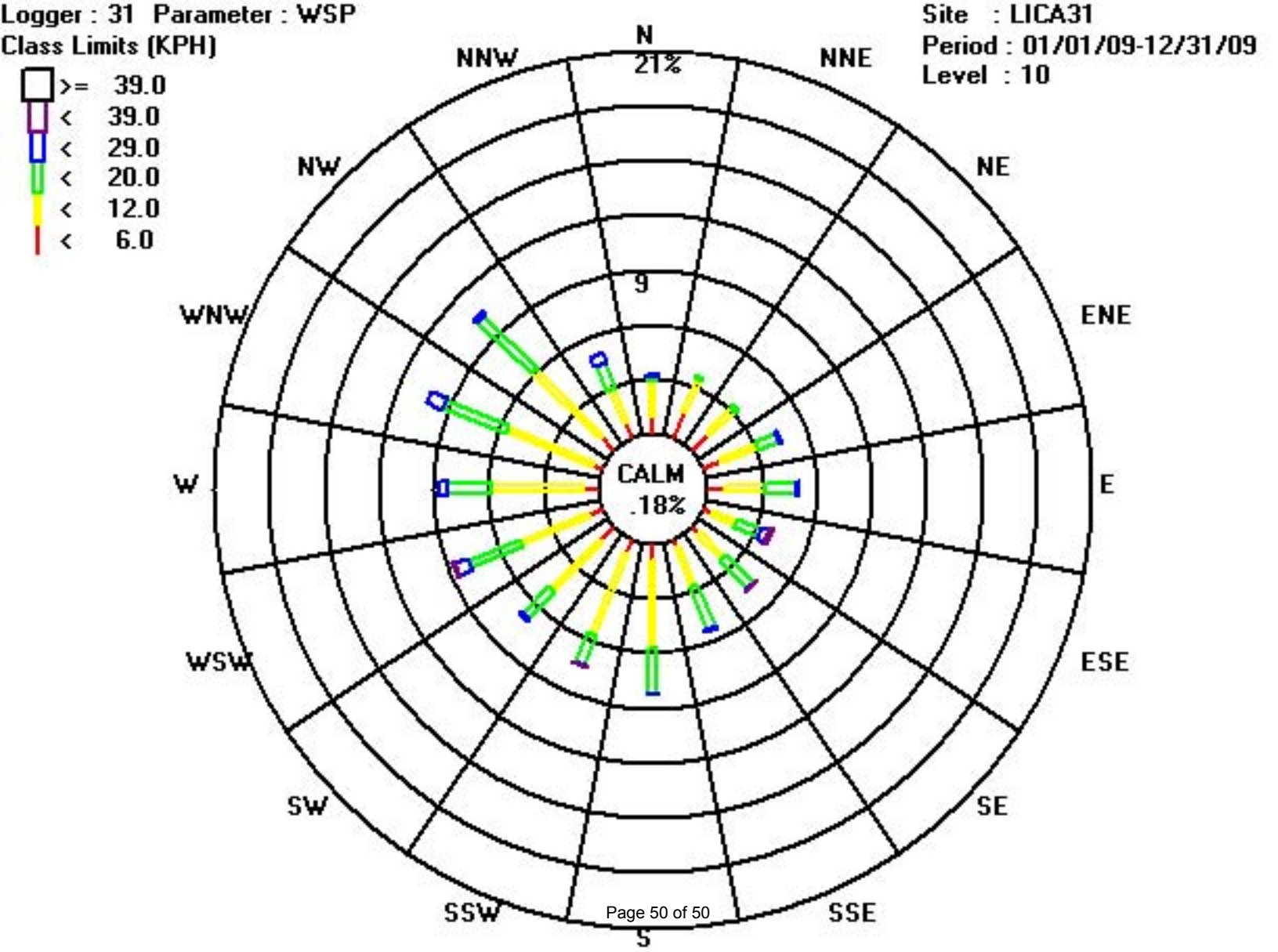
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	47	77	62	49	49	27	25	25	47	43	50	37	40	27	52	47	704
<	12.0	92	93	89	103	105	66	90	110	232	231	185	195	242	242	247	95	2417
<	20.0	13	8	9	58	84	67	103	121	122	84	95	146	113	179	196	71	1469
<	29.0	6			7	3	20	4	5	1	2	10	35	24	46	13	28	204
<	39.0						9	1			2		6					18
>=	39.0																	
	Totals	158	178	160	217	241	189	223	261	402	362	340	419	419	494	508	241	

Calm : .18 %

Total # Operational Hours : 4821


Logger : 31 Parameter : WSP
Class Limits (KPH)
>= 39.0
< 39.0
< 29.0
< 20.0
< 12.0
< 6.0
Site : LICA31
Period : 01/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9
CALM
.18%

Lakeland Industry & Community Association

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

For
2009

Prepared By:

Maxxam Analytics Inc

Driven by Service and Science

January 15, 2010

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

Table of Contents

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: October 2009 to December 2009

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

The monthly 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 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 – PORTABLE

A trailer audit was performed by Alberta Environment on November 4th, 2009.

Sulphur Dioxide (PPB)

- Analyzer make / model - API 100E
  - An installation calibration was performed on September 29th, and the monthly calibration was performed on October 27th.
  - The analyzer was put into the Maintenance mode for two hours on November 11th for the configuration adjustment. The maximum channel was disabled between November 11th and November 12th to change configuration as required for the current input card. 18 hours of data for SO2 maximum were invalidated.
  - One of hour data on December 6th was invalidated due to a power failure.

Hydrogen Sulphuide (PPB)

- Analyzer make / model - API 101E
  - An installation calibration was performed on September 29th, and the monthly calibration was performed on October 27th.
  - The analyzer was put into the Maintenance mode for two hours on November 11th for the configuration adjustment. The maximum channel was disabled between November 11th and November 12th to change configuration as required for the current input card. 19 hours of data for H2S maximum were invalidated.
  - One of hour data on December 6th was invalidated due to a power failure.

General Annual Summary

AQM STATION – LICA – PORTABLE

Nitrogen Dioxide (PPB)

- Analyzer make / model - TECO 42C
  - ❖ An installation calibration was performed on September 29th, and the monthly calibration was performed on October 27th.
  - ❖ The analyzer was put into the Maintenance mode for two hours on November 11th for the configuration adjustment. The maximum channel was disabled between November 11th and November 12th to change configuration as required for the current input card. 18 hours of data for NO2, NO and NOx maximum were invalidated.
  - ❖ The analyzer was put in and out of Maintenance mode on November 12th to test zero air supply.
  - ❖ One of hour data on December 6th was invalidated due to a power failure.

Ozone (PPB)

- Analyzer make / model -TECO 51C-LT
  - ❖ An installation calibration was performed on September 29th, and the monthly calibration was performed on October 27th. It was noticed that the initial span point took long time to stabilize. Suspect long stabilization time of the as found span point was due to a calibrator issue.
  - ❖ The analyzer was put into the Maintenance mode for two hours on November 11th for the configuration adjustment. The maximum channel was disabled between November 11th and November 12th to change configuration as required for the current input card. 18 hours of data for Ozone maximum were invalidated.
  - ❖ One of hour data on December 6th was invalidated due to a power failure.

General Annual Summary

AQM STATION – LICA – PORTABLE

THC (PPM)

- Analyzer make / model –TECO 51C
  - ❖ The analyzer was started collecting air samples on December 1st.
  - ❖ One of hour data on December 6th was invalidated due to a power failure.

