Lakeland Industry & Community Association

Box 8237
5107W-50th Street
Bonnyville, AB T9N 2J5
Phone: (780) 812-2182
Fax: (780) 812-2186
Toll Free: 1-877-737-2182
E-Mail: lica2@lica.ca
Website: http://www.lica.ca

Alberta Environment
Monitoring and Science
Data Management
Floor 11 Oxbridge Place
9820 106 Street
Edmonton Alberta T5K 2J6

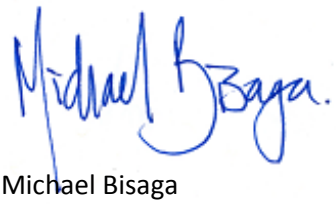
January 10, 2014

**RE: November 2013 Ambient Air Monitoring Monthly Reports**

Attached are the monthly ambient air monitoring reports for the LICA Airshed Zone's Cold Lake South, Maskwa, St. Lina, and Elk Point continuous stations. In addition, there are also summaries for the passive monitoring network and speciated VOC and PAH sampling programs.

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

Respectfully,



Michael Bisaga

Airshed Program Manager
Lakeland Industry and Community Association

cc (email): LICA Office

# Lakeland Industry & Community Association

Cold Lake Monitoring Site
Ambient Air Monitoring
Data Report
For
November 2013

Prepared By:


December 19, 2013

# Lakeland Industry & Community Association
# Cold Lake Monitoring Site
# 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:  Cold Lake
Data Period: November 2013

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Lili Zhou

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.*

# MONTHLY CONTINUOUS DATA SUMMARY
## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

### Continuous Ambient Monitoring – November 2013

| LAKELAND INDUSTRY & COMMUNITY ASSOCIATION COLD LAKE SITE | | | | | | MAXIMUM VALUES | | | | | | | OPERATIONAL TIME (PERCENT) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-HOUR | | | | | 24-HOUR | | |
| PARAMETER | OBJECTIVES | | EXCEEDENCES | | MONTHLY AVERAGE | READING | DAY | HOUR | WIND SPEED (KPH) | WIND DIRECTION (DEGREES) | READING | DAY | |
| | 1-HR | 24-HR | 1-HR | 24-HR | | | | | | | | | |
| $SO_2$ (PPB) | 172 | 48 | 0 | 0 | 0.15 | 2 | VAR | VAR | VAR | VAR | 0.8 | 23 | 100.0 |
| TRS (PPB) | - | - | - | - | 0.00 | 0 | ALL | ALL | VAR | VAR | 0.0 | ALL | 100.0 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 6.87 | 38.5 | 30 | 8 | 1 | 275(W) | 18.6 | 30 | 100.0 |
| NO (PPB) | - | - | - | - | 1.06 | 37.5 | 12 | 8 | 1.3 | 118(ESE) | 6.8 | 12 | 100.0 |
| NOx (PPB) | - | - | - | - | 7.94 | 52.9 | 12 | 8 | 1.3 | 118(ESE) | 18.6 | 12 | 100.0 |
| $O_3$ (PPB) | 82 | - | 0 | - | 20.84 | 39 | 24 | VAR | VAR | VAR | 33.1 | 24 | 100.0 |
| THC (PPM) | - | - | - | - | 2.64 | 4.9 | 5 | 22 | NA | NA | 3.7 | 5 | 93.1 |
| PM 2.5 ($UG/M^3$) | - | 30 | - | 0 | 7.77 | 47 | 6 | 12 | 6.3 | 237(SW) | 15.6 | 29 | 91.7 |
| TEMPERATURE (DEG C) | - | - | - | - | -8.77 | 8.7 | 1 | 14 | 11.7 | 279(W) | 2.3 | 1 | 100.0 |
| RELATIVE HUMIDITY (%) | - | - | - | - | 77.15 | 98 | 3 | 0, 1 | 11.4, 11.8 | 57(ENE), 55(NE) | 90.8 | 8 | 100.0 |
| VECTOR WS (KPH) | - | - | - | - | 5.90 | 43.2 | 24 | 13 | - | 116(ESE) | 11.5 | 3 | 90.4 |
| VECTOR WD (DEGREES) | - | - | - | - | 327(NW) | - | - | - | - | - | - | - | 90.4 |

VAR-VARIOUS NA: NOT AVAILABLE

# Monthly Non-Continuous Data Summary
## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - COLD LAKE

### Passive Ambient Monitoring Network – November 2013

| LAKELAND INDUSTRY & COMMUNITY ASSOCIATION PASSIVE NETWORK | | | |
|---|---|---|---|
| NETWORK MAXIMUM | | | NETWORK AVERAGE |
| PARAMETER | STATION | READING (PPB) | READING (PPB) |
| $SO_2$ | #27 | 1.4 | 0.49 |
| $H_2S$ | #27 | 0.27 | 0.12 |
| $NO_2$ | #28 | 1.6 | 3.7 |
| $O_3$ | #17 | 29.0 | 23.0 |

# 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 – COLD LAKE SOUTH**

**Sulphur Dioxide (PPB)**
- Analyzer make / model – Thermo 43i, S/N: 806528242

No operational issues were observed during the month. The monthly calibration was performed on November 14th. The inlet filter was changed before the monthly calibration was started. Data was corrected using daily zero information.

**Total Reduced Sulphur (PPB)**
- Analyzer make / model –TEI 450i, S/N: 812728560
- Converter - CD NOVA CDN 101, S/N: 250

No operational issues were observed during the month. The monthly calibration was performed on November 14th. The inlet filter was changed before the monthly calibration was started. Data was corrected using daily zero information.

**Ozone (PPB)**
- Analyzer make / model –Thermo 49i, S/N: 700419951

No operational issues were observed during the month. The monthly calibration was performed on November 14th. The inlet filter was changed before the monthly calibration was started. Data was corrected using daily zero information.

# General Monthly Summary

**AQM STATION – LICA – COLD LAKE SOUTH**

**Total Hydrocarbon (PPM)**

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

The monthly calibration was performed on November 14th. The inlet filter was changed before the monthly calibration was started. The analyzer failed on November 28th during hour 22. The issue was addressed on December 4th. A total of 50 hours of data was invalidated in November due to this event. Data was corrected using daily zero information.

**Nitrogen Dioxide (PPB)**

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

No operational issues were observed during the month. The monthly calibration was performed on November 14th. The inlet filter was changed before the monthly calibration was started. The zero/span system was checked and the expected value was adjusted on November 19th.Data was corrected using daily zero information.

**Particulate Matter 2.5 (UG/M3)**

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

Two Teom audits were performed in November: one was on November 6th and the other was on November 14th. The Teom filter and the FDMS filter were replaced on November 6th. Data was corrected using Alberta air quality guideline. If the data was between 0 to –3, the data was corrected to 0. If the data was below –3, the data was invalidated. Sixty hours of data were invalidated as the data were below –3 ug/m3.

**Relative Humidity (PERCENT)**

- System make / model - Rotronic Hygroclip-S3

No operational issues were observed during the month.

**Ambient Temperature (DEGC)**

- System make / model - Rotronic Hygroclip-S3

No operational issues were observed during the month.

# General Monthly Summary

**AQM STATION – LICA – COLD LAKE SOUTH**

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

- System make / model –MetOne, S/N: F1644

The wind system is reported as vector wind speed and vector wind direction. The last wind system calibration was performed on December 28th, 2012.
The wind system was checked on November 6th to verify the system's functionality. The system passed the zero/span test. The heater for the wind system was checked during the same trip.Hourly data between hour 17 on November 5th and hour 11 on November 11th, hour 12 on November 22nd and hour 10 on November 23rd, and hour 23 on November 25th and hour 0 on November 27th were invalidated as the wind system was frozen. A totally of 69 hours of data was invalidated due to these three events.

**Trailer Temperature (DEGC)**

- System make / model - R&R 61

No operational issues were observed during the month.

**Datalogger**

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

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

**Trailer**

The glass manifold was cleaned on November 14th.

**Passive Network**

The samplers installed at site #2 had been removed, so no sample filters were installed.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Sulphur Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

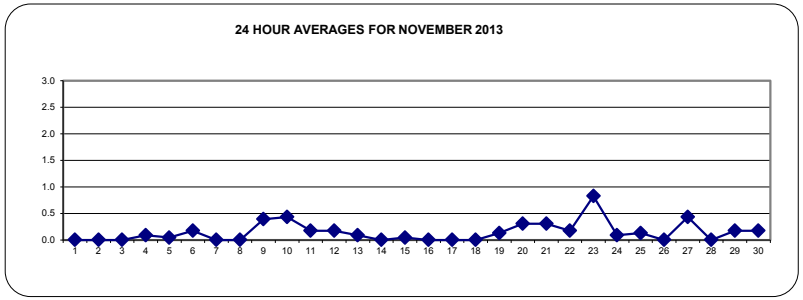
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 6 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 2 | 0.4 | 24 |
| 10 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 11 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 14 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 16 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **S** | 2 | 2 | 0.1 | 24 |
| 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 2 | 0.3 | 24 |
| 21 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 1 | 1 | 0.2 | 24 |
| 23 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | **0.8** | 24 |
| 24 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 1 | 1 | **S** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **S** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.2 | 24 |
| HOURLY MAX | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | | | |
| HOURLY AVG | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.1 | 0.3 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

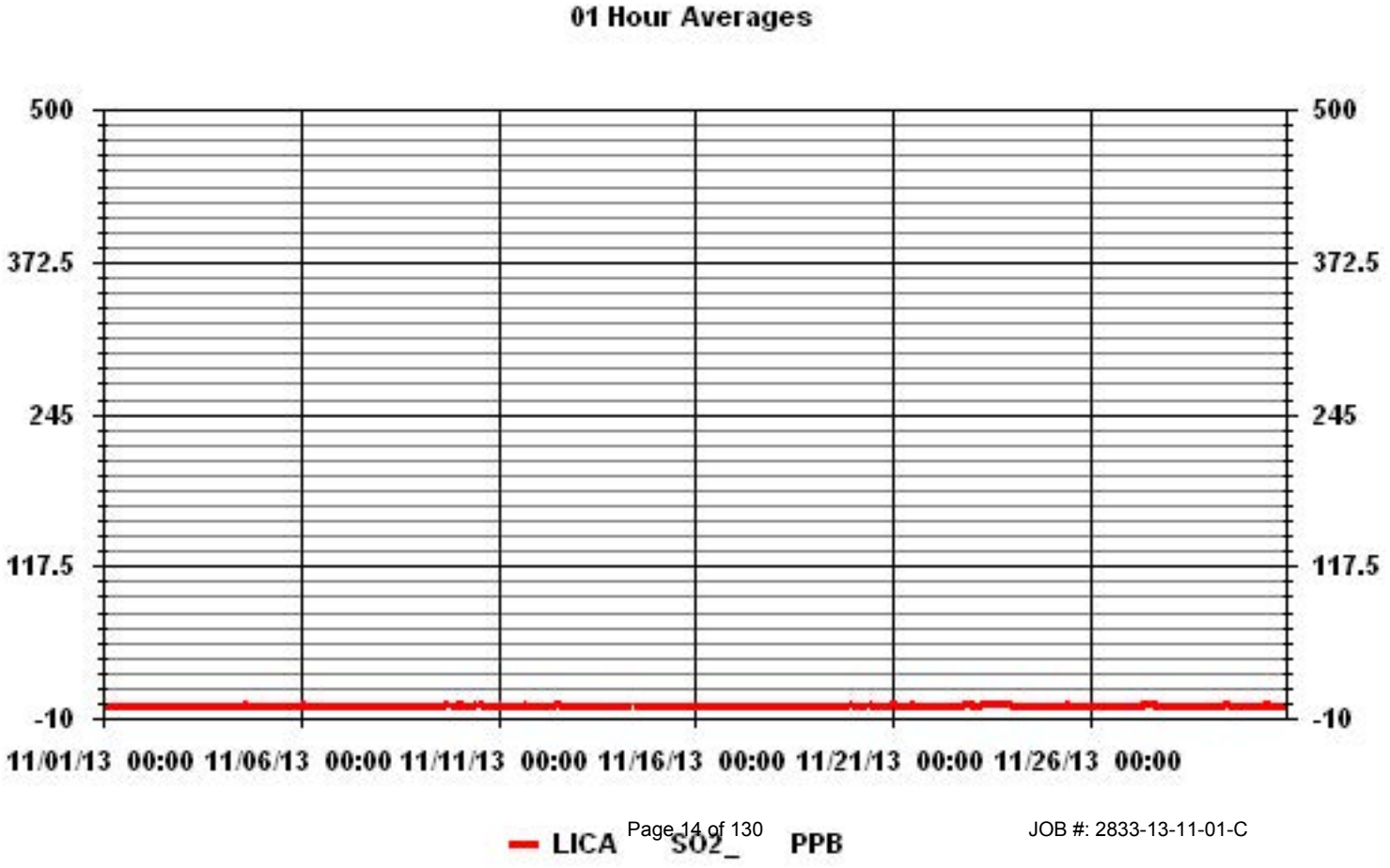
**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 93 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 2 | PPB | @ HOUR(S) | VAR | ON DAY(S) | VAR |
| MAXIMUM 24-HR AVERAGE: | 0.8 | PPB | | | ON DAY(S) | 23 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 0.38 | | MONTHLY AVERAGE: | 0.15 | PPB |



JOB #: 2833-13-11-01-C






JOB #: 2833-13-11-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | **S** | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0.3 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.2 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **S** | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0.3 | 24 |
| 6 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **S** | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 0.8 | 24 |
| 10 | 2 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | **S** | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 2 | 1.1 | 24 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.7 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0.5 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 14 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.2 | 24 |
| 15 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0.3 | 24 |
| 16 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | **S** | **4** | **4** | 0.3 | 24 |
| 20 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 2 | 2 | 0.8 | 24 |
| 21 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | **S** | 1 | 1 | 1 | 2 | 0.8 | 24 |
| 22 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 2 | 1 | 1 | 2 | 0.3 | 24 |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 2 | 1.2 | 24 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 25 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.3 | 24 |
| 27 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | **S** | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.7 | 24 |
| 28 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| HOURLY MAX | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 1 | 4 | | | |
| HOURLY AVG | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.5 | 0.7 | 0.6 | 0.5 | 0.5 | 0.6 | 0.5 | 0.4 | 0.2 | 0.2 | 0.3 | 0.5 | 0.3 | 0.4 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

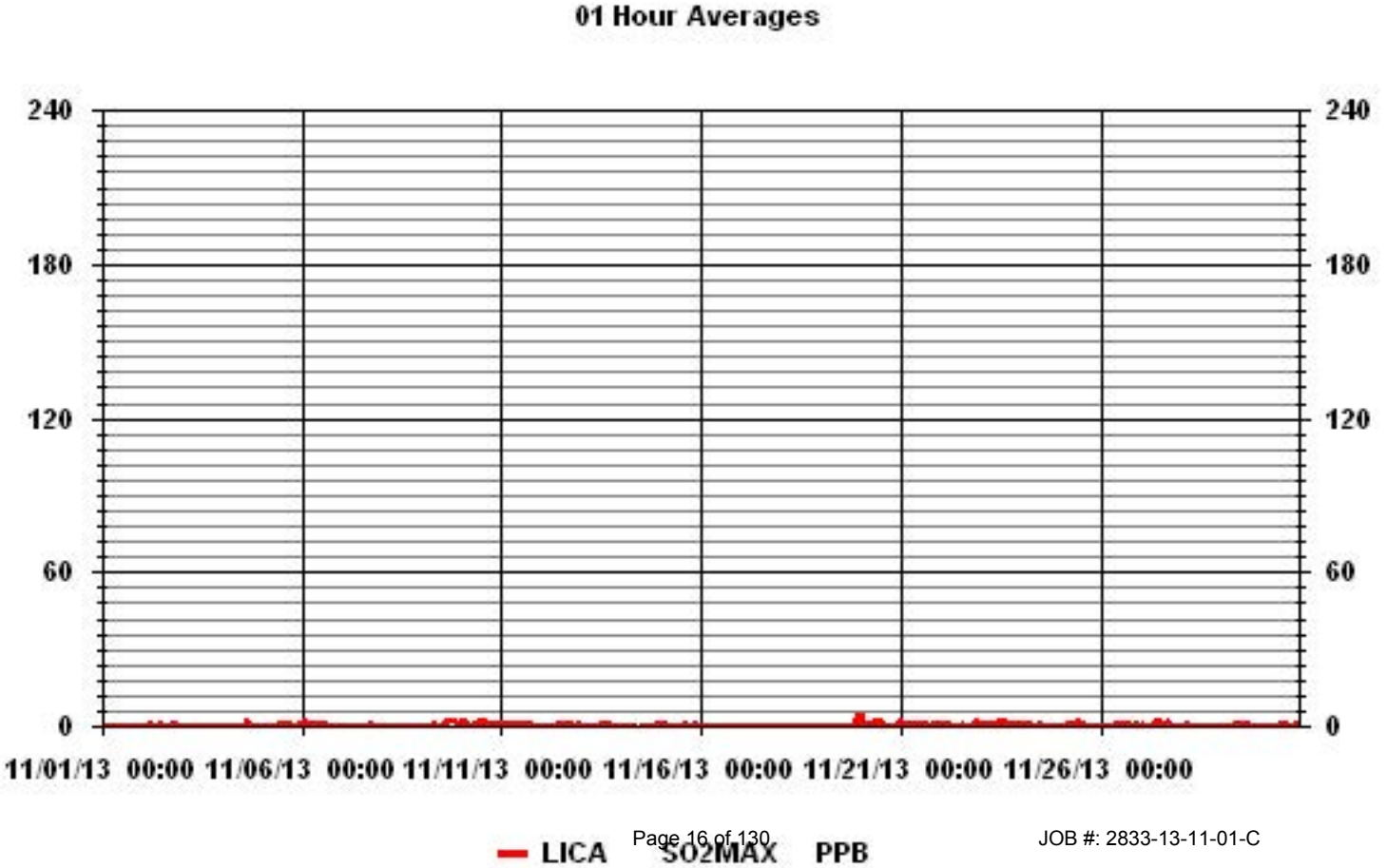
NUMBER OF NON-ZERO READINGS: 221

MAXIMUM INSTANTANEOUS VALUE: 4 PPB @ HOUR(S) 23 ON DAY(S) 19

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 720 HRS

MONTHLY CALIBRATION TIME: 4 HRS

STANDARD DEVIATION: 0.61






JOB #: 2833-13-11-01-C

LICA
SO2_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 | 1.93 | 1.77 | 5.33 | 6.30 | 5.49 | 3.71 | 11.63 | 5.00 | 3.55 | 3.06 | 9.85 | 18.41 | 7.43 | 3.55 | 6.30 | 6.62 | 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 | 1.93 | 1.77 | 5.33 | 6.30 | 5.49 | 3.71 | 11.63 | 5.00 | 3.55 | 3.06 | 9.85 | 18.41 | 7.43 | 3.55 | 6.30 | 6.62 | |

Calm : .00 %

Total # Operational Hours : 619

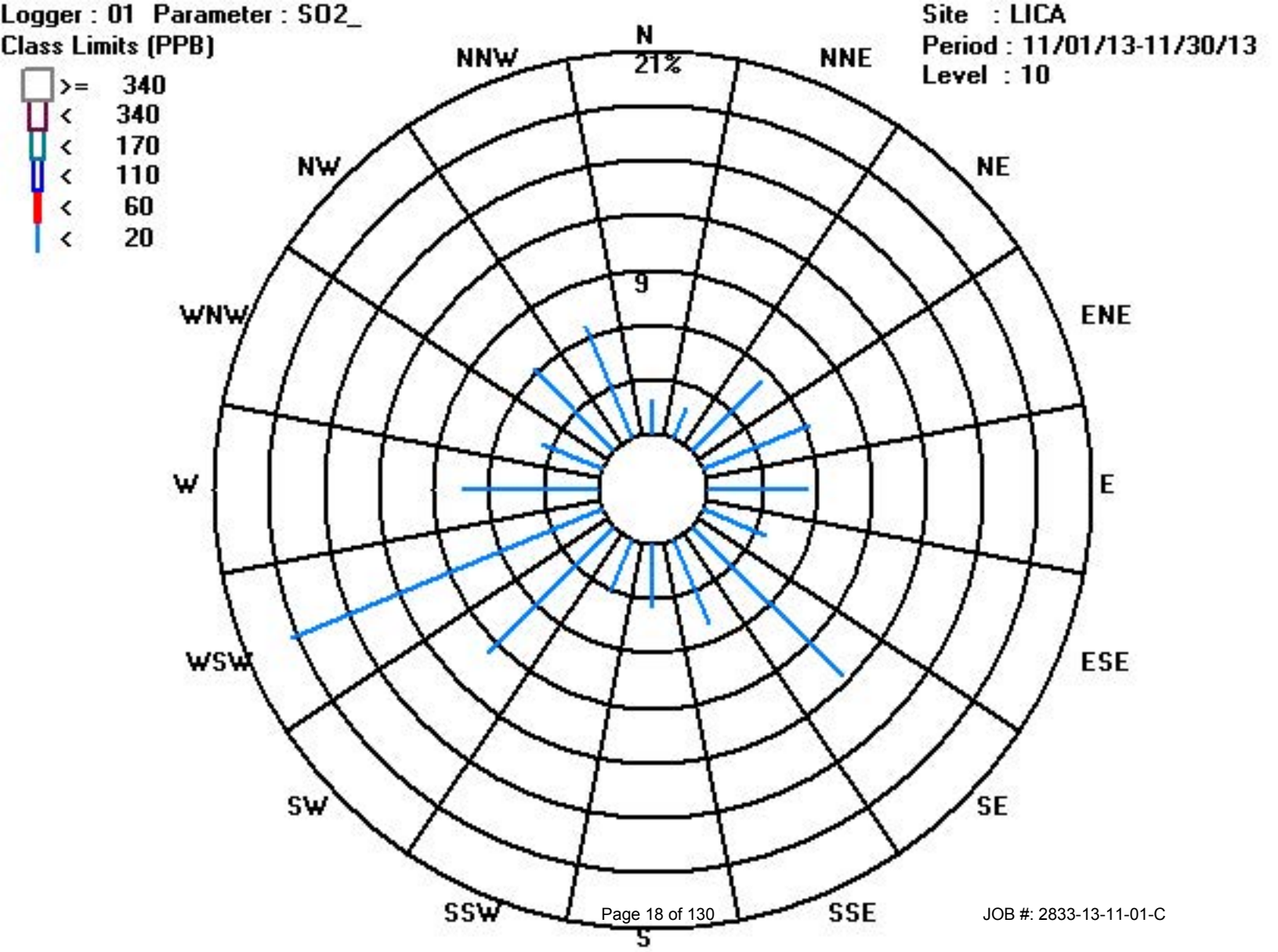
Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 20 | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 61 | 114 | 46 | 22 | 39 | 41 | 619 |
| < 60 | | | | | | | | | | | | | | | | | |
| < 110 | | | | | | | | | | | | | | | | | |
| < 170 | | | | | | | | | | | | | | | | | |
| < 340 | | | | | | | | | | | | | | | | | |
| >= 340 | | | | | | | | | | | | | | | | | |
| Totals | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 61 | 114 | 46 | 22 | 39 | 41 | |

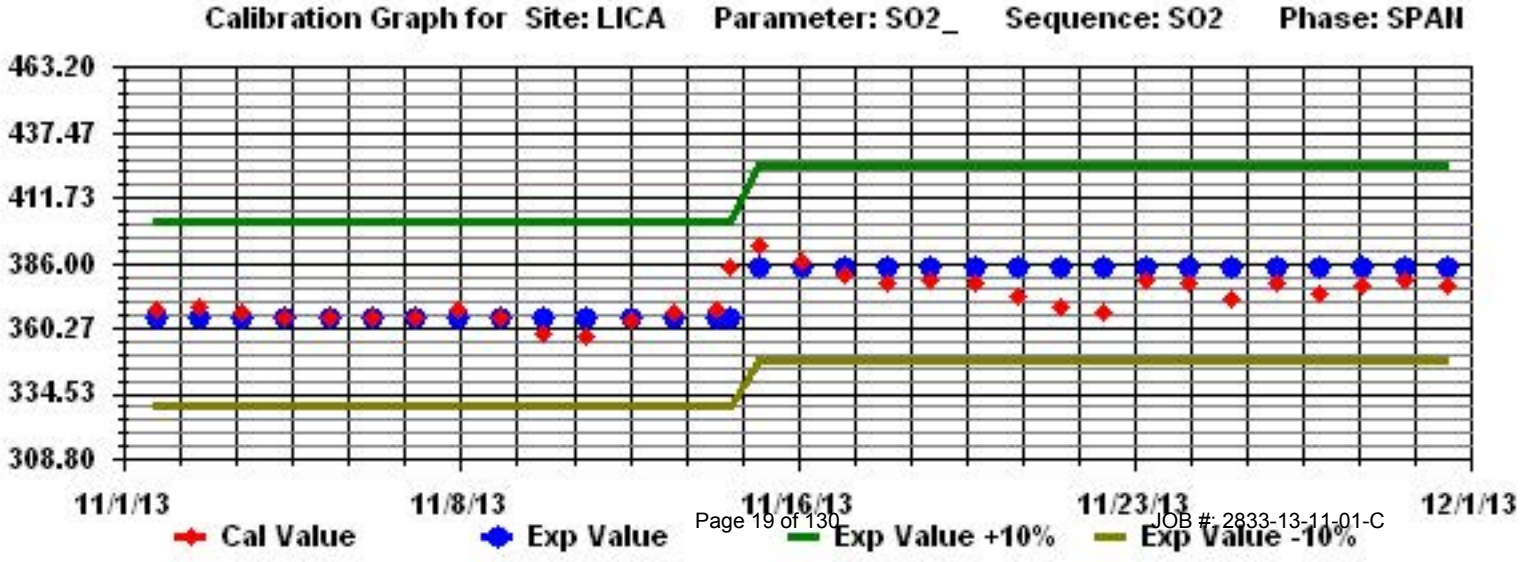
Calm : .00 %

Total # Operational Hours : 619






JOB #: 2833-13-11-01-C


Calibration Graph for Site: LICA Parameter: SO2_ Sequence: SO2 Phase: SPAN
463.20
437.47
411.73
386.00
360.27
334.53
308.80
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Reduced Sulphur

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

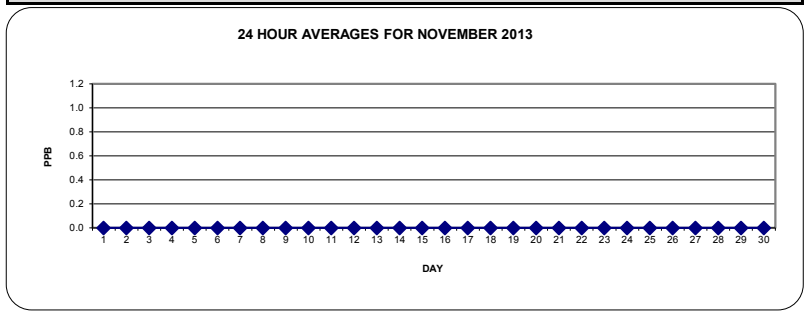
**TOTAL REDUCED SULPHUR (TRS)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 14 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | C | C | C | C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 16 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | S | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| HOURLY AVG | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |

**STATUS FLAG CODES**

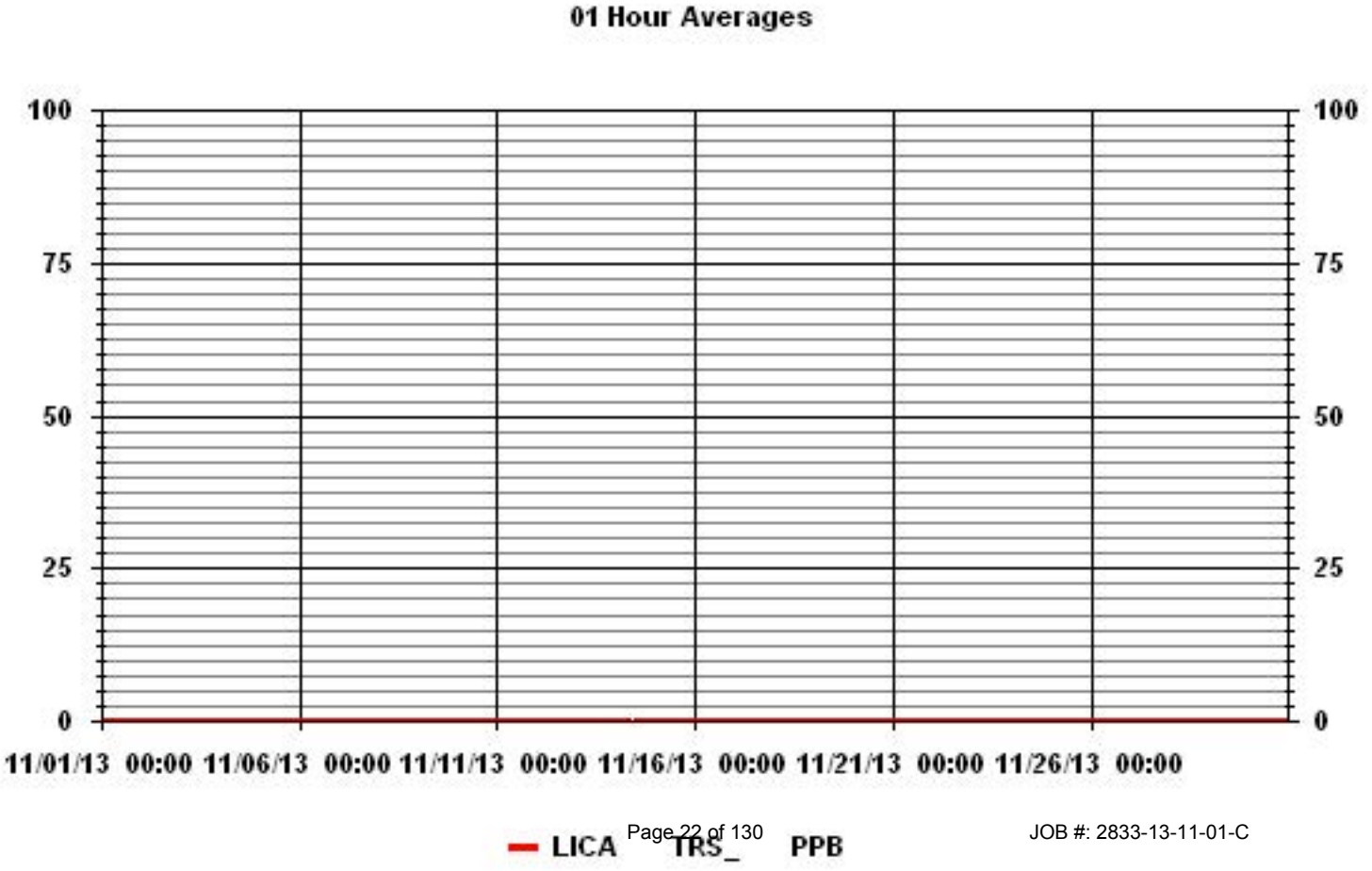
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 0 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 0 | PPB | @ HOUR(S) | ALL | ON DAY(S) | ALL |
| MAXIMUM 24-HR AVERAGE: | 0.0 | PPB | | | ON DAY(S) | ALL |
| | | | | | VAR-VARIOUS | |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 0.00 | | MONTHLY AVERAGE: | 0.00 | PPB |






JOB #: 2833-13-11-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**TOTAL REDUCED SULPHUR MAX** instantaneous maximum in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 1 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 14 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.6 | 24 |
| 15 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 16 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 17 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 18 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1.0 | 24 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1.0 | 24 |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1.0 | 24 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| HOURLY MAX | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS: 376

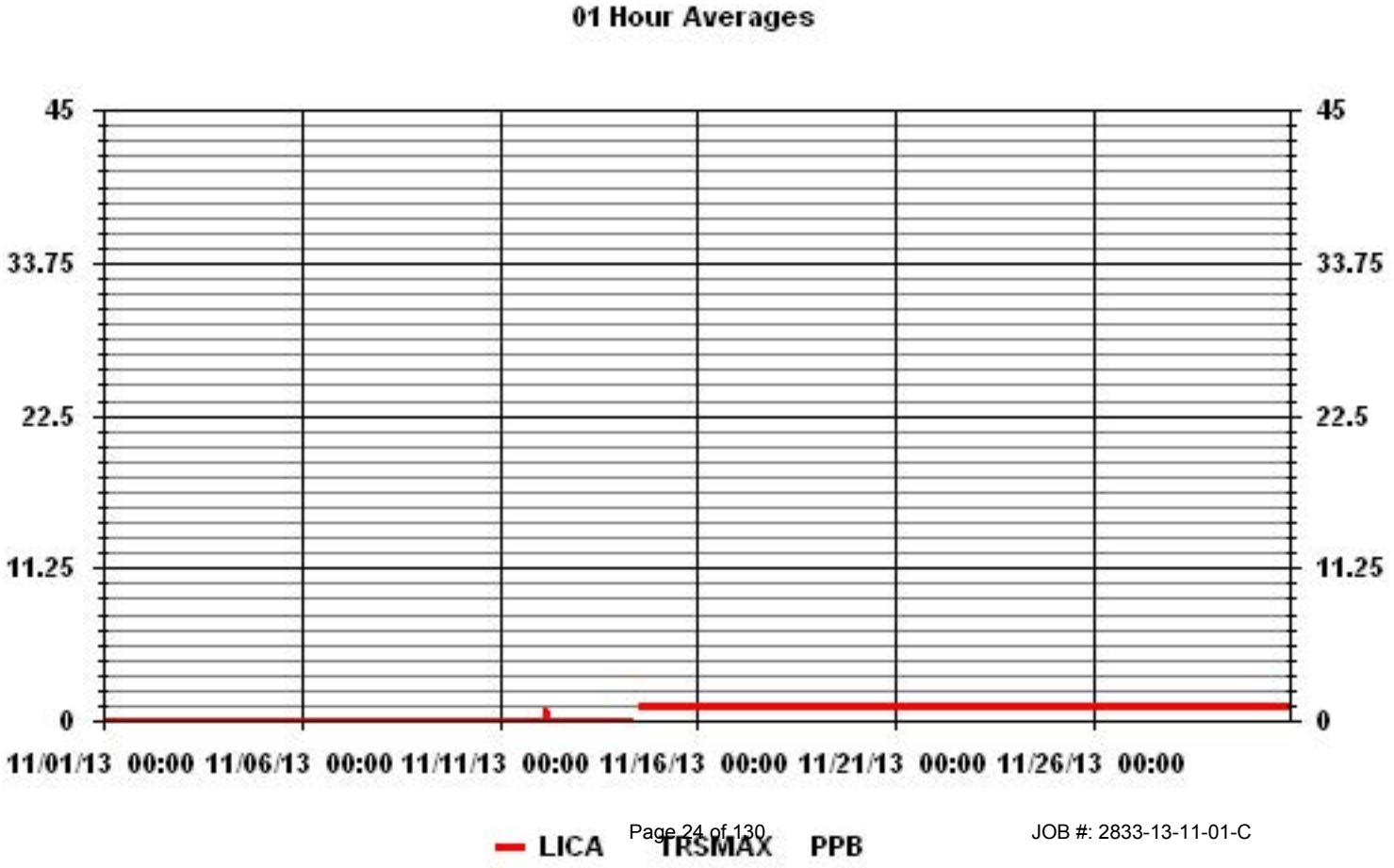
MAXIMUM INSTANTANEOUS VALUE: 1 PPB @ HOUR(S) VAR ON DAY(S) VAR

VAR - VARIOUS

IZS CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 720 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 0.50






JOB #: 2833-13-11-01-C

LICA
TRS_ / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 3 | 1.93 | 1.77 | 5.33 | 6.30 | 5.49 | 3.71 | 11.63 | 5.00 | 3.55 | 3.06 | 9.85 | 18.41 | 7.43 | 3.55 | 6.30 | 6.62 | 100.00 |
| < | 10 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 1.93 | 1.77 | 5.33 | 6.30 | 5.49 | 3.71 | 11.63 | 5.00 | 3.55 | 3.06 | 9.85 | 18.41 | 7.43 | 3.55 | 6.30 | 6.62 | |

Calm : .00 %

Total # Operational Hours : 619

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 3 | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 61 | 114 | 46 | 22 | 39 | 41 | 619 |
| < | 10 | | | | | | | | | | | | | | | | | |
| < | 50 | | | | | | | | | | | | | | | | | |
| >= | 50 | | | | | | | | | | | | | | | | | |
| | Totals | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 61 | 114 | 46 | 22 | 39 | 41 | |

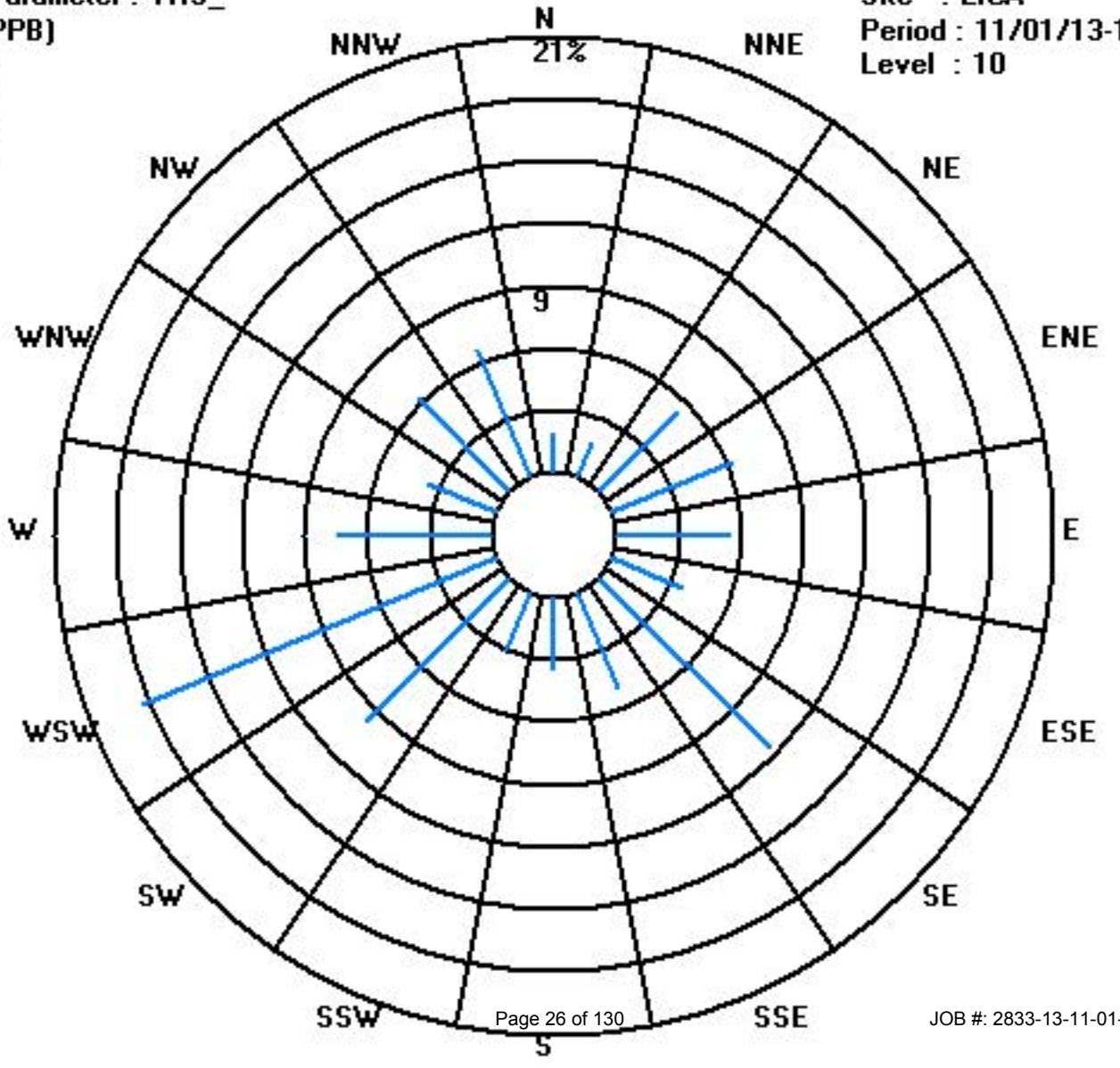
Calm : .00 %

Total # Operational Hours : 619

Logger : 01 Parameter : TRS_
Class Limits (PPB)

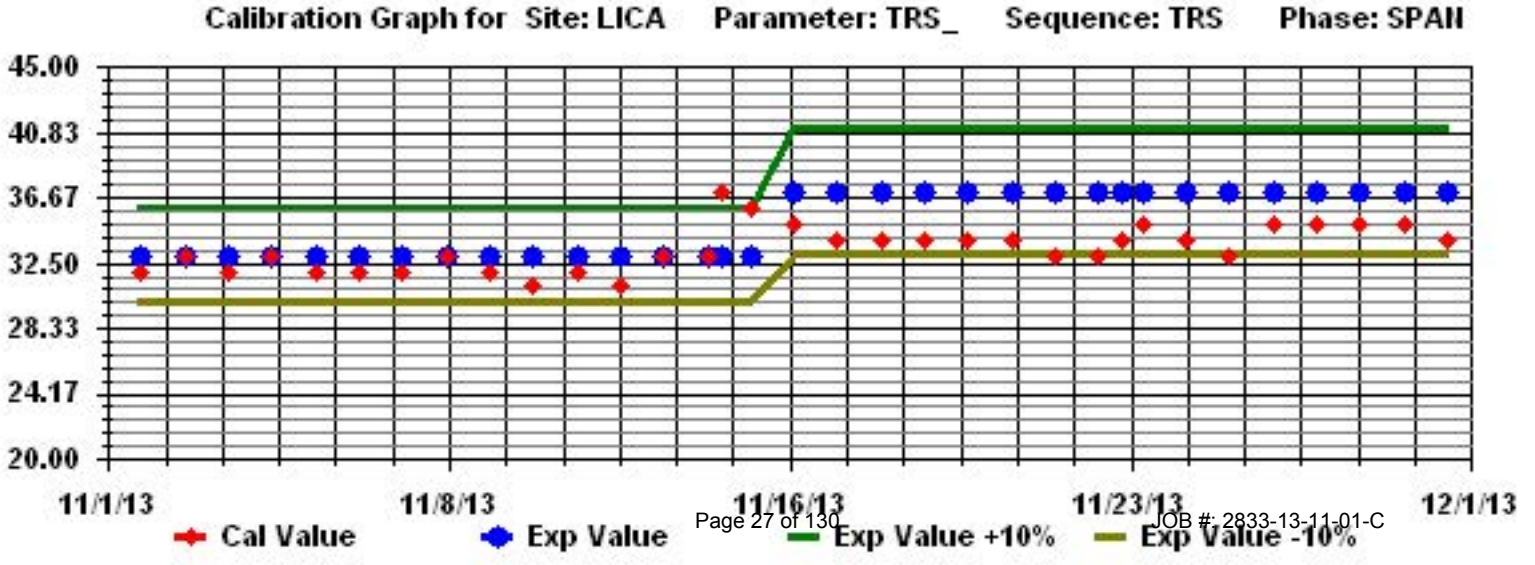
>= 50
< 50
< 10
< 3

Site : LICA
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-01-C


Calibration Graph for Site: LICA Parameter: TRS_ Sequence: TRS Phase: SPAN
45.00
40.83
36.67
32.50
28.33
24.17
20.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

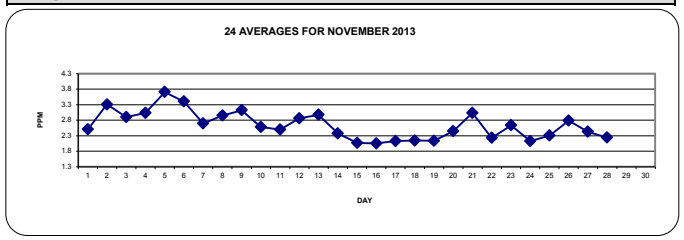
**TOTAL HYDROCARBONS (THC)** hourly averages in ppm

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | **S** | 3.1 | 3.2 | 3.1 | 3.1 | 3.2 | 3.2 | 3.2 | 2.5 | 24 |
| 2 | 3.3 | 3.5 | 3.4 | 3.5 | 3.5 | 3.5 | 3.5 | 3.6 | 3.5 | 3.4 | 3.6 | 4.1 | 3.6 | 3.3 | 3.2 | 3.2 | **S** | 3 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 4.1 | 3.3 | 24 |
| 3 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | **S** | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 24 |
| 4 | 2.9 | 2.9 | 2.9 | 2.9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **S** | 3 | 3 | 3.1 | 3.1 | 3.1 | 3.1 | 3.2 | 3.3 | 3.3 | 3.0 | 24 |
| 5 | 3.4 | 3.6 | 3.6 | 3.7 | 3.8 | 3.9 | 4 | 4.1 | 3.9 | 3.7 | 3.6 | 3.6 | 3.5 | **S** | 3.4 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.4 | 4.1 | **4.9** | 4.6 | **4.9** | **3.7** | 24 |
| 6 | 4.5 | 4.5 | 4.2 | 4.2 | 4.1 | 4.1 | 4.3 | 4.6 | 4.6 | 4.6 | 4.3 | 4 | **S** | 2.4 | 2.5 | 2.4 | 2.5 | 2.6 | 2.6 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 4.6 | 3.4 | 24 |
| 7 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 | 2.4 | 2.5 | **S** | 3.1 | 3 | 3 | 3.1 | 3.1 | 3.2 | 3.2 | 3 | 3 | 3 | 3 | 3 | 3.2 | 2.7 | 24 |
| 8 | 3 | 3 | 3 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | **S** | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 3 | 3 | 3 | 3 | 3.1 | 3.1 | 3.1 | 2.9 | 24 |
| 9 | 3.1 | 3.5 | 3.4 | 3.5 | 3.3 | 3.2 | 3.1 | 3.1 | 3.1 | **S** | 3.1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3.2 | 3.2 | 3.5 | 3.1 | 24 |
| 10 | 3.2 | 3.1 | 3.1 | 3.1 | 3.1 | 3.2 | 3.2 | 3.2 | **S** | 2.4 | 2.4 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.6 | 3.2 | 2.6 | 24 |
| 11 | 2.6 | 2.4 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | **S** | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.6 | 2.7 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.7 | 2.5 | 24 |
| 12 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | **S** | 2.9 | 3.2 | 3.2 | 2.9 | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.8 | 3 | 3.2 | 3.3 | 3.2 | 3 | 2.8 | 2.9 | 3.3 | 2.9 | 24 |
| 13 | 2.7 | 2.5 | 2.5 | 2.5 | 2.4 | **S** | 3.4 | 3.4 | 3.6 | 3.6 | 3.4 | 3.2 | 2.9 | 2.9 | 3 | 3 | 3 | 3 | 3 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 3.6 | 3.0 | 24 |
| 14 | 3 | 3 | 3.1 | 3 | **S** | 2.6 | 2.4 | 2.3 | 2.3 | 2.3 | **S** | 2.4 | **C** | **C** | **C** | **C** | 2.1 | 2 | 2.1 | 2 | 2 | 2 | 2.1 | 2.1 | 3.1 | 2.4 | 24 |
| 15 | 2.1 | 2.1 | 2.1 | **S** | 2 | 2 | 2.1 | 2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 16 | 2.1 | 2.1 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 17 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 24 |
| 18 | **S** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.2 | 2.1 | 24 |
| 19 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.6 | 2.3 | **S** | 2.2 | 2.6 | 2.1 | 24 |
| 20 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.5 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.7 | 2.6 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.6 | 2.6 | **S** | 2.4 | 2.5 | 2.8 | 2.5 | 24 |
| 21 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 3.1 | 3.4 | 3.1 | 3.1 | 3.1 | 3.8 | 3.8 | 3.7 | 3.7 | 3.8 | 3.8 | **S** | 3.3 | 2.4 | 2 | 3.8 | 3.0 | 24 |
| 22 | 2 | 2 | 2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | **S** | 2.4 | 2.4 | 2.4 | 2.6 | 2.6 | 2.2 | 24 |
| 23 | 2.6 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.6 | 2.5 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | **S** | 2.6 | 2.7 | 2.8 | 2.9 | 2.9 | 2.9 | 2.6 | 24 |
| 24 | 2.7 | 2.3 | 2.3 | 2.4 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 2 | 2 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.7 | 2.1 | 24 |
| 25 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4 | **S** | 2.4 | 2.4 | 2.4 | 2.6 | 2.6 | 2.7 | 2.8 | 2.8 | 2.3 | 24 |
| 26 | 2.9 | 2.9 | 2.9 | 3 | 3 | 2.9 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.8 | 2.8 | 2.5 | 2.6 | **S** | 2.7 | 2.7 | 2.7 | 2.8 | 3 | 3 | 2.9 | 2.9 | 3.0 | 2.8 | 24 |
| 27 | 3 | 3 | 3.1 | 3.1 | 3.4 | 3.1 | 2.7 | 2.5 | 2.2 | 2 | 2 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.4 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 3.4 | 2.4 | 24 |
| 28 | 2.1 | 2.2 | 2.2 | 2.3 | 2.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.2 | **S** | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | **X** | **X** | 2.4 | 2.2 | 22 |
| 29 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | | | 0 |
| 30 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | | | 0 |
| HOURLY MAX | 4.5 | 4.5 | 4.2 | 4.2 | 4.1 | 4.1 | 4.3 | 4.6 | 4.6 | 4.6 | 4.3 | 4.1 | 3.6 | 3.3 | 3.8 | 3.8 | 3.7 | 3.7 | 3.8 | 3.8 | 3.4 | 4.1 | 4.9 | 4.6 | | | |
| HOURLY AVG | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.5 | 2.6 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | | | |

**STATUS FLAG CODES**

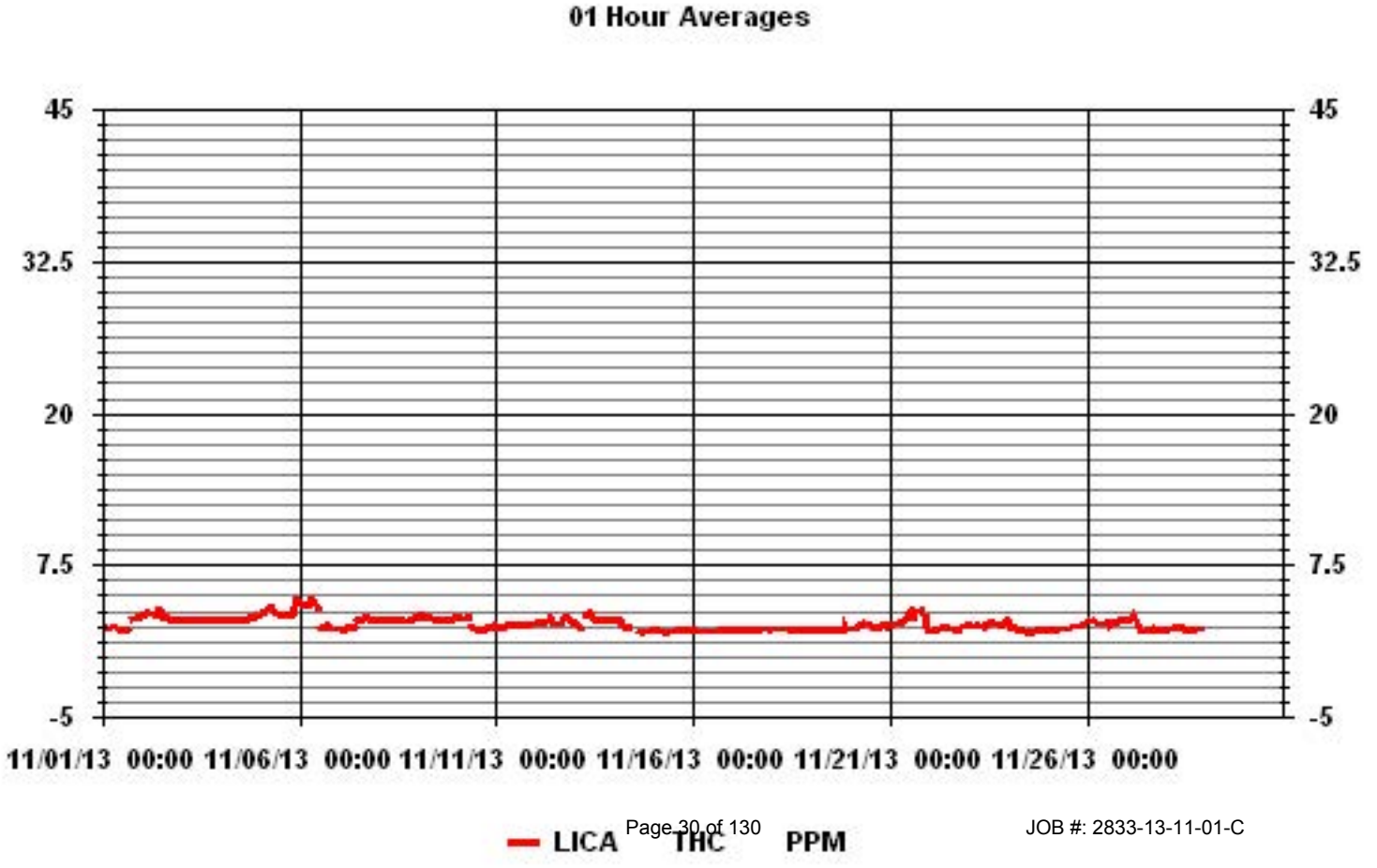
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 636 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 4.9 | PPM | @ HOUR(S) | 22 | ON DAY(S) | 5 |
| MAXIMUM 24-HR AVERAGE: | 3.7 | PPM | | | ON DAY(S) | 5 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 30 | HRS | OPERATIONAL TIME: | 670 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 93.1 | % |
| STANDARD DEVIATION: | 0.54 | | MONTHLY AVERAGE: | 2.64 | PPM |






JOB #: 2833-13-11-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**TOTAL HYDROCARBONS MAX** instantaneous maximum in ppm

MST

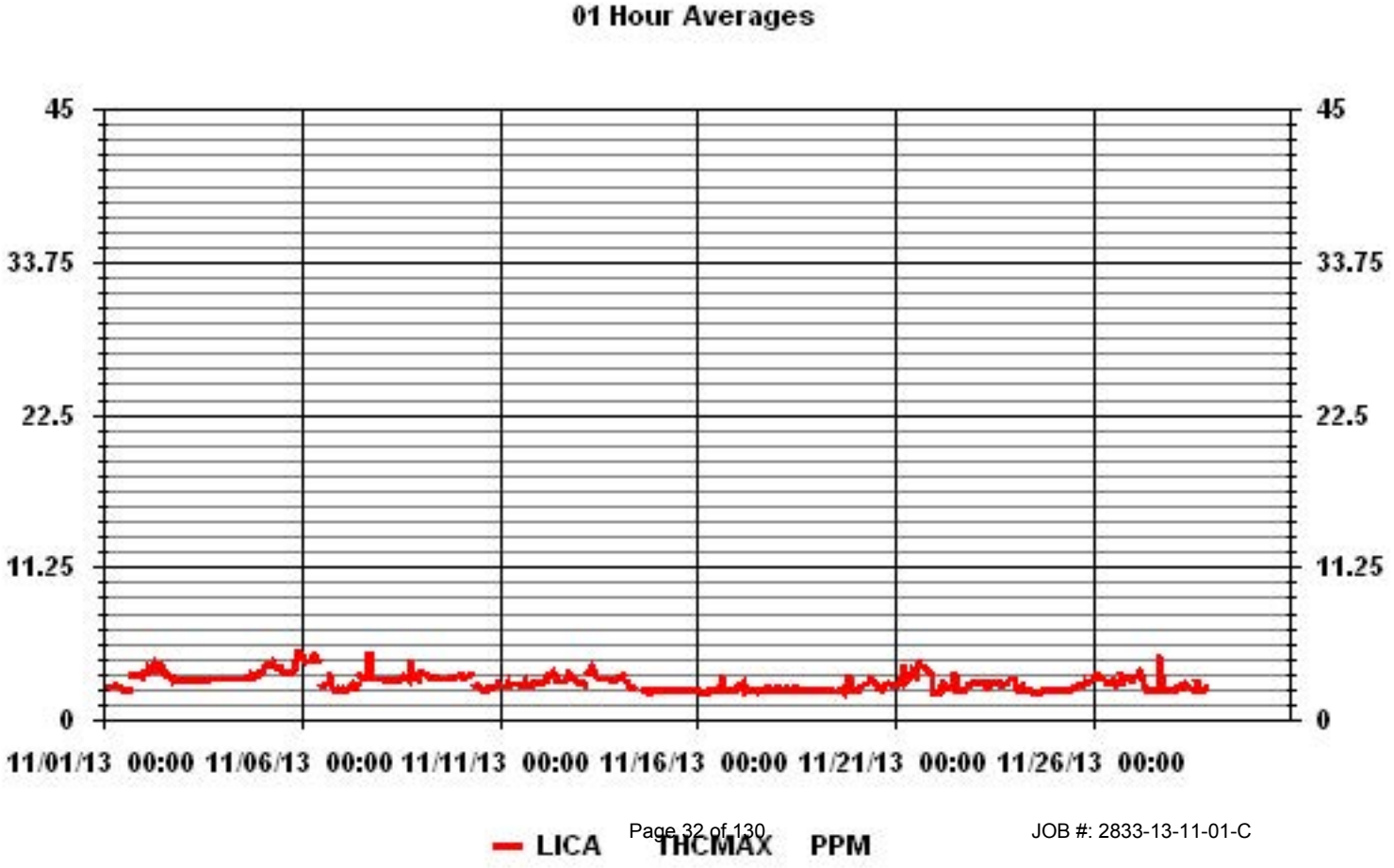
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.6 | 2.5 | 2.5 | 2.4 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 3.2 | 3.2 | 3.2 | 3.3 | 3.3 | 3.2 | 3.3 | 2.6 | 24 |
| 2 | 3.5 | 3.5 | 3.5 | 3.9 | 3.7 | 3.8 | 3.7 | 4 | 3.6 | 3.6 | 3.9 | 4.3 | 3.8 | 3.4 | 3.3 | 3.3 | **S** | 3.2 | 2.9 | 3 | 2.9 | 3 | 2.9 | 2.9 | 4.3 | 3.5 | 24 |
| 3 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 3 | 2.9 | 3 | **S** | 2.9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2.9 | 24 |
| 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **S** | 3.1 | 3.1 | 3.4 | 3.2 | 3.1 | 3.2 | 3.2 | 3.4 | 3.4 | 3.4 | 3.1 | 24 |
| 5 | 3.5 | 3.7 | 3.9 | 4 | 4.1 | 4 | 4 | 4.3 | 4.1 | 3.8 | 3.8 | 3.9 | 3.6 | **S** | 3.5 | 3.5 | 3.4 | 3.4 | 3.5 | 3.7 | 3.7 | 4.5 | **5** | **5** | **5** | 3.9 | 24 |
| 6 | 4.7 | 4.6 | 4.3 | 4.4 | 4.3 | 4.3 | 4.5 | 4.7 | 4.8 | 4.7 | 4.5 | 4.4 | **S** | 2.5 | 2.6 | 2.6 | 2.6 | 3.5 | 2.7 | 2.5 | 2.3 | 2.2 | 2.3 | 2.3 | 4.8 | 3.6 | 24 |
| 7 | 2.2 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.4 | 2.7 | 2.6 | 2.5 | 2.7 | **S** | 3.3 | 3.2 | 3.1 | 3.1 | 3.1 | 4.8 | 4.8 | 3.1 | 3 | 3 | 3 | 3 | 4.8 | 2.9 | 24 |
| 8 | 3 | 3 | 3 | 3 | 2.9 | 3 | 3 | 3 | 2.9 | 3 | **S** | 2.9 | 3 | 3.2 | 3 | 3 | 3.1 | 3 | 4.4 | 3 | 3 | 3.3 | 3.2 | 3.1 | 4.4 | 3.1 | 24 |
| 9 | 3.5 | 3.6 | 3.5 | 3.5 | 3.4 | 3.3 | 3.2 | 3.1 | 3.1 | **S** | 3.3 | 3 | 3 | 3 | 3.1 | 3 | 3 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.2 | 3.3 | 3.6 | 3.2 | 24 |
| 10 | 3.3 | 3.1 | 3.1 | 3.2 | 3.2 | 3.3 | 3.3 | 3.4 | **S** | 2.5 | 2.6 | 2.6 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.8 | 3.4 | 2.7 | 24 |
| 11 | 2.7 | 2.5 | 2.4 | 2.4 | 2.4 | 2.8 | 2.5 | **S** | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.6 | 2.7 | 2.9 | 2.6 | 2.5 | 2.5 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 | 2.9 | 2.6 | 24 |
| 12 | 2.7 | 2.7 | 2.7 | 2.8 | 3.1 | 2.9 | **S** | 3.4 | 3.6 | 3.4 | 3.3 | 2.9 | 2.8 | 2.8 | 2.8 | 2.8 | 3 | 3.1 | 3.4 | 3.4 | 3.3 | 3.1 | 2.9 | 2.9 | 3.6 | 3.0 | 24 |
| 13 | 2.8 | 2.7 | 2.7 | 2.7 | 2.5 | **S** | 3.5 | 3.6 | 3.9 | 3.7 | 3.5 | 3.3 | 3 | 3 | 3 | 3 | 3.1 | 3 | 3 | 3 | 2.9 | 3 | 3 | 2.9 | 3.9 | 3.1 | 24 |
| 14 | 3.1 | 3.1 | 3.2 | 3.3 | **S** | 2.8 | 2.5 | 2.4 | 2.5 | 2.4 | **S** | 2.5 | **C** | **C** | **C** | **C** | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 3.3 | 2.5 | 24 |
| 15 | 2.2 | 2.2 | 2.2 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 24 |
| 16 | 2.1 | 2.1 | **S** | 2.1 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 2.1 | 3.4 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 3.4 | 2.2 | 24 |
| 17 | 2.1 | **S** | 2.6 | 2.5 | 2.7 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.2 | 2.3 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.3 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.7 | 2.3 | 24 |
| 18 | **S** | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.4 | 2.2 | 2.2 | 2.4 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | **S** | 2.2 | 24 |
| 19 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.1 | 2.4 | 3.4 | 2.6 | **S** | 2.2 | 3.4 | 2.2 | 24 |
| 20 | 2.2 | 2.3 | 2.2 | 2.4 | 2.5 | 2.6 | 2.6 | 2.7 | 3.1 | 3 | 2.9 | 2.9 | 2.8 | 2.6 | 2.4 | 2.3 | 2.5 | 2.4 | 2.6 | 2.6 | 2.8 | **S** | 2.5 | 2.6 | 3.1 | 2.6 | 24 |
| 21 | 2.5 | 2.6 | 2.7 | 2.7 | 3.1 | 4.1 | 2.8 | 2.9 | 3 | 3.2 | 3.6 | 3.3 | 3.2 | 3.7 | 4.1 | 4.2 | 3.9 | 3.9 | 4 | 3.9 | **S** | 3.5 | 3.3 | 2 | 4.2 | 3.3 | 24 |
| 22 | 2 | 2 | 2 | 2.4 | 2.3 | 2.9 | 2.4 | 2.5 | 2.4 | 2.5 | 2.6 | 2.4 | 3.5 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.5 | 2.5 | 2.6 | 2.7 | 3.5 | 2.4 | 24 |
| 23 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.7 | 2.6 | 2.5 | 2.7 | 2.6 | 2.8 | 2.7 | 2.7 | 2.7 | 2.8 | 2.7 | 2.7 | 2.6 | **S** | 2.7 | 2.8 | 2.9 | 3 | 3.1 | 3.1 | 2.7 | 24 |
| 24 | 3 | 2.4 | 2.3 | 2.5 | 2.6 | 2.3 | 2.1 | 2.1 | 2.2 | 2.3 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 3 | 2.2 | 24 |
| 25 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.3 | 2.3 | 2.4 | 2.6 | 2.6 | **S** | 2.5 | 2.6 | 2.9 | 2.7 | 2.7 | 2.8 | 2.9 | 2.9 | 2.4 | 24 |
| 26 | 3.2 | 3 | 3 | 3.2 | 3.2 | 3.1 | 3 | 2.7 | 2.7 | 2.8 | 2.8 | 2.9 | 2.9 | 2.6 | 2.7 | **S** | 3.4 | 2.9 | 2.8 | 3 | 3.1 | 3.2 | 3 | 3.1 | 3.4 | 3.0 | 24 |
| 27 | 3 | 3.1 | 3.2 | 3.3 | 3.6 | 3.4 | 3 | 2.6 | 2.4 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | **S** | 2.2 | 4.8 | 3.5 | 2.4 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 4.8 | 2.7 | 24 |
| 28 | 2.2 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.4 | 2.7 | 2.5 | 2.5 | 2.4 | 2.4 | 2.3 | **S** | 2.8 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.4 | 2.4 | **X** | **X** | 2.8 | 2.4 | 22 |
| 29 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | | | 0 |
| 30 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | | | 0 |
| HOURLY MAX | 4.7 | 4.6 | 4.3 | 4.4 | 4.3 | 4.3 | 4.5 | 4.7 | 4.8 | 4.7 | 4.5 | 4.4 | 3.8 | 3.7 | 4.1 | 4.2 | 4.8 | 4.8 | 4.8 | 3.9 | 3.7 | 4.5 | 5.0 | 5.0 | | | |
| HOURLY AVG | 2.8 | 2.7 | 2.8 | 2.8 | 2.8 | 2.9 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 636 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 5.0 | PPM | @ HOUR(S) | 22, 23 | ON DAY(S) | 5 | |
| S CALIBRATION TIME: | 30 | HRS | OPERATIONAL TIME: | | | 670 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | | | | | |
| STANDARD DEVIATION: | 0.60 | | | | | | |






JOB #: 2833-13-11-01-C

LICA
THC / WD Joint Frequency Distribution (Percent)

November 2013

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 | 1.05 | 1.93 | 4.92 | 6.15 | 3.33 | 2.98 | 9.66 | 4.21 | 2.81 | 2.28 | 5.97 | 11.42 | 5.27 | 2.98 | 4.39 | 4.39 | 73.81 |
| < 10.0 | 1.05 | .00 | .87 | .52 | 2.63 | 1.05 | .87 | .70 | .52 | .70 | 2.81 | 6.15 | 2.10 | .87 | 2.46 | 2.81 | 26.18 |
| < 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 | 2.10 | 1.93 | 5.79 | 6.67 | 5.97 | 4.04 | 10.54 | 4.92 | 3.33 | 2.98 | 8.78 | 17.57 | 7.38 | 3.86 | 6.85 | 7.20 | |

Calm : .00 %

Total # Operational Hours : 569

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3.0 | 6 | 11 | 28 | 35 | 19 | 17 | 55 | 24 | 16 | 13 | 34 | 65 | 30 | 17 | 25 | 25 | 420 |
| < 10.0 | 6 | | 5 | 3 | 15 | 6 | 5 | 4 | 3 | 4 | 16 | 35 | 12 | 5 | 14 | 16 | 149 |
| < 50.0 | | | | | | | | | | | | | | | | | |
| >= 50.0 | | | | | | | | | | | | | | | | | |
| Totals | 12 | 11 | 33 | 38 | 34 | 23 | 60 | 28 | 19 | 17 | 50 | 100 | 42 | 22 | 39 | 41 | |

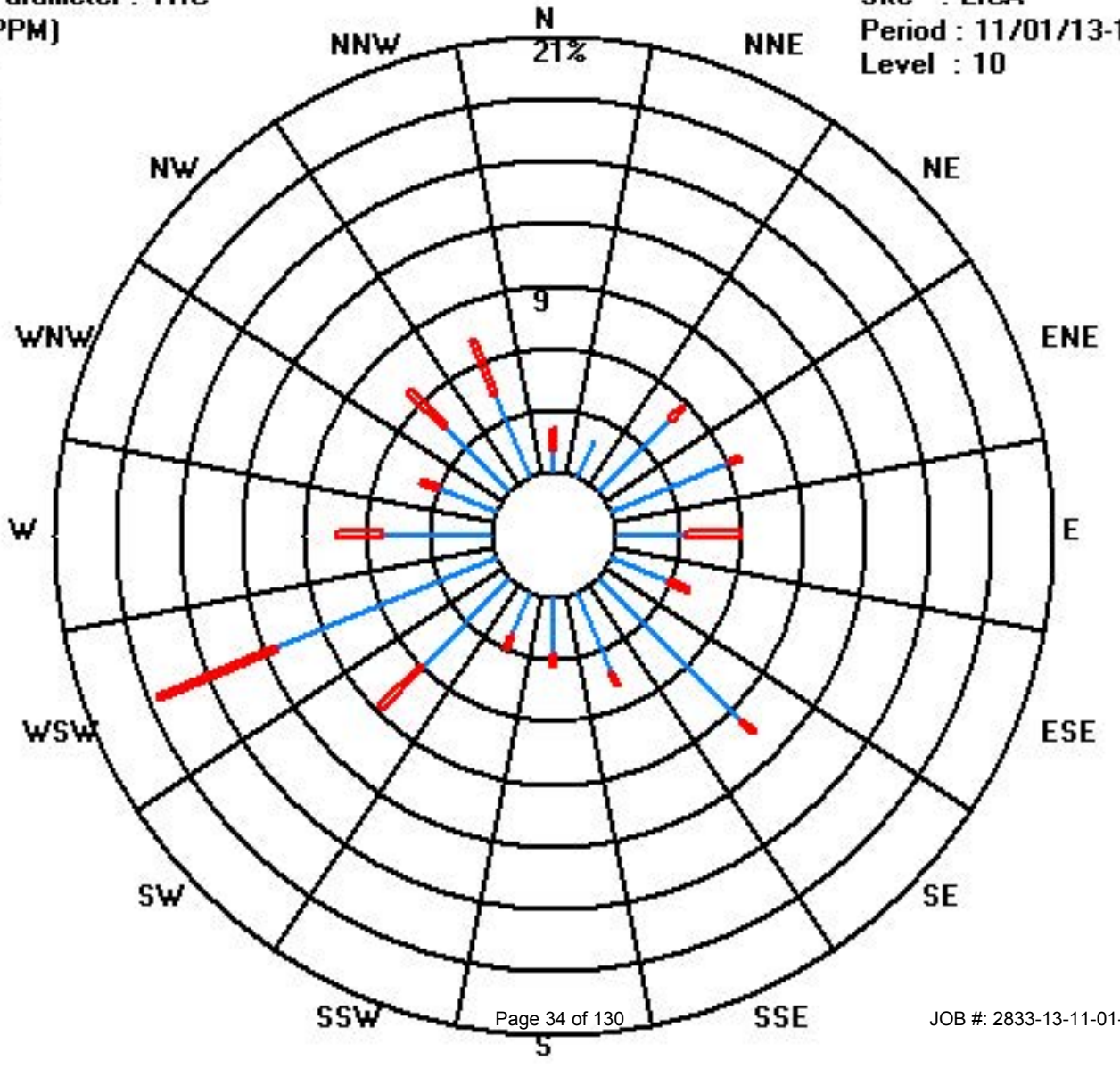
Calm : .00 %

Total # Operational Hours : 569

Logger : 01 Parameter : THC
Class Limits (PPM)

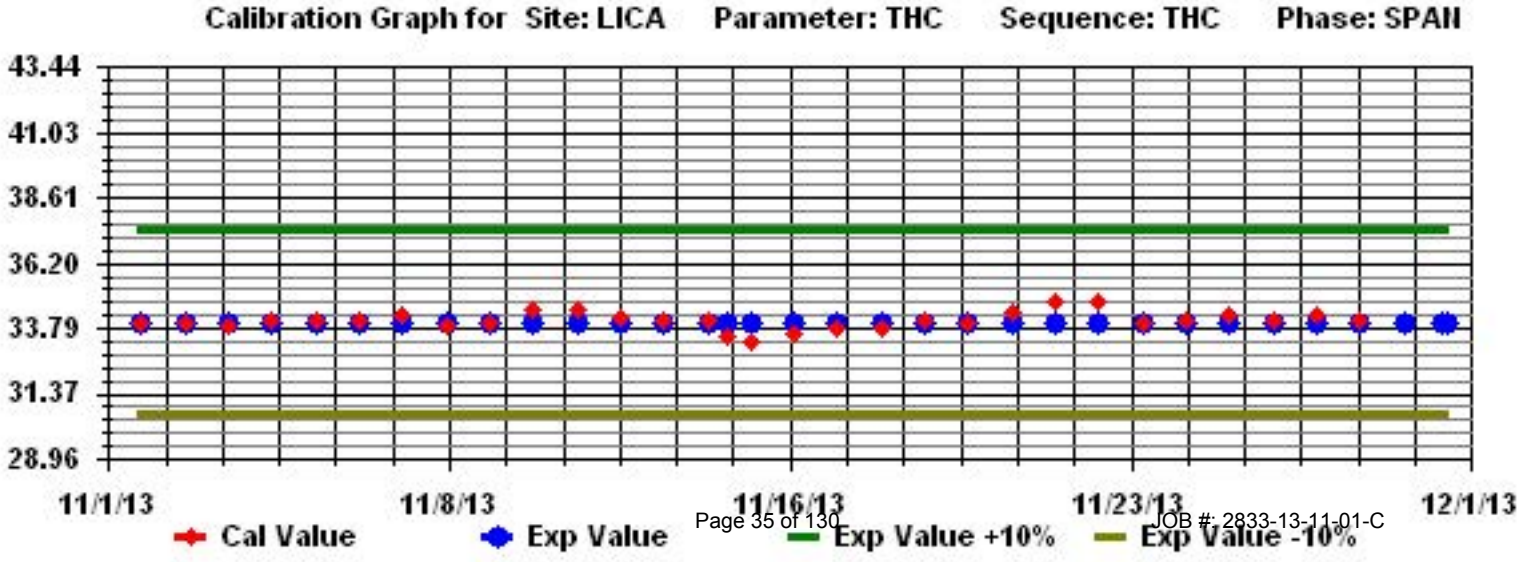
>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-01-C


Calibration Graph for Site: LICA Parameter: THC Sequence: THC Phase: SPAN
43.44
41.03
38.61
36.20
33.79
31.37
28.96
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Particulate Matter 2.5

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**PARTICULATE MATTER 2.5 (PM2.5)** hourly averages in ug/m$^3$

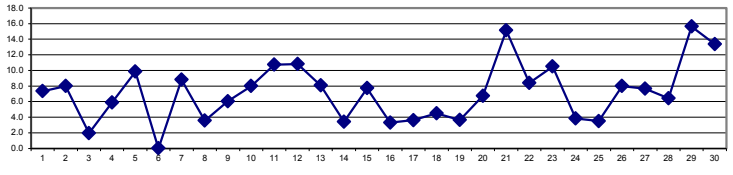
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3 | 1 | 21 | 4 | 2 | 1 | 3 | 2 | 5 | 13 | 6 | 24 | X | 3 | 11 | 8 | 8 | 2 | 12 | 14 | 11 | 7 | 2 | 6 | 24 | 7.3 | 23 |
| 2 | 9 | 11 | 12 | 11 | 8 | 2 | 12 | 1 | 1 | 12 | 14 | 11 | 7 | 9 | 7 | 1 | 9 | 9 | 6 | 3 | 8 | 9 | 6 | 14 | 14 | 8.0 | 24 |
| 3 | 1 | 0 | 2 | 6 | 1 | 3 | X | 4 | 6 | X | 3 | 0 | 1 | 4 | 0 | 1 | X | 0 | 1 | 1 | X | 0 | X | 3 | 6 | 1.9 | 19 |
| 4 | X | 0 | 10 | X | X | X | 0 | 0 | 0 | X | 2 | 2 | 1 | 10 | 5 | 10 | 0 | 8 | X | 18 | 7 | X | 21 | X | 21 | 5.9 | 16 |
| 5 | 0 | 1 | 23 | X | 0 | 6 | 2 | 8 | X | 32 | 18 | 17 | 16 | 15 | 10 | 8 | 7 | 0 | X | X | X | 13 | X | 1 | 32 | 9.8 | 18 |
| 6 | 34 | X | 0 | X | 31 | 2 | 22 | X | 10 | 12 | X | 12 | **47** | C | 10 | 20 | 18 | 18 | 16 | 12 | 7 | 13 | 11 | 17 | **47** | 0.0 | 20 |
| 7 | 9 | 10 | 7 | 12 | 13 | 15 | 12 | 9 | 20 | 15 | 8 | 8 | 4 | 3 | 4 | 8 | 5 | 2 | 2 | 6 | 6 | 15 | 9 | 9 | 20 | 8.8 | 24 |
| 8 | 9 | 8 | 6 | 5 | 5 | 4 | 1 | 1 | 9 | 3 | 5 | 6 | 4 | 0 | 2 | X | 0 | 0 | 0 | 0 | 4 | 3 | 5 | 2 | 9 | 3.6 | 23 |
| 9 | 3 | 0 | 3 | 2 | 1 | 1 | 7 | 8 | 5 | 9 | 6 | 4 | 7 | 2 | 14 | 20 | 5 | 0 | 9 | 16 | 12 | 4 | X | 1 | 20 | 6.0 | 23 |
| 10 | 10 | X | 7 | 10 | 1 | 3 | 1 | 0 | 5 | X | 3 | 4 | X | 4 | X | X | 15 | 5 | 11 | 13 | 30 | X | 15 | 7 | 30 | 8.0 | 18 |
| 11 | 4 | 15 | 7 | 12 | 9 | 1 | 2 | 4 | 4 | 24 | 26 | 6 | 4 | 11 | 13 | 13 | 11 | 10 | X | X | 29 | 8 | 15 | 8 | 29 | 10.7 | 22 |
| 12 | 4 | 24 | 5 | 14 | 2 | X | 7 | 13 | 5 | 9 | 9 | 8 | 3 | 8 | 6 | 18 | 9 | 10 | 12 | 6 | 13 | 16 | 21 | 27 | 27 | 10.8 | 23 |
| 13 | 21 | 21 | 19 | 18 | 18 | 22 | 9 | 7 | 4 | 13 | 5 | 11 | 2 | 10 | 3 | 5 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 22 | 8.1 | 24 |
| 14 | 3 | 2 | 0 | 1 | 7 | 10 | 7 | 5 | 3 | 6 | 3 | 4 | C | 5 | 1 | 3 | 0 | 0 | 3 | 2 | 0 | 3 | X | 7 | 10 | 3.4 | 23 |
| 15 | 10 | 15 | 9 | 21 | 14 | 14 | 15 | 6 | 0 | 0 | X | X | 7 | 15 | 8 | X | 0 | 9 | 2 | 3 | 3 | 6 | 1 | 4 | 21 | 7.7 | 21 |
| 16 | 0 | 6 | 2 | 7 | 4 | 4 | 7 | 8 | 4 | 0 | 1 | 6 | 0 | 6 | 5 | 4 | 2 | 3 | 4 | 1 | X | 0 | 0 | 2 | 8 | 3.3 | 23 |
| 17 | 0 | 7 | 1 | 0 | 0 | 8 | 3 | X | 0 | 10 | 3 | 0 | 0 | 2 | 2 | 1 | 7 | 3 | 5 | 8 | X | X | 15 | 1 | 15 | 3.6 | 21 |
| 18 | 7 | 6 | 8 | 9 | 3 | 14 | 5 | 0 | 5 | 7 | 0 | 5 | 1 | 5 | 6 | 3 | 6 | 2 | 5 | 1 | 1 | 2 | 7 | 0 | 14 | 4.5 | 24 |
| 19 | 5 | 7 | 4 | 5 | 6 | 3 | 2 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | X | 5 | 5 | 8 | X | 2 | 9 | 2 | 10 | 1 | 10 | 3.6 | 22 |
| 20 | 0 | 6 | 9 | 3 | 2 | X | 5 | 0 | 4 | 15 | 6 | 7 | 16 | 5 | 1 | 4 | 6 | 6 | 11 | 2 | 11 | 11 | 17 | 8 | 17 | 6.7 | 23 |
| 21 | 6 | 21 | 7 | 11 | 8 | 3 | 11 | 15 | 9 | 14 | 10 | 16 | 21 | 17 | 14 | 26 | 28 | 32 | 18 | 23 | 25 | 15 | 9 | 4 | 32 | 15.1 | 24 |
| 22 | 12 | 9 | 9 | 0 | 5 | 8 | X | 14 | 12 | 10 | 18 | 7 | 15 | 7 | 9 | 3 | 7 | 3 | 9 | 8 | 7 | 0 | 16 | 5 | 18 | 8.4 | 23 |
| 23 | 14 | 4 | 7 | 3 | 6 | X | 8 | 12 | 0 | 26 | X | 10 | 9 | 11 | 21 | 3 | 22 | 11 | 17 | 3 | 5 | 12 | 15 | 12 | 26 | 10.5 | 22 |
| 24 | 13 | 12 | 8 | 10 | 4 | 0 | 6 | 7 | 4 | X | 0 | 2 | X | 1 | 0 | 1 | 1 | 5 | 0 | X | X | 0 | 0 | 3 | 13 | 3.9 | 20 |
| 25 | 0 | 1 | X | 0 | 1 | X | 0 | 0 | X | X | 0 | X | 0 | 3 | X | 0 | 8 | 27 | 7 | 0 | 7 | 1 | 2 | 6 | 27 | 3.5 | 18 |
| 26 | 3 | 5 | 4 | 9 | 10 | 0 | 14 | 18 | X | 9 | 4 | 5 | 6 | 11 | 13 | 10 | 3 | 5 | 1 | 3 | 9 | 14 | 19 | 9 | 19 | 8.0 | 23 |
| 27 | 15 | 7 | 12 | 13 | 14 | 14 | 13 | 4 | 10 | 0 | 7 | 9 | 3 | 1 | 7 | 2 | 14 | 7 | 9 | 7 | 0 | 4 | 5 | 7 | 15 | 7.7 | 24 |
| 28 | 6 | 8 | 0 | 5 | 6 | 1 | 3 | 3 | 5 | 1 | 3 | 11 | 12 | 9 | 9 | 8 | 12 | 2 | 11 | 13 | 6 | 1 | 6 | 13 | 13 | 6.4 | 24 |
| 29 | 16 | 17 | 8 | 8 | 4 | 0 | 9 | 9 | 10 | 13 | 19 | 20 | 34 | 19 | 18 | 16 | 23 | 17 | 17 | 17 | 24 | 20 | 20 | 17 | 34 | **15.6** | 24 |
| 30 | 18 | 15 | 18 | 13 | 15 | 14 | 13 | 15 | 24 | 14 | 19 | 29 | 15 | 17 | 17 | 9 | 8 | 9 | 4 | 4 | 13 | 5 | 13 | 0 | 29 | 13.4 | 24 |
| HOURLY MAX | 34 | 24 | 23 | 21 | 31 | 22 | 22 | 18 | 24 | 32 | 26 | 29 | 47 | 19 | 21 | 26 | 28 | 32 | 18 | 23 | 30 | 20 | 21 | 27 | | | |
| HOURLY AVG | 8.1 | 8.5 | 7.9 | 7.9 | 6.9 | 6.1 | 7.1 | 6.2 | 6.1 | 10.8 | 7.3 | 8.7 | 9.2 | 7.3 | 8.0 | 7.8 | 8.2 | 7.1 | 7.4 | 6.9 | 10.0 | 6.9 | 10.0 | 6.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

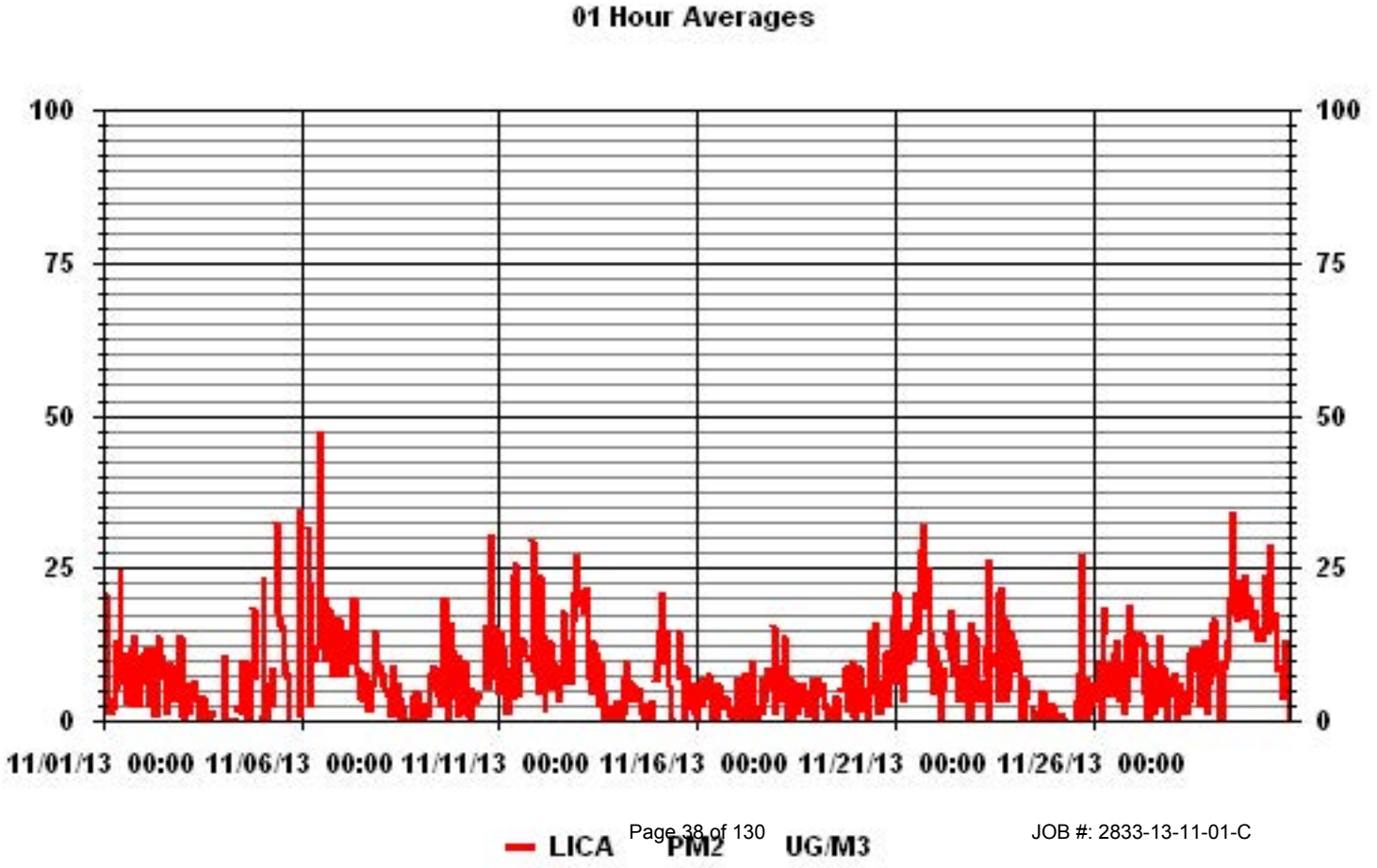
**24 HOUR AVERAGES FOR NOVEMBER 2013**




**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR - ug/m3 | 24-HR 30 ug/m3

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | - | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 580 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 47 | UG/M$^3$ | @ HOUR(S) | 12 | ON DAY(S) | 6 |
| MAXIMUM 24-HR AVERAGE: | 15.6 | UG/M$^3$ | | | ON DAY(S) | 29 |
| IZS CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 660 | HRS |
| MONTHLY CALIBRATION TIME: | 2 | HRS | AMD OPERATION UPTIME: | | 91.7 | % |
| STANDARD DEVIATION: | 6.83 | | MONTHLY AVERAGE: | | 7.77 | UG/M$^3$ |






JOB #: 2833-13-11-01-C

LICA
PM2 / WD Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30 | 1.83 | 1.33 | 5.50 | 6.83 | 5.83 | 3.83 | 12.16 | 5.00 | 3.66 | 2.66 | 9.83 | 18.33 | 8.16 | 2.50 | 5.83 | 5.83 | 99.16 |
| < | 60 | .00 | .00 | .00 | .00 | .00 | .00 | .16 | .16 | .00 | .00 | .00 | .50 | .00 | .00 | .00 | .00 | .83 |
| < | 80 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 120 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 240 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 240 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 1.83 | 1.33 | 5.50 | 6.83 | 5.83 | 3.83 | 12.33 | 5.16 | 3.66 | 2.66 | 9.83 | 18.83 | 8.16 | 2.50 | 5.83 | 5.83 | |

Calm : .00 %

Total # Operational Hours : 600

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30 | 11 | 8 | 33 | 41 | 35 | 23 | 73 | 30 | 22 | 16 | 59 | 110 | 49 | 15 | 35 | 35 | 595 |
| < | 60 | | | | | | | 1 | 1 | | | | 3 | | | | | 5 |
| < | 80 | | | | | | | | | | | | | | | | | |
| < | 120 | | | | | | | | | | | | | | | | | |
| < | 240 | | | | | | | | | | | | | | | | | |
| >= | 240 | | | | | | | | | | | | | | | | | |
| | Totals | 11 | 8 | 33 | 41 | 35 | 23 | 74 | 31 | 22 | 16 | 59 | 113 | 49 | 15 | 35 | 35 | |

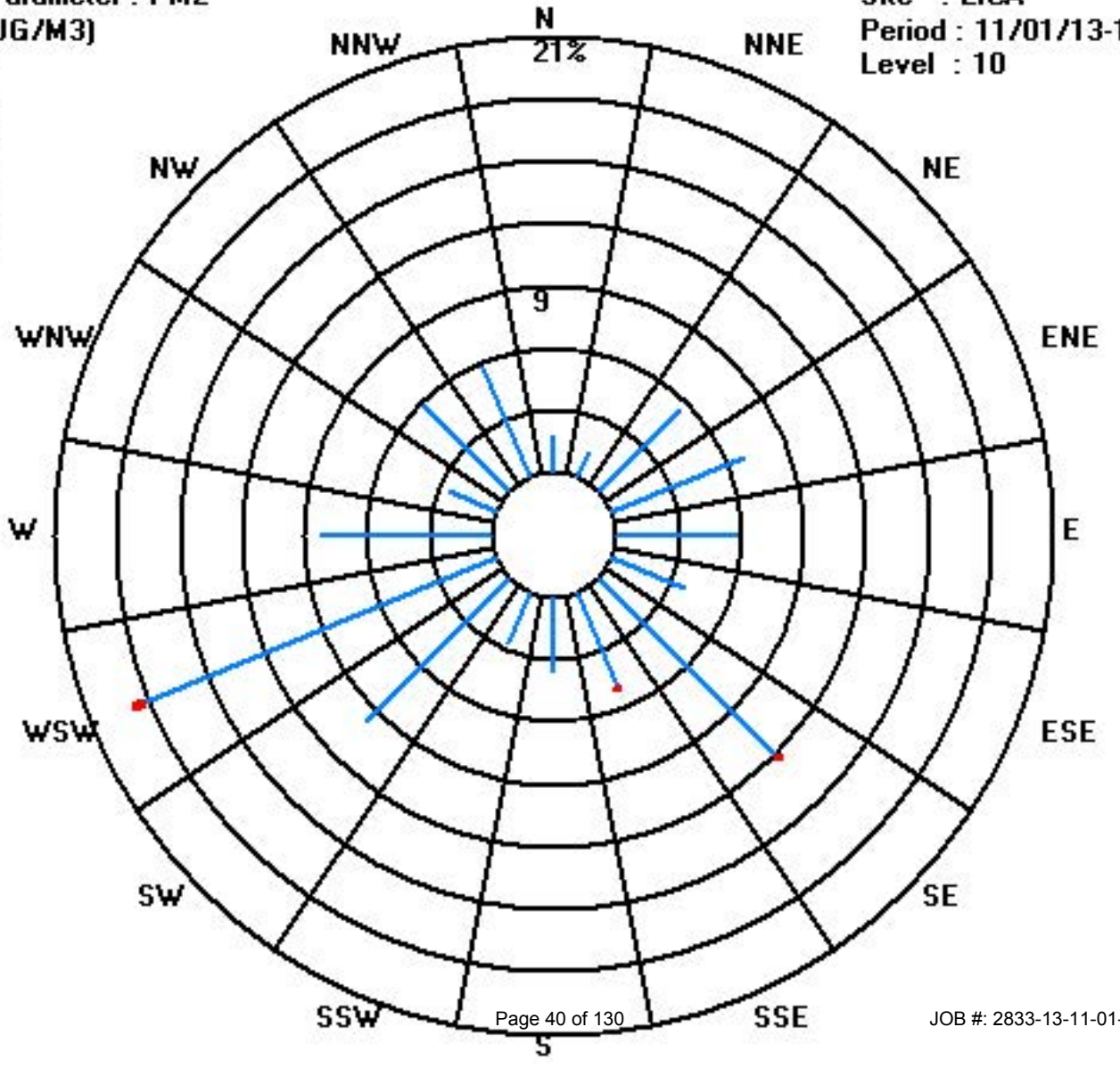
Calm : .00 %

Total # Operational Hours : 600

Logger : 01 Parameter : PM2
Class Limits (UG/M3)

>= 240
< 240
< 120
< 80
< 60
< 30

Site : LICA
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-01-C

# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**NITROGEN DIOXIDE** hourly averages in ppb

MST

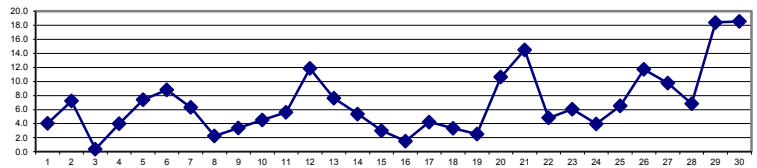
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 4.7 | 4.7 | 2.9 | 2.5 | 3.6 | 3.8 | 5.6 | 7.4 | 5.9 | 4.3 | 4.4 | 2.9 | 1.4 | 1.2 | 1.6 | 1.7 | 3.1 | **S** | 5.7 | 5.6 | 5.5 | 5.2 | 4.9 | 4.3 | 7.4 | 4.0 | 24 |
| 2 | 8.5 | 12 | 7.2 | 8.9 | 8.5 | 7 | 10.6 | 10.7 | 8.7 | 9.8 | 9.2 | 12 | 11.6 | 9.1 | 7.3 | 8.2 | **S** | 6.6 | 2.7 | 2.6 | 1.8 | 1.2 | 1.3 | 0.8 | 12 | 7.2 | 24 |
| 3 | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.7 | 0.6 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 | **S** | 0.4 | 0.1 | 0.1 | 0 | 0 | 0.1 | 0.1 | 0.1 | 0.7 | 0.4 | 24 |
| 4 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | 0.6 | 0.6 | 0.6 | 0.6 | 0.4 | 0.6 | 1 | 1.3 | 1.2 | **S** | 3.9 | 5.4 | 9.6 | 12.5 | 12.6 | 11.4 | 10.1 | 10.4 | 8.6 | 12.6 | 4.0 | 24 |
| 5 | 7.6 | 8.9 | 8.9 | 8.7 | 9.4 | 8.1 | 9.1 | 10.2 | 7 | 5.1 | 3.4 | 3.9 | 4.1 | **S** | 4 | 3.2 | 4.3 | 7.1 | 11.6 | 12.1 | 8.6 | 8.2 | 8.3 | 8.5 | 12.1 | 7.4 | 24 |
| 6 | 7.6 | 7.6 | 6.5 | 6.1 | 5.5 | 5.4 | 7.1 | 10.2 | 9.2 | 7.1 | 7.9 | 9 | **S** | 8.5 | 9.1 | 10.7 | 18 | 16.5 | 12.7 | 8.5 | 7.5 | 8.5 | 7.4 | 6 | 18 | 8.8 | 24 |
| 7 | 5.5 | 5.5 | 5 | 4.3 | 3.8 | 4.3 | 7.2 | 12.9 | 16.8 | 13 | 11.2 | **S** | 3.7 | 3.4 | 4.1 | 9.6 | 8.2 | 7.7 | 5.5 | 4.2 | 3.1 | 2.4 | 1.8 | 1.8 | 16.8 | 6.3 | 24 |
| 8 | 1.7 | 1.5 | 1.7 | 1.4 | 1.5 | 2.1 | 2.3 | 2.1 | 1.8 | 1.6 | **S** | 2 | 1.6 | 1.5 | 1.1 | 1.6 | 1.6 | 2 | 3.6 | 5.6 | 1.5 | 1.4 | 4.7 | 5.7 | 5.7 | 2.2 | 24 |
| 9 | 3.7 | 6.2 | 5.2 | 5.4 | 3.7 | 2.9 | 2.6 | 2.5 | 3.6 | **S** | 3.4 | 1.2 | 1.4 | 1.9 | 2.8 | 1.9 | 2.7 | 2.6 | 2.5 | 2 | 2.2 | 2.2 | 6.1 | 9.1 | 9.1 | 3.4 | 24 |
| 10 | 7.8 | 4.4 | 3 | 5.2 | 3 | 5.7 | 7.3 | 6.2 | **S** | 7.3 | 6.4 | 4.6 | 2.6 | 1.9 | 2 | 2.1 | 10 | 6 | 4 | 2.6 | 2.4 | 2.8 | 3.4 | 3 | 10 | 4.5 | 24 |
| 11 | 4.1 | 2.8 | 2.9 | 3 | 2.7 | 3 | 3.8 | **S** | 4.5 | 2.9 | 2.9 | 3 | 3.4 | 3.7 | 4.8 | 7.2 | 7.1 | 6.8 | 10.5 | 9.4 | 12.4 | 6.8 | 9.3 | 12.2 | 12.4 | 5.6 | 24 |
| 12 | 11.6 | 11.4 | 9.7 | 9.5 | 8.8 | 10.2 | **S** | 12.5 | 15.4 | 14 | 8.5 | 3.4 | 3.9 | 4.1 | 5.5 | 10.4 | 15.3 | 15.7 | 17.8 | 20.3 | 17.2 | 15 | 14.3 | 18.3 | 20.3 | 11.9 | 24 |
| 13 | 15.7 | 14.4 | 16.1 | 14 | 10.3 | **S** | 11.1 | 15.1 | 18.6 | 14.8 | 9 | 5.9 | 2.4 | 2.4 | 3.5 | 2.4 | 4.3 | 3.9 | 2.1 | 1.8 | 2.3 | 2.3 | 1.7 | 1.2 | 18.6 | 7.6 | 24 |
| 14 | 3.1 | 3.9 | 8.5 | 6.5 | **S** | 7.3 | 4.7 | 4.1 | 4.1 | **C** | **C** | **C** | **C** | **C** | 5.2 | 6.2 | 5.2 | 4.4 | 4.1 | 5.7 | 5.4 | 5.7 | 5.6 | 7 | 8.5 | 5.4 | 24 |
| 15 | 5.3 | 6.2 | 5.1 | **S** | 1.8 | 2 | 2.5 | 2.6 | 3.2 | 1.9 | 1.5 | 1.1 | 1.1 | 1.6 | 2.4 | 4 | 11.1 | 8.2 | 1.5 | 1.5 | 1.6 | 1.4 | 0.8 | 0.7 | 11.1 | 3.0 | 24 |
| 16 | 0.8 | 0.8 | **S** | 0.7 | 0.9 | 1.2 | 1 | 1 | 1 | 1.5 | 1.7 | 1.6 | 1.4 | 1.4 | 1.3 | 1.2 | 2.3 | 3.7 | 1.8 | 2.2 | 1.5 | 2.2 | 1.8 | 1.4 | 3.7 | 1.5 | 24 |
| 17 | 1.4 | **S** | 1.6 | 1.7 | 2.3 | 3.1 | 2.7 | 2.8 | 2.4 | 2.6 | 2.5 | 2 | 1.6 | 1.4 | 0.7 | 0.9 | 5.1 | 12.8 | 15.3 | 12.1 | 7.1 | 7.7 | 6 | 1.5 | 15.3 | 4.2 | 24 |
| 18 | **S** | 2.2 | 3.3 | 5.4 | 6.4 | 2.3 | 2.6 | 3.9 | 4.9 | 5 | 2 | 2.2 | 1.3 | 2.4 | 2.6 | 3.2 | 4.7 | 5.7 | 3.4 | 2.8 | 2.6 | 2.2 | 2 | **S** | 6.4 | 3.3 | 24 |
| 19 | 2.2 | 2.1 | 1.8 | 2.4 | 1.9 | 1.8 | 1.9 | 1.2 | 1.6 | 0.9 | 0.9 | 0.9 | 0.6 | 0.6 | **S** | **S** | **S** | **S** | 3.6 | 3.7 | 5.7 | 6 | **S** | 7.8 | 7.8 | 2.5 | 24 |
| 20 | 7.6 | 6.2 | 5.4 | 4.6 | 6.5 | 9 | 9.4 | **S** | 17.6 | 23.9 | 20.4 | 19.1 | 12.6 | 9 | 6.1 | 7.4 | 12 | 15.4 | 13.8 | 9 | 5.7 | **S** | 6.8 | 6.3 | 23.9 | 10.6 | 24 |
| 21 | 5.8 | 5.6 | 5.2 | 4.6 | 4.5 | 5.2 | 7.6 | 12.4 | 14.2 | 19.2 | 20.8 | 18.8 | 16.5 | 16 | 20.9 | 22.8 | 23.3 | 22.8 | 22.7 | 23.1 | **S** | 23.5 | 14.7 | 3.7 | 23.5 | 14.5 | 24 |
| 22 | 3.2 | 2.8 | 2.6 | 2.6 | 2.6 | 2.7 | 3.3 | 5 | 6.2 | 5.5 | 6.6 | 6.5 | 5.2 | 5 | 5.4 | 6.2 | 9.1 | 6.9 | 7.3 | **S** | 4.3 | 4.3 | 3.6 | 3.8 | 9.1 | 4.8 | 24 |
| 23 | 3.8 | 4 | 4.1 | 4 | 4.7 | 5 | 3.8 | 3.8 | 4.3 | 4.8 | 5.2 | 5.3 | 5.9 | 6.4 | 7 | 8.1 | 7.3 | 7.6 | **S** | 8.4 | 8.3 | 8.9 | 9.3 | 9.5 | 9.5 | 6.1 | 24 |
| 24 | 9.9 | 10.5 | 9.2 | 9.1 | 7.7 | 5.2 | 4 | 3.6 | 4.2 | 5 | 3.8 | 2.3 | 1 | 1 | 1 | 1.6 | 2.4 | **S** | 1.9 | 1.5 | 1.1 | 1.7 | 1.4 | 1.8 | 10.5 | 4.0 | 24 |
| 25 | 1.3 | 1.7 | 1.7 | 2.3 | 2.4 | 1.6 | 1.5 | 1.6 | 4.9 | 3.8 | 4.8 | 6.7 | 6.3 | 6 | 6.3 | 7.2 | **S** | 11.6 | 13 | 13.1 | 13.5 | 13.3 | 12.7 | 13.3 | 13.5 | 6.5 | 24 |
| 26 | 12.6 | 9.6 | 8.9 | 11 | 16.1 | 19.2 | 16 | 6 | 5.6 | 5.3 | 5.3 | 5.3 | 5.9 | 4.8 | 5.3 | **S** | 18.4 | 17.3 | 18.9 | 17.5 | 13.9 | 18.7 | 15.4 | 12.9 | 19.2 | 11.7 | 24 |
| 27 | 12.4 | 12 | 10.8 | 11.4 | 15.1 | 19.5 | 16.8 | 13.6 | 9 | 6 | 6.8 | 7 | 7 | 6.8 | **S** | 7.6 | 10 | 11.9 | 10.4 | 8 | 6 | 5.6 | 5.4 | 5.3 | 19.5 | 9.8 | 24 |
| 28 | 5.4 | 5.8 | 6.2 | 6.1 | 6.7 | 6.7 | 6.6 | 6.5 | 7 | 7.1 | 6.7 | 7.4 | 6.7 | **S** | 7.5 | 7.2 | 7 | 7.1 | 7.5 | 7.3 | 7.2 | 7.2 | 7.3 | 7.2 | 7.5 | 6.8 | 24 |
| 29 | 7.4 | 8 | 8.4 | 9.2 | 10.3 | 9.8 | 11.8 | 19.1 | 24.5 | 23.2 | 25.3 | 27.8 | **S** | 25.1 | 22.4 | 21.9 | 23.6 | 23.9 | 23.9 | 21.8 | 20.4 | 18.5 | 16 | 21 | 27.8 | 18.4 | 24 |
| 30 | 27.2 | 17.1 | 16.6 | 15.9 | 19 | 19.7 | 20.7 | 30.9 | **38.5** | 32 | 36.4 | **S** | 15.2 | 12.9 | 12.7 | 13.8 | 15.1 | 15.8 | 12.7 | 11.7 | 12.2 | 10.8 | 9.7 | 10.4 | **38.5** | **18.6** | 24 |
| HOURLY MAX | 27.2 | 17.1 | 16.6 | 15.9 | 19.0 | 19.7 | 20.7 | 30.9 | 38.5 | 32.0 | 36.4 | 27.8 | 16.5 | 25.1 | 22.4 | 22.8 | 23.6 | 23.9 | 23.9 | 23.1 | 20.4 | 23.5 | 16.0 | 21.0 | | | |
| HOURLY AVG | 6.5 | 6.2 | 5.8 | 5.8 | 5.9 | 6.0 | 6.4 | 7.5 | 8.5 | 8.2 | 7.8 | 6.0 | 4.7 | 5.2 | 5.7 | 6.7 | 8.8 | 9.6 | 8.7 | 8.2 | 6.6 | 7.0 | 6.6 | 6.7 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

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

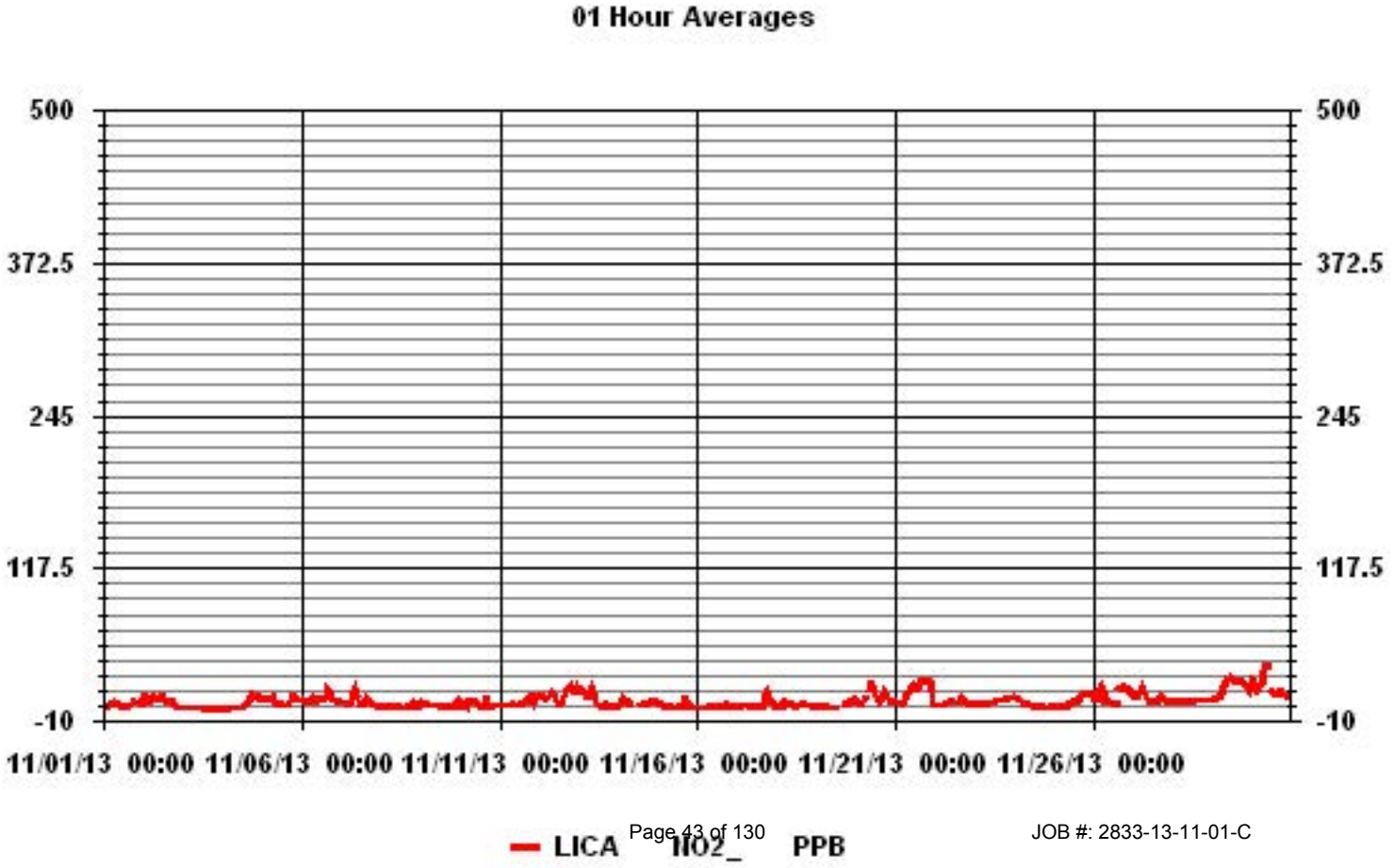
**24 HOUR AVERAGES FOR NOVEMBER 2013**




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 676 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 38.5 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | 18.6 | PPB | | | ON DAY(S) | 30 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 36 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 5 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 5.95 | | MONTHLY AVERAGE: | 6.87 | PPB |






JOB #: 2833-13-11-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**NITROGEN DIOXIDE MAX** instantaneous maximum in ppb

MST

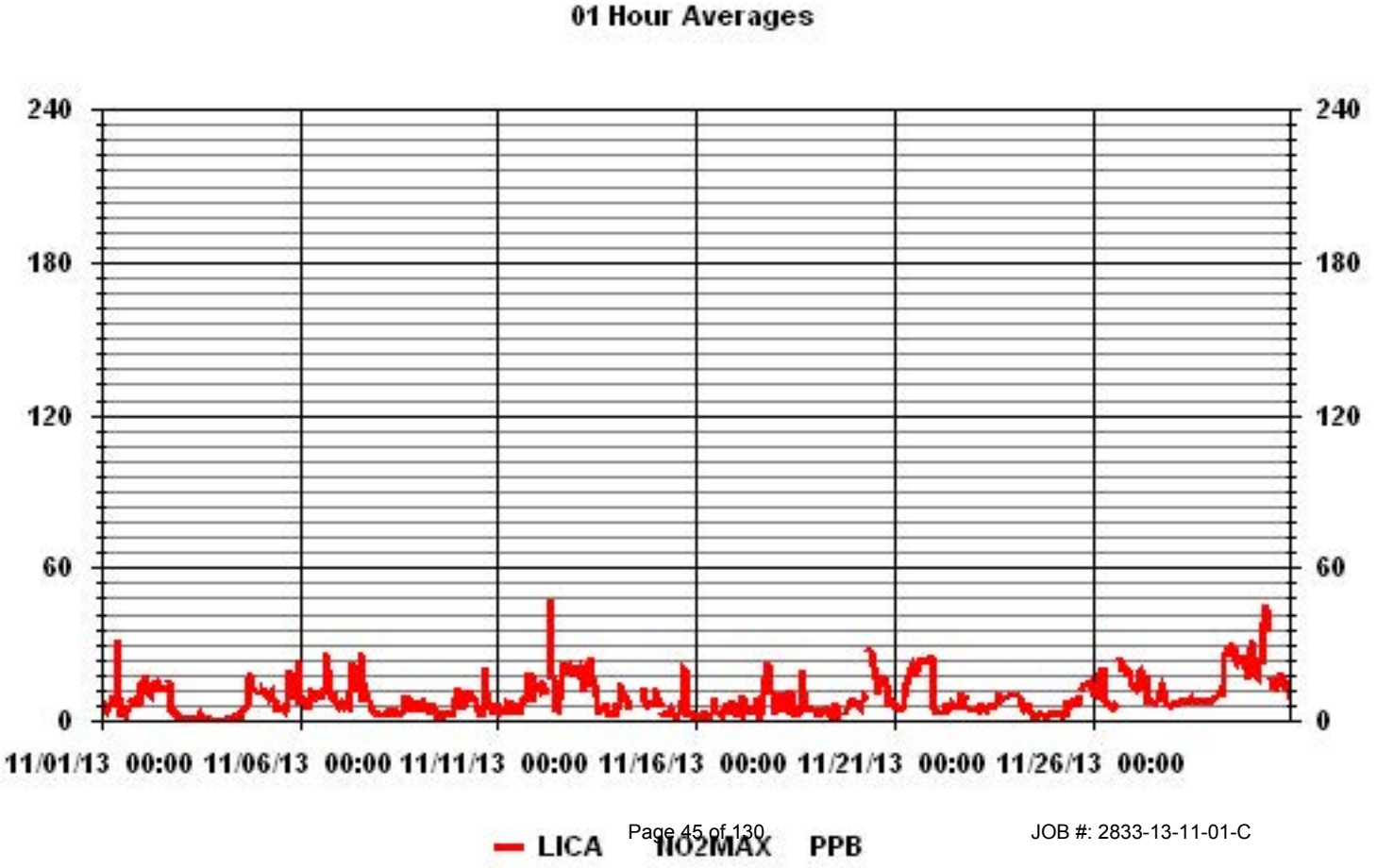
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 8.1 | 8.1 | 5.1 | 4.1 | 6 | 6 | 7.1 | 10.1 | 8 | 5.1 | 31.5 | 10.1 | 2.1 | 2.1 | 3.1 | 2.6 | 5.1 | **S** | 7.7 | 6.7 | 7.3 | 8.8 | 6.7 | 6.8 | 31.5 | 7.3 | 24 |
| 2 | 14.2 | 15.2 | 9.8 | 17.8 | 11.8 | 10.8 | 14.7 | 13.2 | 11.3 | 15.2 | 12.3 | 14.7 | 13.7 | 12.7 | 12.3 | 12.7 | **S** | 14.7 | 4.8 | 4.3 | 3.8 | 2.3 | 2.8 | 1.8 | 17.8 | 10.7 | 24 |
| 3 | 1.8 | 1.3 | 1.2 | 1.8 | 1.3 | 0.8 | 1.2 | 1.2 | 1.2 | 0.8 | 0.8 | 1.3 | 2.7 | 0.8 | 0.8 | **S** | 0.8 | 0.7 | 0.6 | 0.1 | 0.1 | 0.1 | 0.3 | 0.2 | 2.7 | 1.0 | 24 |
| 4 | 0.1 | 0.7 | 0.1 | 0.1 | 0.7 | 0.7 | 0.7 | 1.1 | 1.1 | 1.6 | 1.6 | 2.6 | 2.6 | 1.7 | **S** | 5.1 | 6.1 | 16.6 | 18.1 | 15.1 | 13.5 | 12.6 | 11.1 | 11.1 | 18.1 | 5.4 | 24 |
| 5 | 11.1 | 12.6 | 11.1 | 11.6 | 11.6 | 9.6 | 11.1 | 12.1 | 9.6 | 8.6 | 4.6 | 4.6 | 5.1 | **S** | 5.8 | 4.3 | 6.3 | 13.2 | 19.3 | 18.2 | 12.8 | 9.8 | 9.3 | 23.3 | 23.3 | 10.7 | 24 |
| 6 | 8.3 | 8.8 | 7.2 | 6.3 | 5.8 | 5.8 | 8.8 | 11.3 | 10.8 | 8.8 | 9.2 | 10.8 | **S** | 9.6 | 10.6 | 13 | 27 | 21 | 16.1 | 9.6 | 9.1 | 10.1 | 8.6 | 7.5 | 27 | 10.6 | 24 |
| 7 | 6 | 7.1 | 6 | 5.1 | 5.6 | 5.1 | 11.6 | 18.6 | 23 | 19.5 | 12.6 | **S** | 9.6 | 26.5 | 7.5 | 15 | 9.6 | 10.1 | 8.5 | 6.6 | 4.6 | 3.1 | 3.1 | 2.6 | 26.5 | 9.9 | 24 |
| 8 | 2.6 | 2.1 | 2.1 | 2.5 | 2.6 | 4.1 | 3.6 | 3.6 | 3.6 | 2.6 | **S** | 3.8 | 3.3 | 2.8 | 3.8 | 9.8 | 7.2 | 2.8 | 8.7 | 8.2 | 6.3 | 3.3 | 5.8 | 6.7 | 9.8 | 4.4 | 24 |
| 9 | 5.8 | 7.2 | 5.8 | 6.7 | 4.8 | 4.3 | 3.2 | 3.3 | 5.7 | **S** | 4.3 | 1.7 | 1.7 | 3.2 | 3.3 | 2.3 | 3 | 2.8 | 2.8 | 2.7 | 2.7 | 4.3 | 8.8 | 11.8 | 11.8 | 4.4 | 24 |
| 10 | 12.8 | 5.8 | 4.3 | 8.2 | 4.8 | 8.2 | 11.2 | 11.3 | **S** | 8.3 | 8.3 | 6.4 | 4.4 | 2.8 | 2.8 | 4.4 | 20.3 | 11.8 | 6.8 | 6.8 | 3.4 | 3.4 | 4.9 | 3.4 | 20.3 | 7.2 | 24 |
| 11 | 6.4 | 3.4 | 3.9 | 4.4 | 3.9 | 6.4 | 2.6 | **S** | 6.6 | 3.3 | 3.2 | 3.7 | 5.2 | 4.7 | 6.6 | 8.1 | 8.6 | 7.1 | 19.1 | 17.6 | 18.7 | 7.6 | 11.2 | 15.1 | 19.1 | 7.7 | 24 |
| 12 | 13.6 | 14.1 | 11.2 | 11.7 | 13.1 | 11.6 | **S** | 17 | **47.5** | 18.6 | 16.6 | 5.1 | 4.6 | 8.1 | 13.5 | 18.1 | 22.1 | 18.6 | 21.5 | 22.1 | 20 | 19 | 18.6 | 20 | **47.5** | 16.8 | 24 |
| 13 | 19 | 18.1 | 21.1 | 20 | 12.1 | **S** | 14 | 22.6 | 25.1 | 17.1 | 15 | 10.1 | 3.6 | 3.6 | 4.1 | 5.1 | 5.6 | 6 | 3.1 | 2.6 | 3.1 | 3.1 | 3.1 | 1.6 | 25.1 | 10.4 | 24 |
| 14 | 7 | 4.6 | 15 | 10.6 | **S** | 9.7 | 8.7 | 5.2 | 5.2 | **C** | **C** | **C** | **C** | **C** | **C** | 8.3 | 12.8 | 6.3 | 5.8 | 6.7 | 6.7 | 6.8 | 6.7 | 12.7 | 15 | 8.2 | 24 |
| 15 | 7.3 | 7.8 | 6.8 | **S** | 2.6 | 3.1 | 3.6 | 3.1 | 4.6 | 3.1 | 2.6 | 1.6 | 1.6 | 2.6 | 3.1 | 7.5 | 21 | 20.5 | 1.6 | 2.6 | 2.6 | 4.1 | 1 | 0.7 | 21 | 5.0 | 24 |
| 16 | 1.5 | 1.6 | **S** | 1.2 | 2.8 | 3.2 | 1.8 | 2.3 | 1.8 | 2.8 | 7.7 | 7.7 | 3.8 | 3.3 | 2.8 | 2.3 | 4.3 | 5.8 | 5.8 | 3.8 | 2.3 | 4.8 | 7.3 | 3.8 | 7.7 | 3.7 | 24 |
| 17 | 3.2 | **S** | 3.1 | 2.7 | 9.7 | 6.6 | 3.7 | 3.7 | 3.7 | 4.7 | 4.6 | 3.1 | 9.2 | 3.2 | 1.1 | 2.6 | 10.2 | 16.6 | 21.6 | 21.6 | 11.7 | 11.7 | 11.2 | 3.2 | 21.6 | 7.5 | 24 |
| 18 | **S** | 5.9 | 5.4 | 7.3 | 10.8 | 5.4 | 4.4 | 5.4 | 10.4 | 11.8 | 2.9 | 3.9 | 1.9 | 5.4 | 3.9 | 4.9 | 19.3 | 11.9 | 5.4 | 4.9 | 5.4 | 3.9 | 3.9 | **S** | 19.3 | 6.6 | 24 |
| 19 | 4.1 | 2.6 | 2.6 | 4.1 | 4.6 | 4.1 | 4.6 | 3 | 3.5 | 1 | 1.5 | 1.5 | 6.5 | 0.6 | **S** | **S** | **S** | **S** | 3.6 | 4.6 | 6.5 | 6.5 | **S** | 8.1 | 8.1 | 3.9 | 24 |
| 20 | 8.1 | 6.8 | 6.2 | 5.1 | 7.6 | 10.2 | 9.7 | **S** | **S** | 27.8 | 27.3 | 21.8 | 17.3 | 10.5 | 12.4 | 13.3 | 15.8 | 17.8 | 14.3 | 13.8 | 6.4 | **S** | 7.7 | 6.7 | 27.8 | 12.7 | 24 |
| 21 | 6.3 | 5.8 | 5.8 | 5.2 | 4.8 | 5.8 | 8.7 | 14.7 | 17.2 | 20.2 | 22.2 | 20.7 | 17.2 | 19.2 | 22.7 | 23.8 | 24.3 | 23.3 | 23.3 | 23.7 | **S** | 24.1 | 24.1 | 5 | 24.3 | 16.0 | 24 |
| 22 | 3.6 | 3.6 | 3.6 | 3.1 | 3 | 3.6 | 3.6 | 6.1 | 6.5 | 5.7 | 8 | 7.5 | 6.1 | 6.5 | 6.1 | 8 | 11 | 8 | 9.1 | **S** | 5.1 | 5.1 | 4.1 | 4.1 | 11 | 5.7 | 24 |
| 23 | 4.1 | 4.6 | 4.6 | 4.1 | 6.1 | 6.1 | 4.6 | 4.1 | 5 | 5.6 | 5.6 | 5.6 | 6.1 | 7 | 7 | 10.6 | 8 | 8.1 | **S** | 9.1 | 9 | 9.6 | 10.1 | 10.1 | 10.6 | 6.7 | 24 |
| 24 | 10.1 | 10.6 | 10.1 | 9.6 | 9.1 | 6.1 | 4.6 | 5.1 | 5.6 | 6 | 4.1 | 3.6 | 1.5 | 1 | 1.5 | 2.1 | 3 | **S** | 2.3 | 1.7 | 1.2 | 2.3 | 2.3 | 2.3 | 10.6 | 4.6 | 24 |
| 25 | 2.3 | 2.3 | 2.3 | 2.8 | 2.8 | 1.8 | 2.2 | 2.3 | 8.2 | 4.8 | 6.3 | 7.2 | 7.2 | 6.3 | 6.7 | 8.7 | **S** | 12.9 | 13.8 | 13.8 | 14.3 | 14.3 | 13.3 | 14.8 | 14.8 | 7.5 | 24 |
| 26 | 13.8 | 10.9 | 10.4 | 14.3 | 18.4 | 19.8 | 20.1 | 8.3 | 6.4 | 5.9 | 5.9 | 5.4 | 6.8 | 5.9 | 5.4 | **S** | 23.7 | 18.7 | 21.1 | 20.1 | 17.1 | 20.1 | 19.6 | 14.1 | 23.7 | 13.6 | 24 |
| 27 | 13.1 | 13.1 | 11.7 | 12.2 | 19.1 | 20.1 | 18.7 | 16.2 | 16.7 | 7.6 | 7.6 | 8.1 | 7.6 | 7.1 | **S** | 8.8 | 11.4 | 13.8 | 12.4 | 10.9 | 6.8 | 6.4 | 6 | 5.9 | 20.1 | 11.4 | 24 |
| 28 | 6.4 | 6.4 | 6.8 | 6.8 | 7.3 | 7.3 | 7.4 | 7.3 | 7.8 | 8 | 7.8 | 8.9 | 7.8 | **S** | 8.2 | 7.6 | 7.6 | 7.6 | 8.2 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 8.9 | 7.5 | 24 |
| 29 | 8.1 | 8.7 | 9.2 | 9.7 | 10.7 | 10.7 | 14.1 | 25.6 | 27.1 | 25.6 | 28.2 | 29.6 | **S** | 28.4 | 24 | 23 | 24.5 | 24.5 | 25 | 23.5 | 21.4 | 19.9 | 16.5 | 29 | 29.6 | 20.3 | 24 |
| 30 | 31.5 | 18.5 | 18.5 | 17.5 | 23 | 23 | 22.9 | 38.9 | 45.4 | 34.4 | 41.9 | **S** | 16.4 | 13.9 | 13.4 | 15.4 | 16 | 18.5 | 13.9 | 15.4 | 13.4 | 12 | 10.5 | 11 | 45.4 | 21.1 | 24 |
| HOURLY MAX | 31.5 | 18.5 | 21.1 | 20.0 | 23.0 | 23.0 | 22.9 | 38.9 | 47.5 | 34.4 | 41.9 | 29.6 | 17.3 | 28.4 | 24.0 | 23.8 | 27.0 | 24.5 | 25.0 | 23.7 | 21.4 | 24.1 | 24.1 | 29.0 | | | |
| HOURLY AVG | 8.3 | 7.5 | 7.3 | 7.5 | 7.8 | 7.6 | 8.0 | 9.9 | 11.7 | 10.2 | 10.9 | 7.8 | 6.5 | 7.4 | 7.4 | 9.2 | 12.4 | 12.6 | 11.2 | 10.5 | 8.4 | 8.5 | 8.5 | 8.7 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 677 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 47.5 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 12 |
| IZS CALIBRATION TIME: | 37 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | | | | |
| STANDARD DEVIATION: | 7.07 | | | | | |






JOB #: 2833-13-11-01-C

LICA
NO2_ / WD Joint Frequency Distribution (Percent)

November 2013

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 1.96 | 1.79 | 5.39 | 6.37 | 5.55 | 3.75 | 11.76 | 5.06 | 3.59 | 3.10 | 9.80 | 18.46 | 7.35 | 3.59 | 6.04 | 6.37 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 1.96 | 1.79 | 5.39 | 6.37 | 5.55 | 3.75 | 11.76 | 5.06 | 3.59 | 3.10 | 9.80 | 18.46 | 7.35 | 3.59 | 6.04 | 6.37 | |

Calm : .00 %

Total # Operational Hours : 612

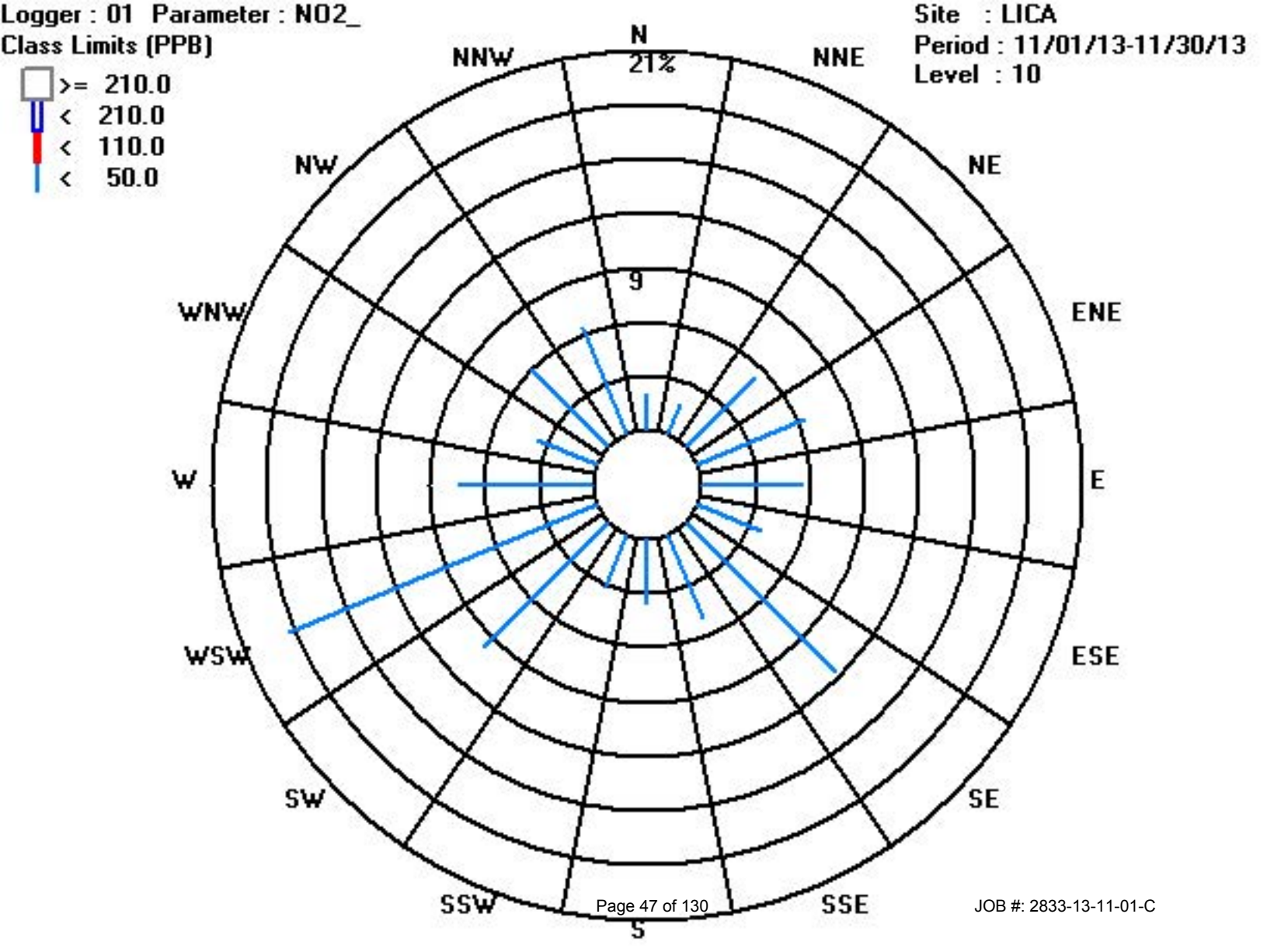
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 60 | 113 | 45 | 22 | 37 | 39 | 612 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 60 | 113 | 45 | 22 | 37 | 39 | |

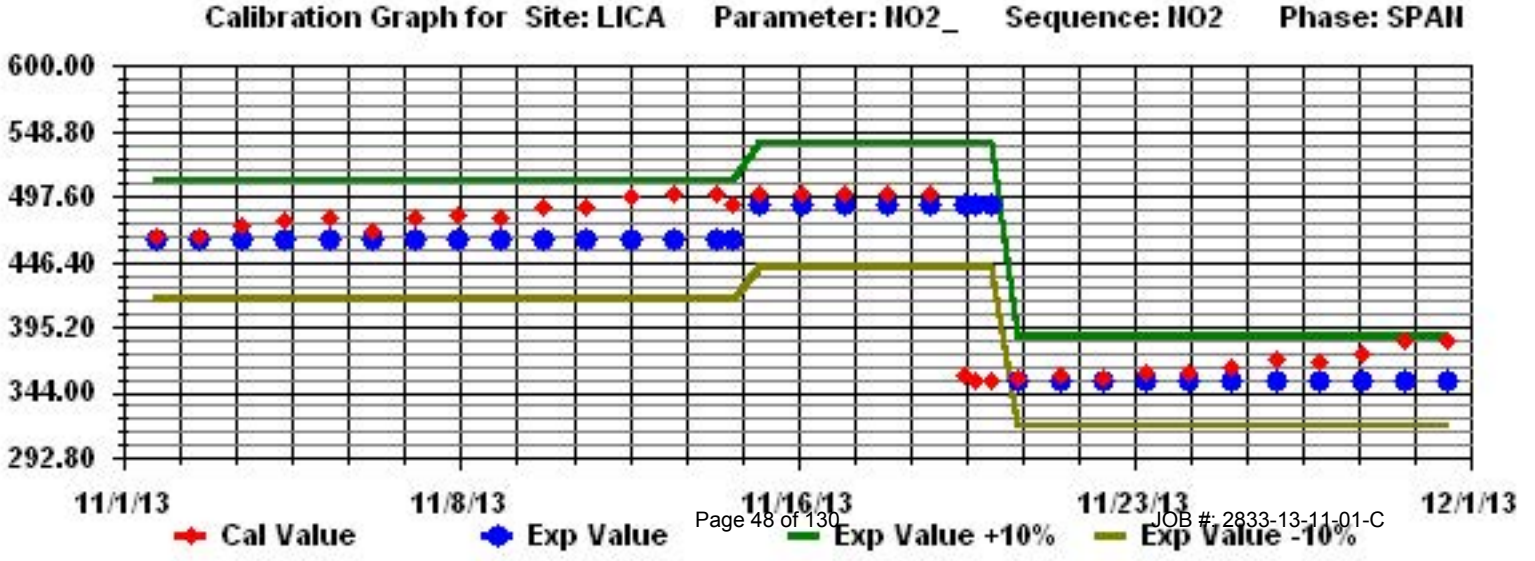
Calm : .00 %

Total # Operational Hours : 612






JOB #: 2833-13-11-01-C


Calibration Graph for Site: LICA Parameter: NO2_ Sequence: NO2 Phase: SPAN
600.00
548.80
497.60
446.40
395.20
344.00
292.80
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

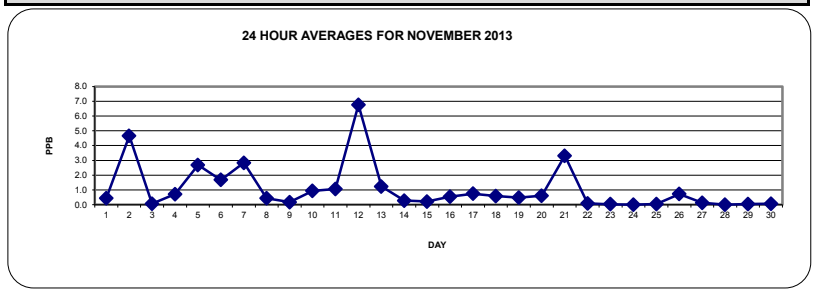
**NITRIC OXIDE** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.5 | 0.9 | 1.6 | 1.4 | 2 | 1.1 | 0.4 | 0.4 | 0.3 | 0 | 0 | **S** | 0 | 0 | 0.2 | 0 | 0 | 0.3 | 2 | 0.4 | 24 |
| 2 | 0.9 | 2.7 | 0.7 | 6.9 | 4.4 | 6.7 | 14.7 | 18.6 | 13.5 | 7.2 | 6.8 | 8.4 | 6.5 | 3.4 | 1.7 | 1.9 | **S** | 0.8 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.1 | 18.6 | 4.7 | 24 |
| 3 | 0.1 | 0.2 | 0.1 | 0.2 | 0 | 0.1 | 0.1 | 0.2 | 0 | 0.1 | 0.1 | 0.2 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.1 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.2 | 0.7 | 0.6 | 0.5 | **S** | 0.9 | 0.3 | 0.7 | 0.8 | 1.4 | 1.3 | 2.9 | 3.4 | 2.4 | 3.4 | 0.7 | 24 |
| 5 | 0.5 | 0.8 | 0.9 | 1.8 | 2.1 | 2 | 4.3 | 9.1 | 13.5 | 8.1 | 2.8 | 3.6 | 3.8 | **S** | 2 | 0.6 | 0 | 0.4 | 2.5 | 1.1 | 0.7 | 0.4 | 0.1 | 0.5 | 13.5 | 2.7 | 24 |
| 6 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 1.5 | 3.7 | 5.9 | 6.4 | **S** | 5.1 | 4 | 2.2 | 4.6 | 3.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 | 6.4 | 1.7 | 24 |
| 7 | 0.2 | 0.2 | 0 | 0.1 | 0.3 | 0.3 | 0.4 | 7.5 | 23.8 | 12.9 | 8.7 | **S** | 2.4 | 2.1 | 0.9 | 2.3 | 0.9 | 0.8 | 0.5 | 0.5 | 0.2 | 0.1 | 0.1 | 0.1 | 23.8 | 2.8 | 24 |
| 8 | 0.2 | 0.1 | 0.1 | 0.2 | 0.3 | 0.5 | 0.6 | 0.3 | 0.5 | 0.5 | **S** | 1.1 | 0.8 | 0.6 | 1.3 | 1 | 0.4 | 0.3 | 0.6 | 0.5 | 0 | 0 | 0.2 | 0.1 | 1.3 | 0.4 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0.4 | **S** | 0.6 | 0.4 | 0.4 | 0.4 | 0.6 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.3 | 0.6 | 0.2 | 24 |
| 10 | 0.2 | 0.2 | 0.1 | 0.3 | 0.1 | 0 | 0.4 | 0.4 | **S** | 4.5 | 5.4 | 3.6 | 1.8 | 1.2 | 0.8 | 0.4 | 0.7 | 0.4 | 0.2 | 0.3 | 0 | 0.1 | 0.3 | 0 | 5.4 | 0.9 | 24 |
| 11 | 0.2 | 0 | 0 | 0 | 0 | 0.5 | 0 | **S** | 1.1 | 1.3 | 1.9 | 2.6 | 2.5 | 2.2 | 2.3 | 1.5 | 0.5 | 0 | 0.8 | 0.8 | 3.2 | 0.3 | 0.3 | 2.5 | 3.2 | 1.1 | 24 |
| 12 | 3.3 | 6.2 | 3.9 | 2.8 | 2.9 | 7.1 | **S** | 26.2 | **37.5** | 30.8 | 13 | 2.4 | 2.4 | 2.4 | 2.2 | 2.3 | 2.1 | 0.9 | 0.9 | 1.3 | 1.5 | 0.9 | 0.8 | 1.5 | **37.5** | **6.8** | 24 |
| 13 | 0.6 | 0.7 | 0.4 | 0.6 | 0.1 | **S** | 0.5 | 1.7 | 6.9 | 8.1 | 4.2 | 2.1 | 0.6 | 0.6 | 0.8 | 0.1 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 8.1 | 1.2 | 24 |
| 14 | 0.2 | 0 | 0.3 | 0 | **S** | 0 | 0.3 | 0.1 | 0.3 | **C** | **C** | **C** | **C** | **C** | 1.2 | 0.9 | 0.5 | 0 | 0 | 0.3 | 0.4 | 0.3 | 0.1 | 0.1 | 1.2 | 0.3 | 24 |
| 15 | 0.2 | 0.3 | 0.3 | **S** | 0.1 | 0.2 | 0.3 | 0.1 | 0.4 | 0.2 | 0.3 | 0.1 | 0 | 0.1 | 0.5 | 0.5 | 1 | 0 | 0 | 0.1 | 0.2 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 16 | 0.2 | 0.1 | **S** | 0 | 0.3 | 0.5 | 0.4 | 0.4 | 0.6 | 0.7 | 0.9 | 1.1 | 0.9 | 0.7 | 0.6 | 0.5 | 0.7 | 0.6 | 0.6 | 0.6 | 0.4 | 0.7 | 0.7 | 0.3 | 1.1 | 0.5 | 24 |
| 17 | 0.6 | **S** | 0.4 | 0.3 | 0.8 | 0.6 | 0.6 | 0.4 | 0.3 | 0.6 | 1.2 | 1 | 1.1 | 0.6 | 0.2 | 0.3 | 0.6 | 0.9 | 2.2 | 3.1 | 0.5 | 0.5 | 0.3 | 0 | 3.1 | 0.7 | 24 |
| 18 | **S** | 0 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 | 2.3 | 1 | 1.3 | 0.7 | 1.1 | 0.7 | 0.5 | 0.6 | 0.2 | 0.8 | 0.8 | 0.6 | 0.4 | 0.3 | **S** | 2.3 | 0.6 | 24 |
| 19 | 0.5 | 0.4 | 0.6 | 0.6 | 1 | 1 | 1 | 0.8 | 0.7 | 0.2 | 0.3 | 0.3 | 1.5 | 0.2 | **S** | **S** | **S** | **S** | 0 | 0 | 0 | 0 | **S** | 0 | 1.5 | 0.5 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1.7 | 4.3 | 3.2 | 2.5 | 0.6 | 0.3 | 0.2 | 0.1 | 0 | 0.5 | 0 | 0 | 0 | **S** | 0 | 0 | 4.3 | 0.6 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 6.2 | 4.3 | 2.8 | 2.6 | 4.6 | 6.5 | 7.3 | 9.1 | 8.8 | 9.4 | **S** | 7.7 | 1.9 | 0 | 9.4 | 3.3 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.4 | 0.3 | 0.4 | 0.1 | 0 | 0.3 | 0 | 0.1 | **S** | 0 | 0 | 0 | 0 | 0.4 | 0.1 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 0 | 0 | 0 | **S** | 0 | 0 | 0.1 | 0 | 0 | 0 | 0.6 | 0.6 | 0.0 | 24 |
| 26 | 0.1 | 0 | 0 | 0.4 | 5.1 | 8 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0.4 | 0.1 | 0.1 | 0 | 0.1 | 0.6 | 0.3 | 0.1 | 8 | 0.7 | 24 |
| 27 | 0.3 | 0.2 | 0 | 0 | 0.6 | 0.8 | 0.5 | 0.1 | 0.4 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0.1 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.2 | 0.4 | **S** | 0.3 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.5 | 0.4 | 0.6 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0.1 | 24 |
| HOURLY MAX | 3.3 | 6.2 | 3.9 | 6.9 | 5.1 | 8.0 | 14.7 | 26.2 | 37.5 | 30.8 | 13.0 | 8.4 | 6.5 | 5.1 | 4.6 | 6.5 | 7.3 | 9.1 | 8.8 | 9.4 | 3.2 | 7.7 | 3.4 | 2.5 | | | |
| HOURLY AVG | 0.3 | 0.4 | 0.3 | 0.5 | 0.6 | 1.0 | 0.9 | 2.4 | 3.7 | 3.3 | 2.4 | 1.6 | 1.1 | 0.9 | 0.9 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.3 | 0.5 | 0.3 | 0.3 | | | |

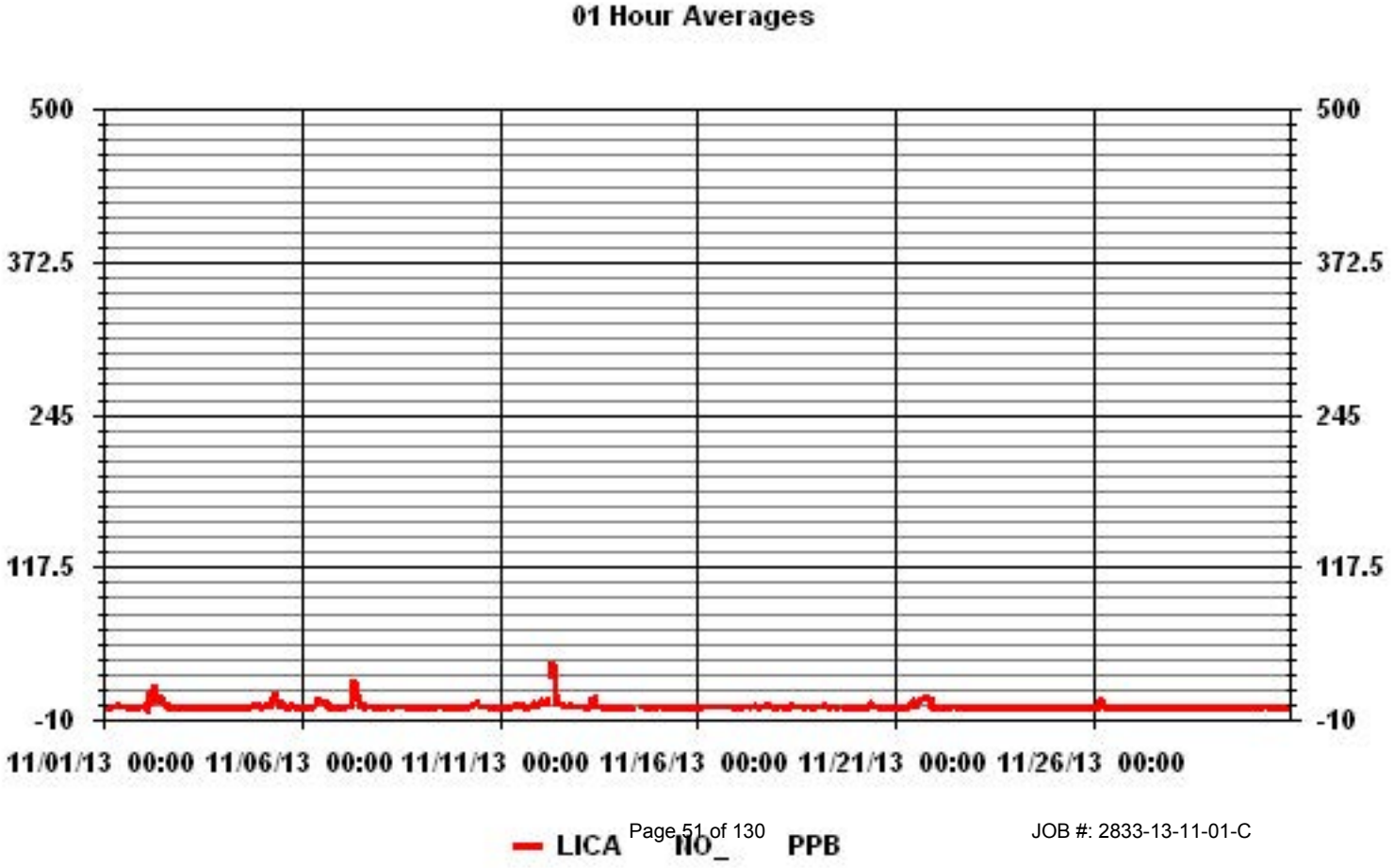
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 410 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 37.5 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 12 | |
| MAXIMUM 24-HR AVERAGE: | 6.8 | PPB | | | ON DAY(S) | 12 | |
| IZS CALIBRATION TIME: | 36 | HRS | OPERATIONAL TIME: | | 720 | HRS | |
| MONTHLY CALIBRATION TIME: | 5 | HRS | AMD OPERATION UPTIME: | | 100.0 | % | |
| STANDARD DEVIATION: | 3.02 | | MONTHLY AVERAGE: | | 1.06 | PPB | |






JOB #: 2833-13-11-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**NITRIC OXIDE MAX** instantaneous maximum in ppb

MST

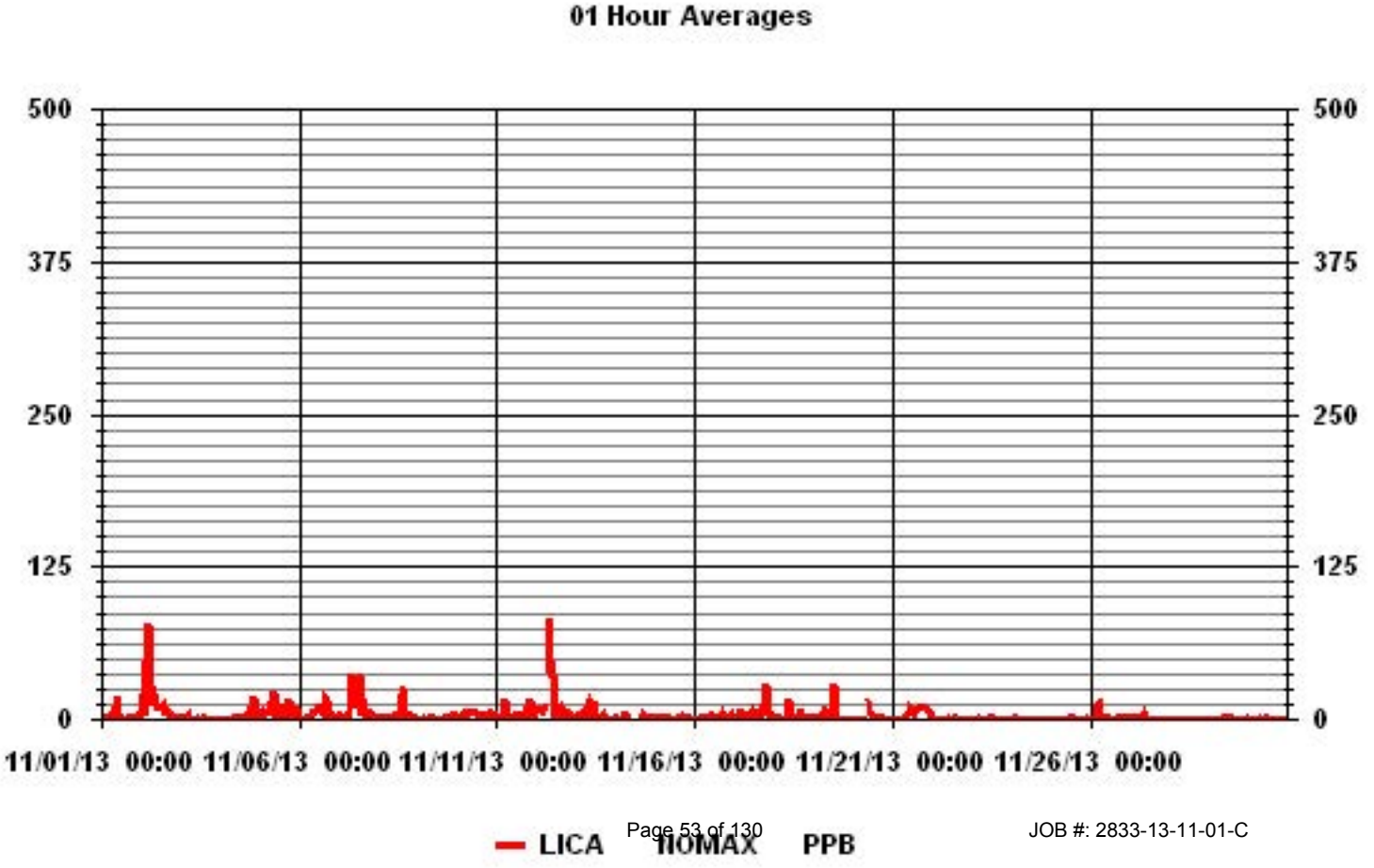
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.5 | 1.5 | 1 | 1.5 | 2 | 1.5 | 3.5 | 2.5 | 10 | 3.5 | 19 | 3.5 | 1 | 1 | 1 | 0.5 | 0.5 | **S** | 0.5 | 1 | 2 | 0.5 | 0.5 | 3.5 | 19 | 2.7 | 24 |
| 2 | 4 | 21.5 | 2.5 | 47.5 | 10 | 77.5 | 60 | 28 | 21.5 | 13.5 | 10.5 | 11 | 9 | 9.5 | 11.5 | 6.5 | **S** | 6 | 2.5 | 2 | 1.5 | 1.5 | 2.5 | 1 | 77.5 | 15.7 | 24 |
| 3 | 1 | 1.5 | 1 | 1.5 | 1 | 4 | 1 | 1 | 0.5 | 1 | 0.5 | 2 | 1 | 0.5 | 0.5 | **S** | 1 | 0.2 | 0.1 | 0 | 0 | 0.1 | 0 | 0.5 | 4 | 0.9 | 24 |
| 4 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 0.5 | 2.5 | 2.5 | 0.5 | **S** | 1.5 | 1 | 5 | 7.5 | 4.5 | 3.5 | 19 | 5 | 5.5 | 19 | 2.6 | 24 |
| 5 | 3 | 5.5 | 1 | 3.5 | 5 | 5 | 8.5 | 14 | 19.5 | 19.5 | 3.5 | 4.7 | 7 | **S** | 10 | 2 | 0.5 | 4.5 | 17 | 5.5 | 6 | 3.5 | 0.5 | 9 | 19.5 | 6.9 | 24 |
| 6 | 1 | 2 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 3 | 6 | 8 | 11 | **S** | 7 | 5.5 | 3.5 | 17.5 | 16 | 1.5 | 1 | 3 | 1.5 | 1.5 | 1 | 17.5 | 4.1 | 24 |
| 7 | 1.5 | 3 | 0.5 | 1.5 | 1.5 | 2 | 5.5 | 25 | 36.5 | 25 | 11 | **S** | 27.5 | 38 | 2 | 15.5 | 2.5 | 3.5 | 3.5 | 8 | 1.5 | 0.5 | 0.5 | 1 | 38 | 9.4 | 24 |
| 8 | 0.6 | 0.5 | 1 | 1.5 | 1.5 | 1.5 | 2 | 1.5 | 2.5 | 1.5 | **S** | 3 | 3 | 1.5 | 20 | 26.5 | 8.5 | 1 | 3.5 | 4.5 | 1.5 | 1 | 2 | 1.5 | 26.5 | 4.0 | 24 |
| 9 | 0 | 0 | 0 | 0.5 | 0.5 | 1.5 | 0.5 | 1.5 | 2 | **S** | 2 | 0.9 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 0 | 0.5 | 0.5 | 0.5 | 0 | 5 | 1 | 5 | 0.9 | 24 |
| 10 | 0.5 | 1.5 | 1 | 4 | 1 | 0 | 6.5 | 6.5 | **S** | 6 | 7 | 5 | 3 | 4 | 2 | 1 | 3 | 3 | 3.5 | 5 | 0.5 | 1 | 3 | 0.5 | 7 | 3.0 | 24 |
| 11 | 2.5 | 0.5 | 1.5 | 0.5 | 0.5 | 16.5 | 8 | **S** | 2 | 2 | 2.5 | 4.5 | 4 | 3.5 | 3 | 2.5 | 4 | 1 | 7.5 | 6 | 15.5 | 1.5 | 2.5 | 7.5 | 16.5 | 4.3 | 24 |
| 12 | 9 | 9.5 | 8.5 | 7.5 | 6.5 | 10 | **S** | 39 | **82** | 49.5 | 36 | 3.5 | 3 | 6 | 9 | 5 | 10 | 4.5 | 3 | 3.5 | 6 | 4.5 | 2.5 | 3 | **82** | 14.0 | 24 |
| 13 | 2 | 4 | 2 | 4 | 0.5 | **S** | 4 | 9.5 | 15.5 | 13 | 13.5 | 4 | 1.5 | 1.5 | 1.5 | 0.5 | 0.5 | 3.5 | 0.5 | 0.5 | 1 | 0.5 | 0 | 0 | 15.5 | 3.6 | 24 |
| 14 | 2 | 0.5 | 2 | 1.5 | **S** | 0 | 5 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | **C** | 2 | 4.5 | 2 | 0.5 | 1 | 1.5 | 1.5 | 0.5 | 2.5 | 5 | 1.7 | 24 |
| 15 | 1.5 | 1 | 2 | **S** | 1 | 1 | 1 | 1 | 2 | 0.5 | 1 | 0.5 | 0.5 | 1 | 1 | 1.5 | 4 | 2 | 0.5 | 1.5 | 1.5 | 1.5 | 0.5 | 0 | 4 | 1.2 | 24 |
| 16 | 1.5 | 1 | **S** | 0.5 | 1.5 | 2 | 1.5 | 2 | 2.5 | 2 | 4 | 4 | 2 | 2 | 2 | 1.5 | 5 | 1.5 | 3 | 2 | 1 | 3.5 | 5 | 2 | 5 | 2.3 | 24 |
| 17 | 2 | **S** | 2.5 | 1.5 | 7.5 | 3 | 4 | 1 | 1.5 | 2.5 | 6 | 2 | 4.5 | 1 | 3.5 | 7 | 3.5 | 6.5 | 10 | 28.5 | 3.5 | 5.5 | 2.5 | 1 | 28.5 | 4.8 | 24 |
| 18 | **S** | 0 | 2 | 2 | 1.5 | 2 | 1 | 2.5 | 3.5 | 16.5 | 2 | 3 | 2.5 | 2.5 | 2.5 | 3 | 8.5 | 1 | 3 | 2 | 2.5 | 1.5 | 1.5 | **S** | 16.5 | 3.0 | 24 |
| 19 | 1 | 2.5 | 3.5 | 2.5 | 3 | 3 | 2.5 | 9 | 4.5 | 0.5 | 1 | 2 | 28.5 | 0.5 | **S** | **S** | **S** | **S** | 0 | 0 | 0 | 0 | **S** | 0 | 28.5 | 3.4 | 24 |
| 20 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0.5 | **S** | **S** | 13.9 | 7.4 | 5.5 | 1.5 | 0.5 | 1.5 | 1.5 | 0.5 | 2 | 0.6 | 0 | 0 | **S** | 0 | 0.1 | 13.9 | 1.7 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5 | 3 | 5 | 9 | 6.5 | 3.5 | 4.5 | 6 | 8.5 | 9.5 | 10 | 10.5 | 10.5 | **S** | 9 | 7.4 | 0 | 10.5 | 4.5 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0.3 | 0 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 1.5 | 0.6 | 0.5 | **S** | 0 | 0.5 | 0 | 0 | 1.5 | 0.3 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 0 | 0 | 0.2 | 0 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.5 | 0.2 | 0 | **S** | 0 | 0.5 | 0.1 | 0 | 0 | 1.5 | 0.3 | 24 |
| 24 | 0.1 | 0.5 | 0.5 | 0.5 | 0 | 0 | 1.2 | 0 | 0 | 0.5 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0.1 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0 | **S** | 0 | 0 | 0.5 | 0 | 0.5 | 0.5 | 1.5 | 1.5 | 0.2 | 24 |
| 26 | 0.5 | 0 | 0 | 1.5 | 12 | 13.5 | 4.5 | 0 | 0 | 0.5 | 0.5 | 0.5 | 0.5 | 0 | 0 | **S** | 2 | 0.5 | 0.5 | 0.5 | 1 | 1 | 1 | 0.5 | 13.5 | 1.8 | 24 |
| 27 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 1.5 | 2 | 1 | 4.5 | 0.5 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0.2 | 0.5 | 0 | 0 | 0 | 0.9 | 4.5 | 0.6 | 24 |
| 28 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.6 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 | 0 | 0.6 | 0.1 | 24 |
| 29 | 0.2 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | **S** | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.6 | 0.2 | 24 |
| 30 | 0.5 | 0 | 0 | 0.3 | 0.5 | 0 | 0.5 | 0.5 | 1 | 0.5 | 1.5 | **S** | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0 | 0.3 | 1.5 | 0.3 | 24 |
| HOURLY MAX | 9.0 | 21.5 | 8.5 | 47.5 | 12.0 | 77.5 | 60.0 | 39.0 | 82.0 | 49.5 | 36.0 | 11.0 | 28.5 | 38.0 | 20.0 | 26.5 | 17.5 | 16.0 | 17.0 | 28.5 | 15.5 | 19.0 | 7.4 | 9.0 | | | |
| HOURLY AVG | 1.3 | 2.0 | 1.2 | 2.9 | 2.0 | 5.1 | 4.3 | 5.3 | 7.8 | 6.6 | 5.3 | 3.0 | 4.0 | 3.3 | 3.3 | 3.4 | 3.3 | 2.8 | 2.8 | 3.1 | 1.9 | 2.1 | 1.5 | 1.5 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 524 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 82.0 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 12 |
| IZS CALIBRATION TIME: | 37 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | | | | |
| STANDARD DEVIATION: | 7.37 | | | | | |






JOB #: 2833-13-11-01-C

LICA
NO_ / WD Joint Frequency Distribution (Percent)

November 2013

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 1.95 | 1.79 | 5.38 | 6.36 | 5.54 | 3.75 | 11.74 | 5.05 | 3.58 | 3.09 | 9.78 | 18.59 | 7.34 | 3.58 | 6.03 | 6.36 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 1.95 | 1.79 | 5.38 | 6.36 | 5.54 | 3.75 | 11.74 | 5.05 | 3.58 | 3.09 | 9.78 | 18.59 | 7.34 | 3.58 | 6.03 | 6.36 | |

Calm : .00 %

Total # Operational Hours : 613

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 60 | 114 | 45 | 22 | 37 | 39 | 613 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 60 | 114 | 45 | 22 | 37 | 39 | |

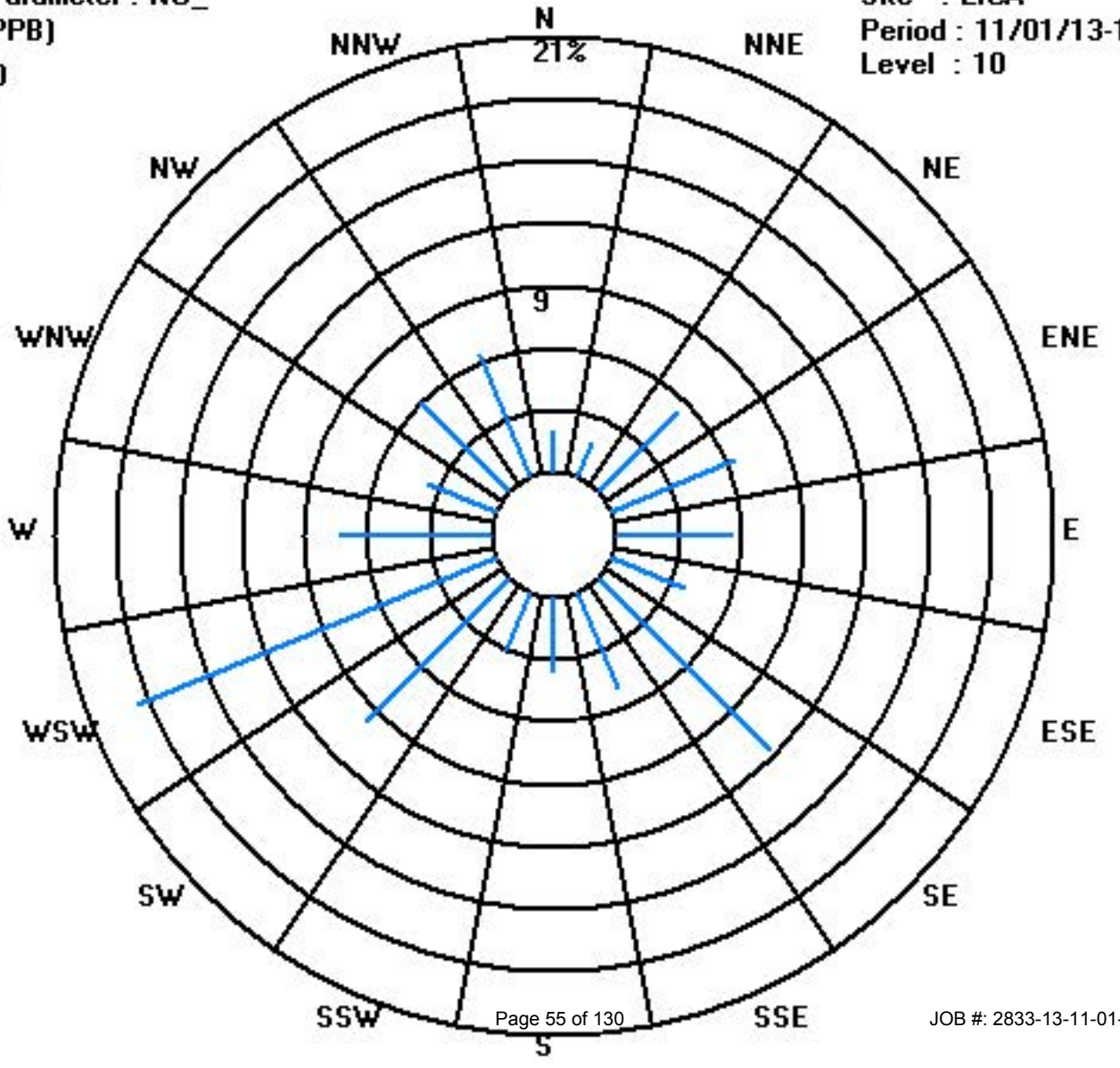
Calm : .00 %

Total # Operational Hours : 613

Logger : 01 Parameter : NO_
Class Limits (PPB)

>= 210.0
< 210.0
< 110.0
< 50.0

Site : LICA
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-01-C

# Oxides of Nitrogen

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

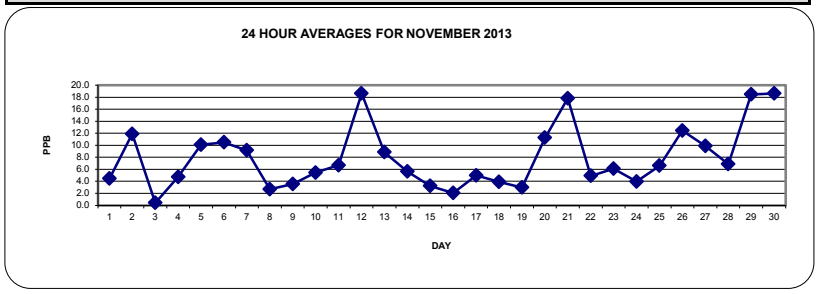
**OXIDES OF NITROGEN** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 4.9 | 4.9 | 3 | 2.6 | 3.8 | 4 | 6.1 | 8.3 | 7.5 | 5.7 | 6.4 | 4 | 1.8 | 1.6 | 1.9 | 1.7 | 3.1 | **S** | 5.7 | 5.6 | 5.7 | 5.2 | 4.9 | 4.6 | 8.3 | 4.5 | 24 |
| 2 | 9.4 | 14.7 | 7.9 | 15.8 | 12.9 | 13.7 | 25.3 | 29.3 | 22.2 | 17 | 16 | 20.4 | 18.1 | 12.5 | 9 | 10.1 | **S** | 7.4 | 2.9 | 2.9 | 2 | 1.4 | 1.6 | 0.9 | 29.3 | 11.9 | 24 |
| 3 | 0.7 | 0.8 | 0.6 | 0.7 | 0.6 | 0.7 | 0.6 | 0.7 | 0.7 | 0.7 | 0.6 | 0.5 | 0.3 | 0.2 | 0.2 | **S** | 0.4 | 0.1 | 0.1 | 0 | 0 | 0.1 | 0.1 | 0.1 | 0.8 | 0.4 | 24 |
| 4 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 1.7 | 1.9 | 1.7 | **S** | 4.8 | 5.7 | 10.3 | 13.3 | 14 | 12.7 | 13 | 13.8 | 11 | 14 | 4.7 | 24 |
| 5 | 8.1 | 9.7 | 9.8 | 10.5 | 11.5 | 10.1 | 13.4 | 19.3 | 20.5 | 13.2 | 6.2 | 7.5 | 7.9 | **S** | 6 | 3.8 | 4.3 | 7.5 | 14.1 | 13.2 | 9.3 | 8.6 | 8.4 | 9 | 20.5 | 10.1 | 24 |
| 6 | 7.8 | 7.8 | 6.5 | 6.1 | 5.5 | 5.4 | 7.1 | 10.4 | 10.7 | 10.8 | 13.8 | 15.4 | **S** | 13.6 | 13.1 | 12.9 | 22.6 | 19.8 | 13 | 8.7 | 7.8 | 8.7 | 7.5 | 6.2 | 22.6 | 10.5 | 24 |
| 7 | 5.7 | 5.7 | 5 | 4.4 | 4.1 | 4.6 | 7.6 | 20.4 | 40.6 | 25.9 | 19.9 | **S** | 6.1 | 5.5 | 5 | 11.9 | 9.1 | 8.5 | 6 | 4.7 | 3.3 | 2.5 | 1.9 | 1.9 | 40.6 | 9.1 | 24 |
| 8 | 1.9 | 1.6 | 1.8 | 1.6 | 1.8 | 2.6 | 2.9 | 2.4 | 2.3 | 2.1 | **S** | 3.1 | 2.4 | 2.1 | 2.4 | 2.6 | 2 | 2.3 | 4.2 | 6.1 | 1.5 | 1.4 | 4.9 | 5.8 | 6.1 | 2.7 | 24 |
| 9 | 3.7 | 6.2 | 5.2 | 5.4 | 3.7 | 3.1 | 2.6 | 2.7 | 4 | **S** | 4 | 1.6 | 1.8 | 2.3 | 3.4 | 2 | 2.7 | 2.6 | 2.5 | 2 | 2.2 | 2.2 | 6.3 | 9.4 | 9.4 | 3.5 | 24 |
| 10 | 8 | 4.6 | 3.1 | 5.5 | 3.1 | 5.7 | 7.7 | 6.6 | **S** | 11.8 | 11.8 | 8.2 | 4.4 | 3.1 | 2.8 | 2.5 | 10.7 | 6.4 | 4.2 | 2.9 | 2.4 | 2.9 | 3.7 | 3 | 11.8 | 5.4 | 24 |
| 11 | 4.3 | 2.8 | 2.9 | 3 | 2.7 | 3.5 | 3.8 | **S** | 5.6 | 4.2 | 4.8 | 5.6 | 5.9 | 5.9 | 7.1 | 8.7 | 7.6 | 6.8 | 11.3 | 10.2 | 15.6 | 7.1 | 9.6 | 14.7 | 15.6 | 6.7 | 24 |
| 12 | 14.9 | 17.6 | 13.6 | 12.3 | 11.7 | 17.3 | **S** | 38.7 | **52.9** | 44.8 | 21.5 | 5.8 | 6.3 | 6.5 | 7.7 | 12.7 | 17.4 | 16.6 | 18.7 | 21.6 | 18.7 | 15.9 | 15.1 | 19.8 | **52.9** | **18.6** | 24 |
| 13 | 16.3 | 15.1 | 16.5 | 14.6 | 10.4 | **S** | 11.6 | 16.8 | 25.5 | 22.9 | 13.2 | 8 | 3 | 3 | 4.3 | 2.5 | 4.3 | 4.1 | 2.1 | 1.8 | 2.3 | 2.3 | 1.7 | 1.2 | 25.5 | 8.8 | 24 |
| 14 | 3.3 | 3.9 | 8.8 | 6.5 | **S** | 7.3 | 5 | 4.2 | 4.4 | **C** | **C** | **C** | **C** | **C** | 6.4 | 7.1 | 5.7 | 4.4 | 4.1 | 6 | 5.8 | 6 | 5.7 | 7.1 | 8.8 | 5.7 | 24 |
| 15 | 5.5 | 6.5 | 5.4 | **S** | 1.9 | 2.2 | 2.8 | 2.7 | 3.6 | 2.1 | 1.8 | 1.2 | 1.1 | 1.7 | 2.9 | 4.5 | 12.1 | 8.2 | 1.5 | 1.6 | 1.8 | 1.4 | 0.8 | 0.7 | 12.1 | 3.2 | 24 |
| 16 | 1 | 0.9 | **S** | 0.7 | 1.2 | 1.7 | 1.4 | 1.4 | 1.6 | 2.2 | 2.6 | 2.7 | 2.3 | 2.1 | 1.9 | 1.7 | 3 | 4.3 | 2.4 | 2.8 | 1.9 | 2.9 | 2.5 | 1.7 | 4.3 | 2.0 | 24 |
| 17 | 2 | **S** | 2 | 2 | 3.1 | 3.7 | 3.3 | 3.2 | 2.7 | 3.2 | 3.7 | 3 | 2.7 | 2 | 0.9 | 1.2 | 5.7 | 13.7 | 17.5 | 15.2 | 7.6 | 8.2 | 6.3 | 1.5 | 17.5 | 5.0 | 24 |
| 18 | **S** | 2.2 | 3.6 | 5.7 | 6.5 | 2.4 | 2.7 | 4 | 5.7 | 7.3 | 3 | 3.5 | 2 | 3.5 | 3.3 | 3.7 | 5.3 | 5.9 | 4.2 | 3.6 | 3.2 | 2.6 | 2.3 | **S** | 7.3 | 3.9 | 24 |
| 19 | 2.7 | 2.5 | 2.4 | 3 | 2.9 | 2.8 | 2.9 | 2 | 2.3 | 1.1 | 1.2 | 1.2 | 2.1 | 0.8 | **S** | **S** | **S** | **S** | 3.6 | 3.7 | 5.7 | 6 | **S** | 7.8 | 7.8 | 3.0 | 24 |
| 20 | 7.6 | 6.2 | 5.4 | 4.6 | 6.5 | 9 | 9.4 | **S** | 19.3 | 28.2 | 23.6 | 21.6 | 13.2 | 9.3 | 6.3 | 7.5 | 12 | 15.9 | 13.8 | 9 | 5.7 | **S** | 6.8 | 6.3 | 28.2 | 11.2 | 24 |
| 21 | 5.8 | 5.6 | 5.2 | 4.6 | 4.5 | 5.2 | 7.6 | 12.4 | 15.2 | 23.2 | 27 | 23.1 | 19.3 | 18.6 | 25.5 | 29.3 | 30.6 | 31.9 | 31.5 | 32.5 | **S** | 31.2 | 16.6 | 3.7 | 32.5 | 17.8 | 24 |
| 22 | 3.2 | 2.8 | 2.6 | 2.6 | 2.6 | 2.7 | 3.3 | 5 | 6.2 | 5.5 | 7 | 6.9 | 5.5 | 5.4 | 5.5 | 6.2 | 9.4 | 6.9 | 7.4 | **S** | 4.3 | 4.3 | 3.6 | 3.8 | 9.4 | 4.9 | 24 |
| 23 | 3.8 | 4 | 4.1 | 4 | 4.7 | 5 | 3.8 | 3.8 | 4.3 | 4.8 | 5.2 | 5.4 | 6.1 | 6.7 | 7.1 | 8.2 | 7.3 | 7.6 | **S** | 8.4 | 8.3 | 8.9 | 9.3 | 9.5 | 9.5 | 6.1 | 24 |
| 24 | 9.9 | 10.5 | 9.2 | 9.1 | 7.7 | 5.2 | 4 | 3.6 | 4.2 | 5 | 3.8 | 2.3 | 1 | 1 | 1 | 1.6 | 2.4 | **S** | 1.9 | 1.5 | 1.1 | 1.7 | 1.4 | 1.8 | 10.5 | 4.0 | 24 |
| 25 | 1.3 | 1.7 | 1.7 | 2.3 | 2.4 | 1.6 | 1.5 | 1.6 | 4.9 | 3.8 | 4.8 | 6.8 | 6.4 | 6 | 6.3 | 7.2 | **S** | 11.6 | 13 | 13.2 | 13.5 | 13.3 | 12.7 | 13.9 | 13.9 | 6.6 | 24 |
| 26 | 12.7 | 9.6 | 8.9 | 11.4 | 21.2 | 27.2 | 17.4 | 6 | 5.6 | 5.3 | 5.3 | 5.3 | 5.9 | 4.8 | 5.3 | **S** | 18.8 | 17.4 | 19 | 17.5 | 14 | 19.3 | 15.7 | 13 | 27.2 | 12.5 | 24 |
| 27 | 12.7 | 12.2 | 10.8 | 11.4 | 15.7 | 20.3 | 17.3 | 13.7 | 9.4 | 6 | 6.8 | 7 | 7 | 6.8 | **S** | 7.6 | 10 | 11.9 | 10.4 | 8 | 6 | 5.6 | 5.4 | 5.3 | 20.3 | 9.9 | 24 |
| 28 | 5.4 | 5.8 | 6.2 | 6.1 | 6.7 | 6.7 | 6.6 | 6.5 | 7 | 7.1 | 6.7 | 7.4 | 6.7 | **S** | 7.5 | 7.2 | 7 | 7.1 | 7.5 | 7.3 | 7.2 | 7.2 | 7.3 | 7.2 | 7.5 | 6.8 | 24 |
| 29 | 7.4 | 8 | 8.4 | 9.2 | 10.3 | 9.8 | 11.8 | 19.1 | 24.5 | 23.3 | 25.5 | 28.2 | **S** | 25.4 | 22.5 | 21.9 | 23.6 | 23.9 | 23.9 | 21.8 | 20.4 | 18.5 | 16 | 21 | 28.2 | 18.5 | 24 |
| 30 | 27.2 | 17.1 | 16.6 | 15.9 | 19 | 19.7 | 20.7 | 31.1 | 39 | 32.4 | 37 | **S** | 15.2 | 12.9 | 12.7 | 13.8 | 15.1 | 15.8 | 12.7 | 11.7 | 12.2 | 10.8 | 9.7 | 10.4 | 39 | 18.6 | 24 |
| HOURLY MAX | 27.2 | 17.6 | 16.6 | 15.9 | 21.2 | 27.2 | 25.3 | 38.7 | 52.9 | 44.8 | 37.0 | 28.2 | 19.3 | 25.4 | 25.5 | 29.3 | 30.6 | 31.9 | 31.5 | 32.5 | 20.4 | 31.2 | 16.6 | 21.0 | | | |
| HOURLY AVG | 6.8 | 6.6 | 6.1 | 6.3 | 6.5 | 7.0 | 7.3 | 9.9 | 12.2 | 11.4 | 10.1 | 7.7 | 5.8 | 6.1 | 6.6 | 7.6 | 9.6 | 10.3 | 9.4 | 8.9 | 7.0 | 7.6 | 7.0 | 7.0 | | | |

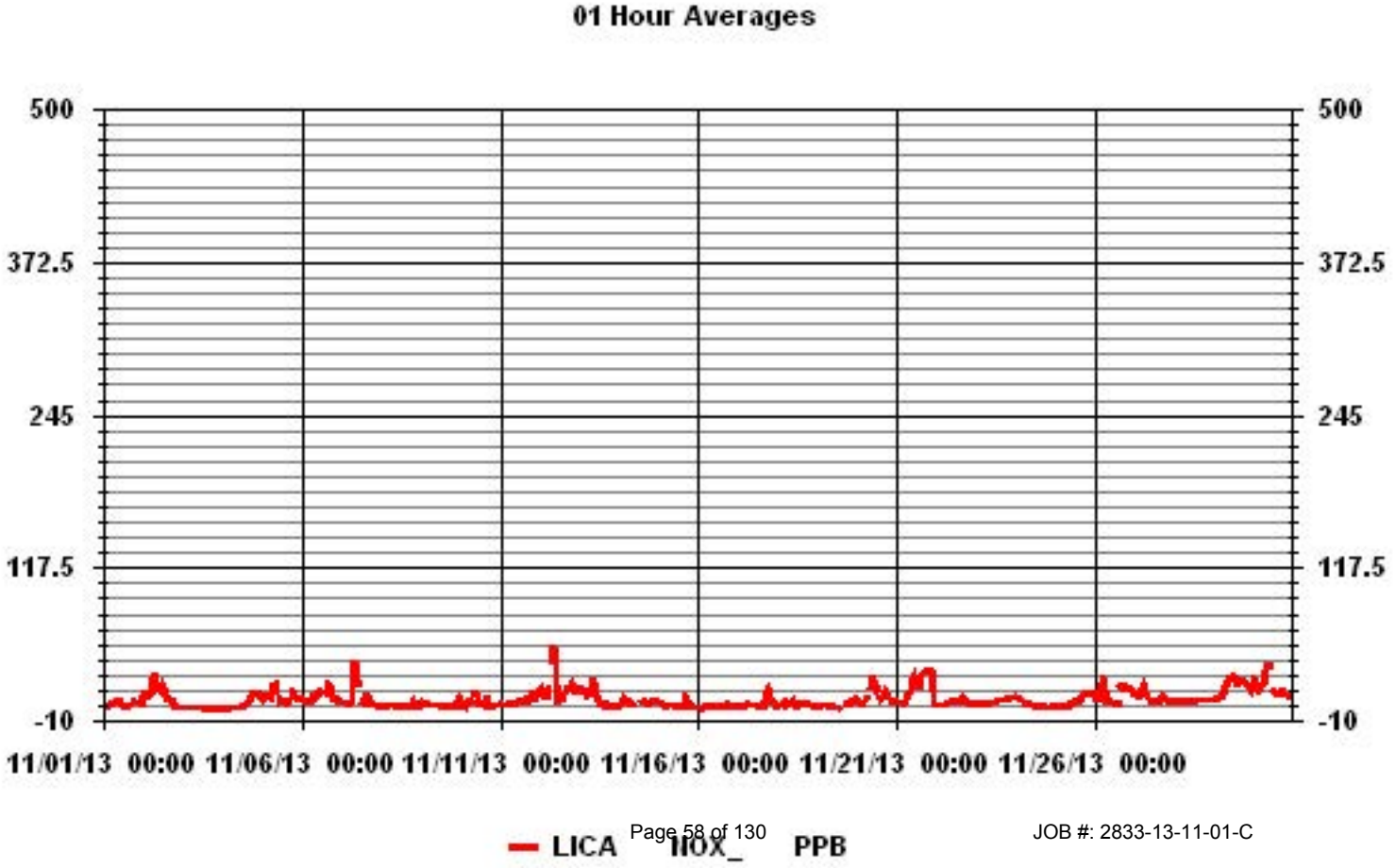
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 676 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 52.9 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 12 | |
| MAXIMUM 24-HR AVERAGE: | 18.6 | PPB | | | ON DAY(S) | 12 | |
| IZS CALIBRATION TIME: | 36 | HRS | OPERATIONAL TIME: | | 720 | HRS | |
| MONTHLY CALIBRATION TIME: | 5 | HRS | AMD OPERATION UPTIME: | | 100.0 | % | |
| STANDARD DEVIATION: | 7.34 | | MONTHLY AVERAGE: | | 7.94 | PPB | |






JOB #: 2833-13-11-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**OXIDES OF NITROGEN MAX** instantaneous maximum in ppb

MST

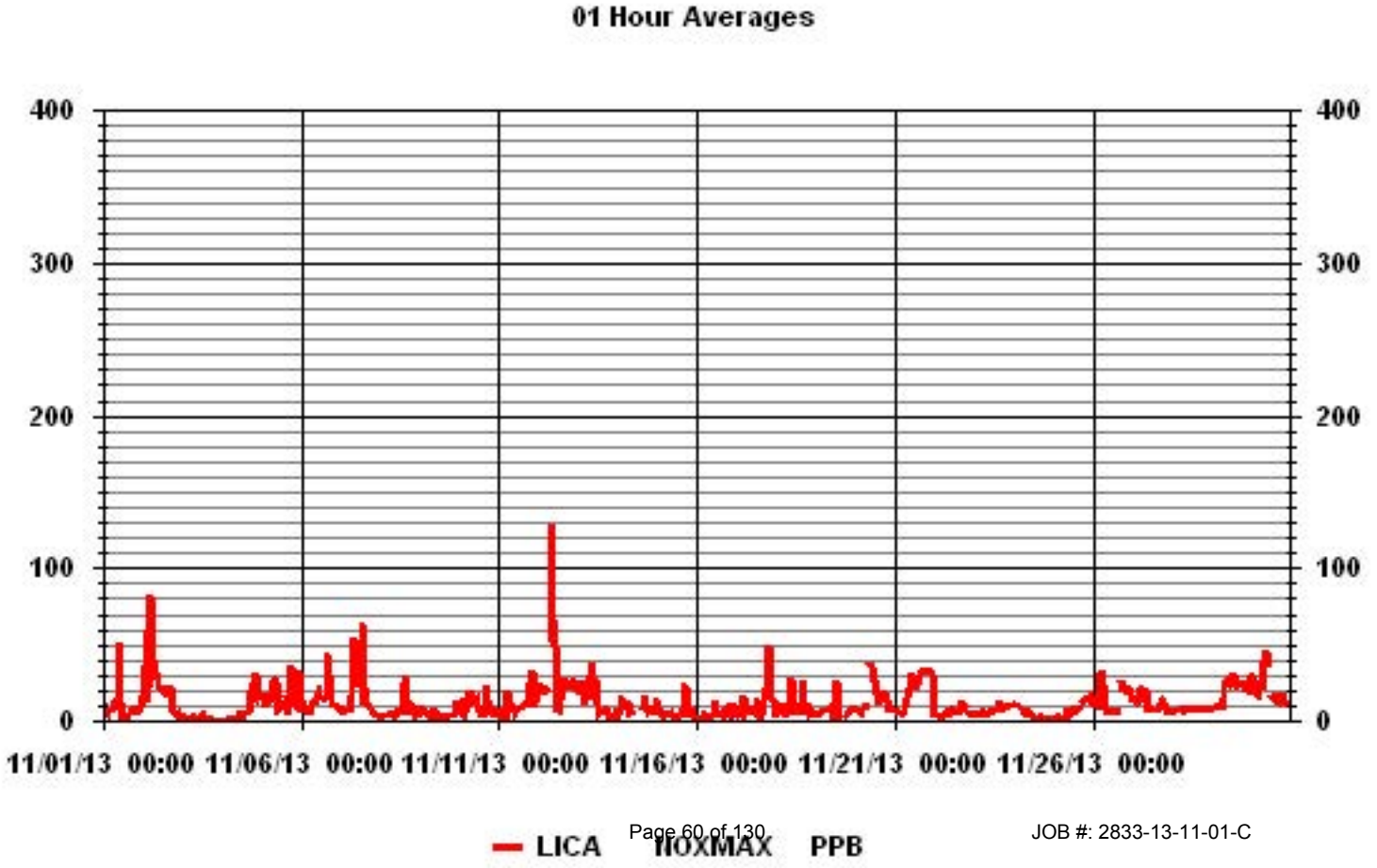
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 8.1 | 9.1 | 6.1 | 4.6 | 6.1 | 7.1 | 8.1 | 12.1 | 14.5 | 7.1 | 50.6 | 13.5 | 2.6 | 2.6 | 4.1 | 3.1 | 5.1 | **S** | 8.3 | 6.8 | 8.3 | 8.8 | 7.3 | 9.3 | 50.6 | 9.3 | 24 |
| 2 | 16.3 | 36.3 | 12.3 | 59.3 | 21.3 | 81.8 | 69.3 | 40.7 | 33.2 | 28.3 | 22.3 | 22.8 | 21.7 | 20.2 | 23.3 | 17.3 | **S** | 20.6 | 6.7 | 5.2 | 4.7 | 3.2 | 5.2 | 2.7 | 81.8 | 25.0 | 24 |
| 3 | 2.7 | 2.2 | 2.2 | 2.7 | 2.2 | 2.7 | 1.2 | 2.2 | 2.2 | 1.7 | 1.6 | 2.2 | 3.7 | 0.7 | 0.7 | **S** | 1.1 | 1.1 | 0.6 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 3.7 | 1.5 | 24 |
| 4 | 0.1 | 0.6 | 0.1 | 0.1 | 0.6 | 0.6 | 0.8 | 1.1 | 1.6 | 1.6 | 2.1 | 4.6 | 4.6 | 2.1 | **S** | 5.7 | 6.7 | 19.7 | 23.7 | 18.2 | 16.7 | 30.7 | 15.7 | 16.2 | 30.7 | 7.6 | 24 |
| 5 | 13.7 | 18.2 | 11.7 | 12.2 | 15.2 | 14.7 | 18.2 | 25.2 | 27.1 | 26.1 | 7.7 | 8.7 | 11.7 | **S** | 14.9 | 5.9 | 6.4 | 17.9 | 36.4 | 23.4 | 17.4 | 10.9 | 9.9 | 32.3 | 36.4 | 16.8 | 24 |
| 6 | 9.4 | 10.4 | 7.9 | 6.9 | 6.4 | 6.4 | 9.4 | 11.9 | 12.4 | 13.9 | 17.4 | 21.9 | **S** | 15.3 | 14.8 | 16.3 | 43.8 | 31.3 | 16.8 | 10.8 | 10.3 | 10.8 | 9.3 | 8.3 | 43.8 | 14.0 | 24 |
| 7 | 6.8 | 8.3 | 6.3 | 6.8 | 6.8 | 6.8 | 16.8 | 43.2 | 54.8 | 40.7 | 23.3 | **S** | 33.4 | 64.4 | 9.5 | 21.5 | 11.5 | 11 | 9.5 | 7.5 | 6 | 4 | 3.5 | 3 | 64.4 | 17.6 | 24 |
| 8 | 2.5 | 2.5 | 3 | 3.5 | 4 | 5 | 5.5 | 5 | 5 | 3.5 | **S** | 6.3 | 6.3 | 4.3 | 24.3 | 29.8 | 13.7 | 4.3 | 11.8 | 10.8 | 6.3 | 3.8 | 6.7 | 7.7 | 29.8 | 7.6 | 24 |
| 9 | 5.8 | 7.3 | 5.8 | 6.7 | 4.8 | 5.3 | 3.3 | 4.8 | 7.2 | **S** | 5.3 | 2.3 | 2.3 | 3.8 | 4.3 | 2.8 | 3.3 | 2.8 | 3.3 | 3.3 | 3.3 | 4.3 | 11.8 | 12.3 | 12.3 | 5.1 | 24 |
| 10 | 13.2 | 6.3 | 4.8 | 10.3 | 5.3 | 8.5 | 17.8 | 17.8 | **S** | 13.7 | 15.3 | 11.3 | 6.8 | 4.8 | 4.3 | 4.8 | 23.3 | 14.7 | 9.8 | 11.8 | 3.8 | 3.8 | 7.8 | 3.8 | 23.3 | 9.7 | 24 |
| 11 | 7.3 | 3.8 | 4.3 | 4.8 | 3.8 | 19.7 | 12.3 | **S** | 9.2 | 4.7 | 5.7 | 8.2 | 8.2 | 8.2 | 9.7 | 10.2 | 13.1 | 8.2 | 25.2 | 23.6 | 33.6 | 9.2 | 11.7 | 22.7 | 33.6 | 11.6 | 24 |
| 12 | 22.7 | 22.7 | 19.6 | 19.2 | 18.7 | 21.1 | **S** | 54.1 | **128.1** | 68.1 | 50.1 | 8.1 | 7.1 | 14.1 | 21.5 | 22.6 | 28.1 | 22.6 | 23.1 | 25.1 | 26.1 | 22.6 | 20.6 | 22.6 | **128.1** | 29.9 | 24 |
| 13 | 20.1 | 20.6 | 23.6 | 23.6 | 12.5 | **S** | 15.6 | 30.1 | 37.1 | 29.1 | 27 | 12.5 | 4.1 | 4.6 | 5.1 | 5.6 | 6.1 | 9.1 | 3.6 | 3.1 | 4.1 | 3.6 | 3.1 | 1.6 | 37.1 | 13.3 | 24 |
| 14 | 8.6 | 4.6 | 15.6 | 10.6 | **S** | 9.7 | 13.2 | 5.7 | 6.2 | **C** | **C** | **C** | **C** | **C** | **C** | 9.8 | 16.8 | 8.3 | 5.8 | 7.3 | 7.3 | 7.8 | 7.3 | 14.3 | 16.8 | 9.3 | 24 |
| 15 | 7.8 | 8.3 | 7.3 | **S** | 3.3 | 4.3 | 4.8 | 4.3 | 5.8 | 3.3 | 3.3 | 2.3 | 1.9 | 3.8 | 4.3 | 8.8 | 22.8 | 22.3 | 2.3 | 4.3 | 3.8 | 5.8 | 1.3 | 1.3 | 22.8 | 6.0 | 24 |
| 16 | 2.8 | 2.3 | **S** | 1.7 | 4.2 | 4.2 | 3.2 | 3.7 | 3.2 | 3.7 | 11.7 | 12.2 | 5.2 | 4.7 | 4.2 | 3.2 | 5.7 | 6.7 | 8.2 | 5.2 | 3.2 | 8.2 | 11.7 | 5.7 | 12.2 | 5.4 | 24 |
| 17 | 3.7 | **S** | 5 | 4 | 17 | 9.5 | 7.5 | 5 | 5 | 7.5 | 10 | 5 | 14 | 4 | 2.5 | 4 | 13.4 | 21.5 | 32 | 50 | 15.5 | 15 | 13.4 | 4.5 | 50 | 11.7 | 24 |
| 18 | **S** | 5.9 | 6.9 | 8.4 | 11.9 | 5.4 | 4.9 | 6.9 | 13.8 | 27.8 | 4.9 | 6.9 | 3.4 | 7.9 | 5.9 | 6.4 | 26.4 | 11.9 | 8.4 | 5.9 | 7.9 | 5.4 | 4.9 | **S** | 27.8 | 9.0 | 24 |
| 19 | 4.3 | 3.8 | 5.3 | 6.8 | 7.7 | 6.8 | 6.8 | 6.8 | 8.2 | 1.8 | 2.3 | 3.3 | 26.2 | 1.3 | **S** | **S** | **S** | **S** | 3.8 | 4.8 | 6.7 | 6.8 | **S** | 8.4 | 26.2 | 6.4 | 24 |
| 20 | 8.4 | 6.8 | 6.4 | 5.4 | 7.8 | 10.4 | 9.9 | **S** | **S** | 36.9 | 34.9 | 27.4 | 19 | 11 | 13.4 | 15 | 16 | 19.9 | 15 | 13.9 | 6.8 | **S** | 7.9 | 6.9 | 36.9 | 14.2 | 24 |
| 21 | 6.4 | 5.9 | 5.9 | 5.4 | 4.9 | 5.9 | 9.4 | 14.9 | 20.8 | 25.4 | 30.9 | 27.8 | 20.9 | 23.4 | 28.3 | 31.9 | 32.9 | 33.3 | 32.9 | 33.3 | **S** | 32.5 | 31.1 | 5.1 | 33.3 | 20.4 | 24 |
| 22 | 4.1 | 3.8 | 3.6 | 3.1 | 3.1 | 3.6 | 3.6 | 6.1 | 7.1 | 5.6 | 8.6 | 8.1 | 6.6 | 7.1 | 6.5 | 8 | 12.6 | 8.6 | 9.6 | **S** | 5.1 | 5.1 | 4.1 | 4.1 | 12.6 | 6.0 | 24 |
| 23 | 4.1 | 4.6 | 4.6 | 4.1 | 6.1 | 6.1 | 4.6 | 4.1 | 5.1 | 5.6 | 5.6 | 6.1 | 6.6 | 7.1 | 7.5 | 12.1 | 8 | 8.1 | **S** | 9.1 | 9.1 | 9.6 | 10.1 | 10.1 | 12.1 | 6.9 | 24 |
| 24 | 10.6 | 11.1 | 10.1 | 9.6 | 9.1 | 6.1 | 4.6 | 5.1 | 5.6 | 6.1 | 4.1 | 3.6 | 1.1 | 1.1 | 1.6 | 2.1 | 3.1 | **S** | 2.2 | 1.7 | 1.2 | 2.2 | 1.7 | 2.2 | 11.1 | 4.6 | 24 |
| 25 | 1.7 | 2.2 | 2.2 | 2.7 | 2.7 | 2.2 | 2.2 | 2.2 | 8.7 | 4.7 | 6.2 | 7.2 | 7.2 | 6.2 | 6.7 | 8.7 | **S** | 12.8 | 13.8 | 14.3 | 14.3 | 14.8 | 13.3 | 15.8 | 15.8 | 7.5 | 24 |
| 26 | 13.8 | 10.8 | 10.3 | 15.3 | 30.3 | 32.2 | 24.8 | 8.3 | 6.3 | 5.8 | 5.8 | 5.8 | 6.8 | 5.8 | 5.8 | **S** | 25.2 | 19.2 | 21.2 | 20.6 | 17.7 | 21.6 | 20.7 | 14.7 | 32.2 | 15.2 | 24 |
| 27 | 13.6 | 13.6 | 11.7 | 12.7 | 20.1 | 21.6 | 20.7 | 16.7 | 20.7 | 8.2 | 7.7 | 7.7 | 7.7 | 7.2 | **S** | 8.7 | 11.2 | 13.6 | 12.2 | 10.7 | 6.7 | 6.2 | 5.7 | 5.7 | 21.6 | 11.8 | 24 |
| 28 | 5.7 | 6.2 | 6.7 | 6.7 | 7.2 | 7.2 | 7.2 | 6.7 | 7.7 | 7.7 | 7.7 | 8.7 | 7.7 | **S** | 8.2 | 7.7 | 7.7 | 7.7 | 8.2 | 7.7 | 8.2 | 8 | 7.7 | 7.7 | 8.7 | 7.5 | 24 |
| 29 | 8.2 | 8.7 | 9.2 | 9.7 | 10.7 | 10.2 | 14.2 | 25.7 | 27.6 | 25.6 | 28.7 | 29.7 | **S** | 29 | 24 | 23 | 24.5 | 24.5 | 25 | 23.5 | 21.5 | 20 | 16.5 | 29.5 | 29.7 | 20.4 | 24 |
| 30 | 31.9 | 18.5 | 18.5 | 17.5 | 23.5 | 23.5 | 23 | 40 | 46.4 | 35 | 42.5 | **S** | 16.5 | 14.5 | 13.5 | 16 | 16 | 18.5 | 14 | 15.5 | 13.4 | 12 | 10.5 | 11 | 46.4 | 21.4 | 24 |
| HOURLY MAX | 31.9 | 36.3 | 23.6 | 59.3 | 30.3 | 81.8 | 69.3 | 54.1 | 128.1 | 68.1 | 50.6 | 29.7 | 33.4 | 64.4 | 28.3 | 31.9 | 43.8 | 33.3 | 36.4 | 50.0 | 33.6 | 32.5 | 31.1 | 32.3 | | | |
| HOURLY AVG | 9.1 | 9.2 | 8.2 | 9.8 | 9.6 | 12.0 | 11.8 | 14.7 | 19.0 | 16.0 | 15.8 | 10.5 | 9.8 | 10.3 | 10.3 | 11.5 | 15.0 | 14.8 | 13.6 | 13.0 | 10.0 | 10.2 | 9.7 | 10.0 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 677 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 128.1 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 12 |
| IZS CALIBRATION TIME: | 37 | HRS | OPERATIONAL TIME: | | | 720 HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | | | | |
| STANDARD DEVIATION: | 11.51 | | | | | |






JOB #: 2833-13-11-01-C

LICA
NOX_ / WD Joint Frequency Distribution (Percent)

November 2013

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 |
| < | 50.0 | 1.95 | 1.79 | 5.38 | 6.36 | 5.54 | 3.58 | 11.74 | 5.05 | 3.58 | 3.09 | 9.78 | 18.59 | 7.34 | 3.58 | 6.03 | 6.36 | 99.83 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .16 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .16 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 1.95 | 1.79 | 5.38 | 6.36 | 5.54 | 3.75 | 11.74 | 5.05 | 3.58 | 3.09 | 9.78 | 18.59 | 7.34 | 3.58 | 6.03 | 6.36 | |

Calm : .00 %

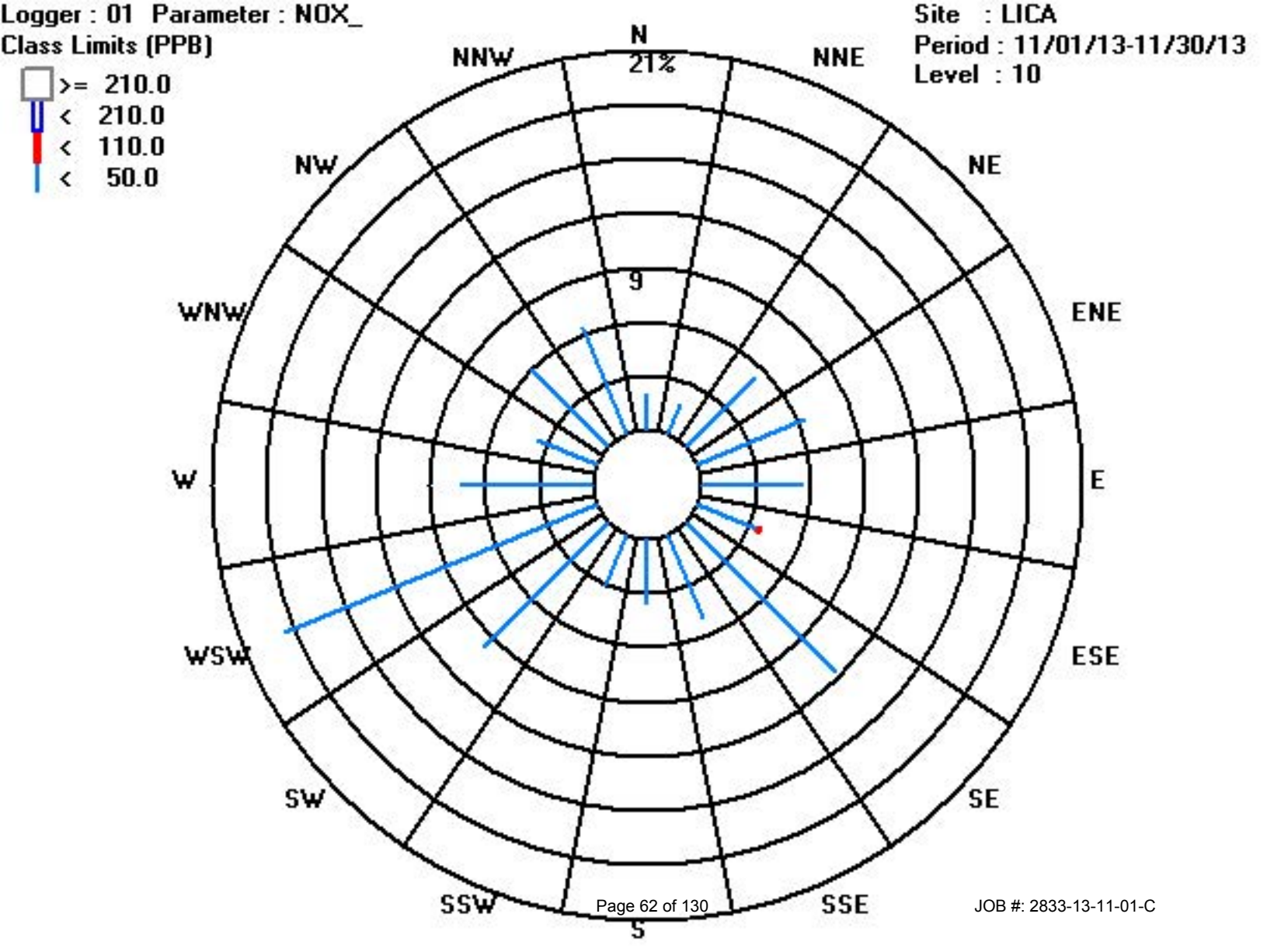
Total # Operational Hours : 613

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50.0 | 12 | 11 | 33 | 39 | 34 | 22 | 72 | 31 | 22 | 19 | 60 | 114 | 45 | 22 | 37 | 39 | 612 |
| < | 110.0 | | | | | | 1 | | | | | | | | | | | 1 |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 60 | 114 | 45 | 22 | 37 | 39 | |