Particulate Matter 2.5 (ug/m^3)

- Analyzer make / model –TEOM1400A
  - ❖ An installation calibration was performed on September 29th.
  - ❖ Four hours of PM2.5 data were invalidated and one hour of PM2.5 maximum data was also invalidated as they were below –3.0 ug/m^3 in October.
  - ❖ The analyzer was put into the Maintenance mode for two hours on November 11th for the configuration adjustment. The maximum channel was disabled between November 11th and November 12th to change configuration as required for the current input card. 18 hours of data for PM2.5 maximum were invalidated.
  - ❖ No hourly PM2.5 data was invalidated as no values were below –3.0 ug/m^3 in November.
  - ❖ One of hour data on December 6th was invalidated due to a power failure.
  - ❖ No hourly PM2.5 data was invalidated as no values were below –3.0 ug/m^3 in December.

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

- System make / model – Met One 50.5
  - ❖ The wind system was put into the Maintenance mode for two hours on November 11th for the configuration adjustment.
  - ❖ One of hour data on December 6th was invalidated due to a power failure.

General Annual Summary

AQM STATION – LICA – PORTABLE

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.

Trailer (N54°22'04.4", W110°42'14.6", Elevation 560m asl)

- The trailer was installed on September 22nd, and an installation calibration was performed on September 26th.
- The hydrogen sensor attempted to be installed on November 12th, but some warning stated after the installation. After performed troubleshootings, the sensor was reinstalled on November 27th, and no faults or warnings appeared. The sensor started collecting on November 27th.
- H2 sensor starts monitoring H2 concentration in December.

Air Quality Index (AQI)

- One hour of fair AQI value recorded in October 2009, and it the fair AQI was due to PM2.5. The rest of AQI values recorded in October 2009 were within good range.
- All AQI values recorded in November 2009 were within good range. in November.
- All AQI values recorded in November 2009 were within good range. in December.

Continuous Monitoring

Annual Summaries Graphs & Wind Roses

Sulphur Dioxide

Current Date : 01/14/10
Current Time : 14:17

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	48	42	0	0	0
October	744	704	0	3	0
November	720	680	0	2	0
December	744	702	0	5	0
Yearly Total	2256	2128	0	5	0

SO_2 Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: PORTABLE

Month	Valid Readings* Hours	% 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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
October	704	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
November	680	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0.00
December	702	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

SO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: PORTABLE

Month	SO2 ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	3
November	2
December	5
ANNUAL PEAK	**5**

LICA33
SO2_ / WDR Joint Frequency Distribution (Percent)

December 2009

Distribution By % Of Samples

Logger Id : 33
Site Name : LICA33
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	4.41	1.42	2.99	5.41	8.68	4.84	3.41	3.56	2.84	2.27	7.83	13.39	12.25	10.25	9.40	6.98	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	4.41	1.42	2.99	5.41	8.68	4.84	3.41	3.56	2.84	2.27	7.83	13.39	12.25	10.25	9.40	6.98	

Calm : .00 %

Total # Operational Hours : 702

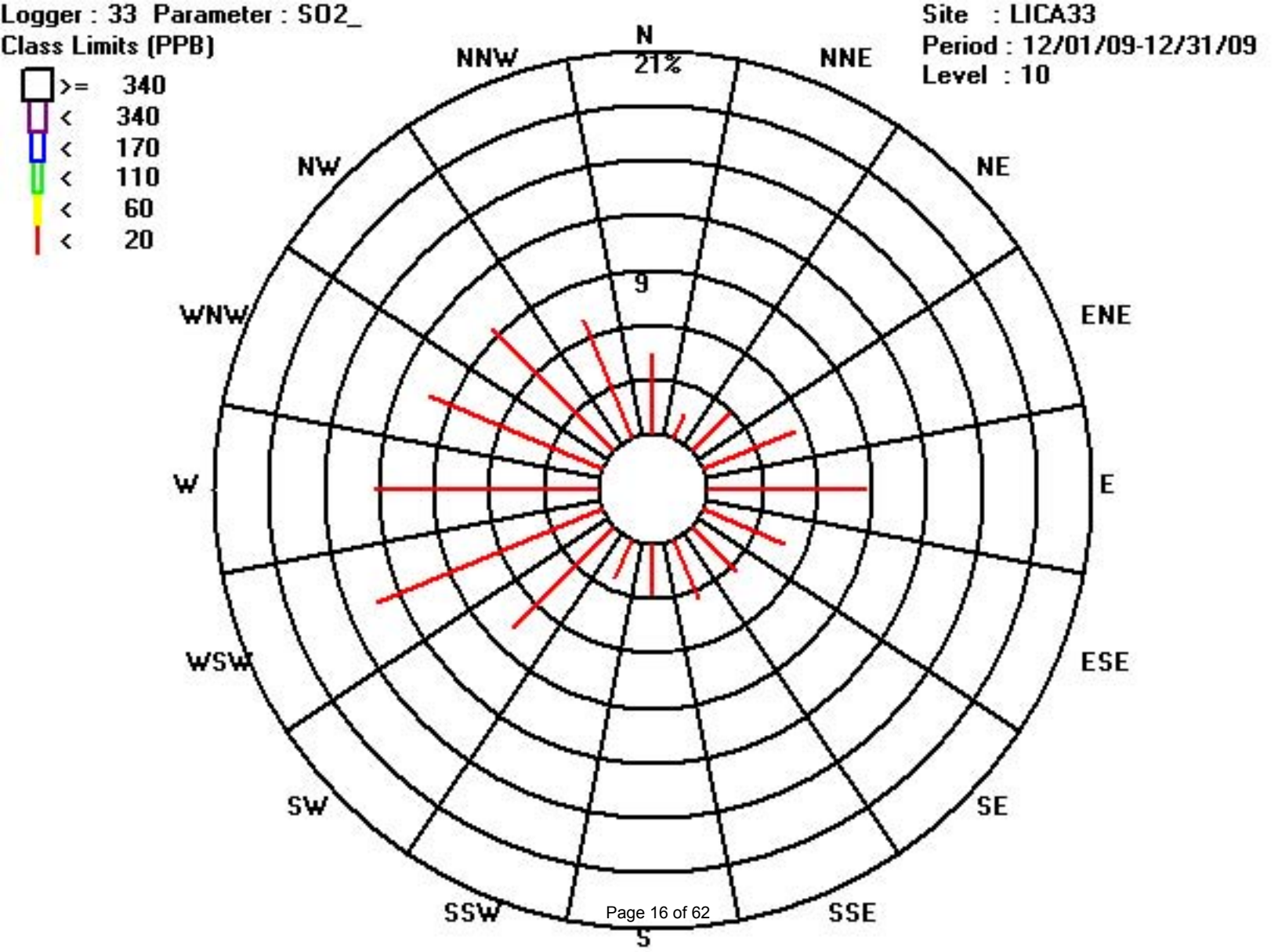
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	20	31	10	21	38	61	34	24	25	20	16	55	94	86	72	66	49	702
<	60																	
<	110																	
<	170																	
<	340																	
>=	340																	
	Totals	31	10	21	38	61	34	24	25	20	16	55	94	86	72	66	49	

Calm : .00 %

Total # Operational Hours : 702


Logger : 33 Parameter : SO2_
Class Limits (PPB)
>= 340
< 340
< 170
< 110
< 60
< 20
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Hydrogen Sulphuide

Current Date : 01/14/10
Current Time : 14:17

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	48	40	0	0	0
October	744	705	0	1	0
November	720	680	0	1	0
December	744	702	0	3	0
Yearly Total	2256	2127	0	3	0

H_2S Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: PORTABLE

Month	Number of Readings	% Readings in Concentration Range (ppb H2S)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines
		0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb		
January	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA	NA
October	705	100.0%	0.0%	0.0%	0.0%	0	0
November	680	100.0%	0.0%	0.0%	0.0%	0	0
December	702	100.0%	0.0%	0.0%	0.0%	0	0
						Annual Average	

H2S Peak Reading of One Hour Averages for 2009

Plant Operator: LICA

Plant Location: PORTABLE

Month	H2S ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	1
November	1
December	3

ANNUAL PEAK	**3**

LICA33
H2S_ / WDR Joint Frequency Distribution (Percent)

December 2009

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	4.41	1.42	2.99	5.41	8.68	4.84	3.41	3.41	2.84	2.27	7.69	13.39	12.39	10.25	9.40	6.98	99.85
< 10	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.14
< 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.41	1.42	2.99	5.41	8.68	4.84	3.41	3.56	2.84	2.27	7.69	13.39	12.39	10.25	9.40	6.98	

Calm : .00 %

Total # Operational Hours : 702

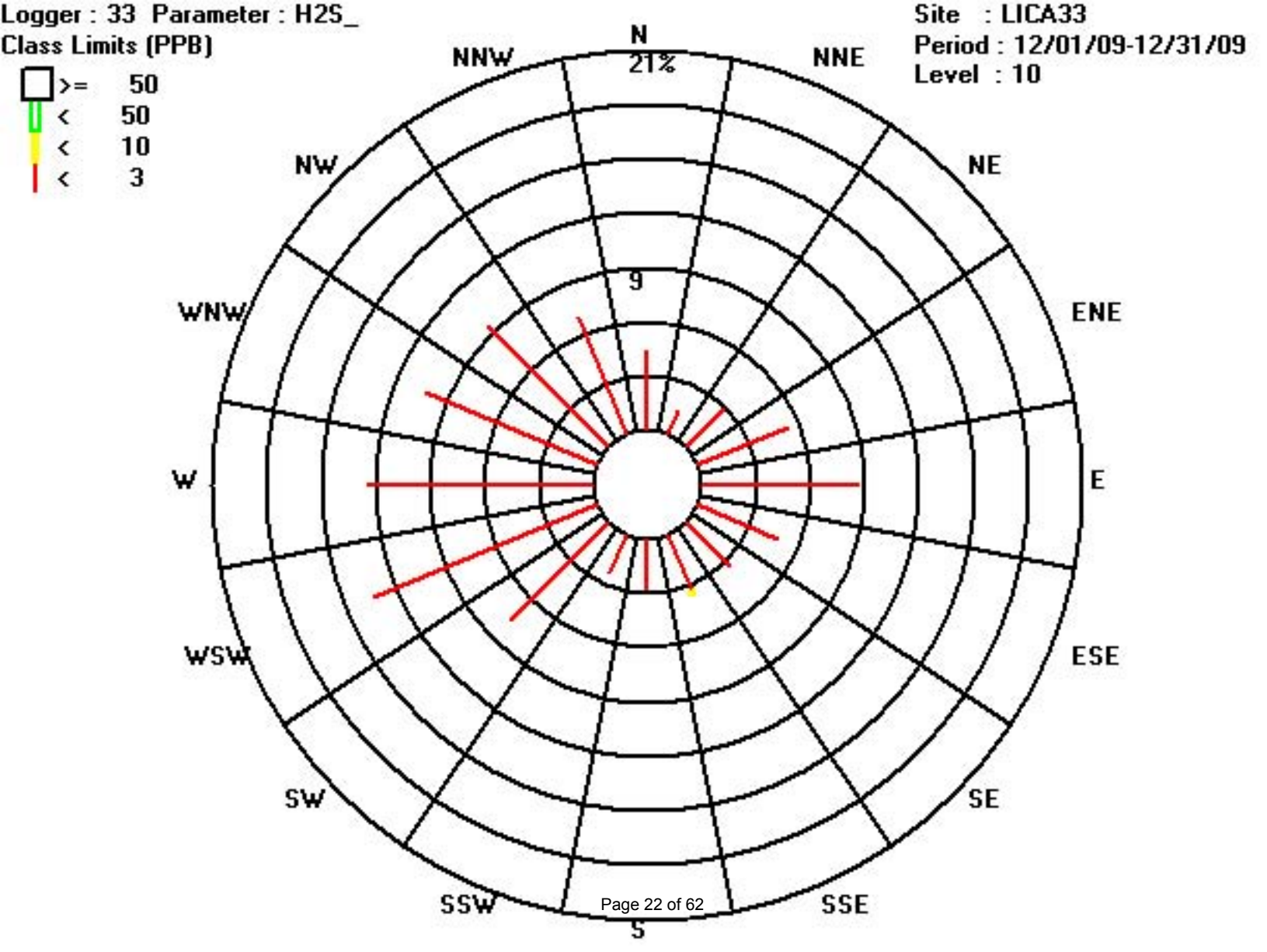
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 3	31	10	21	38	61	34	24	24	20	16	54	94	87	72	66	49	701
< 10								1									1
< 50																	
>= 50																	
Totals	31	10	21	38	61	34	24	25	20	16	54	94	87	72	66	49	

Calm : .00 %

Total # Operational Hours : 702


Logger : 33 Parameter : H2S_
Class Limits (PPB)
>= 50
< 50
< 10
< 3
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitrogen Dioxide

Current Date : 01/14/10
Current Time : 14:18

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	48	40	0	4	0
October	744	706	0	15	1
November	720	672	0	18	3
December	744	705	0	50	6
Yearly Total	2256	2123	0	50	3

NO_2 Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: PORTABLE

Month	Number of Readings	% Readings in Concentration Range (ppm NO2)				24-Hour Averages Above Guidelines	Hourly Readings Above Guidelines	NO2 ppb Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm			
January	NA	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA	NA	NA
October	706	100.0%	0.0%	0.0%	0.0%	0	0	0.00
November	672	100.0%	0.0%	0.0%	0.0%	0	0	0.00
December	705	99.9%	0.1%	0.0%	0.0%	0	0	0.01
						Annual Average		**0.00**

NO_2 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: PORTABLE

Month	NO2 ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	15
November	18
December	50
ANNUAL PEAK	**50**

LICA33
NO2_ / WDR Joint Frequency Distribution (Percent)

December 2009

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	4.39	1.41	2.97	5.39	8.65	4.82	3.40	3.40	2.83	2.26	7.80	13.75	12.19	10.21	9.36	6.95	99.85
< 110	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.14
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.39	1.41	2.97	5.39	8.65	4.82	3.40	3.54	2.83	2.26	7.80	13.75	12.19	10.21	9.36	6.95	