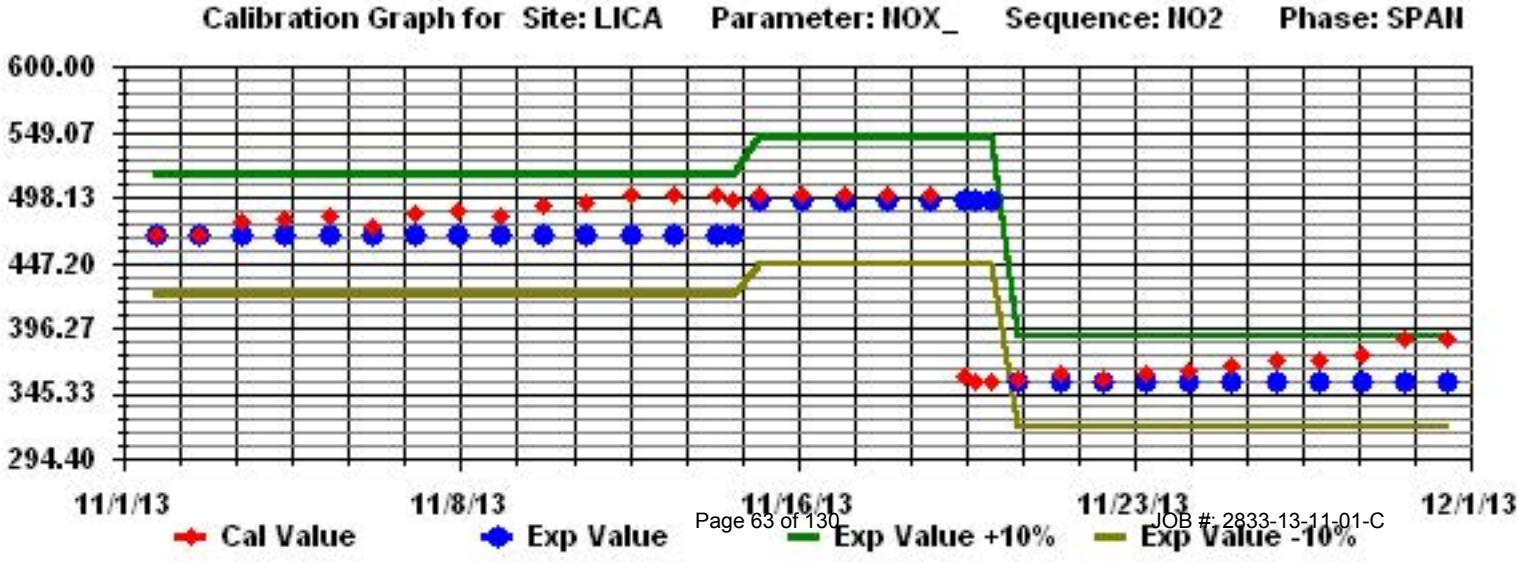
Calm : .00 %

Total # Operational Hours : 613






JOB #: 2833-13-11-01-C


Calibration Graph for Site: LICA Parameter: NOX_ Sequence: NO2 Phase: SPAN
600.00
549.07
498.13
447.20
396.27
345.33
294.40
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ozone

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

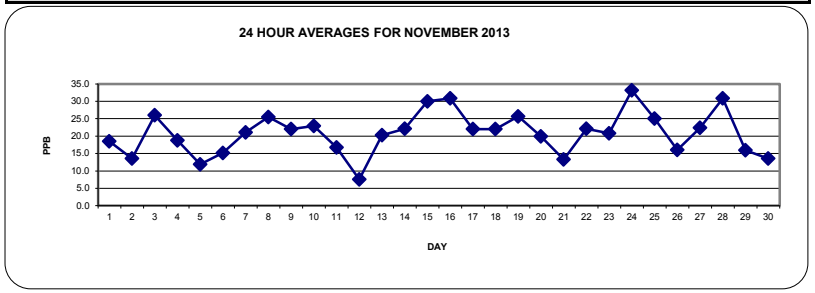
**OZONE ($O_3$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 14 | 16 | 15 | 12 | 15 | 14 | 13 | 11 | 12 | 16 | 20 | 25 | 29 | 32 | 33 | 33 | 31 | **S** | 19 | 20 | 18 | 14 | 8 | 6 | 33 | 18.5 | 24 |
| 2 | 6 | 2 | 4 | 2 | 1 | 2 | 1 | 1 | 3 | 9 | 13 | 13 | 16 | 20 | 21 | 18 | **S** | 23 | 28 | 27 | 26 | 26 | 25 | 25 | 28 | 13.6 | 24 |
| 3 | 25 | 26 | 28 | 26 | 26 | 27 | 29 | 32 | 32 | 29 | 25 | 22 | 22 | 24 | 24 | **S** | 24 | 25 | 25 | 25 | 25 | 25 | 26 | 25 | 32 | 26.0 | 24 |
| 4 | 25 | 26 | 26 | 26 | 26 | 25 | 26 | 26 | 26 | 26 | 26 | 26 | 25 | 25 | **S** | 23 | 20 | 13 | 6 | 3 | 2 | 2 | 1 | 2 | 26 | 18.8 | 24 |
| 5 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 12 | 18 | 19 | 19 | **S** | 23 | 28 | 27 | 22 | 14 | 13 | 14 | 17 | 17 | 17 | 28 | 11.9 | 24 |
| 6 | 17 | 17 | 18 | 17 | 16 | 15 | 14 | 11 | 12 | 14 | 15 | 16 | **S** | 18 | 18 | 15 | 7 | 5 | 12 | 18 | 19 | 17 | 18 | 20 | 20 | 15.2 | 24 |
| 7 | 21 | 21 | 21 | 23 | 23 | 21 | 13 | 4 | 3 | 10 | 16 | **S** | 26 | 27 | 26 | 20 | 22 | 24 | 26 | 27 | 28 | 28 | 27 | 27 | 28 | 21.0 | 24 |
| 8 | 28 | 29 | 29 | 29 | 27 | 27 | 27 | 27 | 27 | 27 | **S** | 25 | 24 | 25 | 26 | 26 | 26 | 26 | 24 | 22 | 24 | 24 | 20 | 17 | 29 | 25.5 | 24 |
| 9 | 18 | 17 | 17 | 16 | 18 | 21 | 23 | 25 | 24 | **S** | 21 | 19 | 19 | 18 | 20 | 27 | 27 | 28 | 28 | 28 | 27 | 26 | 21 | 18 | 28 | 22.0 | 24 |
| 10 | 20 | 23 | 25 | 21 | 24 | 18 | 12 | 11 | **S** | 14 | 18 | 23 | 28 | 29 | 29 | 29 | 20 | 23 | 26 | 28 | 27 | 27 | 26 | 26 | 29 | 22.9 | 24 |
| 11 | 23 | 24 | 23 | 21 | 21 | 21 | 19 | **S** | 16 | 19 | 20 | 20 | 20 | 21 | 20 | 19 | 16 | 16 | 11 | 8 | 6 | 12 | 7 | 2 | 24 | 16.7 | 24 |
| 12 | 1 | 1 | 2 | 1 | 1 | 1 | **S** | 1 | 2 | 5 | 12 | 19 | 19 | 20 | 19 | 14 | 9 | 9 | 7 | 4 | 6 | 8 | 8 | 5 | 20 | 7.6 | 24 |
| 13 | 9 | 12 | 9 | 6 | 6 | **S** | 17 | 11 | 9 | 14 | 20 | 24 | 30 | 30 | 28 | 29 | 26 | 24 | 26 | 27 | 27 | 26 | 27 | 28 | 30 | 20.2 | 24 |
| 14 | 24 | 20 | 14 | 14 | **S** | 16 | 19 | 20 | 20 | 20 | **S** | 20 | 22 | **C** | **C** | **C** | **C** | 29 | 29 | 27 | 27 | 26 | 26 | 25 | 29 | 22.1 | 24 |
| 15 | 27 | 25 | 28 | **S** | 32 | 31 | 30 | 31 | 30 | 31 | 31 | 32 | 31 | 31 | 31 | 29 | 22 | 23 | 33 | 32 | 31 | 32 | 33 | 34 | 34 | 30.0 | 24 |
| 16 | 33 | 33 | **S** | 32 | 32 | 30 | 30 | 31 | 31 | 30 | 31 | 32 | 32 | 33 | 32 | 32 | 30 | 30 | 31 | 30 | 30 | 29 | 28 | 28 | 33 | 30.9 | 24 |
| 17 | 27 | **S** | 27 | 27 | 27 | 27 | 26 | 26 | 26 | 26 | 25 | 25 | 25 | 26 | 26 | 25 | 22 | 12 | 7 | 8 | 15 | 12 | 16 | 23 | 27 | 22.0 | 24 |
| 18 | **S** | 22 | 22 | 20 | 18 | 21 | 22 | 20 | 18 | 19 | 24 | 25 | 26 | 24 | 24 | 23 | 22 | 21 | 23 | 23 | 23 | 23 | 22 | **S** | 26 | 22.0 | 24 |
| 19 | 22 | 23 | 23 | 23 | 23 | 24 | 24 | 25 | 25 | 26 | 26 | 25 | 28 | 28 | 28 | 29 | 30 | 30 | 30 | 29 | 25 | 24 | **S** | 20 | 30 | 25.7 | 24 |
| 20 | 21 | 20 | 20 | 20 | 19 | 16 | 13 | 12 | 11 | 15 | 19 | 22 | 27 | 27 | 28 | 27 | 16 | 15 | 16 | 23 | 24 | **S** | 24 | 23 | 28 | 19.9 | 24 |
| 21 | 23 | 23 | 23 | 23 | 23 | 20 | 16 | 9 | 7 | 11 | 13 | 16 | 16 | 15 | 11 | 7 | 2 | 1 | 1 | 1 | **S** | 1 | 18 | 26 | 26 | 13.3 | 24 |
| 22 | 25 | 26 | 27 | 26 | 23 | 23 | 22 | 19 | 18 | 20 | 18 | 21 | 24 | 23 | 23 | 20 | 19 | 19 | 21 | **S** | 23 | 23 | 23 | 23 | 27 | 22.1 | 24 |
| 23 | 23 | 22 | 22 | 23 | 23 | 24 | 24 | 23 | 22 | 22 | 22 | 22 | 22 | 21 | 21 | 20 | 20 | 19 | **S** | 17 | 18 | 16 | 16 | 16 | 24 | 20.8 | 24 |
| 24 | 18 | 22 | 24 | 25 | 28 | 30 | 33 | 33 | 33 | 33 | 35 | 37 | 39 | 39 | 39 | 38 | 37 | **S** | 37 | 37 | 37 | 36 | 36 | 36 | **39** | **33.1** | 24 |
| 25 | 36 | 35 | 35 | 33 | 33 | 33 | 32 | 31 | 27 | 30 | 30 | 29 | 30 | 29 | 29 | 27 | **S** | 18 | 15 | 11 | 12 | 8 | 7 | 5 | 36 | 25.0 | 24 |
| 26 | 6 | 10 | 9 | 5 | 1 | 1 | 18 | 28 | 28 | 29 | 31 | 32 | 32 | 32 | 31 | **S** | 15 | 11 | 7 | 10 | 14 | 5 | 7 | 7 | 32 | 16.0 | 24 |
| 27 | 5 | 6 | 6 | 5 | 3 | 6 | 12 | 17 | 25 | 30 | 31 | 30 | 30 | 29 | **S** | 29 | 29 | 28 | 30 | 32 | 33 | 32 | 33 | 33 | 33 | 22.3 | 24 |
| 28 | 32 | 31 | 31 | 31 | 31 | 32 | 33 | 34 | 33 | 33 | 34 | 33 | 34 | **S** | 32 | 31 | 31 | 30 | 28 | 28 | 27 | 27 | 27 | 27 | 34 | 30.9 | 24 |
| 29 | 27 | 26 | 26 | 21 | 18 | 15 | 11 | 4 | 7 | 11 | 14 | 16 | **S** | 19 | 19 | 17 | 15 | 15 | 14 | 13 | 16 | 18 | 17 | 7 | 27 | 15.9 | 24 |
| 30 | 5 | 7 | 5 | 5 | 2 | 2 | 1 | 1 | 2 | 5 | 9 | **S** | 24 | 25 | 23 | 20 | 20 | 16 | 21 | 22 | 21 | 25 | 26 | 24 | 26 | 13.5 | 24 |
| HOURLY MAX | 36 | 35 | 35 | 33 | 33 | 33 | 33 | 34 | 33 | 33 | 35 | 37 | 39 | 39 | 39 | 38 | 37 | 30 | 37 | 37 | 37 | 36 | 36 | 36 | | | |
| HOURLY AVG | 19.4 | 19.6 | 19.3 | 18.4 | 18.7 | 18.8 | 19.3 | 18.1 | 18.3 | 20.2 | 22.0 | 23.9 | 25.7 | 25.6 | 25.3 | 24.3 | 21.7 | 19.8 | 20.5 | 20.4 | 21.6 | 20.3 | 20.3 | 19.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 82 PPB

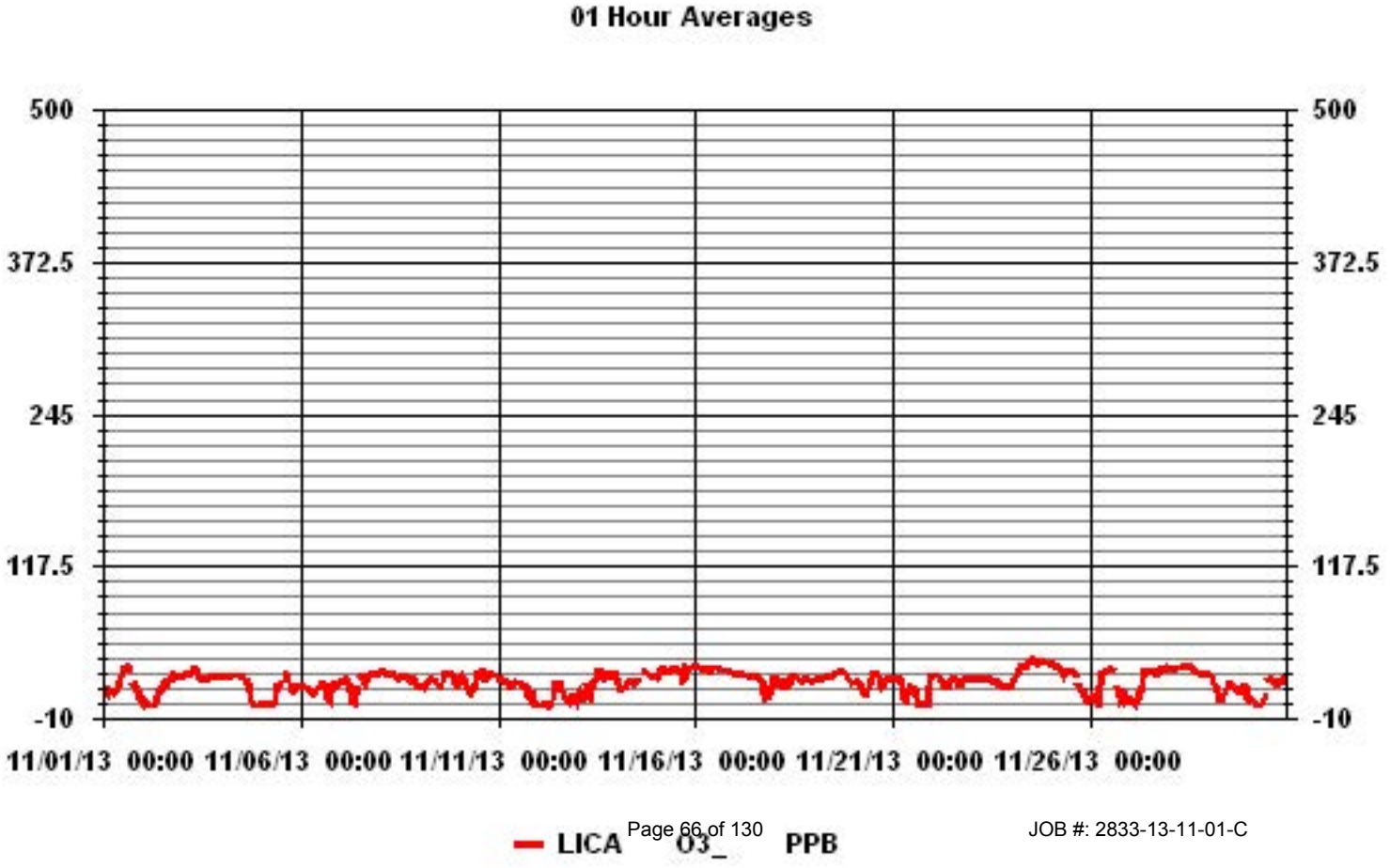
**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 684 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 39 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 24 |
| MAXIMUM 24-HR AVERAGE: | 33.1 | PPB | | | ON DAY(S) | 24 |
| | | | | | VAR-VARIOUS | |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 8.95 | | MONTHLY AVERAGE: | 20.84 | PPB |



JOB #: 2833-13-11-01-C






JOB #: 2833-13-11-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**OZONE MAX** instantaneous maximum in ppb

MST

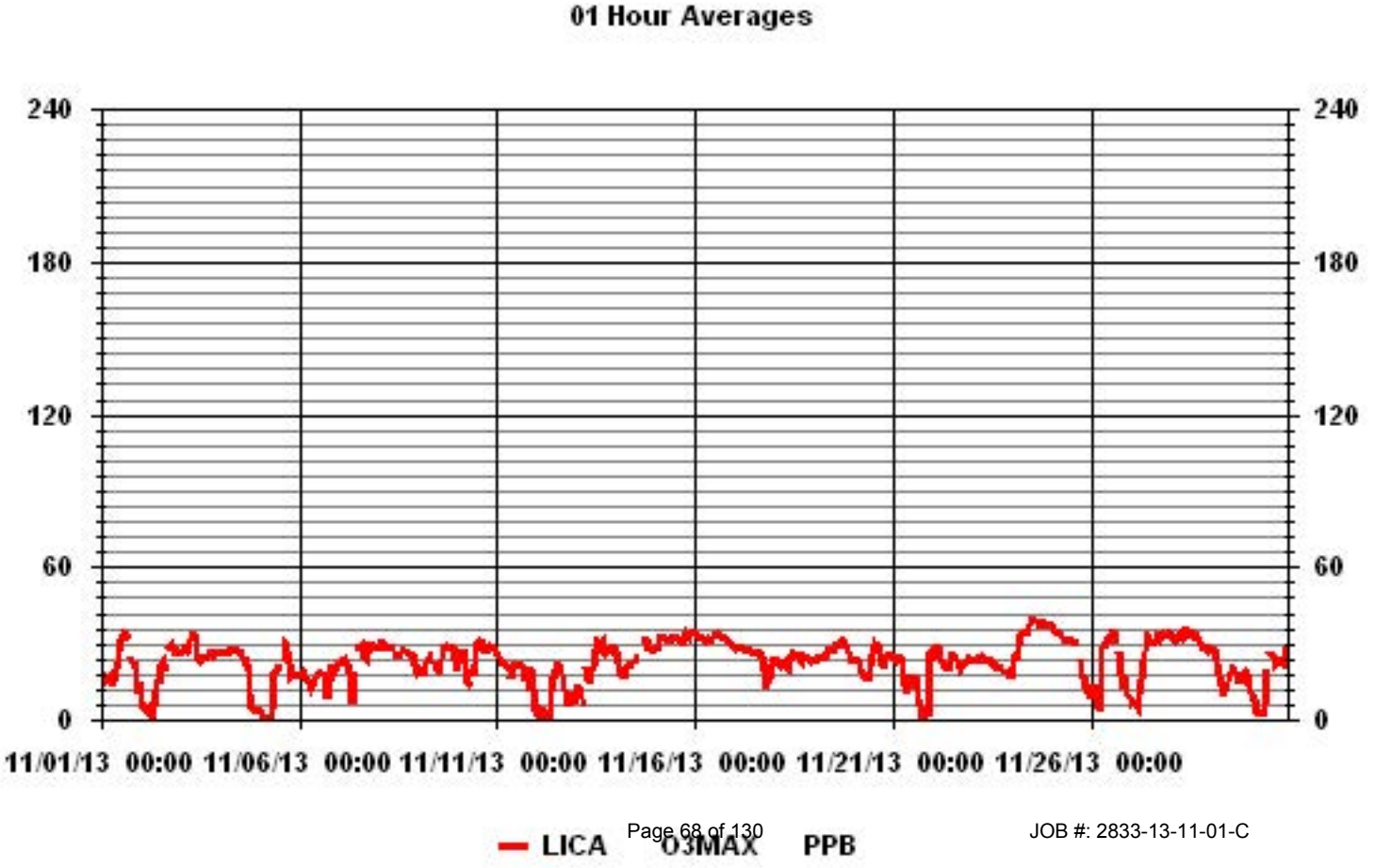
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 16 | 18 | 18 | 16 | 17 | 15 | 15 | 13 | 15 | 20 | 23 | 27 | 31 | 33 | 34 | 34 | 33 | **S** | 24 | 23 | 21 | 21 | 16 | 10 | 34 | 21.4 | 24 |
| 2 | 15 | 4 | 7 | 5 | 4 | 5 | 3 | 2 | 5 | 12 | 15 | 15 | 21 | 22 | 23 | 20 | **S** | 29 | 30 | 28 | 28 | 26 | 26 | 26 | 30 | 16.1 | 24 |
| 3 | 26 | 27 | 28 | 28 | 27 | 28 | 31 | 33 | 33 | 33 | 26 | 24 | 23 | 24 | 25 | **S** | 25 | 26 | 26 | 26 | 25 | 26 | 26 | 26 | 33 | 27.0 | 24 |
| 4 | 26 | 26 | 26 | 26 | 26 | 26 | 27 | 27 | 27 | 27 | 27 | 27 | 26 | 26 | **S** | 24 | 22 | 20 | 11 | 5 | 4 | 4 | 2 | 4 | 27 | 20.3 | 24 |
| 5 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 18 | 19 | 20 | 20 | **S** | 24 | 30 | 29 | 27 | 23 | 18 | 19 | 19 | 18 | 17 | 30 | 13.9 | 24 |
| 6 | 17 | 18 | 19 | 18 | 17 | 16 | 15 | 12 | 13 | 15 | 16 | 18 | **S** | 19 | 19 | 18 | 15 | 8 | 17 | 20 | 20 | 18 | 19 | 21 | 21 | 16.9 | 24 |
| 7 | 22 | 22 | 23 | 23 | 24 | 22 | 19 | 11 | 6 | 14 | 18 | **S** | 28 | 28 | 29 | 25 | 24 | 28 | 30 | 28 | 29 | 29 | 28 | 28 | 30 | 23.4 | 24 |
| 8 | 28 | 30 | 30 | 30 | 28 | 28 | 28 | 28 | 28 | 28 | **S** | 25 | 25 | 26 | 27 | 27 | 27 | 26 | 26 | 25 | 25 | 25 | 22 | 19 | 30 | 26.6 | 24 |
| 9 | 20 | 18 | 18 | 18 | 20 | 22 | 24 | 25 | 25 | **S** | 22 | 20 | 19 | 20 | 24 | 28 | 28 | 29 | 28 | 28 | 28 | 28 | 24 | 19 | 29 | 23.3 | 24 |
| 10 | 23 | 24 | 28 | 26 | 28 | 21 | 15 | 14 | **S** | 18 | 22 | 27 | 30 | 31 | 30 | 30 | 27 | 27 | 27 | 29 | 28 | 28 | 28 | 27 | 31 | 25.6 | 24 |
| 11 | 26 | 25 | 24 | 23 | 22 | 22 | 21 | **S** | 18 | 20 | 21 | 21 | 21 | 21 | 21 | 21 | 18 | 17 | 16 | 11 | 21 | 15 | 13 | 4 | 26 | 19.2 | 24 |
| 12 | 3 | 2 | 4 | 3 | 5 | 2 | **S** | 1 | 4 | 11 | 17 | 20 | 19 | 21 | 21 | 19 | 12 | 12 | 10 | 5 | 9 | 10 | 10 | 6 | 21 | 9.8 | 24 |
| 13 | 10 | 14 | 11 | 9 | 7 | **S** | 20 | 16 | 14 | 19 | 21 | 28 | 31 | 31 | 30 | 31 | 27 | 26 | 27 | 27 | 28 | 27 | 28 | 28 | 31 | 22.2 | 24 |
| 14 | 27 | 23 | 18 | 18 | **S** | 18 | 20 | 21 | 21 | 21 | **S** | 23 | 25 | **C** | **C** | **C** | **C** | 31 | 31 | 28 | 28 | 27 | 27 | 28 | 31 | 24.2 | 24 |
| 15 | 29 | 27 | 32 | **S** | 33 | 32 | 31 | 31 | 31 | 32 | 32 | 32 | 32 | 32 | 31 | 31 | 29 | 31 | 34 | 33 | 32 | 33 | 34 | 34 | 34 | 31.7 | 24 |
| 16 | 34 | 33 | **S** | 32 | 32 | 32 | 31 | 32 | 31 | 31 | 32 | 33 | 33 | 34 | 33 | 33 | 32 | 32 | 32 | 31 | 31 | 30 | 29 | 29 | 34 | 31.8 | 24 |
| 17 | 28 | **S** | 28 | 28 | 28 | 28 | 27 | 27 | 27 | 27 | 26 | 26 | 26 | 26 | 26 | 26 | 25 | 20 | 12 | 14 | 22 | 16 | 22 | 24 | 28 | 24.3 | 24 |
| 18 | **S** | 23 | 23 | 22 | 21 | 22 | 23 | 22 | 21 | 24 | 25 | 26 | 26 | 25 | 25 | 24 | 23 | 25 | 25 | 24 | 24 | 24 | 23 | **S** | 26 | 23.6 | 24 |
| 19 | 23 | 23 | 24 | 24 | 24 | 24 | 25 | 25 | 27 | 27 | 27 | 27 | 29 | 29 | 29 | 30 | 31 | 30 | 31 | 30 | 27 | 26 | **S** | 23 | 31 | 26.7 | 24 |
| 20 | 23 | 23 | 23 | 23 | 20 | 19 | 17 | 17 | 15 | 18 | 21 | 26 | 30 | 29 | 29 | 29 | 24 | 22 | 20 | 25 | 26 | **S** | 26 | 25 | 30 | 23.0 | 24 |
| 21 | 24 | 24 | 23 | 24 | 24 | 23 | 19 | 14 | 10 | 13 | 14 | 17 | 17 | 17 | 13 | 9 | 6 | 2 | 1 | 2 | **S** | 2 | 26 | 27 | 27 | 15.3 | 24 |
| 22 | 26 | 28 | 28 | 28 | 25 | 24 | 23 | 21 | 20 | 20 | 20 | 25 | 25 | 25 | 24 | 22 | 20 | 21 | 22 | **S** | 23 | 24 | 24 | 23 | 28 | 23.5 | 24 |
| 23 | 23 | 23 | 23 | 24 | 24 | 25 | 24 | 23 | 23 | 23 | 23 | 23 | 22 | 22 | 21 | 21 | 20 | 20 | **S** | 19 | 19 | 17 | 17 | 17 | 25 | 21.6 | 24 |
| 24 | 21 | 24 | 24 | 26 | 29 | 33 | 34 | 34 | 34 | 34 | 37 | 39 | 39 | 39 | 39 | 38 | 38 | **S** | 37 | 38 | 38 | 37 | 37 | 37 | **39** | 34.2 | 24 |
| 25 | 37 | 36 | 35 | 34 | 34 | 34 | 33 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 30 | 30 | **S** | 23 | 18 | 17 | 13 | 12 | 11 | 8 | 37 | 27.0 | 24 |
| 26 | 10 | 14 | 12 | 11 | 5 | 4 | 28 | 29 | 29 | 30 | 32 | 33 | 34 | 34 | 31 | **S** | 26 | 18 | 12 | 17 | 18 | 10 | 9 | 9 | 34 | 19.8 | 24 |
| 27 | 7 | 8 | 7 | 6 | 5 | 10 | 16 | 24 | 27 | 33 | 33 | 31 | 30 | 30 | **S** | 31 | 34 | 32 | 33 | 34 | 33 | 33 | 34 | 34 | 34 | 24.6 | 24 |
| 28 | 33 | 32 | 31 | 32 | 32 | 33 | 34 | 35 | 33 | 34 | 35 | 34 | 35 | **S** | 34 | 32 | 32 | 31 | 30 | 28 | 28 | 28 | 27 | 28 | 35 | 31.8 | 24 |
| 29 | 28 | 27 | 27 | 24 | 22 | 18 | 14 | 9 | 11 | 14 | 15 | 18 | **S** | 20 | 20 | 19 | 15 | 15 | 15 | 16 | 18 | 19 | 18 | 14 | 28 | 18.1 | 24 |
| 30 | 11 | 10 | 8 | 8 | 4 | 3 | 2 | 2 | 3 | 6 | 19 | **S** | 26 | 25 | 25 | 22 | 23 | 21 | 23 | 24 | 23 | 27 | 27 | 25 | 27 | 16.0 | 24 |
| HOURLY MAX | 37 | 36 | 35 | 34 | 34 | 34 | 34 | 35 | 34 | 34 | 37 | 39 | 39 | 39 | 39 | 38 | 38 | 32 | 37 | 38 | 38 | 37 | 37 | 37 | | | |
| HOURLY AVG | 21.4 | 21.0 | 20.8 | 20.3 | 20.3 | 20.3 | 21.4 | 20.0 | 20.2 | 22.5 | 23.9 | 25.6 | 26.9 | 26.6 | 26.6 | 26.1 | 24.6 | 23.2 | 23.1 | 22.5 | 23.7 | 22.1 | 22.4 | 21.4 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 684 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 39 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 24 |
| S CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | | | | |
| STANDARD DEVIATION: | 8.39 | | | | | |






JOB #: 2833-13-11-01-C

LICA
O3_ / WD Joint Frequency Distribution (Percent)

November 2013

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 | 1.94 | 1.78 | 5.34 | 6.32 | 5.51 | 3.72 | 11.66 | 5.02 | 3.56 | 3.07 | 9.56 | 18.47 | 7.45 | 3.56 | 6.32 | 6.64 | 100.00 |
| < 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 1.94 | 1.78 | 5.34 | 6.32 | 5.51 | 3.72 | 11.66 | 5.02 | 3.56 | 3.07 | 9.56 | 18.47 | 7.45 | 3.56 | 6.32 | 6.64 | |

Calm : .00 %

Total # Operational Hours : 617

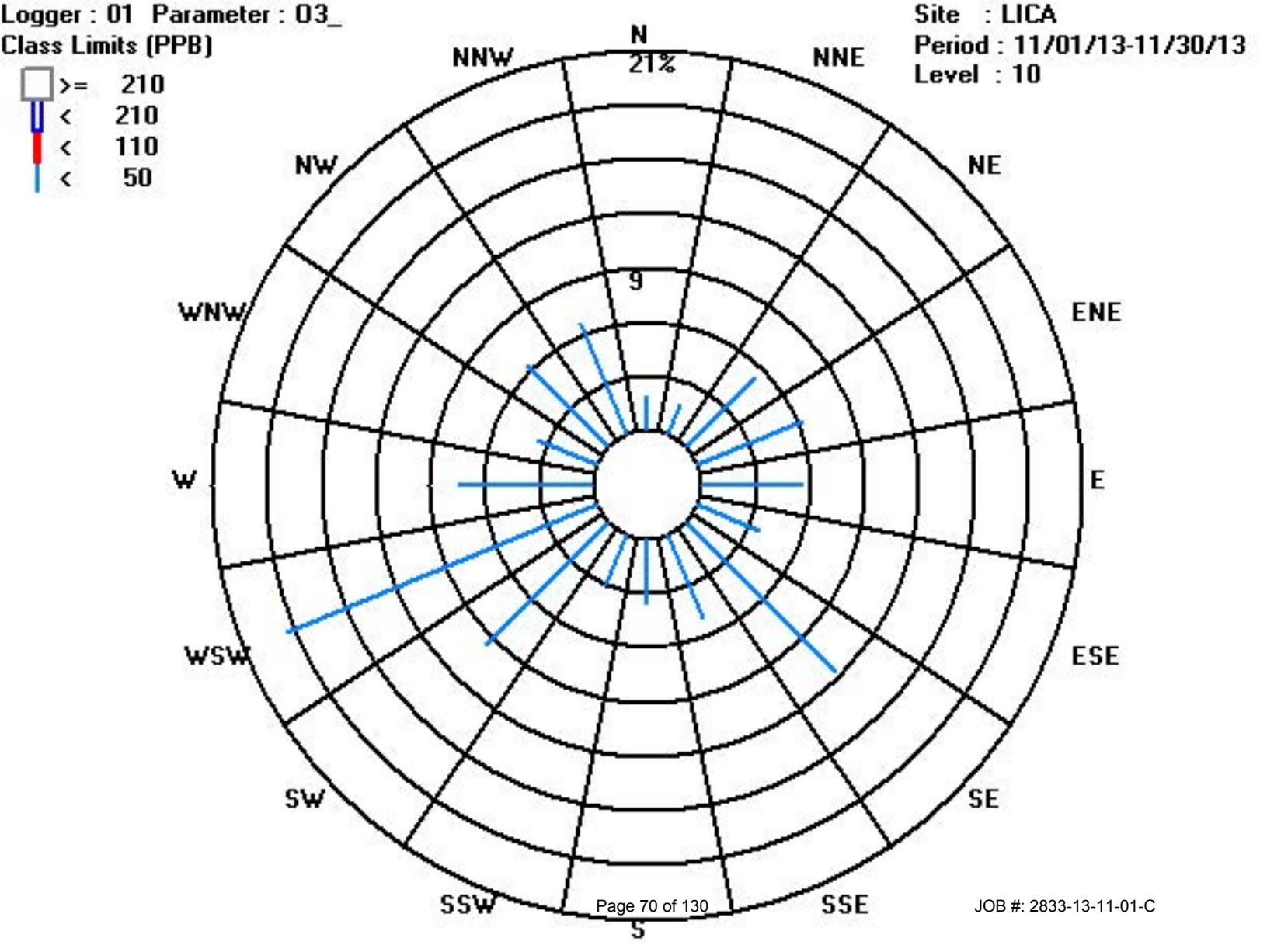
Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 59 | 114 | 46 | 22 | 39 | 41 | 617 |
| < 110 | | | | | | | | | | | | | | | | | |
| < 210 | | | | | | | | | | | | | | | | | |
| >= 210 | | | | | | | | | | | | | | | | | |
| Totals | 12 | 11 | 33 | 39 | 34 | 23 | 72 | 31 | 22 | 19 | 59 | 114 | 46 | 22 | 39 | 41 | |

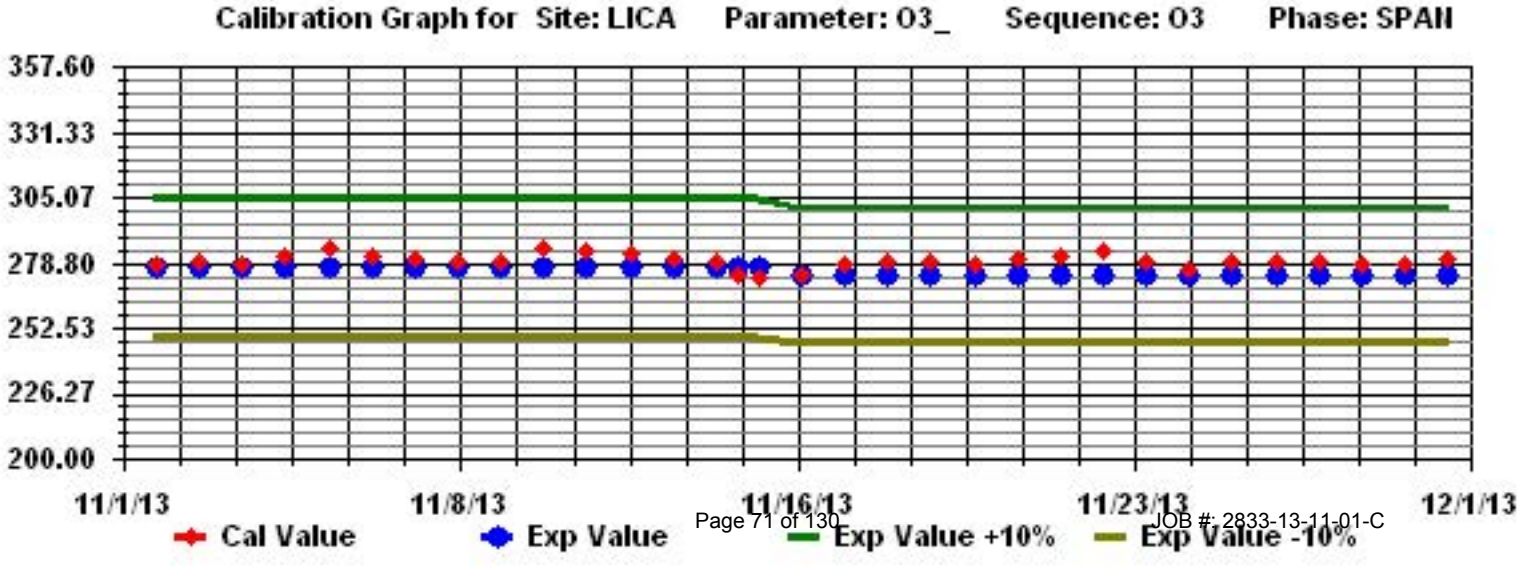
Calm : .00 %

Total # Operational Hours : 617






JOB #: 2833-13-11-01-C


Calibration Graph for Site: LICA Parameter: O3_ Sequence: O3 Phase: SPAN
357.60
331.33
305.07
278.80
252.53
226.27
200.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ambient Temperature

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE***

NOVEMBER 2013

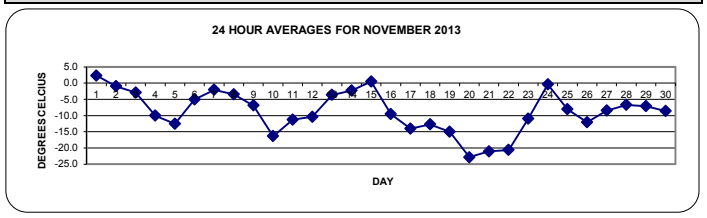
**AMBIENT TEMPERATURE** hourly averages (Degrees C)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.2 | 1 | 0.6 | -0.6 | -0.4 | -0.2 | 0.1 | 0.2 | 0.9 | 2.8 | 4.3 | 6.7 | 7.8 | 8.5 | **8.7** | 8.6 | 6.8 | 3.6 | 1.6 | 1.3 | -0.1 | -1.2 | -3 | -4 | **8.7** | **2.3** | 24 |
| 2 | -3.9 | -4.7 | -5.6 | -6.1 | -6.5 | -6.9 | -7.3 | -7.5 | -5.3 | -1.7 | -0.2 | 1.8 | 3.3 | 4.1 | 4.3 | 3.4 | 2.8 | 3 | 3.5 | 2.9 | 2.2 | 0.7 | 0.2 | 0 | 4.3 | -1.0 | 24 |
| 3 | -0.1 | -0.2 | -0.4 | -0.4 | -0.4 | -0.8 | -1.2 | -1.5 | -1.5 | -1.5 | -1.8 | -2.2 | -2.8 | -3.2 | -3.7 | -4 | -4.4 | -4.9 | -5.1 | -5.5 | -5.6 | -5.8 | -6.1 | -6.5 | -0.1 | -2.9 | 24 |
| 4 | -6.9 | -7.6 | -7.8 | -8.3 | -8.5 | -8.8 | -9.2 | -9.5 | -9.5 | -9.1 | -8.5 | -7.9 | -7.6 | -7.5 | -7.3 | -6.8 | -7.8 | -10.3 | -12.6 | -14 | -15.1 | -16 | -17.1 | -17.6 | -6.8 | -10.1 | 24 |
| 5 | -18.1 | -18.7 | -19.2 | -19.3 | -19.5 | -19.5 | -19.9 | -20.1 | -18.1 | -13.1 | -10.7 | -8.1 | -5.7 | -4.7 | -4 | -3.4 | -5 | -7.2 | -9.7 | -11.5 | -12.2 | -10.9 | -11 | -11.7 | -3.4 | -12.6 | 24 |
| 6 | -11.7 | -10.9 | -10.2 | -10.1 | -10.1 | -9.7 | -9 | -8.7 | -8.4 | -6.8 | -5.4 | -4.2 | -2.4 | -1 | 0.4 | -0.7 | -2.1 | -2.4 | -1.7 | -0.9 | -1.1 | -1.2 | -1.2 | -1.4 | 0.4 | -5.0 | 24 |
| 7 | -1.4 | -1.6 | -1.8 | -2.2 | -3.2 | -4.6 | -7 | -8.6 | -7.1 | -3.3 | -1.3 | 0.7 | 1.1 | 1.1 | 0.8 | 0.4 | -0.2 | -0.7 | -1.2 | -1.6 | -1.8 | -1.7 | -2 | -2.2 | 1.1 | -2.1 | 24 |
| 8 | -2.6 | -2.8 | -2.8 | -2.9 | -3.1 | -3.2 | -3.2 | -3.3 | -3.5 | -3.5 | -3.5 | -3.3 | -3.2 | -3.1 | -3.1 | -3.4 | -3.9 | -3.9 | -3.7 | -3.7 | -4.1 | -4.2 | -4.4 | -4.5 | -2.6 | -3.5 | 24 |
| 9 | -4.7 | -4.8 | -4.9 | -4.9 | -4.8 | -4.8 | -4.5 | -4 | -3.8 | -3.4 | -3.5 | -4.8 | -5.1 | -5.4 | -5.8 | -6.8 | -7.8 | -9.2 | -9.5 | -9.9 | -10.4 | -11.8 | -14.4 | -16 | -3.4 | -6.9 | 24 |
| 10 | -15.6 | -16.3 | -16.8 | -19.1 | -18.9 | -21.1 | -23 | -24.5 | -24.2 | -20.2 | -17.5 | -15 | -13 | -12.9 | -12.8 | -12.9 | -14.8 | -14.7 | -13.7 | -13.3 | -13 | -12.8 | -12.8 | -13.3 | -12.8 | -16.3 | 24 |
| 11 | -14.2 | -12.4 | -12.7 | -14.3 | -15 | -15.4 | -15.6 | -17.1 | -15.8 | -12.3 | -10.2 | -7.9 | -5.9 | -4.9 | -4.3 | -4.2 | -6.7 | -7.7 | -9.5 | -12 | -12.9 | -11.3 | -13.1 | -15 | -4.2 | -11.3 | 24 |
| 12 | -15.9 | -16.5 | -17.3 | -17.9 | -18.9 | -19.5 | -19.9 | -19.8 | -16.8 | -11.3 | -8.1 | -6.7 | -6.1 | -4.4 | -3.5 | -4 | -4.9 | -5 | -4.9 | -5.2 | -5.5 | -5.6 | -5.7 | -5.7 | -3.5 | -10.4 | 24 |
| 13 | -4.9 | -5 | -6.2 | -8.1 | -9.7 | -9.9 | -4.6 | -6.7 | -4.7 | -1.6 | -0.5 | 0.4 | 1.3 | 1.9 | 0.9 | 0 | -1.9 | -2.7 | -3.3 | -3.7 | -4.1 | -4.7 | -4.9 | -5 | 1.9 | -3.7 | 24 |
| 14 | -5.1 | -6.6 | -8.6 | -9.4 | -9.2 | -7.6 | -6.3 | -5.6 | -4.9 | -3.9 | -3 | -1.6 | -0.4 | 1.3 | 2.7 | 2.3 | 1.8 | 1.1 | 0.9 | 1.5 | 1.2 | 1.6 | 1.9 | 1.6 | 2.7 | -2.3 | 24 |
| 15 | 1.4 | 1.4 | 2 | 3.1 | 2.9 | 2.6 | 2.5 | 2.2 | 2.3 | 2.5 | 2.7 | 2.6 | 2.6 | 2.4 | 2.3 | 1.5 | -0.1 | -1.4 | -1.3 | -2.1 | -3.6 | -4.9 | -5.8 | -6.2 | 3.1 | 0.5 | 24 |
| 16 | -6.5 | -7 | -7.8 | -8.3 | -8.6 | -8.9 | -9.1 | -9.2 | -9.3 | -9.4 | -9.2 | -9.1 | -8.6 | -8.8 | -9.1 | -9.6 | -10.1 | -10.5 | -10.5 | -11.2 | -11.8 | -12.2 | -12.2 | -12.2 | -6.5 | -9.6 | 24 |
| 17 | -12.5 | -12.7 | -13 | -13.1 | -13.2 | -13.2 | -13.4 | -13.5 | -13.7 | -13.6 | -13.5 | -13.2 | -12.6 | -12.1 | -12.4 | -12.5 | -13.2 | -15.3 | -17.2 | -18.2 | -16.8 | -16.8 | -15.5 | -14.9 | -12.1 | -14.0 | 24 |
| 18 | -15.3 | -15.2 | -14.6 | -14.1 | -14.1 | -14 | -14.1 | -14 | -14.4 | -12.2 | -12.1 | -11.5 | -11 | -10.9 | -10.7 | -10.7 | -11 | -11 | -11.2 | -12 | -12.1 | -12.5 | -12.9 | -13.1 | -10.7 | -12.7 | 24 |
| 19 | -13.1 | -12.8 | -12.8 | -12.5 | -12.4 | -12.7 | -13 | -13.1 | -13.2 | -13.1 | -13.1 | -13.6 | -13.6 | -13.6 | -14.1 | -14.7 | -15.9 | -16.9 | -17.5 | -18 | -18.8 | -19.2 | -20.1 | -22 | -12.4 | -15.0 | 24 |
| 20 | -23.2 | -24.4 | -25.6 | -26 | -26.8 | -26.8 | **-27.8** | -27.3 | -25.7 | -23.6 | -21.7 | -19.8 | -18.3 | -18.3 | -17.9 | -18.3 | -21.2 | -23.6 | -23.3 | -22.1 | -22.2 | -21.9 | -21.4 | -20.8 | -17.9 | -22.8 | 24 |
| 21 | -20.8 | -20.8 | -20.6 | -20.7 | -20.6 | -21.7 | -23.1 | -23.9 | -24.2 | -23.3 | -21.7 | -19.6 | -18.3 | -17.2 | -20.9 | -22.1 | -22.2 | -23 | -22.2 | -21.2 | -20.2 | -19.4 | -18.6 | -18.6 | -17.2 | -21.0 | 24 |
| 22 | -19.2 | -19.6 | -19.4 | -20.2 | -21.4 | -22.3 | -22.5 | -23 | -23.5 | -22.9 | -22.1 | -20.9 | -19.7 | -19.3 | -19 | -19.9 | -20.9 | -20.5 | -20 | -20.1 | -19.9 | -19.4 | -19.4 | -19.1 | -19.0 | -20.6 | 24 |
| 23 | -18.9 | -18.2 | -17.4 | -16.5 | -16.4 | -15.9 | -15.6 | -15.1 | -14.4 | -13.2 | -12 | -9.3 | -8.4 | -7.7 | -7.4 | -7.4 | -7.1 | -7.1 | -6.8 | -6.3 | -6 | -6.1 | -5.3 | -4.6 | -4.6 | -11.0 | 24 |
| 24 | -3.3 | -1.3 | -1.7 | -1.8 | -1.5 | -2 | -1 | -0.9 | -0.7 | 0 | 1.8 | 2.8 | 3 | 2.8 | 2.7 | 1.6 | 0.2 | -0.7 | -1.1 | -0.9 | -1.2 | -2 | -2.1 | -1.7 | 3.0 | -0.4 | 24 |
| 25 | -1.9 | -2.4 | -2.6 | -2.7 | -3.2 | -4.3 | -6.1 | -7.2 | -8.1 | -6.7 | -5.8 | -4.8 | -4.2 | -4 | -4.7 | -5.8 | -8.7 | -11.4 | -13.7 | -15.1 | -16.6 | -17.1 | -18 | -18.8 | -1.9 | -8.1 | 24 |
| 26 | -19.4 | -19.6 | -20.1 | -20.2 | -19.3 | -17.5 | -13.4 | -11.4 | -10.6 | -9.9 | -8.4 | -6.6 | -5.4 | -4.3 | -5.4 | -5.8 | -7.8 | -9.6 | -11.2 | -12.2 | -11.1 | -12.8 | -13.9 | -14.1 | -4.3 | -12.1 | 24 |
| 27 | -14.5 | -15.2 | -16 | -16.2 | -12.7 | -9.8 | -8.3 | -7.3 | -6.3 | -5.8 | -5.6 | -5.6 | -5.5 | -5.5 | -5.7 | -5.6 | -6 | -6.4 | -6.9 | -7.4 | -7.8 | -7.7 | -7.6 | -7.7 | -5.5 | -8.5 | 24 |
| 28 | -7.7 | -7.7 | -7.6 | -7.7 | -7.8 | -7.7 | -7.6 | -7.6 | -7.7 | -7.6 | -7.3 | -6.7 | -6.1 | -5.8 | -5.7 | -5.8 | -5.9 | -6 | -6.3 | -6.3 | -6.2 | -5.9 | -5.6 | -5.4 | -5.4 | -6.7 | 24 |
| 29 | -5.3 | -5.2 | -5.6 | -7.5 | -9.3 | -10.8 | -12 | -12.9 | -12.2 | -9.6 | -7.2 | -5.1 | -3 | -1.9 | -1.2 | -2.2 | -3.9 | -4.9 | -6.1 | -8 | -7.6 | -7.8 | -9.2 | -11.4 | -1.2 | -7.1 | 24 |
| 30 | -12.9 | -14.5 | -15.3 | -16 | -16.6 | -17.2 | -16.1 | -14.3 | -13 | -11.9 | -9 | -5.2 | -3.5 | -2.5 | -3.1 | -3.7 | -3.7 | -4.1 | -3.7 | -3.9 | -4.2 | -3.7 | -3.8 | -4.1 | -2.5 | -8.6 | 24 |
| HOURLY MAX | 1.4 | 1.4 | 2.0 | 3.1 | 2.9 | 2.6 | 2.5 | 2.2 | 2.3 | 2.8 | 4.3 | 6.7 | 7.8 | 8.5 | 8.7 | 8.6 | 6.8 | 3.6 | 3.5 | 2.9 | 2.2 | 1.6 | 1.9 | 1.6 | | | |
| HOURLY AVG | -9.9 | -10.1 | -10.4 | -10.8 | -11.0 | -11.1 | -11.0 | -11.2 | -10.6 | -9.0 | -7.8 | -6.6 | -5.7 | -5.2 | -5.3 | -5.8 | -6.9 | -7.8 | -8.3 | -8.7 | -9.0 | -9.1 | -9.5 | -9.9 | | | |

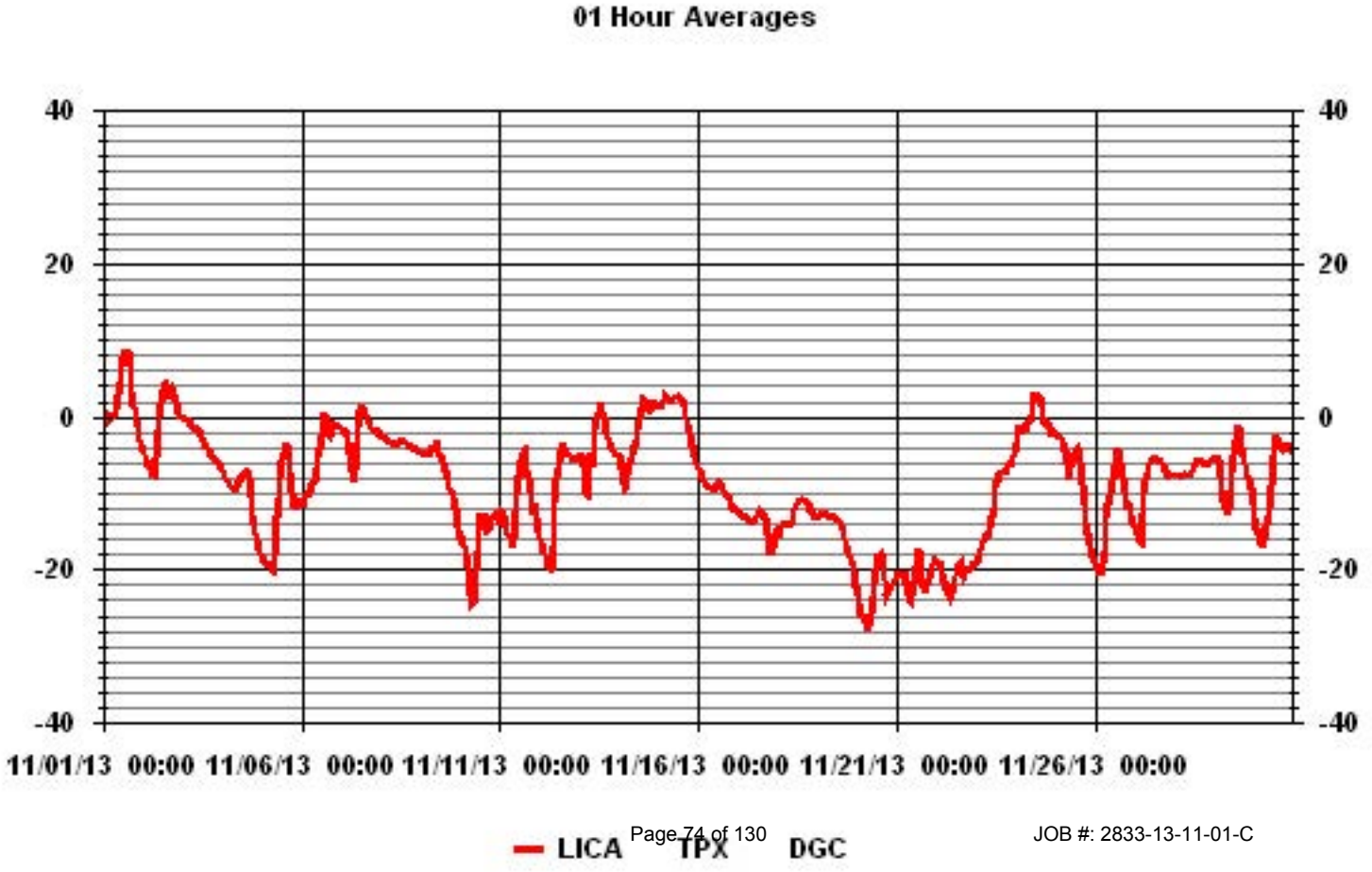
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MINIMUM 1-HR AVERAGE: | -27.8 | $^{O}$C | @ HOUR(S) | 6 | ON DAY(S) | | 20 |
| MAXIMUM 1-HR AVERAGE: | 8.7 | $^{O}$C | @ HOUR(S) | 14 | ON DAY(S) | | 1 |
| MAXIMUM 24-HR AVERAGE: | 2.3 | $^{O}$C | | | ON DAY(S) | | 1 |
| | | | | | VAR-VARIOUS | | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | | 720 | HRS |
| | | | AMD OPERATION UPTIME: | | | 100.0 | % |
| STANDARD DEVIATION: | 7.28 | | MONTHLY AVERAGE: | | | -8.77 | $^{O}$C |






JOB #: 2833-13-11-01-C

# Relative Humidity

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE***

NOVEMBER 2013

**RELATIVE HUMIDITY** hourly averages (%)

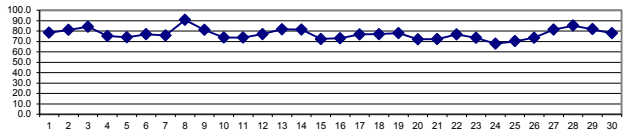
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 93 | 93 | 92 | 94 | 93 | 91 | 90 | 89 | 89 | 83 | 75 | 64 | 58 | 54 | 52 | 51 | 57 | 69 | 76 | 77 | 81 | 83 | 87 | 88 | 94 | 78.3 | 24 |
| 2 | 87 | 87 | 89 | 88 | 88 | 89 | 88 | 88 | 85 | 80 | 78 | 77 | 71 | 67 | 67 | 78 | 80 | 71 | 67 | 68 | 76 | 89 | 94 | 97 | 97 | 81.2 | 24 |
| 3 | **98** | **98** | 96 | 94 | 92 | 93 | 91 | 86 | 81 | 80 | 81 | 82 | 81 | 80 | 80 | 80 | 79 | 80 | 79 | 78 | 78 | 78 | 76 | 77 | **98** | 84.1 | 24 |
| 4 | 76 | 78 | 73 | 74 | 74 | 78 | 76 | 77 | 76 | 76 | 74 | 72 | 72 | 67 | 67 | 65 | 67 | 77 | 82 | 83 | 82 | 81 | 80 | 80 | 83 | 75.3 | 24 |
| 5 | 80 | 78 | 77 | 78 | 78 | 78 | 77 | 77 | 75 | 76 | 75 | 71 | 66 | 63 | 59 | 53 | 59 | 67 | 76 | 81 | 82 | 82 | 83 | 84 | 84 | 74.0 | 24 |
| 6 | 84 | 83 | 83 | 84 | 84 | 84 | 83 | 82 | 80 | 74 | 71 | 68 | 68 | 66 | 62 | 67 | 73 | 77 | 78 | 77 | 78 | 79 | 80 | 79 | 84 | 76.8 | 24 |
| 7 | 79 | 80 | 80 | 81 | 83 | 85 | 89 | 89 | 84 | 75 | 71 | 67 | 65 | 63 | 65 | 67 | 70 | 71 | 72 | 73 | 74 | 75 | 78 | 83 | 89 | 75.8 | 24 |
| 8 | 88 | 91 | 92 | 92 | 92 | 91 | 91 | 90 | 90 | 92 | 93 | 94 | 94 | 93 | 92 | 90 | 89 | 91 | 89 | 89 | 89 | 89 | 89 | 89 | 94 | **90.8** | 24 |
| 9 | 89 | 89 | 89 | 90 | 89 | 90 | 91 | 89 | 88 | 87 | 82 | 78 | 76 | 79 | 76 | 70 | 73 | 70 | 72 | 70 | 72 | 77 | 81 | 82 | 91 | 81.2 | 24 |
| 10 | 80 | 81 | 80 | 78 | 78 | 77 | 75 | 75 | 74 | 75 | 75 | 70 | 64 | 65 | 65 | 65 | 74 | 75 | 73 | 73 | 75 | 75 | 75 | 75 | 81 | 73.8 | 24 |
| 11 | 79 | 76 | 78 | 81 | 81 | 81 | 80 | 81 | 79 | 73 | 67 | 61 | 56 | 55 | 53 | 55 | 67 | 72 | 79 | 84 | 84 | 85 | 83 | 82 | 85 | 73.8 | 24 |
| 12 | 81 | 80 | 79 | 79 | 78 | 78 | 77 | 76 | 77 | 77 | 77 | 76 | 75 | 71 | 69 | 72 | 76 | 77 | 77 | 79 | 80 | 80 | 79 | 79 | 81 | 77.0 | 24 |
| 13 | 78 | 79 | 84 | 87 | 88 | 88 | 91 | 91 | 92 | 86 | 85 | 78 | 71 | 69 | 70 | 69 | 72 | 74 | 75 | 78 | 84 | 90 | 90 | 91 | 92 | 81.7 | 24 |
| 14 | 91 | 91 | 90 | 89 | 90 | 91 | 91 | 91 | 91 | 92 | 90 | 84 | 81 | 74 | 70 | 74 | 75 | 76 | 74 | 72 | 72 | 70 | 66 | 66 | 92 | 81.3 | 24 |
| 15 | 66 | 75 | 74 | 71 | 72 | 75 | 76 | 76 | 76 | 72 | 70 | 66 | 66 | 65 | 65 | 68 | 81 | 83 | 70 | 74 | 73 | 75 | 75 | 73 | 83 | 72.4 | 24 |
| 16 | 74 | 76 | 76 | 77 | 77 | 75 | 73 | 71 | 73 | 71 | 69 | 69 | 66 | 68 | 69 | 71 | 71 | 72 | 73 | 75 | 75 | 78 | 77 | 77 | 78 | 73.0 | 24 |
| 17 | 77 | 78 | 79 | 78 | 76 | 73 | 75 | 76 | 81 | 80 | 78 | 76 | 71 | 66 | 67 | 70 | 76 | 82 | 81 | 80 | 81 | 80 | 81 | 81 | 82 | 76.8 | 24 |
| 18 | 81 | 81 | 82 | 82 | 82 | 82 | 82 | 82 | 81 | 75 | 71 | 68 | 68 | 69 | 70 | 72 | 76 | 76 | 74 | 74 | 78 | 80 | 81 | 81 | 82 | 77.0 | 24 |
| 19 | 82 | 83 | 83 | 84 | 83 | 83 | 83 | 81 | 81 | 80 | 79 | 80 | 76 | 72 | 72 | 74 | 73 | 73 | 74 | 75 | 76 | 75 | 74 | 75 | 84 | 78.0 | 24 |
| 20 | 76 | 75 | 74 | 74 | 74 | 74 | 72 | 73 | 73 | 72 | 70 | 68 | 64 | 64 | 64 | 66 | 75 | 76 | 76 | 75 | 74 | 75 | 74 | 72 | 76 | 72.1 | 24 |
| 21 | 72 | 73 | 74 | 75 | 74 | 75 | 74 | 74 | 74 | 74 | 70 | 65 | 63 | 60 | 68 | 73 | 74 | 75 | 75 | 74 | 74 | 75 | 74 | 75 | 75 | 72.3 | 24 |
| 22 | 76 | 76 | 75 | 77 | 77 | 78 | 77 | 78 | 79 | 78 | 77 | 77 | 77 | 77 | 76 | 77 | 77 | 77 | 76 | 75 | 76 | 76 | 75 | 76 | 79 | 76.7 | 24 |
| 23 | 76 | 77 | 77 | 77 | 77 | 76 | 75 | 76 | 76 | 75 | 72 | 66 | 65 | 66 | 67 | 69 | 70 | 72 | 74 | 76 | 74 | 76 | 75 | 77 | 77 | 73.4 | 24 |
| 24 | 77 | 75 | 79 | 81 | 82 | 84 | 81 | 80 | 78 | 75 | 68 | 58 | 52 | 52 | 52 | 56 | 60 | 62 | 62 | 60 | 61 | 63 | 64 | 64 | 84 | 67.8 | 24 |
| 25 | 66 | 68 | 69 | 69 | 69 | 71 | 73 | 76 | 78 | 69 | 64 | 57 | 55 | 56 | 58 | 60 | 69 | 75 | 81 | 82 | 82 | 81 | 78 | 78 | 82 | 70.2 | 24 |
| 26 | 76 | 77 | 76 | 76 | 77 | 78 | 80 | 72 | 68 | 66 | 63 | 58 | 57 | 59 | 63 | 65 | 73 | 78 | 82 | 84 | 85 | 85 | 84 | 84 | 85 | 73.6 | 24 |
| 27 | 83 | 82 | 80 | 81 | 85 | 87 | 87 | 87 | 86 | 82 | 79 | 77 | 76 | 76 | 77 | 77 | 79 | 80 | 81 | 81 | 82 | 83 | 83 | 84 | 87 | 81.5 | 24 |
| 28 | 84 | 84 | 85 | 85 | 86 | 86 | 86 | 87 | 87 | 87 | 87 | 86 | 84 | 83 | 83 | 84 | 84 | 83 | 84 | 85 | 86 | 86 | 86 | 88 | 88 | 85.3 | 24 |
| 29 | 89 | 87 | 88 | 90 | 89 | 88 | 86 | 85 | 85 | 84 | 80 | 75 | 68 | 66 | 65 | 68 | 74 | 77 | 82 | 86 | 88 | 88 | 89 | 88 | 90 | 81.9 | 24 |
| 30 | 85 | 82 | 81 | 81 | 80 | 79 | 80 | 82 | 82 | 83 | 83 | 76 | 71 | 68 | 69 | 72 | 73 | 76 | 75 | 75 | 76 | 74 | 80 | 85 | 85 | 77.8 | 24 |
| HOURLY MAX | 98 | 98 | 96 | 94 | 93 | 93 | 91 | 91 | 92 | 92 | 93 | 94 | 94 | 93 | 92 | 90 | 89 | 91 | 89 | 89 | 89 | 90 | 94 | 97 | | | |
| HOURLY AVG | 80.8 | 81.1 | 81.1 | 81.6 | 81.6 | 81.9 | 81.7 | 81.2 | 80.6 | 78.3 | 75.8 | 72.1 | 69.2 | 67.8 | 67.7 | 69.3 | 73.2 | 75.5 | 76.3 | 77.1 | 78.3 | 79.4 | 79.7 | 80.3 | | | |

**STATUS FLAG CODES**

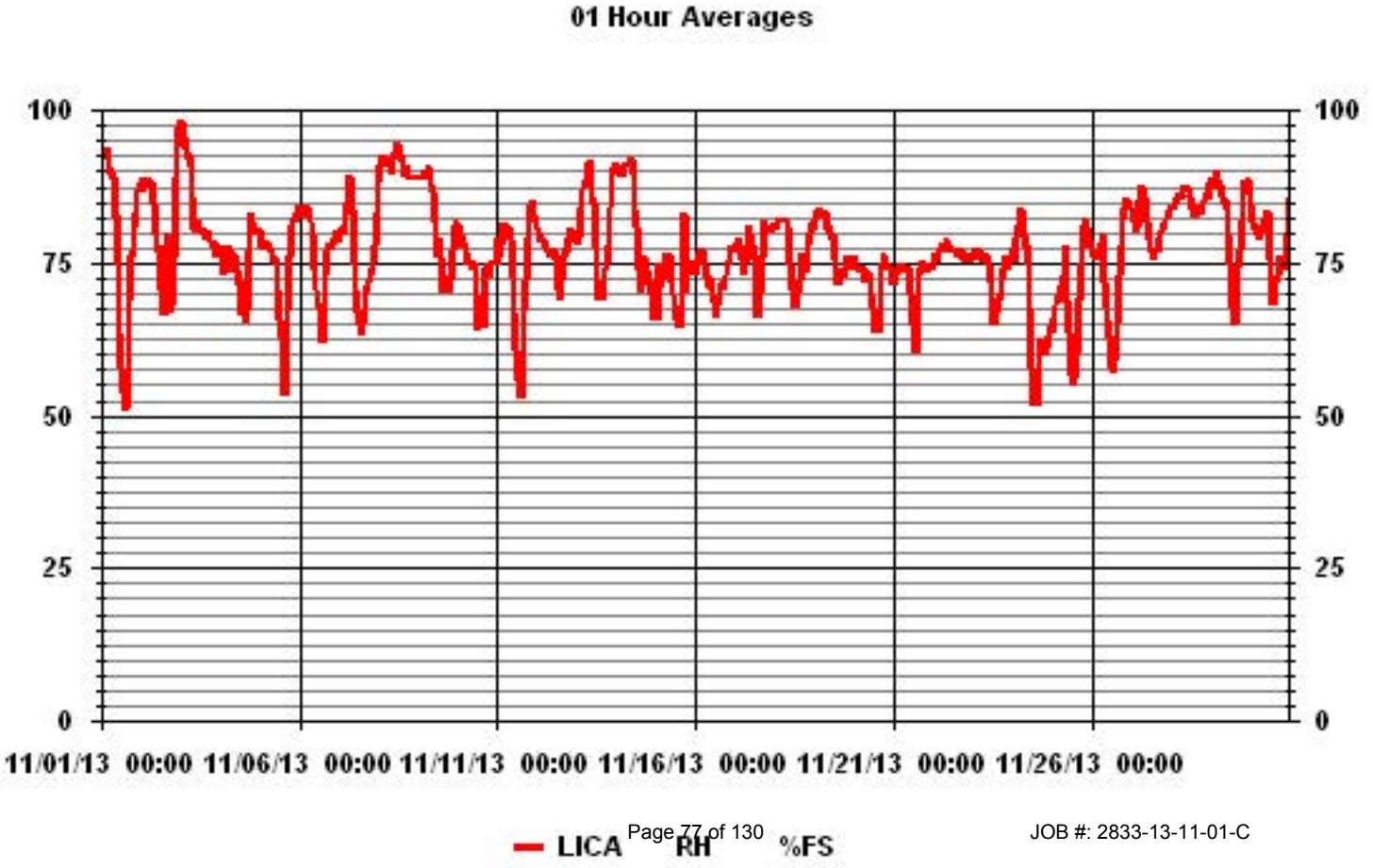
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**24 HOUR AVERAGES FOR NOVEMBER 2013**




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | | 98 | % | @ HOUR(S) | 0, 1 | ON DAY(S) | 3 |
| MAXIMUM 24-HR AVERAGE: | | 90.8 | % | | | ON DAY(S) | 8 |
| CALIBRATION TIME: | 0 | HRS | | OPERATIONAL TIME: | | 720 | HRS |
| | | | | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 8.33 | | | MONTHLY AVERAGE: | | 77.15 | % |






JOB #: 2833-13-11-01-C

# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

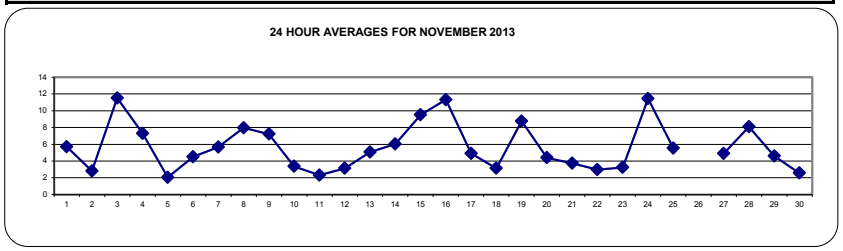
**VECTOR WIND SPEED (WS)** hourly averages (km/hr)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 7.7 | 7.3 | 3.3 | 3.7 | 6.6 | 5.9 | 6.2 | 5.1 | 4 | 5.2 | 5.7 | 9 | 11 | 11.4 | 11.7 | 10.2 | 6.6 | 3.2 | 4.3 | 5.2 | 4.9 | 1.3 | 0.5 | 1.4 | 11.7 | 5.7 | 24 |
| 2 | 1.3 | 0.8 | 1 | 0.4 | 0.8 | 0.5 | 0.4 | 0.7 | 0.5 | 1.2 | 1.3 | 2.6 | 1.9 | 2.1 | 3.2 | 3.7 | 1.8 | 3.9 | 7.5 | 7.9 | 9.5 | 9.6 | 8.9 | 10 | 10 | 2.8 | 24 |
| 3 | 11.4 | 11.8 | 13.6 | 12.7 | 11.1 | 12 | 12 | 13.9 | 14.4 | 13.5 | 13.5 | 13.4 | 13.5 | 13.1 | 13.7 | 13.6 | 13.6 | 14.2 | 13 | 13.3 | 11.9 | 13.2 | 12.8 | 13 | 14.4 | **11.5** | 24 |
| 4 | 13.9 | 12.7 | 12.7 | 13.3 | 12.4 | 10.5 | 12.6 | 10.5 | 8.6 | 7.5 | 9.3 | 8.9 | 10.8 | 10.7 | 9.1 | 9.1 | 5.5 | 1.7 | 2 | 1.8 | 1.3 | 1.5 | 1.6 | 0.7 | 13.9 | 7.3 | 24 |
| 5 | 0.7 | 1.1 | 1.4 | 0.7 | 1.3 | 0.8 | 1 | 0.7 | 1.4 | 3.2 | 3.4 | 2.8 | 1.3 | 2.5 | 4.5 | 3.8 | 4 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 4.5 | 2.0 | 17 |
| 6 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 6.3 | 7 | 5.9 | 3 | 1.5 | 2.2 | 4.1 | 4.8 | 3.9 | 5 | 4.5 | 5.7 | 7.0 | 4.5 | 12 |
| 7 | 5.5 | 4.9 | 5.4 | 6.3 | 6.1 | 4.1 | 0.5 | 0.5 | 0.5 | 0.5 | 1.8 | 2.9 | 4.3 | 5.2 | 5.6 | 5.6 | 7.1 | 6.7 | 9.5 | 9.4 | 11.3 | 10.3 | 11.3 | 10.6 | 11.3 | 5.7 | 24 |
| 8 | 11.4 | 9.3 | 8.7 | 10.9 | 11.4 | 11.2 | 11 | 10.2 | 10.1 | 11.3 | 10.5 | 10.7 | 9.9 | 8.8 | 7.6 | 8.4 | 8.2 | 6.1 | 4 | 2.6 | 2.5 | 1.9 | 1.9 | 2.2 | 11.4 | 8.0 | 24 |
| 9 | 3.2 | 3.6 | 3.6 | 4.4 | 5.5 | 5.4 | 4.6 | 5.6 | 5.5 | 5.9 | 8.8 | 10.5 | 11.2 | 12.3 | 11.4 | 12.5 | 11.8 | 9.9 | 6.9 | 8.4 | 6.7 | 6 | 4 | 5.2 | 12.5 | 7.2 | 24 |
| 10 | 7.1 | 5.3 | 6.2 | 5.3 | 4.5 | 4.9 | 2.5 | 1.4 | 1.1 | 1.2 | 1.1 | 2.1 | 3.8 | 3.8 | 5.1 | 3.4 | 1.4 | 2.3 | 3.1 | 2.6 | 2.7 | 2.7 | 3.9 | 3.3 | 7.1 | 3.4 | 24 |
| 11 | 1.4 | 4.4 | 3.3 | 1.1 | 1.3 | 1.8 | 1 | 0.7 | 1 | 3.3 | 4.9 | 4.6 | 2.3 | 4 | 4.9 | 3.4 | 2.4 | 2.3 | 1 | 1.7 | 0.4 | 3 | 1.2 | 0.3 | 4.9 | 2.3 | 24 |
| 12 | 0.8 | 0.8 | 0.6 | 0.2 | 1 | 0.7 | 0.7 | 1.6 | 1.3 | 1.1 | 2 | 3.9 | 5 | 4.6 | 1.9 | 2.2 | 2.5 | 5 | 6.5 | 7.8 | 6.2 | 5.7 | 7.1 | 5.8 | 7.8 | 3.1 | 24 |
| 13 | 5.5 | 5.7 | 3.7 | 0.8 | 1.6 | 2.3 | 5.8 | 4.1 | 5.2 | 2.7 | 5.6 | 5.1 | 7.3 | 7.7 | 9.5 | 8.1 | 6.1 | 6.3 | 5.8 | 4.7 | 4.2 | 4.3 | 4.8 | 4.3 | 9.5 | 5.1 | 24 |
| 14 | 2.6 | 2.4 | 3.9 | 3.1 | 3.7 | 4.8 | 4 | 4.2 | 4.4 | **X** | 5.2 | 6.1 | 4.5 | 4.7 | 8.9 | 8.9 | 8.6 | 7.2 | 9.6 | 10 | 10.2 | 9.4 | 7.1 | 5.1 | 10.2 | 6.0 | 23 |
| 15 | 7.4 | 11.6 | 10.5 | 13.6 | 11.8 | 10.9 | 10.7 | 9.2 | 9.2 | 9.7 | 9.4 | 9.5 | 7.6 | 7.2 | 6.1 | 3 | 3.3 | 4.4 | 10.1 | 10.9 | 13.2 | 12.5 | 11.7 | 14.5 | 14.5 | 9.5 | 24 |
| 16 | 13.9 | 12.4 | 11.6 | 10.3 | 10.8 | 13 | 14.6 | 15.7 | 16.2 | 12.9 | 12.1 | 12.3 | 10.2 | 10.4 | 10.8 | 13.2 | 10.3 | 7.1 | 11.4 | 8.6 | 9.8 | 7 | 8.4 | 8.5 | 16.2 | 11.3 | 24 |
| 17 | 8.4 | 8.9 | 8.5 | 7.7 | 6.3 | 4.9 | 5.5 | 5.4 | 4.5 | 5.4 | 6.4 | 7.1 | 5.8 | 5.8 | 5.6 | 4.5 | 2.6 | 1.1 | 1.1 | 1.9 | 2.6 | 0.5 | 2.2 | 4.8 | 8.9 | 4.9 | 24 |
| 18 | 3 | 2.7 | 2.9 | 2.9 | 2 | 1.3 | 2 | 0.6 | 1.4 | 1.3 | 2.8 | 4.4 | 2.2 | 2.9 | 2 | 2.1 | 1.6 | 1.3 | 6.6 | 6.8 | 6.4 | 7.5 | 4.1 | 4.3 | 7.5 | 3.1 | 24 |
| 19 | 5 | 4.8 | 6.3 | 5.8 | 9.9 | 10 | 10.1 | 9.2 | 9.6 | 11.4 | 10.6 | 12 | 14.9 | 13.3 | 11.7 | 10.8 | 9.3 | 11.7 | 9.6 | 6.3 | 4.8 | 5.6 | 4.2 | 3.1 | 14.9 | 8.8 | 24 |
| 20 | 4.4 | 3 | 3.4 | 4.7 | 7.5 | 5.2 | 1.9 | 4.6 | 6.4 | 6.4 | 4.3 | 4.9 | 4.6 | 6.9 | 5.7 | 3.8 | 1.1 | 2.3 | 2.3 | 3.3 | 2.1 | 2.7 | 5.9 | 8 | 8.0 | 4.4 | 24 |
| 21 | 7 | 6.9 | 3.5 | 2.9 | 1.5 | 2.4 | 1.9 | 2.8 | 3.9 | 4.3 | 5.4 | 2.1 | 7.1 | 5.6 | 4.2 | 7.1 | 3.2 | 3.7 | 1.2 | 2.3 | 1.1 | 0.9 | 3.9 | 4.6 | 7.1 | 3.7 | 24 |
| 22 | 4 | 1.8 | 2.5 | 2.5 | 2.8 | 2.9 | 1.9 | 4.2 | 3.7 | 2.4 | 3.2 | 3.6 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 4.2 | 3.0 | 12 |
| 23 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 7 | 4.8 | 4.6 | 3.9 | 2.8 | 3.1 | 2.1 | 1 | 1.7 | 2.5 | 2.2 | 3.9 | 2.6 | 7.0 | 3.2 | 13 |
| 24 | 3.9 | 8.1 | 5.4 | 8.4 | 7.4 | 5.9 | 10.6 | 12 | 10.4 | 8.8 | 13.6 | 15.5 | 15.8 | **43.2** | 27.1 | 12.5 | 8 | 6.8 | 6.6 | 9.2 | 8.1 | 5.7 | 9.6 | 12.1 | **43.2** | 11.4 | 24 |
| 25 | 8.9 | 7.4 | 8.5 | 9.9 | 12.1 | 8.1 | 9.2 | 5.6 | 3.1 | 4.8 | 5.9 | 4.5 | 5.4 | 3.6 | 4.2 | 4.7 | 4.8 | 3.5 | 2.9 | 1.7 | 2.7 | 2 | 3.8 | **X** | 12.1 | 5.5 | 23 |
| 26 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | | | 0 |
| 27 | **X** | 1.3 | 3.1 | 2.4 | 5.6 | 5.2 | 4.8 | 3.9 | 5.3 | 7 | 6.8 | 7.1 | 7.2 | 5.9 | 5.2 | 1.3 | 4.8 | 4.1 | 4.3 | 5.2 | 5.5 | 5.2 | 4.8 | 6.4 | 7.2 | 4.9 | 23 |
| 28 | 4.3 | 5.2 | 5.1 | 5.6 | 6.6 | 7.9 | 7.3 | 7.8 | 8.9 | 9.2 | 11.1 | 9.8 | 13 | 12 | 9.4 | 14 | 12.3 | 10.2 | 11.1 | 9.4 | 4.6 | 2.2 | 3 | 4 | 14.0 | 8.1 | 24 |
| 29 | 4 | 5.1 | 4.7 | 3.1 | 2.5 | 2.1 | 2.7 | 1.4 | 4.4 | 5.4 | 4.5 | 5.9 | 4.8 | 8.3 | 6.6 | 6.2 | 5.9 | 6.6 | 5 | 3.9 | 6.4 | 5.4 | 3.8 | 1.5 | 8.3 | 4.6 | 24 |
| 30 | 0.9 | 0.6 | 0.3 | 0.2 | 0.2 | 0.2 | 1.2 | 0.8 | 1 | 0.5 | 2.1 | 3.6 | 4.3 | 6.4 | 7.9 | 5.9 | 4.1 | 1.1 | 2.3 | 2 | 4.4 | 5.9 | 2.2 | 3.3 | 7.9 | 2.6 | 24 |
| HOURLY MAX | 13.9 | 12.7 | 13.6 | 13.6 | 12.4 | 13.0 | 14.6 | 15.7 | 16.2 | 13.5 | 13.6 | 15.5 | 15.8 | 43.2 | 27.1 | 14.0 | 13.6 | 14.2 | 13.0 | 13.3 | 13.2 | 13.2 | 12.8 | 14.5 | | | |
| HOURLY AVG | 5.7 | 5.6 | 5.3 | 5.3 | 5.7 | 5.4 | 5.4 | 5.3 | 5.4 | 5.6 | 6.3 | 6.9 | 7.2 | 8.4 | 7.6 | 6.7 | 5.6 | 5.1 | 5.7 | 5.7 | 5.6 | 5.2 | 5.2 | 5.6 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |



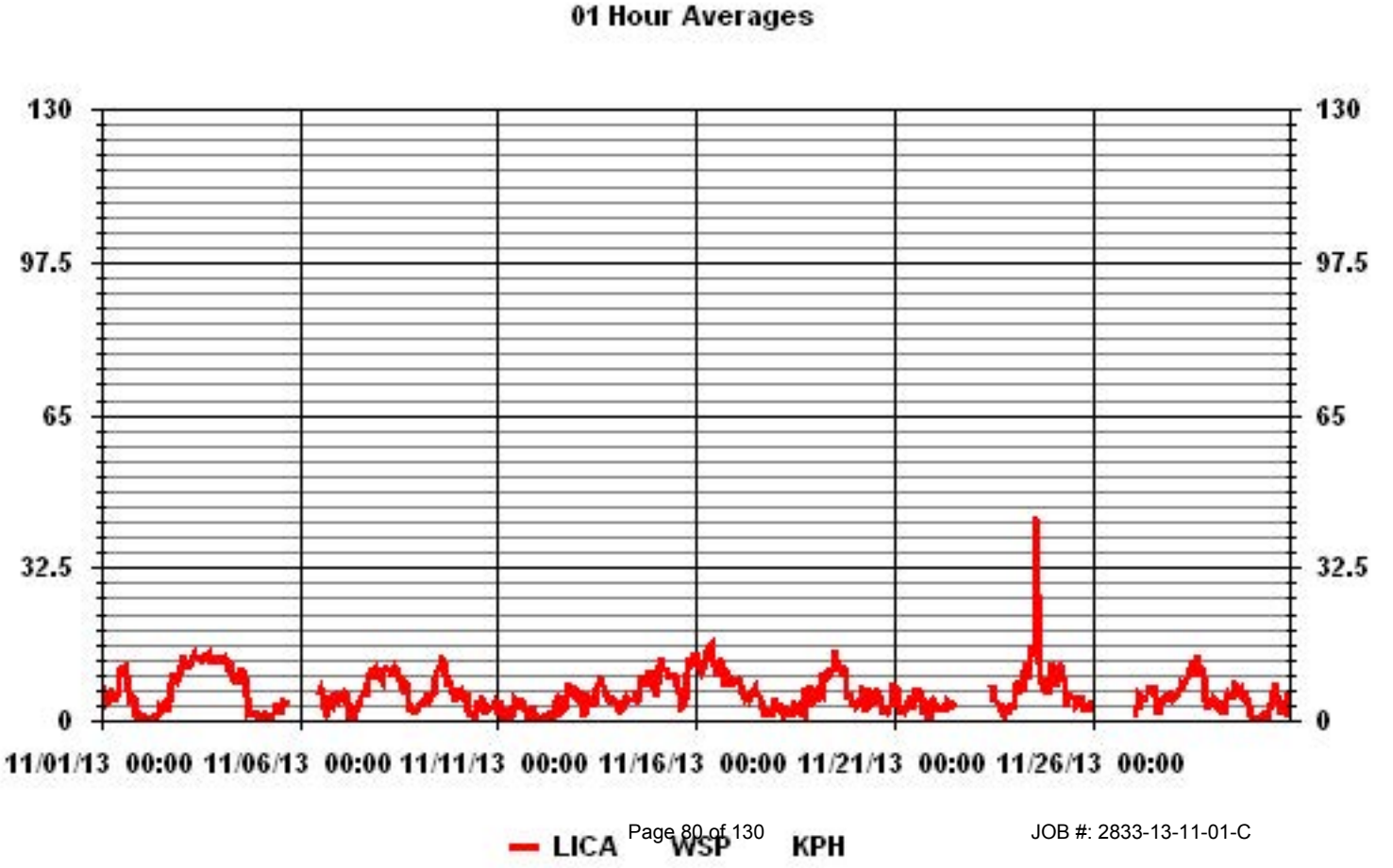

LAST CALIBRATION: November 28, 2012

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 43.2 | KPH | @ HOUR(S) | 13 | ON DAY(S) | 24 | |
| MAXIMUM 24-HR AVERAGE: | 11.5 | KPH | | | ON DAY(S) | 3 | |
| CALMS (≤ 0 KPH) | 0.81 | % | OPERATIONAL TIME: | | 651 | HRS | |
| MONTHLY CALIBRATION TIME: | 0 | HRS | AMD OPERATION UPTIME: | | 90.4 | % | |
| STANDARD DEVIATION: | 4.13 | | MONTHLY AVERAGE: | | 5.90 | KPH | |



JOB #: 2833-13-11-01-C






JOB #: 2833-13-11-01-C

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**VECTOR WIND SPEED MAX instantaneous maximum in km/hr**

MST

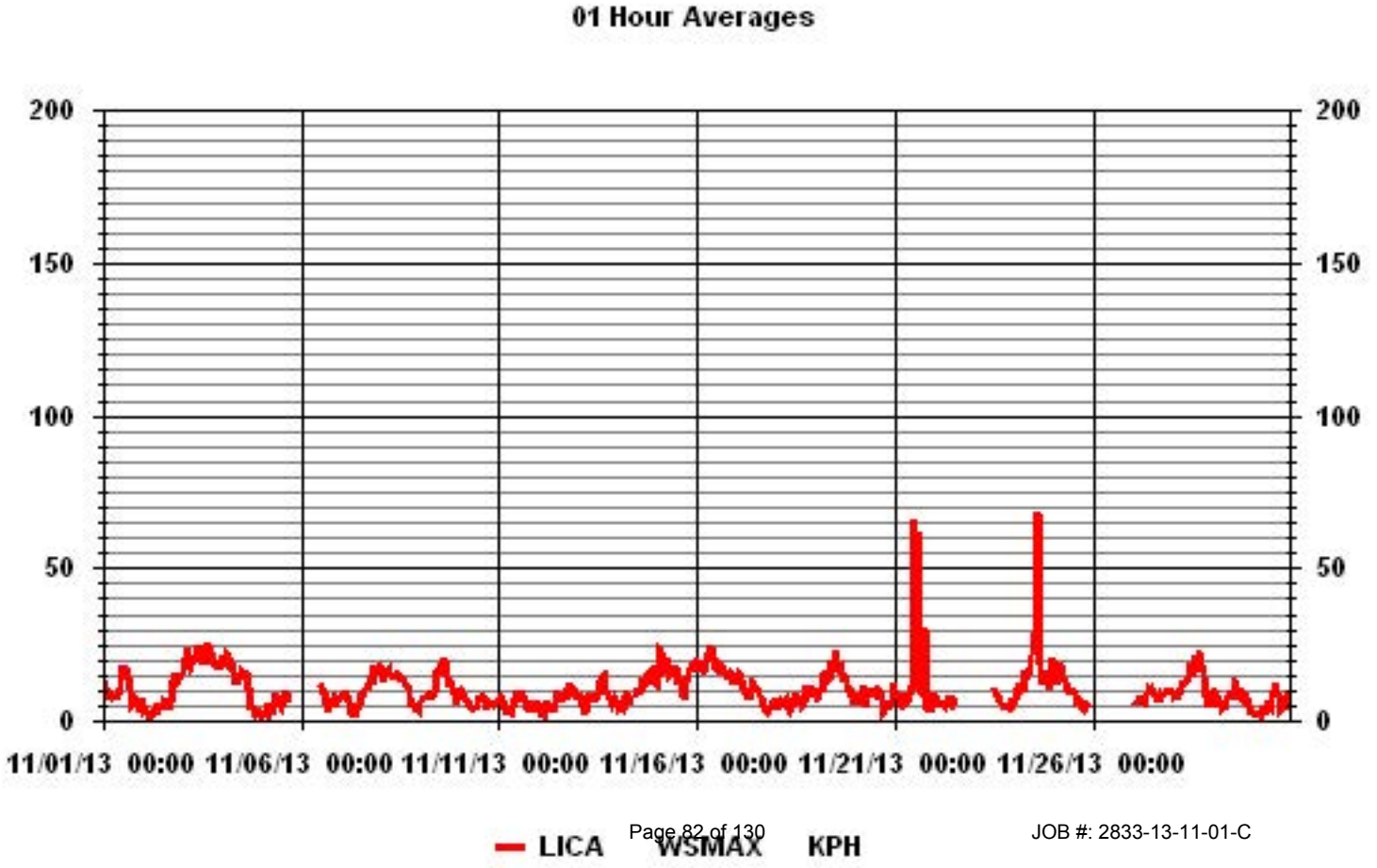
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 12.5 | 9.5 | 8.5 | 6.8 | 8.9 | 7.9 | 8.8 | 8.2 | 6.8 | 8.8 | 10.7 | 13.9 | 18.1 | 16.7 | 18.3 | 15 | 11.1 | 5.1 | 5.8 | 8.5 | 6.4 | 5.3 | 2.5 | 4 | 18.3 |
| 2 | 7 | 3.4 | 4 | 2 | 2.5 | 2 | 3.2 | 3.2 | 4.3 | 3.7 | 4.8 | 5 | 4.9 | 6.9 | 6.1 | 6.7 | 3.4 | 5.9 | 12.5 | 12.4 | 15.1 | 13.1 | 13.7 | 15.3 | 15.3 |
| 3 | 15.6 | 18.1 | 20.4 | 23.9 | 18.4 | 17.2 | 18.3 | 20.1 | 20 | 19.9 | 24.8 | 23.6 | 20.6 | 21.2 | 19.2 | 18.4 | 25.6 | 21.1 | 21.3 | 19.4 | 17.6 | 19.3 | 16.7 | 18.6 | 25.6 |
| 4 | 20.3 | 19.9 | 19.2 | 21.9 | 21.2 | 17 | 19.8 | 16.4 | 12.6 | 12.6 | 15.1 | 13.9 | 16.7 | 16.2 | 15.8 | 15.6 | 11.2 | 4 | 5.1 | 4.6 | 2.1 | 3 | 3.2 | 3.3 | 21.9 |
| 5 | 1.5 | 2.3 | 2.7 | 2.3 | 5.4 | 4.4 | 3.1 | 3.1 | 5.5 | 8.7 | 7.7 | 5.8 | 4.8 | 7.6 | 8.1 | 9.6 | 6.7 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 9.6 |
| 6 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 11.4 | 10.7 | 9.6 | 6.1 | 2.7 | 4.3 | 5.3 | 7.4 | 6.5 | 7.4 | 6.5 | 7.8 | 11.4 |
| 7 | 8.5 | 8.7 | 8.3 | 9.9 | 8.4 | 6.5 | 3 | 2.3 | 3 | 2.7 | 3.9 | 5.3 | 8.3 | 9 | 8.8 | 10.3 | 11.6 | 9.9 | 13.8 | 13.4 | 17.4 | 17.5 | 16.5 | 16.4 | 17.5 |
| 8 | 18.8 | 13.9 | 13.9 | 17.5 | 16.4 | 17.3 | 15.3 | 14.9 | 14.6 | 15.8 | 15.3 | 15.2 | 12.6 | 13.9 | 14 | 12.9 | 12.2 | 10.9 | 8.1 | 5.8 | 5.5 | 4.1 | 4.4 | 3.6 | 18.8 |
| 9 | 6.2 | 7.3 | 7.6 | 7.5 | 8.4 | 8.7 | 9.4 | 8.9 | 8.3 | 9.2 | 16.1 | 17.4 | 15.1 | 18.6 | 19.5 | 19.5 | 15.2 | 14.2 | 10.8 | 13.2 | 11.3 | 9.2 | 5.5 | 8.2 | 19.5 |
| 10 | 9.4 | 7.4 | 8.9 | 7.6 | 7.2 | 6.6 | 5.4 | 4 | 4.4 | 4.1 | 4.2 | 7.4 | 7.2 | 7.5 | 8.1 | 7.4 | 3.2 | 7 | 5.4 | 5.8 | 6.1 | 5.1 | 5.6 | 6.8 | 9.4 |
| 11 | 5.5 | 8.9 | 6.9 | 3.8 | 4.3 | 4.5 | 3.2 | 2.7 | 4.2 | 7.5 | 9 | 9.1 | 6.2 | 7.4 | 8.4 | 6.8 | 6 | 4.7 | 2.6 | 5.1 | 4.5 | 6.6 | 4.8 | 6.5 | 9.1 |
| 12 | 2.7 | 5.3 | 2.6 | 2.1 | 6.9 | 3.8 | 4.7 | 4 | 4.2 | 3 | 6 | 10.2 | 7.4 | 9 | 5.7 | 7.7 | 7.6 | 10.1 | 11.6 | 11.5 | 9.8 | 10.5 | 9.3 | 7.6 | 11.6 |
| 13 | 7.6 | 8.6 | 5.1 | 3 | 3.3 | 6.7 | 8.5 | 6.3 | 7.5 | 6.3 | 8.4 | 8.1 | 13.1 | 14 | 13.8 | 14.5 | 8.7 | 9.7 | 8.6 | 7.7 | 5.8 | 6.8 | 8.1 | 7 | 14.5 |
| 14 | 4.1 | 4.6 | 6.2 | 4.9 | 6.4 | 8.9 | 8.4 | 6.3 | **X** | **X** | 8.5 | 10.3 | 8.5 | 10.6 | 13.6 | 12.2 | 13.6 | 12 | 14.3 | 16.2 | 16.7 | 14.5 | 12.9 | 12.3 | 16.7 |
| 15 | 14.6 | 23.5 | 22.9 | 20.2 | 18 | 15.4 | 20.4 | 14.9 | 15.4 | 15.5 | 17.2 | 17 | 12.7 | 12.9 | 13.9 | 8.7 | 6.5 | 12.4 | 14.8 | 17.3 | 18.1 | 17.6 | 17.4 | 19.4 | 23.5 |
| 16 | 20 | 19.2 | 18.5 | 17.1 | 15.5 | 19.4 | 22.4 | 21.2 | 25 | 20.4 | 16.9 | 20.5 | 15.8 | 18 | 15 | 18.6 | 15.8 | 15 | 15.5 | 14.8 | 16.2 | 15.9 | 12.4 | 13.5 | 25 |
| 17 | 13.8 | 15.5 | 14.4 | 13.5 | 10.8 | 9.1 | 9.8 | 9.7 | 7.1 | 14 | 12 | 11.7 | 10 | 9.6 | 8.8 | 7.7 | 5.5 | 3.5 | 2.8 | 4 | 4.2 | 5.5 | 4.1 | 7.5 | 15.5 |
| 18 | 5.3 | 5 | 5.4 | 6.7 | 6 | 6.9 | 4.9 | 3.8 | 5.6 | 4.9 | 6.7 | 8.5 | 8.1 | 6.4 | 6.8 | 4.3 | 4.6 | 6.4 | 10.9 | 11 | 10 | 11.6 | 7.4 | 9.1 | 11.6 |
| 19 | 7.5 | 7.7 | 10.1 | 10.3 | 14.9 | 15.4 | 14.6 | 13.3 | 13.9 | 19.6 | 17.2 | 18.2 | 23.1 | 18.6 | 17.1 | 17.8 | 12.5 | 15.5 | 13.8 | 10.9 | 10.6 | 8.6 | 6.7 | 5.2 | 23.1 |
| 20 | 9 | 5 | 6.6 | 7.6 | 11.8 | 9.2 | 4.3 | 9.9 | 9.2 | 10.3 | 7.4 | 9.3 | 8.7 | 11.6 | 9.8 | 9 | 2.8 | 3.4 | 5 | 5.8 | 4.9 | 5.1 | 10 | 11.9 | 11.9 |
| 21 | 9.2 | 8.9 | 7.7 | 5.3 | 4.1 | 6.4 | 5.3 | 8.9 | 6.2 | 8.3 | 11.2 | 66.1 | 11.6 | 9.9 | 62 | 10.8 | 9.7 | 7.4 | 30.5 | 4.6 | 3.5 | 3.5 | 8.6 | 8.4 | 66.1 |
| 22 | 8.4 | 4.2 | 5.5 | 4.9 | 4.9 | 5.7 | 4.9 | 6.6 | 5.8 | 5.4 | 7.7 | 6.2 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 8.4 |
| 23 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 10.4 | 9.2 | 8.4 | 7 | 6.4 | 5.2 | 3.3 | 5.4 | 5.1 | 4.7 | 7.5 | 6 | 10.4 |
| 24 | 7 | 11 | 9.7 | 11.4 | 11.6 | 9.5 | 15.5 | 15.4 | 14.9 | 16.9 | 21.5 | 26.9 | 26.3 | **68.5** | 67.7 | 19 | 12 | 12.8 | 11.7 | 16.5 | 13.7 | 9.7 | 16.9 | 20.9 | **68.5** |
| 25 | 16.5 | 11.4 | 16.8 | 14.9 | 19.1 | 13.1 | 14.9 | 12.8 | 10 | 8.3 | 10 | 8.5 | 10.3 | 6.8 | 7.6 | 7.6 | 6.5 | 4.8 | 5.5 | 3.8 | 4.5 | 5.2 | **X** | **X** | 19.1 |
| 26 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 0 |
| 27 | **X** | **X** | 6.5 | 7.6 | 7.8 | 6.8 | 6.4 | 6 | 8.7 | 11.1 | 10.5 | 11.2 | 9.9 | 9 | 8.3 | 6.3 | 8.7 | 8 | 8.2 | 8.9 | 10 | 9.7 | 8.3 | 10.2 | 11.2 |
| 28 | 8 | 8.6 | 8.6 | 8.3 | 10.6 | 13.2 | 12 | 12.7 | 13.1 | 13.9 | 17.2 | 16.6 | 19.9 | 19.4 | 15.7 | 21 | 22.6 | 18.5 | 17.2 | 14.4 | 8.2 | 5.6 | 5.5 | 8.7 | 22.6 |
| 29 | 8.1 | 10.2 | 8.5 | 4.8 | 5.8 | 4.1 | 4.9 | 4.8 | 6.2 | 7.4 | 8 | 9.7 | 7.1 | 13.8 | 11.2 | 8.6 | 8.3 | 9.1 | 7.5 | 6.8 | 8.6 | 8.1 | 5.3 | 2.8 | 13.8 |
| 30 | 2.5 | 2.4 | 2.2 | 3 | 2.8 | 2.1 | 5.1 | 2.5 | 3.7 | 2.7 | 6.1 | 5.1 | 7.3 | 10 | 12 | 8.1 | 9.4 | 3.4 | 4.1 | 4.4 | 6.9 | 9.6 | 5.1 | 6.3 | 12 |
| PEAK | 20.3 | 23.5 | 22.9 | 23.9 | 21.2 | 19.4 | 22.4 | 21.2 | 25.0 | 20.4 | 24.8 | 66.1 | 26.3 | 68.5 | 67.7 | 21.0 | 25.6 | 21.1 | 30.5 | 19.4 | 18.1 | 19.3 | 17.4 | 20.9 | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 68.5 | KPH | @ HOUR(S) | 13 |
| | | | ON DAY(S) | 24 |