Calm : .00 %

Total # Operational Hours : 705

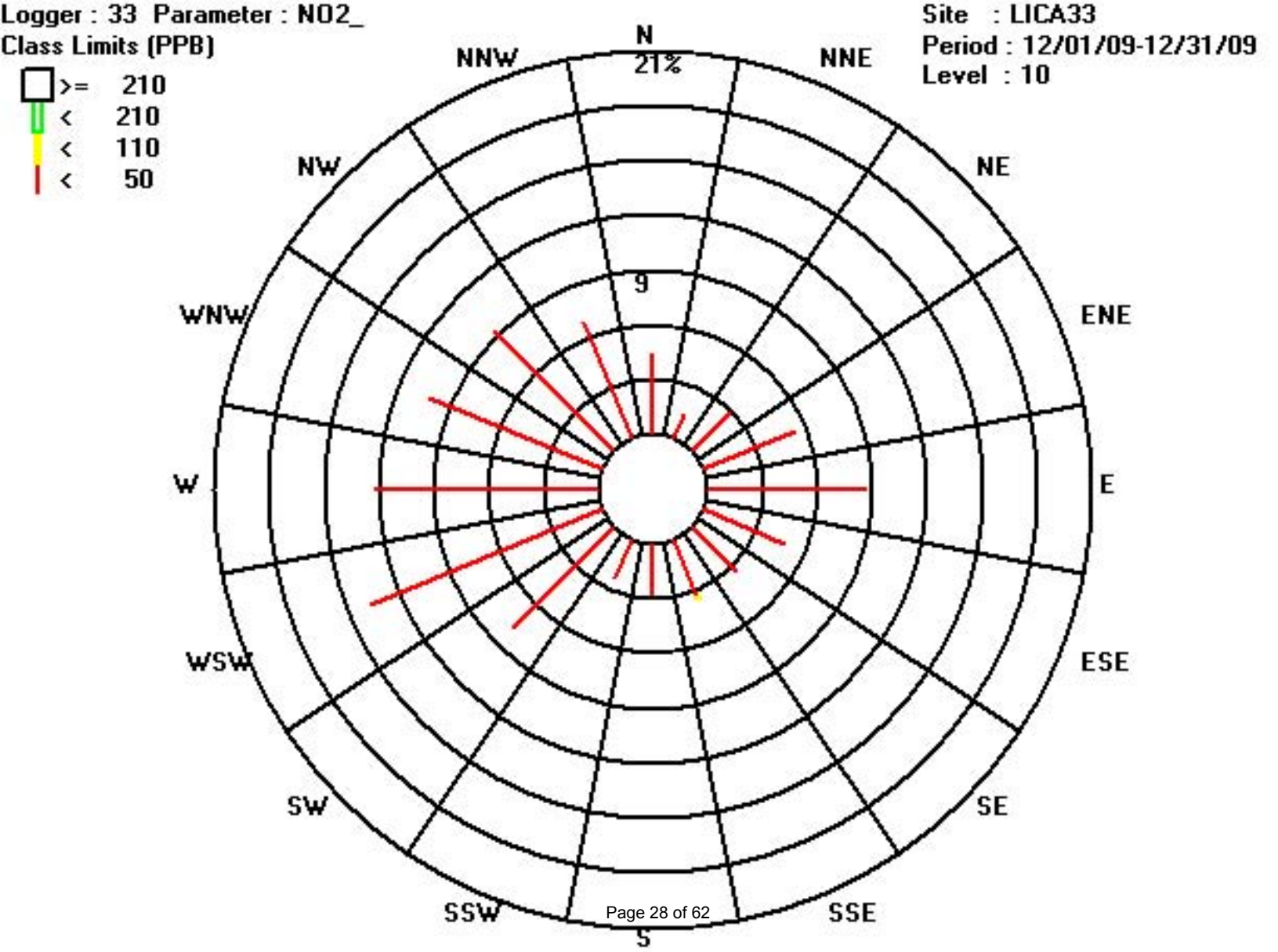
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	31	10	21	38	61	34	24	24	20	16	55	97	86	72	66	49	704
< 110								1									1
< 210																	
>= 210																	
Totals	31	10	21	38	61	34	24	25	20	16	55	97	86	72	66	49	

Calm : .00 %

Total # Operational Hours : 705


Logger : 33 Parameter : NO2_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitric Oxide

Current Date : 01/14/10
Current Time : 14:18

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	48	40	0	1	0
October	744	706	0	9	0
November	720	672	0	7	0
December	744	705	0	132	1
Yearly Total	2256	2123	0	132	0

NO Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA

Station: PORTABLE

Month	Number of Readings	% 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	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA
October	706	100.0%	0.0%	0.0%	0.0%	0.00
November	672	100.0%	0.0%	0.0%	0.0%	0.00
December	705	99.1%	0.7%	0.0%	0.0%	0.00
					Annual Average	**0.00**

NO Peak reading of One Hour Averages for 2009

Plant Operator: LICA Station: PORTABLE

Month	NO ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	9
November	7
December	132
ANNUAL PEAK	**132**

LICA33
NO_ / WDR Joint Frequency Distribution (Percent)

December 2009

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	4.39	1.41	2.97	5.39	8.65	4.82	3.40	2.83	2.83	2.26	7.80	13.75	12.19	10.07	9.36	6.95	99.14
<	110	.00	.00	.00	.00	.00	.00	.00	.56	.00	.00	.00	.00	.00	.14	.00	.00	.70
<	210	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.14
>=	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	4.39	1.41	2.97	5.39	8.65	4.82	3.40	3.54	2.83	2.26	7.80	13.75	12.19	10.21	9.36	6.95	

Calm : .00 %

Total # Operational Hours : 705

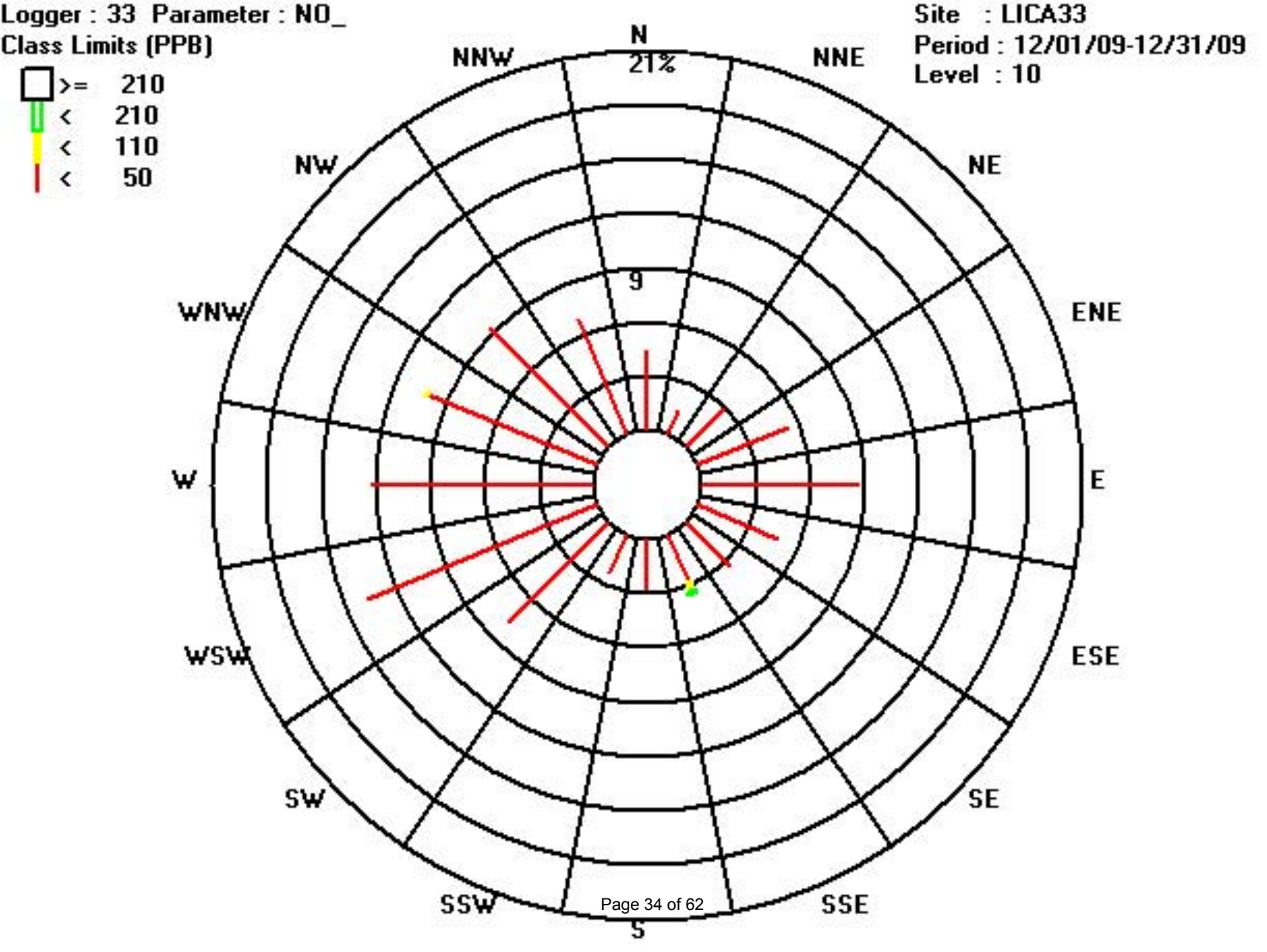
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	31	10	21	38	61	34	24	20	20	16	55	97	86	71	66	49	699
<	110								4						1			5
<	210								1									1
>=	210																	
	Totals	31	10	21	38	61	34	24	25	20	16	55	97	86	72	66	49	

Calm : .00 %

Total # Operational Hours : 705


Logger : 33 Parameter : NO_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Oxides of Nitrogen

Current Date : 01/14/10
Current Time : 14:18

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	48	40	0	4	0
October	744	706	0	25	2
November	720	672	0	26	3
December	744	705	0	183	8
Yearly Total	2256	2123	0	183	4

NO_x Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA Station: PORTABLE

Month	Number of Readings	% Readings in Concentration Range (ppm NOx)				NOx ppm Monthly Average
		0 to 0.05 ppm	0.051 to 0.11 ppm	0.111 to 0.210 ppm	> 0.21 ppm	
January	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA
October	706	100.0%	0.0%	0.0%	0.0%	0.00
November	672	100.0%	0.0%	0.0%	0.0%	0.00
December	705	98.9%	0.7%	0.0%	0.0%	0.01
					Annual Average	**0.01**

NO_x Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: PORTABLE

Month	NOx ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	25
November	26
December	183
ANNUAL PEAK	**183**

LICA33
NOX_ / WDR Joint Frequency Distribution (Percent)

December 2009

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	4.39	1.41	2.97	5.39	8.65	4.82	3.40	2.83	2.69	2.26	7.80	13.75	12.05	10.07	9.36	6.95	98.86
< 110	.00	.00	.00	.00	.00	.00	.00	.28	.14	.00	.00	.00	.14	.14	.00	.00	.70
< 210	.00	.00	.00	.00	.00	.00	.00	.42	.00	.00	.00	.00	.00	.00	.00	.00	.42
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.39	1.41	2.97	5.39	8.65	4.82	3.40	3.54	2.83	2.26	7.80	13.75	12.19	10.21	9.36	6.95	

Calm : .00 %

Total # Operational Hours : 705

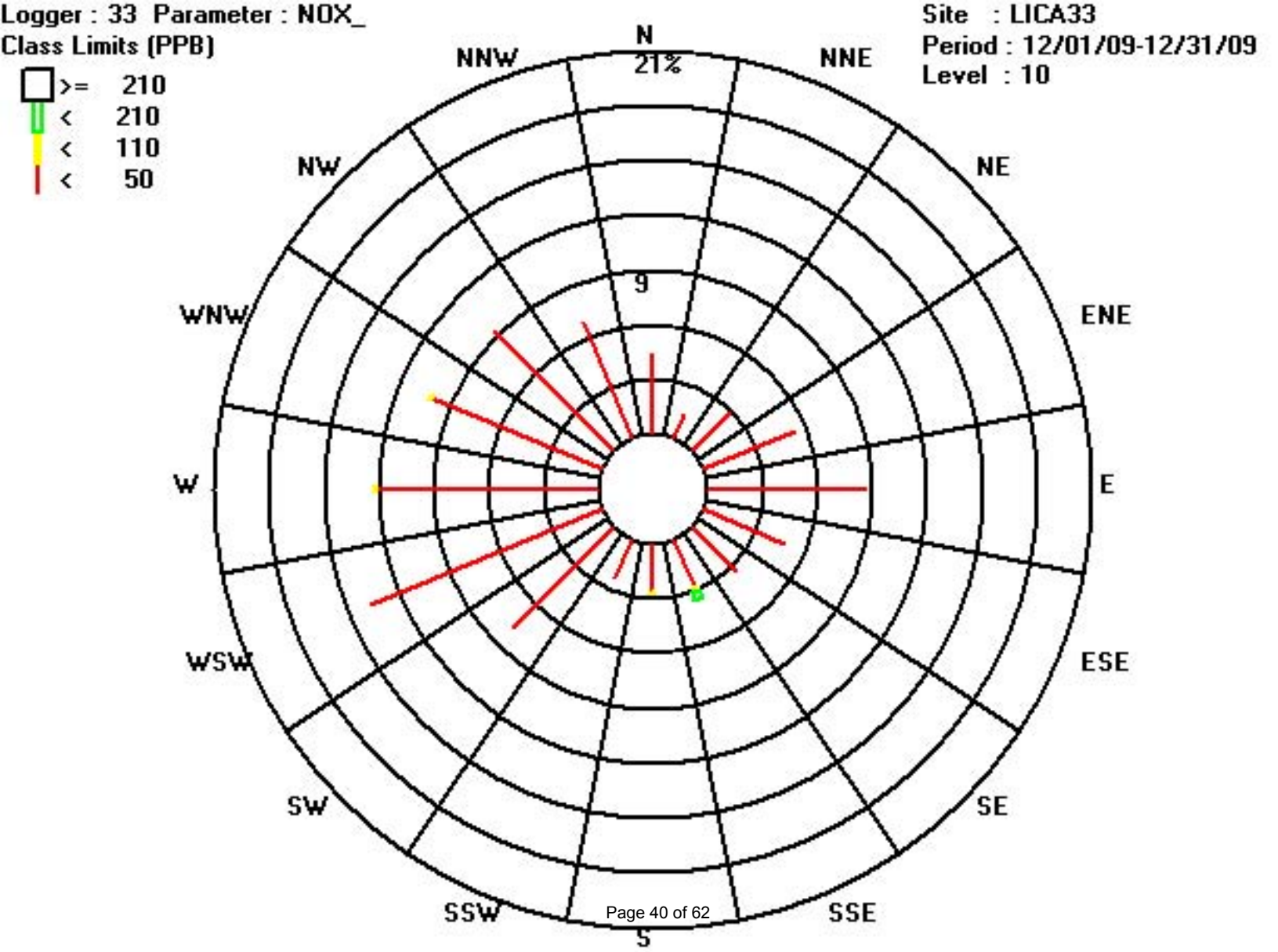
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	31	10	21	38	61	34	24	20	19	16	55	97	85	71	66	49	697
< 110								2	1				1	1			5
< 210								3									3
>= 210																	
Totals	31	10	21	38	61	34	24	25	20	16	55	97	86	72	66	49	

Calm : .00 %

Total # Operational Hours : 705


Logger : 33 Parameter : NOX_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Ozone

Current Date : 01/14/10
Current Time : 14:18

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	48	41	6	23	15
October	744	707	0	37	16
November	720	682	0	40	19
December	744	706	0	39	20
Yearly Total	2256	2136	0	40	18

O3 Monthly Averages and Frequency Distributions of One Hour Readings -2009

Plant Operator: LICA

Station: PORTABLE

Month	Number of Readings	% 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	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA
October	707	100.0%	0.0%	0.0%	0.0%	0.02
November	682	100.0%	0.0%	0.0%	0.0%	0.02
December	706	100.0%	0.0%	0.0%	0.0%	0.02
					Annual Average	**0.02**

O3 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Station: PORTABLE

Month	O3 ppb Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	37
November	40
December	39
ANNUAL PEAK	**40**

LICA33
O3_ / WDR Joint Frequency Distribution (Percent)