JOB #: 2833-13-11-01-C

LICA
WSP / WD Joint Frequency Distribution (Percent)

November 2013

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 | .30 | .30 | .92 | 1.07 | 2.30 | 3.22 | 8.29 | 4.76 | 3.37 | 2.91 | 8.90 | 13.82 | 4.45 | 1.22 | 2.45 | 1.07 | 59.44 |
| < | 12.0 | 1.07 | .92 | 2.76 | 3.99 | 3.22 | .00 | 2.61 | .15 | .00 | .00 | .76 | 4.45 | 3.07 | 1.84 | 2.91 | 2.91 | 30.72 |
| < | 20.0 | .46 | .46 | 1.53 | 1.38 | .00 | .00 | .61 | .00 | .00 | .00 | .00 | .00 | .61 | .30 | .46 | 2.76 | 8.60 |
| < | 29.0 | .00 | .00 | .00 | .00 | .00 | .15 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .15 |
| < | 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 | .15 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .15 |
| | Totals | 1.84 | 1.68 | 5.22 | 6.45 | 5.52 | 3.53 | 11.52 | 4.91 | 3.37 | 2.91 | 9.67 | 18.27 | 8.14 | 3.37 | 5.83 | 6.75 | |

Calm : .92 %

Total # Operational Hours : 651

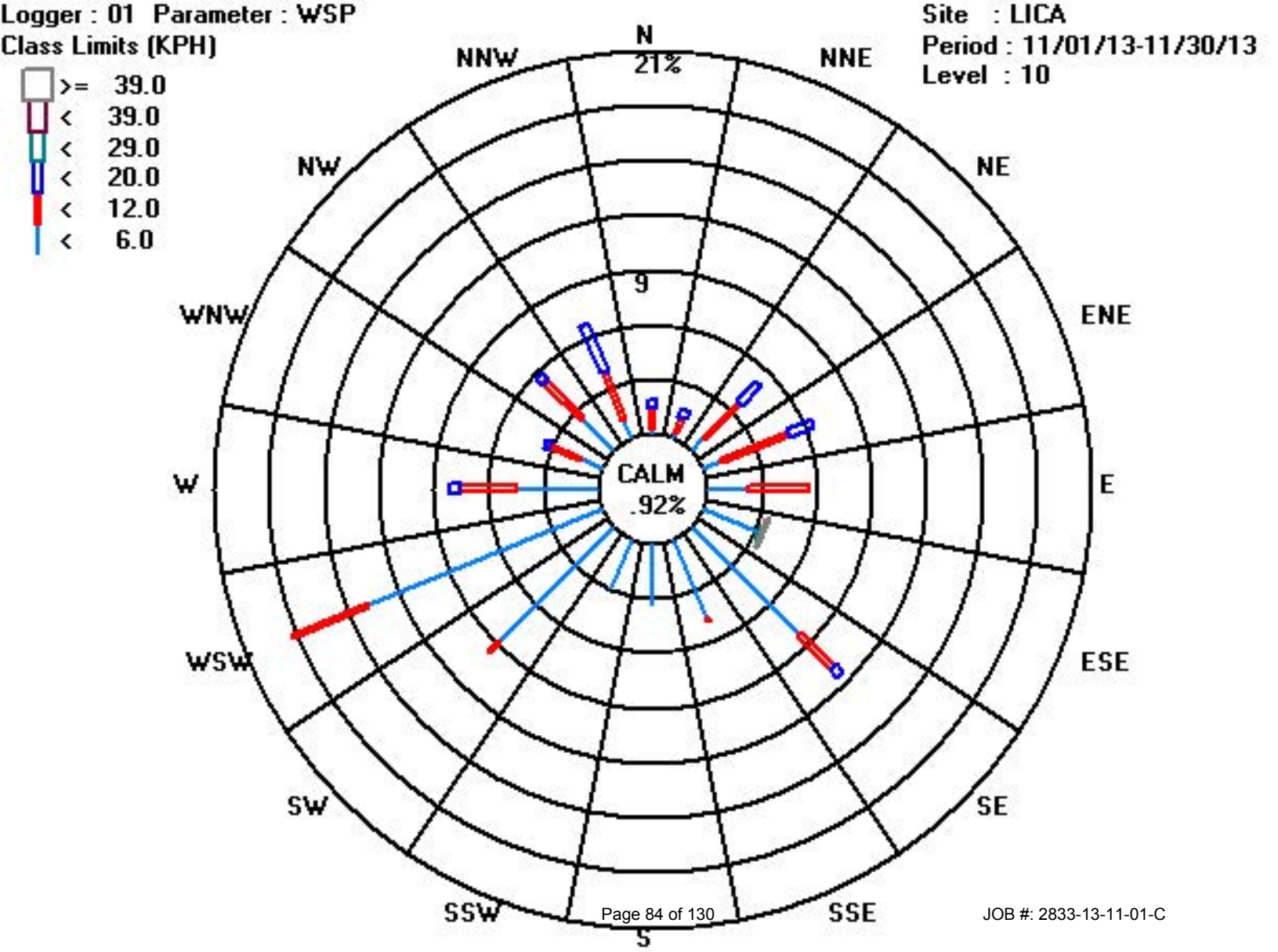
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 2 | 2 | 6 | 7 | 15 | 21 | 54 | 31 | 22 | 19 | 58 | 90 | 29 | 8 | 16 | 7 | 387 |
| < | 12.0 | 7 | 6 | 18 | 26 | 21 | | 17 | 1 | | | 5 | 29 | 20 | 12 | 19 | 19 | 200 |
| < | 20.0 | 3 | 3 | 10 | 9 | | | 4 | | | | | | 4 | 2 | 3 | 18 | 56 |
| < | 29.0 | | | | | | 1 | | | | | | | | | | | 1 |
| < | 39.0 | | | | | | | | | | | | | | | | | |
| >= | 39.0 | | | | | | 1 | | | | | | | | | | | 1 |
| | Totals | 12 | 11 | 34 | 42 | 36 | 23 | 75 | 32 | 22 | 19 | 63 | 119 | 53 | 22 | 38 | 44 | |

Calm : .92 %

Total # Operational Hours : 651






JOB #: 2833-13-11-01-C

# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**VECTOR WIND DIRECTION (WD)** hourly averages in degrees

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24-HOUR | 24-HOUR AVG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | AVG. | QUANDRANT | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 256 | 258 | 238 | 237 | 252 | 244 | 253 | 243 | 244 | 234 | 246 | 263 | 266 | 276 | 279 | 276 | 264 | 244 | 238 | 251 | 238 | 209 | 188 | 242 | 257 | WSW | 24 |
| 2 | 236 | 150 | 232 | 76 | 168 | 143 | 105 | 184 | 285 | 258 | 322 | 72 | 103 | 91 | 54 | 45 | 67 | 58 | 65 | 61 | 52 | 49 | 58 | 55 | 61 | ENE | 24 |
| 3 | 57 | 55 | 53 | 49 | 41 | 36 | 36 | 37 | 42 | 31 | 23 | 14 | 360 | 352 | 350 | 344 | 344 | 343 | 342 | 344 | 344 | 342 | 341 | 341 | 12 | NNE | 24 |
| 4 | 344 | 342 | 344 | 347 | 341 | 334 | 329 | 333 | 358 | 349 | 346 | 0 | 333 | 329 | 332 | 317 | 313 | 260 | 245 | 245 | 236 | 238 | 246 | 209 | 335 | NNW | 24 |
| 5 | 157 | 228 | 238 | 224 | 258 | 244 | 231 | 231 | 263 | 146 | 152 | 145 | 134 | 96 | 138 | 180 | 219 | X | X | X | X | X | X | X | 174 | S | 17 |
| 6 | X | X | X | X | X | X | X | X | X | X | X | X | 237 | 244 | 259 | 225 | 203 | 236 | 243 | 236 | 248 | 244 | 242 | 243 | 241 | WSW | 12 |
| 7 | 243 | 243 | 239 | 241 | 246 | 250 | 235 | 219 | 87 | 163 | 132 | 133 | 122 | 119 | 107 | 90 | 89 | 89 | 96 | 96 | 96 | 92 | 92 | 90 | 112 | ESE | 24 |
| 8 | 92 | 83 | 79 | 74 | 67 | 67 | 68 | 63 | 57 | 63 | 57 | 58 | 51 | 47 | 43 | 21 | 23 | 34 | 48 | 87 | 307 | 247 | 237 | 238 | 59 | ENE | 24 |
| 9 | 231 | 214 | 225 | 230 | 229 | 244 | 230 | 239 | 255 | 272 | 295 | 305 | 312 | 321 | 325 | 340 | 332 | 330 | 342 | 353 | 350 | 316 | 297 | 304 | 304 | WNW | 24 |
| 10 | 328 | 334 | 349 | 317 | 316 | 256 | 236 | 211 | 153 | 233 | 312 | 262 | 275 | 138 | 144 | 135 | 143 | 156 | 156 | 166 | 154 | 149 | 142 | 152 | 229 | SW | 24 |
| 11 | 159 | 216 | 215 | 170 | 182 | 207 | 185 | 179 | 168 | 215 | 225 | 252 | 258 | 197 | 246 | 221 | 183 | 203 | 192 | 212 | 307 | 227 | 256 | 304 | 217 | SW | 24 |
| 12 | 118 | 237 | 140 | 131 | 256 | 247 | 272 | 220 | 118 | 44 | 136 | 157 | 139 | 144 | 160 | 250 | 231 | 254 | 256 | 258 | 253 | 243 | 253 | 252 | 229 | SW | 24 |
| 13 | 242 | 250 | 236 | 123 | 210 | 265 | 254 | 258 | 260 | 252 | 261 | 285 | 289 | 304 | 326 | 323 | 327 | 344 | 341 | 344 | 342 | 335 | 320 | 320 | 298 | WNW | 24 |
| 14 | 276 | 265 | 251 | 230 | 261 | 225 | 228 | 237 | 231 | X | 243 | 239 | 244 | 236 | 242 | 238 | 235 | 233 | 231 | 244 | 254 | 249 | 236 | 240 | 241 | WSW | 23 |
| 15 | 249 | 263 | 253 | 268 | 286 | 276 | 273 | 282 | 278 | 288 | 290 | 294 | 305 | 305 | 325 | 27 | 69 | 4 | 27 | 32 | 45 | 38 | 39 | 60 | 315 | NW | 24 |
| 16 | 56 | 49 | 44 | 42 | 48 | 59 | 61 | 61 | 59 | 70 | 71 | 65 | 70 | 55 | 58 | 61 | 69 | 70 | 62 | 84 | 75 | 76 | 65 | 70 | 62 | ENE | 24 |
| 17 | 67 | 68 | 72 | 84 | 89 | 107 | 103 | 96 | 118 | 101 | 99 | 96 | 107 | 110 | 139 | 138 | 115 | 124 | 115 | 140 | 128 | 226 | 119 | 139 | 101 | E | 24 |
| 18 | 142 | 148 | 121 | 117 | 130 | 178 | 135 | 170 | 283 | 217 | 127 | 129 | 117 | 107 | 0 | 267 | 172 | 69 | 92 | 90 | 82 | 95 | 93 | 99 | 110 | ESE | 24 |
| 19 | 86 | 87 | 81 | 83 | 64 | 56 | 56 | 39 | 36 | 30 | 17 | 344 | 346 | 341 | 332 | 332 | 320 | 324 | 322 | 314 | 307 | 287 | 278 | 246 | 2 | N | 24 |
| 20 | 268 | 241 | 188 | 255 | 265 | 253 | 202 | 262 | 267 | 261 | 250 | 244 | 235 | 233 | 238 | 233 | 181 | 142 | 140 | 164 | 164 | 125 | 135 | 137 | 227 | SW | 24 |
| 21 | 139 | 136 | 143 | 143 | 182 | 238 | 252 | 271 | 251 | 255 | 263 | 83 | 269 | 247 | 50 | 253 | 259 | 257 | 192 | 240 | 214 | 283 | 128 | 132 | 215 | SSW | 24 |
| 22 | 134 | 181 | 142 | 167 | 159 | 147 | 176 | 145 | 152 | 169 | 148 | 151 | X | X | X | X | X | X | X | X | X | X | X | X | 153 | SSE | 12 |
| 23 | X | X | X | X | X | X | X | X | X | X | X | 5 | 200 | 203 | 203 | 174 | 213 | 176 | 224 | 252 | 266 | 234 | 227 | 248 | 222 | SW | 13 |
| 24 | 243 | 257 | 251 | 257 | 253 | 244 | 261 | 268 | 276 | 257 | 270 | 294 | 298 | 116 | 118 | 273 | 269 | 280 | 287 | 295 | 298 | 282 | 307 | 310 | 267 | W | 24 |
| 25 | 296 | 276 | 301 | 311 | 309 | 312 | 305 | 305 | 305 | 307 | 319 | 259 | 250 | 208 | 225 | 234 | 236 | 248 | 245 | 234 | 256 | 233 | 37 | X | 287 | WNW | 23 |
| 26 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | 0 |
| 27 | X | 251 | 253 | 266 | 265 | 276 | 273 | 289 | 323 | 345 | 342 | 343 | 338 | 333 | 347 | 28 | 87 | 103 | 91 | 128 | 138 | 142 | 149 | 145 | 333 | NNW | 23 |
| 28 | 155 | 142 | 141 | 145 | 139 | 143 | 147 | 146 | 143 | 140 | 136 | 134 | 138 | 136 | 133 | 134 | 139 | **141** | 139 | 144 | 149 | 173 | 164 | 175 | 141 | SE | 24 |
| 29 | 204 | 235 | 229 | 227 | 229 | 216 | 226 | 224 | 246 | 248 | 251 | 239 | 246 | 261 | 250 | 241 | 239 | 242 | 242 | 234 | 242 | 243 | 241 | 125 | 240 | WSW | 24 |
| 30 | 151 | 236 | 131 | 237 | 230 | 188 | 270 | 69 | 275 | 272 | 130 | 137 | 137 | 141 | 143 | 140 | 144 | 206 | 144 | 171 | 141 | 140 | 154 | 136 | 145 | SE | 24 |
| HOURLY AVG | 344 | 342 | 349 | 347 | 341 | 334 | 329 | 333 | 358 | 349 | 346 | 344 | 360 | 352 | 350 | 344 | 344 | 344 | 342 | 353 | 350 | 342 | 341 | 341 | | | |

**STATUS FLAG CODES**

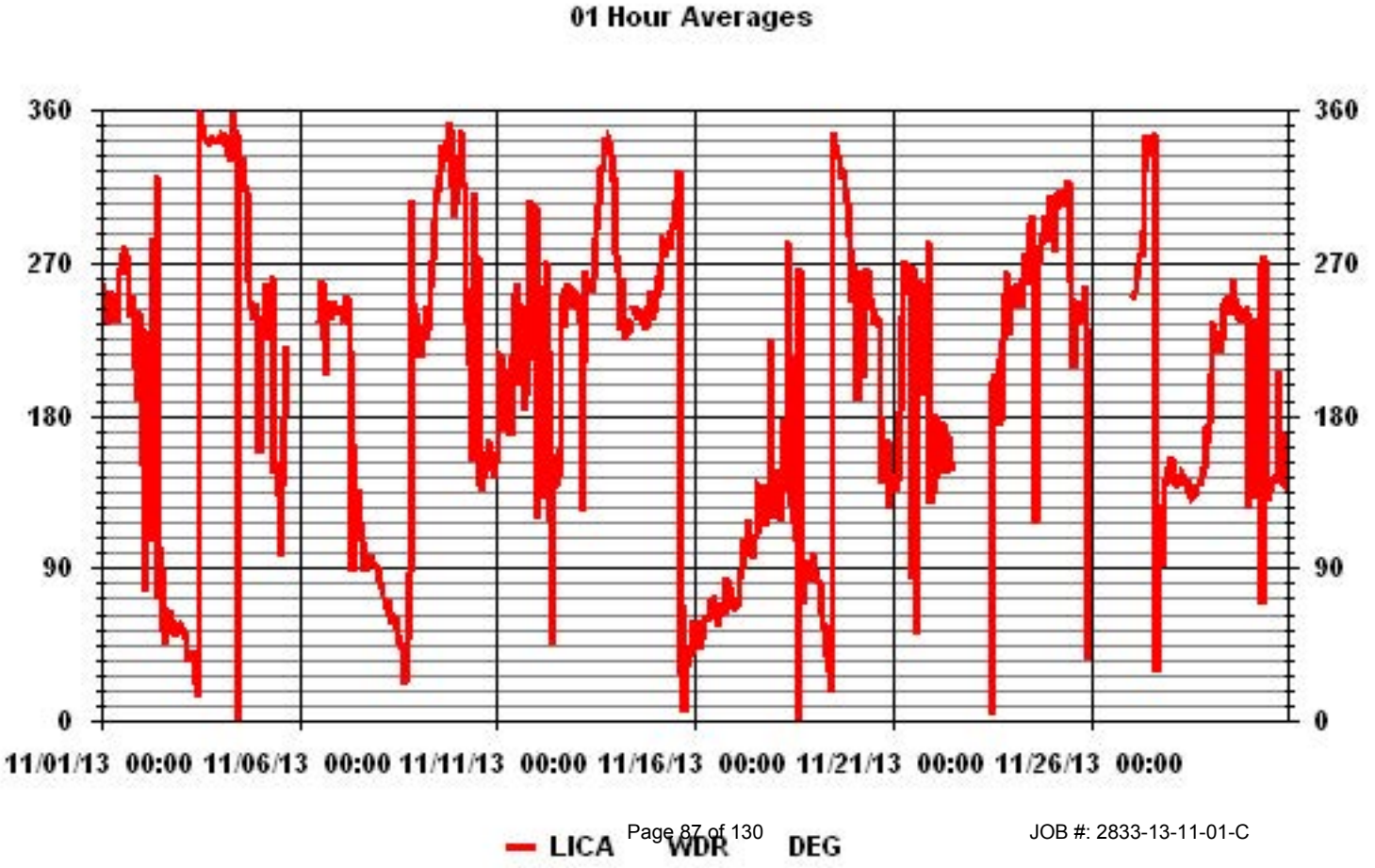
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

| | |
|---|---|
| LAST CALIBRATION: | November 28, 2012 |
| DECLINATION : | 19 DEGREES FROM MAGNETIC NORTH |

| | | | | | |
|---|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 651 | HRS |
| STANDARD DEVIATION: | 90.62 | | AMD OPERATION UPTIME: | 90.4 | % |
| | | | MONTHLY AVERAGE: | 327 | DEG |



JOB #: 2833-13-11-01-C






JOB #: 2833-13-11-01-C

# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

NOVEMBER 2013

**STANDARD DEVIATION WIND DIRECTION (STDWDIR)** hourly averages in degrees

MST

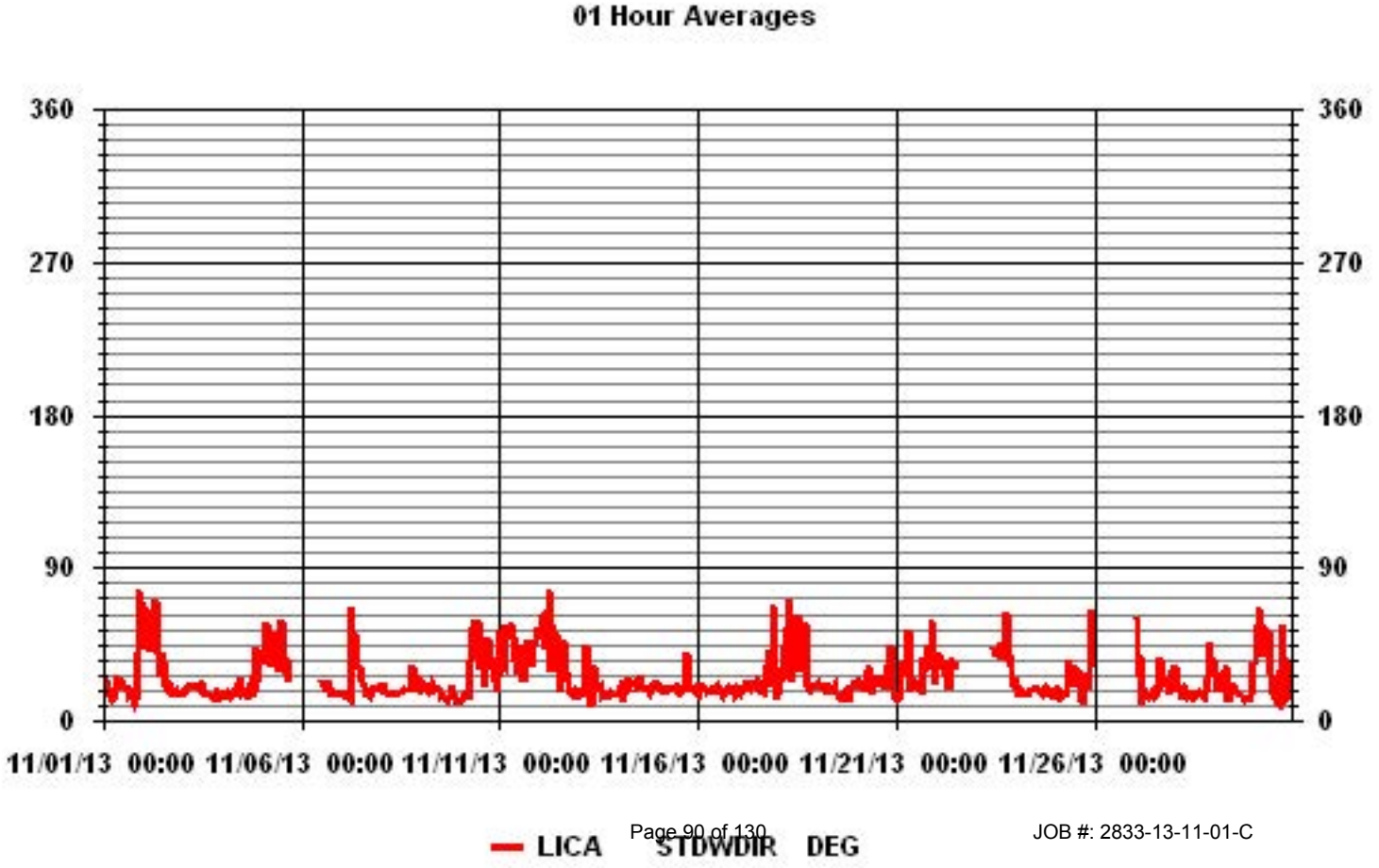
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 15 | 15 | 25 | 20 | 15 | 16 | 13 | 14 | 26 | 18 | 22 | 23 | 21 | 21 | 19 | 19 | 15 | 16 | 14 | 10 | 12 | 40 | 77 | 54 |
| 2 | 70 | 42 | 66 | 61 | 41 | 53 | 62 | 55 | 71 | 40 | 36 | 26 | 40 | 35 | 21 | 17 | 24 | 17 | 16 | 16 | 16 | 18 | 16 | 16 |
| 3 | 16 | 17 | 17 | 19 | 20 | 20 | 21 | 20 | 21 | 21 | 19 | 18 | 23 | 17 | 17 | 15 | 15 | 15 | 15 | 14 | 16 | 19 | 15 | 14 |
| 4 | 15 | 16 | 15 | 17 | 16 | 14 | 15 | 15 | 18 | 20 | 17 | 25 | 17 | 18 | 16 | 17 | 13 | 22 | 14 | 27 | 17 | 43 | 22 | 40 |
| 5 | 33 | 40 | 33 | 58 | 52 | 40 | 31 | 52 | 34 | 37 | 30 | 30 | 60 | 35 | 27 | 37 | 24 | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| 6 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 23 | 20 | 21 | 17 | 24 | 21 | 14 | 17 | 16 | 16 | 16 | 16 |
| 7 | 16 | 16 | 15 | 16 | 15 | 14 | 67 | 53 | 40 | 51 | 30 | 32 | 24 | 23 | 21 | 17 | 18 | 18 | 16 | 19 | 19 | 19 | 19 | 20 |
| 8 | 18 | 19 | 20 | 18 | 17 | 16 | 16 | 16 | 16 | 15 | 15 | 16 | 17 | 18 | 19 | 18 | 18 | 19 | 19 | 32 | 27 | 27 | 22 | 19 |
| 9 | 16 | 23 | 22 | 20 | 18 | 20 | 19 | 23 | 21 | 19 | 19 | 19 | 14 | 15 | 15 | 15 | 14 | 13 | 15 | 20 | 17 | 12 | 12 | 11 |
| 10 | 11 | 12 | 15 | 16 | 16 | 12 | 36 | 55 | 59 | 47 | 54 | 60 | 30 | 38 | 20 | 25 | 30 | 49 | 33 | 38 | 32 | 24 | 16 | 25 |
| 11 | 54 | 33 | 32 | 56 | 48 | 52 | 55 | 57 | 51 | 36 | 28 | 31 | 45 | 37 | 23 | 29 | 43 | 47 | 39 | 32 | 48 | 43 | 55 | 50 |
| 12 | 51 | 62 | 63 | 42 | 60 | 61 | 77 | 28 | 57 | 37 | 52 | 31 | 16 | 23 | 33 | 48 | 30 | 26 | 17 | 16 | 15 | 17 | 14 | 14 |
| 13 | 17 | 16 | 14 | 40 | 45 | 38 | 10 | 10 | 12 | 32 | 18 | 20 | 20 | 21 | 15 | 16 | 15 | 16 | 15 | 17 | 15 | 15 | 15 | 15 |
| 14 | 20 | 21 | 11 | 23 | 19 | 16 | 25 | 20 | 22 | **X** | 19 | 22 | 24 | 27 | 20 | 19 | 19 | 19 | 17 | 20 | 19 | 20 | 22 | 22 |
| 15 | 20 | 18 | 19 | 18 | 19 | 18 | 19 | 20 | 19 | 19 | 20 | 20 | 18 | 17 | 18 | 20 | 35 | 40 | 19 | 19 | 19 | 19 | 20 | 17 |
| 16 | 16 | 19 | 20 | 20 | 19 | 17 | 18 | 17 | 17 | 19 | 20 | 19 | 21 | 19 | 18 | 16 | 19 | 20 | 16 | 19 | 18 | 21 | 17 | 19 |
| 17 | 17 | 16 | 19 | 19 | 19 | 24 | 22 | 20 | 22 | 22 | 21 | 20 | 24 | 23 | 18 | 17 | 23 | 32 | 42 | 20 | 33 | 68 | 32 | 12 |
| 18 | 16 | 24 | 24 | 25 | 44 | 55 | 36 | 71 | 23 | 43 | 35 | 28 | 63 | 36 | 35 | 36 | 29 | 58 | 21 | 20 | 19 | 21 | 20 | 20 |
| 19 | 20 | 22 | 20 | 21 | 20 | 17 | 17 | 20 | 20 | 19 | 21 | 17 | 16 | 15 | 14 | 16 | 13 | 12 | 12 | 12 | 21 | 18 | 24 | 22 |
| 20 | 23 | 18 | 21 | 23 | 18 | 20 | 29 | 32 | 27 | 15 | 23 | 23 | 26 | 20 | 22 | 20 | 27 | 18 | 33 | 37 | 44 | 26 | 14 | 13 |
| 21 | 15 | 14 | 15 | 33 | 34 | 25 | 37 | 53 | 18 | 20 | 23 | 23 | 21 | 20 | 18 | 15 | 37 | 29 | 44 | 31 | 31 | 60 | 36 | 21 |
| 22 | 34 | 40 | 32 | 30 | 35 | 25 | 35 | 18 | 28 | 37 | 35 | 32 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| 23 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 42 | 37 | 41 | 36 | 46 | 39 | 38 | 64 | 49 | 31 | 39 | 22 | 21 |
| 24 | 25 | 15 | 17 | 14 | 17 | 17 | 16 | 16 | 18 | 18 | 18 | 19 | 19 | 19 | 19 | 18 | 16 | 18 | 20 | 19 | 17 | 19 | 14 | 14 |
| 25 | 18 | 19 | 18 | 14 | 15 | 15 | 15 | 31 | 36 | 22 | 20 | 33 | 22 | 31 | 23 | 15 | 12 | 9 | 28 | 22 | 18 | 32 | 63 | **X** |
| 26 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| 27 | **X** | 59 | 26 | 39 | 9 | 13 | 14 | 16 | 14 | 15 | 15 | 17 | 14 | 15 | 17 | 37 | 20 | 24 | 24 | 21 | 16 | 18 | 29 | 16 |
| 28 | 32 | 17 | 20 | 18 | 13 | 17 | 20 | 19 | 14 | 15 | 14 | 17 | 14 | 15 | 17 | 15 | 15 | **15** | 14 | 17 | 25 | 46 | 33 | 37 |
| 29 | 34 | 22 | 19 | 17 | 27 | 28 | 23 | 33 | **11** | **15** | **19** | 20 | 20 | 17 | 17 | 16 | 15 | 15 | 12 | 13 | 13 | 13 | 15 | 33 |
| 30 | 34 | 54 | 54 | 66 | 43 | 37 | 57 | 45 | 39 | 53 | 28 | 16 | 20 | 14 | 11 | 10 | 29 | 56 | 37 | 36 | 13 | 14 | 30 | 17 |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

LAST CALIBRATION: November 28, 2012

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 651 HRS






JOB #: 2833-13-11-01-C

# Non-Continuous Monitoring

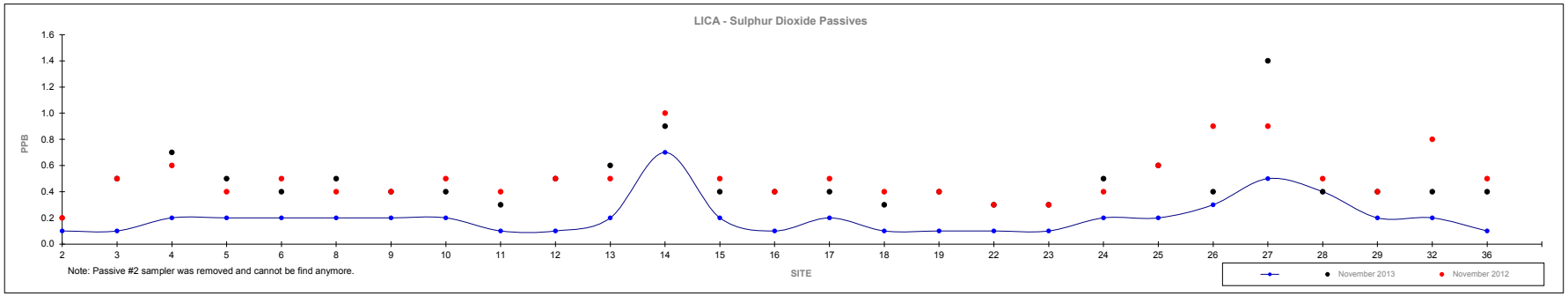
# Passive Summary Results for November 2013

## Lakeland Industry & Community Association

**Sulphur Dioxide**
**ppb**

**2012**

| | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 32 | 36 | **November 2013** Reading | Site |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mean** | 0.2 | 0.3 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 | 1.0 | 0.4 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.6 | 0.7 | 1.0 | 0.6 | 0.4 | 0.5 | 0.3 | 0.49 | - |
| **Minimum** | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.7 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.5 | 0.4 | 0.2 | 0.2 | 0.1 | 0.3 | VAR |
| **Maximum** | 0.3 | 0.6 | 0.8 | 0.7 | 0.7 | 1.2 | 0.7 | 0.7 | 0.5 | 0.9 | 1.1 | 1.6 | 0.7 | 0.7 | 1.0 | 0.6 | 0.7 | 0.6 | 0.4 | 0.7 | 0.9 | 1.1 | 1.8 | 1.0 | 0.6 | 0.8 | 0.8 | 1.4 | #27 |



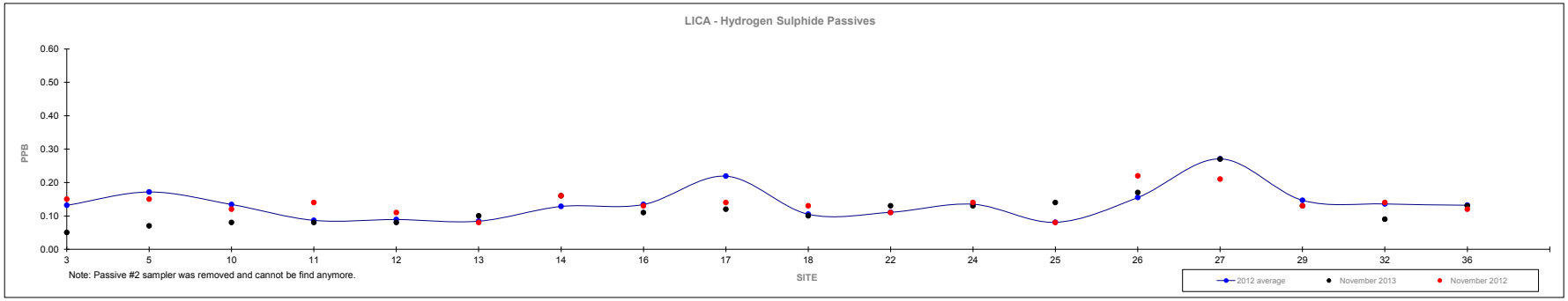

Note: Passive #2 sampler was removed and cannot be find anymore.

# Passive Summary Results for November 2013

## Lakeland Industry & Community Association

**Hydrogen Sulphide**
**ppb**

| | 2012 | | | | | | | | | | | | | | | | | | November 2013 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 5 | 10 | 11 | 12 | 13 | 14 | 16 | 17 | 18 | 22 | 24 | 25 | 26 | 27 | 29 | 32 | 36 | Reading | Site |
| **Mean** | 0.13 | 0.17 | 0.13 | 0.09 | 0.09 | 0.08 | 0.13 | 0.13 | 0.22 | 0.11 | 0.11 | 0.14 | 0.08 | 0.16 | 0.27 | 0.15 | 0.14 | 0.13 | 0.12 | - |
| **Minimum** | 0.09 | 0.06 | 0.08 | 0.04 | 0.02 | 0.02 | 0.06 | 0.09 | 0.09 | 0.06 | 0.06 | 0.07 | 0.03 | 0.07 | 0.02 | 0.06 | 0.09 | 0.07 | 0.05 | #3 |
| **Maximum** | 0.21 | 0.38 | 0.35 | 0.15 | 0.16 | 0.16 | 0.20 | 0.23 | 0.55 | 0.16 | 0.18 | 0.24 | 0.17 | 0.28 | 0.74 | 0.49 | 0.23 | 0.23 | 0.27 | #27 |



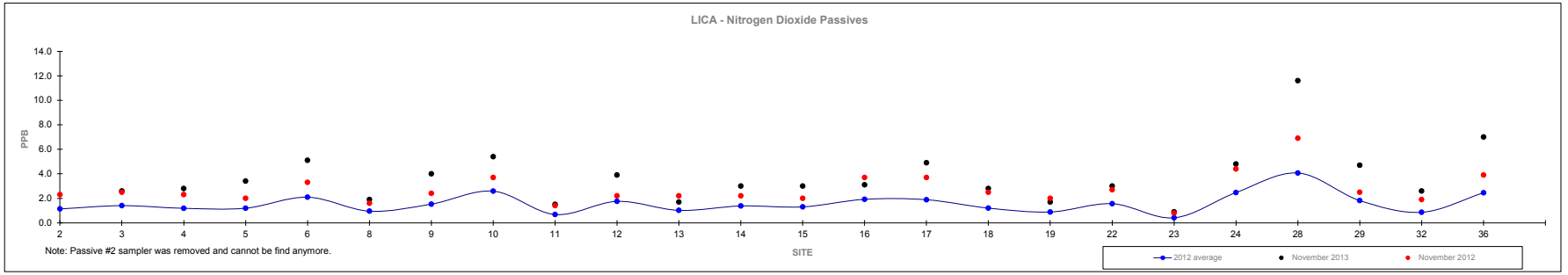

Note: Passive #2 sampler was removed and cannot be find anymore.

# Passive Summary Results for November 2013

## Lakeland Industry & Community Association

**Nitrogen Dioxide**
**ppb**

| | 2012 | | | | | | | | | | | | | | | | | | | | | | | November 2013 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2** | **3** | **4** | **5** | **6** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **22** | **23** | **24** | **28** | **29** | **32** | **36** | **Reading** | **Site** |
| **Mean** | 1.1 | 1.4 | 1.2 | 1.2 | 2.1 | 1.0 | 1.5 | 2.6 | 0.7 | 1.8 | 1.0 | 1.4 | 1.3 | 1.9 | 1.9 | 1.2 | 0.9 | 1.6 | 0.4 | 2.5 | 4.1 | 1.8 | 0.9 | 2.5 | 3.7 | - |
| **Minimum** | 0.4 | 0.5 | 0.4 | 0.3 | 0.9 | 0.3 | 0.7 | 1.3 | 0.2 | 0.4 | 0.3 | 0.5 | 0.3 | 0.6 | 0.8 | 0.4 | 0.3 | 0.4 | 0.1 | 1.1 | 1.2 | 0.4 | 0.2 | 1.0 | 0.9 | #23 |
| **Maximum** | 3.6 | 3.6 | 3.6 | 3.2 | 4.7 | 2.1 | 3.6 | 5.2 | 1.8 | 4.4 | 2.5 | 3.2 | 2.9 | 4.9 | 3.9 | 2.7 | 2.0 | 3.2 | 1.2 | 6.0 | 8.6 | 4.8 | 2.4 | 6.6 | 1.6 | #28 |



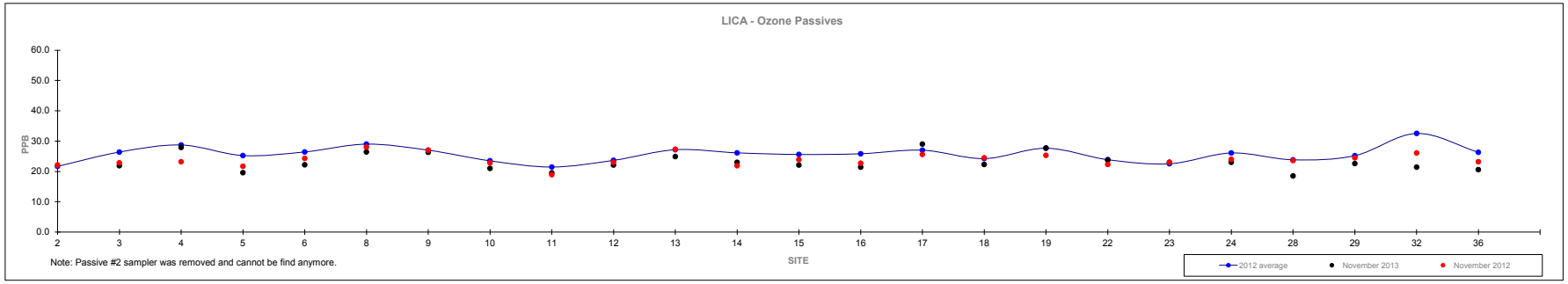

Note: Passive #2 sampler was removed and cannot be find anymore.

# Passive Summary Results for November 2013

## Lakeland Industry & Community Association

**Ozone**
**ppb**

| | 2012 | | | | | | | | | | | | | | | | | | | | | | | November 2013 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2** | **3** | **4** | **5** | **6** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **22** | **23** | **24** | **28** | **29** | **32** | **36** | **Reading** | **Site** |
| **Mean** | 21.7 | 26.4 | 28.7 | 25.2 | 26.4 | 29.0 | 27.0 | 23.5 | 21.5 | 23.7 | 27.2 | 26.1 | 25.6 | 25.8 | 27.0 | 24.2 | 27.7 | 23.9 | 22.5 | 26.1 | 23.8 | 25.2 | 32.5 | 26.3 | 23.0 | - |
| **Minimum** | 12.8 | 18.4 | 18.8 | 19.0 | 17.5 | 21.6 | 17.6 | 15.1 | 12.3 | 13.9 | 15.9 | 17.8 | 16.8 | 18.4 | 16.4 | 15.8 | 18.3 | 15.2 | 11.8 | 17.5 | 17.1 | 17.5 | 24.4 | 20.4 | 18.5 | #28 |
| **Maximum** | 32.2 | 41.2 | 42.3 | 34.7 | 37.0 | 38.8 | 40.2 | 35.4 | 32.1 | 33.1 | 38.9 | 37.4 | 36.6 | 38.1 | 38.7 | 33.8 | 35.6 | 35.2 | 36.1 | 37.9 | 30.2 | 33.2 | 40.8 | 33.1 | 29.0 | #17 |




Note: Passive #2 sampler was removed and cannot be find anymore.

# Calibration Reports

# Sulphur Dioxide

## SO2 Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 14, 2013 | Previous Calibration | October 2, 2013 |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | Cold Lake South | | |
| Start Time (MST) | 9:15 | End Time (MST) | 11:38 |
| Reason: | Monthly calibration | | |
| Barometric Pressure | 27.85 in HG | Station Temperature | 22 Deg C |
| Cal Gas | 49.6 ppm | Gas Cyl. # | BAL3031 |
| Cal Gas Expiry date | December 29, 2016 | | |
| DAS Output Voltage | 0-10 Volts | Chart Rec. Output | N/A Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 43i | S/N : | 806528242 | Method: | Fluorescent |
| Converter Make / Model: | N/A | S/N : | N/A | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | A3485K | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0-500 ppb | | | |
| Sample Flow / Box Temp | 445 ccm | 27 Deg C | 446 ccm | 28.2 Deg C |
| HVPS / Lamp Setting | -631.6 | 729 | -631.6 | 725 |
| PMT / RxCell Temp | OK Deg C | 45 Deg C | OK Deg C | 45 Deg C |
| Converter / IZS Temp | N/A Deg C | 45 Deg C | N/A Deg C | 45.0 Deg C |
| Offset / Slope | 6.7 | 1.054 | 7 | 1.095 |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4994 | 0 | 0 | 0 | N/A |
| | No zero adj. | | | |
| 4961 | 40.1 | 398 | 382 | 1.0411 |
| 4961 | 40.1 | 398 | 401 | 0.9918 |
| 4980 | 20.1 | 199 | 200 | 0.9950 |
| 4989 | 10.0 | 100 | 101 | 0.9863 |
| 5000 | 0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 0.9921 |
| | | | New Correction Factor | 0.9918 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 365.0 | 385.0 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9968 |
| Current Correction Factor Before Span Adjust: | 1.0411 |
| Percent Change: | -4.3% |

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

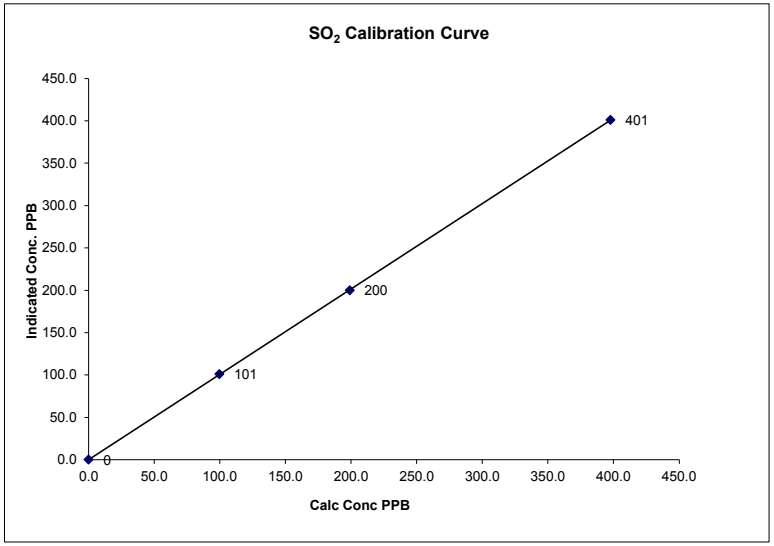
Calibration Performed by: Waseem Ahmed

## $SO_2$ Calibration Curve

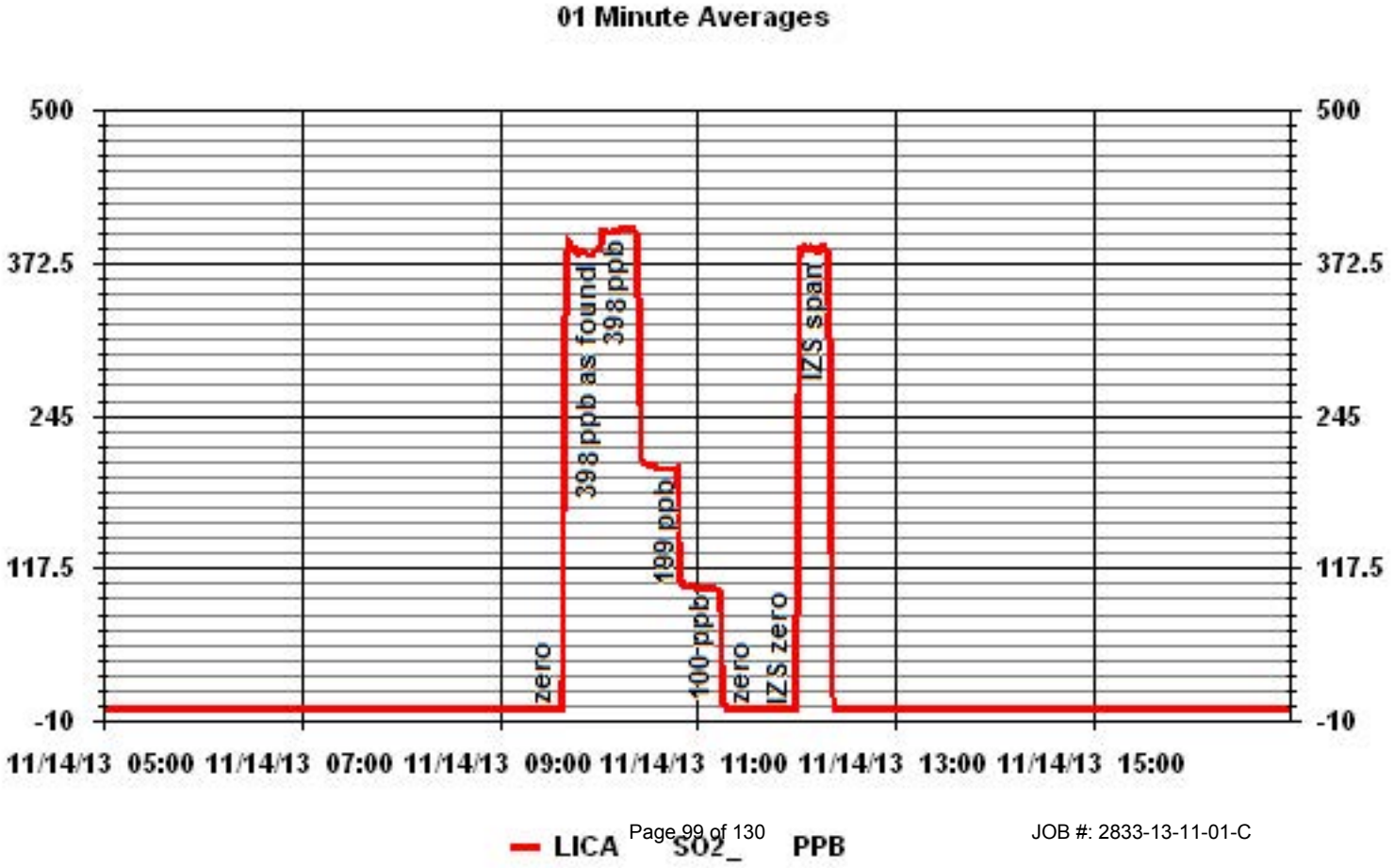
| | | | |
|---|---|---|---|
| Calibration Date | November 14, 2013 | | |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | Cold Lake South | | |
| Start Time (MST) | 9:15 | End Time (MST) | 11:38 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 100 | 101 | 0.9863 |
| 199 | 200 | 0.9950 |
| 398 | 401 | 0.9918 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999992 |
| Slope | (0.85 to 1.15) | 1.007620 |
| Intercept | (± 3% F.S.) | 0.095144 |




**Notes:**






JOB #: 2833-13-11-01-C

# Total Reduced Sulphur

## TRS Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 14, 2013 | | Previous Calibration | October 2, 2013 | |
| Company | **Lakeland Industry & Community Association** | | | | |
| Plant / Location | **Cold Lake South** | | | | |
| Start Time (MST) | 9:15 | | End Time (MST) | 12:28 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure | 27.85 | in HG | Station Temperature | 22 | Deg C |
| Cal Gas | 10.1 ppm | Gas Cyl. # | BLM005049 | Cal Gas Expiry date | December 25, 2015 |
| DAS Output Voltage | 0-10 Volts | Chart Rec. Output | N/A Volts | | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 450i | S/N : | 812728560 | Method: | Fluorescent |
| Converter Make / Model: | CND 101 | S/N : | 501 | | |
| Calibrator Make / Model: | API 700 | S/N : | 690 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | A3485K | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | API 700 | S/N : | 690 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0-100 ppb | | | | | | | |
| Sample Flow / Box Temp | 489 ccm | | 30.9 Deg C | | 489 ccm | | 31.5 Deg C | |
| HVPS / Lamp Setting | -650.5 | | 744 | | -650.5 | | 744 | |
| PMT / RxCell Temp | OK Deg C | | 45 Deg C | | OK Deg C | | 45 Deg C | |
| Converter / IZS Temp | 810 Deg C | | 45 Deg C | | 810 Deg C | | 45.0 Deg C | |
| Offset / Slope | 12.7 | | 0.878 | | 12.2 | | 0.889 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 5000 | 0 | 0 | -1 | N/A |
| 5000 | 0 | 0 | 0 | N/A |
| 4958 | 40 | 81 | 79 | 1.0232 |
| 4958 | 40.0 | 81 | 81 | 1.0000 |
| 4978 | 20.0 | 40 | 40 | 1.0000 |
| 4990 | 12.0 | 24 | 24 | 1.0000 |
| 5000 | 0.0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 1.0010 |
| | | | New Correction Factor | 1.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 33.0 | 37.0 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 1.0232 |
| Percent Change: | -2.3% |

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

Calibrator malfunction at 10:20. reset the calibraotr and redid the point.

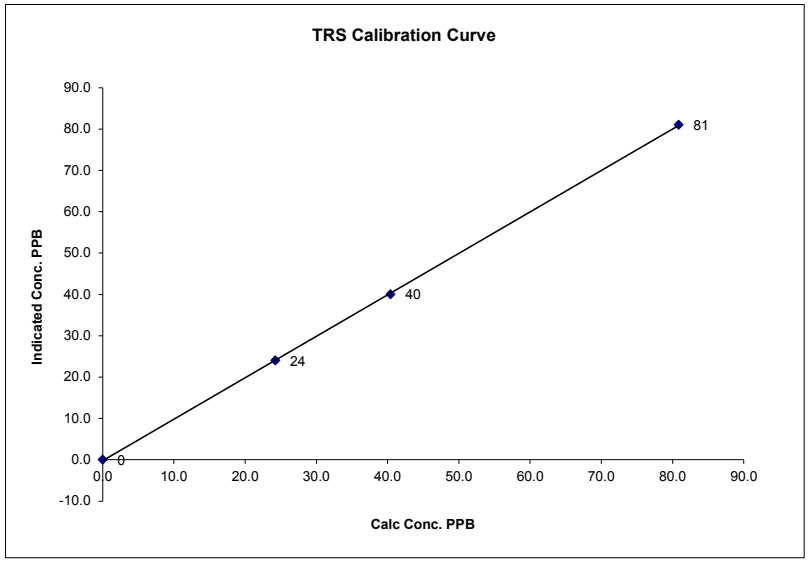
Calibration Performed by: Waseem Ahmed

## TRS Calibration Curve

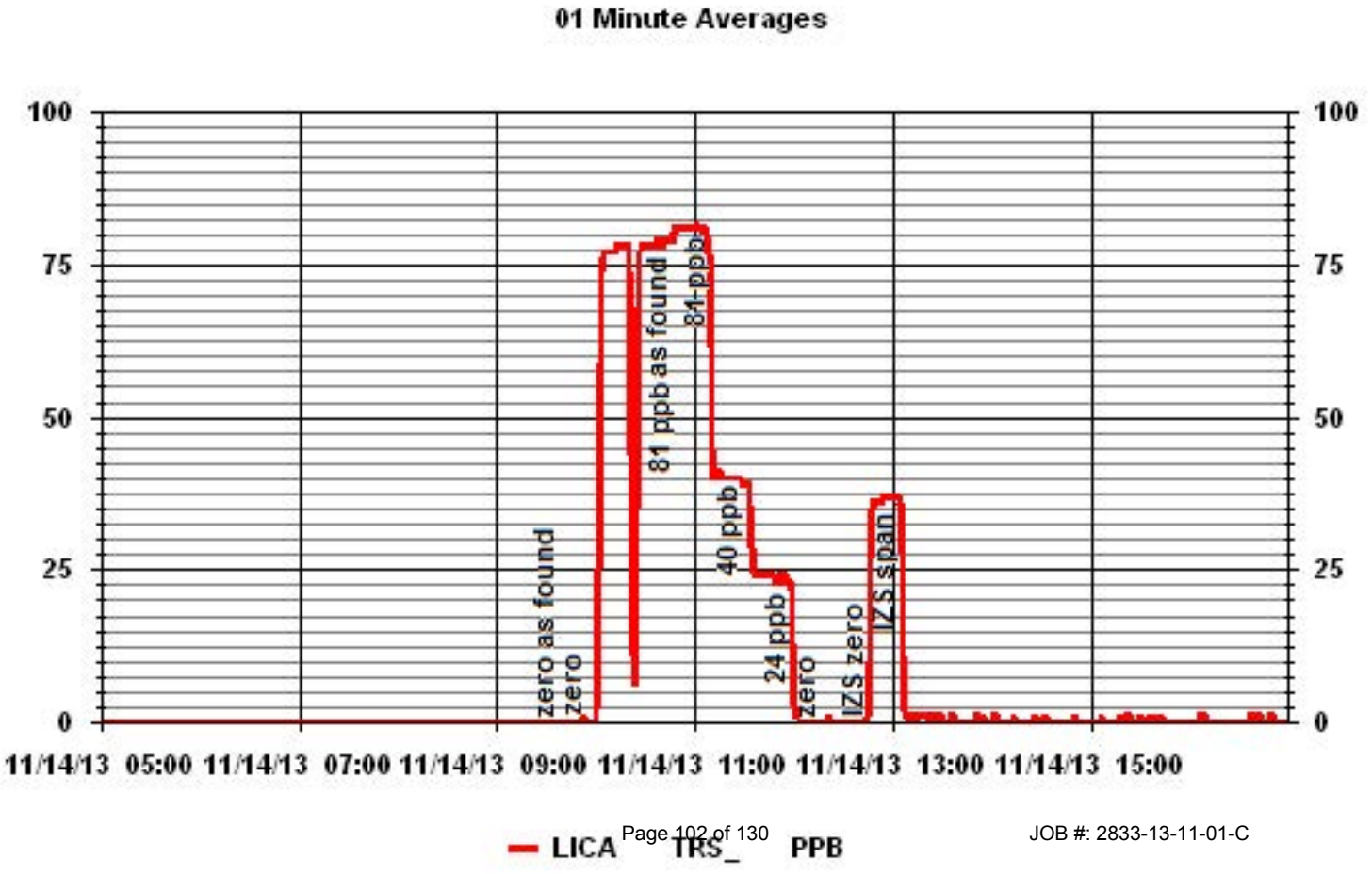
| | | | | |
|---|---|---|---|---|
| Calibration Date | November 14, 2013 | | | |
| Company | **Lakeland Industry & Community Association** | | | |
| Plant / Location | **Cold Lake South** | | | |
| Start Time (MST) | 9:15 | End Time (MST) | 12:28 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 24 | 24 | 1.0000 |
| 40 | 40 | 1.0000 |
| 81 | 81 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999949 |
| Slope | (0.85 to 1.15) | 1.002473 |
| Intercept | (± 3% F.S.) | -0.209662 |




Notes:






JOB #: 2833-13-11-01-C

# Total Hydrocarbons

## THC Calibration Report

Station Information

| | | | |
|---|---|---|---|
| Calibration Date: | November 14, 2013 | Previous Calibration | October 2, 2013 |
| Company: | **Lakeland Industry & Community Association** | | |
| Plant / Location: | **Cold Lake South** | | |
| Start Time (MST) | 12:30 | End Time (MST) | 14:38 |
| Reason: | Monthly calibration | | |
| Barometric Pressure: | 27.76 in HG | Station Temperature: | 22 Deg C |
| Calibrator: | API 700 | S/N: | 690 |
| Cal Gas Concentration: | CH4 593 PPM | C3H8 | 205 PPM |
| | TOTAL CH4 1156.8 PPM | Gas Cyl. # | LL84567 Cal Gas Expiry Date: June 7, 2014 |
| DAS make & Model: | ESC 8832 | S/N : | A3485K |
| Chart Recorder: | N/A | S/N: | N/A |
| Output Voltage Range: | 0-10 VDC | Chart Speed: | N/A mm/hr |

**Analyzer Information**

| | | | | | |
|---|---|---|---|---|---|
| Make / Model | Thermo 51C-LT | S/N : | 427408718 | Method | Flame Ionization |

**Analyzer Settings**

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0-50 | ppm | 0-50 | ppm |
| Sample Pressure | 6.5 | psi | 6.5 | psi |
| Hydrogen Pressure | 9 | psi | 9 | psi |
| Air Pressure | 20 | psi | 20 | psi |

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 1995 | 0.0 | 0.0 | -0.2 | N/A |
| 1995 | 0.0 | 0.0 | 0.0 | N/A |
| 1995 | 74.0 | 41.4 | 41.3 | 1.0018 |
| | No span adj. | | | |
| 1995 | 37.0 | 21.1 | 21.0 | 1.0030 |
| 1995 | 20.0 | 11.5 | 11.1 | 1.0344 |
| 1995 | 0.0 | 0.0 | 0.0 | N/A |
| | | | New Correction Factor: | 1.0018 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 1.0018 |
| Percent Change: | -0.2% |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 34.0 | 34.0 |
| Sample Lines Connected | | **Yes** |

Cylinder Pressures

Span 1275 psi Hydrogen 2000 psi Zero Air 34 psi

Notes: **N/A : Not Applicable**

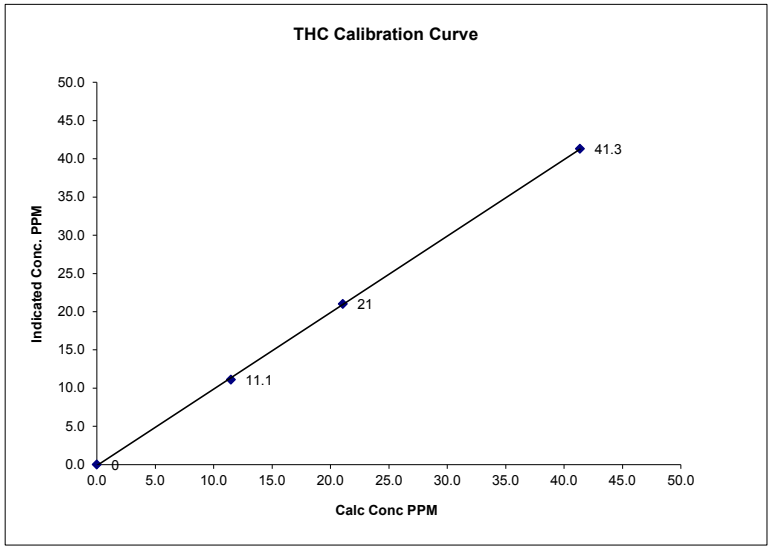
Calibration Performed by: Waseem Ahmed

No Zero Adj.
No Span Adj.

## THC Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 14, 2013 | | |
| Company | **Lakeland Industry & Community Association** | | |
| Plant / Location | **Cold Lake South** | | |
| Start Time (MST) | 12:30 | End Time (MST) | 14:38 |

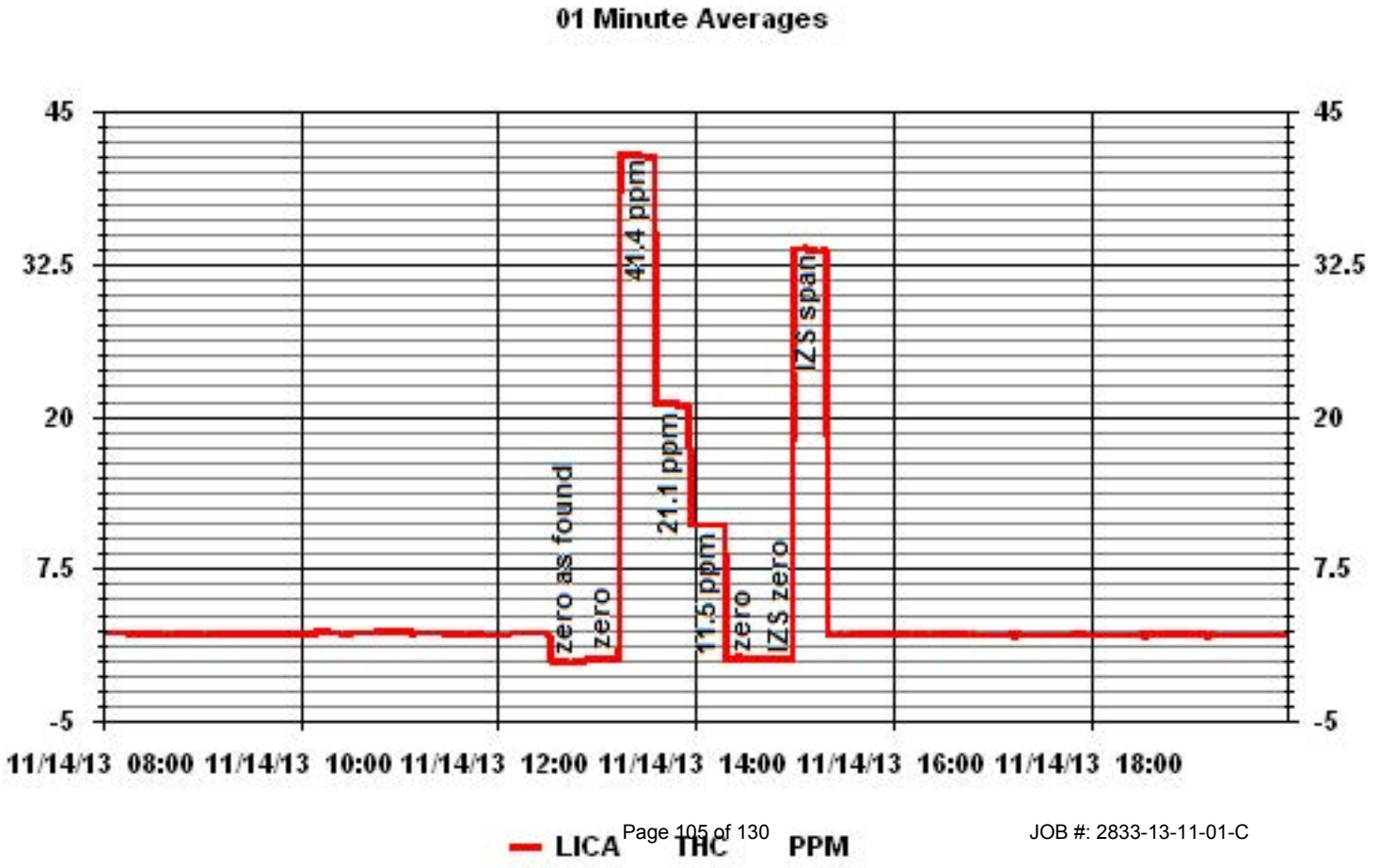
| Calculated Conc. ppm | Indicated Response ppm | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999906 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 1.000922 |
| 0.0 | 0.0 | N/A | Intercept (± 3% F.S.) | -0.14619 |
| 11.5 | 11.1 | 1.0344 | | |
| 21.1 | 21.0 | 1.0030 | | |
| 41.4 | 41.3 | 1.0018 | | |




Notes:



JOB #: 2833-13-11-01-C






JOB #: 2833-13-11-01-C

# Particulate Matter 2.5

**TEOM 1405F Audit**

| Station | | Audit Transfer Standard | |
|---|---|---|---|
| Date: | November 6, 2013 | Make/Model: | Streamline FTS |
| Station Name: | LICA 1 | Serial Number: | LO 091099, HI 091001 |
| Location: | Cold Lake South | Cell s/n: | N/A |
| Operator: | LICA | Thermometer s/n: | Station Temp. Sensor |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | Thermo TEOM Series 1405F | F-Main Set Pt (l/min) | 3.00 |
| Unit # | AMU 1775 | F-Aux Set Pt (l/min) | 13.67 |
| Unit s/n | 1405A201620804 | Filter Load (%) | 22.7% |
| Firmware Ver. | 1.52 | $K_o$ Factor | 14578.0 |
| Parameter | PM 2.5 (with FDMS) | Temp ($^oC$) | -0.5 |
| | | Press (ATM) | 0.939 |

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

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

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

**Audit**

**Status**

| | | | |
|---|---|---|---|
| Noise **<0.10*u* g** | 0.008 | Warnings | None |
| Pump Vacuum **<0.40atm** | 0.34 | Pump Gauge (inHg) | N/A |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 2 °C)** | -0.3 | **D °C** | -0.2 |
| Measured Press **(± 0.01atm)** | 0.924 | **DATM** | 0.015 |

**Flow Audit**

| | | | |
|---|---|---|---|
| Indicated Main Flow (l/min) | 3.00 | Main Flow Drift **(±10.0%)** | 0.28% |
| Measured Main Flow (l/min) | 2.95 | Flow Adjusted to Measured? | Yes |
| Indicated Bypass Flow (l/min) | 13.68 | Bypass Flow Drift **(±10.0%)** | 2.94% |
| Measured Bypass Flow (l/min) | 13.91 | Flow Adjusted to Measured? | Yes |

**Leak Check**

| | | **Instrument Setup** |
|---|---|---|
| Main **(< 0.15 l/min)** | Base= 0.04 Ref = 0.05 | Flow Control=Active |
| Aux **(< 0.6 l/min)** | Base= 0.11 Ref = 0.10 | Report Conditions=Actual |

**$K_o$ Factor**

| | |
|---|---|
| Measured | N/A |
| $K_o$ Difference **(± 2.5%)** | N/A |

**Start Time:** 13:20:00 AM **Finish Time:** 14:20:00 AM

**Sample Inlet Cleaned:** Yes **New Filters Installed:** New

**New Filter Loading %:** 18.2%

**Comments:**

**Auditor/s:** Waseem Ahmed

**TEOM 1405F Audit**

| Station | | Audit Transfer Standard | |
|---|---|---|---|
| Date: | November 14, 2013 | Make/Model: | Streamline FTS |
| Station Name: | LICA 1 | Serial Number: | LO 091099, HI 091001 |
| Location: | Cold Lake South | Cell s/n: | N/A |
| Operator: | LICA | Thermometer s/n: | Station Temp. Sensor |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | Thermo TEOM Series 1405F | F-Main Set Pt (l/min) | 3.00 |
| Unit # | AMU 1775 | F-Aux Set Pt (l/min) | 13.67 |
| Unit s/n | 1405A201620804 | Filter Load (%) | 22.9% |
| Firmware Ver. | 1.52 | $K_o$ Factor | 14578.0 |
| Parameter | PM 2.5 (with FDMS) | Temp ($^oC$) | -0.3 |
| | | Press (ATM) | 0.928 |

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

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

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

**Audit**

**Status**

| | | | |
|---|---|---|---|
| Noise **<0.10*u* g** | 0.012 | Warnings | None |
| Pump Vacuum **<0.40atm** | 0.36 | Pump Gauge (inHg) | N/A |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 2 °C)** | -0.3 | **D °C** | 0.0 |
| Measured Press **(± 0.01atm)** | 0.924 | **DATM** | 0.004 |

**Flow Audit**

| | | | |
|---|---|---|---|
| Indicated Main Flow (l/min) | 3.00 | Main Flow Drift **(±10.0%)** | 3.16% |
| Measured Main Flow (l/min) | 3.10 | Flow Adjusted to Measured? | Yes |
| Indicated Bypass Flow (l/min) | 13.68 | Bypass Flow Drift **(±10.0%)** | 3.14% |
| Measured Bypass Flow (l/min) | 13.68 | Flow Adjusted to Measured? | Yes |

**Leak Check**

| | |
|---|---|
| Main **(< 0.15 l/min)** | Base= NA Ref = NA |
| Aux **(< 0.6 l/min)** | Base= NA Ref = NA |

**Instrument Setup**

Flow Control=Active

Report Conditions=Actual

**$K_o$ Factor**

| | |
|---|---|
| Measured | N/A |
| $K_o$ Difference **(± 2.5%)** | N/A |

**Start Time:** 12:10 **Finish Time:** 13:10

**Sample Inlet Cleaned:** NA **New Filters Installed:** NA

**New Filter Loading %:** NA

**Comments:**

**Auditor/s:** Waseem Ahmed

# Nitrogen Dioxide

## NOx - NO- $NO_2$ Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 14, 2013 | | Previous Calibration | October 2, 2013 | |
| Company | LICA | | Plant/Location | Cold Lake South | |
| Start Time (MST) | 9:15 | | End Time (MST) | 13:14 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure | 27.85 in HG | Station Temperature | 22 Deg C | MFCF | N/A |
| Cal Gas Concentration | NOx 49.3 ppm | NO 49.2 ppm | Cal Gas Expiry date | December 29, 2016 | |
| Cal Gas Cylinder # | BAL3031 | | | | |
| DAS Output Voltage | 0-10 Volts | | Chart Rec. Output | N/A Volts | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 42C | S/N : | 427408716 | Method: | Chemiluminescent |
| Calibrator Make / Model: | Environics 6100 | S/N: | 4760 | | |
| DAS Make / Model: | ESC 8832 | S/N : | A3485K | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | | | ppb | | | |
| Sample Flow/Conv. Temp | 732 | ccm | 318 | Deg C | | 732 | ccm | 318 | Deg C |
| Ozone Flow / Vacuum | OK | ccm | 174.7 | "Hg-A | | OK | ccm | 174.9 | "Hg-A |
| HVPS / A ZERO | -821 | Volts | N/A | MV | | -821 | Volts | N/A | MV |
| Rx/ Temp / PMT Temp | 49.7 | Deg C | -2.5 | Deg C | | 49.6 | Deg C | -2.5 | Deg C |
| Box Temp / IZS Temp | 28.2 | Deg C | OK | Deg C | | 28.4 | Deg C | OK | Deg C |
| Offset | 5.9 | NOx | 5.0 | NO | | 6.1 | NOx | 5.1 | NO |
| Slope | 1.005 | NOx | 1.297 | NO | | 1.005 | NOx | 1.340 | NO |
| $NO_2$ COEF / Conv Efficency | 0.998 | NO2 | N/A | | | 0.998 | NO2 | N/A | |

### Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 4994 | 0.0 | NA | 0 | 0 | NA | 0 | 0 | 0 | NA | NA |
| | No zero adj. | | | | | | | | | |
| 4961 | 40.1 | NA | 395 | 394 | NA | 383 | 381 | 2 | 1.0321 | 1.0354 |
| 4961 | 40.1 | NA | 395 | 394 | NA | 396 | 395 | 1 | 0.9982 | 0.9987 |
| 4980 | 20.1 | NA | 198 | 197 | NA | 200 | 199 | 1 | 0.9889 | 0.9919 |
| 4989 | 10.0 | NA | 99 | 99 | NA | 102 | 101 | 1 | 0.9707 | 0.9783 |
| 5000 | 0.0 | NA | 0 | 0 | NA | 0 | 0 | 0 | NA | NA |

### Gas Phase Titration Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | $NO_2$ Correction Factor | NO2 Conv Efficency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | | |
| 4961 | 40.1 | NA | 395 | 394 | NA | 396 | 394 | 2 | NA | NA |
| 4961 | 40.1 | 350 | 395 | NA | 320 | 396 | 76 | 320 | 1.0000 | 100.00% |
| | No adj. | | | | | | | | | |
| 4961 | 40.0 | 150 | 394 | NA | 140 | 396 | 256 | 140 | 1.0000 | 100.00% |
| 4961 | 40.0 | 75 | 394 | NA | 70 | 396 | 326 | 70 | 1.0000 | 100.00% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Linearity | | Sum of Least Squares | NOx= 0.995 | NO= 0.996 | NO2= 1.000 | | |
| OK? | Yes | No | Correction Factors: | NOx= 0.9982 | NO= 0.9987 | NO2= 1.0000 | |
| | | | | Average Converter Efficiency= 100.00% | | | |

### IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | 0.0 | NOx | 0.0 | NO2 | | 0.0 | NOx | 0.0 | NO2 |
| Auto Span | 469 | NOx | 464 | NO2 | | 496 | NOx | 491 | NO2 |
| | | | | | Sample Lines Connected | YES | | | |

### Percent Change

| | NOx | NO | NO2 |
|---|---|---|---|
| Previous Month's Calibration Correction Factor | 1.000 | 1.000 | 1.000 |
| Current Correction Factor Before Span Adjust | 1.032 | 1.035 | 1.000 |
| Percent Change | -3.1% | -3.4% | 0.0% |

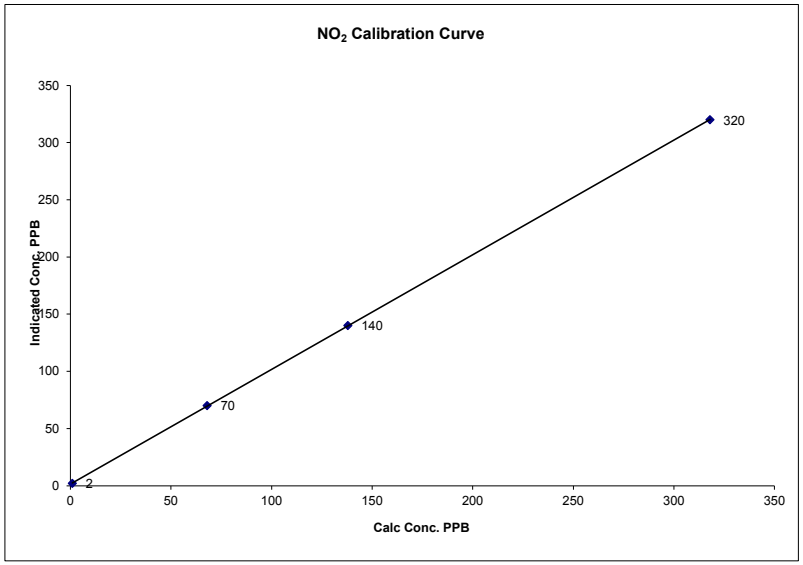
Notes **NA : Not Applicable**

Calibration Performed by: Waseem Ahmed

## $NO_2$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 14, 2013 | | |
| Company | LICA | | |
| Plant / Location | Cold Lake South | | |
| Start Time (MST) | 9:15 | End Time (MST) | 13:14 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999992 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 1.002331 |
| 1 | 2 | NA | Intercept (± 3% F.S.) | 1.44411 |
| 68 | 70 | 0.9714 | | |
| 138 | 140 | 0.9857 | | |
| 318 | 320 | 0.9938 | | |

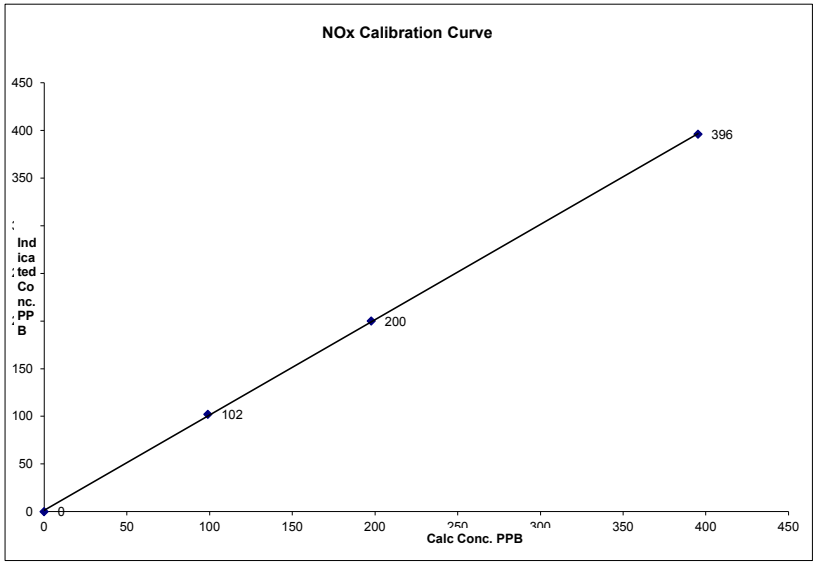



Notes:

## NOx Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 14, 2013 | | | | |
| Company | LICA | | | | |
| Plant / Location | Cold Lake South | | | | |
| Start Time (MST) | 9:15 | End Time (MST) | 13:14 | | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient | (≥ 0.995) | 0.999934 |
|---|---|---|---|---|---|
| | | | Slope | (0.85 to 1.15) | 0.999877 |
| 0 | 0 | NA | Intercept | (± 3% F.S.) | 1.49583 |
| 99 | 102 | 0.9707 | | | |
| 198 | 200 | 0.9889 | | | |
| 395 | 396 | 0.9982 | | | |

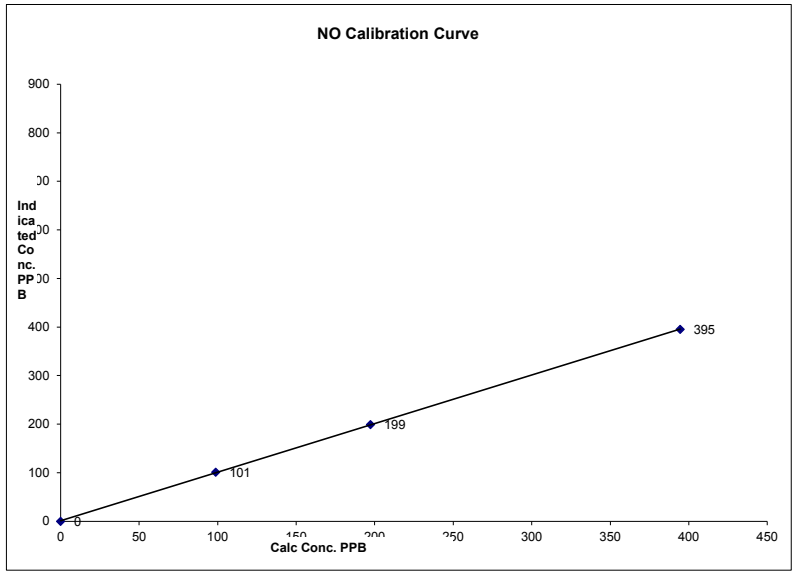



Notes:

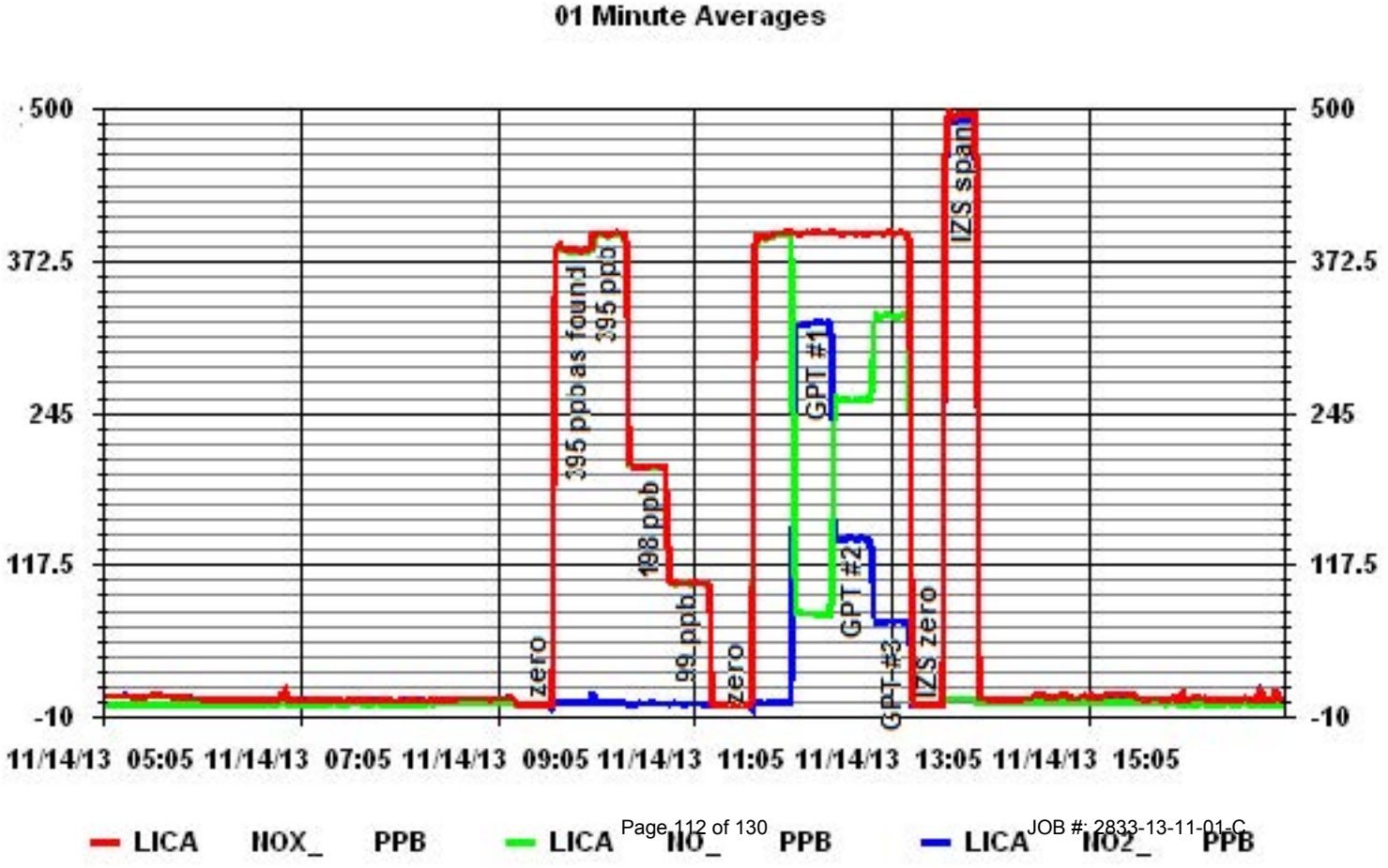
## NO Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 14, 2013 | | | | |
| Company | LICA | | | | |
| Plant / Location | Cold Lake South | | | | |
| Start Time (MST) | 9:15 | End Time (MST) | 13:14 | | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient | (≥ 0.995) | 0.999965 |
|---|---|---|---|---|---|
| | | | Slope | (0.85 to 1.15) | 0.999880 |
| 0 | 0 | NA | Intercept | (± 3% F.S.) | 1.09625 |
| 99 | 101 | 0.9783 | | | |
| 197 | 199 | 0.9919 | | | |
| 394 | 395 | 0.9987 | | | |




Notes:


01 Minute Averages
500
372.5
245
117.5
-10
zero
395 ppb as found
395 ppb
198 ppb
99 ppb
zero
GPT #1
GPT #2
GPT #3
IZS zero
IZS span
11/14/13 05:05
11/14/13 07:05
11/14/13 09:05
11/14/13 11:05
11/14/13 13:05
11/14/13 15:05
LICA NOX_ PPB
LICA NO_ PPB
LICA NO2_ PPB

# Ozone

## $O_3$ Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 14, 2013 | Previous Calibration | October 3, 2013 |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | LICA 1 - Cold Lake South | | |
| Start Time (MST) | 13:17 | End Time (MST) | 16:00 |
| Reason: | Monthly Calibration | | |
| Barometric Pressure | 27.73 inHg | Station Temperature | 23 Deg C |
| DAS Output Voltage | 0 - 10 Volts | | |

### Equipment Information

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

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0 -500 | ppb | | | | |
| Cell A Flow / Cell B Flow | 706 | LPM | 746 | LPM | 705 | LPM | 745 | LPM |
| $O_3$ Set Level | 696 | mmHg | | | 694 | mmHg | | |
| Bench Lamp | 28.9 | Deg C | | | 28.9 | Deg C | | |
| O3 Lamp / Box Temp | 53.5 | Deg | 67.5 | Deg C | 53.5 | Deg C | 67.5 | Deg C |
| Offset / Slope | -0.1 | | 1.025 | | -0.1 | | 1.012 | |

### Calibration Data

| Dilution Flow Rate | Ozone Set Point | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4995 | 0 | 0 | 0 | NA |
| | No Zero Adj. | | | |
| 4995 | 350 | 318 | 322 | 0.9876 |
| 4995 | 350 | 318 | 319 | 0.9969 |
| 4995 | 150 | 138 | 136 | 1.0147 |
| 4995 | 75 | 68 | 67 | 1.0149 |
| 4995 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 1.0002 |
| | | | New Correction Factor | 0.9969 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 277 | 274 |
| Sample Lines Connected | | YES |
| Previous Calibration Correction Factor: | | #VALUE! |
| Current Correctio Factor Before Span Adjust: | | 0.9876 |
| Percent Change: | | #VALUE! |

Note: **NA : Not Applicable**

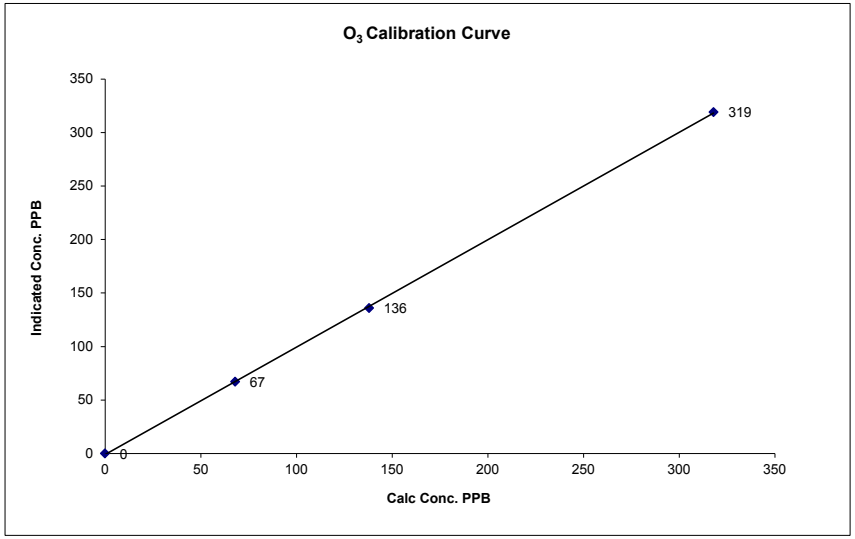
Calibration Performed by: Waseem Ahmed

## $O_3$ Calibration Curve

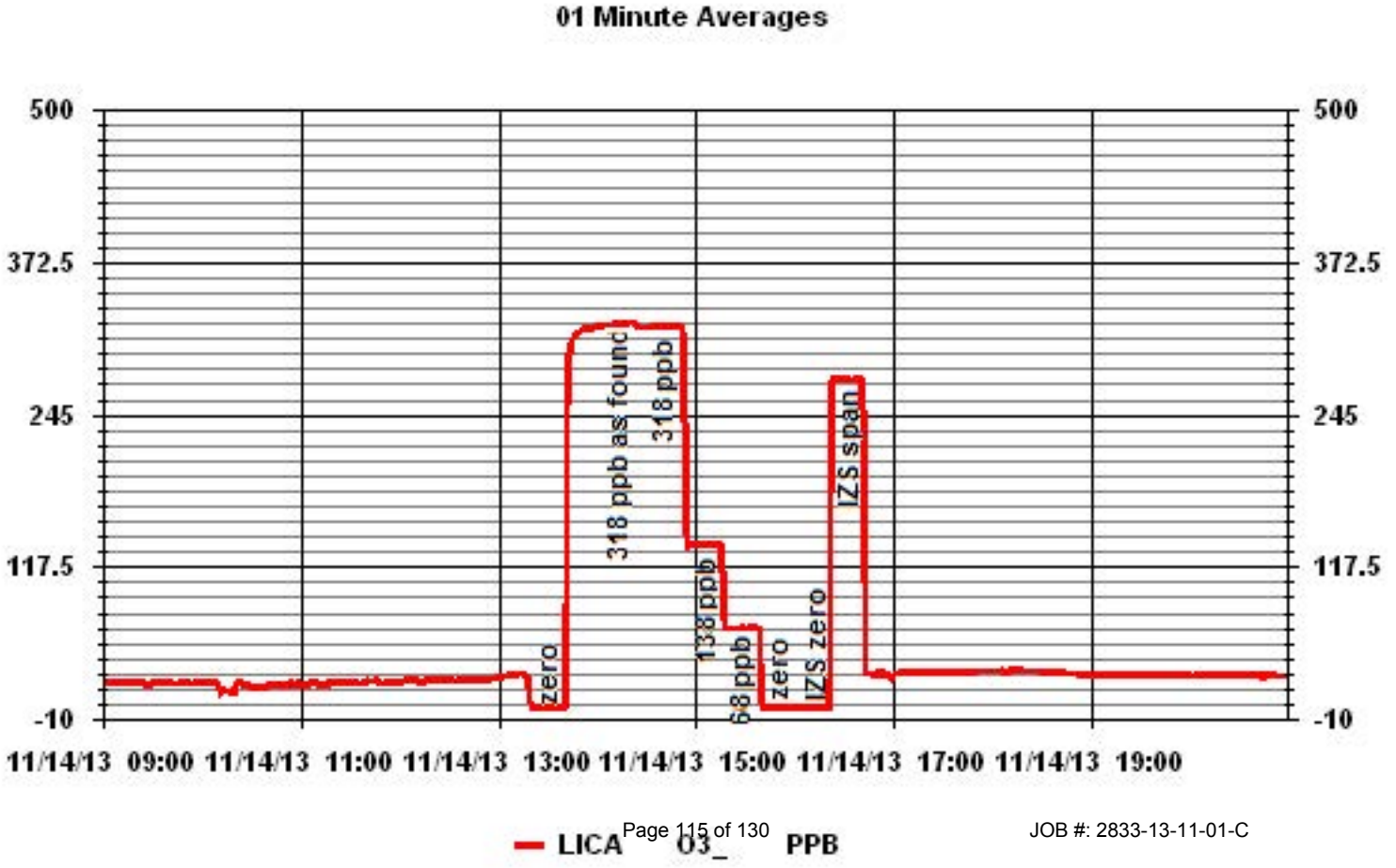
| | |
|---|---|
| Calibration Date | November 14, 2013 |
| Company | Lakeland Industry & Community Association |
| Plant / Location | LICA 1 - Cold Lake South |
| Start Time (MST) | 13:17 |
| End Time (MST) | 16:00 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | n/a |
| 68 | 67 | 1.0149 |
| 138 | 136 | 1.0147 |
| 318 | 319 | 0.9969 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999929 |
| Slope | (0.85 to 1.15) | 1.004203 |
| Intercept | (± 3% F.S.) | -1.050616 |




Notes:





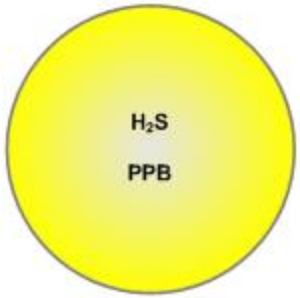

JOB #: 2833-13-11-01-C

# Passive Bubble Maps

# Lakeland Industry & Community Association
# $H_2S$ Passive Bubble Map

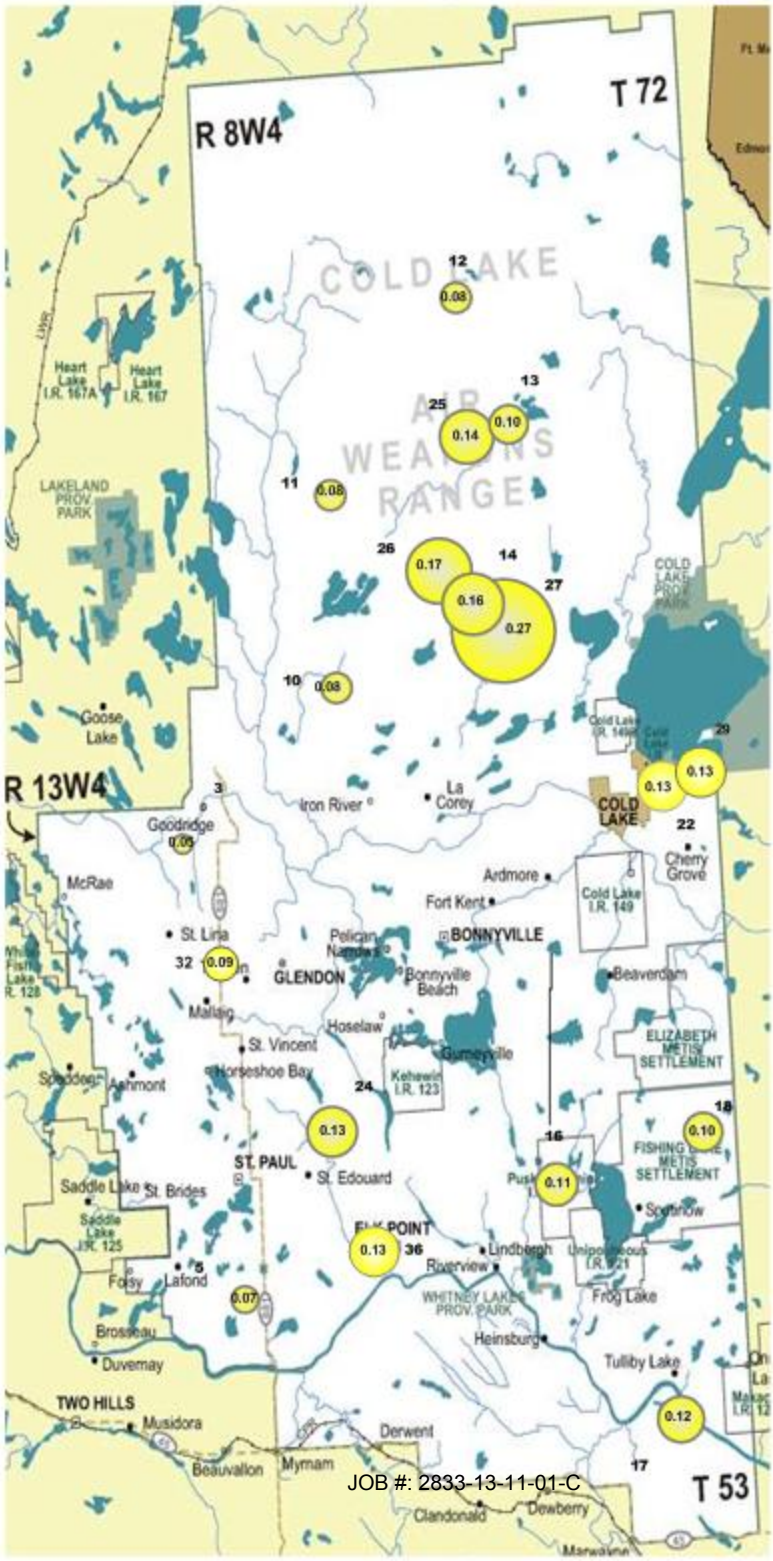
## NOVEMBER 2013

| PASSIVE STATIONS | | DUPLICATE |
|---|---|---|
| 3 – Therien | 0.05 PPB | NA |
| 5 – Lake Eliza | 0.07 PPB | NA |
| 10 – La Corey | 0.08 PPB | NA |
| 11 – Wolf Lake | 0.08 PPB | NA |
| 12 – Foster Creek | 0.08 PPB | NA |
| 13 – Primrose | 0.10 PPB | NA |
| 14 – Maskwa | 0.16 PPB | NA |
| 16 – Frog Lake | 0.11 PPB | NA |
| 17 – Clear Range | 0.12 PPB | NA |
| 18 – Fishing Lake | 0.10 PPB | NA |
| 22 – Cold Lake South | 0.13 PPB | NA |
| 24 – Fort George | 0.13 PPB | NA |
| 25 – Burnt Lake | 0.14 PPB | 0.13 PPB |
| 26 – Mahihkan | 0.17 PPB | 0.16 PPB |
| 27 – Mahkeses | 0.27 PPB | NA |
| 29 – Cold Lake South 2 | 0.13 PPB | NA |
| 32 – St. Lina | 0.09 PPB | NA |
| 36 – Elk Point | 0.13 PPB | NA |




## Summary

Minimum : 0.05 PPB – Therien
Maximum: 0.27 PPB – Mahkeses
Average: 0.12 PPB (Includes Duplicates)