December 2009

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	4.39	1.41	2.97	5.38	8.64	4.81	3.39	3.54	2.83	2.26	7.79	13.59	12.46	10.19	9.34	6.94	100.00
< 110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
< 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>= 210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Totals	4.39	1.41	2.97	5.38	8.64	4.81	3.39	3.54	2.83	2.26	7.79	13.59	12.46	10.19	9.34	6.94	

Calm : .00 %

Total # Operational Hours : 706

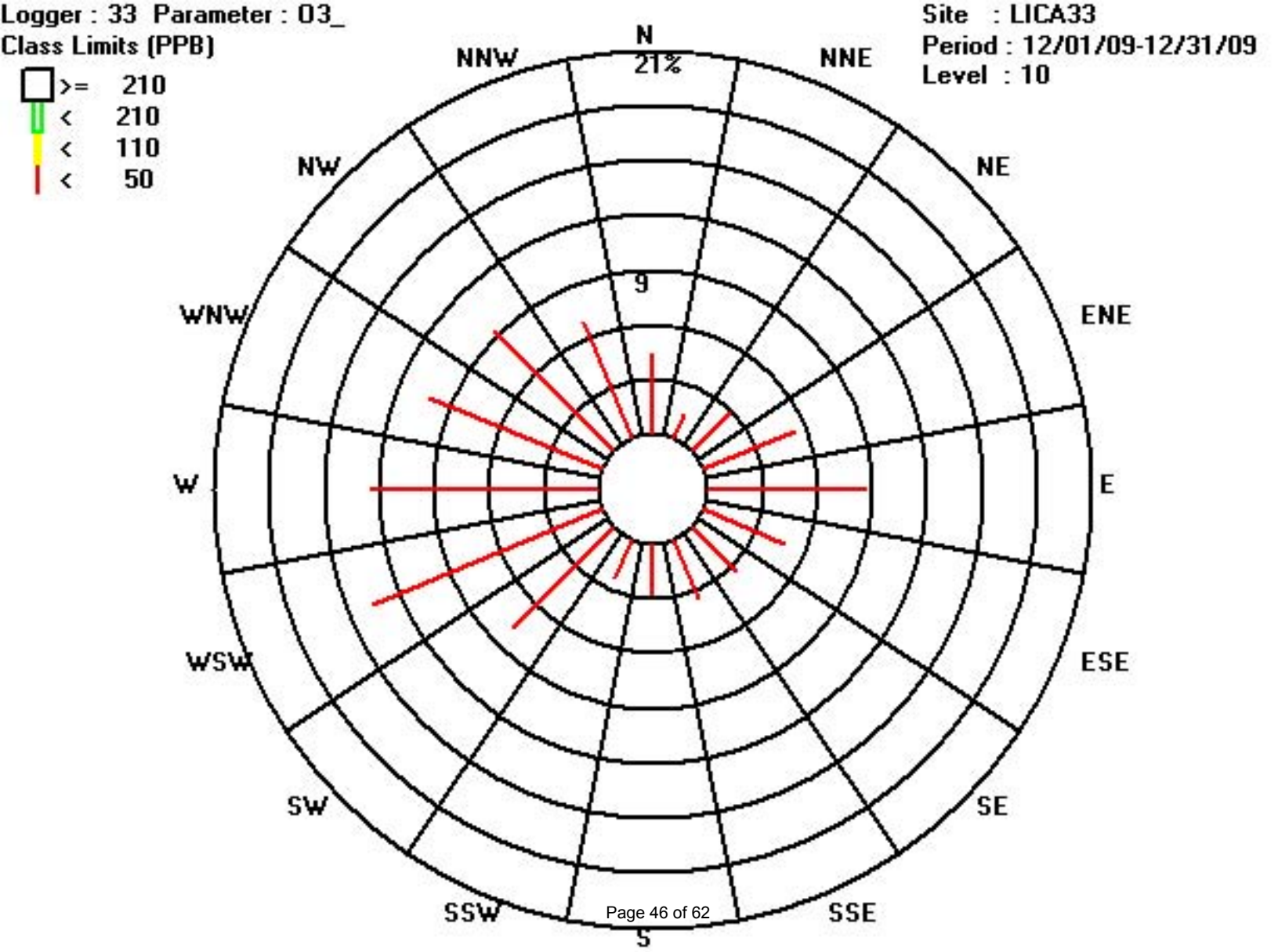
Distribution By Samples

Direction

Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
< 50	31	10	21	38	61	34	24	25	20	16	55	96	88	72	66	49	706
< 110																	
< 210																	
>= 210																	
Totals	31	10	21	38	61	34	24	25	20	16	55	96	88	72	66	49	

Calm : .00 %

Total # Operational Hours : 706


Logger : 33 Parameter : 03_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Total Hydrocarbons

Current Date : 01/14/10
Current Time : 14:18

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	0	0			
October	0	0			
November	0	0			
December	744	697	1.7	8.6	2.6
Yearly Total	768	710	1.7	8.6	2.6

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2009

Plant Operator: LICA Plant Location: PORTABLE

Month	Number of Readings	% 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	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA
October	NA	NA	NA	NA	NA	NA
November	NA	NA	NA	NA	NA	NA
December	697	76.0%	24.0%	0.0%	0.0%	2.64
					Annual Average	**2.64**

THC Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: PORTABLE

Month	THC ppm Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	NA
November	NA
December	8.6
ANNUAL PEAK	**8.6**

LICA33
THC / WDR Joint Frequency Distribution (Percent)

December 2009

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	3.15	.86	1.14	2.58	4.59	2.72	2.58	2.58	2.29	2.00	5.88	11.47	10.47	7.17	8.17	6.59	74.31
<	10.0	1.29	.57	1.86	2.86	4.16	2.15	.57	.71	.57	.28	2.00	2.72	2.29	2.43	.71	.43	25.68
<	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	4.44	1.43	3.01	5.45	8.75	4.87	3.15	3.29	2.86	2.29	7.89	14.20	12.76	9.61	8.89	7.03	

Calm : .00 %

Total # Operational Hours : 697

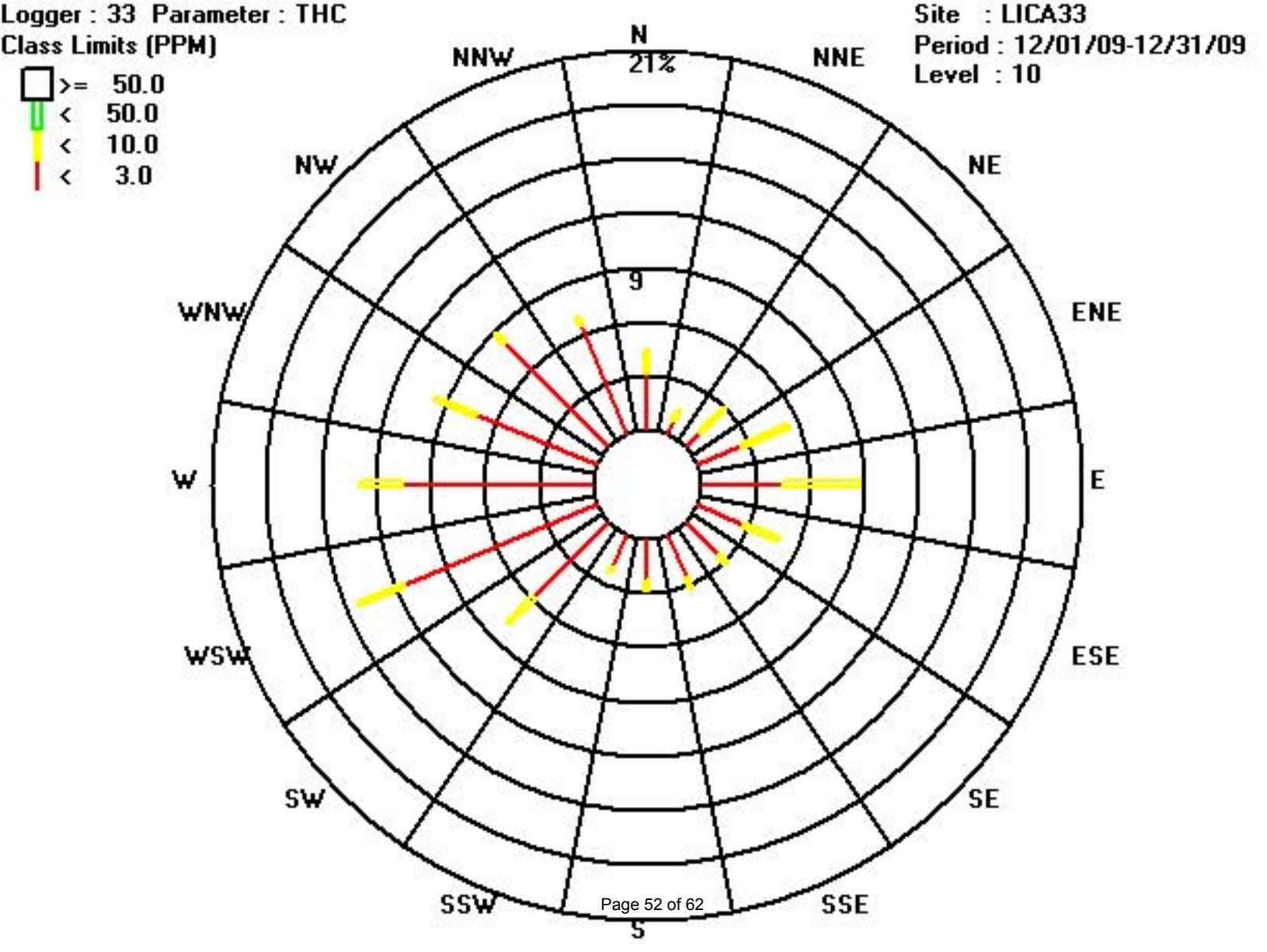
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	3.0	22	6	8	18	32	19	18	18	16	14	41	80	73	50	57	46	518
<	10.0	9	4	13	20	29	15	4	5	4	2	14	19	16	17	5	3	179
<	50.0																	
>=	50.0																	
	Totals	31	10	21	38	61	34	22	23	20	16	55	99	89	67	62	49	

Calm : .00 %

Total # Operational Hours : 697


Logger : 33 Parameter : THC
Class Limits (PPM)
>= 50.0
< 50.0
< 10.0
< 3.0
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Particulate Matter 2.5

Current Date : 01/14/10
Current Time : 14:18

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	24	13	1.3	6.8	3.5
October	744	733	0	31.8	1.7
November	720	706	0	14.3	2.4
December	744	741	0	20.4	3.4
Yearly Total	2232	2193	0	31.8	2.5

PM 2.5 Monthly Averages and Frequency Distributions of Daily Average Rea

Plant Operator: LICA

Plant Location: PORTABLE

Month	Valid Readings* Hours	% Readings in Concentration Range (ug/m^3)						Total D Readi > 30 ug
		≤ 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	NA	NA	NA	NA	NA	NA	NA	NA
February	NA	NA	NA	NA	NA	NA	NA	NA
March	NA	NA	NA	NA	NA	NA	NA	NA
April	NA	NA	NA	NA	NA	NA	NA	NA
May	NA	NA	NA	NA	NA	NA	NA	NA
June	NA	NA	NA	NA	NA	NA	NA	NA
July	NA	NA	NA	NA	NA	NA	NA	NA
August	NA	NA	NA	NA	NA	NA	NA	NA
September	NA	NA	NA	NA	NA	NA	NA	NA
October	713	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0
November	682	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
December	717	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
								Annual A

C - Concentration

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

PM 2.5 Peak Reading of One Hour Averages for 2009

Plant Operator: LICA Plant Location: PORTABLE

Month	PM 2.5 (ug/m3) Peak Reading
January	NA
February	NA
March	NA
April	NA
May	NA
June	NA
July	NA
August	NA
September	NA
October	32
November	14
December	20
ANNUAL PEAK	**32**

LICA33
PM2 / WDR Joint Frequency Distribution (Percent)

December 2009

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	30.0	4.45	1.34	2.96	5.39	8.63	4.72	3.64	3.37	2.83	2.29	8.09	13.76	12.14	10.39	8.90	7.01	100.00
<	60.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	80.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	120.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	4.45	1.34	2.96	5.39	8.63	4.72	3.64	3.37	2.83	2.29	8.09	13.76	12.14	10.39	8.90	7.01	

Calm : .00 %

Total # Operational Hours : 741

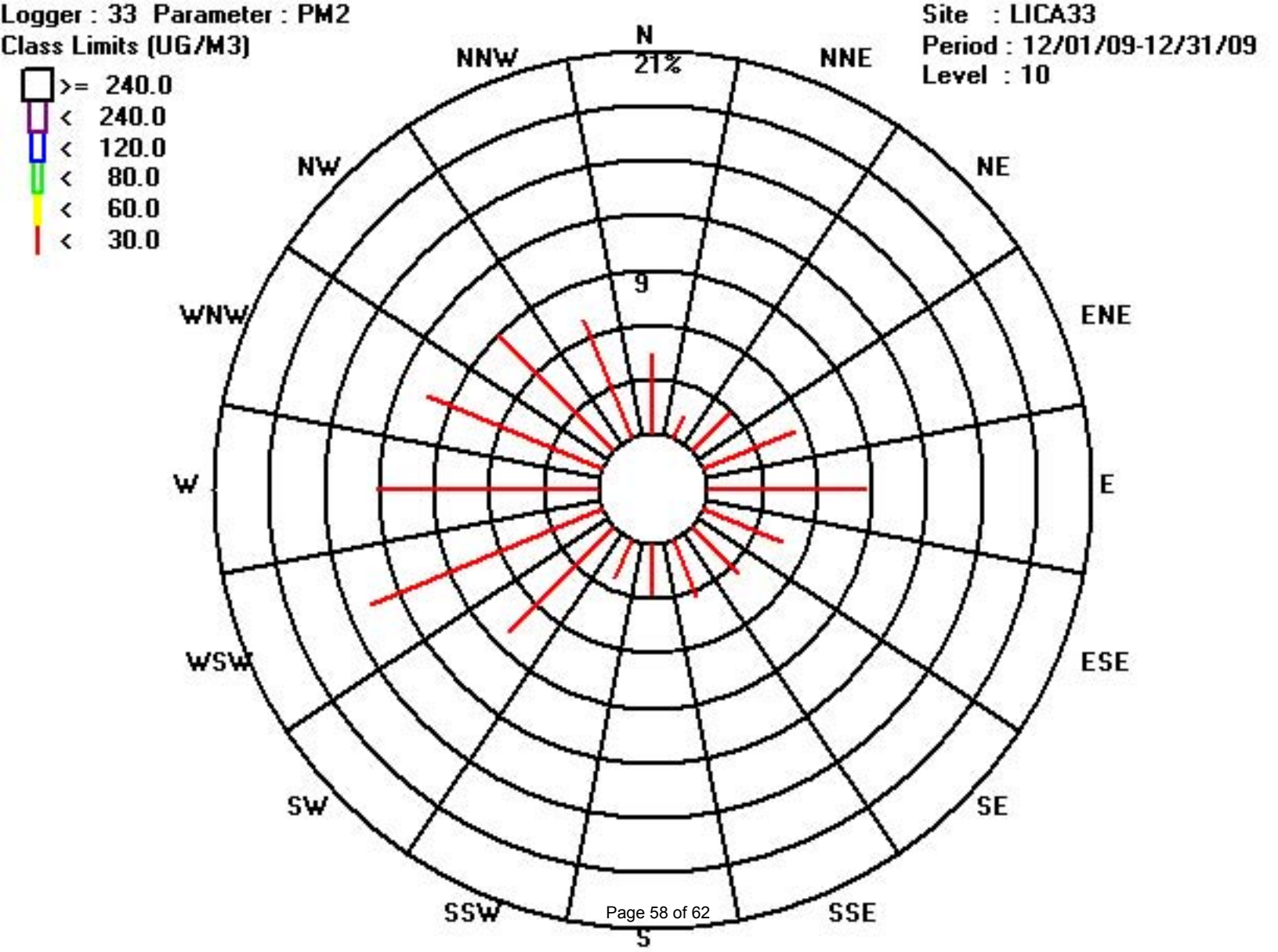
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	30.0	33	10	22	40	64	35	27	25	21	17	60	102	90	77	66	52	741
<	60.0																	
<	80.0																	
<	120.0																	
<	240.0																	
>=	240.0																	
	Totals	33	10	22	40	64	35	27	25	21	17	60	102	90	77	66	52	