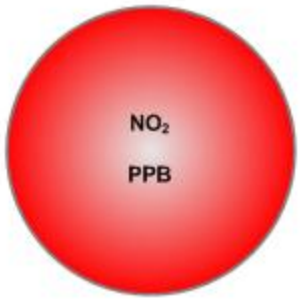

JOB #: 2833-13-11-01-C

# Lakeland Industry & Community Association
# $NO_2$ Passive Bubble Map

## NOVEMBER 2013

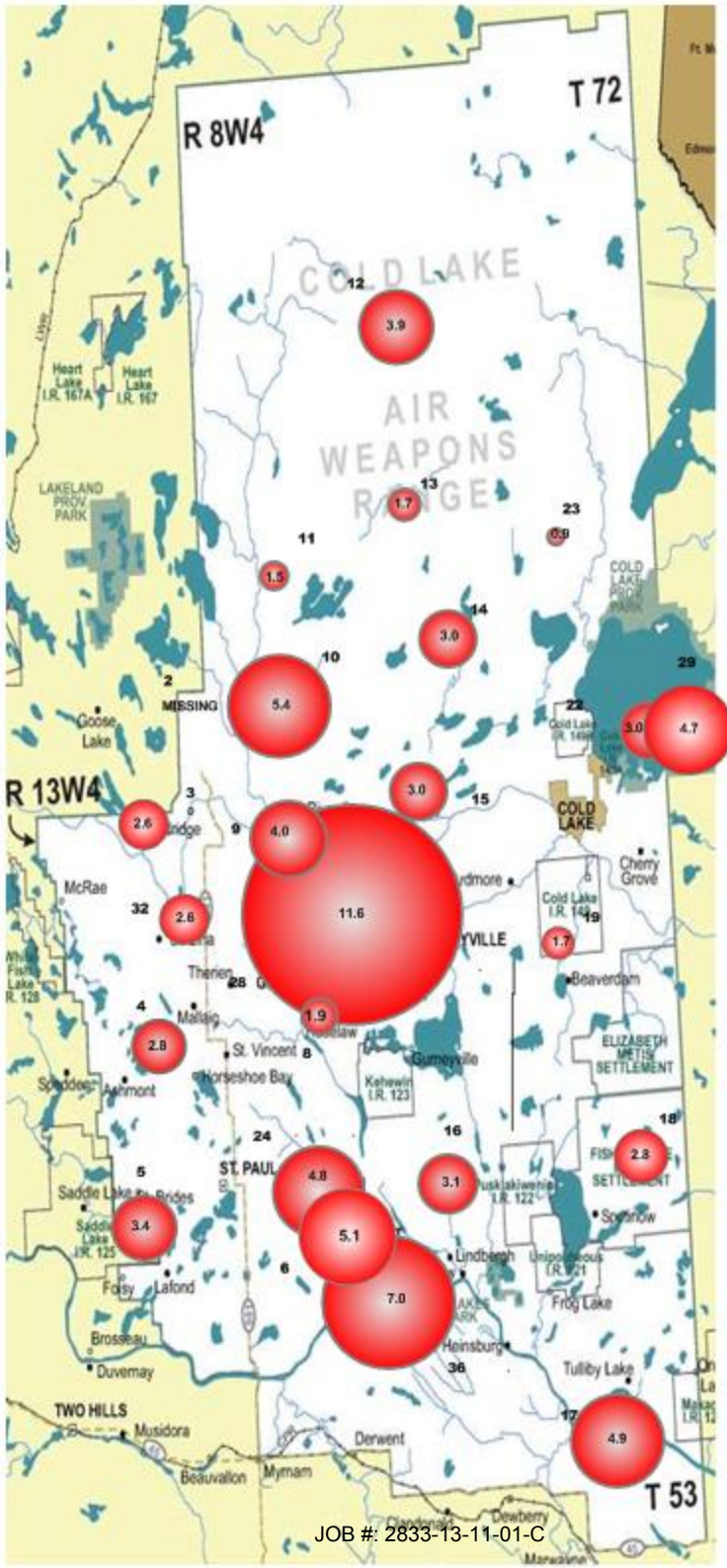
**PASSIVE STATIONS**

| | | DUPLICATE |
|---|---|---|
| 2 – Sand River | MISSING | NA |
| 3 – Therien | 2.3 PPB | 2.8 PPB |
| 4 – Flat Lake | 2.8 PPB | NA |
| 5 – Lake Eliza | 3.4 PPB | NA |
| 6 – Telegraph Creek | 5.1 PPB | NA |
| 8 – Muriel-Kehewin | 1.9 PPB | NA |
| 9 – Dupre | 4.0 PPB | NA |
| 10 – La Corey | 5.4 PPB | NA |
| 11 – Wolf Lake | 1.5 PPB | NA |
| 12 – Foster Creek | 3.9 PPB | NA |
| 13 – Primrose | 1.7 PPB | NA |
| 14 – Maskwa | 3.0 PPB | NA |
| 15 – Ardmore | 3.0 PPB | NA |
| 16 – Frog Lake | 3.1 PPB | NA |
| 17 – Clear Range | 4.9 PPB | NA |
| 18 – Fishing Lake | 2.8 PPB | NA |
| 19 – Beaverdam | 1.7 PPB | NA |
| 22 – Cold Lake South | 3.0 PPB | NA |
| 23 – Medley-Martineau | 0.9 PPB | NA |
| 24 – Fort George | 4.8 PPB | NA |
| 28 – Town of Bonnyville | 11.6 PPB | NA |
| 29 – Cold Lake South 2 | 4.7 PPB | NA |
| 32 – St. Lina | 2.6 PPB | NA |
| 36 – Elk Point | 7.7 PPB | 6.3 PPB |




## Summary

Minimum : 0.9 PPB – Medley-Martineau
Maximum: 11.6PPB – Town of Bonnyville
Average: 3.7 PPB *Includes Duplicates






JOB #: 2833-13-11-01-C

# Lakeland Industry & Community Association
# $O_3$ Passive Bubble Map

## NOVEMBER 2013

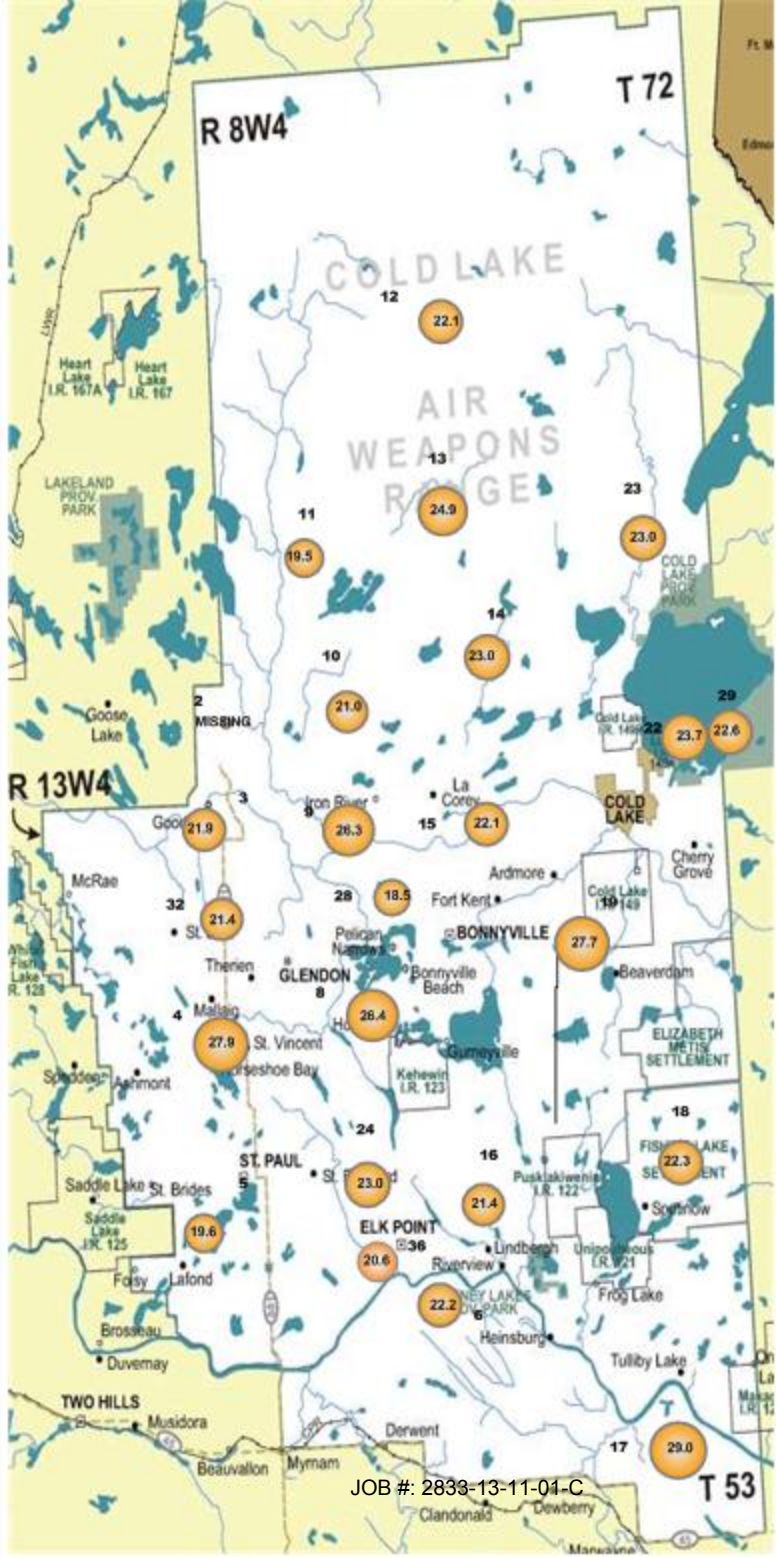
**PASSIVE STATIONS**

| | | DUPLICATE |
|---|---|---|
| 2 – Sand River | MISSING | NA |
| 3 – Therien | 20.9 PPB | 22.8 PPB |
| 4 – Flat Lake | 27.9 PPB | NA |
| 5 – Lake Eliza | 19.6 PPB | NA |
| 6 – Telegraph Creek | 22.2 PPB | NA |
| 8 – Muriel-Kehewin | 26.4 PPB | NA |
| 9 – Dupre | 26.3 PPB | NA |
| 10 – La Corey | 21.0 PPB | NA |
| 11 – Wolf Lake | 19.5 PPB | NA |
| 12 – Foster Creek | 22.1 PPB | NA |
| 13 – Primrose | 24.9 PPB | NA |
| 14 – Maskwa | 23.0 PPB | NA |
| 15 – Ardmore | 22.1 PPB | NA |
| 16 – Frog Lake | 21.4 PPB | NA |
| 17 – Clear Range | 29.0 PPB | NA |
| 18 – Fishing Lake | 22.3 PPB | NA |
| 19 – Beaverdam | 27.7 PPB | NA |
| 22 – Cold Lake South | 23.7 PPB | NA |
| 23 – Medley-Martineau | 23.0 PPB | NA |
| 24 – Fort George | 23.0 PPB | NA |
| 28 – Town of Bonnyville | 18.5 PPB | NA |
| 29 – Cold Lake South 2 | 22.6 PPB | NA |
| 32 – St. Lina | 21.4 PPB | NA |
| 36 – Elk Point | 22.3 PPB | 18.8 PPB |

$O_3$ PPB

## Summary

Minimum : 18.5 PPB – La Corey
Maximum: 29.0 PPB – Primrose
Average: 23.0 PPB *Includes Duplicates






JOB #: 2833-13-11-01-C

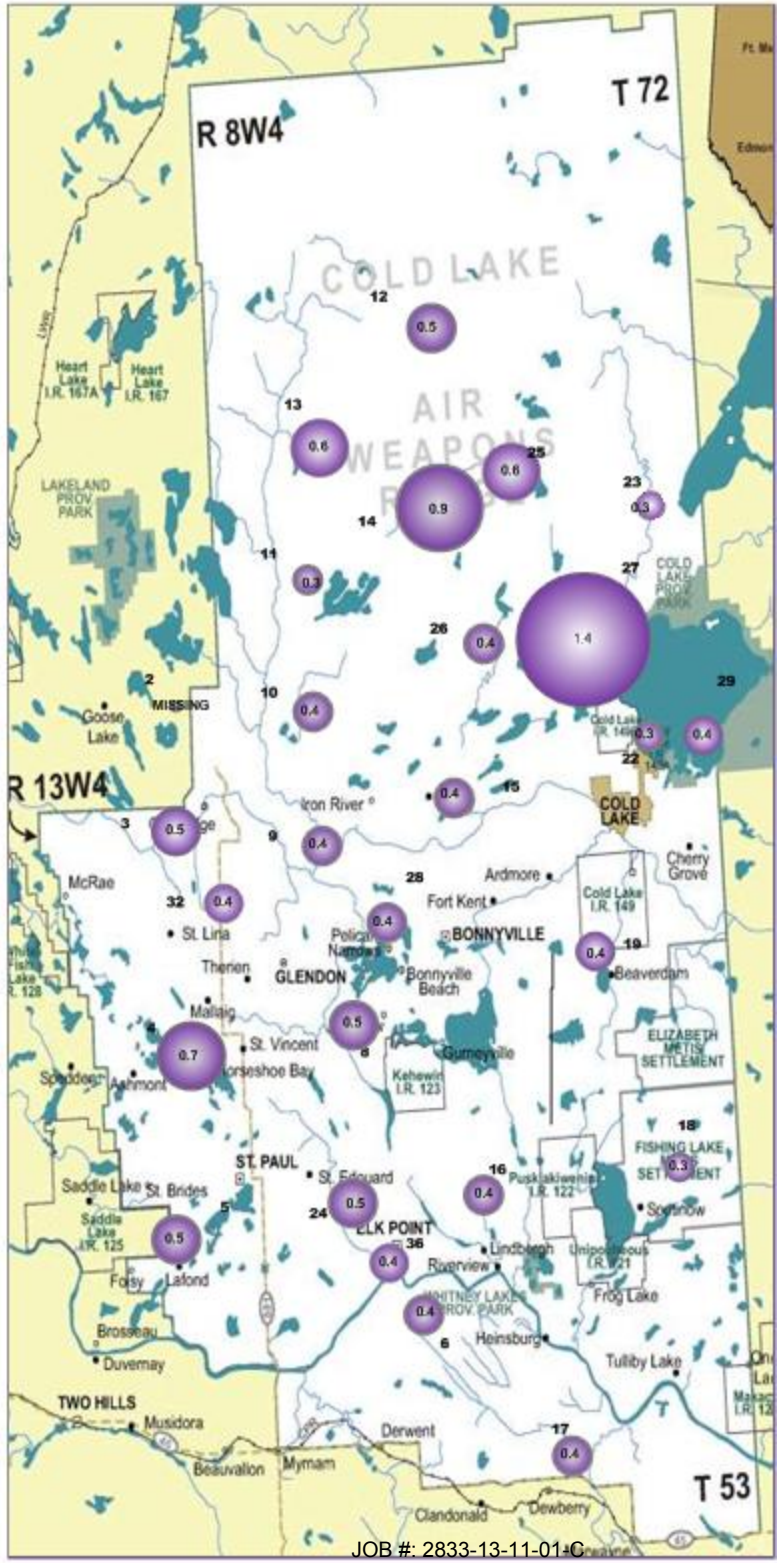
# Lakeland Industry & Community Association
# $SO_2$ Passive Bubble Map

## NOVEMOBER 2013

| PASSIVE STATIONS | | DUPLICATE |
|---|---|---|
| 2 – Sand River | MISSING | NA |
| 3 – Therien | 0.5 PPB | NA |
| 4 – Flat Lake | 0.7 PPB | NA |
| 5 – Lake Eliza | 0.5 PPB | NA |
| 6 – Telegraph Creek | 0.4 PPB | NA |
| 8 – Muriel-Kehewin | 0.5 PPB | NA |
| 9 – Dupre | 0.4 PPB | NA |
| 10 – La Corey | 0.4 PPB | NA |
| 11 – Wolf Lake | 0.3 PPB | NA |
| 12 – Foster Creek | 0.5 PPB | NA |
| 13 – Primrose | 0.6 PPB | NA |
| 14 – Maskwa | 0.9 PPB | NA |
| 15 – Ardmore | 0.4 PPB | NA |
| 16 – Frog Lake | 0.4 PPB | NA |
| 17 – Clear Range | 0.4 PPB | 0.4 PPB |
| 18 – Fishing Lake | 0.3 PPB | 0.3 PPB |
| 19 – Beaverdam | 0.4 PPB | NA |
| 22 – Cold Lake South | 0.3 PPB | NA |
| 23 – Medley-Martineau | 0.3 PPB | NA |
| 24 – Fort George | 0.5 PPB | NA |
| 25 – Burnt Lake | 0.6 PPB | NA |
| 26 – Mahikan | 0.4 PPB | NA |
| 27 – Mahkeses | 1.4 PPB | NA |
| 28 – Town of Bonnyville | 0.4 PPB | NA |
| 29 – Cold Lake South 2 | 0.4 PPB | NA |
| 32 – St. Lina | 0.4 PPB | NA |
| 36 – Elk Point | 0.4 PPB | NA |


## Summary

Minimum : 0.3 PPB –various stations
Maximum: 1.4 PPB –Mahkeses
Average: 0.49 PPB *Includes Duplicates






JOB #: 2833-13-11-01-C

# Passive Field Data

# Field Notes

| ID | SAMPLER | START | | END | | NOTES |
|---|---|---|---|---|---|---|
| | | DATE | TIME | DATE | TIME | |
| 2 | $SO_2/NO_2/O_3$ | NA | NA | NA | NA | All samplers had been removed and samples are missing. |
| 3 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 16:50 | 12/05/2013 | 15:32 | |
| 4 | $SO_2/NO_2/O_3$ | 11/01/2013 | 15:30 | 12/05/2013 | 12:40 | |
| 5 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 14:35 | 12/05/2013 | 11:22 | |
| 6 | $SO_2/NO_2/O_3$ | 11/01/2013 | 13:00 | 12/04/2013 | 15:14 | |
| 8 | $SO_2/NO_2/O_3$ | 11/01/2013 | 18:10 | 12/05/2013 | 09:30 | |
| 9 | $SO_2/NO_2/O_3$ | 11/01/2013 | 17:30 | 12/03/2013 | 09:17 | |
| 10 | $H_2S/SO_2/NO_2/O_3$ | 11/04/2013 | 09:30 | 12/03/2013 | 10:17 | |
| 11 | $H_2S/SO_2/NO_2/O_3$ | 11/04/2013 | 10:05 | 12/03/2013 | 11:29 | |
| 12 | $H_2S/SO_2/NO_2/O_3$ | 11/04/2013 | 11:30 | 12/03/2013 | 13:36 | |
| 13 | $H_2S/SO_2/NO_2/O_3$ | 11/04/2013 | 14:45 | 12/03/2013 | 17:50 | |
| 14 | $H_2S/SO_2/NO_2/O_3$ | 11/04/2013 | 15:35 | 12/03/2013 | 19:55 | |
| 15 | $SO_2/NO_2/O_3$ | 11/05/2013 | 14:40 | 12/06/2013 | 09:55 | |
| 16 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 10:10 | 12/04/2013 | 13:11 | |
| 17 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 12:05 | 12/04/2013 | 14:05 | |
| 18 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 10:55 | 12/04/2013 | 11:55 | |
| 19 | $SO_2/NO_2/O_3$ | 11/01/2013 | 09:35 | 12/04/2013 | 09:12 | |
| 22 | $H_2S/SO_2/NO_2/O_3$ | 11/05/2013 | 16:50 | 12/05/2013 | 18:50 | |
| 23 | $SO_2/NO_2/O_3$ | 11/05/2013 | 16:30 | 12/06/2013 | 10:54 | |
| 24 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 13:30 | 12/04/2013 | 15:55 | |
| 25 | $H_2S/SO_2$ | 11/04/2013 | 12:40 | 12/03/2013 | 15:33 | |
| 26 | $H_2S/SO_2$ | 11/04/2013 | 15:20 | 12/03/2013 | 17:00 | |
| 27 | $H_2S/SO_2$ | 11/04/2013 | 16:30 | 12/03/2013 | 21:00 | |
| 28 | $SO_2/NO_2/O_3$ | 11/01/2013 | 17:45 | 12/03/2013 | 08:32 | |
| 29 | $H_2S/SO_2/NO_2/O_3$ | 11/05/2013 | 17:00 | 12/05/2013 | 18:53 | |
| 32 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 16:10 | 12/05/2013 | 14:16 | |
| 36 | $H_2S/SO_2/NO_2/O_3$ | 11/01/2013 | 13:40 | 12/04/2013 | 16:35 | |

| ID | SAMPLER | START5 | | END | | NOTES |
|---|---|---|---|---|---|---|
| | | DATE | TIME | DATE | TIME | |
| Duplicate # 17 | $SO_2$ | 11/01/2013 | 12:05 | 12/04/2013 | 14:05 | |
| Duplicate # 18 | $SO_2$ | 11/01/2013 | 10:55 | 12/04/2013 | 11:55 | |
| Duplicate # 19 | $SO_2$ | 11/01/2013 | 09:35 | 12/04/2013 | 09:12 | |
| Duplicate # 25 | $H_2S$ | 11/04/2013 | 12:40 | 12/03/2013 | 15:33 | |
| Duplicate # 26 | $H_2S$ | 11/04/2013 | 15:20 | 12/03/2013 | 17:00 | |
| Duplicate # 36 | $NO_{2,}$ | 11/01/2013 | 13:40 | 12/04/2013 | 16:35 | |
| Duplicate # 3 | $NO_2$ | 11/01/2013 | 16:50 | 12/05/2013 | 15:32 | |
| Duplicate # 36 | $O_3$ | 11/01/2013 | 13:40 | 12/04/2013 | 16:35 | |
| Duplicate # 3 | $O_3$ | 11/01/2013 | 16:50 | 12/05/2013 | 15:32 | |

# Passive Network Laboratory Analysis

Your Project #: 2013/11/01 - 2013/12/05
Site Location: LICA

**Attention:MICHAEL BISAGA**

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

**Report Date: 2013/12/16**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B3B3500**
**Received: 2013/12/09, 09:54**

Sample Matrix: Air
# Samples Received: 32

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| H2S Passive Analysis (1) | 20 | 2013/12/13 | 2013/12/16 | PTC SOP-00150 | Tang.Passive H2S in |
| NO2 Passive Analysis (1) | 4 | 2013/12/13 | 2013/12/16 | PTC SOP-00148 | Passive NO2 in ATM |
| NO2 Passive Analysis (1) | 21 | 2013/12/16 | 2013/12/16 | PTC SOP-00148 | Passive NO2 in ATM |
| O3 Passive Analysis (1) | 25 | 2013/12/14 | 2013/12/16 | PTC SOP-00197 | EPA 300 R2.1 |
| SO2 Passive Analysis (1) | 8 | 2013/12/13 | 2013/12/16 | PTC SOP-00149 | Tang Passive SO2 in |
| SO2 Passive Analysis (1) | 20 | 2013/12/16 | 2013/12/16 | PTC SOP-00149 | Tang Passive SO2 in |

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500
==========
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.


Maxxam Analytics International Corporation o/a Maxxam Analytics 6744 50th Street T6B 3M9 Telephone(780) 378-8500 FAX(780) 478-8689

Maxxam Job #: B3B3500
Report Date: 2013/12/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2013/11/01 - 2013/12/05
Site Location: LICA
Sampler Initials: WA

## RESULTS OF CHEMICAL ANALYSES OF AIR

| Maxxam ID | | IG6481 | IG6482 | IG6483 | IG6484 | IG6485 | IG6486 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2013/11/01 16:50 | 2013/11/01 15:30 | 2013/11/01 14:35 | 2013/11/01 13:00 | 2013/11/01 18:10 | 2013/11/01 17:30 | | |
| | Units | 3 | 4 | 5 | 6 | 8 | 9 | RDL | QC Batch |
| **Passive Monitoring** | | | | | | | | | |
| Calculated H2S | ppb | 0.05 | | 0.07 | | | | 0.02 | 7320641 |
| Calculated NO2 | ppb | 2.3 | 2.8 | 3.4 | 5.1 | 1.9 | 4.0 | 0.1 | 7323041 |
| Calculated O3 | ppb | 20.9 | 27.9 | 19.6 | 22.2 | 26.4 | 26.3 | 0.1 | 7321770 |
| Calculated SO2 | ppb | 0.5 | 0.7 | 0.5 | 0.4 | 0.5 | 0.4 | 0.1 | 7320115 |
| RDL = Reportable Detection Limit | | | | | | | | | |

| Maxxam ID | | IG6487 | IG6488 | | IG6489 | IG6490 | IG6491 | IG6492 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2013/11/04 09:30 | 2013/11/04 10:05 | | 2013/11/04 11:30 | 2013/11/04 14:45 | 2013/11/04 15:35 | 2013/11/05 14:40 | | |
| | Units | 10 | 11 | QC Batch | 12 | 13 | 14 | 15 | RDL | QC Batch |
| **Passive Monitoring** | | | | | | | | | | |
| Calculated H2S | ppb | 0.08 | 0.08 | 7320641 | 0.08 | 0.10 | 0.16 | | 0.02 | 7320641 |
| Calculated NO2 | ppb | 5.4 | 1.5 | 7323041 | 3.9 | 1.7 | 3.0 | 3.0 | 0.1 | 7323041 |
| Calculated O3 | ppb | 21.0 | 19.5 | 7321773 | 22.1 | 24.9 | 23.0 | 22.1 | 0.1 | 7321773 |
| Calculated SO2 | ppb | 0.4 | 0.3 | 7320115 | 0.5 | 0.6 | 0.9 | 0.4 | 0.1 | 7323149 |
| RDL = Reportable Detection Limit | | | | | | | | | | |

| Maxxam ID | | IG6493 | IG6494 | IG6495 | IG6496 | IG6497 | IG6498 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2013/11/01 10:10 | 2013/11/01 12:05 | 2013/11/01 10:55 | 2013/11/01 09:35 | 2013/11/05 16:50 | 2013/11/05 16:30 | | |
| | Units | 16 | 17 | 18 | 19 | 22 | 23 | RDL | QC Batch |
| **Passive Monitoring** | | | | | | | | | |
| Calculated H2S | ppb | 0.11 | 0.12 | 0.10 | | 0.13 | | 0.02 | 7320641 |
| Calculated NO2 | ppb | 3.1 | 4.9 | 2.8 | 1.7 | 3.0 | 0.9 | 0.1 | 7323041 |
| Calculated O3 | ppb | 21.4 | 29.0 | 22.3 | 27.7 | 23.7 | 23.0 | 0.1 | 7321773 |
| Calculated SO2 | ppb | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.1 | 7323149 |
| RDL = Reportable Detection Limit | | | | | | | | | |

| Maxxam ID | | IG6499 | IG6500 | IG6501 | IG6502 | IG6503 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2013/11/01 13:30 | 2013/11/04 12:40 | 2013/11/04 15:20 | 2013/11/04 16:30 | 2013/11/01 17:45 | | |
| | Units | 24 | 25 | 26 | 27 | 28 | RDL | QC Batch |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | 0.13 | 0.14 | 0.17 | 0.27 | | 0.02 | 7320641 |
| Calculated NO2 | ppb | 4.8 | | | | 11.6 | 0.1 | 7323041 |
| Calculated O3 | ppb | 23.0 | | | | 18.5 | 0.1 | 7321773 |
| Calculated SO2 | ppb | 0.5 | 0.6 | 0.4 | 1.4 | 0.4 | 0.1 | 7323149 |
| RDL = Reportable Detection Limit | | | | | | | | |


Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton 6744 50th Street T6B 3M9 Telephone(780) 378-8500 FAX(780) 378-8599

Maxxam Job #: B3B3500
Report Date: 2013/12/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2013/11/01 - 2013/12/05
Site Location: LICA
Sampler Initials: WA

## RESULTS OF CHEMICAL ANALYSES OF AIR

| Maxxam ID | | IG6504 | IG6505 | IG6506 | IG6509 | | IG6510 | IG6511 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2013/11/05 17:00 | 2013/11/01 16:10 | 2013/11/01 13:40 | 2013/11/01 13:40 | | 2013/11/01 16:50 | 2013/11/01 12:05 | | |
| | Units | 29 | 32 | 36 | 36 DUP | QC Batch | 3 DUP | 17 DUP | RDL | QC Batch |
| **Passive Monitoring** | | | | | | | | | | |
| Calculated H2S | ppb | 0.13 | 0.09 | 0.13 | | 7320641 | | | 0.02 | 7320641 |
| Calculated NO2 | ppb | 4.7 | 2.6 | 7.7 | 6.3 | 7320135 | 2.8 | | 0.1 | 7323041 |
| Calculated O3 | ppb | 22.6 | 21.4 | 22.3 | 18.8 | 7321773 | 22.8 | | 0.1 | 7321773 |
| Calculated SO2 | ppb | 0.4 | 0.4 | 0.4 | | 7323149 | | 0.4 | 0.1 | 7323149 |
| RDL = Reportable Detection Limit | | | | | | | | | | |

| Maxxam ID | | IG6512 | IG6514 | IG6515 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2013/11/01 10:55 | 2013/11/04 12:40 | 2013/11/04 15:20 | | |
| | Units | 18 DUP | 25 DUP | 26 DUP | RDL | QC Batch |
| **Passive Monitoring** | | | | | | |
| Calculated H2S | ppb | | 0.13 | 0.16 | 0.02 | 7320641 |
| Calculated SO2 | ppb | 0.3 | | | 0.1 | 7323149 |
| RDL = Reportable Detection Limit | | | | | | |

Maxxam Job #: B3B3500
Report Date: 2013/12/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2013/11/01 - 2013/12/05
Site Location: LICA
Sampler Initials: WA

## GENERAL COMMENTS

Sample #19 SO2 DUP, unexposed sample returned in error.

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



Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 6744 - 50th Street T6B 3M9 Telephone(780) 378-8500 FAX(780) 378-8699

Maxxam Job #: B3B3500
Report Date: 2013/12/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2013/11/01 - 2013/12/05
Site Location: LICA
Sampler Initials: WA

## QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type | Parameter | Date Analyzed | Value | Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 7320115 | DF4 | Calibration Check | Calculated SO2 | 2013/12/13 | | 99 | % | 95 - 105 |
| 7320115 | DF4 | Spiked Blank | Calculated SO2 | 2013/12/13 | | 99 | % | 90 - 110 |
| 7320115 | DF4 | Method Blank | Calculated SO2 | 2013/12/13 | <0.1 | | ppb | |
| 7320135 | DF4 | Calibration Check | Calculated NO2 | 2013/12/13 | | 100 | % | 76 - 118 |
| 7320135 | DF4 | Spiked Blank | Calculated NO2 | 2013/12/13 | | 99 | % | 93 - 105 |
| 7320135 | DF4 | Method Blank | Calculated NO2 | 2013/12/13 | <0.1 | | ppb | |
| 7320641 | SS6 | Calibration Check | Calculated H2S | 2013/12/16 | | 98 | % | 90 - 110 |
| 7320641 | SS6 | Spiked Blank | Calculated H2S | 2013/12/16 | | 103 | % | 90 - 110 |
| 7321770 | OZ | Calibration Check | Calculated O3 | 2013/12/14 | | 101 | % | 91 - 107 |
| 7321770 | OZ | Spiked Blank | Calculated O3 | 2013/12/14 | | 98 | % | 96 - 103 |
| 7321770 | OZ | Method Blank | Calculated O3 | 2013/12/14 | <0.1 | | ppb | |
| 7321773 | OZ | Calibration Check | Calculated O3 | 2013/12/14 | | 101 | % | 91 - 107 |
| 7321773 | OZ | Spiked Blank | Calculated O3 | 2013/12/14 | | 98 | % | 96 - 103 |
| 7321773 | OZ | Method Blank | Calculated O3 | 2013/12/14 | <0.1 | | ppb | |
| 7323041 | DF4 | Calibration Check | Calculated NO2 | 2013/12/16 | | 100 | % | 76 - 118 |
| 7323041 | DF4 | Spiked Blank | Calculated NO2 | 2013/12/16 | | 101 | % | 93 - 105 |
| 7323041 | DF4 | Method Blank | Calculated NO2 | 2013/12/16 | <0.1 | | ppb | |
| 7323149 | DF4 | Calibration Check | Calculated SO2 | 2013/12/16 | | 97 | % | 95 - 105 |
| 7323149 | DF4 | Spiked Blank | Calculated SO2 | 2013/12/16 | | 100 | % | 90 - 110 |
| 7323149 | DF4 | Method Blank | Calculated SO2 | 2013/12/16 | <0.1 | | ppb | |

Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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

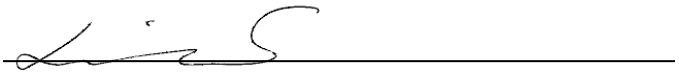

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 6744 - 50th Street T6B 3M9 Telephone(780) 378-8500 FAX(780) 378-8699

Maxxam Job #: B3B3500
Report Date: 2013/12/16

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2013/11/01 - 2013/12/05
Site Location: LICA
Sampler Initials: WA

## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.


Maxxam Analytics International Corporation o/a Maxxam Analytics, Edmonton, 6744 50th Street T6B 3M9 Telephone(780) 378-8500 FAX(780) 378-8993

# Lakeland Industry & Community Association

Portable / Elk Point Airport Monitoring Site
Ambient Air Monitoring Data Report
For
November 2013

Prepared By:


December 19, 2013

# Lakeland Industry & Community Association
# Portable / Elk Point Airport
# 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 / Elk Point Airport
Data Period: November 2013

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Lili Zhou

# Calibration Procedure

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

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

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

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

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

# MONTHLY CONTINUOUS DATA SUMMARY
## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
## – PORTABLE – ELK POINT AIRPORT -

### Continuous Ambient Monitoring – November 2013

| LAKELAND INDUSTRY & COMMUNITY ASSOCIATION PORTABLE / ELK POINT AIRPORT SITE | | | | | | MAXIMUM VALUES | | | | | | | OPERATIONAL TIME (PERCENT) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-HOUR | | | | | 24-HOUR | | |
| PARAMETER | OBJECTIVES | | EXCEEDENCES | | MONTHLY AVERAGE | READING | DAY | HOUR | WIND SPEED (KPH) | WIND DIRECTION (DEGREES) | READING | DAY | |
| | 1-HR | 24-HR | 1-HR | 24-HR | | | | | | | | | |
| $SO_2$ (PPB) | 172 | 48 | 0 | 0 | 0.08 | 4 | 19 | 20, 21 | 25.9, 19.5 | 313(NW), 315(NW) | 0.7 | 23 | 100.0 |
| $H_2S$ (PPB) | 10 | 3 | 0 | 0 | 0.09 | 2 | 15, 30 | VAR | VAR | VAR | 0.6 | 30 | 100.0 |
| THC (55i) (PPM) | - | - | - | - | 2.84 | 9.2 | 30 | 4 | 1.4 | 95(E) | 5.88 | 30 | 100.0 |
| Methane (PPM) | - | - | - | - | 2.81 | 8.8 | 30 | 4 | 1.4 | 95(E) | 5.64 | 30 | 100.0 |
| NMHC (PPM) | - | - | - | - | 0.03 | 0.5 | 30 | 1, 2 | 1, 1.2 | 282(W), 252(WSW) | 0.24 | 30 | 100.0 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 8.82 | 33.0 | 29 | 23 | 3.9 | 260(WSW) | 21.8 | 30 | 100.0 |
| NO (PPB) | - | - | - | - | 5.16 | 73.7 | 5 | 7 | 1.3 | 112(ESE) | 23.1 | 30 | 100.0 |
| NOx (PPB) | - | - | - | - | 13.97 | 101.3 | 30 | 3 | 3.1 | 121(ESE) | 44.9 | 30 | 100.0 |
| $O_3$ (PPB) | 82 | - | 0 | - | 18.26 | 38 | 24 | VAR | VAR | VAR | 32.6 | 24 | 100.0 |
| PM 2.5 ($UG/M^3$) | - | 30 | - | 0 | 11.41 | 54 | 30 | 23 | 6.5 | 107(ESE) | 22.1 | 13 | 93.6 |
| VECTOR WS (KPH) | - | - | - | - | 10.86 | 35.0 | 24 | 13 | - | 292(WNW) | 24.4 | 24 | 100.0 |
| VECTOR WD (DEGREES) | - | - | - | - | 320(NW) | - | - | - | - | - | - | - | 100.0 |

VAR-VARIOUS

# General Monthly Summary

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

**AQM STATION – LICA – PORTABLE**

**Sulphur Dioxide (PPB)**
- Analyzer make / model – API 100E, S/N: 467

The analyzer was working well throughout the month. The monthly calibration was performed on November 13th. The inlet filter was changed before the calibration was started. Data was corrected using daily zero information.

**Hydrogen Sulphide (PPB)**
- Analyzer make / model –API 101E, S/N: 509
- Converter - Internal

The analyzer was working well throughout the month. The monthly calibration was performed on November 13th. The inlet filter was changed before the calibration was started. Data was corrected using daily zero information.

**THC 55i (PPM)**
- Analyzer make / model –Thermo 55i, S/N: (12)36656107

The analyzer was working well throughout the month. The monthly calibration was performed on November 13th. The inlet filter was changed before the calibration was started. Data was corrected using daily zero information.
No canister was collected this month as per client request.

# General Monthly Summary

**AQM STATION – LICA – PORTABLE**

**Ozone (PPB)**

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

The analyzer was working well throughout the month. The monthly calibration was performed on November 13th. The inlet filter was changed before the calibration was started. Data was corrected using daily zero information.

**Nitrogen Dioxide (PPB)**

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

The analyzer was working well throughout the month. The monthly calibration was performed on November 13th. The inlet filter was changed before the calibration was started. The hourly maximum reading for NOx collected on November 25th at hour 14 went above the full scale. The real concentration might be higher than indicated. Data was corrected using daily zero information.

**Particulate Matter 2.5 (ug/$m^3$)**

- Analyzer make / model – TEOM 1405F, S/N: 1405A208301003

The front screen on the Teom unit was found not to be operable during the site visit on November 15th. The unit attempted to be replaced on November 20th between hour 11 and hour 15. However, a major leak was noticed on the replacement. The replacement was removed and the existing unit was installed back to the shelf on November 20th. The screen was replaced using the one on the replacement. The unit was left on the maintenance mode overnight for stabilization. A Teom unit was performed on November 21st. Data was corrected using Alberta air quality guideline. If the data was between 0 to –3, the data was corrected to 0. If the data was below –3, the data was invalidated. Twenty-four hours of data were invalidated as the data were below –3 ug/$m^3$.

# General Monthly Summary

**AQM STATION – LICA – PORTABLE**

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

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

The wind system is reported as vector wind speed and vector wind direction. The most recent wind system calibration was done on November 24, 2011.
No operational issues were observed during the month.

**Datalogger**

- System make / model - ESC 8832, S/N: AO717
- Software make / version - ESC v 5.51a

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

**Trailer**

The manifold system was cleaned on November 13th.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Sulphur Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *PORTABLE SITE*

NOVEMBER 2013

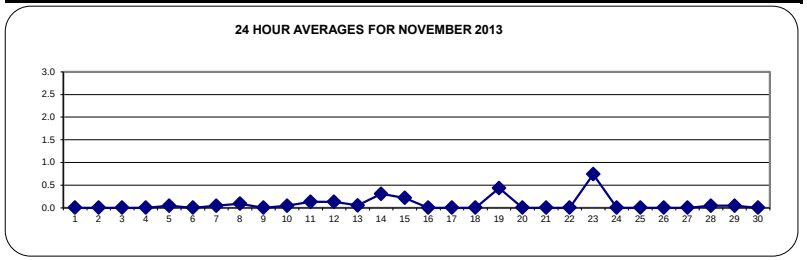
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 8 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 12 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | **C** | **C** | **C** | **C** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 15 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 16 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **4** | **4** | 1 | 0 | **4** | 0.4 | 24 |
| 20 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 0 | 0 | 0 | 2 | **0.7** | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 1 | 1 | | | |
| HOURLY AVG | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.0 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

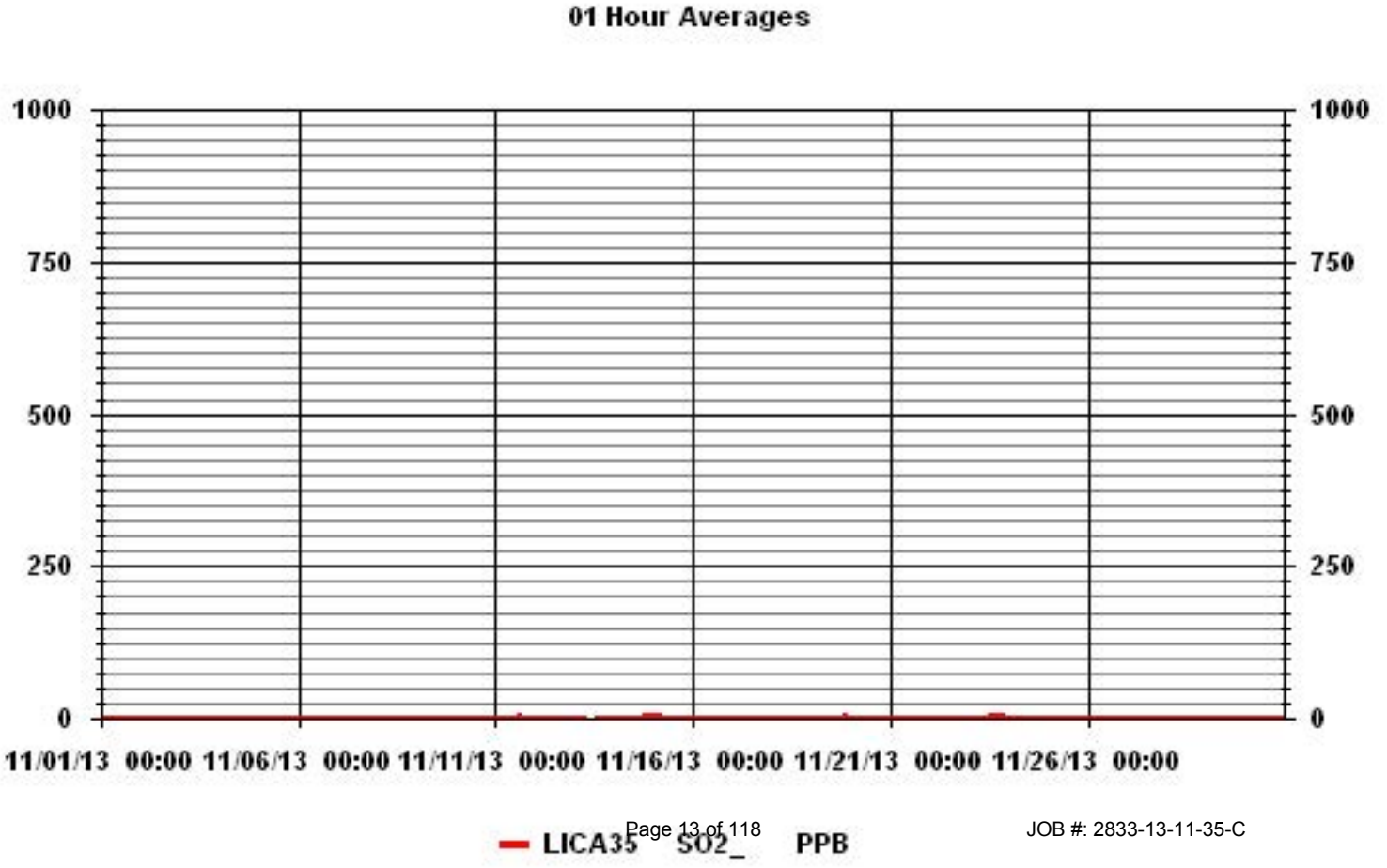



**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 39 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 4 | PPB | @ HOUR(S) | 20, 21 | ON DAY(S) | 19 |
| MAXIMUM 24-HR AVERAGE: | 0.7 | PPB | | | ON DAY(S) | 23 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 0.36 | | MONTHLY AVERAGE: | 0.08 | PPB |






JOB #: 2833-13-11-35-C

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

NOVEMBER 2013

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

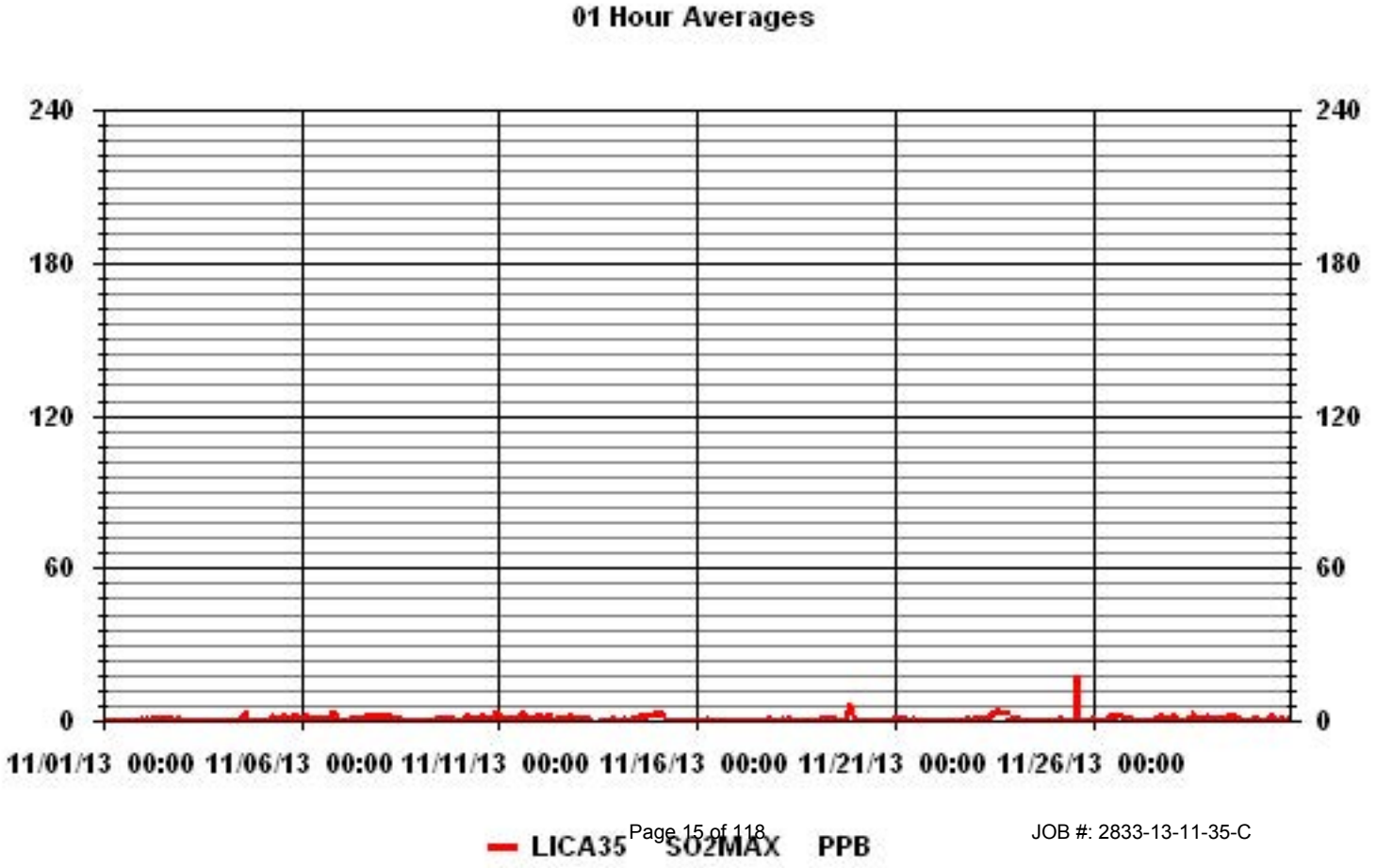
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 1 | 0 | 1 | 0.7 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 2 | **S** | 1 | 1 | 1 | 1 | 0 | 3 | 1 | 1 | 3 | 0.8 | 24 |
| 6 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 4 | 0.9 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | **S** | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 0.9 | 24 |
| 8 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 10 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 1.1 | 24 |
| 11 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 1.3 | 24 |
| 12 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | **S** | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1.2 | 24 |
| 13 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | **S** | 0 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.3 | 24 |
| 14 | 0 | 0 | 0 | 0 | 1 | 0 | **S** | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1.1 | 24 |
| 15 | 3 | 3 | 3 | 2 | 2 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.6 | 24 |
| 16 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 18 | 0 | 0 | **S** | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 19 | 0 | **S** | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 6 | 6 | 3 | 0 | 6 | 1.1 | 24 |
| 20 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 21 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 0.3 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **S** | 0 | 0 | 1 | 0.0 | 24 |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | **S** | 0 | 0 | 1 | 4 | 1.8 | 24 |
| 24 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 25 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **18** | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | **18** | 0.8 | 24 |
| 26 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | **S** | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 0.9 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **S** | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 0.3 | 24 |
| 28 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 0.8 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | **S** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 | 24 |
| 30 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | **S** | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 0.4 | 24 |
| HOURLY MAX | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 3 | 18 | 3 | 3 | 3 | 3 | 4 | 6 | 6 | 3 | 4 | | | |
| HOURLY AVG | 0.6 | 0.6 | 0.4 | 0.6 | 0.5 | 0.3 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.6 | 0.7 | 0.7 | 1.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.7 | 0.5 | 0.6 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 281 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 18 | PPB | @ HOUR(S) | 14 | ON DAY(S) | 25 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 5 | HRS | | | | |
| STANDARD DEVIATION: | 1.07 | | | | | |






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 20 | 3.35 | 3.50 | 6.42 | 3.50 | 7.44 | 15.32 | 6.86 | 3.21 | 2.04 | 1.02 | 1.60 | 8.46 | 13.28 | 8.02 | 7.88 | 8.02 | 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 | 3.35 | 3.50 | 6.42 | 3.50 | 7.44 | 15.32 | 6.86 | 3.21 | 2.04 | 1.02 | 1.60 | 8.46 | 13.28 | 8.02 | 7.88 | 8.02 | |

Calm : .00 %

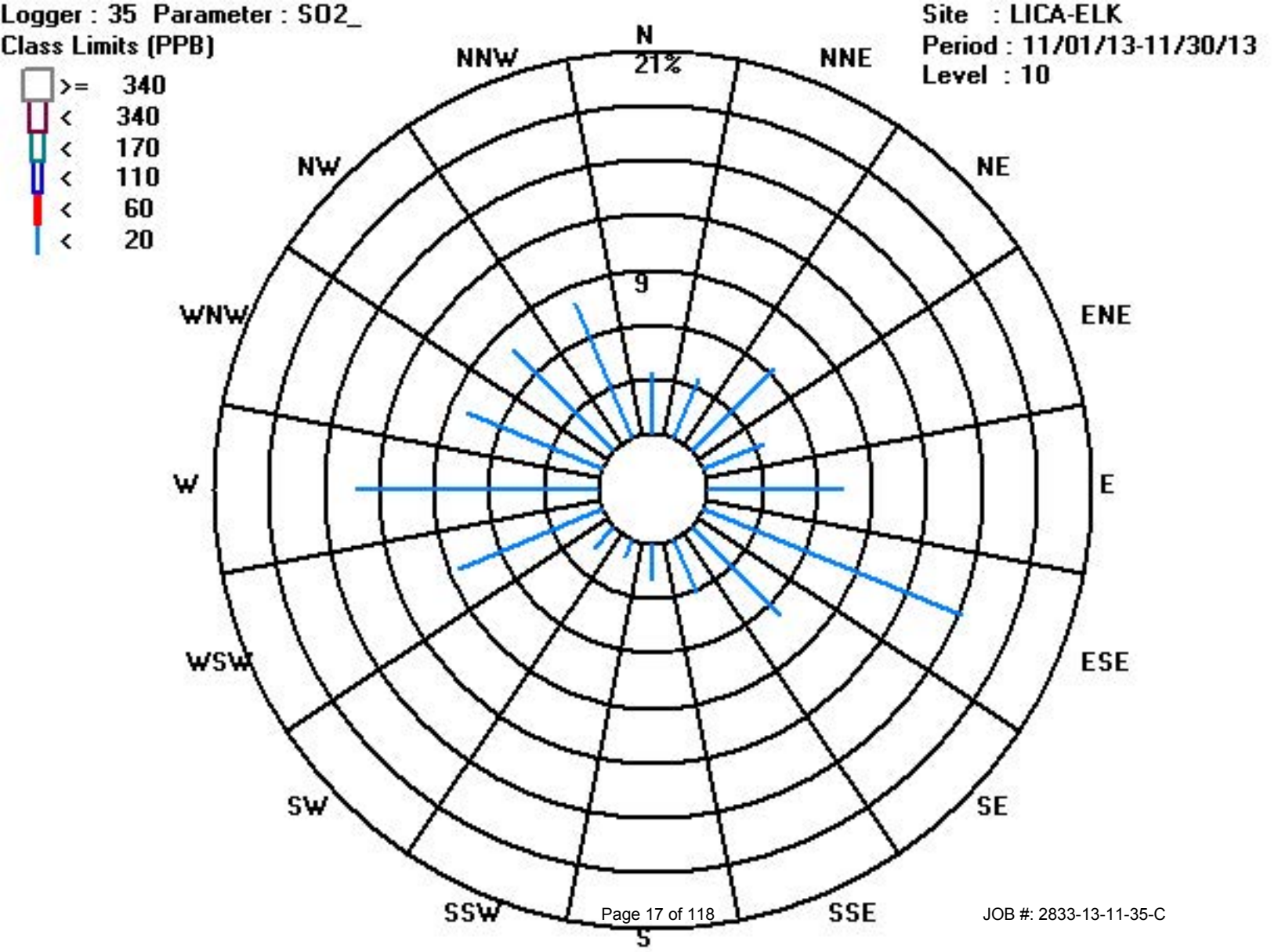
Total # Operational Hours : 685

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 20 | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 55 | 54 | 55 | 685 |
| < | 60 | | | | | | | | | | | | | | | | | |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 170 | | | | | | | | | | | | | | | | | |
| < | 340 | | | | | | | | | | | | | | | | | |
| >= | 340 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 55 | 54 | 55 | |

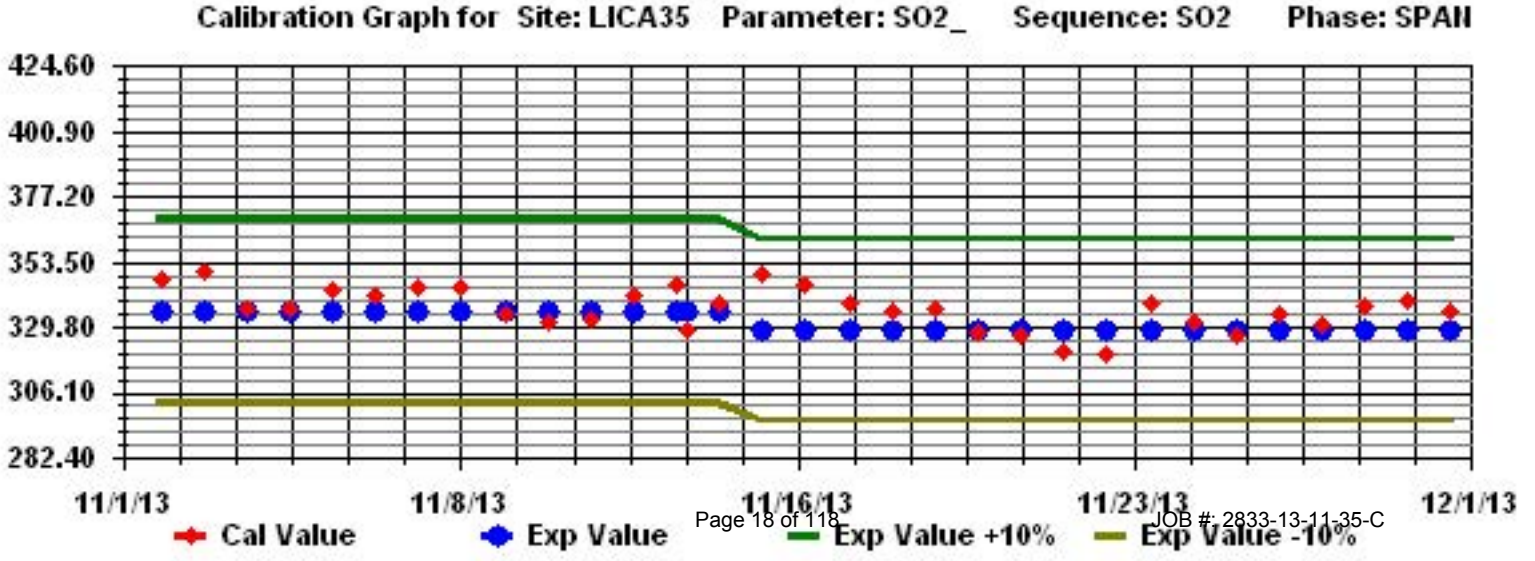
Calm : .00 %

Total # Operational Hours : 685






JOB #: 2833-13-11-35-C


Calibration Graph for Site: LICA35 Parameter: SO2_ Sequence: SO2 Phase: SPAN
424.60
400.90
377.20
353.50
329.80
306.10
282.40
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Hydrogen Sulphide

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

NOVEMBER 2013

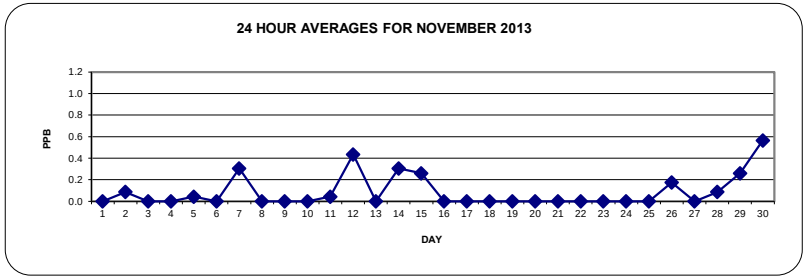
**HYDROGEN SULPHIDE (H2S)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 12 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0.4 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 15 | 1 | 1 | 1 | 1 | 2 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | 0.3 | 24 |
| 16 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | **S** | **S** | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 29 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | **S** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.3 | 24 |
| 30 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | **0.6** | 24 |
| HOURLY MAX | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

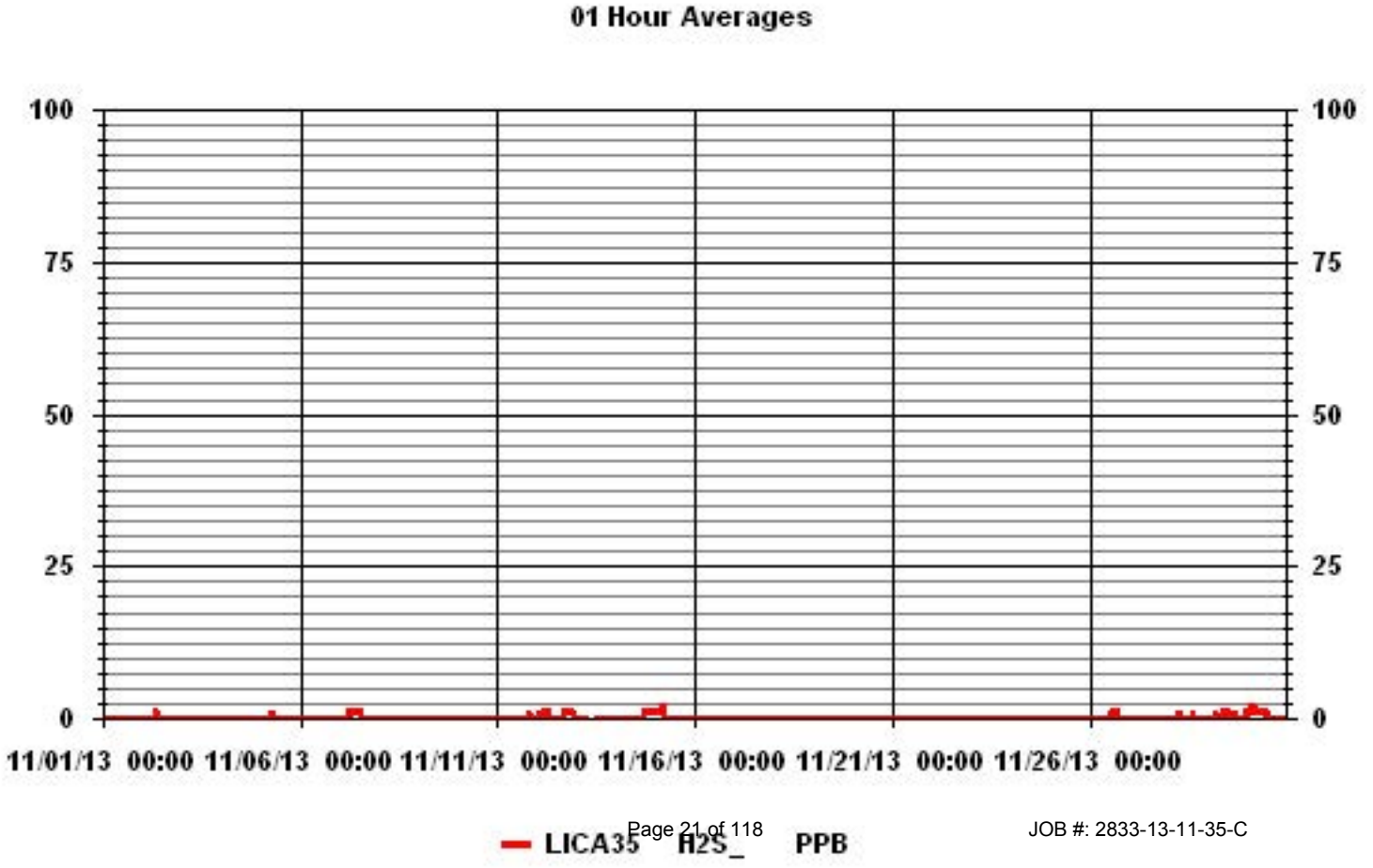



**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 57 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 56 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 2 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 15, 30 |
| MAXIMUM 24-HR AVERAGE: | 0.6 | PPB | | | ON DAY(S) | 30 |
| | | | | VAR-VARIOUS | | |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 36 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 0.30 | | MONTHLY AVERAGE: | 0.09 | PPB |






JOB #: 2833-13-11-35-C

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

NOVEMBER 2013

**HYDROGEN SULPHIDE MAX** instantaneous maximum in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.2 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | **S** | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0.4 | 24 |
| 7 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | **S** | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.0 | 24 |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 12 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | **S** | 0 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 1 | 3 | 1.2 | 24 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 0.7 | 24 |
| 15 | 2 | 1 | 2 | 2 | 2 | **S** | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 0.9 | 24 |
| 16 | 0 | 0 | 0 | 0 | **S** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | **S** | **S** | 1 | 0 | **S** | **S** | **S** | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | **S** | 1 | 0.2 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **S** | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 0.1 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 1 | 1 | 0.6 | 24 |
| 24 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 25 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | **21** | 0 | 0 | 0 | **S** | 0 | 0 | 1 | 1 | 1 | **21** | 1.3 | 24 |
| 26 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | **S** | 1 | 1 | 1 | 1 | 1 | 0 | 2 | 1.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 28 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0.6 | 24 |
| 29 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | **S** | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 2 | 1.0 | 24 |
| 30 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.9 | 24 |
| HOURLY MAX | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 21 | 2 | 2 | 1 | 2 | 3 | 1 | 2 | 2 | 2 | | | |
| HOURLY AVG | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.9 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS: 217

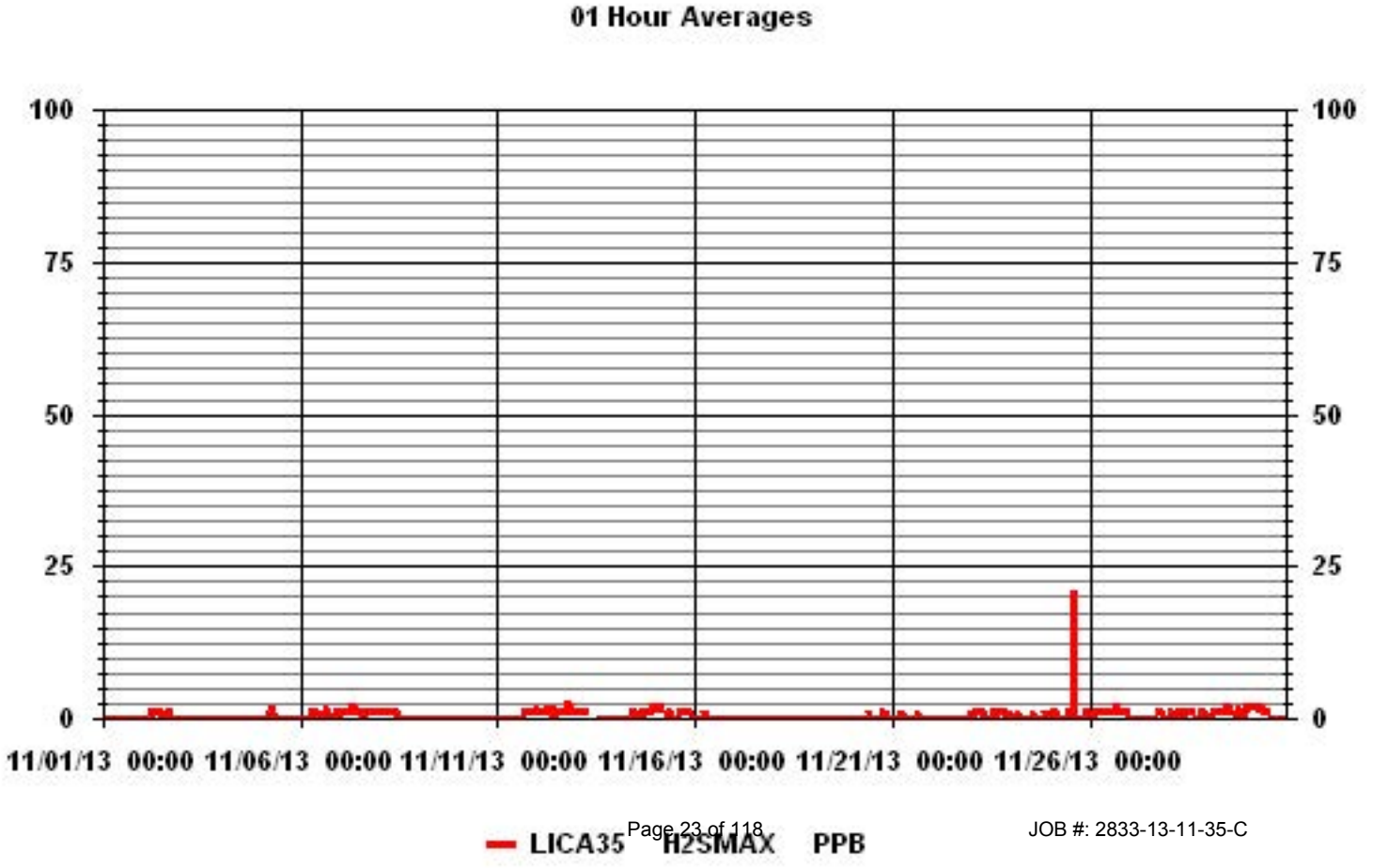
MAXIMUM INSTANTANEOUS VALUE: 21 PPB @ HOUR(S) 14 ON DAY(S) 25

VAR - VARIOUS

IZS CALIBRATION TIME: 38 HRS OPERATIONAL TIME: 720 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 0.98






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 3.38 | 3.52 | 6.47 | 3.52 | 7.50 | 15.44 | 6.91 | 3.23 | 2.05 | .88 | 1.61 | 8.23 | 13.08 | 8.08 | 7.94 | 8.08 | 100.00 |
| < 10 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 3.38 | 3.52 | 6.47 | 3.52 | 7.50 | 15.44 | 6.91 | 3.23 | 2.05 | .88 | 1.61 | 8.23 | 13.08 | 8.08 | 7.94 | 8.08 | |

Calm : .00 %

Total # Operational Hours : 680

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 6 | 11 | 56 | 89 | 55 | 54 | 55 | 680 |
| < 10 | | | | | | | | | | | | | | | | | |
| < 50 | | | | | | | | | | | | | | | | | |
| >= 50 | | | | | | | | | | | | | | | | | |
| Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 6 | 11 | 56 | 89 | 55 | 54 | 55 | |

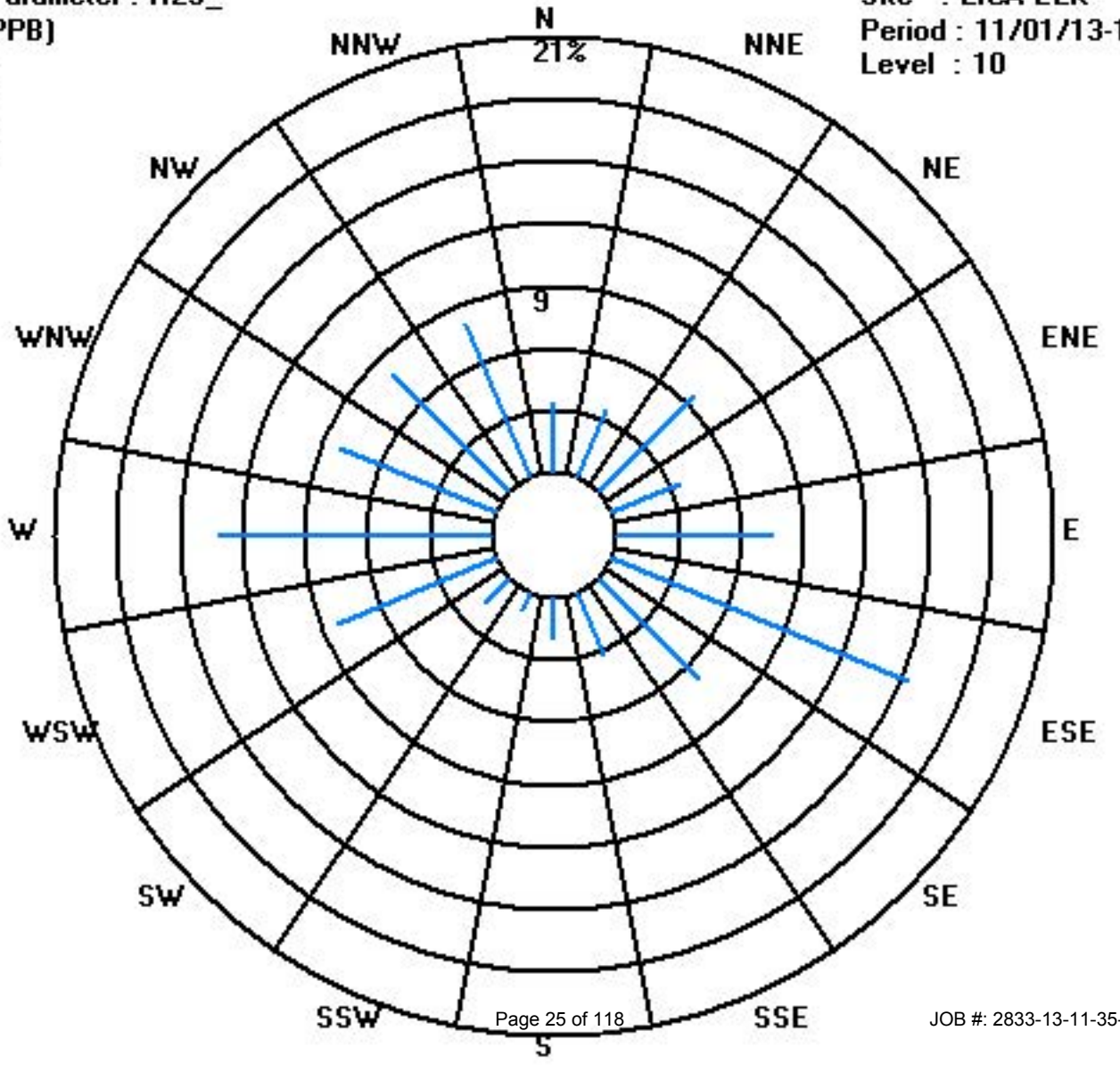
Calm : .00 %

Total # Operational Hours : 680

Logger : 35 Parameter : H2S_
Class Limits (PPB)

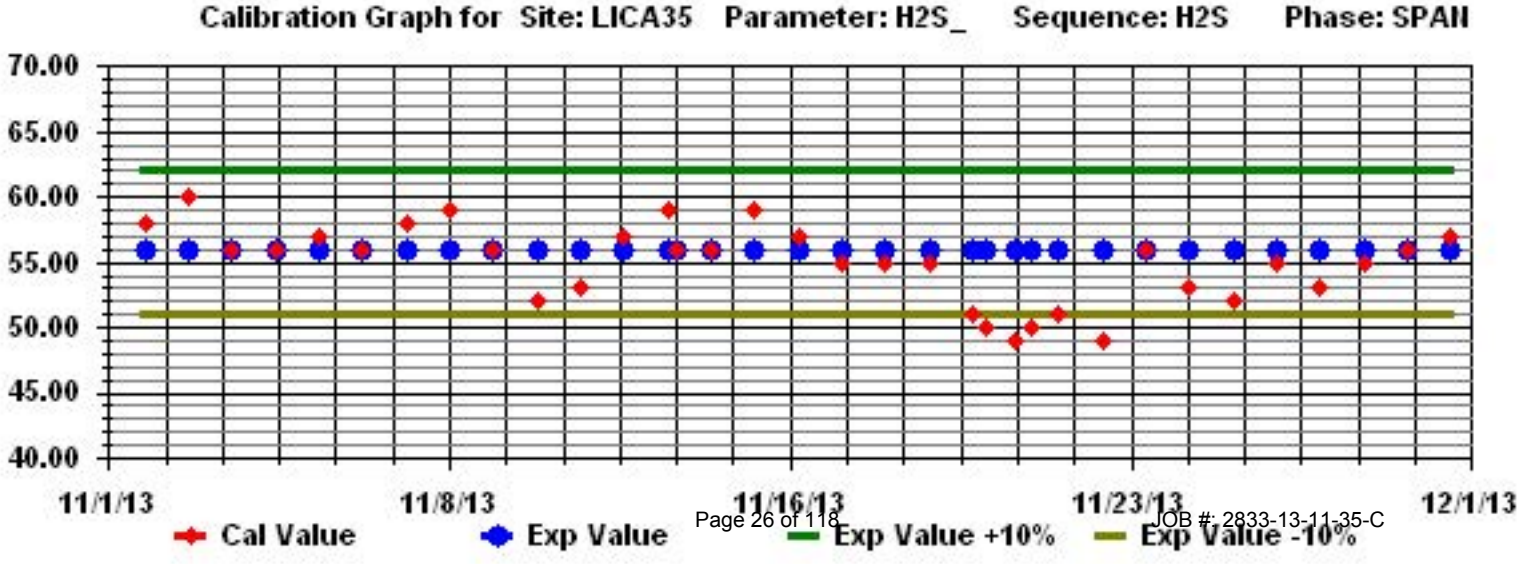
>= 50
< 50
< 10
< 3

Site : LICA-ELK
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C


Calibration Graph for Site: LICA35 Parameter: H2S_ Sequence: H2S Phase: SPAN
70.00
65.00
60.00
55.00
50.00
45.00
40.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Particulate Matter 2.5

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

NOVEMBER 2013

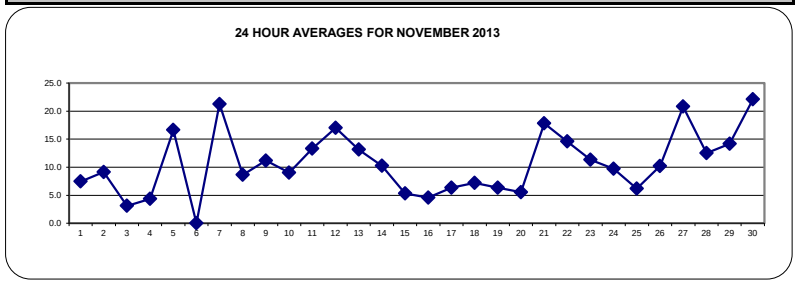
**PARTICULATE MATTER 2.5 (PM2.5)** hourly averages in ug/m$^3$

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3 | 0 | 16 | 0 | 0 | 9 | 6 | 9 | 6 | 11 | 12 | 1 | 11 | 4 | 8 | 5 | 13 | 4 | 7 | 9 | 13 | 9 | 13 | 10 | 16 | 7.5 | 24 |
| 2 | 5 | 7 | 14 | 13 | 2 | 0 | 0 | 4 | 7 | 13 | 12 | 14 | 15 | 12 | 11 | 9 | 10 | 14 | 9 | 9 | 10 | 11 | 8 | 10 | 15 | 9.1 | 24 |
| 3 | 5 | 7 | 5 | 4 | 3 | 2 | 4 | 3 | 3 | 1 | 2 | 4 | 1 | 2 | 5 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 1 | 4 | 7 | 3.1 | 24 |
| 4 | 2 | 2 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 1 | 2 | 4 | 6 | 4 | 5 | 3 | 4 | 5 | 3 | 9 | 6 | 9 | 12 | 7 | 12 | 4.3 | 24 |
| 5 | 16 | 9 | 13 | 10 | 10 | 13 | 14 | 12 | 10 | 13 | 10 | 18 | 27 | 13 | 14 | 19 | 21 | 19 | 22 | 23 | 27 | 20 | 26 | 20 | 27 | 16.6 | 24 |
| 6 | 22 | 24 | 25 | 22 | 24 | 26 | 21 | 23 | 24 | 23 | 30 | 27 | 21 | 24 | 21 | 19 | 17 | 19 | 16 | 15 | 28 | 24 | 14 | 14 | 30 | 0.0 | 24 |
| 7 | 12 | **X** | 0 | 32 | 28 | 17 | 24 | 24 | 19 | 22 | 21 | 18 | 19 | 25 | 22 | 32 | 28 | 35 | 30 | 21 | 16 | 18 | 15 | 11 | 35 | 21.3 | 23 |
| 8 | 16 | 10 | 7 | 4 | 9 | 23 | 4 | **X** | 14 | 20 | 0 | **X** | 0 | 11 | 4 | 3 | 3 | 4 | 3 | 11 | 3 | 2 | 9 | 30 | 30 | 8.6 | 22 |
| 9 | 36 | 29 | **X** | **X** | **X** | **X** | **X** | **X** | 21 | 16 | 14 | 10 | 8 | 8 | 5 | 3 | 7 | 7 | 8 | 4 | 9 | 7 | 2 | 7 | 36 | 11.2 | 18 |
| 10 | 5 | 7 | 9 | 7 | 9 | 9 | 11 | 14 | 11 | 11 | 8 | 7 | 4 | 5 | 12 | 5 | 12 | 17 | 8 | 14 | 11 | 7 | 11 | 2 | 17 | 9.0 | 24 |
| 11 | 7 | 9 | 5 | 7 | 9 | 11 | 7 | 9 | 8 | 10 | 12 | **X** | 16 | 17 | 16 | 14 | 19 | 23 | 18 | 15 | 24 | 15 | 14 | 21 | 24 | 13.3 | 23 |
| 12 | 12 | 13 | 21 | 10 | 15 | 14 | 10 | 13 | 10 | 17 | 21 | 14 | 14 | 12 | 17 | 31 | 16 | 17 | 16 | 20 | 22 | 28 | 23 | 22 | 31 | 17.0 | 24 |
| 13 | 23 | 21 | 28 | 12 | 11 | 17 | 19 | 15 | 20 | 10 | 10 | 14 | 3 | 8 | 5 | 11 | 12 | 15 | 8 | 11 | 19 | 8 | 10 | 5 | 28 | 13.1 | 24 |
| 14 | 11 | 11 | 6 | 9 | 9 | 13 | 7 | 12 | 16 | 10 | 11 | 11 | 11 | 10 | 7 | 5 | 7 | 9 | 8 | 10 | 7 | 15 | 16 | 15 | 16 | 10.3 | 24 |
| 15 | 17 | 11 | 11 | 9 | 15 | 4 | 7 | 3 | 4 | 5 | 4 | 9 | 4 | 1 | 2 | 1 | 3 | 1 | 6 | 3 | 2 | 3 | 3 | 0 | 17 | 5.3 | 24 |
| 16 | 3 | 1 | **X** | 6 | **X** | 2 | 11 | 17 | 0 | 2 | 5 | 2 | 4 | 0 | **X** | 3 | 5 | 7 | 7 | 4 | 2 | 6 | 4 | 5 | 17 | 4.6 | 21 |
| 17 | 5 | 4 | 6 | 6 | 8 | 6 | 4 | 3 | 6 | 7 | 4 | 7 | 6 | 3 | 9 | 7 | 10 | 9 | 9 | 5 | 8 | 8 | 6 | 6 | 10 | 6.3 | 24 |
| 18 | 10 | 6 | 9 | 11 | 8 | 8 | 11 | 10 | 11 | 9 | 7 | 6 | 4 | 6 | 10 | 1 | 5 | 6 | 8 | 10 | 3 | 6 | 6 | 2 | 11 | 7.2 | 24 |
| 19 | 4 | 10 | 7 | 10 | 4 | 20 | 3 | 4 | 4 | 2 | **X** | 9 | 3 | 10 | 3 | 2 | **X** | 12 | 14 | 4 | 7 | 5 | 3 | 0 | 20 | 6.4 | 22 |
| 20 | 0 | 11 | 4 | 0 | 4 | 5 | 3 | 6 | 6 | 12 | 10 | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | 12 | 5.5 | 11 |
| 21 | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** | **C** | 40 | 21 | 13 | 8 | 17 | 14 | 21 | 11 | 17 | 10 | 24 | 16 | 16 | 21 | 40 | 17.8 | 15 |
| 22 | 12 | 17 | 15 | 16 | 16 | 24 | 20 | 23 | 24 | 22 | 13 | 9 | 18 | 17 | 18 | 18 | 16 | 1 | 17 | 10 | 6 | 11 | 1 | 6 | 24 | 14.6 | 24 |
| 23 | 8 | 2 | 8 | 1 | 5 | 8 | 7 | 11 | 4 | 10 | 6 | 25 | 19 | 25 | 30 | 8 | 22 | 10 | 2 | 14 | 4 | **X** | **X** | 20 | 30 | 11.3 | 22 |
| 24 | 15 | 17 | 18 | 15 | 5 | 7 | 18 | 26 | 6 | 0 | 20 | **X** | **X** | 23 | 15 | 3 | 0 | 3 | 0 | 8 | 5 | 3 | 0 | 7 | 26 | 9.7 | 22 |
| 25 | 1 | 2 | 0 | **X** | 6 | 6 | 1 | 8 | 7 | 11 | 8 | 6 | 4 | 3 | 12 | 0 | 6 | 9 | 11 | 15 | 12 | 4 | 1 | 9 | 15 | 6.2 | 23 |
| 26 | 11 | 10 | 8 | 10 | 16 | 9 | 11 | 13 | 11 | 5 | 10 | 2 | 10 | 7 | 3 | 9 | 6 | 4 | 6 | 9 | 22 | 0 | 38 | 15 | 38 | 10.2 | 24 |
| 27 | 29 | 14 | 21 | 18 | 19 | 21 | 18 | 18 | 14 | 9 | 12 | 11 | 12 | 46 | 49 | 3 | 7 | 21 | 26 | 17 | 22 | 23 | **X** | 48 | 49 | 20.8 | 23 |
| 28 | 17 | **X** | **X** | 1 | 3 | 6 | 7 | 2 | 4 | 12 | 9 | 7 | 25 | 22 | 15 | 11 | 26 | 15 | 11 | **X** | 29 | 7 | 33 | 0 | 33 | 12.5 | 21 |
| 29 | 14 | 6 | 6 | 6 | 0 | 15 | 16 | 9 | 15 | 13 | 10 | 21 | 16 | 7 | 31 | 46 | 9 | 3 | 24 | 5 | 13 | 16 | 22 | 17 | 46 | 14.2 | 24 |
| 30 | 21 | 11 | 20 | 22 | 28 | 15 | 23 | 23 | 16 | 21 | 23 | 28 | 26 | 26 | 16 | 38 | 17 | 17 | 18 | 4 | 26 | 13 | 24 | **54** | **54** | **22.1** | 24 |
| HOURLY MAX | 36 | 29 | 28 | 32 | 28 | 26 | 24 | 26 | 24 | 23 | 40 | 28 | 27 | 46 | 49 | 46 | 28 | 35 | 30 | 23 | 29 | 28 | 38 | 54 | | | |
| HOURLY AVG | 11.8 | 10.0 | 11.0 | 9.8 | 10.0 | 11.1 | 10.3 | 11.7 | 10.5 | 11.0 | 11.9 | 11.7 | 11.4 | 12.4 | 13.6 | 11.2 | 11.6 | 11.0 | 11.5 | 10.4 | 13.2 | 10.6 | 12.3 | 13.4 | | | |

**STATUS FLAG CODES**

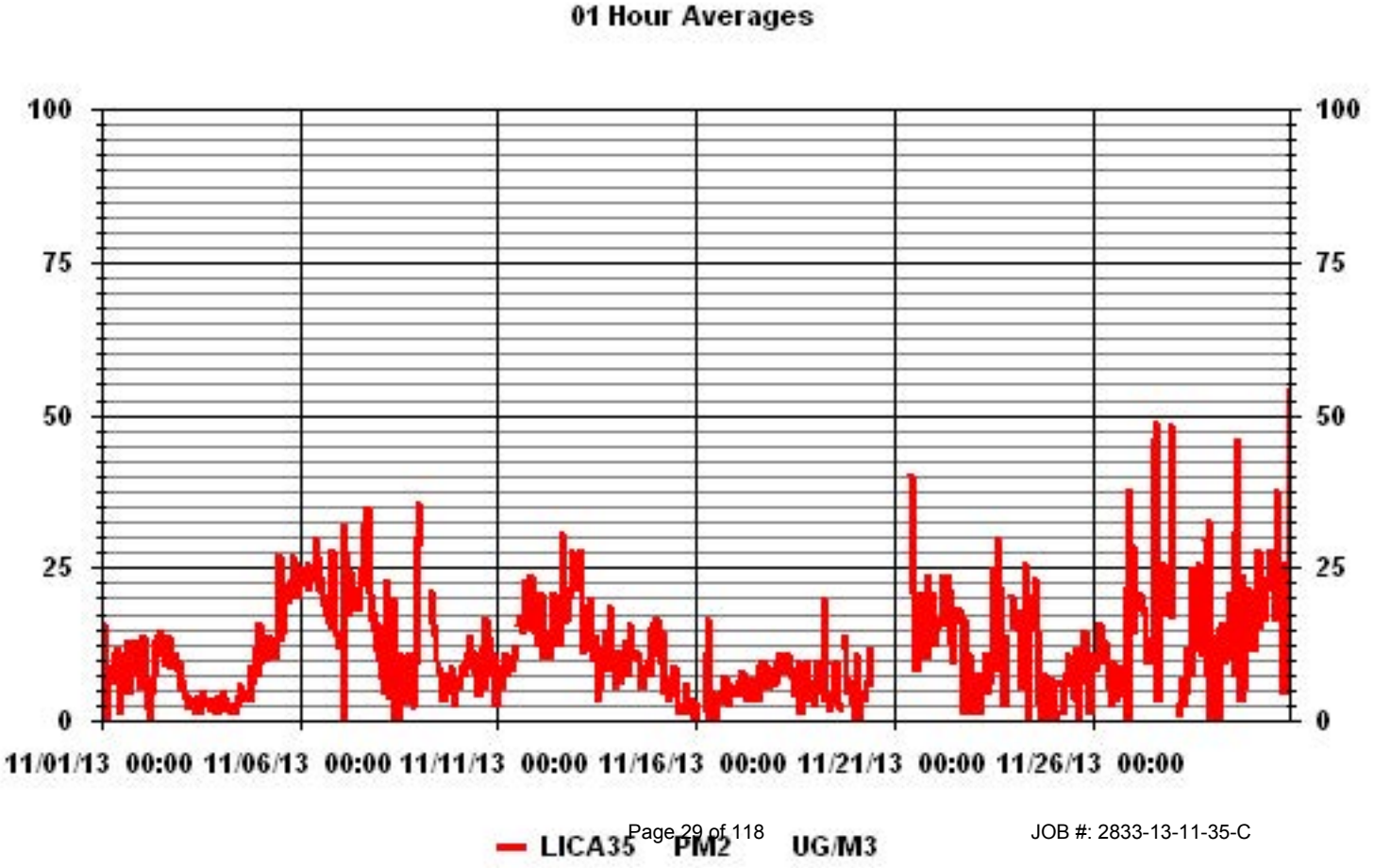
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR - PPB | 24-HR 30 PPB

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | - | | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | | |
| NUMBER OF NON-ZERO READINGS: | 650 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 54 | UG/M$^3$ | @ HOUR(S) | 23 | ON DAY(S) | 30 | |
| MAXIMUM 24-HR AVERAGE: | 22.1 | UG/M$^3$ | | | ON DAY(S) | 13 | |
| IZS CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 674 | HRS | |
| MONTHLY CALIBRATION TIME: | 1 | HRS | AMD OPERATION UPTIME: | | 93.6 | % | |
| STANDARD DEVIATION: | 8.38 | | MONTHLY AVERAGE: | | 11.41 | UG/M$^3$ | |






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : PM2
Units : UG/M3

Wind Parameter : WDR
Instrument Height : 10 Meters

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 30 | 3.12 | 3.71 | 6.24 | 3.41 | 7.57 | 14.71 | 6.83 | 2.52 | 1.78 | .74 | 1.18 | 7.28 | 13.22 | 8.46 | 8.17 | 8.17 | 97.17 |
| < | 60 | .29 | .00 | .14 | .00 | .00 | .74 | .14 | .29 | .00 | .14 | .14 | .29 | .29 | .29 | .00 | .00 | 2.82 |
| < | 80 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 120 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 240 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 240 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 3.41 | 3.71 | 6.38 | 3.41 | 7.57 | 15.45 | 6.98 | 2.82 | 1.78 | .89 | 1.33 | 7.57 | 13.52 | 8.76 | 8.17 | 8.17 | |

Calm : .00 %

Total # Operational Hours : 673

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 30 | 21 | 25 | 42 | 23 | 51 | 99 | 46 | 17 | 12 | 5 | 8 | 49 | 89 | 57 | 55 | 55 | 654 |
| < | 60 | 2 | | 1 | | | 5 | 1 | 2 | | 1 | 1 | 2 | 2 | 2 | | | 19 |
| < | 80 | | | | | | | | | | | | | | | | | |
| < | 120 | | | | | | | | | | | | | | | | | |
| < | 240 | | | | | | | | | | | | | | | | | |
| >= | 240 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 25 | 43 | 23 | 51 | 104 | 47 | 19 | 12 | 6 | 9 | 51 | 91 | 59 | 55 | 55 | |

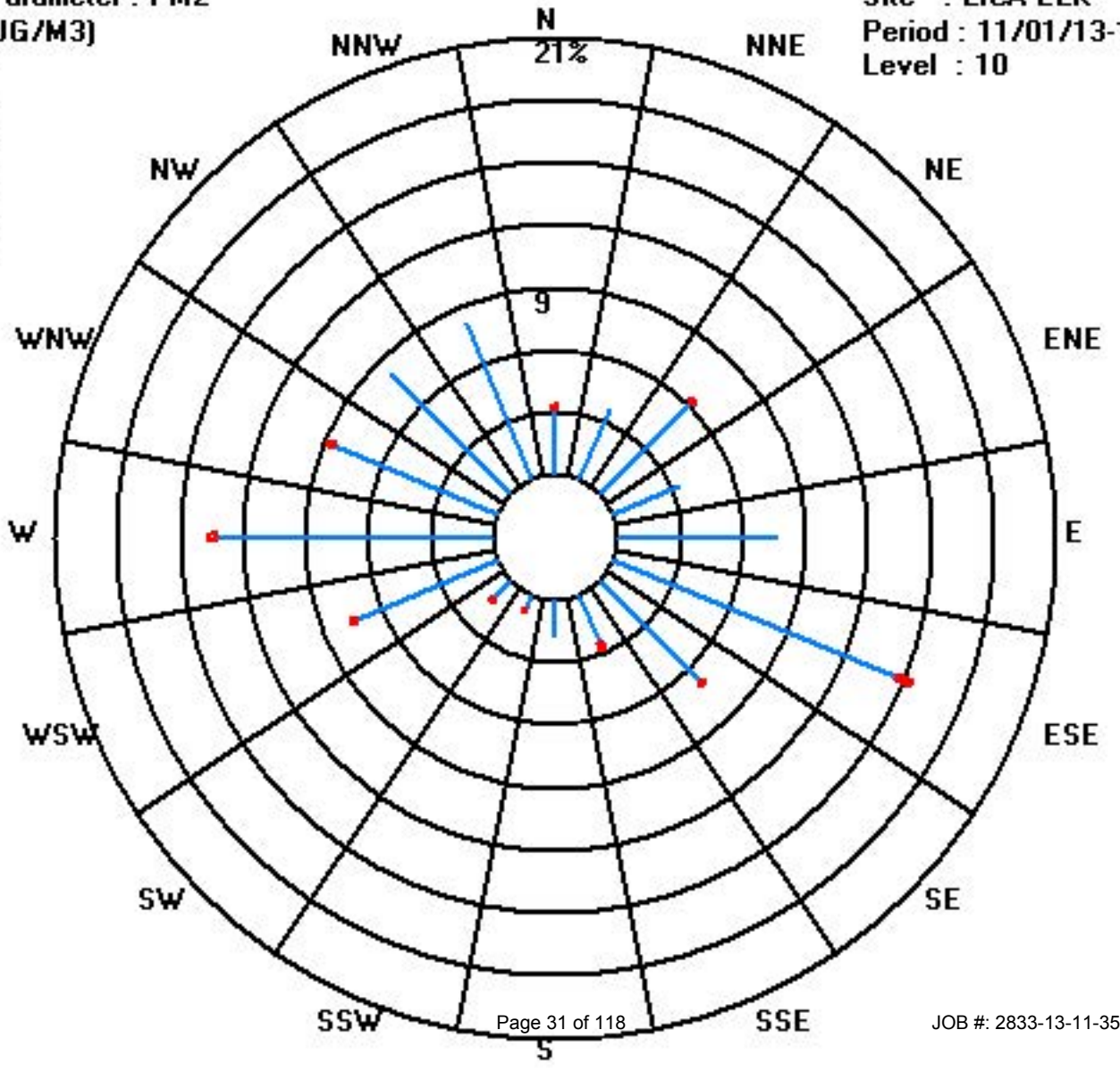
Calm : .00 %

Total # Operational Hours : 673

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

>= 240
< 240
< 120
< 80
< 60
< 30

Site : LICA-ELK
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C

# Nitrogen Dioxide

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

NOVEMBER 2013

**NITROGEN DIOXIDE** hourly averages in ppb

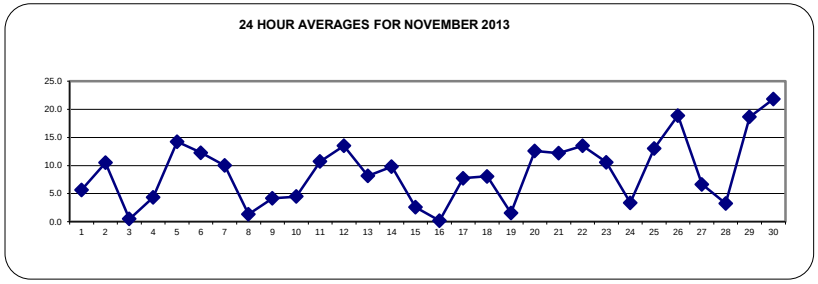
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 6.5 | 9.4 | 5.9 | 3.0 | 3.7 | 6.1 | 6.8 | 6.5 | 5.8 | 3.4 | 2.0 | 1.5 | 1.3 | 1.1 | 1.2 | 0.9 | 3.9 | 10.0 | 12.1 | **S** | 10.9 | 6.5 | 7.5 | 13.7 | 13.7 | 5.6 | 24 |
| 2 | 8.6 | 8.6 | 18.3 | 18.0 | 15.3 | 17.6 | 18.9 | 17.1 | 16.6 | 14.7 | 13.3 | 11.9 | 10.4 | 10.5 | 11.0 | 9.1 | 7.8 | 5.9 | **S** | 3.1 | 2.0 | 1.2 | 0.8 | 0.7 | 18.9 | 10.5 | 24 |
| 3 | 0.5 | 0.7 | 0.6 | 0.2 | 0.5 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 0.3 | 0.4 | 1.2 | **S** | 1.1 | 1.0 | 1.0 | 0.6 | 0.3 | 0.5 | 1.2 | 0.5 | 24 |
| 4 | 0.5 | 0.6 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.5 | 0.8 | 0.9 | 1.4 | 1.1 | 0.7 | **S** | 7.2 | 13.1 | 14.6 | 15.7 | 13.5 | 9.9 | 16.6 | 16.6 | 4.3 | 24 |
| 5 | 18.7 | 15.2 | 15.6 | 14.2 | 14.4 | 13.9 | 15.3 | 14.9 | 12.4 | 10.2 | 9.3 | 8.6 | 8.5 | 8.3 | 8.6 | **S** | 14.9 | 16.8 | 21.5 | 20.2 | 17.8 | 16.2 | 17.7 | 14.4 | 21.5 | 14.2 | 24 |
| 6 | 14.5 | 14.6 | 14.2 | 12.6 | 14.4 | 15.1 | 16.7 | 16.4 | 15.1 | 13.7 | 13.3 | 10.3 | 8.9 | 9.1 | **S** | 6.0 | 9.8 | 15.2 | 13.0 | 9.3 | 7.4 | 7.7 | 13.0 | 12.4 | 16.7 | 12.3 | 24 |
| 7 | 12.1 | 8.9 | 6.5 | 8.5 | 13.9 | 16.2 | 16.8 | 17.3 | 15.5 | 12.7 | 10.4 | 9.5 | 9.3 | **S** | 9.3 | 8.5 | 11.2 | 14.2 | 10.2 | 7.5 | 4.0 | 3.6 | 2.1 | 1.8 | 17.3 | 10.0 | 24 |
| 8 | 1.4 | 0.7 | 0.4 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 1.2 | 0.9 | 1.3 | 5.7 | 0.8 | 0.7 | 1.3 | 2.1 | 1.5 | 4.3 | 8.5 | 8.5 | 1.3 | 24 |
| 9 | 15.8 | 15.4 | 9.6 | 2.8 | 2.5 | 7.9 | 9.1 | 13.2 | 4.7 | 4.0 | 2.1 | **S** | 0.4 | 0.5 | 0.7 | 1.0 | 1.3 | 1.2 | 1.0 | 0.6 | 0.7 | 0.5 | 0.5 | 0.5 | 15.8 | 4.2 | 24 |
| 10 | 0.5 | 0.9 | 1.0 | 1.5 | 3.1 | 3.3 | 4.5 | 4.7 | 7.4 | 5.4 | **S** | 3.4 | 3.8 | 4.1 | 3.9 | 4.3 | 5.4 | 7.4 | 7.2 | 7.2 | 8.1 | 6.6 | 5.1 | 4.3 | 8.1 | 4.5 | 24 |
| 11 | 6.3 | 5.5 | 8.3 | 7.2 | 8.5 | 9.4 | 13.3 | 15.3 | 10.4 | **S** | 4.7 | 4.0 | 4.6 | 5.0 | 5.9 | 7.1 | 11.6 | 18.2 | 19.0 | 19.0 | 16.4 | 16.9 | 15.7 | 14.3 | 19.0 | 10.7 | 24 |
| 12 | 15.2 | 15.5 | 15.3 | 13.6 | 12.3 | 14.0 | 14.4 | 12.8 | **S** | 6.1 | 6.5 | 6.1 | 6.5 | 6.7 | 8.4 | 12.6 | 17.8 | 20.7 | 18.7 | 23.5 | 20.4 | 16.1 | 14.9 | 13.3 | 23.5 | 13.5 | 24 |
| 13 | 18.1 | 17.7 | 16.1 | 15.5 | 15.6 | 12.2 | 10.7 | **S** | 11.8 | **C** | **C** | **C** | **C** | **C** | **C** | 2.5 | 1.7 | 3.1 | 2.5 | 1.5 | 2.2 | 2.2 | 3.0 | 2.3 | 18.1 | 8.2 | 24 |
| 14 | 2.4 | 12.3 | 13.5 | 11.2 | 5.8 | 9.8 | **S** | 16.0 | 10.9 | 11.8 | 12.9 | 8.6 | 4.0 | 5.7 | 6.3 | 4.9 | 11.3 | 13.6 | 11.7 | 12.3 | 11.6 | 10.4 | 8.0 | 10.4 | 16.0 | 9.8 | 24 |
| 15 | 7.6 | 5.9 | 5.2 | 2.7 | 2.6 | **S** | 1.9 | 5.1 | 4.6 | 3.2 | 1.4 | 0.3 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 3.8 | 4.0 | 4.0 | 1.3 | 0.8 | 1.3 | 0.7 | 7.6 | 2.6 | 24 |
| 16 | 0.2 | 0.1 | 0.0 | 0.0 | **S** | 0.6 | 0.4 | 0.2 | 0.0 | 0.2 | 0.0 | 0.3 | 0.0 | 0.5 | 0.0 | 0.2 | 0.4 | 0.0 | 0.3 | 0.0 | 0.0 | 0.2 | 0.3 | 0.5 | 0.6 | 0.2 | 24 |
| 17 | 0.3 | 0.6 | 0.7 | **S** | 1.0 | 1.3 | 1.8 | 1.5 | 1.2 | 1.2 | 1.1 | 1.2 | 1.4 | 1.9 | 2.4 | 4.7 | 8.2 | 12.9 | 19.7 | 25.1 | 23.3 | 22.8 | 22.3 | 21.6 | 25.1 | 7.7 | 24 |
| 18 | 18.5 | 15.1 | **S** | 13.5 | 15.0 | 16.4 | 20.0 | 20.8 | 16.3 | 10.3 | 8.6 | 6.9 | 10.0 | 2.7 | 4.1 | 3.0 | 1.7 | 0.9 | 0.3 | 0.6 | 0.3 | 0.5 | 0.3 | 0.0 | 20.8 | 8.1 | 24 |
| 19 | 0.8 | **S** | 1.0 | 1.3 | 0.5 | 0.8 | 0.4 | 0.5 | 0.4 | 0.3 | 0.8 | 0.9 | 0.3 | 0.3 | 1.1 | 4.9 | 1.2 | 2.0 | 2.8 | 3.2 | 4.2 | 3.8 | 2.7 | 1.5 | 4.9 | 1.6 | 24 |
| 20 | **S** | 1.7 | 1.1 | 1.7 | 1.8 | 3.0 | 15.9 | 23.8 | 19.9 | 12.8 | 7.6 | 8.1 | 6.5 | 7.2 | 9.3 | 10.4 | 16.3 | 28.1 | 29.4 | 22.6 | 21.8 | 14.4 | 13.8 | **S** | 29.4 | 12.6 | 24 |
| 21 | 11.9 | 11.8 | 10.8 | 9.1 | 12.6 | 21.3 | 23.0 | 24.5 | 18.5 | 10.8 | 8.2 | 6.8 | 6.0 | 8.5 | 7.8 | 12.5 | 16.5 | 11.2 | 8.5 | 8.5 | 9.5 | 11.3 | **S** | 11.5 | 24.5 | 12.2 | 24 |
| 22 | 10.9 | 13.1 | 13.2 | 11.6 | 15.3 | 18.5 | 19.8 | 22.1 | 21.5 | 17.9 | 9.6 | 8.4 | 8.0 | 10.1 | 9.3 | 11.8 | 14.4 | 14.1 | 14.2 | 13.1 | 13.3 | **S** | 10.8 | 9.7 | 22.1 | 13.5 | 24 |
| 23 | 9.5 | 8.6 | 9.6 | 8.0 | 7.5 | 7.5 | 7.4 | 7.5 | 7.2 | 7.2 | 6.3 | 6.4 | 6.8 | 5.8 | 7.5 | 10.6 | 16.9 | 17.5 | 19.7 | 16.7 | **S** | 16.0 | 18.5 | 14.6 | 19.7 | 10.6 | 24 |
| 24 | 10.5 | 9.7 | 10.4 | 9.2 | 4.2 | 2.9 | 2.0 | 1.3 | 3.0 | 2.2 | 1.0 | 0.2 | 0.0 | 0.0 | 0.0 | 2.3 | 0.4 | 0.2 | 0.0 | **S** | 1.3 | 4.9 | 5.4 | 6.6 | 10.5 | 3.4 | 24 |
| 25 | 5.6 | 12.4 | 3.9 | 4.4 | 10.8 | 7.1 | 1.4 | 0.6 | 1.1 | 0.7 | 0.7 | 0.3 | 0.6 | 4.7 | 31.9 | 12.3 | 23.3 | 23.5 | **S** | 29.3 | 31.1 | 31.3 | 32.1 | 31.3 | 32.1 | 13.1 | 24 |
| 26 | 29.6 | 26.0 | 24.6 | 23.3 | 22.3 | 22.1 | 17.5 | 14.7 | 14.9 | 12.3 | 10.7 | 8.0 | 9.6 | 8.3 | 9.2 | 21.5 | 27.0 | **S** | 29.6 | 25.3 | 21.0 | 20.6 | 18.0 | 18.7 | 29.6 | 18.9 | 24 |
| 27 | 14.4 | 10.0 | 12.2 | 11.5 | 9.0 | 18.8 | 17.2 | 14.6 | 4.4 | 2.0 | 1.5 | 1.6 | 2.0 | 2.6 | 3.3 | 3.5 | **S** | 3.8 | 2.4 | 6.1 | 4.2 | 3.2 | 3.1 | 1.6 | 18.8 | 6.7 | 24 |
| 28 | 2.5 | 1.7 | 1.2 | 1.7 | 1.6 | 1.5 | 2.0 | 2.1 | 2.2 | 3.0 | 2.3 | 3.7 | 4.5 | 2.9 | 4.7 | **S** | 4.5 | 5.7 | 4.0 | 3.6 | 3.1 | 5.1 | 4.0 | 7.3 | 7.3 | 3.3 | 24 |
| 29 | 11.6 | 8.3 | 5.3 | 18.1 | 17.3 | 13.3 | 9.6 | 18.8 | 19.5 | 14.3 | 20.4 | 17.4 | 17.6 | 16.5 | **S** | 21.6 | 18.5 | 19.4 | 21.6 | 20.4 | 24.3 | 29.6 | 32.7 | **33.0** | **33.0** | 18.7 | 24 |
| 30 | 32.7 | 32.0 | 30.5 | 30.8 | 28.8 | 26.9 | 26.5 | 25.7 | 23.7 | 18.2 | 16.1 | 16.1 | 13.9 | **S** | 15.4 | 19.5 | 20.3 | 21.9 | 22.0 | 21.5 | 16.1 | 13.7 | 14.4 | 15.0 | 32.7 | **21.8** | 24 |
| HOURLY MAX | 32.7 | 32.0 | 30.5 | 30.8 | 28.8 | 26.9 | 26.5 | 25.7 | 23.7 | 18.2 | 20.4 | 17.4 | 17.6 | 16.5 | 31.9 | 21.6 | 27.0 | 28.1 | 29.6 | 29.3 | 31.1 | 31.3 | 32.7 | 33.0 | | | |
| HOURLY AVG | 9.9 | 9.8 | 8.8 | 8.8 | 9.0 | 9.9 | 10.1 | 11.0 | 9.3 | 7.1 | 6.1 | 5.4 | 5.2 | 4.7 | 6.1 | 7.1 | 9.8 | 10.7 | 11.1 | 11.5 | 10.2 | 9.7 | 9.7 | 9.9 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