Calm : .00 %

Total # Operational Hours : 741


Logger : 33 Parameter : PM2
Class Limits (UG/M3)
>= 240.0
< 240.0
< 120.0
< 80.0
< 60.0
< 30.0
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Vector Wind Speed

Current Date : 01/14/10
Current Time : 14:19

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2009

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

	Readings	Valid Readings	Min	Max	Mean
January	0	0			
February	0	0			
March	0	0			
April	0	0			
May	0	0			
June	0	0			
July	0	0			
August	0	0			
September	48	48	6.6	31.5	17.1
October	744	744	0.2	26.3	10
November	720	718	0.3	31	9.7
December	744	743	0	21.4	6.9
Yearly Total	2256	2253	0	31.5	9

LICA33
WSP / WDR Joint Frequency Distribution (Percent)

December 2009

Distribution By % Of Samples

Logger Id : 33
Site Name : LICA33
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	2.15	.80	2.55	4.03	5.65	3.90	2.01	1.34	2.55	2.28	5.11	4.84	4.44	4.30	1.48	1.21	48.72
<	12.0	1.88	.40	.13	.67	2.69	.67	1.48	1.88	.26	.00	2.42	6.72	5.51	3.90	5.51	1.88	36.06
<	20.0	.26	.13	.26	.67	.26	.13	.13	.13	.00	.00	.67	2.01	2.28	2.15	1.88	3.76	14.80
<	29.0	.13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	.26
<	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	4.44	1.34	2.96	5.38	8.61	4.71	3.63	3.36	2.82	2.28	8.20	13.59	12.24	10.36	8.88	6.99	

Calm : .13 %

Total # Operational Hours : 743

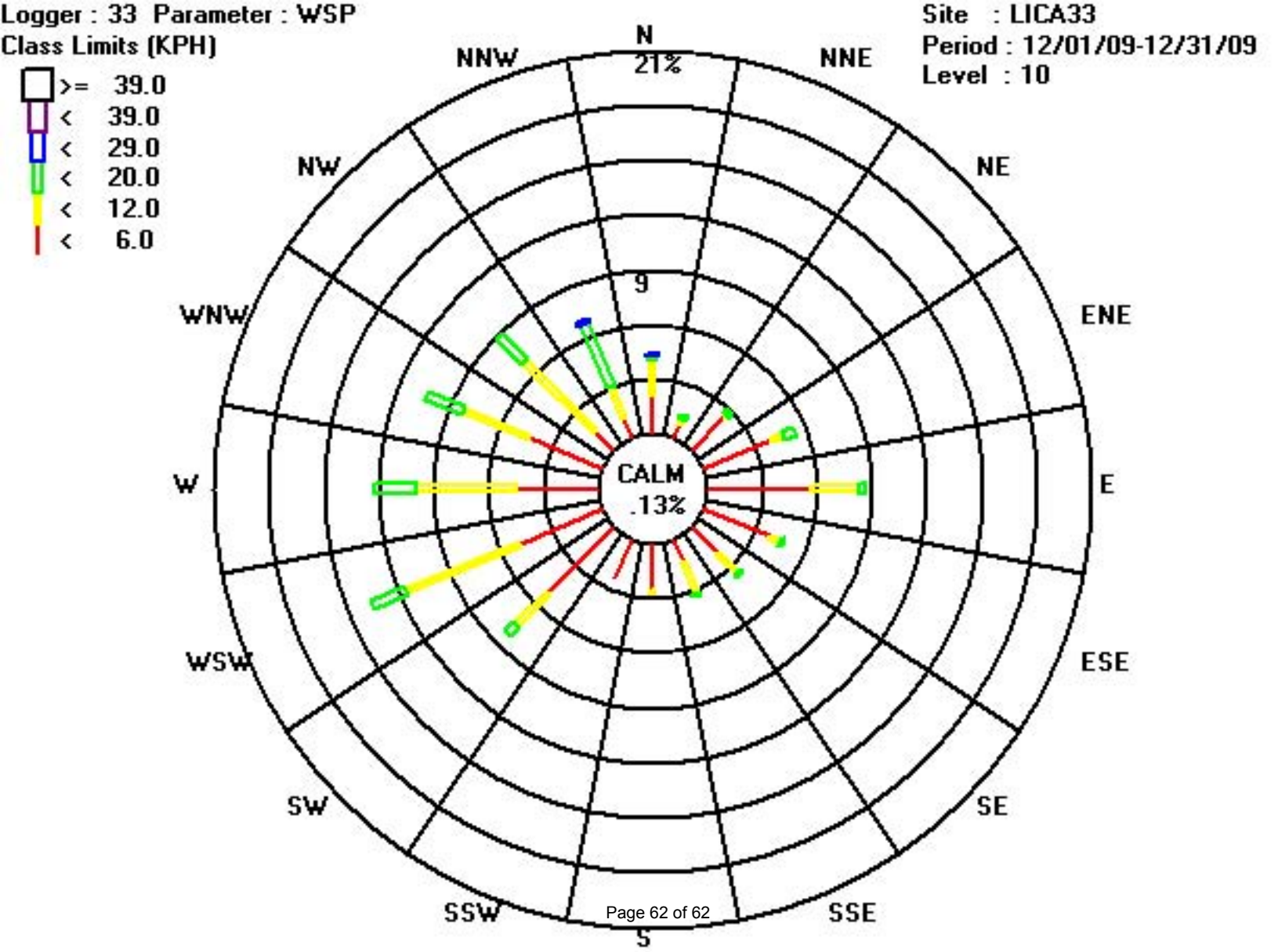
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	16	6	19	30	42	29	15	10	19	17	38	36	33	32	11	9	362
<	12.0	14	3	1	5	20	5	11	14	2		18	50	41	29	41	14	268
<	20.0	2	1	2	5	2	1	1	1			5	15	17	16	14	28	110
<	29.0	1															1	2
<	39.0																	
>=	39.0																	
	Totals	33	10	22	40	64	35	27	25	21	17	61	101	91	77	66	52	

Calm : .13 %

Total # Operational Hours : 743


Logger : 33 Parameter : WSP
Class Limits (KPH)
>= 39.0
< 39.0
< 29.0
< 20.0
< 12.0
< 6.0
Site : LICA33
Period : 12/01/09-12/31/09
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9
CALM
.13%