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



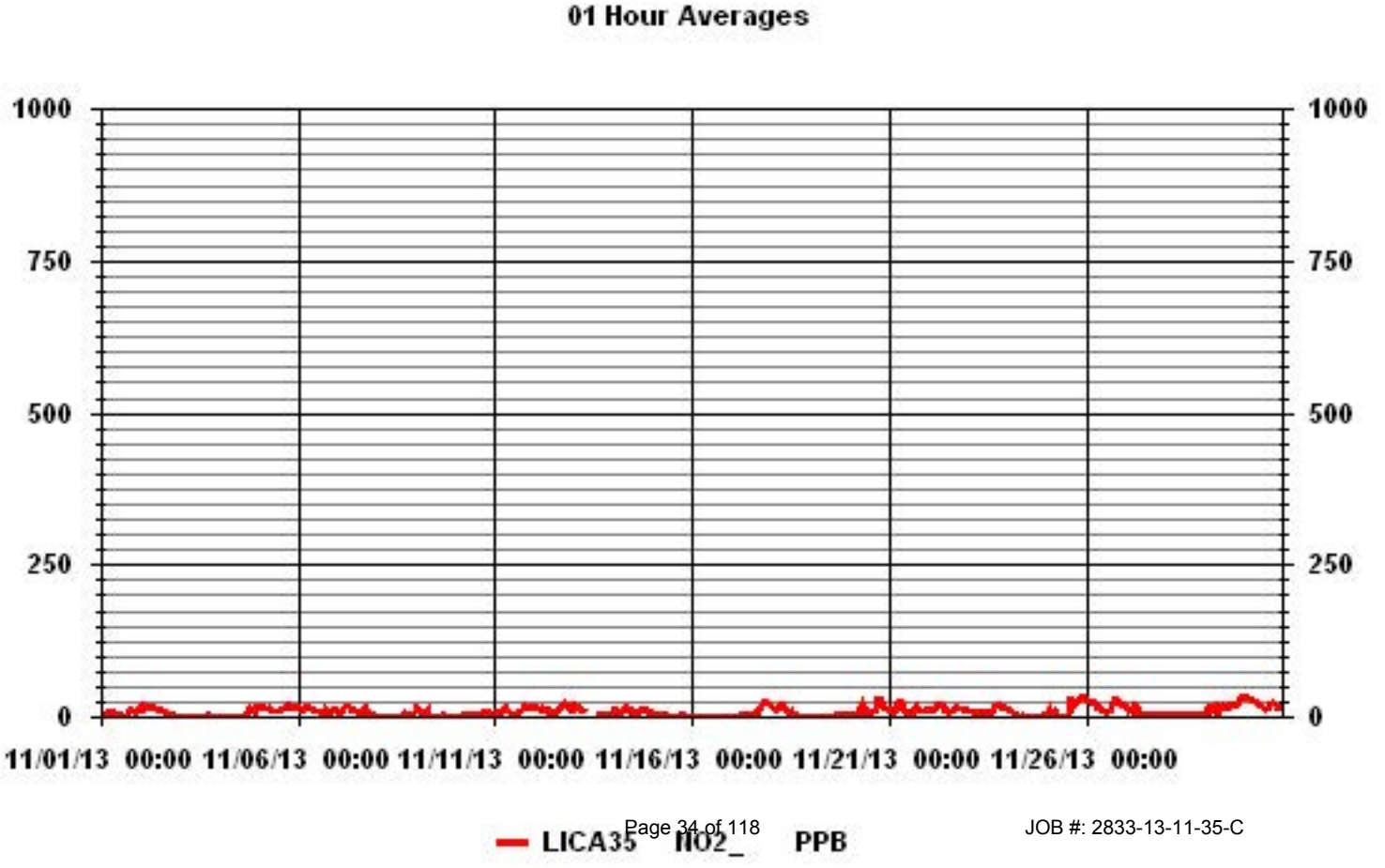

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 661 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 33.0 | PPB | @ HOUR(S) | 23 | ON DAY(S) | 29 |
| MAXIMUM 24-HR AVERAGE: | 21.8 | PPB | | | ON DAY(S) | 30 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 7.77 | | MONTHLY AVERAGE: | 8.82 | PPB |



JOB #: 2833-13-11-35-C






JOB #: 2833-13-11-35-C

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

NOVEMBER 2013

**NITROGEN DIOXIDE MAX** instantaneous maximum in ppb

MST

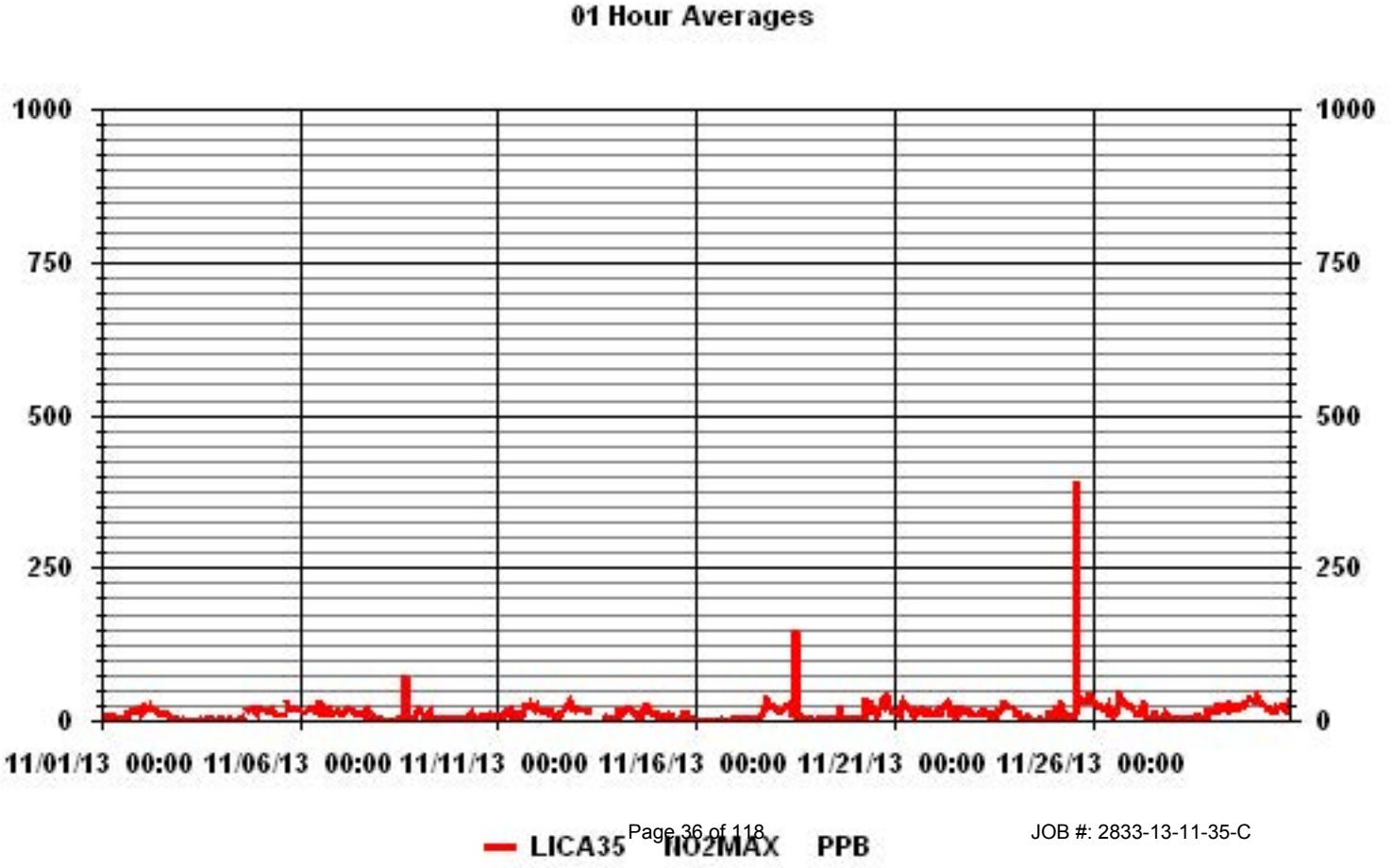
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 9.1 | 11.6 | 9.5 | 4.1 | 5.6 | 7.2 | 8.3 | 8.2 | 7.0 | 4.4 | 2.4 | 1.8 | 2.0 | 2.0 | 1.6 | 1.9 | 12.4 | 15.1 | 18.2 | **S** | 16.3 | 13.6 | 13.3 | 22.2 | 22.2 | 8.6 | 24 |
| 2 | 10.4 | 13.1 | 25.2 | 24.2 | 19.8 | 20.4 | 24.9 | 19.9 | 19.6 | 17.6 | 15.3 | 14.0 | 12.0 | 12.2 | 12.4 | 11.2 | 10.5 | 7.7 | **S** | 4.5 | 2.6 | 2.0 | 1.2 | 1.0 | 25.2 | 13.1 | 24 |
| 3 | 0.9 | 1.4 | 1.2 | 0.7 | 1.0 | 0.7 | 0.5 | 0.7 | 1.3 | 0.6 | 0.5 | 0.6 | 1.2 | 1.1 | 0.9 | 1.2 | 2.0 | **S** | 1.7 | 1.5 | 1.7 | 1.4 | 0.9 | 1.1 | 2.0 | 1.1 | 24 |
| 4 | 1.1 | 1.2 | 1.1 | 1.2 | 0.9 | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 1.3 | 1.5 | 6.0 | 1.9 | 1.4 | **S** | 16.8 | 18.1 | 17.7 | 20.5 | 16.8 | 12.2 | 21.1 | 21.1 | 6.4 | 24 |
| 5 | 21.1 | 16.9 | 16.8 | 17.5 | 16.9 | 15.8 | 18.6 | 21.3 | 15.5 | 11.3 | 10.2 | 9.1 | 8.8 | 9.1 | 10.4 | **S** | 29.7 | 21.3 | 24.0 | 22.1 | 19.9 | 19.3 | 18.9 | 17.1 | 29.7 | 17.0 | 24 |
| 6 | 17.3 | 16.2 | 16.2 | 14.3 | 16.2 | 16.9 | 18.7 | 19.1 | 21.5 | 15.2 | 14.7 | 14.2 | 33.4 | 10.7 | **S** | 9.4 | 18.2 | 19.0 | 25.4 | 13.1 | 10.5 | 12.5 | 16.2 | 15.4 | 33.4 | 16.7 | 24 |
| 7 | 14.2 | 11.6 | 9.8 | 11.7 | 15.7 | 19.1 | 19.1 | 20.4 | 18.5 | 15.2 | 11.5 | 10.2 | 10.9 | **S** | 12.4 | 10.3 | 18.1 | 21.0 | 15.0 | 12.7 | 7.3 | 5.4 | 3.0 | 2.5 | 21.0 | 12.9 | 24 |
| 8 | 2.4 | 1.4 | 1.2 | 0.5 | 0.4 | 0.6 | 0.5 | 0.7 | 0.3 | 0.0 | 0.3 | 0.9 | **S** | 1.4 | 1.5 | 19.7 | 72.5 | 3.3 | 1.1 | 2.2 | 2.5 | 2.0 | 8.3 | 14.5 | 72.5 | 6.0 | 24 |
| 9 | 19.4 | 20.2 | 13.3 | 5.6 | 3.4 | 10.7 | 12.8 | 16.9 | 7.2 | 7.0 | 5.2 | **S** | 1.0 | 1.1 | 1.5 | 2.0 | 2.1 | 2.1 | 1.7 | 1.2 | 1.6 | 1.5 | 1.2 | 1.2 | 20.2 | 6.1 | 24 |
| 10 | 1.3 | 1.6 | 1.6 | 2.5 | 4.2 | 3.8 | 7.5 | 7.5 | 14.1 | 9.8 | **S** | 4.1 | 5.1 | 6.1 | 5.9 | 7.1 | 6.4 | 8.7 | 8.2 | 10.6 | 10.9 | 8.9 | 6.0 | 5.5 | 14.1 | 6.4 | 24 |
| 11 | 8.9 | 8.3 | 10.9 | 8.2 | 12.3 | 11.3 | 17.8 | 19.5 | 12.6 | **S** | 5.9 | 4.6 | 15.6 | 5.7 | 6.8 | 8.6 | 16.5 | 28.6 | 20.8 | 28.5 | 23.2 | 23.6 | 20.0 | 24.6 | 28.6 | 14.9 | 24 |
| 12 | 20.1 | 16.6 | 16.9 | 15.9 | 13.6 | 15.0 | 15.4 | 16.5 | **S** | 9.1 | 7.5 | 8.0 | 8.5 | 7.5 | 11.7 | 15.2 | 20.1 | 21.9 | 26.9 | 31.1 | 23.3 | 20.0 | 19.7 | 17.0 | 31.1 | 16.4 | 24 |
| 13 | 19.7 | 20.5 | 17.6 | 17.2 | 19.0 | 15.5 | 16.6 | **S** | 16.2 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 2.8 | 7.4 | 3.6 | 2.9 | 3.2 | 4.1 | 4.3 | 3.8 | 20.5 | 10.9 | 24 |
| 14 | 3.9 | 21.5 | 16.0 | 16.1 | 13.0 | 16.1 | **S** | 19.0 | 18.4 | 15.1 | 14.0 | 11.4 | 7.9 | 8.6 | 7.3 | 14.5 | 19.6 | 17.6 | 27.2 | 15.5 | 14.6 | 12.4 | 12.1 | 14.6 | 27.2 | 14.6 | 24 |
| 15 | 12.4 | 8.4 | 6.5 | 6.1 | 5.9 | **S** | 5.3 | 10.2 | 7.4 | 9.6 | 2.6 | 0.9 | 0.8 | 1.1 | 1.3 | 1.4 | 1.6 | 17.6 | 8.5 | 5.5 | 2.4 | 1.6 | 1.9 | 1.9 | 17.6 | 5.3 | 24 |
| 16 | 1.0 | 0.8 | 0.7 | 0.5 | **S** | 1.1 | 0.8 | 0.7 | 0.7 | 1.0 | 0.6 | 0.8 | 0.6 | 1.3 | 0.8 | 1.0 | 1.2 | 0.9 | 1.2 | 0.6 | 0.5 | 1.2 | 1.0 | 1.2 | 1.3 | 0.9 | 24 |
| 17 | 1.3 | 1.6 | 1.7 | **S** | 1.5 | 1.9 | 2.8 | 2.3 | 2.1 | 2.0 | 1.9 | 2.2 | 2.7 | 2.4 | 2.8 | 8.0 | 13.2 | 24.3 | 35.4 | 32.6 | 28.4 | 24.8 | 25.3 | 23.0 | 35.4 | 10.6 | 24 |
| 18 | 21.0 | 17.0 | **S** | 16.0 | 17.4 | 19.7 | 25.7 | 24.1 | 26.3 | 16.4 | 13.1 | 8.9 | 150.4 | 4.9 | 8.4 | 8.3 | 2.6 | 1.8 | 1.1 | 1.6 | 1.3 | 1.6 | 1.5 | 0.6 | 150.4 | 16.9 | 24 |
| 19 | 2.7 | **S** | 2.0 | 2.2 | 1.2 | 1.4 | 1.0 | 1.3 | 1.1 | 1.0 | 1.6 | 1.6 | 1.1 | 1.0 | 13.9 | 22.4 | 2.6 | 4.8 | 4.1 | 4.2 | 4.9 | 5.0 | 3.4 | 3.0 | 22.4 | 3.8 | 24 |
| 20 | **S** | 3.2 | 2.8 | 3.3 | 3.5 | 4.9 | 34.9 | 29.8 | 31.1 | 17.0 | 10.5 | 22.9 | 17.3 | 10.0 | 12.3 | 17.4 | 27.2 | 34.4 | 37.5 | 26.9 | 32.2 | 23.7 | 15.7 | **S** | 37.5 | 19.0 | 24 |
| 21 | 13.4 | 13.2 | 12.7 | 10.3 | 22.5 | 32.3 | 27.1 | 27.3 | 23.2 | 18.1 | 12.9 | 17.2 | 7.4 | 10.4 | 11.7 | 16.6 | 19.8 | 13.6 | 9.5 | 9.5 | 10.5 | 15.7 | **S** | 12.3 | 32.3 | 16.0 | 24 |
| 22 | 11.9 | 15.4 | 14.5 | 12.8 | 21.9 | 22.6 | 23.7 | 27.6 | 31.7 | 28.0 | 10.8 | 9.7 | 8.9 | 24.3 | 10.4 | 12.9 | 25.0 | 15.9 | 15.5 | 14.3 | 15.7 | **S** | 12.0 | 10.7 | 31.7 | 17.2 | 24 |
| 23 | 10.1 | 9.2 | 10.9 | 10.4 | 8.9 | 9.3 | 19.4 | 9.3 | 9.4 | 8.8 | 8.1 | 9.8 | 10.2 | 7.0 | 11.0 | 16.0 | 20.1 | 31.2 | 24.8 | 28.2 | **S** | 21.5 | 21.8 | 21.3 | 31.2 | 14.6 | 24 |
| 24 | 13.2 | 13.9 | 12.0 | 12.6 | 7.6 | 3.9 | 3.3 | 3.1 | 6.6 | 5.9 | 2.6 | 1.9 | 0.7 | 0.7 | 1.0 | 4.5 | 5.6 | 4.9 | 1.1 | **S** | 3.3 | 10.9 | 12.0 | 12.6 | 13.9 | 6.3 | 24 |
| 25 | 11.8 | 23.2 | 6.1 | 5.6 | 32.8 | 21.6 | 3.4 | 1.3 | 1.9 | 1.4 | 11.9 | 1.0 | 1.4 | 8.8 | **389.5** | 27.1 | 36.5 | 35.4 | **S** | 32.4 | 33.9 | 33.3 | 45.2 | 34.0 | **389.5** | 34.8 | 24 |
| 26 | 32.2 | 28.3 | 27.2 | 24.4 | 23.3 | 24.1 | 19.6 | 19.8 | 19.8 | 24.6 | 13.2 | 10.3 | 15.4 | 11.1 | 14.1 | 48.4 | 36.3 | **S** | 35.1 | 30.8 | 26.1 | 25.1 | 23.2 | 22.9 | 48.4 | 24.1 | 24 |
| 27 | 18.6 | 11.9 | 14.3 | 12.9 | 11.5 | 22.5 | 29.6 | 27.0 | 8.2 | 3.3 | 2.0 | 2.1 | 3.4 | 17.1 | 5.2 | 4.4 | **S** | 6.7 | 4.1 | 11.9 | 8.2 | 6.7 | 6.2 | 2.6 | 29.6 | 10.5 | 24 |
| 28 | 3.4 | 2.6 | 2.0 | 2.5 | 2.4 | 5.9 | 3.4 | 4.5 | 3.0 | 5.1 | 3.8 | 5.3 | 7.3 | 4.8 | 7.6 | **S** | 7.5 | 8.1 | 5.6 | 5.1 | 4.5 | 21.7 | 9.1 | 17.8 | 21.7 | 6.2 | 24 |
| 29 | 17.1 | 17.9 | 9.3 | 24.9 | 23.4 | 22.6 | 12.4 | 28.9 | 22.0 | 19.9 | 30.4 | 21.8 | 21.4 | 19.6 | **S** | 26.1 | 20.8 | 22.5 | 22.9 | 24.3 | 28.0 | 31.3 | 35.0 | 34.7 | 35.0 | 23.4 | 24 |
| 30 | 33.5 | 34.5 | 33.4 | 38.9 | 31.8 | 28.6 | 28.3 | 26.9 | 25.9 | 20.8 | 17.8 | 17.6 | 15.4 | **S** | 15.9 | 24.5 | 22.5 | 25.0 | 24.1 | 24.9 | 20.3 | 26.3 | 18.3 | 17.0 | 38.9 | 24.9 | 24 |
| HOURLY MAX | 33.5 | 34.5 | 33.4 | 38.9 | 32.8 | 32.3 | 34.9 | 29.8 | 31.7 | 28.0 | 30.4 | 22.9 | 150.4 | 24.3 | 389.5 | 48.4 | 72.5 | 35.4 | 37.5 | 32.6 | 33.9 | 33.3 | 45.2 | 34.7 | | | |
| HOURLY AVG | 12.2 | 12.5 | 10.8 | 11.1 | 12.3 | 13.0 | 13.9 | 14.3 | 12.9 | 10.3 | 8.3 | 7.7 | 13.3 | 7.3 | 21.5 | 12.6 | 16.9 | 15.6 | 15.1 | 14.9 | 13.0 | 13.6 | 12.7 | 13.0 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 681 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 389.5 | PPB | @ HOUR(S) | 14 | ON DAY(S) | 25 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | | |
| STANDARD DEVIATION: | 18.24 | | | | | | |






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : NO2_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50.0 | 3.36 | 3.51 | 6.44 | 3.51 | 7.46 | 15.37 | 6.88 | 3.22 | 2.04 | 1.02 | 1.61 | 8.49 | 13.32 | 7.90 | 7.75 | 8.05 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 3.36 | 3.51 | 6.44 | 3.51 | 7.46 | 15.37 | 6.88 | 3.22 | 2.04 | 1.02 | 1.61 | 8.49 | 13.32 | 7.90 | 7.75 | 8.05 | |

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50.0 | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 54 | 53 | 55 | 683 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 54 | 53 | 55 | |

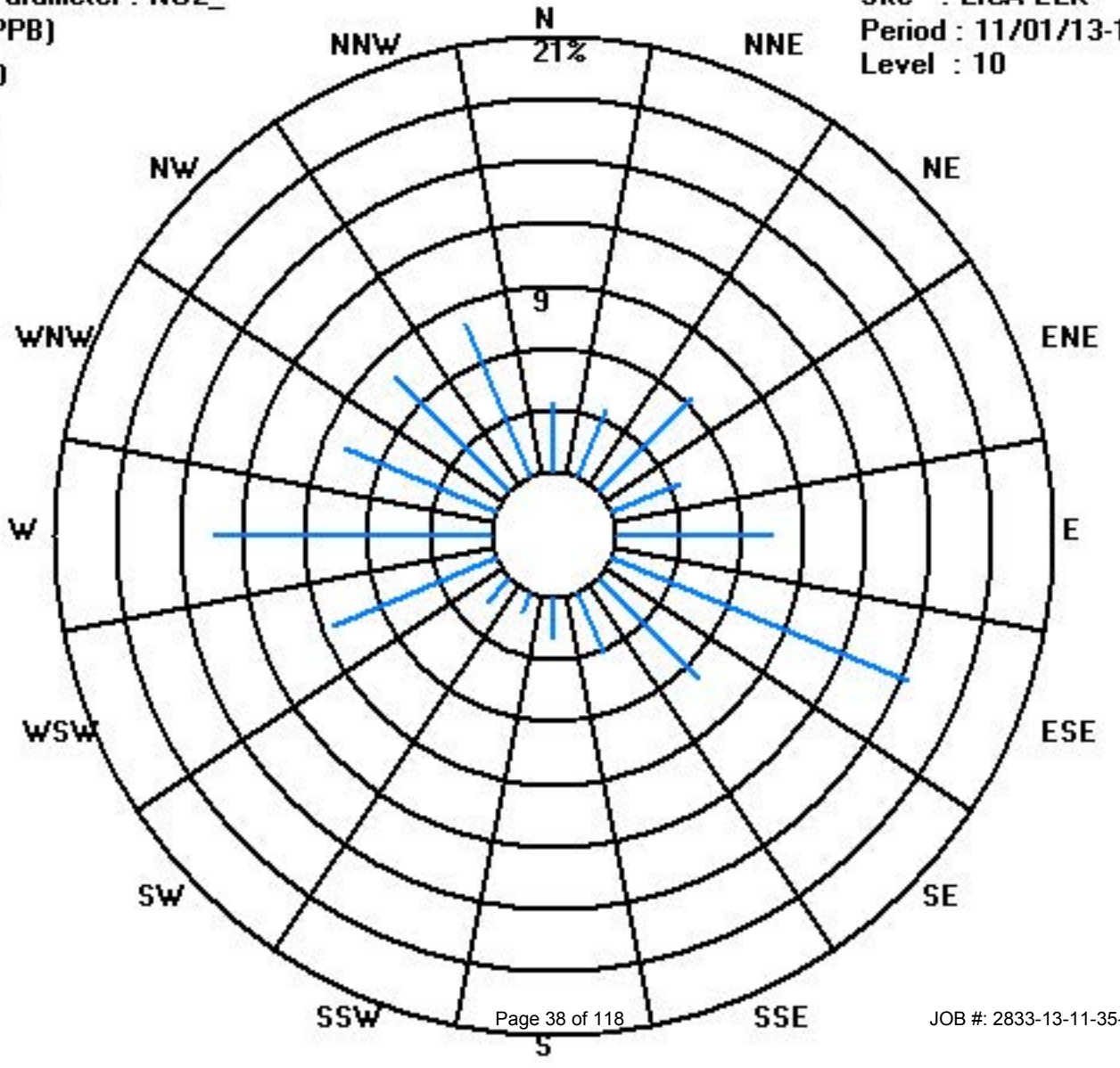
Calm : .00 %

Total # Operational Hours : 683

Logger : 35 Parameter : NO2_
Class Limits (PPB)

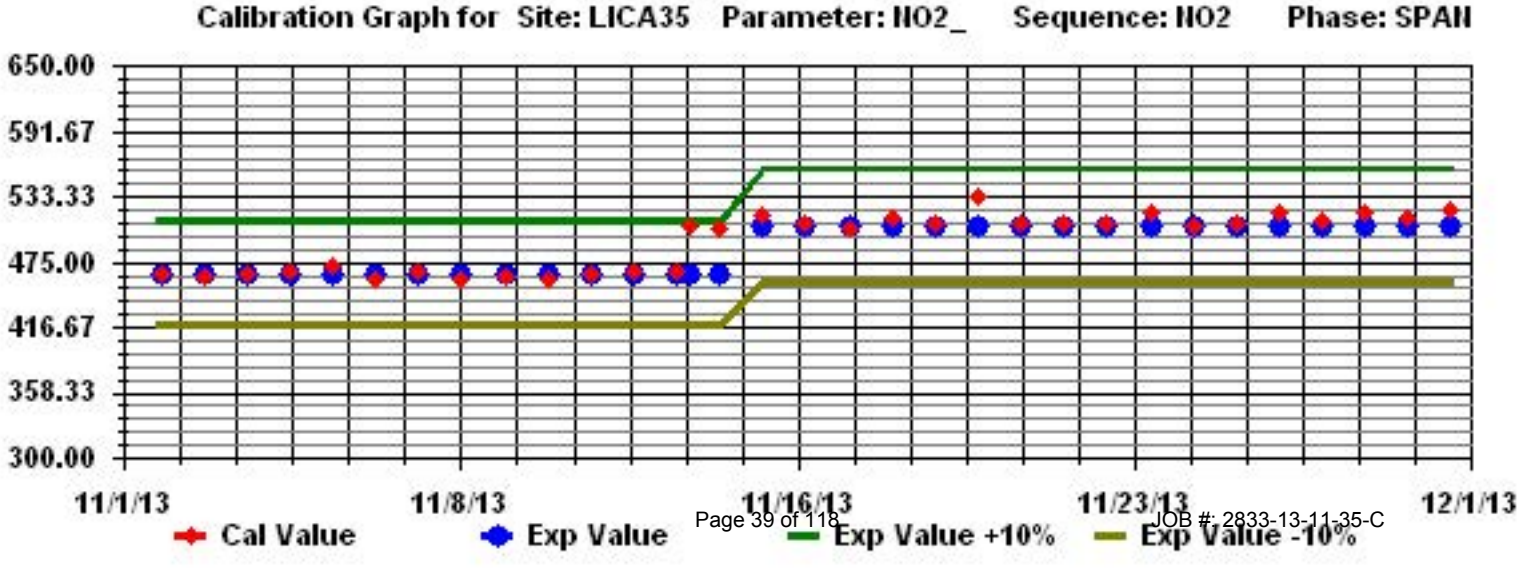
>= 210.0
< 210.0
< 110.0
< 50.0

Site : LICA-ELK
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C


Calibration Graph for Site: LICA35 Parameter: NO2_ Sequence: NO2 Phase: SPAN
650.00
591.67
533.33
475.00
416.67
358.33
300.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

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

NOVEMBER 2013

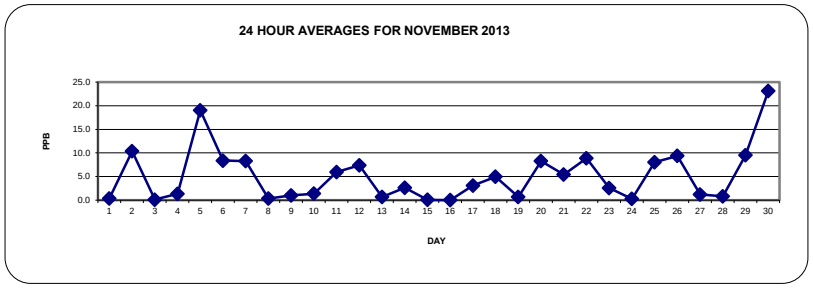
**NITRIC OXIDE** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.1 | 0.9 | 0.6 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.9 | **S** | 1.6 | 0.8 | 0.7 | 1.4 | 1.9 | 0.4 | 24 |
| 2 | 0.5 | 0.5 | 7.1 | 5.6 | 4.1 | 7.0 | 26.0 | 36.4 | 43.5 | 41.7 | 31.4 | 14.5 | 6.7 | 4.9 | 5.0 | 1.7 | 0.6 | 0.2 | **S** | 0.7 | 0.3 | 0.2 | 0.0 | 0.0 | 43.5 | 10.4 | 24 |
| 3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.6 | 0.0 | 0.0 | 0.1 | 0.2 | 0.4 | 0.2 | 0.3 | 0.2 | **S** | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.1 | 24 |
| 4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.6 | 0.3 | 0.0 | **S** | 1.6 | 4.3 | 3.2 | 4.7 | 3.6 | 1.8 | 10.0 | 10.0 | 1.3 | 24 |
| 5 | 10.6 | 6.7 | 21.8 | 12.7 | 15.8 | 21.4 | 48.4 | **73.7** | 56.9 | 38.5 | 31.2 | 21.4 | 14.3 | 9.4 | 6.7 | **S** | 10.8 | 4.2 | 12.0 | 8.8 | 2.4 | 2.5 | 4.3 | 3.3 | **73.7** | 19.0 | 24 |
| 6 | 1.7 | 1.3 | 2.4 | 1.9 | 2.5 | 3.7 | 9.9 | 22.3 | 39.2 | 33.0 | 31.7 | 14.9 | 8.4 | 5.6 | **S** | 2.3 | 2.1 | 2.3 | 3.2 | 0.7 | 0.6 | 0.6 | 1.3 | 0.9 | 39.2 | 8.4 | 24 |
| 7 | 1.0 | 0.8 | 0.7 | 0.6 | 1.3 | 4.7 | 10.8 | 24.5 | 38.5 | 36.5 | 22.4 | 17.9 | 13.2 | **S** | 5.9 | 2.7 | 2.6 | 3.2 | 1.3 | 0.8 | 0.3 | 0.2 | 0.1 | 0.3 | 38.5 | 8.3 | 24 |
| 8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | **S** | 0.8 | 0.3 | 0.5 | 4.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.7 | 4.5 | 0.3 | 24 |
| 9 | 4.2 | 4.1 | 0.8 | 0.3 | 0.1 | 0.6 | 0.9 | 2.1 | 1.1 | 1.6 | 1.0 | **S** | 1.4 | 0.9 | 0.8 | 0.6 | 0.5 | 0.3 | 0.4 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 4.2 | 1.0 | 24 |
| 10 | 0.1 | 0.2 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 | 4.4 | 4.5 | **S** | 4.0 | 4.0 | 3.4 | 2.7 | 1.2 | 0.5 | 0.8 | 0.5 | 0.9 | 1.6 | 0.7 | 0.0 | 0.3 | 4.5 | 1.4 | 24 |
| 11 | 2.6 | 0.6 | 2.3 | 0.4 | 2.0 | 2.1 | 5.8 | 9.0 | 7.4 | **S** | 6.7 | 5.5 | 5.5 | 5.4 | 4.4 | 2.7 | 3.4 | 10.6 | 12.6 | 17.5 | 8.6 | 9.3 | 5.4 | 7.4 | 17.5 | 6.0 | 24 |
| 12 | 10.0 | 7.6 | 7.5 | 3.4 | 2.7 | 5.7 | 10.7 | 5.5 | **S** | 8.0 | 9.2 | 7.6 | 7.2 | 6.4 | 5.8 | 4.4 | 6.9 | 6.1 | 18.6 | 31.8 | 2.5 | 0.8 | 0.9 | 0.5 | 31.8 | 7.4 | 24 |
| 13 | 1.1 | 0.8 | 1.0 | 0.9 | 1.1 | 0.4 | 0.5 | **S** | 4.0 | **C** | **C** | **C** | **C** | **C** | **C** | 1.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.0 | 0.7 | 24 |
| 14 | 0.0 | 1.0 | 1.3 | 0.2 | 0.0 | 0.0 | **S** | 4.7 | 3.8 | 10.9 | 16.6 | 7.3 | 2.4 | 3.2 | 2.8 | 0.7 | 0.9 | 1.2 | 1.5 | 1.1 | 0.5 | 0.3 | 0.1 | 0.3 | 16.6 | 2.6 | 24 |
| 15 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.6 | 0.4 | 0.5 | 0.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.1 | 24 |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 24 |
| 17 | 0.0 | 0.0 | 0.0 | **S** | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 0.2 | 0.5 | 0.7 | 1.1 | 1.1 | 0.9 | 1.4 | 1.7 | 4.0 | 7.6 | 22.1 | 13.4 | 6.0 | 5.9 | 4.3 | 22.1 | 3.1 | 24 |
| 18 | 2.8 | 1.5 | **S** | 2.2 | 2.4 | 4.6 | 9.8 | 15.6 | 21.5 | 14.8 | 14.5 | 8.6 | 9.7 | 2.7 | 2.5 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 21.5 | 5.0 | 24 |
| 19 | 0.0 | **S** | 1.2 | 0.5 | 0.1 | 0.0 | 0.1 | 0.3 | 0.2 | 0.4 | 0.6 | 0.9 | 0.7 | 0.5 | 1.1 | 7.2 | 0.0 | 0.0 | 0.1 | 0.4 | 0.4 | 0.4 | 0.2 | 0.3 | 7.2 | 0.7 | 24 |
| 20 | **S** | 1.6 | 0.7 | 0.4 | 0.4 | 0.5 | 9.6 | 11.7 | 12.5 | 9.7 | 6.7 | 10.8 | 7.0 | 6.9 | 7.4 | 5.4 | 7.4 | 24.0 | 28.9 | 8.2 | 14.5 | 4.4 | 3.3 | **S** | 28.9 | 8.3 | 24 |
| 21 | 2.3 | 1.3 | 1.2 | 0.5 | 2.7 | 12.0 | 18.2 | 25.1 | 12.5 | 9.0 | 7.3 | 5.5 | 4.3 | 6.7 | 4.3 | 5.4 | 3.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.4 | **S** | 2.4 | 25.1 | 5.4 | 24 |
| 22 | 1.4 | 1.6 | 1.0 | 1.0 | 3.1 | 6.0 | 8.4 | 30.1 | 28.4 | 38.1 | 18.6 | 15.5 | 14.1 | 12.1 | 6.8 | 4.5 | 3.2 | 2.2 | 1.9 | 1.4 | 2.5 | **S** | 1.8 | 1.1 | 38.1 | 8.9 | 24 |
| 23 | 0.7 | 0.6 | 0.8 | 0.4 | 0.3 | 0.6 | 1.1 | 0.9 | 1.2 | 2.4 | 4.0 | 5.5 | 5.4 | 3.2 | 3.1 | 3.9 | 3.3 | 5.6 | 6.8 | 3.0 | **S** | 2.3 | 2.8 | 1.4 | 6.8 | 2.6 | 24 |
| 24 | 0.8 | 0.5 | 0.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 1.3 | 1.0 | 0.8 | 0.8 | 1.3 | 0.3 | 24 |
| 25 | 0.5 | 1.7 | 0.6 | 0.4 | 3.3 | 0.9 | 0.2 | 0.4 | 0.3 | 0.6 | 0.5 | 0.4 | 0.3 | 2.9 | 35.8 | 6.3 | 8.6 | 7.4 | **S** | 10.5 | 17.5 | 16.1 | 27.3 | 42.7 | 42.7 | 8.1 | 24 |
| 26 | 39.5 | 27.2 | 15.7 | 5.5 | 4.9 | 3.9 | 2.0 | 2.9 | 4.0 | 7.3 | 6.0 | 4.6 | 5.9 | 3.3 | 3.0 | 15.0 | 16.4 | **S** | 18.6 | 8.7 | 4.2 | 5.8 | 6.2 | 5.0 | 39.5 | 9.4 | 24 |
| 27 | 2.1 | 0.8 | 1.2 | 0.9 | 0.8 | 7.2 | 5.1 | 3.3 | 0.3 | 0.3 | 0.2 | 0.0 | 0.2 | 0.3 | 0.7 | 0.4 | **S** | 1.1 | 0.4 | 1.0 | 0.4 | 0.5 | 0.7 | 0.0 | 7.2 | 1.2 | 24 |
| 28 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.5 | 0.5 | 1.1 | 0.9 | 1.8 | 2.4 | 1.2 | 1.8 | **S** | 1.8 | 2.1 | 0.8 | 0.7 | 0.2 | 0.9 | 0.4 | 1.0 | 2.4 | 0.8 | 24 |
| 29 | 1.5 | 1.1 | 0.4 | 2.5 | 1.9 | 1.0 | 0.7 | 5.3 | 8.8 | 10.6 | 39.7 | 30.8 | 38.8 | 16.8 | **S** | 9.1 | 2.2 | 2.6 | 2.4 | 2.5 | 3.2 | 5.8 | 14.1 | 17.6 | 39.7 | 9.5 | 24 |
| 30 | 30.7 | 36.8 | 46.8 | 70.5 | 54.1 | 41.7 | 41.1 | 41.6 | 34.4 | 24.2 | 26.0 | 25.3 | 18.4 | **S** | 9.3 | 9.2 | 5.0 | 3.8 | 2.7 | 3.5 | 2.2 | 1.8 | 1.2 | 1.3 | 70.5 | **23.1** | 24 |
| HOURLY MAX | 39.5 | 36.8 | 46.8 | 70.5 | 54.1 | 41.7 | 48.4 | 73.7 | 56.9 | 41.7 | 39.7 | 30.8 | 38.8 | 16.8 | 35.8 | 15.0 | 16.4 | 24.0 | 28.9 | 31.8 | 17.5 | 16.1 | 27.3 | 42.7 | | | |
| HOURLY AVG | 3.9 | 3.4 | 4.0 | 3.8 | 3.6 | 4.3 | 7.3 | 10.9 | 11.2 | 10.5 | 9.9 | 7.3 | 6.1 | 3.7 | 4.1 | 3.1 | 3.1 | 3.0 | 4.5 | 4.6 | 2.9 | 2.2 | 2.8 | 3.6 | | | |

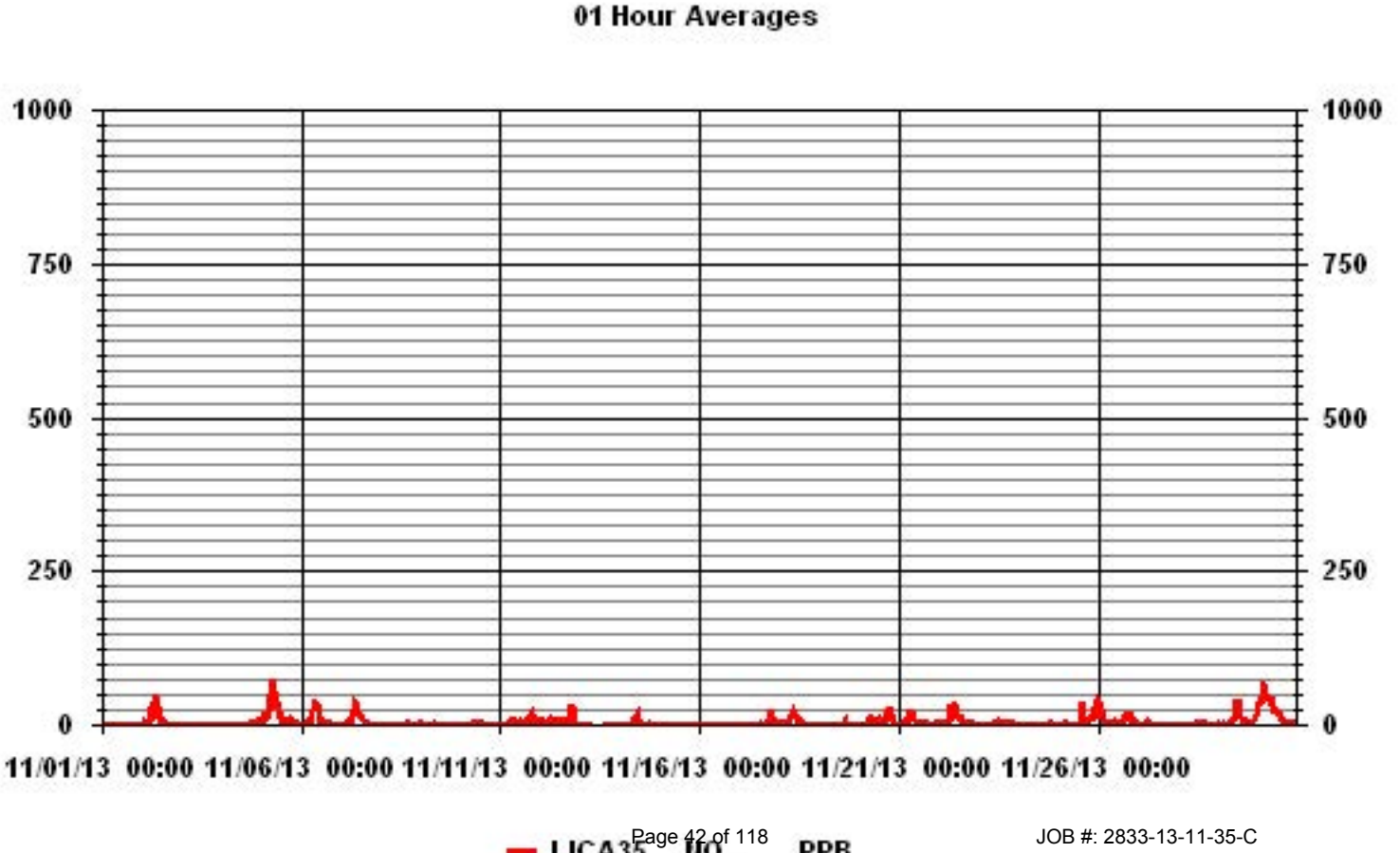
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 541 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 73.7 | PPB | @ HOUR(S) | 7 | ON DAY(S) | 5 | |
| MAXIMUM 24-HR AVERAGE: | 23.1 | PPB | | | ON DAY(S) | 30 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS | |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | 100.0 | % | |
| STANDARD DEVIATION: | 9.74 | | MONTHLY AVERAGE: | | 5.16 | PPB | |






JOB #: 2833-13-11-35-C

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

NOVEMBER 2013

**NITRIC OXIDE MAX** instantaneous maximum in ppb

MST

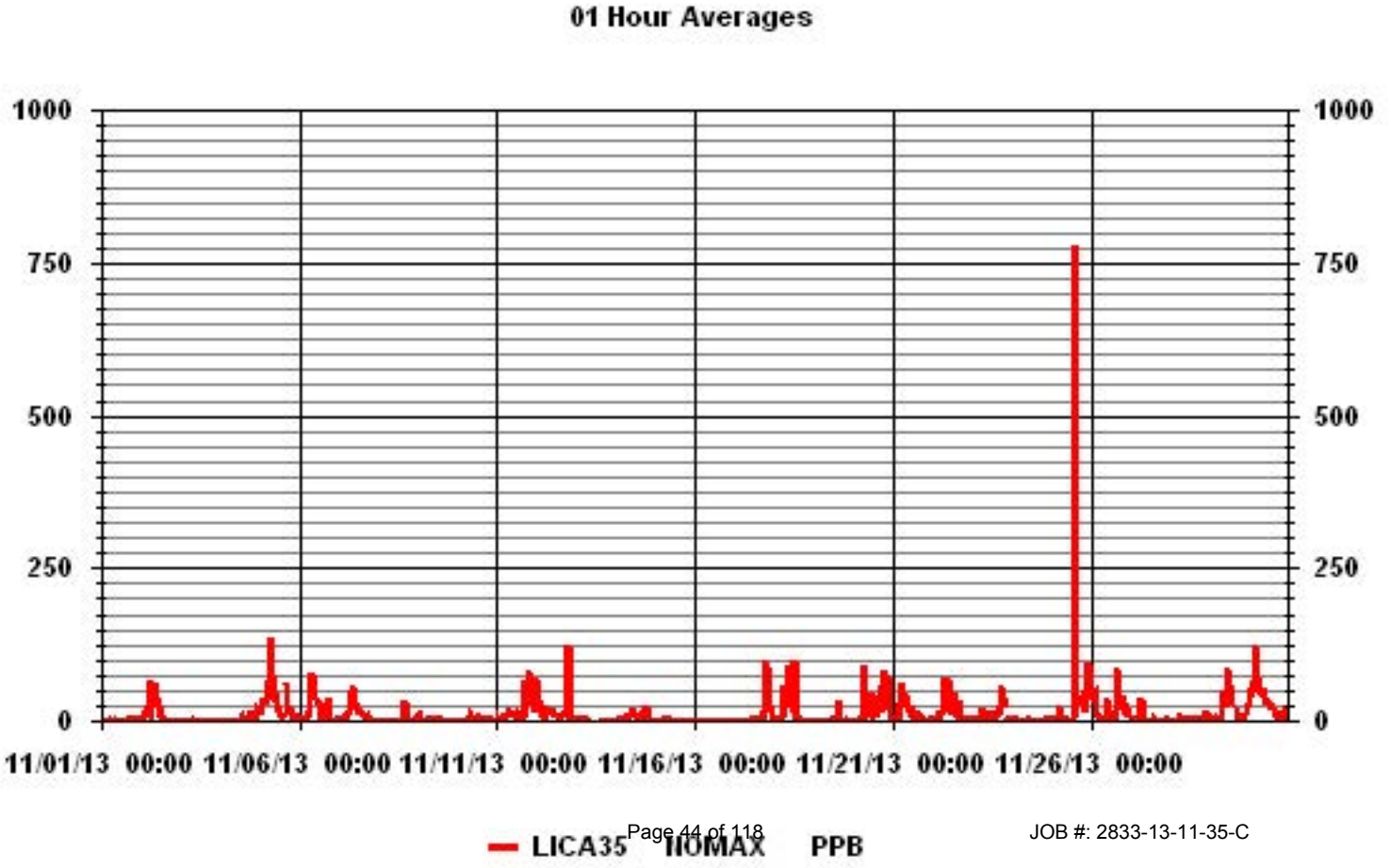
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.7 | 0.7 | 0.3 | 0.2 | 0.8 | 1.2 | 1.6 | 1.2 | 2.1 | 1.6 | 0.7 | 0.5 | 0.5 | 0.3 | 0.8 | 0.1 | 1.5 | 2.2 | 4.6 | **S** | 2.9 | 2.5 | 2.0 | 4.3 | 4.6 | 1.4 | 24 |
| 2 | 1.1 | 1.1 | 15.4 | 20.5 | 13.8 | 10.4 | 67.8 | 63.9 | 51.9 | 60.5 | 40.2 | 27.3 | 10.7 | 6.9 | 6.2 | 3.8 | 1.5 | 0.9 | **S** | 1.6 | 0.9 | 0.6 | 0.5 | 0.6 | 67.8 | 17.7 | 24 |
| 3 | 0.6 | 0.3 | 0.4 | 0.3 | 0.6 | 0.3 | 0.4 | 0.4 | 3.3 | 0.6 | 0.4 | 0.6 | 0.9 | 0.9 | 0.9 | 0.8 | 0.6 | **S** | 1.7 | 0.6 | 0.6 | 0.4 | 0.4 | 0.5 | 3.3 | 0.7 | 24 |
| 4 | 0.2 | 0.5 | 0.5 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 | 0.5 | 0.8 | 7.6 | 0.9 | 0.6 | **S** | 4.6 | 10.6 | 9.6 | 12.1 | 8.1 | 3.5 | 19.8 | 19.8 | 3.6 | 24 |
| 5 | 16.4 | 15.3 | 37.9 | 32.2 | 25.5 | 35.6 | 64.4 | 135.4 | 79.1 | 46.5 | 33.9 | 26.9 | 17.2 | 12.7 | 9.2 | **S** | 58.8 | 10.0 | 25.1 | 15.8 | 4.8 | 6.8 | 9.8 | 6.6 | 135.4 | 31.6 | 24 |
| 6 | 6.6 | 2.5 | 4.7 | 4.2 | 4.2 | 8.3 | 16.6 | 53.3 | 76.1 | 39.6 | 36.9 | 26.2 | 34.5 | 6.7 | **S** | 4.6 | 4.6 | 5.1 | 36.8 | 1.4 | 1.2 | 1.5 | 3.2 | 1.9 | 76.1 | 16.6 | 24 |
| 7 | 2.0 | 1.5 | 1.7 | 1.5 | 2.2 | 12.1 | 16.4 | 48.7 | 53.1 | 53.1 | 30.4 | 21.5 | 14.8 | **S** | 12.6 | 4.5 | 6.8 | 10.3 | 3.1 | 3.3 | 1.0 | 1.0 | 0.8 | 1.0 | 53.1 | 13.2 | 24 |
| 8 | 0.8 | 0.5 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.8 | 0.9 | **S** | 1.7 | 0.7 | 10.9 | 34.7 | 7.3 | 0.2 | 0.4 | 0.4 | 0.4 | 2.3 | 1.7 | 34.7 | 2.9 | 24 |
| 9 | 10.3 | 11.5 | 2.4 | 0.9 | 0.5 | 1.4 | 2.0 | 4.4 | 3.0 | 3.0 | 2.8 | **S** | 2.7 | 1.5 | 1.4 | 1.1 | 1.1 | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.6 | 11.5 | 2.4 | 24 |
| 10 | 0.6 | 0.8 | 0.7 | 0.7 | 0.9 | 0.8 | 1.6 | 1.9 | 11.8 | 7.8 | **S** | 5.1 | 6.1 | 5.4 | 5.0 | 3.7 | 1.5 | 2.5 | 1.5 | 3.1 | 4.5 | 2.7 | 0.4 | 1.3 | 11.8 | 3.1 | 24 |
| 11 | 7.6 | 1.7 | 6.2 | 1.2 | 6.2 | 7.1 | 12.2 | 20.7 | 10.6 | **S** | 8.7 | 7.1 | 13.4 | 7.9 | 5.8 | 4.7 | 6.5 | 67.4 | 25.8 | 81.8 | 40.2 | 54.4 | 12.7 | 70.8 | 81.8 | 20.9 | 24 |
| 12 | 43.8 | 17.4 | 21.9 | 11.9 | 7.4 | 10.7 | 24.6 | 18.8 | **S** | 16.1 | 10.9 | 11.5 | 9.5 | 8.7 | 10.0 | 7.0 | 13.0 | 13.6 | 69.7 | 124.4 | 5.0 | 1.8 | 1.6 | 1.2 | 124.4 | 20.0 | 24 |
| 13 | 1.8 | 1.5 | 2.4 | 2.3 | 4.1 | 1.0 | 3.1 | **S** | 6.0 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0.7 | 0.7 | 0.2 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 6.0 | 1.5 | 24 |
| 14 | 0.0 | 4.5 | 4.4 | 2.2 | 0.3 | 1.5 | **S** | 8.0 | 8.5 | 18.2 | 19.0 | 13.1 | 5.9 | 5.6 | 8.9 | 2.2 | 3.0 | 3.4 | 26.2 | 3.0 | 1.5 | 1.5 | 0.8 | 1.0 | 26.2 | 6.2 | 24 |
| 15 | 0.8 | 0.6 | 1.2 | 0.2 | 0.4 | **S** | 1.6 | 1.2 | 1.8 | 2.5 | 0.8 | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.3 | 1.4 | 0.1 | 0.4 | 0.4 | 0.2 | 0.3 | 0.0 | 2.5 | 0.7 | 24 |
| 16 | 0.0 | 0.1 | 0.2 | 0.2 | **S** | 1.5 | 0.7 | 0.5 | 0.3 | 0.5 | 0.4 | 0.4 | 0.2 | 0.5 | 0.5 | 0.4 | 0.5 | 0.2 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 1.5 | 0.4 | 24 |
| 17 | 0.3 | 0.3 | 0.2 | **S** | 1.3 | 1.0 | 0.6 | 0.7 | 0.4 | 0.7 | 1.1 | 1.3 | 1.9 | 1.9 | 1.5 | 3.1 | 4.7 | 17.7 | 98.6 | 90.9 | 57.9 | 14.4 | 22.3 | 6.2 | 98.6 | 14.3 | 24 |
| 18 | 5.8 | 3.1 | **S** | 3.7 | 4.1 | 7.9 | 56.6 | 33.9 | 89.7 | 27.6 | 25.6 | 12.1 | 99.3 | 5.8 | 5.5 | 4.3 | 0.6 | 0.4 | 0.4 | 0.3 | 0.5 | 0.2 | 0.2 | 0.3 | 99.3 | 16.9 | 24 |
| 19 | 0.4 | **S** | 2.7 | 1.2 | 0.6 | 0.6 | 0.7 | 0.9 | 0.8 | 0.8 | 1.7 | 1.4 | 1.5 | 1.2 | 26.7 | 27.0 | 0.6 | 0.6 | 0.6 | 1.0 | 1.0 | 1.0 | 0.8 | 0.8 | 27.0 | 3.2 | 24 |
| 20 | **S** | 2.6 | 1.3 | 1.2 | 1.0 | 1.2 | 89.4 | 33.6 | 40.8 | 14.2 | 10.9 | 45.6 | 17.4 | 11.3 | 12.5 | 17.5 | 17.4 | 57.4 | 83.7 | 15.2 | 73.7 | 32.0 | 6.3 | **S** | 89.4 | 26.6 | 24 |
| 21 | 3.8 | 1.8 | 2.9 | 1.0 | 29.2 | 60.4 | 38.0 | 46.9 | 26.2 | 20.1 | 15.2 | 23.1 | 5.6 | 9.8 | 7.9 | 11.5 | 8.5 | 1.0 | 0.3 | 0.4 | 0.5 | 2.6 | **S** | 4.2 | 60.4 | 14.0 | 24 |
| 22 | 2.0 | 5.2 | 1.6 | 1.6 | 11.7 | 13.5 | 17.0 | 70.2 | 52.4 | 69.7 | 21.3 | 19.0 | 17.2 | 45.9 | 9.7 | 6.1 | 34.6 | 4.4 | 3.1 | 2.3 | 6.6 | **S** | 3.2 | 2.1 | 70.2 | 18.3 | 24 |
| 23 | 1.3 | 2.6 | 2.5 | 1.9 | 2.0 | 3.1 | 19.4 | 4.3 | 2.6 | 4.8 | 5.8 | 12.6 | 11.7 | 4.6 | 6.2 | 14.6 | 9.5 | 58.8 | 21.3 | 32.0 | **S** | 4.6 | 6.5 | 3.9 | 58.8 | 10.3 | 24 |
| 24 | 1.5 | 1.1 | 1.0 | 1.2 | 0.5 | 0.3 | 0.4 | 0.2 | 0.9 | 1.3 | 1.3 | 1.1 | 0.1 | 0.1 | 0.1 | 0.5 | 0.4 | 0.1 | 0.0 | **S** | 2.4 | 1.6 | 1.3 | 1.4 | 2.4 | 0.8 | 24 |
| 25 | 1.6 | 4.3 | 1.2 | 1.0 | 23.8 | 7.8 | 0.8 | 0.9 | 1.0 | 1.2 | 1.5 | 0.9 | 0.8 | 5.8 | **777.8** | 26.9 | 41.9 | 32.3 | **S** | 18.7 | 49.0 | 34.8 | 92.7 | 65.0 | **777.8** | 51.8 | 24 |
| 26 | 52.5 | 40.6 | 44.5 | 11.4 | 6.3 | 6.0 | 4.7 | 6.1 | 9.0 | 34.8 | 9.3 | 6.2 | 14.2 | 5.3 | 5.4 | 86.7 | 34.7 | **S** | 38.3 | 20.4 | 14.3 | 12.3 | 18.3 | 12.5 | 86.7 | 21.5 | 24 |
| 27 | 5.0 | 1.7 | 2.0 | 1.6 | 2.1 | 13.5 | 36.3 | 19.7 | 1.0 | 1.0 | 1.0 | 0.7 | 0.9 | 5.5 | 1.9 | 1.0 | **S** | 2.6 | 1.0 | 3.1 | 1.6 | 2.1 | 2.3 | 0.6 | 36.3 | 4.7 | 24 |
| 28 | 0.7 | 0.4 | 0.4 | 0.4 | 0.6 | 9.2 | 1.6 | 2.5 | 1.2 | 2.5 | 2.0 | 3.1 | 5.1 | 2.8 | 5.0 | **S** | 4.8 | 3.8 | 1.9 | 2.0 | 1.0 | 17.2 | 1.1 | 6.4 | 17.2 | 3.3 | 24 |
| 29 | 6.6 | 4.3 | 1.7 | 7.1 | 5.2 | 2.8 | 1.5 | 47.9 | 28.8 | 24.7 | 88.3 | 49.9 | 58.6 | 31.1 | **S** | 18.8 | 4.2 | 5.7 | 3.6 | 5.2 | 5.2 | 10.0 | 27.3 | 29.0 | 88.3 | 20.3 | 24 |
| 30 | 40.1 | 51.2 | 65.8 | 124.5 | 74.4 | 51.5 | 46.9 | 49.0 | 48.8 | 28.6 | 34.0 | 31.2 | 22.6 | **S** | 13.4 | 21.5 | 9.8 | 7.8 | 5.1 | 11.0 | 6.8 | 24.3 | 2.2 | 3.0 | 124.5 | 33.6 | 24 |
| HOURLY MAX | 52.5 | 51.2 | 65.8 | 124.5 | 74.4 | 60.4 | 89.4 | 135.4 | 89.7 | 69.7 | 88.3 | 49.9 | 99.3 | 45.9 | 777.8 | 86.7 | 58.8 | 67.4 | 98.6 | 124.4 | 73.7 | 54.4 | 92.7 | 70.8 | | | |
| HOURLY AVG | 7.4 | 6.2 | 7.9 | 8.2 | 7.9 | 9.4 | 18.2 | 23.3 | 21.1 | 17.2 | 14.5 | 12.5 | 13.4 | 7.3 | 34.7 | 10.5 | 11.0 | 11.5 | 16.6 | 16.0 | 10.3 | 8.3 | 7.7 | 8.5 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 674 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 777.8 | PPB | @ HOUR(S) | 14 | ON DAY(S) | 25 |
| IZS CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION: | 35.42 | | | | | |






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50.0 | 3.36 | 3.51 | 6.44 | 3.51 | 7.17 | 15.08 | 6.88 | 3.22 | 2.04 | 1.02 | 1.61 | 8.49 | 13.32 | 7.90 | 7.75 | 8.05 | 99.41 |
| < | 110.0 | .00 | .00 | .00 | .00 | .29 | .29 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .58 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 3.36 | 3.51 | 6.44 | 3.51 | 7.46 | 15.37 | 6.88 | 3.22 | 2.04 | 1.02 | 1.61 | 8.49 | 13.32 | 7.90 | 7.75 | 8.05 | |

Calm : .00 %

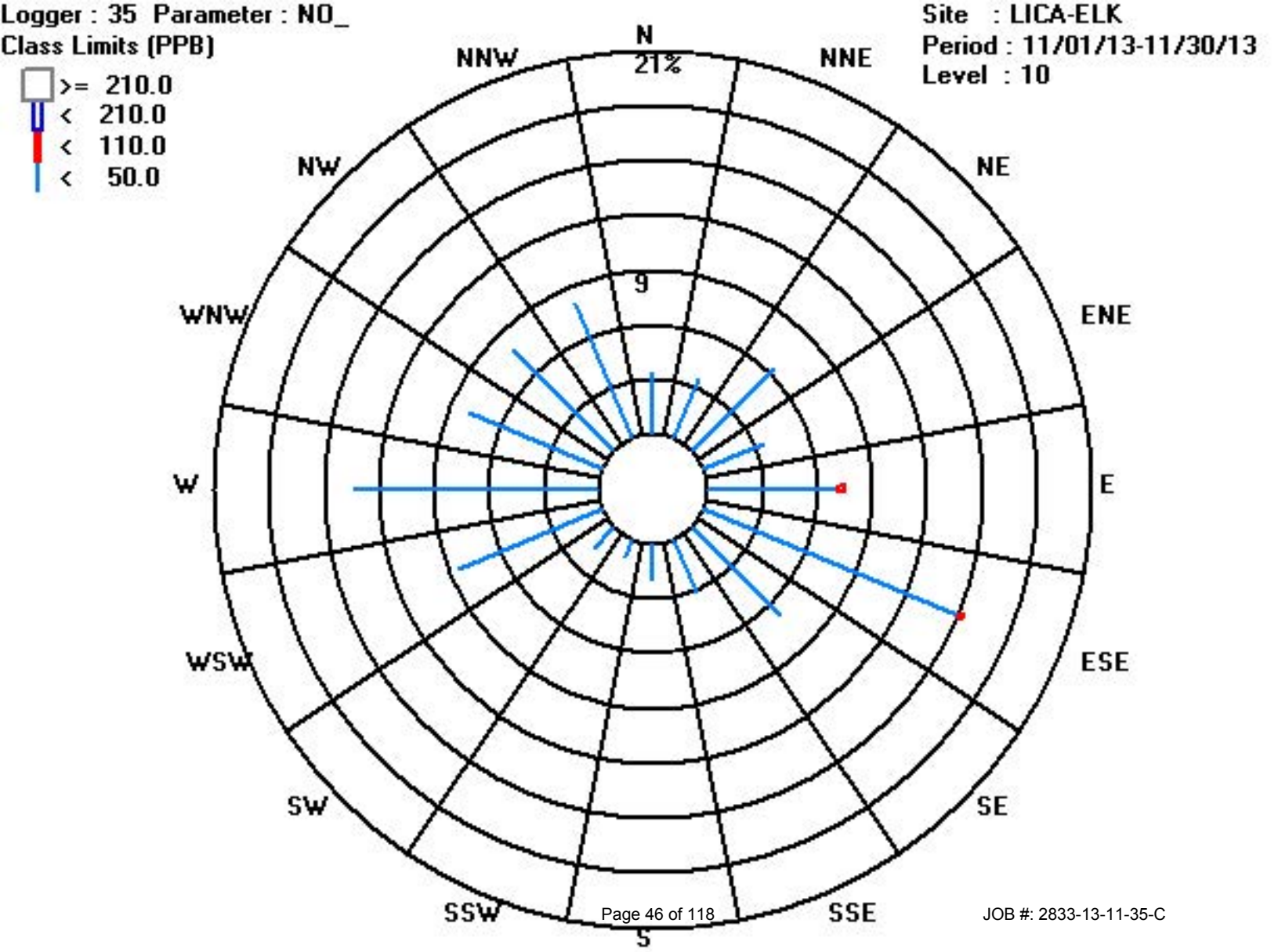
Total # Operational Hours : 683

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50.0 | 23 | 24 | 44 | 24 | 49 | 103 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 54 | 53 | 55 | 679 |
| < | 110.0 | | | | | 2 | 2 | | | | | | | | | | | 4 |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 54 | 53 | 55 | |

Calm : .00 %

Total # Operational Hours : 683






JOB #: 2833-13-11-35-C

# Oxides of Nitrogen

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

NOVEMBER 2013

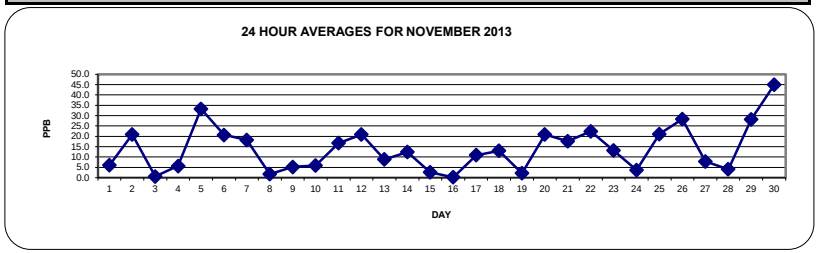
**OXIDES OF NITROGEN** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 6.5 | 9.4 | 5.9 | 3.0 | 3.7 | 6.3 | 7.1 | 6.6 | 6.7 | 4.0 | 2.2 | 1.5 | 1.3 | 1.1 | 1.2 | 0.9 | 3.9 | 10.3 | 14.0 | S | 12.5 | 7.3 | 8.2 | 15.1 | 15.1 | 6.0 | 24 |
| 2 | 9.1 | 9.1 | 25.4 | 23.6 | 19.4 | 24.6 | 44.9 | 53.5 | 60.1 | 56.4 | 44.7 | 26.4 | 17.1 | 15.4 | 16.0 | 10.8 | 8.4 | 6.1 | S | 3.8 | 2.3 | 1.4 | 0.8 | 0.7 | 60.1 | 20.9 | 24 |
| 3 | 0.5 | 0.7 | 0.6 | 0.2 | 0.5 | 0.1 | 0.1 | 0.2 | 0.8 | 0.2 | 0.2 | 0.3 | 0.8 | 1.0 | 0.5 | 0.7 | 1.4 | S | 1.6 | 1.1 | 1.0 | 0.6 | 0.3 | 0.5 | 1.6 | 0.6 | 24 |
| 4 | 0.5 | 0.6 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.5 | 0.9 | 1.3 | 2.0 | 1.4 | 0.7 | S | 8.8 | 17.4 | 17.8 | 20.4 | 17.1 | 11.7 | 26.6 | 26.6 | 5.7 | 24 |
| 5 | 29.3 | 21.9 | 37.4 | 26.9 | 30.2 | 35.3 | 63.7 | 88.6 | 69.3 | 48.7 | 40.5 | 30.0 | 22.8 | 17.7 | 15.3 | S | 25.7 | 21.0 | 33.5 | 29.0 | 20.2 | 18.7 | 22.0 | 17.7 | 88.6 | 33.3 | 24 |
| 6 | 16.2 | 15.9 | 16.6 | 14.5 | 16.9 | 18.8 | 26.6 | 38.7 | 54.3 | 46.7 | 45.0 | 25.2 | 17.3 | 14.7 | S | 8.3 | 11.9 | 17.5 | 16.2 | 10.0 | 8.0 | 8.3 | 14.3 | 13.3 | 54.3 | 20.7 | 24 |
| 7 | 13.1 | 9.7 | 7.2 | 9.1 | 15.2 | 20.9 | 27.6 | 41.8 | 54.0 | 49.2 | 32.8 | 27.4 | 22.5 | S | 15.2 | 11.2 | 13.8 | 17.4 | 11.5 | 8.3 | 4.3 | 3.8 | 2.2 | 2.1 | 54.0 | 18.3 | 24 |
| 8 | 1.5 | 0.7 | 0.4 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | S | 2.0 | 1.2 | 1.8 | 10.2 | 1.1 | 0.7 | 1.3 | 2.1 | 1.5 | 4.6 | 9.2 | 10.2 | 1.7 | 24 |
| 9 | 20.0 | 19.5 | 10.4 | 3.1 | 2.6 | 8.5 | 10.0 | 15.3 | 5.8 | 5.6 | 3.1 | S | 1.8 | 1.4 | 1.5 | 1.6 | 1.8 | 1.5 | 1.4 | 0.8 | 1.0 | 0.8 | 0.8 | 0.7 | 20.0 | 5.2 | 24 |
| 10 | 0.6 | 1.1 | 1.1 | 1.6 | 3.4 | 3.6 | 4.8 | 5.3 | 11.8 | 9.9 | S | 7.4 | 7.8 | 7.5 | 6.6 | 5.5 | 5.9 | 8.2 | 7.7 | 8.1 | 9.7 | 7.3 | 5.1 | 4.6 | 11.8 | 5.9 | 24 |
| 11 | 8.9 | 6.1 | 10.6 | 7.6 | 10.5 | 11.5 | 19.1 | 24.3 | 17.8 | S | 11.4 | 9.5 | 10.1 | 10.4 | 10.3 | 9.8 | 15.0 | 28.8 | 31.6 | 36.5 | 25.0 | 26.2 | 21.1 | 21.7 | 36.5 | 16.7 | 24 |
| 12 | 25.2 | 23.1 | 22.8 | 17.0 | 15.0 | 19.7 | 25.1 | 18.3 | S | 14.1 | 15.7 | 13.7 | 13.7 | 13.1 | 14.2 | 17.0 | 24.7 | 26.8 | 37.3 | 55.3 | 22.9 | 16.9 | 15.8 | 13.8 | 55.3 | 20.9 | 24 |
| 13 | 19.2 | 18.5 | 17.1 | 16.4 | 16.7 | 12.6 | 11.2 | S | 15.8 | C | C | C | C | C | C | 3.9 | 1.8 | 3.1 | 2.5 | 1.5 | 2.2 | 2.2 | 3.0 | 2.3 | 19.2 | 8.8 | 24 |
| 14 | 2.4 | 13.3 | 14.8 | 11.4 | 5.8 | 9.8 | S | 20.7 | 14.7 | 22.7 | 29.5 | 15.9 | 6.4 | 8.9 | 9.1 | 5.6 | 12.2 | 14.8 | 13.2 | 13.4 | 12.1 | 10.7 | 8.1 | 10.7 | 29.5 | 12.4 | 24 |
| 15 | 7.6 | 5.9 | 5.2 | 2.7 | 2.6 | S | 2.5 | 5.5 | 5.1 | 3.8 | 1.5 | 0.3 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 3.8 | 4.0 | 4.0 | 1.3 | 0.8 | 1.3 | 0.7 | 7.6 | 2.7 | 24 |
| 16 | 0.2 | 0.1 | 0.0 | 0.0 | S | 1.0 | 0.4 | 0.2 | 0.0 | 0.2 | 0.0 | 0.3 | 0.0 | 0.5 | 0.0 | 0.2 | 0.4 | 0.0 | 0.3 | 0.0 | 0.0 | 0.2 | 0.3 | 0.5 | 1.0 | 0.2 | 24 |
| 17 | 0.3 | 0.6 | 0.7 | S | 1.5 | 1.6 | 1.9 | 1.5 | 1.2 | 1.4 | 1.6 | 1.9 | 2.5 | 3.0 | 3.3 | 6.1 | 9.9 | 16.9 | 27.3 | 47.2 | 36.7 | 28.8 | 28.2 | 25.9 | 47.2 | 10.9 | 24 |
| 18 | 21.3 | 16.6 | S | 15.7 | 17.4 | 21.0 | 29.8 | 36.4 | 37.8 | 25.1 | 23.1 | 15.5 | 19.7 | 5.4 | 6.6 | 4.1 | 1.7 | 0.9 | 0.3 | 0.6 | 0.3 | 0.5 | 0.3 | 0.0 | 37.8 | 13.0 | 24 |
| 19 | 0.8 | S | 2.2 | 1.8 | 0.6 | 0.8 | 0.5 | 0.8 | 0.6 | 0.7 | 1.4 | 1.8 | 1.0 | 0.8 | 2.2 | 12.1 | 1.2 | 2.0 | 2.9 | 3.6 | 4.6 | 4.2 | 2.9 | 1.8 | 12.1 | 2.2 | 24 |
| 20 | S | 3.3 | 1.8 | 2.1 | 2.2 | 3.5 | 25.5 | 35.5 | 32.4 | 22.5 | 14.3 | 18.9 | 13.5 | 14.1 | 16.7 | 15.8 | 23.7 | 52.1 | 58.3 | 30.8 | 36.3 | 18.8 | 17.1 | S | 58.3 | 20.9 | 24 |
| 21 | 14.2 | 13.1 | 12.0 | 9.6 | 15.3 | 33.3 | 41.2 | 49.6 | 31.0 | 19.8 | 15.5 | 12.3 | 10.3 | 15.2 | 12.1 | 17.9 | 19.9 | 11.4 | 8.5 | 8.5 | 9.5 | 11.7 | S | 13.9 | 49.6 | 17.6 | 24 |
| 22 | 12.3 | 14.7 | 14.2 | 12.6 | 18.4 | 24.5 | 28.2 | 52.2 | 49.9 | 56.0 | 28.2 | 23.9 | 22.1 | 22.2 | 16.1 | 16.3 | 17.6 | 16.3 | 16.1 | 14.5 | 15.8 | S | 12.6 | 10.8 | 56.0 | 22.4 | 24 |
| 23 | 10.2 | 9.2 | 10.4 | 8.4 | 7.8 | 8.1 | 8.5 | 8.4 | 8.4 | 9.6 | 10.3 | 11.9 | 12.2 | 9.0 | 10.6 | 14.5 | 20.2 | 23.1 | 26.5 | 19.7 | S | 18.3 | 21.3 | 16.0 | 26.5 | 13.2 | 24 |
| 24 | 11.3 | 10.2 | 10.9 | 9.5 | 4.2 | 2.9 | 2.0 | 1.3 | 3.0 | 2.6 | 1.1 | 0.2 | 0.0 | 0.0 | 0.0 | 2.3 | 0.4 | 0.2 | 0.0 | S | 2.6 | 5.9 | 6.2 | 7.4 | 11.3 | 3.7 | 24 |
| 25 | 6.1 | 14.1 | 4.5 | 4.8 | 14.1 | 8.0 | 1.6 | 1.0 | 1.4 | 1.3 | 1.2 | 0.7 | 0.9 | 7.6 | 67.7 | 18.6 | 31.9 | 30.9 | S | 39.8 | 48.6 | 47.4 | 59.4 | 74.0 | 74.0 | 21.1 | 24 |
| 26 | 69.1 | 53.2 | 40.3 | 28.8 | 27.2 | 26.0 | 19.5 | 17.6 | 18.9 | 19.6 | 16.7 | 12.6 | 15.5 | 11.6 | 12.2 | 36.5 | 43.4 | S | 48.2 | 34.0 | 25.2 | 26.4 | 24.2 | 23.7 | 69.1 | 28.3 | 24 |
| 27 | 16.5 | 10.8 | 13.4 | 12.4 | 9.8 | 26.0 | 22.3 | 17.9 | 4.7 | 2.3 | 1.7 | 1.6 | 2.2 | 2.9 | 4.0 | 3.9 | S | 4.9 | 2.8 | 7.1 | 4.6 | 3.7 | 3.8 | 1.6 | 26.0 | 7.9 | 24 |
| 28 | 2.5 | 1.7 | 1.2 | 1.7 | 1.6 | 1.6 | 2.2 | 2.6 | 2.7 | 4.1 | 3.2 | 5.5 | 6.9 | 4.1 | 6.5 | S | 6.3 | 7.8 | 4.8 | 4.3 | 3.3 | 6.0 | 4.4 | 8.3 | 8.3 | 4.1 | 24 |
| 29 | 13.1 | 9.4 | 5.7 | 20.6 | 19.2 | 14.3 | 10.3 | 24.1 | 28.3 | 24.9 | 60.1 | 48.2 | 56.4 | 33.3 | S | 30.7 | 20.7 | 22.0 | 24.0 | 22.9 | 27.5 | 35.4 | 46.8 | 50.6 | 60.1 | 28.2 | 24 |
| 30 | 63.4 | 68.8 | 77.3 | **101.3** | 82.9 | 68.6 | 67.6 | 67.3 | 58.1 | 42.4 | 42.1 | 41.4 | 32.3 | S | 24.7 | 28.7 | 25.3 | 25.7 | 24.7 | 25.0 | 18.3 | 15.5 | 15.6 | 16.3 | **101.3** | **44.9** | 24 |
| HOURLY MAX | 69 | 69 | 77 | 101 | 83 | 69 | 68 | 89 | 69 | 56 | 60 | 48 | 56 | 33 | 68 | 37 | 43 | 52 | 58 | 55 | 49 | 47 | 59 | 74 | | | |
| HOURLY AVG | 13.9 | 13.1 | 12.8 | 12.6 | 12.6 | 14.2 | 17.4 | 21.9 | 20.5 | 17.6 | 16.0 | 12.7 | 11.4 | 8.3 | 10.2 | 10.2 | 12.9 | 13.7 | 15.6 | 16.0 | 13.0 | 11.9 | 12.5 | 13.5 | | | |

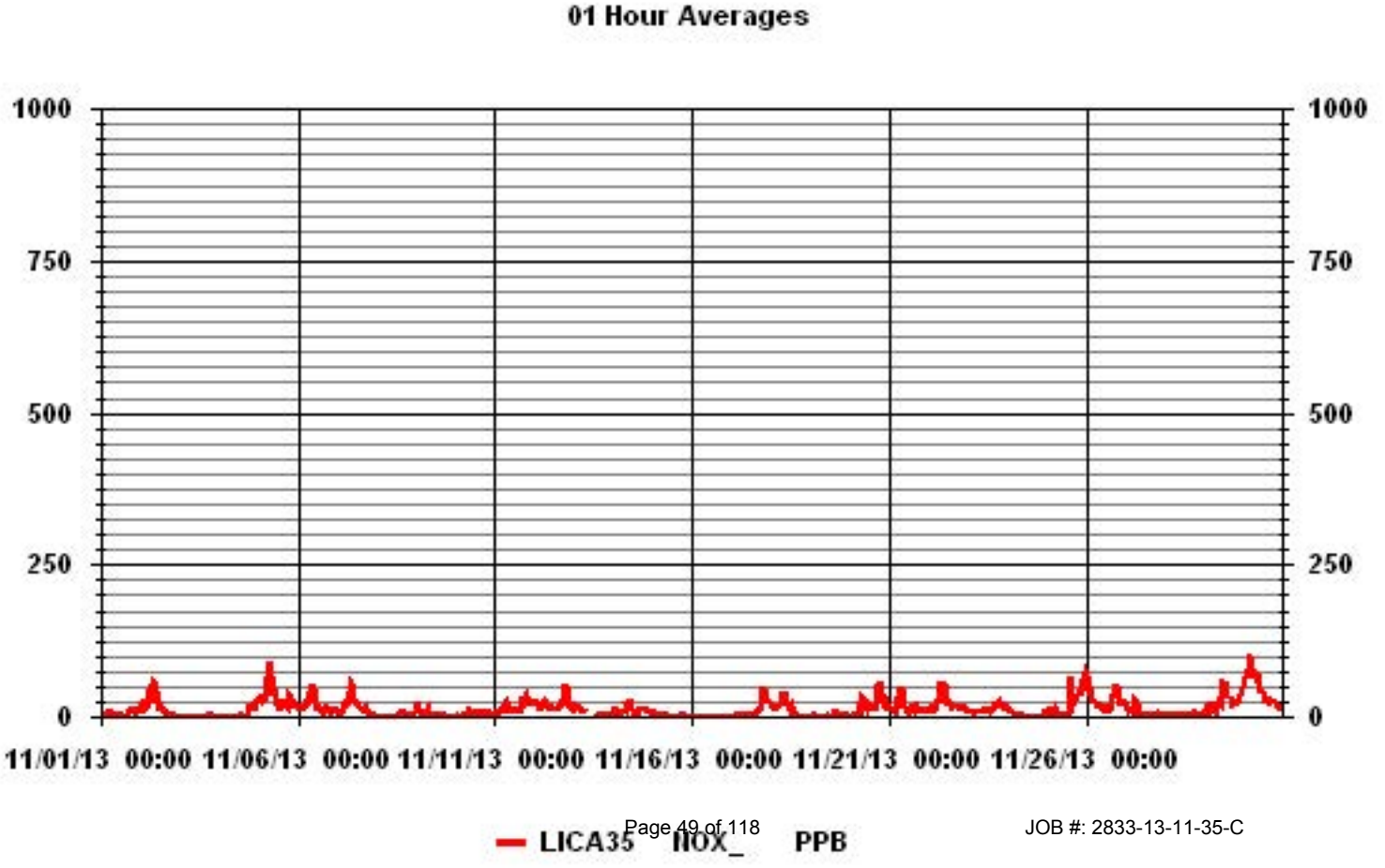
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 663 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 101.3 | PPB | @ HOUR(S) | 3 | ON DAY(S) | 30 | |
| MAXIMUM 24-HR AVERAGE: | 44.9 | PPB | | | ON DAY(S) | 30 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS | |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | 100.0 | % | |
| STANDARD DEVIATION: | 15.69 | | MONTHLY AVERAGE: | | 13.97 | PPB | |






JOB #: 2833-13-11-35-C

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

NOVEMBER 2013

**OXIDES OF NITROGEN MAX** instantaneous maximum in ppb

MST

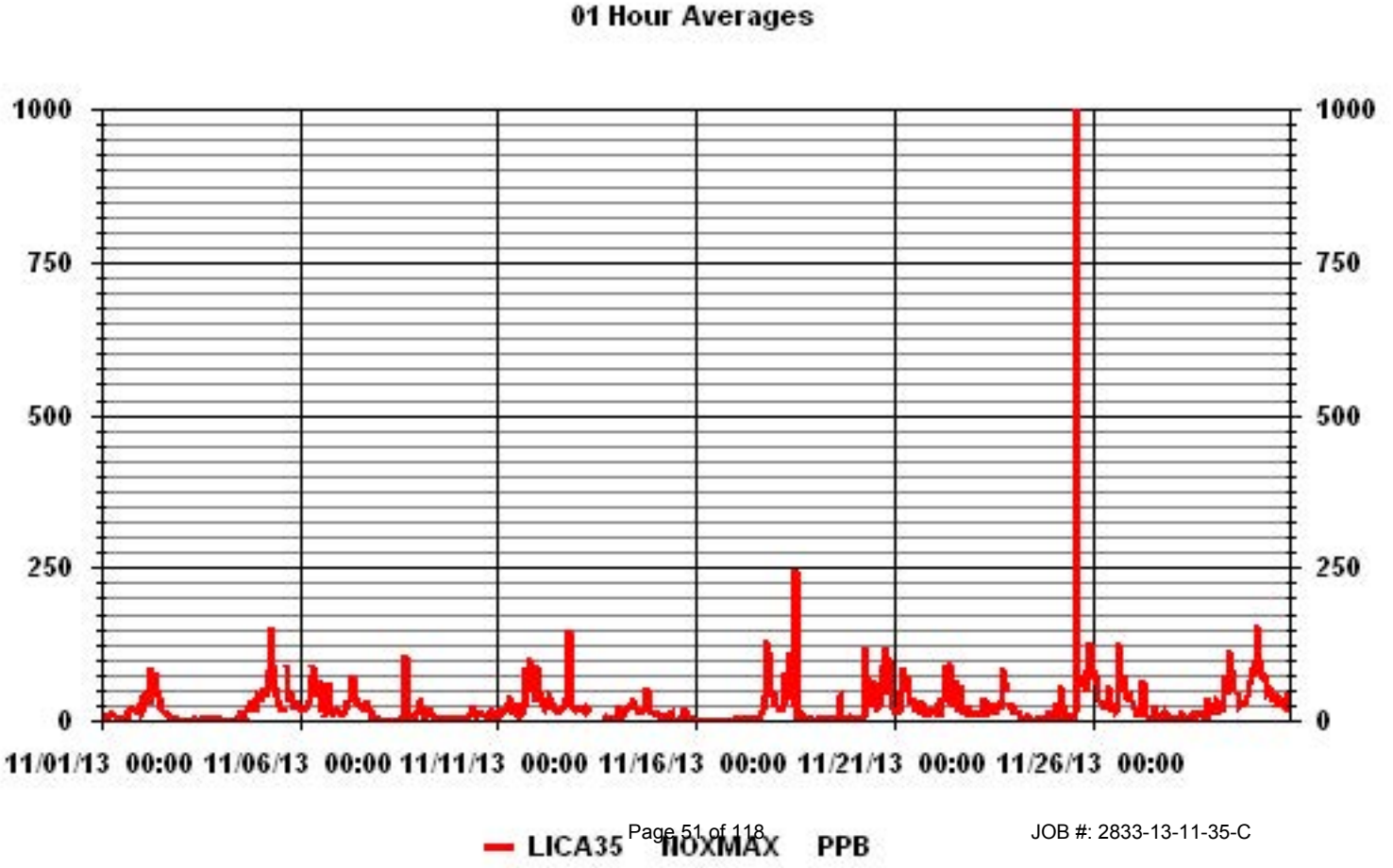
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 10.0 | 12.4 | 10.2 | 4.4 | 6.9 | 8.7 | 10.2 | 9.6 | 9.3 | 6.7 | 3.2 | 2.4 | 2.4 | 2.4 | 2.7 | 2.1 | 14.1 | 17.6 | 22.5 | **S** | 18.6 | 15.5 | 14.7 | 26.2 | 26.2 | 10.1 | 24 |
| 2 | 11.1 | 13.7 | 39.1 | 43.7 | 30.6 | 30.2 | 88.1 | 82.5 | 71.3 | 77.5 | 54.8 | 40.3 | 21.9 | 18.6 | 17.4 | 14.4 | 11.4 | 7.8 | **S** | 6.1 | 3.0 | 2.1 | 1.3 | 1.2 | 88.1 | 29.9 | 24 |
| 3 | 1.0 | 1.5 | 1.0 | 0.7 | 1.2 | 0.5 | 0.5 | 0.7 | 3.2 | 0.6 | 0.8 | 0.7 | 1.6 | 1.5 | 1.0 | 1.3 | 2.0 | **S** | 2.8 | 1.7 | 1.7 | 1.2 | 1.0 | 1.1 | 3.2 | 1.3 | 24 |
| 4 | 1.1 | 1.2 | 1.0 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.9 | 0.8 | 1.1 | 1.6 | 2.2 | 13.5 | 2.4 | 1.4 | **S** | 21.3 | 28.3 | 27.3 | 31.4 | 22.6 | 15.8 | 41.0 | 41.0 | 9.5 | 24 |
| 5 | 37.3 | 31.8 | 53.8 | 48.3 | 40.2 | 49.2 | 82.0 | 151.7 | 94.3 | 57.6 | 44.2 | 35.7 | 25.9 | 21.1 | 19.6 | **S** | 86.3 | 30.7 | 48.3 | 37.9 | 24.3 | 25.8 | 28.6 | 23.8 | 151.7 | 47.8 | 24 |
| 6 | 23.8 | 18.3 | 20.5 | 18.1 | 19.5 | 25.1 | 34.0 | 72.1 | 91.4 | 54.5 | 51.0 | 39.4 | 67.6 | 17.1 | **S** | 13.0 | 22.1 | 22.2 | 61.4 | 13.9 | 11.3 | 13.4 | 19.4 | 16.5 | 91.4 | 32.4 | 24 |
| 7 | 15.8 | 12.9 | 10.6 | 12.5 | 17.1 | 30.5 | 34.8 | 69.0 | 67.8 | 67.7 | 41.8 | 31.7 | 25.3 | **S** | 25.5 | 13.9 | 24.9 | 31.3 | 18.0 | 15.7 | 8.2 | 6.4 | 3.3 | 3.1 | 69.0 | 25.6 | 24 |
| 8 | 2.6 | 1.5 | 1.0 | 0.6 | 0.5 | 0.5 | 0.7 | 0.6 | 0.3 | 0.0 | 0.5 | 1.2 | **S** | 3.0 | 2.1 | 30.9 | 106.8 | 7.6 | 1.2 | 2.4 | 2.8 | 2.2 | 9.7 | 16.0 | 106.8 | 8.5 | 24 |
| 9 | 29.7 | 31.8 | 16.1 | 6.5 | 3.8 | 12.0 | 13.8 | 20.1 | 9.9 | 10.0 | 7.9 | **S** | 3.4 | 2.2 | 2.3 | 2.5 | 2.6 | 2.5 | 2.1 | 1.6 | 1.7 | 1.7 | 1.4 | 1.4 | 31.8 | 8.1 | 24 |
| 10 | 1.5 | 2.0 | 1.8 | 2.6 | 4.5 | 4.3 | 8.6 | 9.4 | 26.1 | 17.5 | **S** | 9.2 | 10.5 | 11.5 | 10.0 | 10.9 | 7.9 | 11.1 | 9.0 | 13.7 | 15.5 | 11.6 | 6.3 | 6.9 | 26.1 | 9.2 | 24 |
| 11 | 16.5 | 9.9 | 17.3 | 9.3 | 17.4 | 18.3 | 27.4 | 40.3 | 22.1 | **S** | 14.5 | 12.1 | 28.4 | 13.5 | 12.0 | 12.5 | 23.3 | 87.1 | 45.7 | 103.2 | 59.2 | 74.7 | 29.6 | 89.0 | 103.2 | 34.1 | 24 |
| 12 | 63.4 | 33.5 | 37.9 | 28.0 | 21.2 | 25.5 | 39.9 | 35.2 | **S** | 25.4 | 18.2 | 19.1 | 17.1 | 16.2 | 21.5 | 22.1 | 32.0 | 35.0 | 88.2 | 149.8 | 26.4 | 21.4 | 20.7 | 18.0 | 149.8 | 35.5 | 24 |
| 13 | 21.0 | 21.7 | 19.2 | 19.3 | 22.5 | 16.0 | 19.5 | **S** | 22.3 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 3.4 | 7.6 | 3.5 | 2.8 | 2.9 | 3.6 | 4.0 | 3.2 | 22.5 | 12.0 | 24 |
| 14 | 3.8 | 26.2 | 19.9 | 18.4 | 13.2 | 17.6 | **S** | 26.6 | 25.5 | 33.6 | 33.2 | 24.4 | 13.7 | 14.3 | 15.3 | 16.2 | 22.2 | 20.6 | 51.9 | 18.0 | 15.6 | 13.3 | 12.9 | 15.3 | 51.9 | 20.5 | 24 |
| 15 | 13.0 | 8.7 | 7.4 | 6.0 | 6.3 | **S** | 6.2 | 11.4 | 9.0 | 12.1 | 3.1 | 1.0 | 0.9 | 1.2 | 1.4 | 1.4 | 1.4 | 19.2 | 8.5 | 5.8 | 2.2 | 1.6 | 1.8 | 1.8 | 19.2 | 5.7 | 24 |
| 16 | 0.7 | 0.7 | 0.4 | 0.3 | **S** | 2.3 | 1.2 | 0.9 | 1.0 | 1.0 | 0.5 | 0.8 | 0.7 | 1.3 | 0.5 | 0.9 | 0.9 | 0.9 | 1.0 | 0.5 | 0.5 | 1.2 | 0.9 | 1.2 | 2.3 | 0.9 | 24 |
| 17 | 1.0 | 1.3 | 1.2 | **S** | 2.7 | 2.5 | 2.8 | 2.5 | 2.4 | 2.3 | 2.7 | 2.9 | 4.3 | 3.7 | 4.0 | 10.8 | 16.8 | 42.0 | 131.4 | 116.5 | 83.7 | 38.8 | 47.4 | 28.5 | 131.4 | 24.0 | 24 |
| 18 | 26.8 | 20.1 | **S** | 19.1 | 21.0 | 27.3 | 79.1 | 57.6 | 111.7 | 44.0 | 38.6 | 20.8 | 248.8 | 10.7 | 13.7 | 12.1 | 2.7 | 1.6 | 1.1 | 1.4 | 1.2 | 1.2 | 1.1 | 0.1 | 248.8 | 33.1 | 24 |
| 19 | 2.2 | **S** | 4.4 | 2.6 | 1.8 | 1.4 | 1.2 | 1.3 | 1.3 | 1.2 | 3.0 | 2.3 | 2.0 | 1.4 | 40.0 | 43.1 | 2.8 | 4.7 | 4.2 | 4.6 | 5.4 | 5.4 | 3.6 | 3.0 | 43.1 | 6.2 | 24 |
| 20 | **S** | 5.0 | 3.7 | 4.1 | 4.4 | 5.8 | 120.5 | 63.4 | 68.1 | 31.1 | 21.4 | 66.7 | 34.2 | 21.4 | 23.0 | 34.2 | 44.7 | 89.1 | 119.8 | 41.0 | 101.0 | 54.7 | 21.5 | **S** | 120.5 | 44.5 | 24 |
| 21 | 15.5 | 14.8 | 15.1 | 11.1 | 49.4 | 86.4 | 63.9 | 73.3 | 49.4 | 38.3 | 27.8 | 36.3 | 12.9 | 20.2 | 18.3 | 28.0 | 28.3 | 14.4 | 9.4 | 9.6 | 10.6 | 18.1 | **S** | 15.6 | 86.4 | 29.0 | 24 |
| 22 | 13.4 | 20.4 | 15.6 | 13.9 | 33.4 | 34.4 | 39.1 | 91.2 | 74.0 | 92.9 | 31.8 | 28.4 | 26.5 | 65.7 | 18.8 | 17.8 | 55.5 | 19.3 | 17.9 | 15.5 | 21.9 | **S** | 14.9 | 12.4 | 92.9 | 33.7 | 24 |
| 23 | 11.0 | 11.8 | 13.3 | 12.1 | 10.4 | 12.3 | 36.6 | 13.2 | 11.8 | 13.0 | 13.3 | 22.5 | 22.2 | 11.1 | 17.2 | 30.3 | 28.5 | 86.0 | 46.2 | 56.5 | **S** | 25.7 | 27.6 | 25.2 | 86.0 | 24.3 | 24 |
| 24 | 14.1 | 14.6 | 12.8 | 13.5 | 7.9 | 3.8 | 2.9 | 2.9 | 6.9 | 6.8 | 3.3 | 2.3 | 0.4 | 0.6 | 0.6 | 4.6 | 5.9 | 4.8 | 0.7 | **S** | 4.2 | 12.0 | 12.7 | 13.5 | 14.6 | 6.6 | 24 |
| 25 | 12.7 | 27.4 | 6.5 | 5.9 | 55.8 | 29.3 | 3.5 | 1.5 | 2.3 | 2.0 | 12.9 | 1.2 | 1.7 | 14.4 | **1051.1** | 53.8 | 74.5 | 64.3 | **S** | 49.7 | 81.7 | 66.3 | 125.9 | 96.3 | 1051.1 | 80.0 | 24 |
| 26 | 84.3 | 68.5 | 70.2 | 35.0 | 29.4 | 29.6 | 23.7 | 25.8 | 28.7 | 57.1 | 22.3 | 16.4 | 29.6 | 16.4 | 19.2 | 126.7 | 70.8 | **S** | 70.9 | 51.2 | 40.5 | 37.7 | 41.3 | 34.8 | 126.7 | 44.8 | 24 |
| 27 | 23.5 | 13.6 | 15.8 | 14.5 | 13.2 | 35.0 | 63.8 | 47.1 | 8.9 | 3.3 | 2.5 | 2.6 | 4.2 | 22.8 | 6.7 | 5.0 | **S** | 9.3 | 5.0 | 14.9 | 8.9 | 8.7 | 8.1 | 3.1 | 63.8 | 14.8 | 24 |
| 28 | 3.9 | 2.7 | 2.1 | 2.7 | 2.9 | 14.6 | 4.8 | 6.8 | 3.9 | 7.3 | 5.7 | 8.4 | 12.2 | 7.3 | 12.7 | **S** | 12.0 | 11.1 | 6.6 | 6.9 | 5.2 | 37.8 | 9.6 | 23.9 | 37.8 | 9.2 | 24 |
| 29 | 23.4 | 21.9 | 9.9 | 31.9 | 28.5 | 25.4 | 13.2 | 73.5 | 50.4 | 44.7 | 114.6 | 71.3 | 80.1 | 50.3 | **S** | 41.9 | 24.4 | 26.9 | 25.7 | 29.4 | 32.7 | 39.3 | 62.0 | 62.2 | 114.6 | 42.8 | 24 |
| 30 | 72.4 | 83.8 | 98.4 | 157.3 | 104.7 | 78.3 | 72.6 | 75.1 | 72.9 | 47.5 | 51.6 | 47.8 | 37.4 | **S** | 28.8 | 45.7 | 32.5 | 32.5 | 28.7 | 35.3 | 26.1 | 46.8 | 19.9 | 19.2 | 157.3 | 57.2 | 24 |
| HOURLY MAX | 84.3 | 83.8 | 98.4 | 157.3 | 104.7 | 86.4 | 120.5 | 151.7 | 111.7 | 92.9 | 114.6 | 71.3 | 248.8 | 65.7 | 1051.1 | 126.7 | 106.8 | 89.1 | 131.4 | 149.8 | 101.0 | 74.7 | 125.9 | 96.3 | | | |
| HOURLY AVG | 19.2 | 18.4 | 18.1 | 18.7 | 19.7 | 21.6 | 30.9 | 36.8 | 32.7 | 27.0 | 22.4 | 19.6 | 26.4 | 14.2 | 51.4 | 22.1 | 27.2 | 26.0 | 30.7 | 29.7 | 22.4 | 21.1 | 19.6 | 20.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 681 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 1051.1 | PPB | @ HOUR(S) | 14 | ON DAY(S) | 25 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | | |
| STANDARD DEVIATION: | 48.17 | | | | | | |






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 3.36 | 3.51 | 6.44 | 3.36 | 6.29 | 14.20 | 6.73 | 3.07 | 1.90 | .87 | 1.61 | 8.05 | 13.03 | 7.61 | 7.61 | 7.90 | 95.60 |
| < | 110.0 | .00 | .00 | .00 | .14 | 1.17 | 1.17 | .14 | .14 | .14 | .14 | .00 | .43 | .29 | .29 | .14 | .14 | 4.39 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 3.36 | 3.51 | 6.44 | 3.51 | 7.46 | 15.37 | 6.88 | 3.22 | 2.04 | 1.02 | 1.61 | 8.49 | 13.32 | 7.90 | 7.75 | 8.05 | |

Calm : .00 %

Total # Operational Hours : 683

Distribution By Samples

Direction

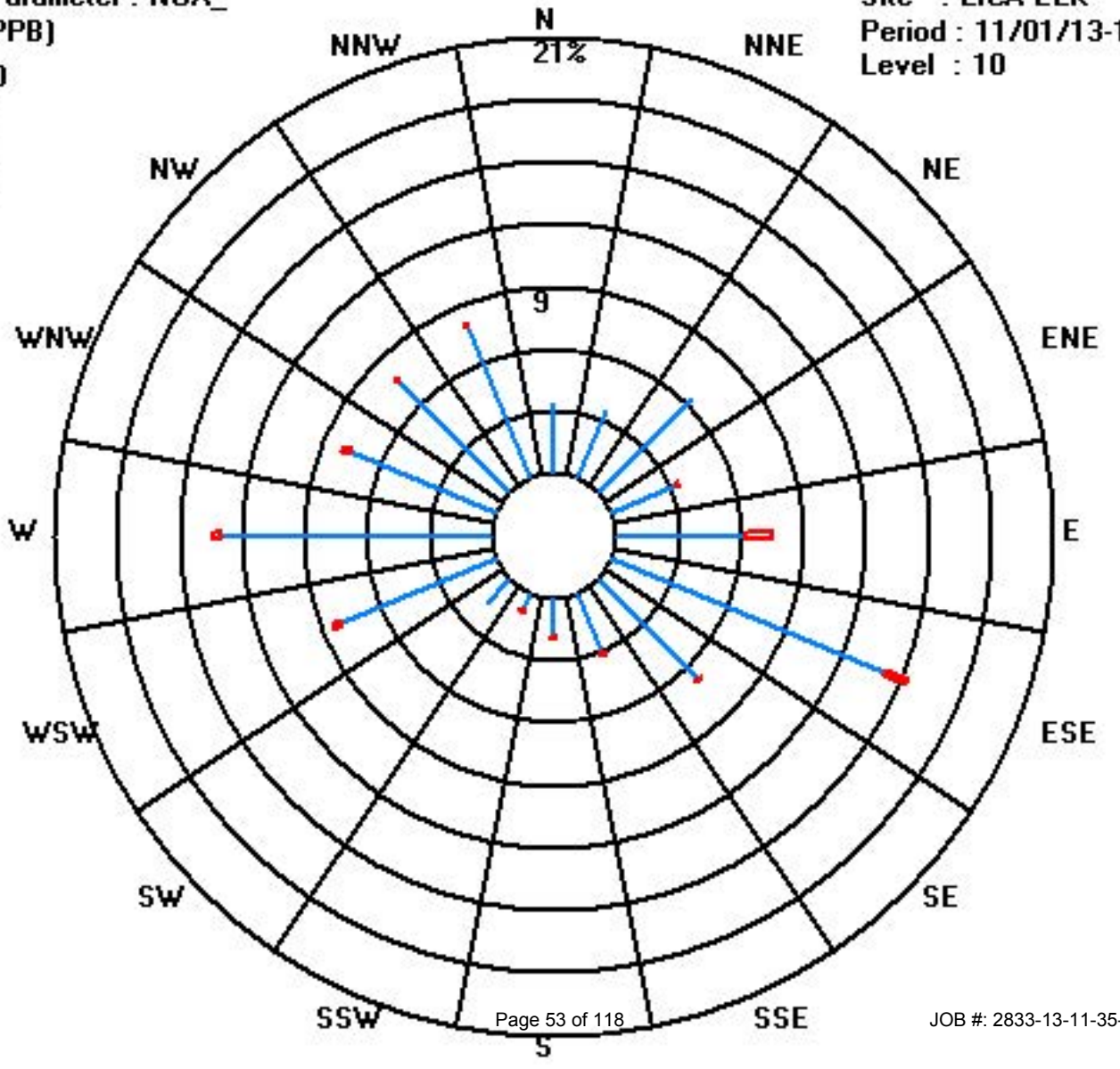
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 23 | 24 | 44 | 23 | 43 | 97 | 46 | 21 | 13 | 6 | 11 | 55 | 89 | 52 | 52 | 54 | 653 |
| < | 110.0 | | | | 1 | 8 | 8 | 1 | 1 | 1 | 1 | | 3 | 2 | 2 | 1 | 1 | 30 |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 54 | 53 | 55 | |

Calm : .00 %

Total # Operational Hours : 683

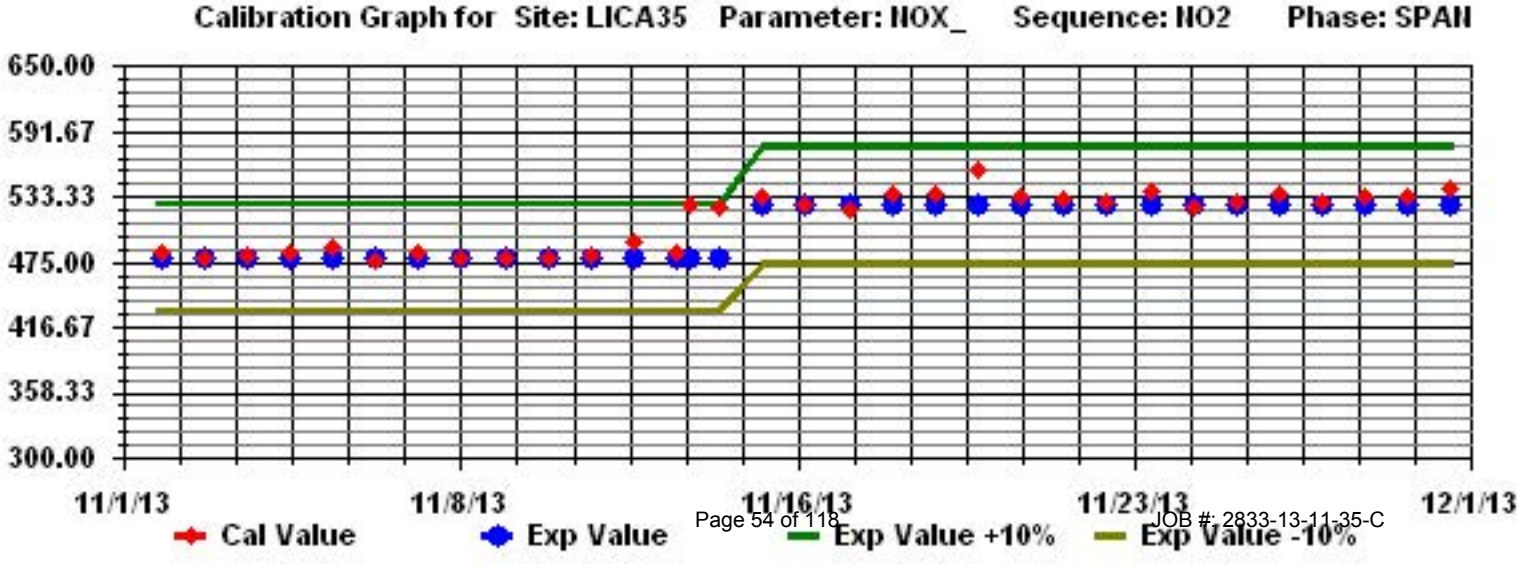
Logger : 35 Parameter : NOX_
Class Limits (PPB)
>= 210.0
< 210.0
< 110.0
< 50.0

Site : LICA-ELK
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C


Calibration Graph for Site: LICA35 Parameter: NOX_ Sequence: NO2 Phase: SPAN
650.00
591.67
533.33
475.00
416.67
358.33
300.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ozone

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *PORTABLE SITE - Elk Poinr Airport*

NOVEMBER 2013

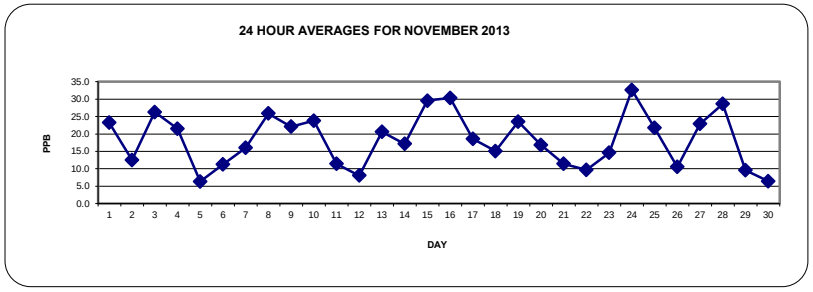
**OZONE ($O_3$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 15 | 12 | 15 | 18 | 18 | 17 | 17 | 18 | 20 | 25 | 29 | 31 | 33 | 35 | 35 | 36 | 32 | 24 | 21 | **S** | 20 | 25 | 23 | 15 | 36 | 23.2 | 24 |
| 2 | 19 | 15 | 4 | 8 | 8 | 4 | 1 | 1 | 2 | 2 | 3 | 7 | 12 | 10 | 9 | 15 | 18 | 19 | **S** | 24 | 27 | 27 | 27 | 26 | 27 | 12.5 | 24 |
| 3 | 26 | 25 | 25 | 29 | 29 | 29 | 29 | 28 | 30 | 32 | 28 | 22 | 22 | 22 | 24 | 25 | 24 | **S** | 25 | 26 | 26 | 26 | 26 | 26 | 32 | 26.3 | 24 |
| 4 | 26 | 26 | 27 | 26 | 26 | 26 | 27 | 27 | 27 | 27 | 27 | 26 | 26 | 26 | 27 | 28 | **S** | 18 | 11 | 9 | 7 | 9 | 12 | 4 | 28 | 21.5 | 24 |
| 5 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 5 | 8 | 12 | 16 | 20 | 22 | **S** | 10 | 8 | 3 | 4 | 6 | 7 | 4 | 9 | 22 | 6.3 | 24 |
| 6 | 7 | 7 | 7 | 8 | 4 | 3 | 1 | 1 | 3 | 6 | 8 | 15 | 18 | 19 | **S** | 26 | 19 | 13 | 15 | 17 | 20 | 18 | 12 | 12 | 26 | 11.3 | 24 |
| 7 | 12 | 15 | 17 | 14 | 8 | 5 | 1 | 1 | 3 | 6 | 9 | 10 | 13 | **S** | 20 | 23 | 19 | 18 | 24 | 26 | 30 | 30 | 32 | 32 | 32 | 16.0 | 24 |
| 8 | 31 | 29 | 29 | 29 | 29 | 28 | 27 | 27 | 26 | 25 | 25 | 26 | **S** | 28 | 27 | 26 | 24 | 26 | 26 | 25 | 24 | 24 | 20 | 14 | 31 | 25.9 | 24 |
| 9 | 5 | 5 | 13 | 23 | 26 | 20 | 19 | 14 | 22 | 22 | 22 | **S** | 21 | 21 | 21 | 20 | 24 | 29 | 29 | 30 | 31 | 31 | 30 | 30 | 31 | 22.1 | 24 |
| 10 | 29 | 28 | 28 | 27 | 24 | 24 | 21 | 19 | 17 | 23 | **S** | 25 | 26 | 26 | 26 | 26 | 25 | 22 | 22 | 22 | 20 | 21 | 23 | 23 | 29 | 23.8 | 24 |
| 11 | 21 | 20 | 16 | 16 | 13 | 12 | 7 | 6 | 11 | **S** | 18 | 18 | 19 | 19 | 19 | 17 | 12 | 4 | 2 | 1 | 3 | 2 | 4 | 3 | 21 | 11.4 | 24 |
| 12 | 3 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | **S** | 14 | 14 | 16 | 16 | 18 | 16 | 13 | 4 | 1 | 3 | 2 | 9 | 14 | 13 | 13 | 18 | 8.0 | 24 |
| 13 | 10 | 12 | 14 | 15 | 15 | 19 | 19 | **S** | 19 | 20 | 28 | 25 | 25 | 28 | **C** | **C** | **C** | **C** | 27 | 26 | 24 | 23 | 21 | 21 | 28 | 20.6 | 24 |
| 14 | 21 | 11 | 10 | 13 | 18 | 14 | **S** | 6 | 10 | 9 | 9 | 16 | 24 | 22 | 23 | 28 | 21 | 19 | 19 | 19 | 18 | 20 | 24 | 20 | 28 | 17.1 | 24 |
| 15 | 22 | 25 | 27 | 30 | 30 | **S** | 32 | 29 | 29 | 31 | 33 | 34 | 33 | 33 | 32 | 32 | 31 | 26 | 26 | 25 | 30 | 31 | 29 | 30 | 34 | 29.6 | 24 |
| 16 | 30 | 32 | 32 | 32 | **S** | 30 | 30 | 30 | 29 | 29 | 29 | 29 | 30 | 30 | 32 | 32 | 31 | 31 | 30 | 31 | 31 | 30 | 29 | 28 | 32 | 30.3 | 24 |
| 17 | 28 | 27 | 26 | **S** | 26 | 25 | 24 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 23 | 19 | 14 | 6 | 2 | 2 | 2 | 2 | 3 | 28 | 18.6 | 24 |
| 18 | 5 | 7 | **S** | 8 | 7 | 5 | 2 | 2 | 5 | 10 | 14 | 16 | 18 | 21 | 20 | 21 | 23 | 23 | 24 | 23 | 23 | 23 | 23 | 23 | 24 | 15.0 | 24 |
| 19 | 22 | **S** | 22 | 21 | 22 | 22 | 22 | 22 | 23 | 24 | 24 | 24 | 24 | 25 | 25 | 25 | 27 | 26 | 24 | 22 | 22 | 23 | 24 | 27 | 27 | 23.6 | 24 |
| 20 | **S** | 26 | 27 | 27 | 27 | 26 | 13 | 8 | 12 | 19 | 22 | 22 | 23 | 23 | 21 | 19 | 13 | 3 | 3 | 5 | 6 | 12 | 13 | **S** | 27 | 16.8 | 24 |
| 21 | 14 | 13 | 14 | 15 | 11 | 4 | 2 | 2 | 5 | 12 | 14 | 16 | 17 | 15 | 16 | 12 | 8 | 13 | 15 | 14 | 12 | 10 | **S** | 8 | 17 | 11.4 | 24 |
| 22 | 8 | 7 | 9 | 10 | 7 | 5 | 3 | 1 | 4 | 7 | 11 | 13 | 14 | 15 | 14 | 12 | 11 | 11 | 11 | 11 | 11 | **S** | 13 | 14 | 15 | 9.7 | 24 |
| 23 | 13 | 14 | 13 | 16 | 17 | 18 | 18 | 18 | 18 | 18 | 19 | 18 | 18 | 20 | 19 | 16 | 10 | 8 | 6 | 9 | **S** | 8 | 6 | 15 | 20 | 14.6 | 24 |
| 24 | 18 | 20 | 22 | 25 | 33 | 34 | 35 | 36 | 33 | 34 | 35 | 37 | 38 | 38 | 38 | 35 | 37 | 37 | 37 | **S** | 36 | 32 | 31 | 29 | **38** | **32.6** | 24 |
| 25 | 30 | 23 | 31 | 30 | 23 | 27 | 32 | 33 | 32 | 32 | 33 | 33 | 34 | 30 | 22 | 23 | 13 | 12 | **S** | 3 | 1 | 1 | 1 | 1 | 34 | 21.7 | 24 |
| 26 | 1 | 1 | 1 | 2 | 3 | 4 | 8 | 13 | 13 | 18 | 20 | 24 | 24 | 25 | 24 | 13 | 8 | **S** | 4 | 7 | 8 | 6 | 8 | 7 | 25 | 10.5 | 24 |
| 27 | 11 | 15 | 12 | 14 | 17 | 6 | 10 | 12 | 25 | 30 | 30 | 29 | 29 | 28 | 27 | 28 | **S** | 29 | 30 | 26 | 28 | 29 | 30 | 32 | 32 | 22.9 | 24 |
| 28 | 30 | 31 | 32 | 30 | 29 | 29 | 30 | 29 | 30 | 30 | 31 | 30 | 29 | 30 | 28 | **S** | 28 | 26 | 27 | 28 | 28 | 26 | 26 | 21 | 32 | 28.6 | 24 |
| 29 | 17 | 19 | 21 | 7 | 8 | 12 | 14 | 5 | 4 | 9 | 6 | 8 | 9 | 14 | **S** | 12 | 14 | 12 | 9 | 10 | 6 | 3 | 1 | 1 | 21 | 9.6 | 24 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 7 | 10 | 12 | 14 | **S** | 15 | 10 | 8 | 8 | 6 | 5 | 10 | 12 | 11 | 10 | 15 | 6.4 | 24 |
| HOURLY MAX | 31 | 32 | 32 | 32 | 33 | 34 | 35 | 36 | 33 | 34 | 35 | 37 | 38 | 38 | 38 | 36 | 37 | 37 | 37 | 31 | 36 | 32 | 32 | 32 | | | |
| HOURLY AVG | 16.4 | 16.2 | 17.1 | 17.2 | 16.7 | 15.6 | 15.4 | 14.4 | 16.6 | 19.0 | 20.1 | 21.3 | 22.4 | 23.8 | 23.2 | 22.1 | 19.0 | 17.8 | 17.3 | 16.1 | 17.9 | 18.1 | 17.9 | 17.1 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |



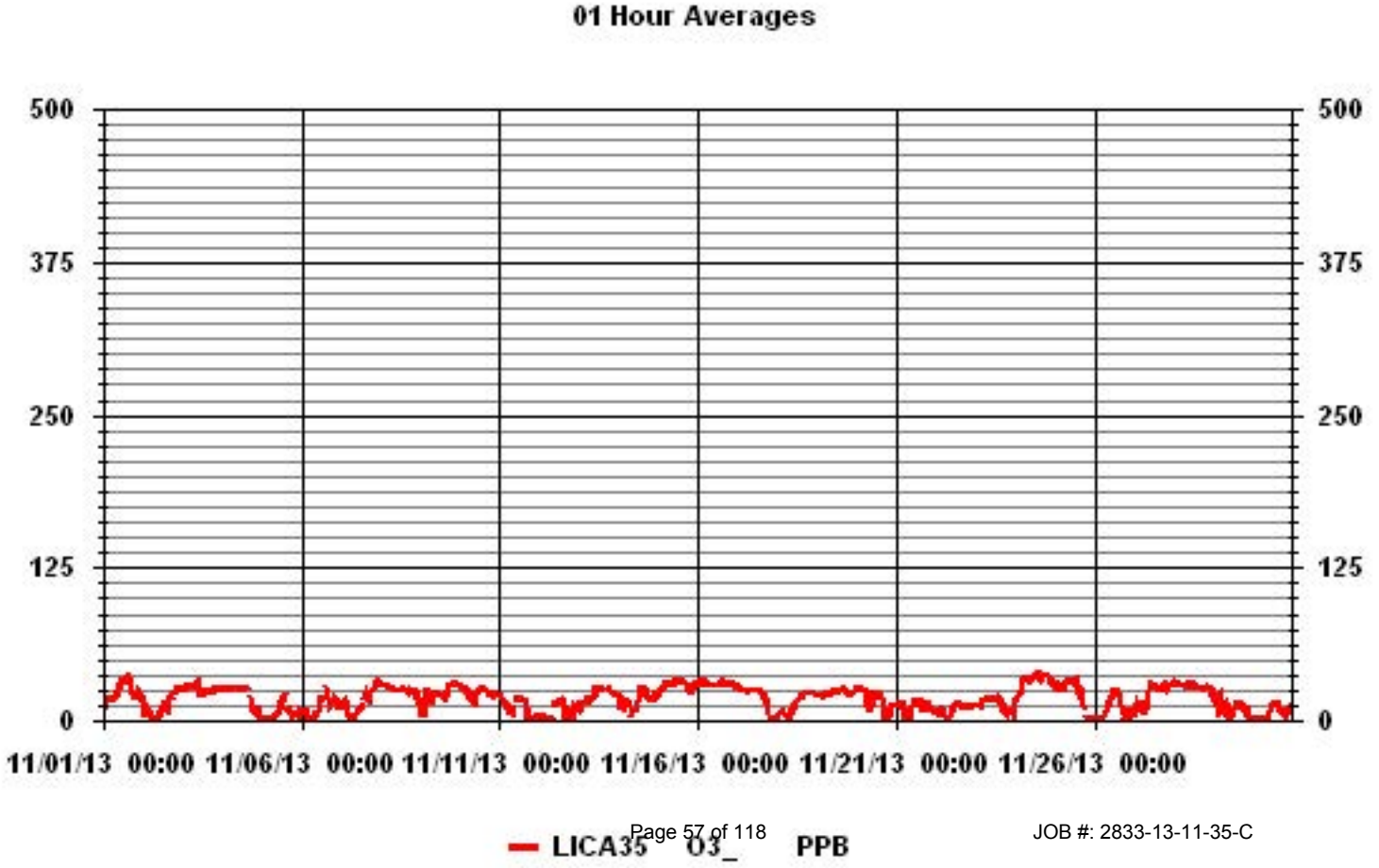

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 82 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 685 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 38 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 24 |
| MAXIMUM 24-HR AVERAGE: | 32.6 | PPB | | | ON DAY(S) | 24 |
| | | | | | VAR-VARIOUS | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 9.89 | | MONTHLY AVERAGE: | | 18.26 | PPB |



JOB #: 2833-13-11-35-C






JOB #: 2833-13-11-35-C

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

NOVEMBER 2013

**OZONE MAX** instantaneous maximum in ppb

MST

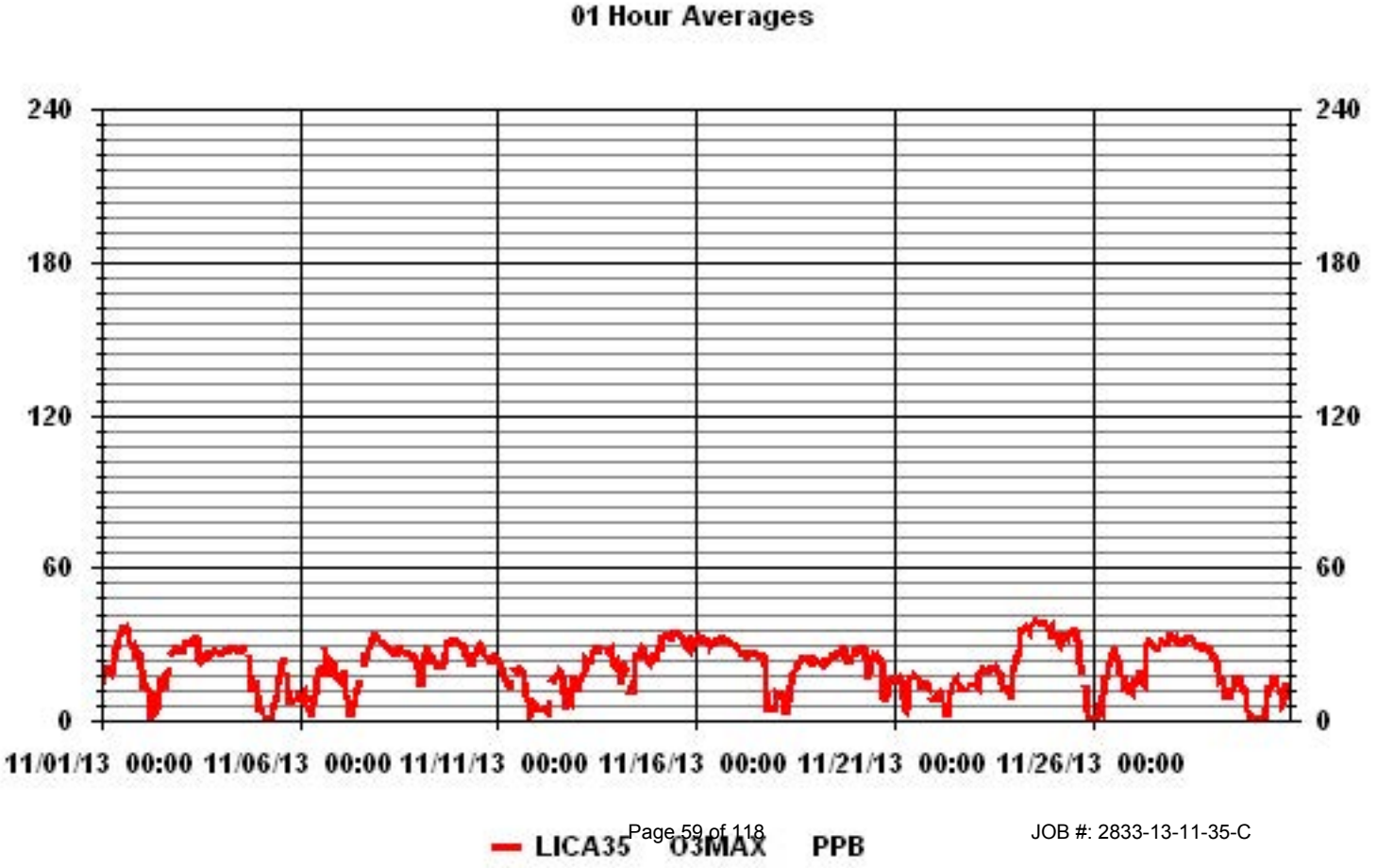
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 18 | 14 | 19 | 20 | 20 | 20 | 19 | 21 | 24 | 28 | 31 | 33 | 34 | 36 | 36 | 37 | 35 | 31 | 29 | **S** | 25 | 29 | 28 | 27 | 37 | 26.7 | 24 |
| 2 | 21 | 20 | 12 | 15 | 12 | 12 | 1 | 2 | 3 | 3 | 4 | 11 | 17 | 15 | 12 | 18 | 19 | 20 | **S** | 27 | 28 | 28 | 28 | 28 | 28 | 15.5 | 24 |
| 3 | 27 | 27 | 28 | 30 | 30 | 30 | 30 | 30 | 32 | 33 | 34 | 24 | 23 | 24 | 25 | 26 | 25 | **S** | 26 | 26 | 27 | 27 | 27 | 26 | 34 | 27.7 | 24 |
| 4 | 26 | 26 | 27 | 27 | 27 | 27 | 28 | 28 | 28 | 28 | 27 | 27 | 27 | 27 | 28 | 28 | **S** | 25 | 19 | 11 | 13 | 13 | 16 | 11 | 28 | 23.7 | 24 |
| 5 | 3 | 5 | 3 | 1 | 1 | 1 | 1 | 2 | 4 | 7 | 10 | 14 | 18 | 22 | 24 | **S** | 18 | 13 | 7 | 7 | 8 | 8 | 9 | 12 | 24 | 8.6 | 24 |
| 6 | 9 | 8 | 10 | 11 | 7 | 4 | 2 | 2 | 6 | 9 | 10 | 17 | 20 | 21 | **S** | 28 | 26 | 17 | 20 | 21 | 23 | 22 | 17 | 17 | 28 | 14.2 | 24 |
| 7 | 16 | 18 | 19 | 20 | 10 | 9 | 2 | 2 | 5 | 8 | 10 | 13 | 15 | **S** | 22 | 27 | 24 | 26 | 28 | 30 | 32 | 33 | 33 | 33 | 33 | 18.9 | 24 |
| 8 | 32 | 31 | 30 | 30 | 29 | 29 | 28 | 27 | 27 | 26 | 26 | 28 | **S** | 29 | 28 | 27 | 26 | 26 | 26 | 26 | 25 | 25 | 24 | 21 | 32 | 27.2 | 24 |
| 9 | 14 | 14 | 19 | 26 | 28 | 28 | 23 | 23 | 25 | 24 | 23 | **S** | 21 | 21 | 21 | 22 | 27 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 31 | 24.9 | 24 |
| 10 | 30 | 30 | 29 | 29 | 26 | 25 | 25 | 22 | 22 | 26 | **S** | 27 | 28 | 30 | 29 | 28 | 26 | 25 | 24 | 24 | 23 | 23 | 25 | 25 | 30 | 26.1 | 24 |
| 11 | 24 | 23 | 21 | 18 | 17 | 16 | 14 | 12 | 15 | **S** | 20 | 19 | 20 | 20 | 20 | 19 | 16 | 10 | 8 | 3 | 4 | 5 | 7 | 6 | 24 | 14.7 | 24 |
| 12 | 5 | 4 | 4 | 4 | 5 | 5 | 4 | 7 | **S** | 16 | 17 | 17 | 18 | 20 | 19 | 18 | 11 | 4 | 9 | 8 | 13 | 18 | 16 | 15 | 20 | 11.2 | 24 |
| 13 | 11 | 15 | 16 | 17 | 19 | 24 | 23 | **S** | 23 | 27 | 29 | **S** | 27 | 29 | **C** | **C** | **C** | **C** | 28 | 27 | 28 | 24 | 23 | 22 | 29 | 22.9 | 24 |
| 14 | 23 | 20 | 14 | 17 | 21 | 20 | **S** | 12 | 14 | 13 | 10 | 24 | 26 | 24 | 27 | 29 | 28 | 25 | 24 | 24 | 23 | 25 | 25 | 24 | 29 | 21.4 | 24 |
| 15 | 24 | 28 | 28 | 32 | 32 | **S** | 34 | 33 | 31 | 33 | 34 | 34 | 34 | 34 | 33 | 33 | 31 | 31 | 29 | 28 | 32 | 32 | 30 | 31 | 34 | 31.3 | 24 |
| 16 | 31 | 33 | 32 | 32 | **S** | 31 | 31 | 31 | 29 | 30 | 30 | 30 | 31 | 31 | 32 | 32 | 32 | 32 | 31 | 31 | 31 | 30 | 30 | 29 | 33 | 31.0 | 24 |
| 17 | 29 | 28 | 27 | **S** | 27 | 26 | 25 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 25 | 25 | 25 | 22 | 12 | 4 | 4 | 6 | 4 | 4 | 29 | 20.7 | 24 |
| 18 | 10 | 9 | **S** | 11 | 10 | 10 | 3 | 4 | 7 | 14 | 18 | 19 | 21 | 22 | 23 | 24 | 24 | 24 | 24 | 24 | 24 | 23 | 24 | 24 | 24 | 17.2 | 24 |
| 19 | 23 | **S** | 23 | 22 | 23 | 22 | 23 | 23 | 24 | 25 | 25 | 25 | 25 | 26 | 26 | 27 | 28 | 28 | 25 | 24 | 22 | 24 | 25 | 28 | 28 | 24.6 | 24 |
| 20 | **S** | 27 | 28 | 28 | 28 | 28 | 25 | 16 | 18 | 23 | 24 | 26 | 25 | 26 | 24 | 24 | 23 | 9 | 7 | 9 | 13 | 16 | 17 | **S** | 28 | 21.1 | 24 |
| 21 | 15 | 15 | 16 | 17 | 16 | 9 | 5 | 4 | 7 | 17 | 17 | 18 | 17 | 17 | 17 | 15 | 12 | 15 | 15 | 15 | 13 | 12 | **S** | 9 | 18 | 13.6 | 24 |
| 22 | 8 | 8 | 10 | 11 | 10 | 8 | 6 | 1 | 6 | 10 | 12 | 14 | 16 | 17 | 15 | 14 | 13 | 12 | 12 | 12 | 12 | **S** | 14 | 14 | 17 | 11.1 | 24 |
| 23 | 14 | 15 | 14 | 18 | 19 | 20 | 20 | 19 | 19 | 20 | 20 | 20 | 20 | 21 | 20 | 19 | 15 | 13 | 11 | 13 | **S** | 10 | 8 | 20 | 21 | 16.9 | 24 |
| 24 | 21 | 22 | 25 | 28 | 35 | 35 | 36 | 37 | 36 | 35 | 37 | 38 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | **S** | 37 | 36 | 37 | 33 | **39** | 34.7 | 24 |
| 25 | 33 | 33 | 33 | 31 | 30 | 32 | 33 | 33 | 32 | 33 | 34 | 34 | 35 | 35 | 32 | 33 | 23 | 19 | **S** | 13 | 4 | 2 | 1 | 1 | 35 | 25.6 | 24 |
| 26 | 1 | 1 | 2 | 5 | 4 | 9 | 10 | 17 | 18 | 21 | 23 | 26 | 28 | 27 | 26 | 24 | 19 | **S** | 17 | 11 | 13 | 12 | 13 | 12 | 28 | 14.7 | 24 |
| 27 | 16 | 16 | 15 | 16 | 20 | 16 | 15 | 20 | 30 | 31 | 31 | 30 | 29 | 29 | 28 | 28 | **S** | 31 | 31 | 30 | 30 | 31 | 33 | 33 | 33 | 25.6 | 24 |
| 28 | 32 | 32 | 33 | 31 | 30 | 30 | 31 | 31 | 32 | 32 | 32 | 32 | 32 | 31 | 30 | **S** | 30 | 28 | 28 | 29 | 29 | 28 | 28 | 27 | 33 | 30.3 | 24 |
| 29 | 25 | 25 | 24 | 20 | 16 | 17 | 17 | 12 | 8 | 11 | 8 | 12 | 13 | 17 | **S** | 15 | 17 | 17 | 11 | 13 | 11 | 4 | 3 | 2 | 25 | 13.8 | 24 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 9 | 13 | 14 | 17 | **S** | 17 | 14 | 11 | 11 | 7 | 8 | 14 | 14 | 13 | 12 | 17 | 8.1 | 24 |
| HOURLY MAX | 33 | 33 | 33 | 32 | 35 | 35 | 36 | 37 | 36 | 35 | 37 | 38 | 39 | 39 | 39 | 38 | 38 | 38 | 38 | 31 | 37 | 36 | 37 | 33 | | | |
| HOURLY AVG | 18.7 | 18.9 | 19.4 | 19.6 | 19.1 | 18.8 | 17.8 | 17.2 | 19.2 | 21.3 | 21.9 | 23.3 | 24.2 | 25.6 | 25.1 | 24.9 | 23.0 | 21.6 | 20.6 | 18.9 | 20.4 | 20.4 | 20.3 | 19.9 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 684 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 39 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 24 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | | | | |
| STANDARD DEVIATION: | 9.43 | | | | | |






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA-ELK
Parameter : O3_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 3.35 | 3.50 | 6.42 | 3.50 | 7.44 | 15.32 | 6.86 | 3.21 | 2.04 | 1.02 | 1.60 | 8.46 | 13.28 | 8.46 | 7.44 | 8.02 | 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 | 3.35 | 3.50 | 6.42 | 3.50 | 7.44 | 15.32 | 6.86 | 3.21 | 2.04 | 1.02 | 1.60 | 8.46 | 13.28 | 8.46 | 7.44 | 8.02 | |

Calm : .00 %

Total # Operational Hours : 685

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 58 | 51 | 55 | 685 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 58 | 51 | 55 | |

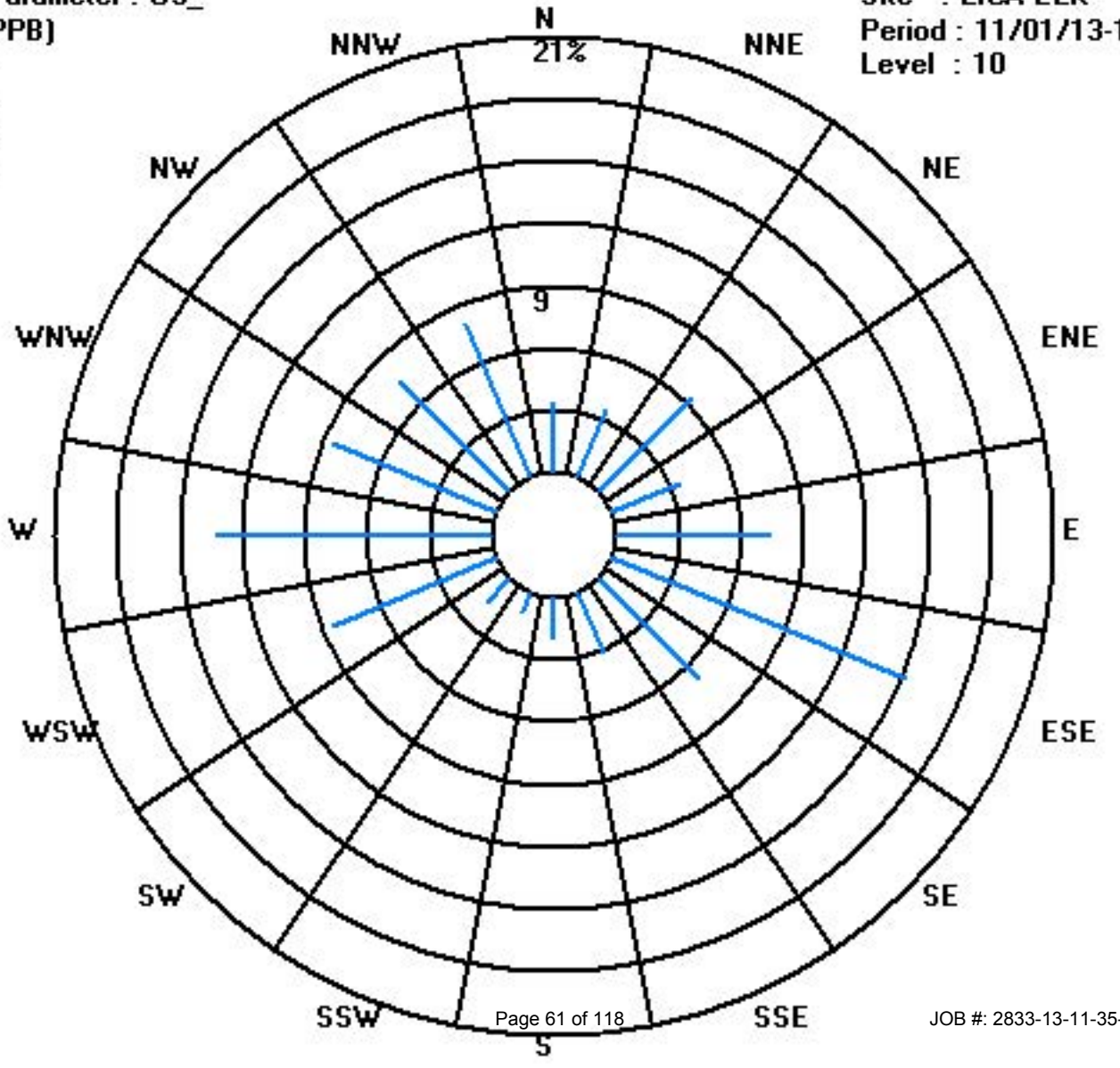
Calm : .00 %

Total # Operational Hours : 685

Logger : 35 Parameter : 03_
Class Limits (PPB)

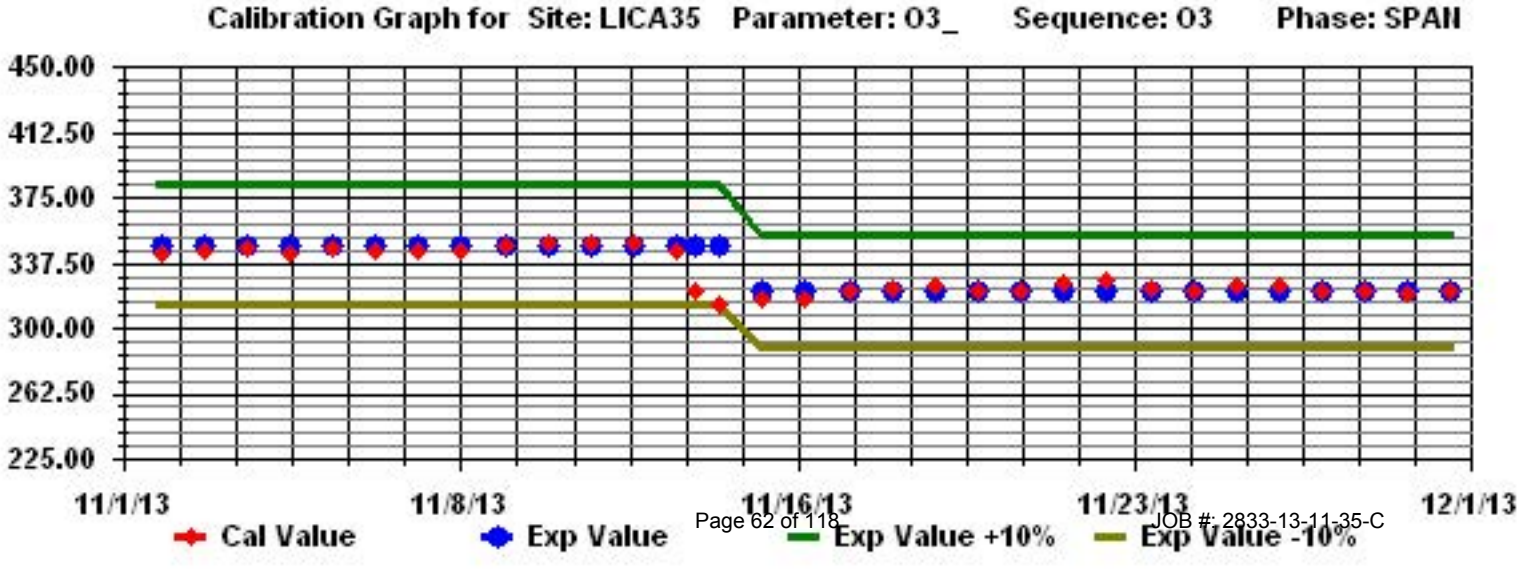
>= 210
< 210
< 110
< 50

Site : LICA-ELK
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C


Calibration Graph for Site: LICA35 Parameter: O3_ Sequence: O3 Phase: SPAN
450.00
412.50
375.00
337.50
300.00
262.50
225.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons (55i)

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

NOVEMBER 2013

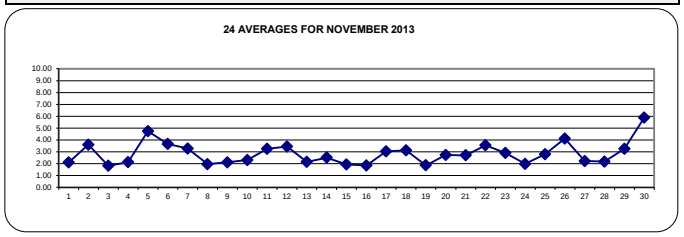
**TOTAL HYDROCARBONS** (55i) hourly averages in ppm

MST

| HOUR START / HOUR END | 0:00 1:00 | 1:00 2:00 | 2:00 3:00 | 3:00 4:00 | 4:00 5:00 | 5:00 6:00 | 6:00 7:00 | 7:00 8:00 | 8:00 9:00 | 9:00 10:00 | 10:00 11:00 | 11:00 12:00 | 12:00 13:00 | 13:00 14:00 | 14:00 15:00 | 15:00 16:00 | 16:00 17:00 | 17:00 18:00 | 18:00 19:00 | 19:00 20:00 | 20:00 21:00 | 21:00 22:00 | 22:00 23:00 | 23:00 0:00 | DAILY MAX. | 24-HOUR AVG. | RDGS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.2 | 2.3 | 2.1 | 2 | 2 | 2.1 | 2 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.1 | 2.4 | **S** | 2.5 | 2.2 | 2.3 | 2.9 | 2.9 | 2.10 | 24 |
| 2 | 3.1 | 2.7 | 3.4 | 3.8 | 3.8 | 3.5 | 4.8 | 5.3 | 6.2 | 7.1 | 6.9 | 4.6 | 3.5 | 3.5 | 3.6 | 2.5 | 2.3 | 2.3 | **S** | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 7.1 | 3.60 | 24 |
| 3 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | **S** | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.82 | 24 |
| 4 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | **S** | 2.3 | 2.3 | 2.6 | 3.1 | 2.9 | 2.9 | 3.9 | 3.9 | 2.12 | 24 |
| 5 | 4.6 | 3.8 | 4.7 | 5.9 | 5.3 | 5.2 | 5.7 | 7.1 | 7.5 | 6.7 | 5.6 | 4.9 | 4.3 | 3.4 | 2.9 | **S** | 4 | 3.6 | 3.8 | 4.6 | 3.7 | 3.7 | 4 | 3.8 | 7.5 | 4.73 | 24 |
| 6 | 3.9 | 3.8 | 4 | 3.9 | 4.4 | 4.8 | 4.7 | 5.4 | 7.4 | 6.7 | 5.5 | 3.5 | 2.6 | 2.2 | **S** | 2.1 | 2.2 | 2.5 | 2.6 | 2.3 | 2.2 | 2.2 | 2.5 | 2.6 | 7.4 | 3.65 | 24 |
| 7 | 2.7 | 2.5 | 2.2 | 2.6 | 3 | 3.3 | 4.2 | 4.6 | 5.2 | 5.6 | 5.3 | 4.1 | 3.7 | **S** | 3 | 2.5 | 3.1 | 3 | 2.8 | 2.6 | 2.5 | 2.3 | 2.2 | 2.3 | 5.6 | 3.27 | 24 |
| 8 | 2.1 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **S** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.2 | 2.6 | 2.6 | 1.96 | 24 |
| 9 | 3 | 3 | 2.9 | 2.1 | 2.1 | 2.4 | 2.4 | 2.7 | 2.1 | 2.1 | 2 | **S** | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 3.0 | 2.11 | 24 |
| 10 | 1.9 | 2 | 2 | 1.9 | 1.9 | 1.9 | 2.1 | 2.3 | 2.5 | 2.6 | **S** | 2.2 | 2.5 | 2.6 | 2.5 | 2.4 | 2.3 | 2.5 | 2.5 | 2.6 | 2.7 | 2.6 | 2.4 | 2.3 | 2.7 | 2.31 | 24 |
| 11 | 2.3 | 2.3 | 2.6 | 2.8 | 3.7 | 4.4 | 5.4 | 4.2 | 3.2 | **S** | 2.7 | 2.5 | 2.6 | 2.5 | 2.4 | 2.4 | 2.5 | 3.2 | 3.6 | 4.5 | 3.5 | 4.4 | 3.7 | 3.3 | 5.4 | 3.25 | 24 |
| 12 | 3.5 | 3.2 | 4.1 | 4 | 3.7 | 3.8 | 3.7 | 4.3 | **S** | 3.2 | 3.7 | 3.2 | 3.3 | 2.9 | 3.1 | 3.1 | 3.5 | 4 | 4.7 | 5 | 2.5 | 2.3 | 2.2 | 2.2 | 5.0 | 3.44 | 24 |
| 13 | 2.6 | 2.5 | 2.4 | 2.4 | 2.5 | 2.4 | 2.1 | **S** | 2.1 | 2.7 | 2 | 2 | **C** | **C** | **C** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 1.9 | 2 | 2 | 2.7 | 2.16 | 24 |
| 14 | 2 | 2.4 | 2.7 | 2.4 | 2.2 | 2.4 | **S** | 3.2 | 2.9 | 2.9 | 3.5 | 2.7 | 2 | 2.2 | 2.1 | 1.9 | 2.7 | 3 | 2.5 | 2.4 | 2.5 | 2.4 | 2.1 | 2.6 | 3.5 | 2.51 | 24 |
| 15 | 2.2 | 2 | 1.9 | 1.9 | 1.9 | **S** | 1.8 | 2 | 2 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 2 | 2.3 | 2.1 | 1.9 | 1.9 | 1.9 | 1.9 | 2.3 | 1.93 | 24 |
| 16 | 1.9 | 1.8 | 1.8 | 1.8 | **S** | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.85 | 24 |
| 17 | 1.9 | 1.9 | 1.9 | **S** | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.7 | 4.9 | 6 | 5.4 | 7.2 | 6.8 | 4.7 | 7.2 | 3.03 | 24 |
| 18 | 4.2 | 4.2 | **S** | 4.1 | 3.7 | 4.3 | 5.2 | 5.4 | 4.9 | 4.1 | 4 | 2.9 | 2.7 | 2.4 | 2.3 | 2.1 | 2 | 1.9 | 1.9 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 5.4 | 3.13 | 24 |
| 19 | 2 | **S** | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 2 | 1.9 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 2.0 | 1.87 | 24 |
| 20 | **S** | 2 | 2 | 2 | 2 | 2.1 | 2.9 | 3.2 | 2.5 | 2.4 | 2.5 | 2.4 | 2.3 | 2.2 | 2.4 | 2.9 | 3.1 | 3.6 | 3.9 | 4.7 | 3.4 | 2.8 | 3 | **S** | 4.7 | 2.74 | 24 |
| 21 | 3 | 2.9 | 2.9 | 2.7 | 3 | 3.6 | 4.8 | 3.9 | 3.4 | 2.7 | 2.4 | 2.2 | 2.1 | 2.2 | 2.2 | 2.6 | 2.4 | 2.4 | 2.1 | 2.1 | 2.1 | 2.3 | **S** | 2.2 | 4.8 | 2.70 | 24 |
| 22 | 2.2 | 2.7 | 2.7 | 2.8 | 2.9 | 3 | 4.2 | 5.7 | 5 | 5.3 | 4.6 | 3.9 | 3.8 | 3.1 | 3.1 | 3 | 3.2 | 3.3 | 3.6 | 3.7 | 3.7 | **S** | 3.3 | 3.1 | 5.7 | 3.56 | 24 |
| 23 | 3 | 2.9 | 3.1 | 2.9 | 2.7 | 2.7 | 2.6 | 2.5 | 2.5 | 2.6 | 2.7 | 2.6 | 2.7 | 2.4 | 2.5 | 2.8 | 3.1 | 3.5 | 3.7 | 3.6 | **S** | 3.5 | 3.7 | 2.6 | 3.7 | 2.91 | 24 |
| 24 | 2.3 | 2.3 | 2.3 | 2.2 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | **S** | 1.9 | 2.1 | 2.1 | 2.1 | 2.3 | 1.98 | 24 |
| 25 | 2 | 2.4 | 2.1 | 2.1 | 2.4 | 2.4 | 2 | 1.9 | 1.9 | 1.9 | 1.8 | 1.9 | 1.9 | 2.2 | 2.8 | 2.7 | 2.6 | 2.8 | **S** | 3.1 | 3.7 | 4.2 | 7 | 6.6 | 7.0 | 2.80 | 24 |
| 26 | 7.3 | 6.4 | 5.3 | 5 | 5.4 | 4.8 | 4.5 | 3.9 | 4.1 | 3.8 | 3.9 | 3.4 | 2.9 | 3.2 | 3.1 | 3.6 | 3.9 | **S** | 3.5 | 3.4 | 3.1 | 3.7 | 3.3 | 3.2 | 7.3 | 4.12 | 24 |
| 27 | 2.5 | 2.3 | 2.5 | 2.5 | 2.3 | 3.2 | 2.7 | 2.9 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **S** | 2.1 | 2 | 2.1 | 2.2 | 2.2 | 2.2 | 2 | 3.2 | 2.23 | 24 |
| 28 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.4 | **S** | 2.1 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.3 | 2.4 | 2.18 | 24 |
| 29 | 2.8 | 2.7 | 2.8 | 3.3 | 3.8 | 3.1 | 2.5 | 2.8 | 3.3 | 3.1 | 3.5 | 4.6 | 5.8 | 4.2 | **S** | 2.7 | 2.3 | 2.5 | 2.5 | 2.5 | 3 | 3 | 3.6 | 4.3 | 5.8 | 3.25 | 24 |
| 30 | 4.7 | 6.4 | 7.1 | 8.9 | **9.2** | 8.1 | 7.8 | 6.5 | 6.2 | 6.2 | 6 | 5.4 | 5.3 | **S** | 4.4 | 4.6 | 5 | 5.5 | 5.9 | 5.6 | 4.4 | 3.9 | 4.2 | 4 | **9.2** | **5.88** | 24 |
| HOURLY MAX | 7.3 | 6.4 | 7.1 | 8.9 | 9.2 | 8.1 | 7.8 | 7.1 | 7.5 | 7.1 | 6.9 | 5.4 | 5.8 | 4.2 | 4.4 | 4.6 | 5.0 | 5.5 | 5.9 | 6.0 | 5.4 | 7.2 | 7.0 | 6.6 | | | |
| HOURLY AVG | 2.8 | 2.8 | 2.8 | 3.0 | 3.0 | 3.1 | 3.2 | 3.3 | 3.2 | 3.2 | 3.1 | 2.7 | 2.7 | 2.4 | 2.4 | 2.4 | 2.6 | 2.7 | 2.8 | 3.0 | 2.7 | 2.7 | 2.9 | 2.8 | | | |

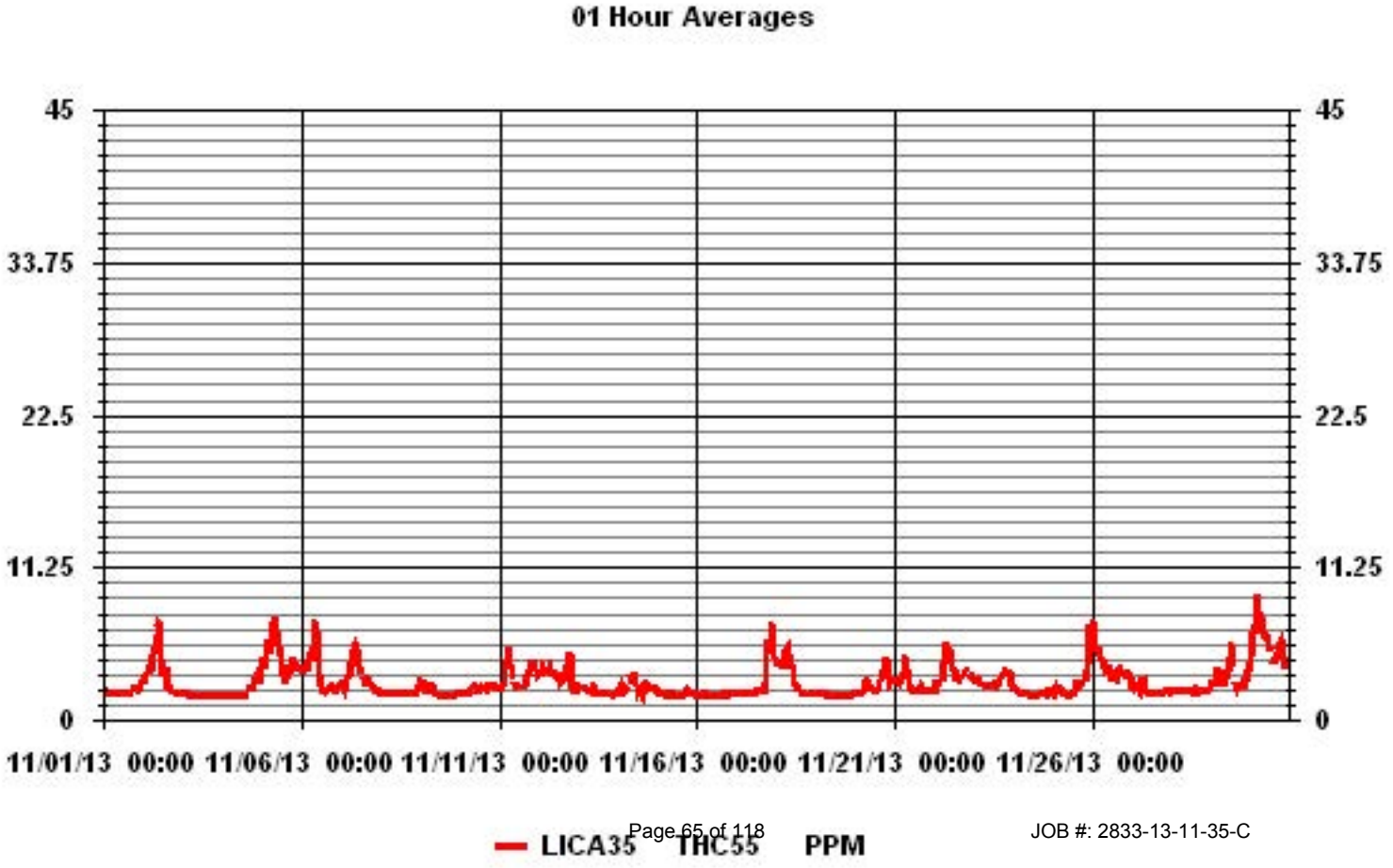
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 686 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 9.2 | PPM | @ HOUR(S) | 4 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | 5.88 | PPM | | | ON DAY(S) | 30 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 3 | HRS | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 1.26 | | MONTHLY AVERAGE: | | 2.84 | PPM |






JOB #: 2833-13-11-35-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

NOVEMBER 2013

**TOTAL HYDROCARBONS (THC) MAX** instantaneous maximum in ppm

MST

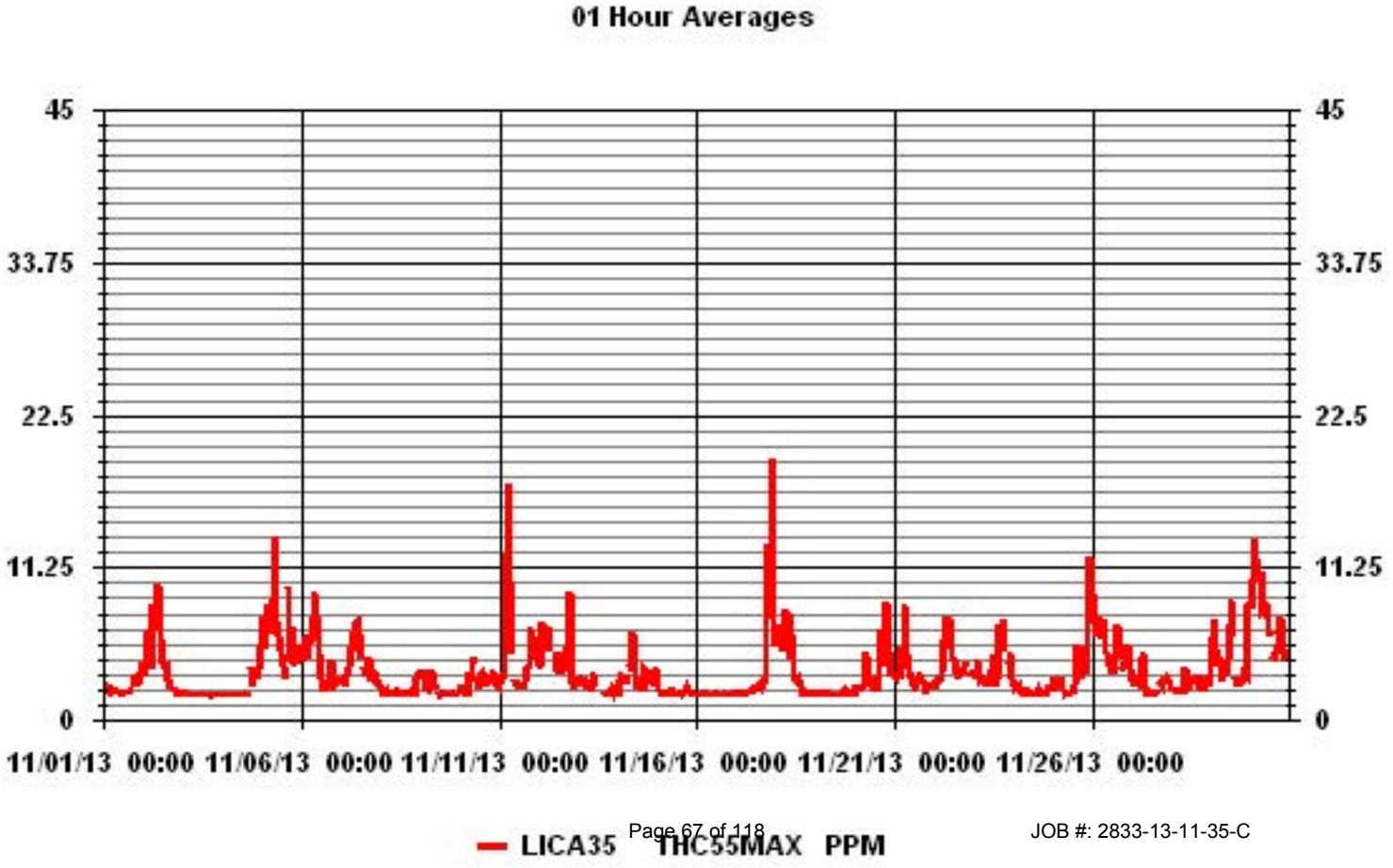
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.55 | 2.55 | 2.57 | 2.17 | 2.08 | 2.29 | 2.16 | 2.26 | 2.12 | 2.05 | 2.07 | 1.99 | 2 | 2.02 | 2.03 | 2.04 | 2.16 | 2.41 | 3.07 | **S** | 2.7 | 2.73 | 3.53 | 3.81 | 3.81 | 2.41 | 24 |
| 2 | 4.27 | 3.15 | 4.77 | 6.41 | 6.64 | 3.81 | 8.62 | 6.49 | 6.9 | 10 | 8.28 | 6.05 | 4.25 | 3.87 | 3.96 | 3.03 | 2.51 | 2.52 | **S** | 2.27 | 2.03 | 1.99 | 1.95 | 1.91 | 10.00 | 4.59 | 24 |
| 3 | 1.93 | 1.98 | 2.07 | 1.93 | 1.93 | 1.88 | 1.88 | 1.96 | 1.89 | 1.87 | 1.87 | 1.85 | 1.88 | 1.85 | 1.87 | 1.87 | 1.87 | **S** | 1.85 | 1.87 | 1.88 | 1.89 | 1.87 | 1.91 | 2.07 | 1.90 | 24 |
| 4 | 1.87 | 1.9 | 1.88 | 1.88 | 1.89 | 1.91 | 1.88 | 1.87 | 1.88 | 1.87 | 1.87 | 1.89 | 1.89 | 1.91 | 1.92 | 1.89 | **S** | 3.6 | 2.51 | 2.95 | 3.52 | 3.4 | 3.76 | 5.47 | 5.47 | 2.41 | 24 |
| 5 | 7.56 | 5.21 | 5.91 | 8.61 | 6.8 | 6.35 | 7.57 | 8.96 | 13.52 | 7.37 | 6.27 | 5.32 | 4.92 | 4.1 | 3.22 | **S** | 9.65 | 4.61 | 4.48 | 6.81 | 4.26 | 4.26 | 5.02 | 5.38 | 13.52 | 6.35 | 24 |
| 6 | 5.38 | 4.35 | 6.03 | 4.5 | 6.23 | 5.67 | 6.1 | 7.56 | 9.46 | 7.81 | 5.95 | 4.96 | 3.21 | 2.38 | **S** | 2.48 | 2.62 | 3.37 | 4.38 | 3.04 | 2.62 | 2.8 | 2.91 | 2.96 | 9.46 | 4.64 | 24 |
| 7 | 3.09 | 2.98 | 2.43 | 3.2 | 3.32 | 3.91 | 5.17 | 5.17 | 6.43 | 7.05 | 7.21 | 6.46 | 4.71 | **S** | 3.75 | 3.23 | 3.71 | 4.66 | 3.08 | 2.84 | 3.67 | 2.97 | 2.91 | 2.73 | 7.21 | 4.12 | 24 |
| 8 | 2.48 | 2.03 | 2.01 | 2 | 2.22 | 2 | 2 | 2.05 | 2.01 | 2.12 | 2.14 | 2.19 | **S** | 1.95 | 1.95 | 1.93 | 1.92 | 1.96 | 1.95 | 2.18 | 1.96 | 1.93 | 3.12 | 3.42 | 3.42 | 2.15 | 24 |
| 9 | 3.55 | 3.56 | 3.28 | 2.39 | 2.31 | 2.85 | 2.78 | 3.59 | 2.79 | 2.5 | 2.48 | **S** | 1.89 | 1.96 | 1.96 | 1.92 | 1.9 | 1.89 | 1.91 | 1.91 | 1.9 | 1.91 | 1.94 | 2.04 | 3.59 | 2.40 | 24 |
| 10 | 2.32 | 2.35 | 2.61 | 2.02 | 2.05 | 2.03 | 3.52 | 2.84 | 4.36 | 4.36 | **S** | 2.44 | 3.11 | 3.38 | 3.54 | 3.19 | 2.47 | 2.89 | 2.62 | 3.22 | 3.56 | 3.19 | 2.62 | 2.44 | 4.36 | 2.92 | 24 |
| 11 | 3.25 | 2.9 | 3.11 | 3.57 | 9.04 | 12.32 | 17.34 | 10.36 | 5.08 | **S** | 2.89 | 2.61 | 2.64 | 2.7 | 2.65 | 2.55 | 2.84 | 3.81 | 4.14 | 6.79 | 5.31 | 6 | 5.68 | 4.74 | 17.34 | 5.32 | 24 |
| 12 | 4.14 | 3.86 | 7.15 | 5.27 | 5.48 | 5.03 | 6.78 | 5.85 | **S** | 4.12 | 5.02 | 3.64 | 4.5 | 3.4 | 4.93 | 3.55 | 5.26 | 5.3 | 6.3 | 9.51 | 2.82 | 2.57 | 2.5 | 2.68 | 9.51 | 4.77 | 24 |
| 13 | 2.99 | 3.15 | 3.03 | 2.74 | 2.88 | 2.89 | 2.64 | **S** | 2.37 | 3.57 | 2.74 | **C** | **C** | **C** | **C** | **C** | 1.92 | 1.97 | 1.94 | 2.04 | 2.33 | 2.02 | 2.31 | 2.29 | 3.57 | 2.55 | 24 |
| 14 | 2.2 | 2.91 | 3.49 | 2.96 | 2.66 | 3.22 | **S** | 3.94 | 3.67 | 6.43 | 4.15 | 3.32 | 2.34 | 2.63 | 2.54 | 2.16 | 3.88 | 3.73 | 3.52 | 3.09 | 3.6 | 2.85 | 2.47 | 3.91 | 6.43 | 3.29 | 24 |
| 15 | 2.82 | 2.31 | 2.09 | 2.03 | 2.11 | **S** | 2.01 | 2.22 | 2.11 | 2.2 | 2.03 | 1.86 | 1.88 | 1.99 | 1.98 | 1.87 | 2 | 2.14 | 2.53 | 2.27 | 2.1 | 1.93 | 1.93 | 1.92 | 2.82 | 2.10 | 24 |
| 16 | 1.93 | 1.89 | 1.91 | 1.89 | **S** | 1.94 | 1.93 | 1.92 | 1.89 | 1.91 | 1.89 | 1.91 | 1.91 | 1.91 | 1.88 | 1.9 | 1.93 | 1.95 | 1.96 | 1.9 | 1.91 | 1.96 | 1.99 | 2.01 | 2.01 | 1.92 | 24 |
| 17 | 2 | 1.99 | 1.98 | **S** | 2.01 | 2.04 | 2 | 2.03 | 2.09 | 2.1 | 2.37 | 2.26 | 2.31 | 2.35 | 2.6 | 2.39 | 2.69 | 3.16 | 10.3 | 13 | 7.34 | 11.69 | **19.34** | 6.67 | **19.34** | 4.64 | 24 |
| 18 | 5.34 | 6.8 | **S** | 5.64 | 5.14 | 5.6 | 8.14 | 7.09 | 7.24 | 4.52 | 6.27 | 3.39 | 3.09 | 2.66 | 2.96 | 2.6 | 2.03 | 2.05 | 1.95 | 2.08 | 2.04 | 2.05 | 2.01 | 2.02 | 8.14 | 4.03 | 24 |
| 19 | 2.16 | **S** | 2.05 | 2.08 | 2.01 | 2.02 | 1.95 | 1.92 | 1.9 | 1.9 | 1.9 | 1.86 | 1.88 | 1.88 | 1.93 | 1.89 | 2.14 | 2.37 | 2.2 | 1.92 | 1.9 | 1.9 | 2.1 | 1.95 | 2.37 | 1.99 | 24 |
| 20 | **S** | 2.5 | 2.31 | 2.31 | 2.36 | 2.46 | 4.99 | 4.69 | 3.1 | 2.83 | 3.03 | 3 | 2.49 | 2.45 | 3.38 | 6.62 | 3.84 | 5.16 | 5.44 | 8.72 | 6.58 | 3.2 | 4.75 | **S** | 8.72 | 3.92 | 24 |
| 21 | 3.27 | 3.11 | 3.49 | 2.97 | 5.38 | 4.93 | 8.56 | 4.93 | 3.95 | 3.69 | 3.15 | 2.64 | 2.19 | 3.08 | 2.63 | 3.52 | 2.64 | 2.93 | 2.28 | 2.19 | 2.62 | 2.58 | **S** | 2.49 | 8.56 | 3.44 | 24 |
| 22 | 2.49 | 2.84 | 2.89 | 2.99 | 3.23 | 3.66 | 6 | 7.65 | 6.48 | 7.58 | 5.38 | 4.72 | 4.55 | 3.68 | 3.35 | 3.26 | 3.51 | 3.7 | 3.82 | 4.06 | 4.08 | **S** | 3.52 | 3.36 | 7.65 | 4.21 | 24 |
| 23 | 3.39 | 3.13 | 4.38 | 3.56 | 2.99 | 3.11 | 2.91 | 2.85 | 2.75 | 2.75 | 3.61 | 2.87 | 4.85 | 2.53 | 3.04 | 7.03 | 5.23 | 6.47 | 7.4 | 5.34 | **S** | 4.46 | 4.99 | 3.15 | 7.40 | 4.03 | 24 |
| 24 | 2.55 | 2.73 | 2.49 | 2.62 | 2.25 | 2.22 | 1.99 | 2.08 | 2.23 | 2.09 | 2.05 | 1.9 | 1.93 | 1.9 | 1.95 | 2.27 | 1.98 | 2.01 | 2.01 | **S** | 2.06 | 2.43 | 2.38 | 2.36 | 2.73 | 2.19 | 24 |
| 25 | 2.16 | 3.12 | 2.28 | 2.49 | 3.02 | 3.03 | 2.22 | 1.95 | 2.08 | 1.95 | 1.9 | 2.09 | 2.1 | 2.66 | 5.64 | 5.45 | 3.55 | 3.31 | **S** | 3.69 | 5.38 | 7.92 | 11.99 | 7.47 | 11.99 | 3.80 | 24 |
| 26 | 9.38 | 7.32 | 7.21 | 6.17 | 7.52 | 5.96 | 7.26 | 7.26 | 5.1 | 4.51 | 4.71 | 3.7 | 3.38 | 4.69 | 4.38 | 7.1 | 4.71 | **S** | 3.94 | 4.11 | 4.5 | 5.56 | 4.65 | 3.95 | 9.38 | 5.52 | 24 |
| 27 | 3.1 | 2.58 | 2.93 | 2.73 | 2.68 | 4.57 | 4.85 | 4.85 | 2.46 | 2.06 | 1.99 | 2.02 | 1.95 | 1.93 | 1.95 | 2.04 | **S** | 2.79 | 2.59 | 3.15 | 2.73 | 3.25 | 3.12 | 2.22 | 4.85 | 2.81 | 24 |
| 28 | 2.22 | 2.26 | 2.21 | 2.23 | 2.3 | 2.26 | 2.23 | 3.29 | 3.96 | 3.02 | 2.48 | 2.66 | 2.94 | 2.93 | 3.21 | **S** | 2.5 | 3.29 | 2.43 | 2.48 | 2.4 | 3.1 | 2.46 | 3.36 | 3.96 | 2.71 | 24 |
| 29 | 5.67 | 6.06 | 7.35 | 4.65 | 4.81 | 4.19 | 2.86 | 3.27 | 3.71 | 3.32 | 4.44 | 7.12 | 8.88 | 6.4 | **S** | 3.01 | 2.51 | 2.79 | 2.73 | 2.84 | 3.44 | 3.29 | 8.41 | 8.58 | 8.88 | 4.80 | 24 |
| 30 | 8.14 | 10.36 | 13.34 | 11.17 | 11.91 | 10.63 | 10.72 | 7.99 | 8.13 | 8.61 | 7.63 | 6.2 | 6.44 | **S** | 4.68 | 4.89 | 5.45 | 6.4 | 7.58 | 6.92 | 5.18 | 4.26 | 5.24 | 4.47 | 13.34 | 7.67 | 24 |
| HOURLY MAX | 9.38 | 10.36 | 13.34 | 11.17 | 11.91 | 12.32 | 17.34 | 10.36 | 13.52 | 10.00 | 8.28 | 7.12 | 8.88 | 6.40 | 5.64 | 7.10 | 9.65 | 6.47 | 10.30 | 13.00 | 7.34 | 11.69 | 19.34 | 8.58 | | | |
| HOURLY AVG | 3.6 | 3.5 | 3.8 | 3.6 | 4.0 | 4.0 | 4.8 | 4.4 | 4.2 | 4.0 | 3.7 | 3.3 | 3.2 | 2.8 | 3.0 | 3.2 | 3.2 | 3.3 | 3.6 | 4.0 | 3.3 | 3.5 | 4.2 | 3.5 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 684 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 19.34 | PPM | @ HOUR(S) | 22 | ON DAY(S) | 17 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 5 | HRS | | | | | |
| STANDARD DEVIATION: | 2.24 | | | | | | |






JOB #: 2833-13-11-35-C

LICA35
THC55 / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA35
Parameter : THC55
Units : PPM

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 2.91 | 3.06 | 5.83 | 3.20 | 2.04 | 3.06 | 4.37 | 2.47 | 1.74 | .87 | 1.02 | 6.70 | 9.91 | 6.55 | 7.14 | 7.58 | 68.51 |
| < | 10.0 | .43 | .43 | .58 | .29 | 5.39 | 12.24 | 2.47 | .72 | .29 | .14 | .58 | 1.74 | 3.35 | 1.60 | .72 | .43 | 31.48 |
| < | 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 | 3.35 | 3.49 | 6.41 | 3.49 | 7.43 | 15.30 | 6.85 | 3.20 | 2.04 | 1.02 | 1.60 | 8.45 | 13.26 | 8.16 | 7.87 | 8.01 | |

Calm : .00 %

Total # Operational Hours : 686

Distribution By Samples

Direction

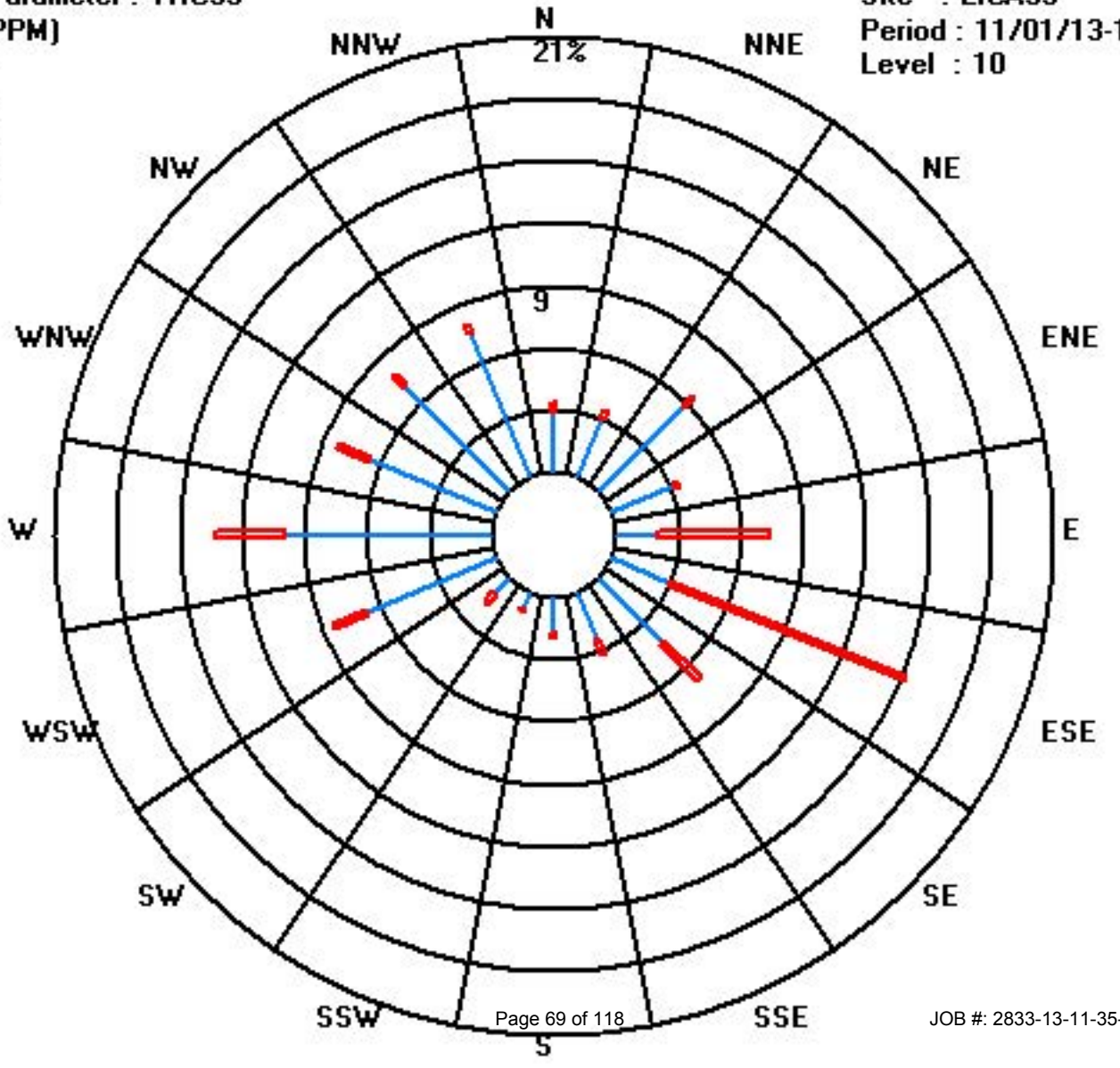
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 20 | 21 | 40 | 22 | 14 | 21 | 30 | 17 | 12 | 6 | 7 | 46 | 68 | 45 | 49 | 52 | 470 |
| < | 10.0 | 3 | 3 | 4 | 2 | 37 | 84 | 17 | 5 | 2 | 1 | 4 | 12 | 23 | 11 | 5 | 3 | 216 |
| < | 50.0 | | | | | | | | | | | | | | | | | |
| >= | 50.0 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 56 | 54 | 55 | |

Calm : .00 %

Total # Operational Hours : 686

Logger : 35 Parameter : THC55
Class Limits (PPM)
>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA35
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C

# Methane

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

NOVEMBER 2013

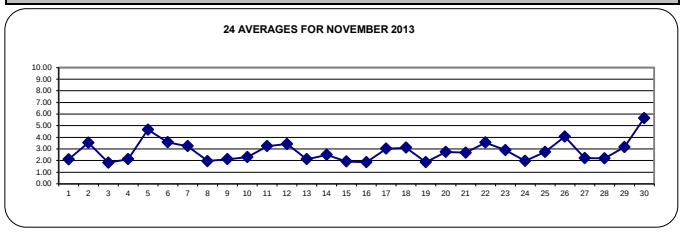
**METHANE** hourly averages in ppm

MST

| HOUR START / HOUR END | 0:00 1:00 | 1:00 2:00 | 2:00 3:00 | 3:00 4:00 | 4:00 5:00 | 5:00 6:00 | 6:00 7:00 | 7:00 8:00 | 8:00 9:00 | 9:00 10:00 | 10:00 11:00 | 11:00 12:00 | 12:00 13:00 | 13:00 14:00 | 14:00 15:00 | 15:00 16:00 | 16:00 17:00 | 17:00 18:00 | 18:00 19:00 | 19:00 20:00 | 20:00 21:00 | 21:00 22:00 | 22:00 23:00 | 23:00 0:00 | DAILY MAX. | 24-HOUR AVG. | RDGS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.2 | 2.3 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 2.1 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.1 | 2.3 | **S** | 2.5 | 2.2 | 2.3 | 2.9 | 2.9 | 2.10 | 24 |
| 2 | 3.0 | 2.7 | 3.3 | 3.7 | 3.7 | 3.5 | 4.7 | 5.1 | 6.0 | 6.9 | 6.8 | 4.5 | 3.4 | 3.4 | 3.5 | 2.5 | 2.3 | 2.3 | **S** | 2.1 | 2.0 | 1.9 | 1.9 | 1.9 | 6.9 | 3.53 | 24 |
| 3 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | **S** | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.82 | 24 |
| 4 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | **S** | 2.3 | 2.3 | 2.6 | 3.1 | 2.9 | 2.8 | 3.8 | 3.8 | 2.11 | 24 |
| 5 | 4.4 | 3.8 | 4.7 | 5.7 | 5.1 | 5.1 | 5.6 | 6.9 | 7.4 | 6.6 | 5.5 | 4.8 | 4.3 | 3.3 | 2.9 | **S** | 4.0 | 3.6 | 3.8 | 4.6 | 3.7 | 3.6 | 4.0 | 3.8 | 7.4 | 4.66 | 24 |
| 6 | 3.8 | 3.7 | 3.9 | 3.8 | 4.4 | 4.7 | 4.5 | 5.2 | 7.2 | 6.5 | 5.3 | 3.4 | 2.6 | 2.2 | **S** | 2.1 | 2.2 | 2.5 | 2.5 | 2.3 | 2.2 | 2.2 | 2.5 | 2.6 | 7.2 | 3.58 | 24 |
| 7 | 2.7 | 2.5 | 2.2 | 2.6 | 2.9 | 3.3 | 4.1 | 4.4 | 5.0 | 5.5 | 5.2 | 4.1 | 3.7 | **S** | 3.0 | 2.5 | 3.1 | 3.0 | 2.8 | 2.6 | 2.5 | 2.3 | 2.2 | 2.3 | 5.5 | 3.24 | 24 |
| 8 | 2.1 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **S** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.2 | 2.5 | 2.5 | 1.96 | 24 |
| 9 | 3.0 | 3.0 | 2.9 | 2.1 | 2.1 | 2.4 | 2.4 | 2.7 | 2.1 | 2.1 | 2.0 | **S** | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 3.0 | 2.11 | 24 |
| 10 | 1.9 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 2.1 | 2.3 | 2.5 | 2.6 | **S** | 2.2 | 2.4 | 2.6 | 2.5 | 2.4 | 2.3 | 2.5 | 2.5 | 2.6 | 2.7 | 2.6 | 2.4 | 2.3 | 2.7 | 2.31 | 24 |
| 11 | 2.3 | 2.3 | 2.6 | 2.8 | 3.7 | 4.4 | 5.4 | 4.2 | 3.2 | **S** | 2.7 | 2.5 | 2.6 | 2.5 | 2.4 | 2.4 | 2.5 | 3.2 | 3.6 | 4.5 | 3.5 | 4.4 | 3.7 | 3.3 | 5.4 | 3.25 | 24 |
| 12 | 3.5 | 3.2 | 4.1 | 4.0 | 3.7 | 3.8 | 3.7 | 4.3 | **S** | 3.2 | 3.7 | 3.2 | 3.3 | 2.9 | 3.1 | 3.1 | 3.5 | 3.9 | 4.6 | 4.9 | 2.5 | 2.3 | 2.1 | 2.1 | 4.9 | 3.42 | 24 |
| 13 | 2.5 | 2.4 | 2.3 | 2.3 | 2.5 | 2.3 | 2.1 | **S** | 2.1 | 2.6 | 1.9 | 2.0 | **C** | **C** | **C** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 1.9 | 2.0 | 2.0 | 2.6 | 2.12 | 24 |
| 14 | 2.0 | 2.4 | 2.7 | 2.4 | 2.2 | 2.4 | **S** | 3.2 | 2.9 | 2.9 | 3.5 | 2.7 | 2.0 | 2.1 | 2.1 | 1.9 | 2.7 | 3.0 | 2.4 | 2.4 | 2.5 | 2.3 | 2.1 | 2.5 | 3.5 | 2.49 | 24 |
| 15 | 2.2 | 2.0 | 1.9 | 1.9 | 1.9 | **S** | 1.8 | 2.0 | 2.0 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 2.0 | 2.2 | 2.1 | 1.9 | 1.9 | 1.9 | 1.9 | 2.2 | 1.93 | 24 |
| 16 | 1.9 | 1.8 | 1.8 | 1.8 | **S** | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.85 | 24 |
| 17 | 1.9 | 1.9 | 1.9 | **S** | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.7 | 4.9 | 6.0 | 5.4 | 7.0 | 6.7 | 4.7 | 7.0 | 3.02 | 24 |
| 18 | 4.2 | 4.1 | **S** | 4.1 | 3.7 | 4.3 | 5.1 | 5.3 | 4.8 | 4.0 | 4.0 | 2.9 | 2.7 | 2.4 | 2.3 | 2.1 | 2.0 | 1.9 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 5.3 | 3.10 | 24 |
| 19 | 2.0 | **S** | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 2.0 | 1.9 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 2.0 | 1.87 | 24 |
| 20 | **S** | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.9 | 3.2 | 2.5 | 2.4 | 2.5 | 2.4 | 2.3 | 2.2 | 2.4 | 2.9 | 3.1 | 3.6 | 3.9 | 4.7 | 3.4 | 2.8 | 3.0 | **S** | 4.7 | 2.74 | 24 |
| 21 | 3.0 | 2.9 | 2.9 | 2.7 | 3.0 | 3.4 | 4.6 | 3.8 | 3.3 | 2.7 | 2.4 | 2.2 | 2.1 | 2.2 | 2.2 | 2.6 | 2.4 | 2.4 | 2.1 | 2.1 | 2.1 | 2.3 | **S** | 2.2 | 4.6 | 2.68 | 24 |
| 22 | 2.2 | 2.7 | 2.7 | 2.8 | 2.9 | 3.0 | 4.0 | 5.6 | 5.0 | 5.3 | 4.6 | 3.9 | 3.8 | 3.1 | 3.1 | 3.0 | 3.2 | 3.3 | 3.6 | 3.7 | 3.6 | **S** | 3.3 | 3.1 | 5.6 | 3.54 | 24 |
| 23 | 3.0 | 2.9 | 3.0 | 2.9 | 2.7 | 2.7 | 2.6 | 2.5 | 2.5 | 2.6 | 2.7 | 2.6 | 2.7 | 2.4 | 2.5 | 2.8 | 3.1 | 3.5 | 3.7 | 3.6 | **S** | 3.5 | 3.7 | 2.5 | 3.7 | 2.90 | 24 |
| 24 | 2.3 | 2.2 | 2.3 | 2.2 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | **S** | 1.9 | 2.1 | 2.1 | 2.1 | 2.3 | 1.98 | 24 |
| 25 | 2.0 | 2.4 | 2.1 | 2.1 | 2.4 | 2.4 | 2.0 | 1.9 | 1.9 | 1.9 | 1.8 | 1.9 | 1.9 | 2.2 | 2.8 | 2.7 | 2.5 | 2.8 | **S** | 3.1 | 3.5 | 3.9 | 6.7 | 6.3 | 6.7 | 2.75 | 24 |
| 26 | 7.1 | 6.3 | 5.2 | 4.9 | 5.4 | 4.7 | 4.5 | 3.9 | 4.1 | 3.8 | 3.8 | 3.4 | 2.9 | 3.2 | 3.1 | 3.5 | 3.8 | **S** | 3.3 | 3.3 | 3.1 | 3.6 | 3.3 | 3.1 | 7.1 | 4.06 | 24 |
| 27 | 2.5 | 2.3 | 2.5 | 2.4 | 2.3 | 3.1 | 2.6 | 2.9 | 2.1 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **S** | 2.1 | 2.0 | 2.1 | 2.2 | 2.2 | 2.2 | 2.0 | 3.1 | 2.21 | 24 |
| 28 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.4 | **S** | 2.1 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.3 | 2.4 | 2.18 | 24 |
| 29 | 2.8 | 2.7 | 2.8 | 3.2 | 3.7 | 3.0 | 2.5 | 2.8 | 3.2 | 3.0 | 3.4 | 4.5 | 5.7 | 4.0 | **S** | 2.6 | 2.3 | 2.4 | 2.4 | 2.4 | 2.8 | 2.9 | 3.3 | 4.0 | 5.7 | 3.15 | 24 |
| 30 | 4.3 | 5.9 | 6.6 | 8.5 | **8.8** | 7.8 | 7.5 | 6.2 | 6.0 | 6.0 | 5.8 | 5.2 | 5.1 | **S** | 4.3 | 4.4 | 4.8 | 5.4 | 5.8 | 5.4 | 4.2 | 3.8 | 4.1 | 3.9 | **8.8** | **5.64** | 24 |
| HOURLY MAX | 7.1 | 6.3 | 6.6 | 8.5 | 8.8 | 7.8 | 7.5 | 6.9 | 7.4 | 6.9 | 6.8 | 5.2 | 5.7 | 4.0 | 4.3 | 4.4 | 4.8 | 5.4 | 5.8 | 6.0 | 5.4 | 7.0 | 6.7 | 6.3 | | | |
| HOURLY AVG | 2.78 | 2.77 | 2.77 | 2.91 | 2.98 | 3.02 | 3.17 | 3.30 | 3.21 | 3.16 | 3.05 | 2.73 | 2.65 | 2.34 | 2.41 | 2.36 | 2.54 | 2.65 | 2.78 | 2.94 | 2.64 | 2.69 | 2.83 | 2.74 | | | |

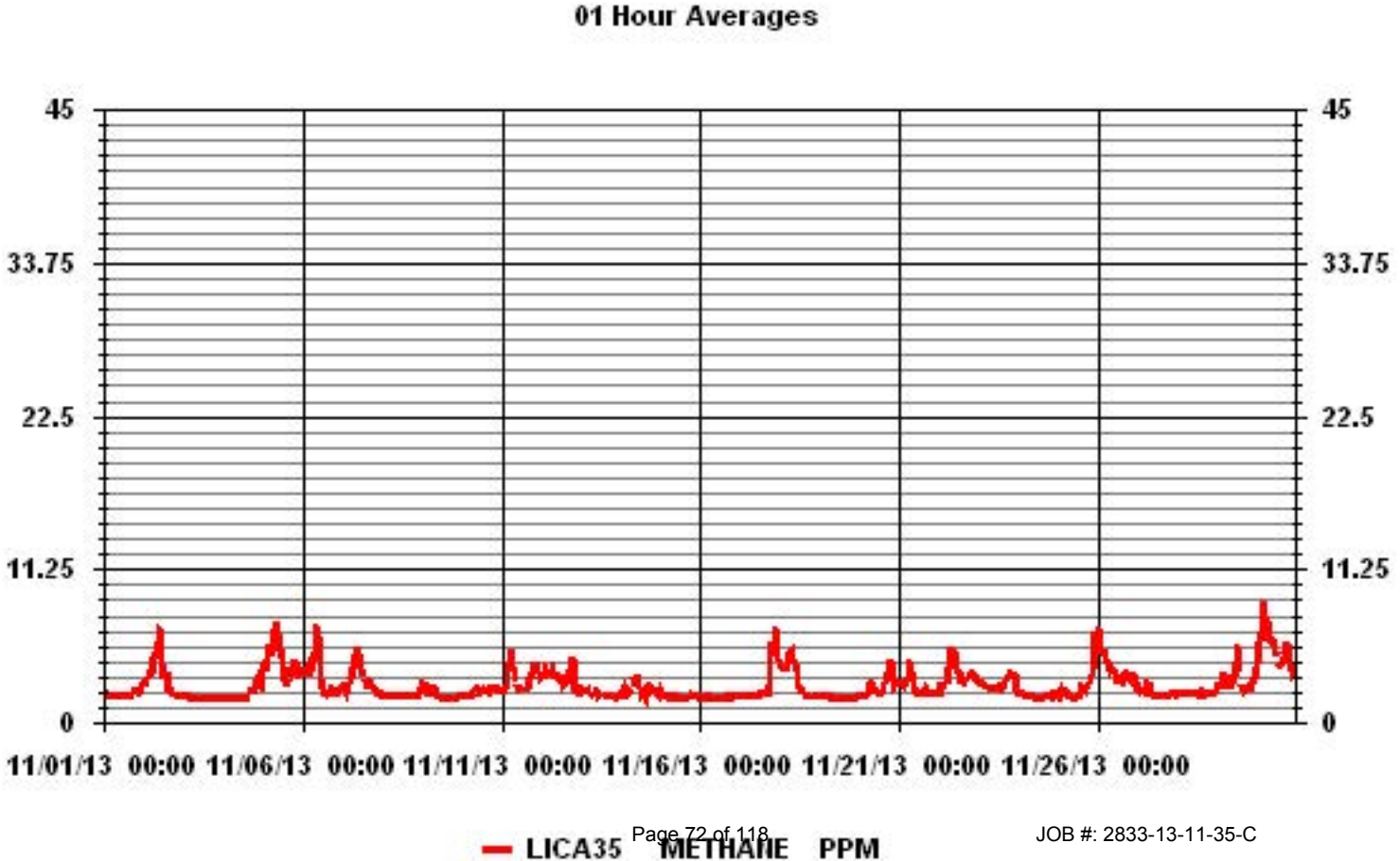
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | | 686 | | | | | |
| MAXIMUM 1-HR AVERAGE: | | 8.8 | PPM | @ HOUR(S) | 4 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | | 5.64 | PPM | | | ON DAY(S) | 30 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 3 | HRS | AMD OPERATION UPTIME: | | | 100.0 | % |
| STANDARD DEVIATION: | 1.21 | | MONTHLY AVERAGE: | | | 2.81 | PPM |






JOB #: 2833-13-11-35-C

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

NOVEMBER 2013

**METHANE MAX** instantaneous maximum in ppm

MST

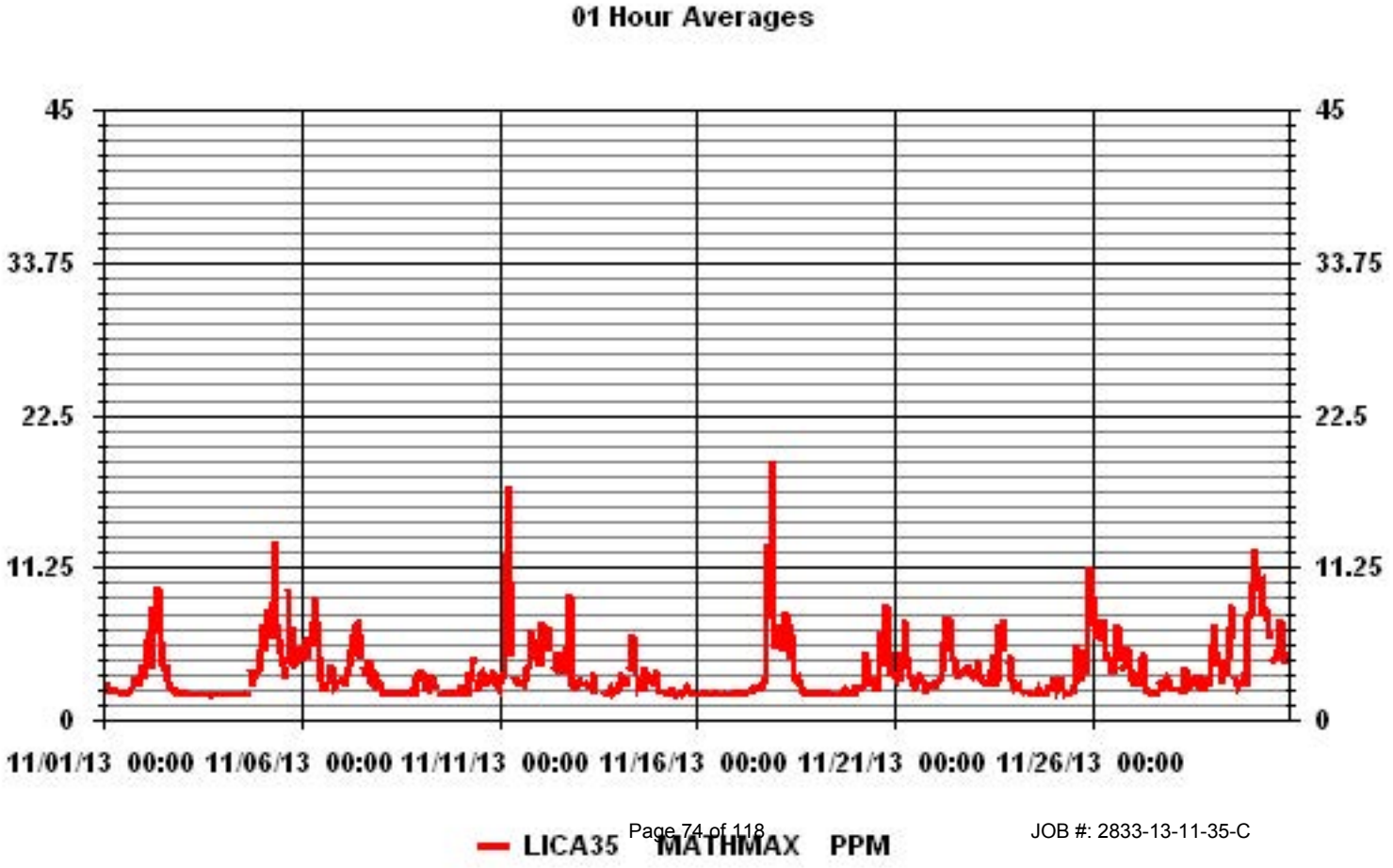
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.40 | 2.52 | 2.57 | 2.15 | 2.09 | 2.27 | 2.16 | 2.27 | 2.13 | 2.06 | 2.09 | 1.99 | 2.00 | 2.02 | 2.04 | 1.96 | 2.10 | 2.33 | 2.91 | **S** | 2.70 | 2.47 | 3.32 | 3.55 | 3.55 | 2.35 | 24 |
| 2 | 4.12 | 3.03 | 4.54 | 5.97 | 6.55 | 3.73 | 8.33 | 6.34 | 6.81 | 9.81 | 8.02 | 5.96 | 4.12 | 3.67 | 3.80 | 2.98 | 2.49 | 2.35 | **S** | 2.21 | 2.03 | 2.00 | 1.95 | 1.91 | 9.81 | 4.47 | 24 |
| 3 | 1.93 | 1.98 | 1.97 | 1.93 | 1.93 | 1.88 | 1.88 | 1.89 | 1.89 | 1.87 | 1.87 | 1.85 | 1.88 | 1.85 | 1.87 | 1.87 | 1.87 | **S** | 1.84 | 1.86 | 1.88 | 1.89 | 1.87 | 1.91 | 1.98 | 1.89 | 24 |
| 4 | 1.88 | 1.90 | 1.88 | 1.88 | 1.89 | 1.91 | 1.88 | 1.87 | 1.88 | 1.87 | 1.87 | 1.89 | 1.89 | 1.91 | 1.92 | 1.89 | **S** | 3.59 | 2.51 | 2.95 | 3.48 | 3.41 | 3.55 | 5.12 | 5.12 | 2.38 | 24 |
| 5 | 7.10 | 5.03 | 5.90 | 8.13 | 6.47 | 6.03 | 7.34 | 8.75 | 13.24 | 7.28 | 6.19 | 5.16 | 4.79 | 4.09 | 3.22 | **S** | 9.43 | 4.49 | 4.34 | 6.82 | 4.16 | 4.24 | 5.02 | 5.20 | 13.24 | 6.19 | 24 |
| 6 | 5.20 | 4.29 | 5.96 | 4.51 | 6.11 | 5.53 | 5.96 | 7.20 | 9.15 | 7.50 | 5.65 | 4.76 | 3.03 | 2.28 | **S** | 2.48 | 2.63 | 3.18 | 4.10 | 3.04 | 2.58 | 2.80 | 2.87 | 2.82 | 9.15 | 4.51 | 24 |
| 7 | 2.99 | 2.99 | 2.43 | 3.12 | 3.26 | 3.86 | 4.98 | 4.98 | 6.23 | 6.95 | 7.10 | 6.42 | 4.71 | **S** | 3.74 | 3.18 | 3.62 | 4.51 | 2.94 | 2.76 | 3.67 | 2.97 | 2.82 | 2.73 | 7.10 | 4.04 | 24 |
| 8 | 2.48 | 2.04 | 2.01 | 2.00 | 2.00 | 2.00 | 2.01 | 2.06 | 2.02 | 1.97 | 2.00 | 2.04 | **S** | 1.95 | 1.95 | 1.93 | 1.92 | 1.96 | 1.95 | 2.18 | 1.96 | 1.93 | 3.12 | 3.31 | 3.31 | 2.12 | 24 |
| 9 | 3.47 | 3.44 | 3.11 | 2.39 | 2.32 | 2.81 | 2.78 | 3.36 | 2.79 | 2.50 | 2.47 | **S** | 1.89 | 1.88 | 1.91 | 1.92 | 1.90 | 1.90 | 1.91 | 1.91 | 1.90 | 1.91 | 1.94 | 1.95 | 3.47 | 2.36 | 24 |
| 10 | 2.33 | 2.36 | 2.62 | 2.02 | 2.05 | 2.03 | 3.52 | 2.84 | 4.36 | 4.36 | **S** | 2.44 | 2.90 | 3.38 | 3.54 | 3.18 | 2.47 | 2.89 | 2.63 | 3.21 | 3.56 | 3.19 | 2.63 | 2.44 | 4.36 | 2.91 | 24 |
| 11 | 3.26 | 2.90 | 3.12 | 3.57 | 8.97 | 12.24 | 17.24 | 10.37 | 4.96 | **S** | 2.99 | 2.71 | 2.74 | 2.80 | 2.75 | 2.66 | 2.94 | 3.88 | 4.14 | 6.62 | 5.21 | 5.87 | 5.56 | 4.71 | 17.24 | 5.31 | 24 |
| 12 | 4.23 | 3.96 | 7.19 | 5.35 | 5.58 | 4.99 | 6.80 | 5.92 | **S** | 4.05 | 4.94 | 3.64 | 4.50 | 3.40 | 4.93 | 3.45 | 5.16 | 5.06 | 6.14 | 9.33 | 2.73 | 2.53 | 2.40 | 2.55 | 9.33 | 4.73 | 24 |
| 13 | 2.85 | 2.97 | 2.82 | 2.65 | 2.67 | 2.78 | 2.64 | **S** | 2.34 | 3.45 | 2.08 | **C** | **C** | **C** | **C** | **C** | 1.92 | 1.98 | 1.94 | 2.05 | 2.33 | 2.03 | 2.17 | 2.15 | 3.45 | 2.43 | 24 |
| 14 | 2.20 | 2.83 | 3.49 | 2.96 | 2.57 | 3.01 | **S** | 3.84 | 3.65 | 6.34 | 4.08 | 3.33 | 2.32 | 2.51 | 2.46 | 2.05 | 3.87 | 3.53 | 3.35 | 2.95 | 3.34 | 2.78 | 2.47 | 3.71 | 6.34 | 3.20 | 24 |
| 15 | 2.70 | 2.21 | 2.04 | 2.03 | 2.11 | **S** | 2.01 | 2.22 | 2.12 | 2.21 | 2.03 | 1.85 | 1.88 | 1.99 | 1.98 | 1.86 | 2.00 | 2.15 | 2.42 | 2.24 | 2.01 | 1.93 | 1.93 | 1.92 | 2.70 | 2.08 | 24 |
| 16 | 1.93 | 1.89 | 1.91 | 1.89 | **S** | 1.94 | 1.93 | 1.92 | 1.89 | 1.91 | 1.90 | 1.91 | 1.91 | 1.91 | 1.89 | 1.90 | 1.94 | 1.95 | 1.96 | 1.90 | 1.91 | 1.96 | 2.00 | 2.02 | 2.02 | 1.92 | 24 |
| 17 | 2.00 | 1.99 | 1.99 | **S** | 2.02 | 2.05 | 2.00 | 2.04 | 2.10 | 2.11 | 2.37 | 2.27 | 2.32 | 2.36 | 2.31 | 2.39 | 2.70 | 3.12 | 10.23 | 13.00 | 7.37 | 11.53 | **19.17** | 6.61 | **19.17** | 4.61 | 24 |
| 18 | 5.30 | 6.74 | **S** | 5.65 | 5.07 | 5.48 | 8.00 | 6.91 | 7.18 | 4.48 | 6.29 | 3.40 | 3.09 | 2.66 | 2.95 | 2.60 | 2.04 | 2.05 | 1.95 | 2.09 | 2.04 | 2.05 | 2.01 | 2.03 | 8.00 | 4.00 | 24 |
| 19 | 2.16 | **S** | 2.05 | 2.08 | 2.01 | 2.03 | 1.95 | 1.92 | 1.90 | 1.91 | 1.90 | 1.87 | 1.88 | 1.87 | 1.93 | 1.89 | 2.14 | 2.37 | 2.20 | 1.92 | 1.90 | 1.90 | 2.11 | 1.95 | 2.37 | 1.99 | 24 |
| 20 | **S** | 2.49 | 2.32 | 2.31 | 2.36 | 2.46 | 4.99 | 4.67 | 2.97 | 2.83 | 3.03 | 3.01 | 2.48 | 2.44 | 3.17 | 6.58 | 3.84 | 5.16 | 5.36 | 8.61 | 6.54 | 3.20 | 4.71 | **S** | 8.61 | 3.89 | 24 |
| 21 | 3.23 | 3.06 | 3.49 | 2.82 | 5.06 | 4.47 | 7.46 | 4.85 | 3.87 | 3.47 | 3.15 | 2.58 | 2.19 | 3.09 | 2.64 | 3.47 | 2.64 | 2.94 | 2.19 | 2.19 | 2.63 | 2.59 | **S** | 2.48 | 7.46 | 3.33 | 24 |
| 22 | 2.48 | 2.84 | 2.86 | 2.97 | 3.14 | 3.66 | 5.74 | 7.57 | 6.50 | 7.52 | 5.20 | 4.62 | 4.54 | 3.62 | 3.30 | 3.27 | 3.50 | 3.63 | 3.81 | 3.99 | 3.94 | **S** | 3.51 | 3.28 | 7.57 | 4.15 | 24 |
| 23 | 3.39 | 3.14 | 4.38 | 3.49 | 2.99 | 2.94 | 2.90 | 2.85 | 2.75 | 2.76 | 3.60 | 2.86 | 4.84 | 2.49 | 2.90 | 7.05 | 4.99 | 6.41 | 7.32 | 5.35 | **S** | 4.46 | 4.87 | 3.04 | 7.32 | 3.99 | 24 |
| 24 | 2.50 | 2.69 | 2.49 | 2.63 | 2.26 | 2.15 | 2.00 | 2.02 | 2.11 | 2.06 | 2.05 | 1.90 | 1.93 | 1.90 | 1.95 | 2.27 | 1.98 | 2.01 | 2.01 | **S** | 2.06 | 2.43 | 2.37 | 2.37 | 2.69 | 2.18 | 24 |
| 25 | 2.16 | 3.08 | 2.29 | 2.49 | 3.02 | 2.97 | 2.22 | 1.95 | 2.10 | 1.95 | 1.90 | 2.10 | 2.11 | 2.67 | 5.52 | 5.33 | 3.34 | 3.13 | **S** | 3.52 | 5.14 | 7.64 | 11.39 | 7.27 | 11.39 | 3.71 | 24 |
| 26 | 9.28 | 7.14 | 7.14 | 6.01 | 7.44 | 5.81 | 7.20 | 7.20 | 5.11 | 4.43 | 4.69 | 3.64 | 3.36 | 4.69 | 4.38 | 7.02 | 4.48 | **S** | 3.91 | 4.10 | 4.49 | 5.43 | 4.49 | 3.83 | 9.28 | 5.45 | 24 |
| 27 | 3.00 | 2.58 | 2.94 | 2.66 | 2.67 | 4.49 | 4.73 | 4.73 | 2.46 | 2.06 | 2.00 | 1.95 | 1.95 | 1.93 | 1.95 | 2.01 | **S** | 2.79 | 2.59 | 2.45 | 2.73 | 3.25 | 3.13 | 2.22 | 4.73 | 2.75 | 24 |
| 28 | 2.22 | 2.26 | 2.22 | 2.24 | 2.31 | 2.27 | 2.24 | 3.29 | 3.87 | 3.03 | 2.48 | 2.66 | 2.93 | 2.84 | 3.21 | **S** | 2.50 | 3.29 | 2.42 | 2.47 | 2.40 | 3.11 | 2.45 | 3.20 | 3.87 | 2.69 | 24 |
| 29 | 5.50 | 5.77 | 7.11 | 4.51 | 4.66 | 4.09 | 2.73 | 3.18 | 3.43 | 3.21 | 4.44 | 6.87 | 8.55 | 6.12 | **S** | 2.92 | 2.41 | 2.56 | 2.59 | 2.61 | 3.23 | 3.09 | 7.64 | 7.90 | 8.55 | 4.57 | 24 |
| 30 | 7.61 | 9.96 | 12.65 | 10.70 | 11.37 | 10.13 | 10.29 | 7.66 | 7.88 | 8.38 | 7.51 | 6.03 | 6.33 | **S** | 4.49 | 4.62 | 5.19 | 6.25 | 7.31 | 6.71 | 5.05 | 4.14 | 5.06 | 4.36 | 12.65 | 7.38 | 24 |
| HOURLY MAX | 9.28 | 9.96 | 12.65 | 10.70 | 11.37 | 12.24 | 17.24 | 10.37 | 13.24 | 9.81 | 8.02 | 6.87 | 8.55 | 6.12 | 5.52 | 7.05 | 9.43 | 6.41 | 10.23 | 13.00 | 7.37 | 11.53 | 19.17 | 7.90 | | | |
| HOURLY AVG | 3.51 | 3.45 | 3.71 | 3.56 | 3.89 | 3.86 | 4.69 | 4.37 | 4.13 | 3.94 | 3.65 | 3.28 | 3.18 | 2.75 | 2.91 | 3.14 | 3.14 | 3.27 | 3.53 | 3.97 | 3.27 | 3.40 | 4.09 | 3.40 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 684 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 19.17 | PPM | @ HOUR(S) | 22 | ON DAY(S) | 17 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 5 | HRS | | | | |
| STANDARD DEVIATION: | 2.17 | | | | | |






JOB #: 2833-13-11-35-C

LICA35
METHANE / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3.0 | 2.91 | 3.06 | 5.83 | 3.20 | 2.04 | 3.06 | 4.37 | 2.47 | 1.74 | .87 | 1.02 | 6.85 | 10.20 | 6.55 | 7.14 | 7.58 | 68.95 |
| < 10.0 | .43 | .43 | .58 | .29 | 5.39 | 12.24 | 2.47 | .72 | .29 | .14 | .58 | 1.60 | 3.06 | 1.60 | .72 | .43 | 31.04 |
| < 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 3.35 | 3.49 | 6.41 | 3.49 | 7.43 | 15.30 | 6.85 | 3.20 | 2.04 | 1.02 | 1.60 | 8.45 | 13.26 | 8.16 | 7.87 | 8.01 | |

Calm : .00 %

Total # Operational Hours : 686

Distribution By Samples

Direction

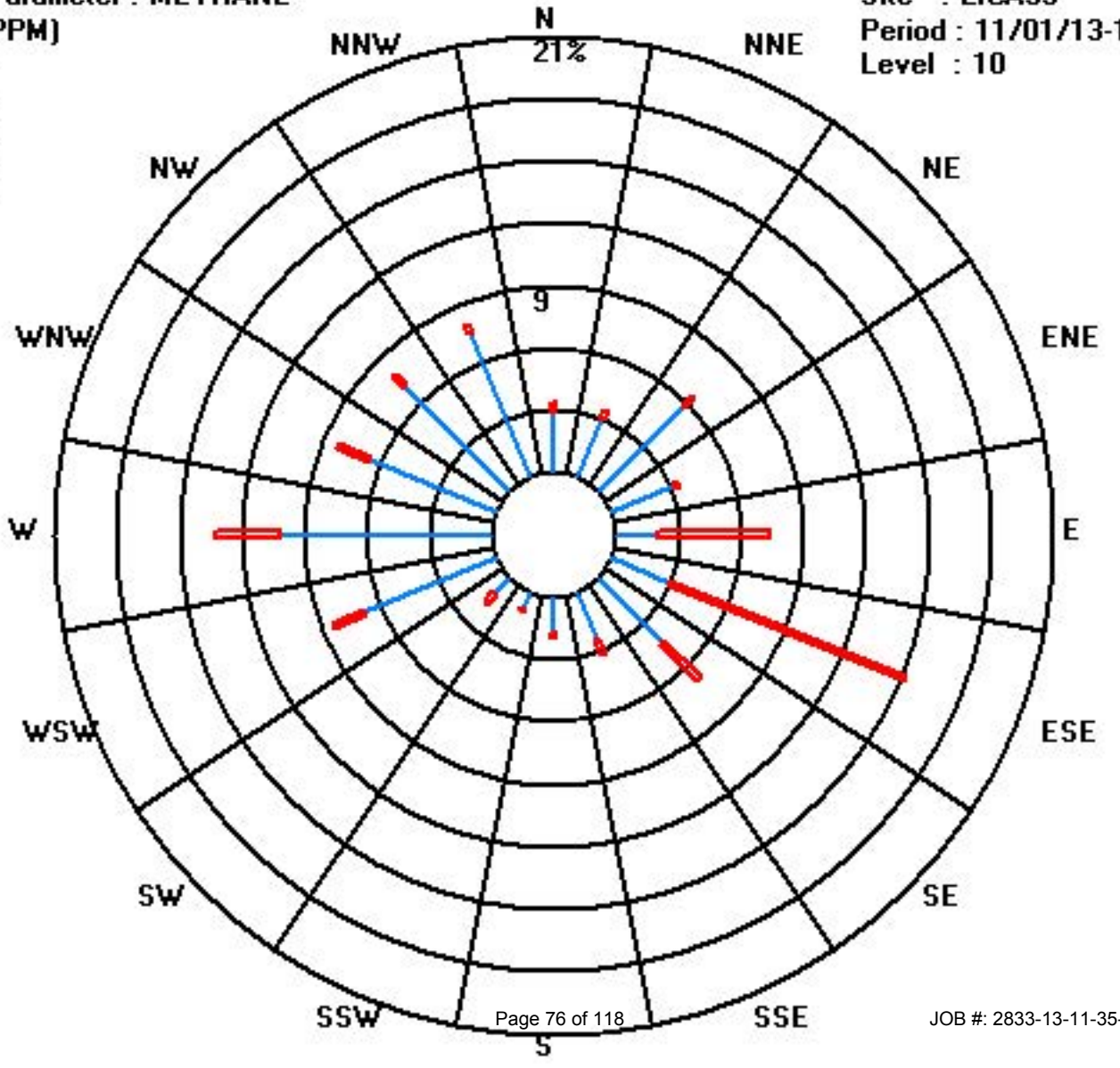
| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3.0 | 20 | 21 | 40 | 22 | 14 | 21 | 30 | 17 | 12 | 6 | 7 | 47 | 70 | 45 | 49 | 52 | 473 |
| < 10.0 | 3 | 3 | 4 | 2 | 37 | 84 | 17 | 5 | 2 | 1 | 4 | 11 | 21 | 11 | 5 | 3 | 213 |
| < 50.0 | | | | | | | | | | | | | | | | | |
| >= 50.0 | | | | | | | | | | | | | | | | | |
| Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 56 | 54 | 55 | |

Calm : .00 %

Total # Operational Hours : 686

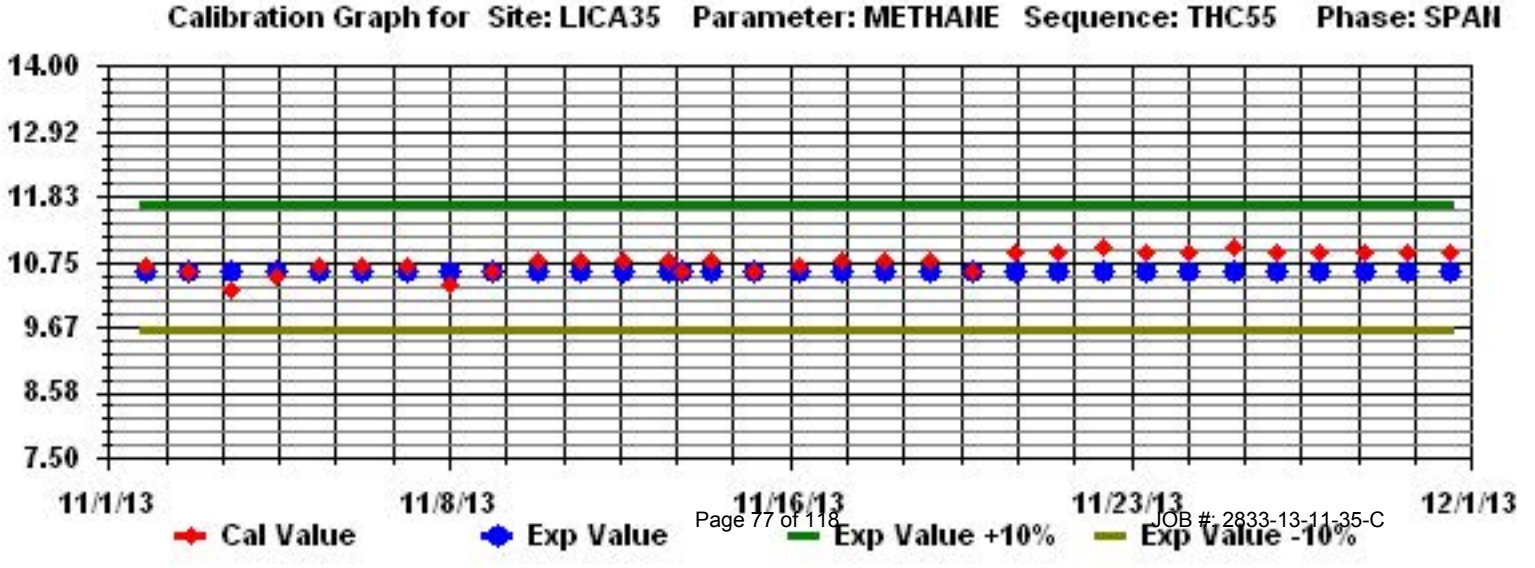
Logger : 35 Parameter : METHANE
Class Limits (PPM)
>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA35
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C


Calibration Graph for Site: LICA35 Parameter: METHANE Sequence: THC55 Phase: SPAN
14.00
12.92
11.83
10.75
9.67
8.58
7.50
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Non-Methane Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

NOVEMBER 2013

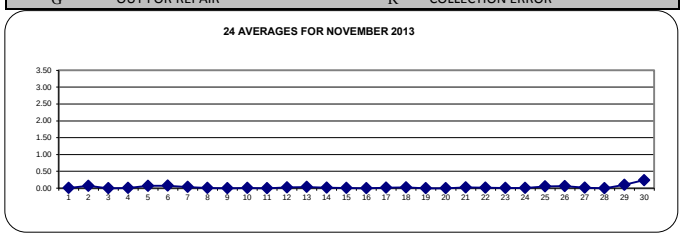
**NON-METHANE HYDROCARBONS** hourly averages in ppm

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.00 | 24 |
| 2 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.07 | 24 |
| 3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 24 |
| 4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.01 | 24 |
| 5 | 0.2 | 0.0 | 0.0 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.07 | 24 |
| 6 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.07 | 24 |
| 7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.03 | 24 |
| 8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.00 | 24 |
| 9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 24 |
| 10 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.00 | 24 |
| 11 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 24 |
| 12 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.02 | 24 |
| 13 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | **S** | 0.0 | 0.1 | 0.1 | 0.0 | **C** | **C** | **C** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.04 | 24 |
| 14 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.02 | 24 |
| 15 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.00 | 24 |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 24 |
| 17 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.2 | 0.01 | 24 |
| 18 | 0.0 | 0.1 | **S** | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.02 | 24 |
| 19 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 24 |
| 20 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.00 | 24 |
| 21 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.2 | 0.03 | 24 |
| 22 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | **S** | 0.0 | 0.2 | 0.02 | 24 |
| 23 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.1 | 0.01 | 24 |
| 24 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.00 | 24 |
| 25 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | **S** | 0.0 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.05 | 24 |
| 26 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | **S** | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.2 | 0.06 | 24 |
| 27 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.01 | 24 |
| 28 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 24 |
| 29 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | **S** | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.3 | 0.3 | 0.3 | 0.10 | 24 |
| 30 | 0.4 | **0.5** | **0.5** | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | **S** | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | **0.5** | **0.24** | 24 |
| HOURLY MAX | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | | | |
| HOURLY AVG | 0.04 | 0.03 | 0.03 | 0.04 | 0.03 | 0.04 | 0.05 | 0.05 | 0.04 | 0.04 | 0.03 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | | | |

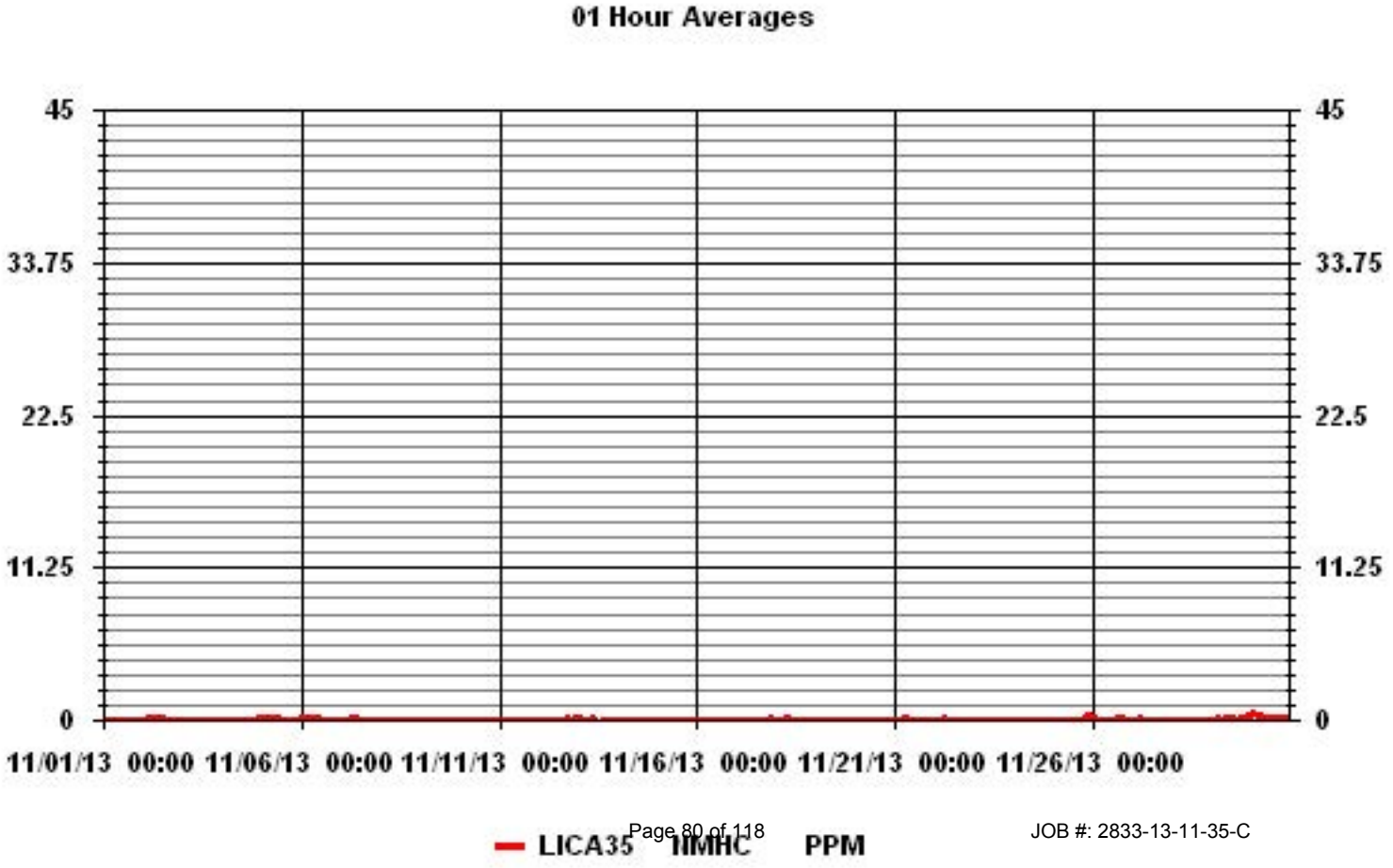
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | | 142 | | | | | |
| MAXIMUM 1-HR AVERAGE: | | 0.5 | PPM | @ HOUR(S) | 1, 2 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | | 0.24 | PPM | | | ON DAY(S) | 30 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 3 | HRS | AMD OPERATION UPTIME: | | | 100.0 | % |
| STANDARD DEVIATION: | 0.07 | | MONTHLY AVERAGE: | | | 0.03 | PPM |






JOB #: 2833-13-11-35-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

NOVEMBER 2013

**NON-METHANE HYDROCARBONS MAX** instantaneous maximum in ppm

MST

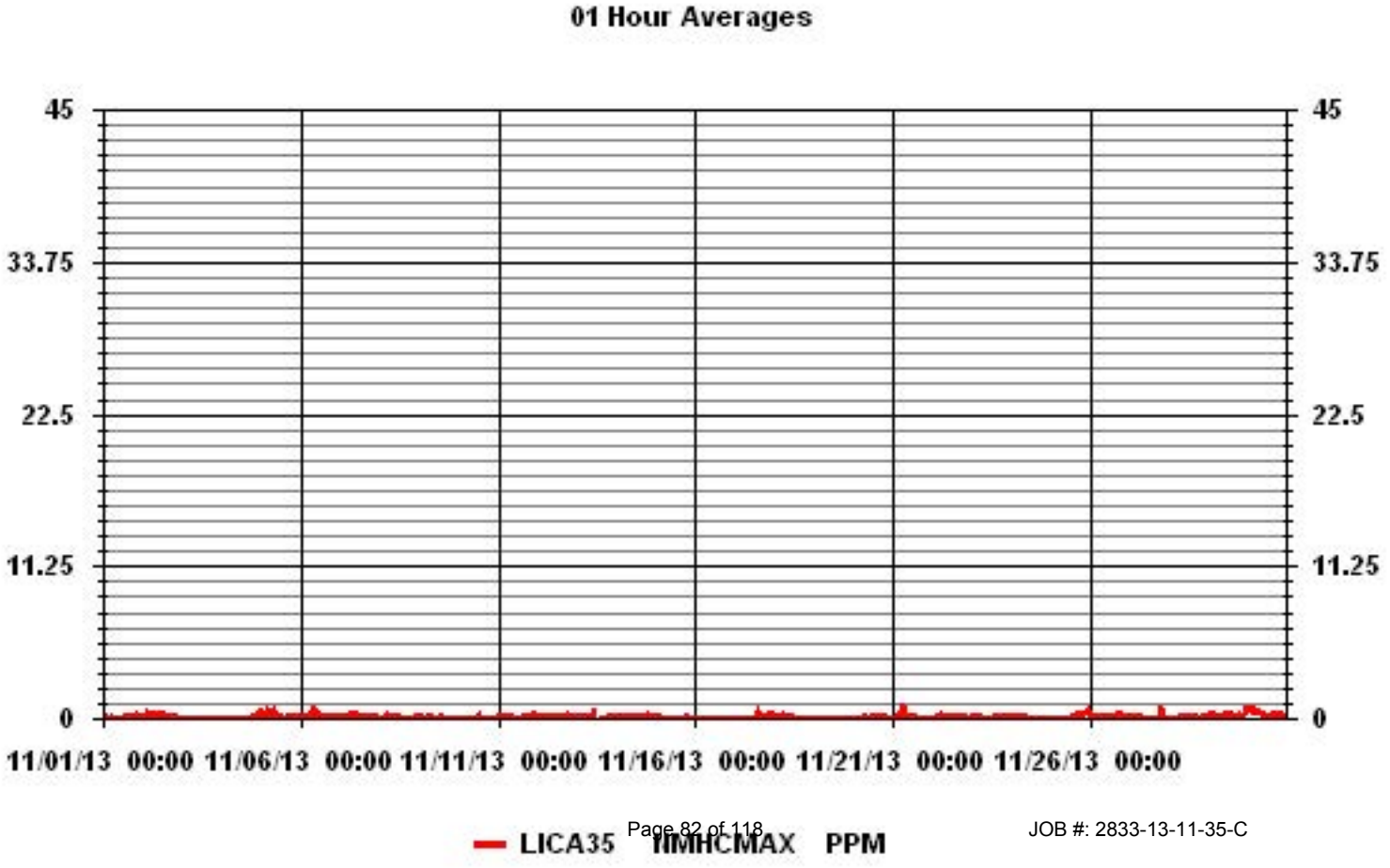
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.16 | 0.16 | 0.12 | 0.05 | 0 | 0.14 | 0.09 | 0.05 | 0 | 0 | 0 | 0 | 0 | 0.14 | 0 | 0.15 | 0.14 | 0.13 | 0.25 | **S** | 0.07 | 0.31 | 0.22 | 0.26 | 0.31 | 0.11 | 24 |
| 2 | 0.14 | 0.14 | 0.22 | 0.47 | 0.3 | 0.17 | 0.37 | 0.34 | 0.37 | 0.39 | 0.42 | 0.23 | 0.24 | 0.25 | 0.18 | 0.14 | 0.15 | 0.2 | **S** | 0.17 | 0 | 0 | 0 | 0 | 0.47 | 0.21 | 24 |
| 3 | 0 | 0 | 0.12 | 0 | 0 | 0 | 0 | 0.08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0.12 | 0.01 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0.12 | 0.13 | 0.14 | 0.22 | 0.35 | 0.35 | 0.04 | 24 |
| 5 | 0.49 | 0.18 | 0.17 | 0.55 | 0.35 | 0.32 | 0.32 | 0.32 | 0.53 | 0.25 | 0.22 | 0.18 | 0.15 | 0.14 | 0.09 | **S** | 0.22 | 0.12 | 0.19 | 0.25 | 0.18 | 0.17 | 0.18 | 0.23 | 0.55 | 0.25 | 24 |
| 6 | 0.2 | 0.19 | 0.22 | 0.23 | 0.22 | 0.27 | 0.29 | 0.45 | 0.81 | 0.33 | 0.34 | 0.27 | 0.19 | 0.17 | **S** | 0.1 | 0.06 | 0.19 | 0.29 | 0.11 | 0.12 | 0.16 | 0.17 | 0.2 | 0.81 | 0.24 | 24 |
| 7 | 0.16 | 0.1 | 0.01 | 0.2 | 0.15 | 0.2 | 0.26 | 0.29 | 0.27 | 0.31 | 0.28 | 0.29 | 0.2 | **S** | 0.19 | 0.16 | 0.18 | 0.18 | 0.25 | 0.14 | 0.11 | 0.12 | 0.08 | 0 | 0.31 | 0.18 | 24 |
| 8 | 0.08 | 0 | 0 | 0 | 0.23 | 0 | 0 | 0 | 0 | 0.19 | 0.19 | 0.16 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.14 | 0.24 | 0.24 | 0.05 | 24 |
| 9 | 0.13 | 0.21 | 0.18 | 0 | 0 | 0.16 | 0.15 | 0.22 | 0 | 0 | 0 | **S** | 0 | 0.07 | 0.07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.12 | 0.22 | 0.06 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 | **S** | 0 | 0.22 | 0 | 0.1 | 0 | 0 | 0.06 | 0 | 0.1 | 0.03 | 0 | 0.07 | 0 | 0.22 | 0.03 | 24 |
| 11 | 0.09 | 0.08 | 0.16 | 0 | 0.15 | 0.12 | 0.16 | 0.09 | 0.13 | **S** | 0.07 | 0 | 0 | 0.07 | 0 | 0.06 | 0.06 | 0.09 | 0.09 | 0.29 | 0.21 | 0.25 | 0.25 | 0.12 | 0.29 | 0.11 | 24 |
| 12 | 0.14 | 0.13 | 0.17 | 0.13 | 0.17 | 0.18 | 0.18 | 0.18 | **S** | 0.16 | 0.1 | 0.14 | 0.12 | 0.13 | 0.15 | 0.19 | 0.2 | 0.24 | 0.28 | 0.25 | 0.19 | 0.18 | 0.15 | 0.17 | 0.28 | 0.17 | 24 |
| 13 | 0.23 | 0.19 | 0.25 | 0.2 | 0.21 | 0.2 | 0.14 | **S** | 0.17 | 0.18 | 0.65 | **C** | **C** | **C** | **C** | **C** | 0.01 | 0 | 0 | 0.12 | 0.1 | 0 | 0.22 | 0.2 | 0.65 | 0.17 | 24 |
| 14 | 0.1 | 0.17 | 0.12 | 0.09 | 0.13 | 0.22 | **S** | 0.2 | 0.16 | 0.28 | 0.19 | 0.23 | 0.13 | 0.22 | 0.08 | 0.14 | 0.21 | 0.23 | 0.21 | 0.24 | 0.25 | 0.21 | 0.12 | 0.21 | 0.28 | 0.18 | 24 |
| 15 | 0.17 | 0.23 | 0.15 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.17 | 0.17 | 0.19 | 0 | 0 | 0 | 0.23 | 0.05 | 24 |
| 16 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 | 0.00 | 24 |
| 17 | 0 | 0 | 0 | **S** | 0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.1 | 0 | 0.11 | 0.17 | 0.22 | 0.13 | 0.34 | 0.38 | 0.1 | 0.4 | 0.09 | 24 |
| 18 | 0.17 | 0.15 | **S** | 0.13 | 0.12 | 0.23 | 0.23 | 0.19 | 0.16 | 0.14 | 0.17 | 0.09 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.23 | 0.08 | 24 |
| 19 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 24 |
| 20 | **S** | 0 | 0 | 0 | 0 | 0 | 0.16 | 0.14 | 0.14 | 0.03 | 0 | 0.1 | 0.11 | 0 | 0.21 | 0.26 | 0.19 | 0.13 | 0.14 | 0.11 | 0.09 | 0.03 | 0.06 | **S** | 0.26 | 0.09 | 24 |
| 21 | 0.12 | 0.19 | 0.14 | 0.16 | 0.31 | 0.46 | **1.12** | 0.17 | 0.18 | 0.21 | 0.11 | 0.14 | 0.06 | 0.08 | 0.08 | 0.08 | 0.05 | 0.05 | 0.14 | 0 | 0 | 0 | **S** | 0.04 | **1.12** | 0.17 | 24 |
| 22 | 0.13 | 0.02 | 0.1 | 0.15 | 0.1 | 0.13 | 0.39 | 0.28 | 0.2 | 0.16 | 0.19 | 0.15 | 0.1 | 0.15 | 0.15 | 0.12 | 0.15 | 0.18 | 0.17 | 0.13 | 0.22 | **S** | 0.09 | 0.17 | 0.39 | 0.16 | 24 |
| 23 | 0.14 | 0.07 | 0.13 | 0.15 | 0.09 | 0.19 | 0 | 0 | 0 | 0 | 0.11 | 0.01 | 0.03 | 0.09 | 0.14 | 0.09 | 0.25 | 0.21 | 0.14 | 0.16 | **S** | 0.22 | 0.21 | 0.16 | 0.25 | 0.11 | 24 |
| 24 | 0.13 | 0.14 | 0.15 | 0.18 | 0.03 | 0.17 | 0.01 | 0.1 | 0.22 | 0.06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0.01 | 0 | 0 | 0 | 0.22 | 0.05 | 24 |
| 25 | 0 | 0.07 | 0 | 0 | 0.06 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.08 | 0.15 | 0.13 | 0.24 | 0.25 | **S** | 0.21 | 0.34 | 0.39 | 0.6 | 0.4 | 0.6 | 0.13 | 24 |
| 26 | 0.36 | 0.28 | 0.23 | 0.21 | 0.21 | 0.18 | 0.15 | 0.09 | 0.14 | 0.22 | 0.17 | 0.18 | 0.18 | 0.17 | 0.17 | 0.18 | 0.26 | **S** | 0.5 | 0.19 | 0.22 | 0.26 | 0.22 | 0.18 | 0.5 | 0.22 | 24 |
| 27 | 0.14 | 0.14 | 0.11 | 0.15 | 0.1 | 0.19 | 0.18 | 0.16 | 0 | 0 | 0 | 0.09 | 0 | 0 | 0 | 0.04 | **S** | 0 | 0.08 | 0.96 | 0.02 | 0.09 | 0 | 0 | 0.96 | 0.11 | 24 |
| 28 | 0 | 0.09 | 0 | 0 | 0 | 0.05 | 0 | 0.06 | 0.09 | 0 | 0.14 | 0.19 | 0.06 | 0.1 | 0.11 | **S** | 0.18 | 0.16 | 0 | 0 | 0 | 0.18 | 0 | 0.16 | 0.19 | 0.07 | 24 |
| 29 | 0.17 | 0.3 | 0.36 | 0.22 | 0.22 | 0.18 | 0.18 | 0.17 | 0.28 | 0.21 | 0.25 | 0.29 | 0.34 | 0.33 | **S** | 0.2 | 0.17 | 0.23 | 0.22 | 0.24 | 0.24 | 0.29 | 0.79 | 0.7 | 0.79 | 0.29 | 24 |
| 30 | 0.65 | 0.66 | 0.73 | 0.58 | 0.53 | 0.59 | 0.51 | 0.39 | 0.37 | 0.31 | 0.25 | 0.28 | 0.25 | **S** | 0.22 | 0.27 | 0.31 | 0.3 | 0.34 | 0.33 | 0.27 | 0.28 | 0.24 | 0.28 | 0.73 | 0.39 | 24 |
| HOURLY MAX | 0.65 | 0.66 | 0.73 | 0.58 | 0.53 | 0.59 | 1.12 | 0.45 | 0.81 | 0.39 | 0.65 | 0.29 | 0.34 | 0.33 | 0.4 | 0.27 | 0.31 | 0.3 | 0.5 | 0.96 | 0.34 | 0.39 | 0.79 | 0.7 | | | |
| HOURLY AVG | 0.14 | 0.13 | 0.13 | 0.13 | 0.13 | 0.15 | 0.17 | 0.14 | 0.15 | 0.12 | 0.13 | 0.11 | 0.09 | 0.08 | 0.09 | 0.09 | 0.11 | 0.11 | 0.13 | 0.16 | 0.11 | 0.13 | 0.15 | 0.15 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 440 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 1.12 | PPM | @ HOUR(S) | 6 | ON DAY(S) | 21 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 5 | HRS | | | | |
| STANDARD DEVIATION: | 0.14 | | | | | |






JOB #: 2833-13-11-35-C

LICA35
NMHC / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

Logger Id : 35
Site Name : LICA35
Parameter : NMHC
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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | .2 | 3.35 | 3.49 | 6.41 | 3.49 | 7.14 | 14.86 | 6.85 | 3.20 | 2.04 | .87 | 1.60 | 8.01 | 13.11 | 7.87 | 7.72 | 8.01 | 98.10 |
| < | .5 | .00 | .00 | .00 | .00 | .29 | .43 | .00 | .00 | .00 | .14 | .00 | .29 | .14 | .14 | .14 | .00 | 1.60 |
| < | 1.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .14 | .00 | .14 | .00 | .00 | .29 |
| < | 2.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 4.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 4.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 3.35 | 3.49 | 6.41 | 3.49 | 7.43 | 15.30 | 6.85 | 3.20 | 2.04 | 1.02 | 1.60 | 8.45 | 13.26 | 8.16 | 7.87 | 8.01 | |

Calm : .00 %

Total # Operational Hours : 686

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | .2 | 23 | 24 | 44 | 24 | 49 | 102 | 47 | 22 | 14 | 6 | 11 | 55 | 90 | 54 | 53 | 55 | 673 |
| < | .5 | | | | | 2 | 3 | | | | 1 | | 2 | 1 | 1 | 1 | | 11 |
| < | 1.0 | | | | | | | | | | | | 1 | | 1 | | | 2 |
| < | 2.0 | | | | | | | | | | | | | | | | | |
| < | 4.0 | | | | | | | | | | | | | | | | | |
| >= | 4.0 | | | | | | | | | | | | | | | | | |
| | Totals | 23 | 24 | 44 | 24 | 51 | 105 | 47 | 22 | 14 | 7 | 11 | 58 | 91 | 56 | 54 | 55 | |

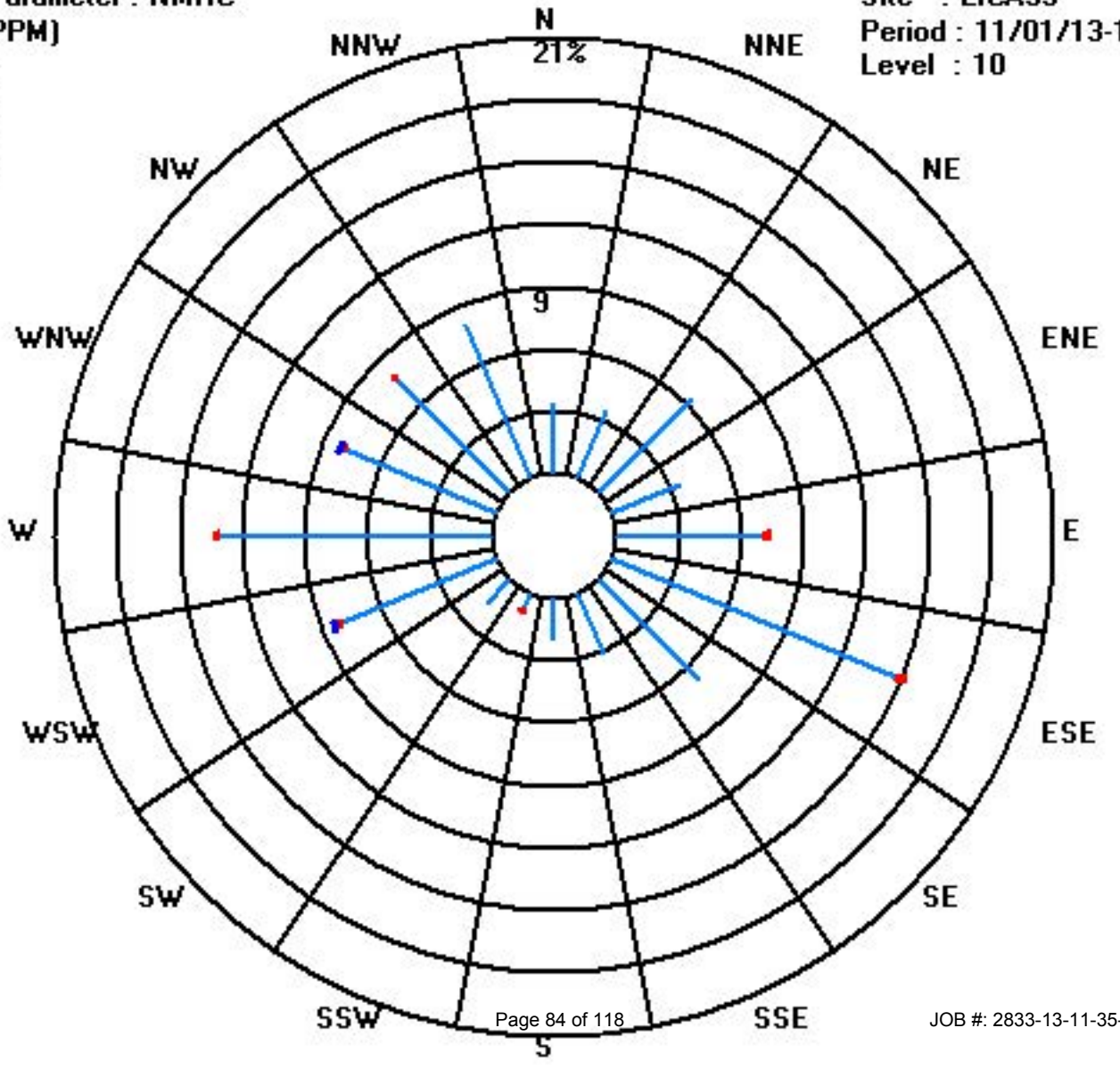
Calm : .00 %

Total # Operational Hours : 686

Logger : 35 Parameter : NMHC
Class Limits (PPM)

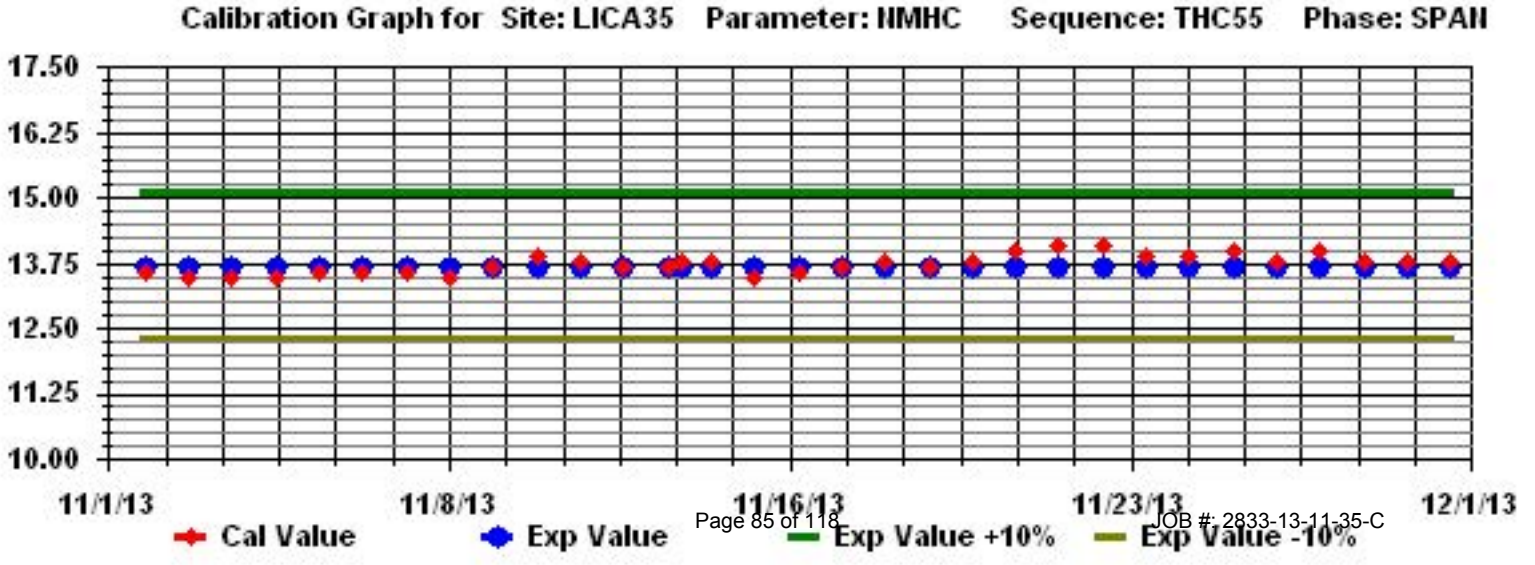
>= 4.0
< 4.0
< 2.0
< 1.0
< .5
< .2

Site : LICA35
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-35-C


Calibration Graph for Site: LICA35 Parameter: NMHC Sequence: THC55 Phase: SPAN
17.50
16.25
15.00
13.75
12.50
11.25
10.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Vector Wind Speed

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

NOVEMBER 2013

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

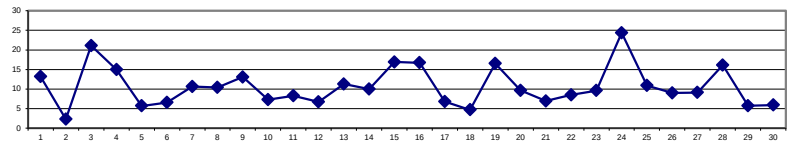
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 10.5 | 9.2 | 9.3 | 9.2 | 8.9 | 9.1 | 8.1 | 14.8 | 14.9 | 14.4 | 22.2 | 21.6 | 22.7 | 21.8 | 18.7 | 24.7 | 15.2 | 10.5 | 10.7 | 8 | 9.1 | 11.1 | 10.1 | 6.8 | 24.7 | 13.2 | 24 |
| 2 | 9.8 | 1.7 | 6.1 | 8.9 | 10.7 | 6.4 | 1.1 | 0.1 | 0.4 | 0.7 | 0.3 | 0.5 | 1.2 | 2 | 2.1 | 7.2 | 2.4 | 6.4 | 6.6 | 10.5 | 10.8 | 11.7 | 13.3 | 14.7 | 14.7 | 2.3 | 24 |
| 3 | 16.1 | 18.6 | 19.2 | 21.5 | 21.4 | 23.6 | 22.2 | 21.3 | 20.8 | 24.5 | 25 | 26 | 26 | 29.2 | 26.9 | 26.3 | 24.5 | 23 | 26.5 | 24.2 | 18.6 | 17.7 | 20.9 | 20.4 | 29.2 | 21.1 | 24 |
| 4 | 22 | 19.3 | 22.7 | 18.1 | 20.5 | 19.6 | 22.2 | 20.4 | 21.1 | 20.8 | 22.2 | 19.3 | 18.4 | 17.8 | 18 | 17.3 | 13.7 | 12.4 | 8.2 | 6.6 | 6.5 | 9.3 | 11.3 | 8.7 | 22.7 | 15 | 24 |
| 5 | 4.5 | 3.7 | 3.5 | 1.8 | 1.2 | 2.4 | 0.3 | 1.3 | 1.3 | 2.6 | 3.8 | 4.7 | 5.8 | 6.9 | 9.5 | 10.5 | 9.8 | 5.9 | 8.9 | 10.2 | 11.8 | 9.1 | 7.9 | 9.3 | 11.8 | 5.7 | 24 |
| 6 | 7.7 | 6.6 | 7.7 | 7.7 | 4.9 | 5.5 | 2.8 | 1.1 | 0.2 | 0.1 | 0.6 | 3.7 | 6.4 | 8.6 | 11.2 | 14.6 | 8.3 | 8.1 | 6.1 | 5 | 7.9 | 8.9 | 12.9 | 11.2 | 14.6 | 6.6 | 24 |
| 7 | 13.3 | 10.5 | 10.6 | 7.1 | 8.8 | 13.1 | 3.5 | 1.8 | 2.6 | 4.1 | 4.9 | 7.3 | 9.9 | 11.7 | 14.2 | 12.8 | 14.6 | 16.2 | 17.5 | 16.5 | 12.4 | 9.2 | 14.3 | 18.6 | 18.6 | 10.6 | 24 |
| 8 | 19.6 | 17.4 | 16.9 | 13.9 | 15.9 | 10.9 | 11.3 | 12.6 | 7 | 7 | 6.5 | 8.9 | 9.3 | 10.4 | 11.8 | 14 | 12.6 | 9.7 | 7 | 8.2 | 5.5 | 4.3 | 4.9 | 4.9 | 19.6 | 10.4 | 24 |
| 9 | 4.8 | 5.2 | 6.9 | 11 | 10.5 | 9.5 | 6.8 | 10.7 | 10.1 | 9.2 | 15 | 22.3 | 20.8 | 18.1 | 19 | 18.4 | 17.7 | 15.8 | 14.9 | 15.5 | 16.5 | 15.1 | 11.7 | 8.5 | 22.3 | 13.1 | 24 |
| 10 | 5.7 | 8.5 | 8.8 | 4.5 | 4.2 | 5.3 | 1.9 | 4.5 | 2.9 | 5.8 | 5 | 4.1 | 8.3 | 7.7 | 9.1 | 7.7 | 8.8 | 9.4 | 8.7 | 9.4 | 9.7 | 8.6 | 10.7 | 15.2 | 15.2 | 7.3 | 24 |
| 11 | 13.9 | 8.5 | 6.5 | 5.6 | 8.1 | 8.8 | 8.2 | 7.1 | 7.6 | 9.1 | 7.8 | 6.7 | 9 | 11.5 | 10.8 | 7.9 | 7.2 | 7.7 | 8 | 8.2 | 8.4 | 8.6 | 8 | 6.5 | 13.9 | 8.3 | 24 |
| 12 | 8 | 6.1 | 5.7 | 5.4 | 5.7 | 3.8 | 3.3 | 4.2 | 5.4 | 5.3 | 5.1 | 5.9 | 7.5 | 6.8 | 7.4 | 0.6 | 1.7 | 5.6 | 12.1 | 8.8 | 11.4 | 13.1 | 12.5 | 10.7 | 13.1 | 6.8 | 24 |
| 13 | 11.8 | 13 | 16.2 | 11.3 | 13.2 | 10.4 | 11.4 | 15.7 | 15.9 | 12.6 | 13.5 | 13.7 | 12.1 | 15.4 | 14.2 | 15.7 | 13.8 | 9.2 | 6.6 | 3.9 | 2.7 | 3.8 | 6 | 8.7 | 16.2 | 11.3 | 24 |
| 14 | 6.6 | 6.5 | 7.9 | 8.8 | 7 | 5.5 | 1.2 | 3.8 | 3.4 | 0.6 | 2.4 | 9.3 | 13 | 14 | 14.1 | 14.9 | 15.6 | 17.1 | 15.8 | 13.8 | 12.4 | 13.9 | 15.7 | 16.3 | 17.1 | 10.0 | 24 |
| 15 | 16.5 | 18.6 | 15.9 | 26.1 | 29.8 | 27.4 | 28.9 | 27.4 | 23 | 18.1 | 14.8 | 15.9 | 16.5 | 13.9 | 10 | 6.8 | 0.6 | 1.2 | 5.3 | 11.7 | 17.6 | 18.8 | 19.7 | 21.7 | 29.8 | 16.9 | 24 |
| 16 | 17 | 19.5 | 19.6 | 21.2 | 18.9 | 16.4 | 18.3 | 19.2 | 20.3 | 19 | 19 | 17.9 | 17.4 | 18.5 | 16.3 | 12 | 10.8 | 12.7 | 15.7 | 18.1 | 15.8 | 14.6 | 11.3 | 12.3 | 21.2 | 16.7 | 24 |
| 17 | 11.9 | 11.8 | 12.3 | 9.1 | 8.6 | 7.9 | 7.2 | 8.7 | 7.8 | 7.1 | 8.8 | 8.5 | 6.5 | 4.5 | 2.1 | 2.5 | 3.8 | 4.4 | 2.5 | 6 | 5.7 | 5.2 | 6 | 4 | 12.3 | 6.8 | 24 |
| 18 | 1.9 | 3.7 | 2 | 1.8 | 3.5 | 2.8 | 0.9 | 2.6 | 1.1 | 0.2 | 2.5 | 1.2 | 1.5 | 4.2 | 6 | 7.7 | 9.8 | 8.4 | 9.8 | 7.1 | 7.5 | 9.1 | 8.4 | 9.2 | 9.8 | 4.7 | 24 |
| 19 | 11.5 | 8.8 | 8.9 | 9.1 | 8.3 | 11 | 14.1 | 16.3 | 14 | 15.4 | 17.5 | 22.8 | 24.7 | 23 | 21.5 | 17.1 | 15 | 14.7 | 21.1 | 25.1 | 25.9 | 19.5 | 15.5 | 15.2 | 25.9 | 16.5 | 24 |
| 20 | 16.2 | 17.5 | 13.9 | 18.1 | 17.1 | 12.4 | 14 | 9.3 | 8.3 | 9 | 5.9 | 5.1 | 5.8 | 4.3 | 4.4 | 5.8 | 6.2 | 6.1 | 5.8 | 8.5 | 9.2 | 9.9 | 8.2 | 10.7 | 18.1 | 9.7 | 24 |
| 21 | 8.4 | 6.8 | 4.5 | 2.2 | 0.6 | 3.7 | 6 | 8.7 | 10.4 | 7.9 | 9.2 | 10.1 | 12.5 | 11.2 | 11.9 | 6.9 | 9.2 | 8 | 7.5 | 6 | 6.1 | 4.1 | 2.5 | 2.3 | 12.5 | 6.9 | 24 |
| 22 | 2.6 | 4.4 | 5.2 | 4.3 | 1 | 1.6 | 1.1 | 2.4 | 4 | 5.7 | 7.3 | 6.6 | 8.2 | 8 | 10.6 | 11.8 | 14.1 | 14.2 | 16.1 | 15.9 | 16.9 | 14.6 | 13.1 | 14.1 | 16.9 | 8.5 | 24 |
| 23 | 14.6 | 16.3 | 11.3 | 13.3 | 13.5 | 14.4 | 15.6 | 13.4 | 12.1 | 9.4 | 7.2 | 9.6 | 10 | 8.9 | 10.2 | 9.4 | 6.5 | 7.6 | 7.7 | 4.1 | 3.5 | 1.8 | 1.7 | 8.4 | 16.3 | 9.6 | 24 |
| 24 | 14.1 | 15.5 | 15.7 | 17.2 | 23.7 | 26 | 28.4 | 30.6 | 28.6 | 23.8 | 30.9 | 32 | 33.9 | **35** | 33.9 | 29.4 | 26.5 | 26.6 | 22.3 | 12.5 | 16 | 20 | 19.4 | 23.2 | **35.0** | **24.4** | 24 |
| 25 | 22.9 | 22.5 | 21.8 | 18.4 | 20.7 | 12 | 11.2 | 11.2 | 7 | 13.5 | 12.9 | 11.2 | 12 | 9.1 | 11.3 | 8.3 | 6.9 | 11.7 | 8.8 | 4.9 | 1.5 | 1.9 | 0.5 | 0.3 | 22.9 | 10.9 | 24 |
| 26 | 1.9 | 5.2 | 6.1 | 4.1 | 5.3 | 7.5 | 7.3 | 9.3 | 9.3 | 12.2 | 10.1 | 12.5 | 13 | 8.4 | 8.8 | 6.6 | 3.3 | 0.3 | 2.8 | 11.2 | 14.7 | 17.8 | 19.2 | 19.5 | 19.5 | 9.0 | 24 |
| 27 | 18.1 | 16.7 | 15.3 | 17.6 | 17.9 | 4.3 | 5 | 4.3 | 7.7 | 9.5 | 11.3 | 7.2 | 6.6 | 4.8 | 4.3 | 5.9 | 2.8 | 6.1 | 5.7 | 8.4 | 7.4 | 9.3 | 12.6 | 9.8 | 18.1 | 9.1 | 24 |
| 28 | 11.8 | 12.8 | 14.1 | 12.5 | 14 | 15.7 | 14.5 | 14.9 | 15.8 | 19.4 | 18 | 19 | 23.4 | 23 | 20.9 | 25.1 | 19.5 | 21 | 17 | 14.9 | 10.5 | 10.3 | 9.6 | 9.2 | 25.1 | 16.1 | 24 |
| 29 | 4.5 | 5.9 | 2.7 | 3.7 | 3.8 | 4.8 | 4.9 | 2.7 | 3 | 2 | 0.8 | 0.4 | 2.5 | 1.6 | 6.1 | 9.5 | 9 | 10 | 10 | 13 | 11.9 | 11.3 | 9.9 | 3.9 | 13.0 | 5.7 | 24 |
| 30 | 1.7 | 1 | 1.2 | 3.1 | 1.4 | 1.7 | 1.3 | 2 | 2 | 0.7 | 6.4 | 8 | 9 | 9.5 | 9.7 | 12.5 | 12 | 10 | 8.2 | 8.1 | 11.8 | 8.2 | 6.7 | 6.5 | 12.5 | 5.9 | 24 |
| HOURLY MAX | 22.9 | 22.5 | 22.7 | 26.1 | 29.8 | 27.4 | 28.9 | 30.6 | 28.6 | 24.5 | 30.9 | 32.0 | 33.9 | 35.0 | 33.9 | 29.4 | 26.5 | 26.6 | 26.5 | 25.1 | 25.9 | 20.0 | 20.9 | 23.2 | | | |
| HOURLY AVG | 11.0 | 10.7 | 10.6 | 10.6 | 11.0 | 10.1 | 9.4 | 10.1 | 9.6 | 9.7 | 10.6 | 11.4 | 12.5 | 12.3 | 12.5 | 12.3 | 10.7 | 10.7 | 10.8 | 10.8 | 10.9 | 10.7 | 10.8 | 11.0 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**24 HOUR AVERAGES FOR NOVEMBER 2013**



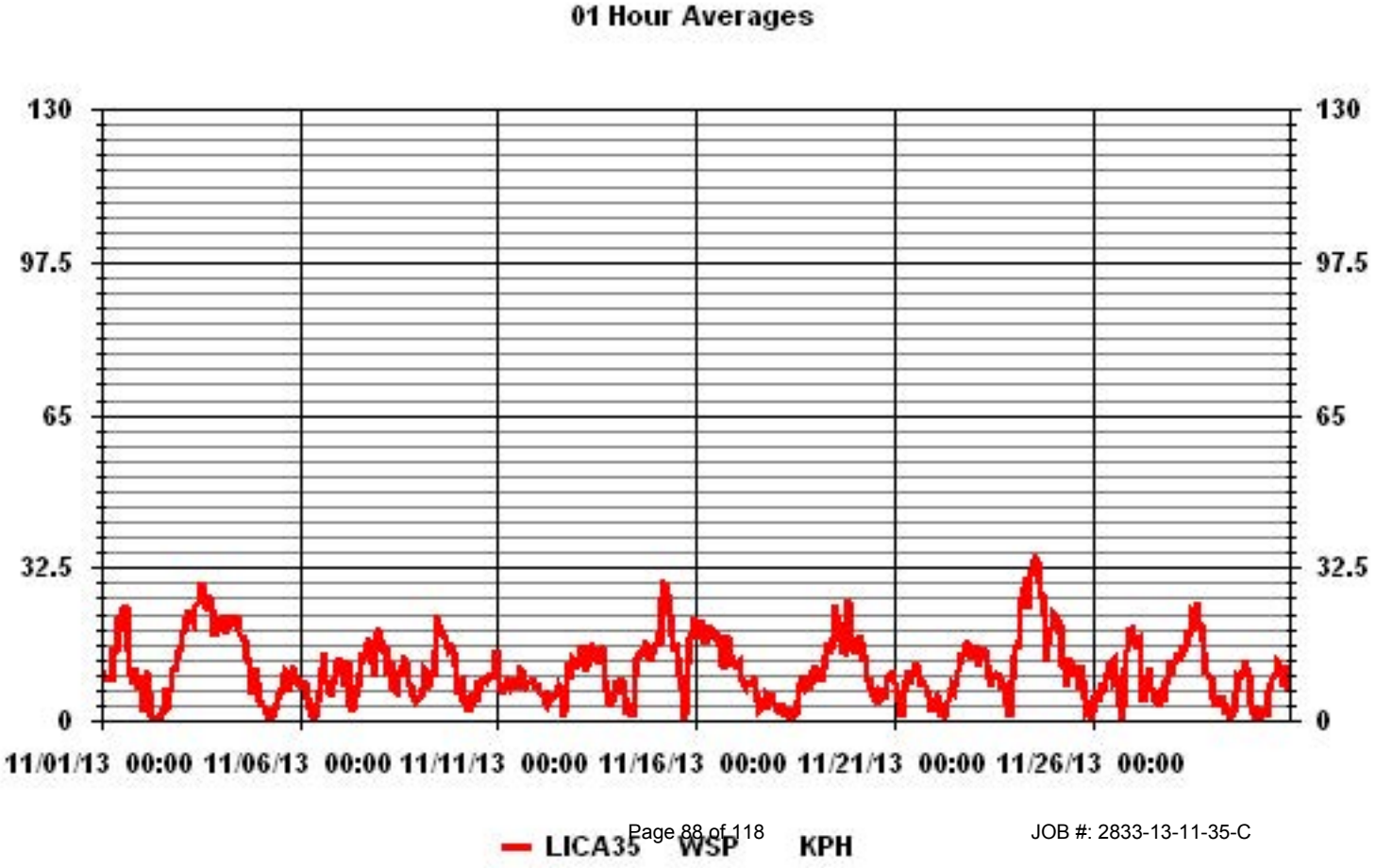

LAST CALIBRATION: November 24, 2011

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 35.0 | KPH | @ HOUR(S) | 13 | ON DAY(S) | 24 | |
| MAXIMUM 24-HR AVERAGE: | 24.4 | KPH | | | ON DAY(S) | 24 | |
| CALMS (≤ 1 KPH) | 1.08 | % | OPERATIONAL TIME: | | 720 | HRS | |
| MONTHLY CALIBRATION TIME: | 0 | HRS | AMD OPERATION UPTIME: | | 100.0 | % | |
| STANDARD DEVIATION: | 6.75 | | MONTHLY AVERAGE: | | 10.86 | KPH | |



JOB #: 2833-13-11-35-C






JOB #: 2833-13-11-35-C

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

NOVEMBER 2013

**VECTOR WIND SPEED MAX instantaneous maximum in km/hr**

MST

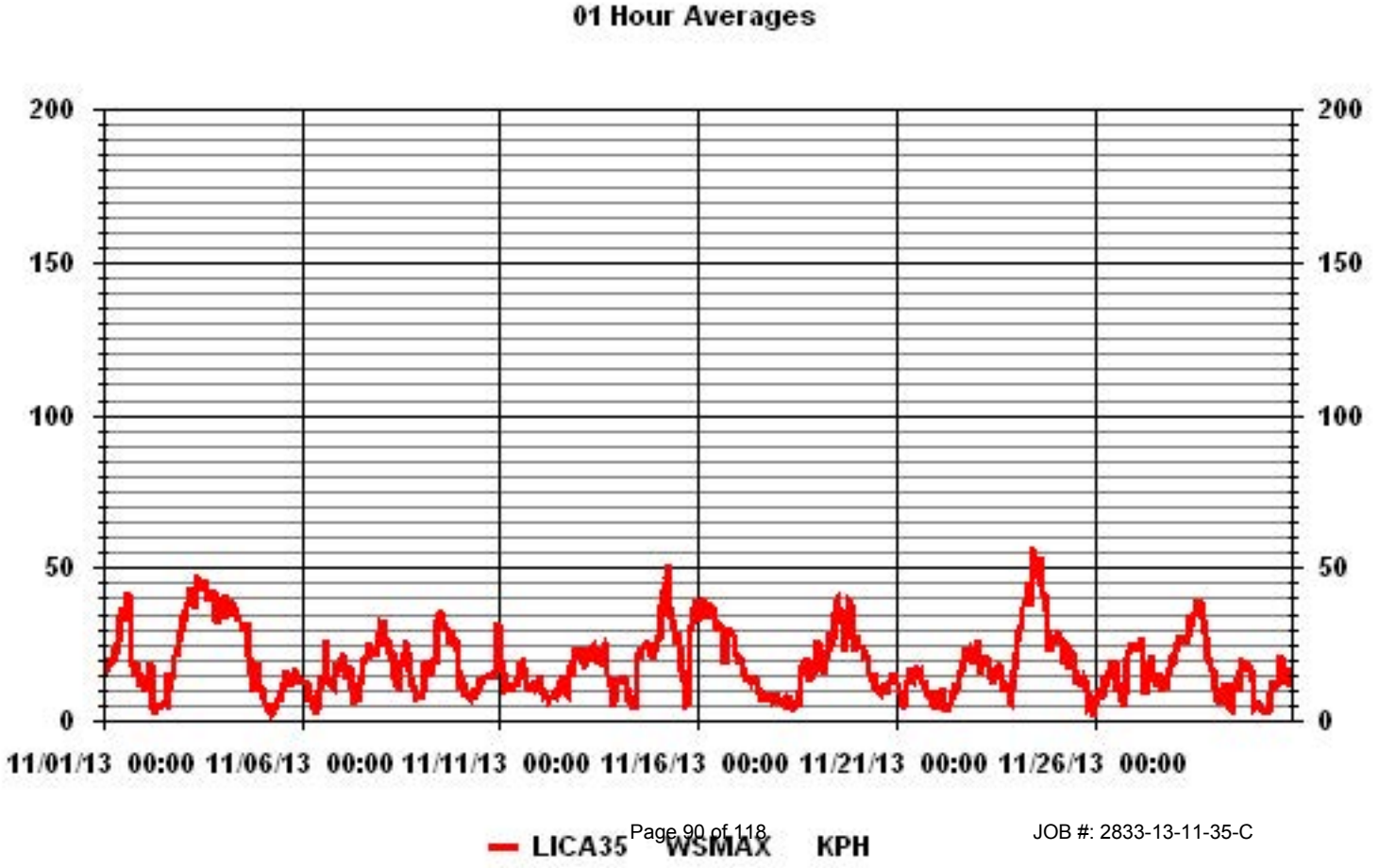
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 18.3 | 14 | 15.8 | 20.6 | 18.9 | 20.1 | 19.1 | 23.3 | 23 | 25.6 | 34 | 33.8 | 36.5 | 34.5 | 34.5 | 41.8 | 33.1 | 20.5 | 18.1 | 15.9 | 16.2 | 18.5 | 16.7 | 11.2 | 41.8 |
| 2 | 15.1 | 9.1 | 10.8 | 14.5 | 17.3 | 19 | 4.7 | 2.2 | 4.2 | 4.7 | 4.9 | 4.6 | 5 | 5.9 | 5.5 | 15.5 | 9.8 | 15.2 | 13.7 | 20.7 | 22.1 | 21 | 25.6 | 29.3 | 29.3 |
| 3 | 34.2 | 34 | 36.2 | 38 | 38.4 | 43.8 | 39.2 | 36.1 | 39.2 | 48 | 44.5 | 43.7 | 43.6 | 44.7 | 46.4 | 42.3 | 39 | 42.8 | 41.3 | 43.1 | 33.5 | 31.7 | 35.7 | 40.1 | 48 |
| 4 | 36.1 | 33.2 | 40.8 | 34.8 | 37.8 | 39.3 | 36.5 | 34 | 36.3 | 35.4 | 33.3 | 32.8 | 29.3 | 31.3 | 31.1 | 31.4 | 21.6 | 15.8 | 12.6 | 10 | 10 | 14.1 | 18.7 | 11.3 | 40.8 |
| 5 | 10.9 | 7.9 | 5.8 | 4 | 3.5 | 5.6 | 2.9 | 3.9 | 4.3 | 5.9 | 8.3 | 7.9 | 9.4 | 12.3 | 13.6 | 16 | 13.3 | 10.9 | 13.2 | 14.6 | 16.8 | 13.9 | 11.5 | 15 | 16.8 |
| 6 | 11.8 | 13 | 12.4 | 12.3 | 8 | 8.6 | 7.9 | 4.6 | 4.4 | 1.9 | 3.9 | 9.8 | 14.4 | 14.9 | 25.2 | 25.2 | 12.6 | 12.5 | 12 | 11.2 | 14.2 | 18.1 | 18.3 | 16.2 | 25.2 |
| 7 | 20.2 | 21.9 | 17.3 | 13.2 | 17 | 18.4 | 10.7 | 5.4 | 8.9 | 9.2 | 8.5 | 12.1 | 14.5 | 18.4 | 20.2 | 21 | 20.1 | 25.8 | 24.6 | 23 | 21.4 | 21.4 | 24 | 28.9 | 28.9 |
| 8 | 32.6 | 32.3 | 32.3 | 24.4 | 27.4 | 22.3 | 21 | 22.8 | 14.4 | 12.2 | 11.6 | 18.4 | 19 | 18.8 | 22.3 | 25.9 | 23.3 | 16.3 | 14.2 | 12.1 | 10.1 | 7.5 | 7.7 | 7.9 | 32.6 |
| 9 | 7.8 | 9.2 | 18.4 | 19.1 | 18.9 | 16.4 | 14.7 | 18.7 | 19.7 | 18.2 | 32.8 | 34.3 | 35.9 | 31.1 | 32.2 | 31.2 | 29.6 | 26.5 | 26.8 | 29.6 | 24 | 26.8 | 23.6 | 16.9 | 35.9 |
| 10 | 9.9 | 13.7 | 12.6 | 8.4 | 8.3 | 8.3 | 7.4 | 8.8 | 7.5 | 10.8 | 9.7 | 11.1 | 13.9 | 12.8 | 14 | 14.1 | 14.8 | 14.7 | 14.3 | 14.4 | 15.4 | 13.7 | 22.9 | 32.2 | 32.2 |
| 11 | 27.2 | 20.7 | 16.8 | 10.1 | 10.4 | 11.1 | 11.2 | 9.8 | 11.6 | 12.9 | 11.2 | 13.8 | 18.3 | 18.9 | 17.1 | 16.7 | 10.1 | 11 | 10.7 | 11.3 | 10.6 | 12.7 | 11.1 | 10 | 27.2 |
| 12 | 14.5 | 9.8 | 8.5 | 9.6 | 8.9 | 6.5 | 7.2 | 8 | 8.7 | 8.7 | 8 | 10.2 | 11.5 | 13 | 14.9 | 9.6 | 8.9 | 14.6 | 17.1 | 16.6 | 19.6 | 21.1 | 24.1 | 22.4 | 24.1 |
| 13 | 20.8 | 21.6 | 24 | 18.5 | 18.9 | 19.8 | 21.6 | 23.8 | 24.4 | 19 | 22.3 | 19.3 | 19 | 23.4 | 23.1 | 24.9 | 23.7 | 15.5 | 13 | 11.8 | 4.7 | 6 | 14.2 | 12.8 | 24.9 |
| 14 | 14.1 | 11.6 | 13.5 | 14.9 | 13.1 | 11.1 | 7 | 6.7 | 7.1 | 4 | 5.6 | 21.2 | 21.1 | 23.2 | 23.6 | 24.9 | 24.6 | 25.1 | 24.2 | 21.5 | 20.4 | 22.8 | 25.6 | 27.7 | 27.7 |
| 15 | 26.1 | 37.8 | 33.8 | 42.6 | 44.9 | 46.8 | 50.7 | 37.9 | 33.8 | 30.6 | 24.8 | 28.2 | 28.3 | 24.4 | 17 | 13.2 | 5 | 5.3 | 15.9 | 29.1 | 31.5 | 37 | 38.5 | 39.6 | 50.7 |
| 16 | 33.9 | 34.1 | 37.7 | 40 | 38.8 | 32.9 | 35 | 38.3 | 37.2 | 34.6 | 33.7 | 31 | 29 | 31.1 | 30.2 | 22.1 | 18.4 | 24.8 | 27.2 | 30.5 | 29.2 | 28.6 | 22.1 | 22.2 | 40 |
| 17 | 19.9 | 20.3 | 20.4 | 18.1 | 15.2 | 12.8 | 14.2 | 14.3 | 13.1 | 14.4 | 14.3 | 12.6 | 11.4 | 8.9 | 5.7 | 8.6 | 7.7 | 8 | 6.1 | 8.3 | 8.4 | 6.7 | 7.4 | 7.9 | 20.4 |
| 18 | 5.4 | 6.5 | 6.3 | 6 | 7.2 | 5.9 | 3.6 | 8.2 | 4.2 | 3.2 | 6.5 | 5.5 | 5.5 | 9.7 | 14.8 | 17.6 | 19.3 | 16.1 | 20.9 | 12.6 | 14.3 | 14.4 | 15.5 | 16.4 | 20.9 |
| 19 | 26.2 | 18.7 | 18 | 16.8 | 15.1 | 19.6 | 22.8 | 28.5 | 24 | 26.2 | 35.3 | 38.8 | 39.7 | 37 | 36.3 | 32.3 | 22.7 | 26.7 | 35.6 | 39 | 38.3 | 31 | 22.7 | 28.2 | 39.7 |
| 20 | 26.6 | 25.5 | 23.5 | 24.9 | 21.6 | 22.2 | 20.6 | 16.2 | 13.8 | 13.9 | 14.5 | 11.4 | 10.1 | 10.2 | 9.1 | 10.5 | 12.2 | 10.8 | 10.4 | 12.3 | 12.4 | 15.4 | 12.4 | 15.1 | 26.6 |
| 21 | 13.3 | 9.9 | 9.3 | 5.2 | 4.1 | 7 | 12.1 | 13.1 | 17.4 | 14.4 | 13.7 | 16.3 | 17.9 | 15.4 | 16.1 | 12.9 | 11.8 | 12.1 | 9.5 | 9 | 8 | 8.5 | 5.1 | 3.7 | 17.9 |
| 22 | 5.6 | 9.4 | 9.5 | 9.7 | 4.6 | 3.8 | 3.6 | 5.2 | 5.8 | 8.7 | 10.3 | 9.1 | 10.5 | 12.3 | 14 | 16.2 | 19.4 | 19.7 | 23.9 | 21.5 | 23.5 | 22.4 | 19.6 | 19.6 | 23.9 |
| 23 | 23.5 | 26.3 | 15.3 | 18.8 | 19.5 | 19.8 | 21.5 | 18.4 | 17.9 | 14.2 | 11.6 | 15.7 | 16.9 | 16.9 | 18.5 | 14.1 | 10.3 | 10.5 | 12 | 9.7 | 6.1 | 5.5 | 10.4 | 16.7 | 26.3 |
| 24 | 21.8 | 25.6 | 29.8 | 31 | 37.2 | 39.1 | 39.8 | 45.4 | 42.2 | 37.3 | **57** | 46.5 | 53.5 | 51.6 | 52.1 | 44.4 | 40.4 | 41.9 | 36.2 | 24.3 | 24.1 | 26.9 | 25.9 | 27.2 | **57** |
| 25 | 27.7 | 29.2 | 26.8 | 24.7 | 27 | 18.2 | 24.6 | 25.7 | 16.9 | 22 | 22 | 18.8 | 17 | 12.3 | 13.4 | 12.2 | 11 | 14.5 | 13.9 | 9.9 | 3.9 | 4.5 | 2.2 | 2.4 | 29.2 |
| 26 | 5 | 7.6 | 8.9 | 7.7 | 7.9 | 14.9 | 10.7 | 13.8 | 16.1 | 20 | 16.5 | 16.7 | 20.1 | 11.6 | 12 | 11.8 | 7 | 4.5 | 8.7 | 20.2 | 22.5 | 23.2 | 25.1 | 22.9 | 25.1 |
| 27 | 24.2 | 24.5 | 22.5 | 24.5 | 26.9 | 16.2 | 9.1 | 10.2 | 18.3 | 18.4 | 21.6 | 12.5 | 13.8 | 11.4 | 14.1 | 16 | 9.4 | 10.6 | 10.9 | 14.2 | 15.1 | 17.2 | 21.4 | 18.5 | 26.9 |
| 28 | 22.5 | 24.9 | 25.9 | 27.5 | 25.4 | 28.1 | 26.7 | 25.2 | 27.3 | 34.7 | 30.5 | 33.8 | 35.7 | 39.4 | 33.6 | 39.9 | 39 | 33.7 | 28.9 | 28 | 20.9 | 19.6 | 17.6 | 16.9 | 39.9 |
| 29 | 10.9 | 10.7 | 7 | 5.8 | 8.3 | 9.3 | 12 | 8.9 | 6.4 | 4.9 | 4.4 | 12.4 | 8.9 | 12.3 | 11.8 | 16.7 | 20.4 | 16.8 | 16.7 | 17.6 | 18.7 | 18.2 | 14.6 | 15 | 20.4 |
| 30 | 4.7 | 5.4 | 5.7 | 5.6 | 3.6 | 3 | 2.9 | 3.4 | 3.3 | 2.3 | 9.3 | 12.8 | 11.6 | 12.3 | 12.2 | 16.6 | 21.3 | 13.9 | 12.1 | 14.9 | 16.8 | 14.4 | 10.8 | 13.2 | 21.3 |
| PEAK | 36.1 | 37.8 | 40.8 | 42.6 | 44.9 | 46.8 | 50.7 | 45.4 | 42.2 | 48.0 | 57.0 | 46.5 | 53.5 | 51.6 | 52.1 | 44.4 | 40.4 | 42.8 | 41.3 | 43.1 | 38.3 | 37.0 | 38.5 | 40.1 | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 57 | KPH | @ HOUR(S) | 10 |
| | | | ON DAY(S) | 24 |






JOB #: 2833-13-11-35-C

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

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 1.11 | 1.25 | .83 | .55 | 4.30 | 3.61 | 1.80 | 1.11 | .55 | .69 | .69 | 1.25 | 2.22 | 1.52 | 1.94 | 1.11 | 24.58 |
| < | 12.0 | .97 | 1.25 | 2.22 | 1.66 | 2.50 | 8.33 | 2.77 | 1.52 | 1.11 | .27 | .27 | 4.16 | 6.25 | 1.52 | 2.08 | 1.25 | 38.19 |
| < | 20.0 | .41 | .55 | 2.91 | 1.25 | .69 | 3.47 | 1.80 | .41 | .27 | .00 | .55 | 2.77 | 2.63 | 3.19 | 3.19 | 2.50 | 26.66 |
| < | 29.0 | .83 | .55 | .41 | .00 | .00 | .00 | .69 | .00 | .00 | .00 | .00 | .00 | 1.66 | 1.66 | .69 | 2.77 | 9.30 |
| < | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .41 | .69 | .00 | .13 | 1.25 |
| >= | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 3.33 | 3.61 | 6.38 | 3.47 | 7.50 | 15.41 | 7.08 | 3.05 | 1.94 | .97 | 1.52 | 8.19 | 13.19 | 8.61 | 7.91 | 7.77 | |

Calm : .00 %

Total # Operational Hours : 720

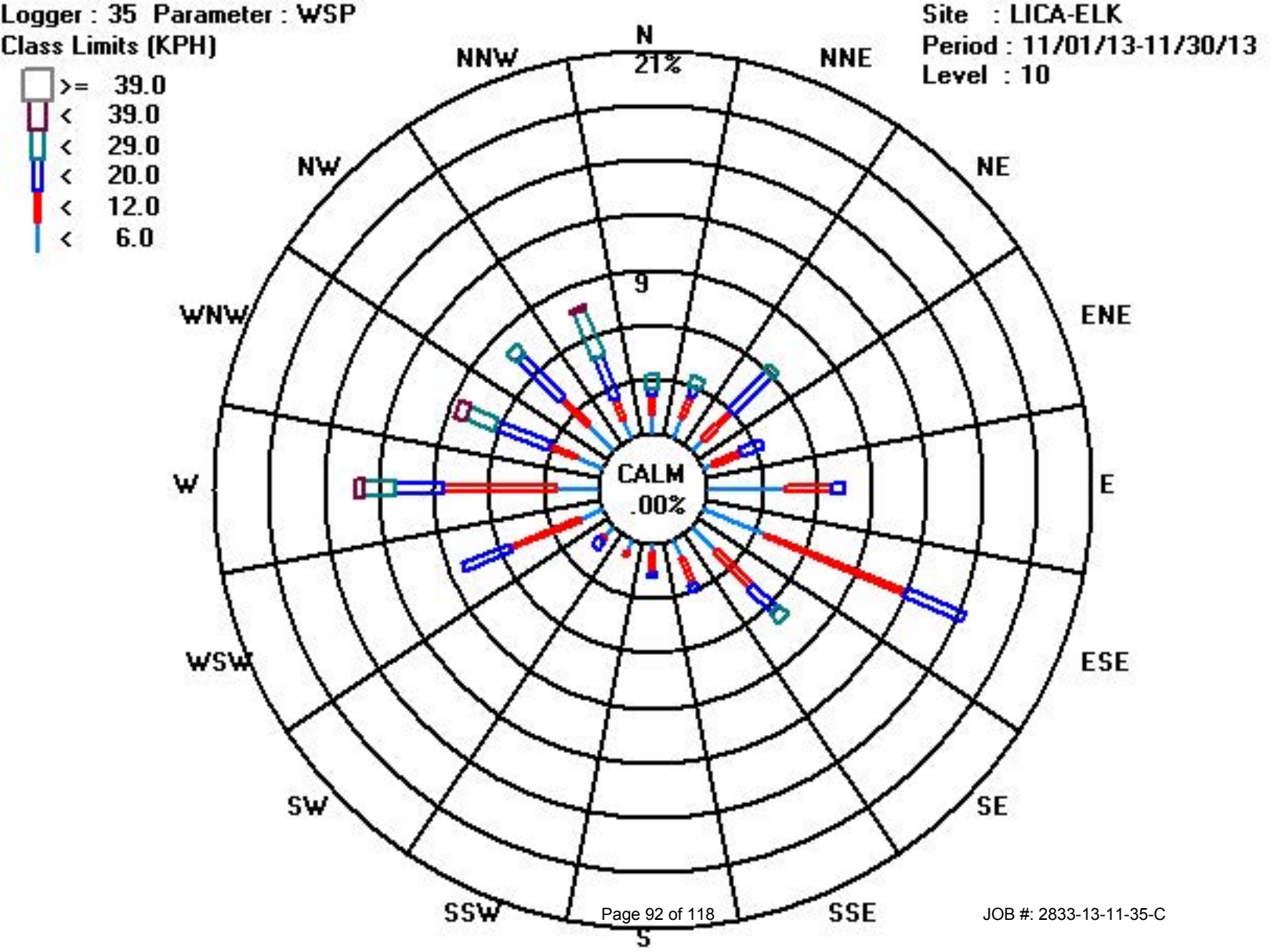
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 8 | 9 | 6 | 4 | 31 | 26 | 13 | 8 | 4 | 5 | 5 | 9 | 16 | 11 | 14 | 8 | 177 |
| < | 12.0 | 7 | 9 | 16 | 12 | 18 | 60 | 20 | 11 | 8 | 2 | 2 | 30 | 45 | 11 | 15 | 9 | 275 |
| < | 20.0 | 3 | 4 | 21 | 9 | 5 | 25 | 13 | 3 | 2 | | 4 | 20 | 19 | 23 | 23 | 18 | 192 |
| < | 29.0 | 6 | 4 | 3 | | | | 5 | | | | | | 12 | 12 | 5 | 20 | 67 |
| < | 39.0 | | | | | | | | | | | | | 3 | 5 | | 1 | 9 |
| >= | 39.0 | | | | | | | | | | | | | | | | | |
| | Totals | 24 | 26 | 46 | 25 | 54 | 111 | 51 | 22 | 14 | 7 | 11 | 59 | 95 | 62 | 57 | 56 | |

Calm : .00 %

Total # Operational Hours : 720






JOB #: 2833-13-11-35-C

# Vector Wind Direction

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

NOVEMBER 2013

**VECTOR WIND DIRECTION (WD)** hourly averages in degrees

MST

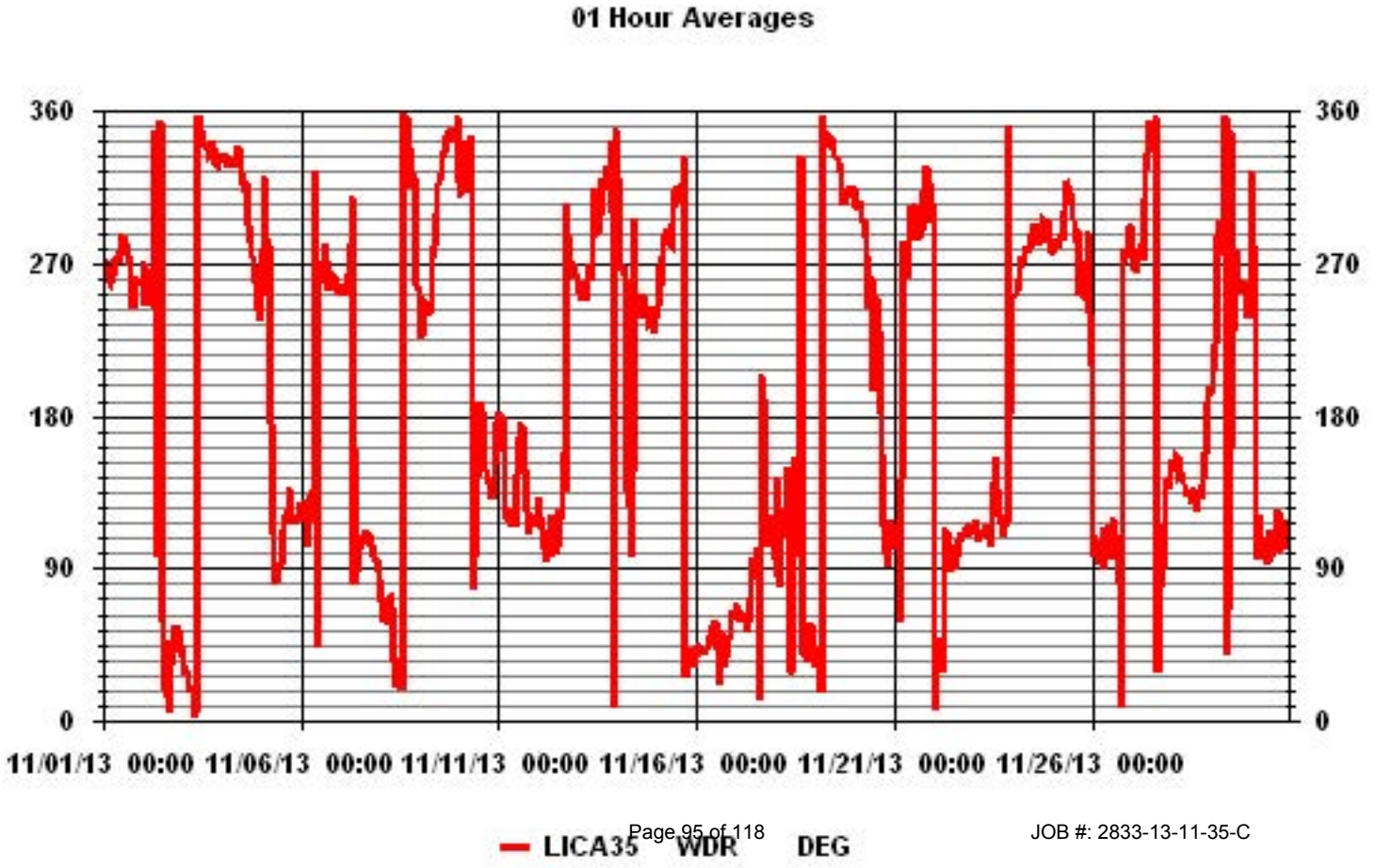
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24-HOUR | 24-HOUR AVG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | AVG. | QUANDRANT | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 264 | 270 | 272 | 261 | 261 | 259 | 263 | 272 | 273 | 270 | 277 | 287 | 284 | 285 | 283 | 276 | 270 | 261 | 244 | 254 | 262 | 258 | 258 | 261 | 271 | W | 24 |
| 2 | 257 | 272 | 245 | 251 | 259 | 267 | 248 | 243 | 348 | 96 | 341 | 355 | 59 | 49 | 19 | 15 | 5 | 47 | 33 | 40 | 57 | 53 | 55 | 45 | 19 | NNE | 24 |
| 3 | 39 | 34 | 27 | 29 | 22 | 19 | 18 | 9 | 3 | 5 | 358 | 356 | 350 | 341 | 340 | 338 | 333 | 334 | 343 | 339 | 330 | 329 | 335 | 332 | 355 | N | 24 |
| 4 | 335 | 329 | 335 | 327 | 331 | 331 | 329 | 330 | 327 | 332 | 339 | 333 | 325 | 318 | 311 | 318 | 293 | 284 | 275 | 274 | 269 | 260 | 244 | 236 | 319 | NW | 24 |
| 5 | 265 | 279 | 321 | 250 | 285 | 281 | 177 | 112 | 81 | 91 | 82 | 91 | 93 | 112 | 119 | 121 | 125 | 138 | 116 | 120 | 116 | 122 | 118 | 129 | 118 | ESE | 24 |
| 6 | 123 | 121 | 125 | 130 | 102 | 118 | 133 | 136 | 142 | 325 | 43 | 266 | 258 | 269 | 269 | 282 | 272 | 254 | 263 | 263 | 256 | 262 | 252 | 255 | 244 | WSW | 24 |
| 7 | 253 | 252 | 252 | 258 | 264 | 253 | 281 | 310 | 80 | 160 | 88 | 101 | 109 | 106 | 107 | 111 | 111 | 107 | 108 | 105 | 99 | 95 | 95 | 89 | 117 | ESE | 24 |
| 8 | 84 | 71 | 61 | 60 | 58 | 72 | 73 | 68 | 35 | 38 | 20 | 31 | 26 | 18 | 359 | 352 | 357 | 342 | 339 | 314 | 323 | 321 | 258 | 255 | 34 | NE | 24 |
| 9 | 225 | 231 | 228 | 247 | 246 | 239 | 241 | 244 | 273 | 280 | 299 | 317 | 321 | 321 | 332 | 336 | 345 | 347 | 347 | 349 | 341 | 347 | 346 | 358 | 315 | NW | 24 |
| 10 | 319 | 312 | 313 | 313 | 342 | 333 | 321 | 345 | 77 | 97 | 134 | 144 | 189 | 177 | 184 | 158 | 149 | 140 | 143 | 136 | 131 | 135 | 152 | 176 | 155 | SSE | 24 |
| 11 | 182 | 176 | 181 | 160 | 127 | 121 | 120 | 119 | 115 | 124 | 114 | 146 | 168 | 176 | 174 | 168 | 150 | 124 | 110 | 114 | 119 | 115 | 121 | 119 | 141 | SE | 24 |
| 12 | 132 | 121 | 114 | 102 | 94 | 110 | 112 | 97 | 121 | 109 | 98 | 105 | 102 | 124 | 119 | 159 | 135 | 305 | 288 | 268 | 269 | 269 | 264 | 263 | 166 | SSE | 24 |
| 13 | 256 | 257 | 248 | 255 | 248 | 260 | 269 | 259 | 267 | 301 | 314 | 288 | 289 | 298 | 320 | 317 | 316 | 319 | 328 | 324 | 299 | 343 | 7 | 350 | 289 | WNW | 24 |
| 14 | 321 | 274 | 268 | 268 | 264 | 262 | 136 | 127 | 97 | 147 | 296 | 245 | 244 | 237 | 250 | 250 | 245 | 241 | 242 | 234 | 235 | 233 | 229 | 237 | 245 | WSW | 24 |
| 15 | 245 | 269 | 256 | 274 | 285 | 284 | 290 | 282 | 281 | 293 | 302 | 313 | 316 | 309 | 307 | 317 | 334 | 28 | 28 | 40 | 39 | 43 | 32 | 38 | 306 | NW | 24 |
| 16 | 43 | 44 | 43 | 43 | 40 | 40 | 42 | 45 | 50 | 56 | 46 | 59 | 43 | 21 | 44 | 53 | 48 | 32 | 38 | 49 | 49 | 59 | 65 | 63 | 46 | NE | 24 |
| 17 | 69 | 60 | 60 | 63 | 62 | 62 | 53 | 58 | 73 | 84 | 95 | 95 | 102 | 91 | 12 | 204 | 191 | 167 | 111 | 102 | 111 | 118 | 121 | 95 | 82 | E | 24 |
| 18 | 144 | 86 | 79 | 118 | 122 | 124 | 108 | 150 | 30 | 28 | 98 | 132 | 156 | 96 | 283 | 333 | 39 | 55 | 39 | 34 | 45 | 58 | 44 | 43 | 54 | NE | 24 |
| 19 | 32 | 40 | 32 | 17 | 358 | 346 | 341 | 342 | 346 | 345 | 339 | 335 | 334 | 333 | 330 | 325 | 312 | 304 | 307 | 313 | 313 | 315 | 309 | 315 | 332 | NNW | 24 |
| 20 | 305 | 303 | 303 | 307 | 295 | 295 | 286 | 276 | 243 | 259 | 262 | 195 | 239 | 251 | 231 | 183 | 159 | 116 | 99 | 91 | 101 | 119 | 109 | 115 | 275 | W | 24 |
| 21 | 113 | 116 | 103 | 58 | 142 | 283 | 271 | 261 | 277 | 304 | 286 | 302 | 305 | 283 | 288 | 285 | 289 | 313 | 320 | 328 | 320 | 318 | 294 | 305 | 296 | WNW | 24 |
| 22 | 6 | 32 | 38 | 49 | 28 | 38 | 114 | 112 | 92 | 95 | 89 | 91 | 91 | 104 | 102 | 106 | 110 | 110 | 112 | 110 | 110 | 115 | 114 | 116 | 102 | E | 24 |
| 23 | 110 | 118 | 106 | 113 | 110 | 111 | 114 | 113 | 116 | 109 | 102 | 129 | 141 | 155 | 138 | 122 | 117 | 108 | 121 | 114 | 118 | 351 | 181 | 252 | 119 | ESE | 24 |
| 24 | 249 | 252 | 254 | 261 | 272 | 271 | 273 | 276 | 280 | 276 | 279 | 288 | 292 | 292 | 292 | 280 | 287 | 286 | 296 | 295 | 295 | 289 | 278 | 277 | 280 | W | 24 |
| 25 | 279 | 284 | 281 | 281 | 285 | 285 | 301 | 318 | 314 | 316 | 313 | 305 | 297 | 284 | 283 | 291 | 253 | 252 | 270 | 270 | 268 | 289 | 242 | 211 | 288 | WNW | 24 |
| 26 | 111 | 96 | 106 | 93 | 96 | 98 | 89 | 114 | 109 | 116 | 102 | 95 | 120 | 99 | 102 | 109 | 82 | 8 | 279 | 270 | 274 | 279 | 291 | 293 | 106 | ESE | 24 |
| 27 | 280 | 267 | 265 | 271 | 277 | 282 | 272 | 309 | 325 | 335 | 354 | 342 | 351 | 349 | 358 | 29 | 93 | 79 | 89 | 116 | 141 | 142 | 137 | 154 | 293 | WNW | 24 |
| 28 | 152 | 151 | 158 | 157 | 144 | 145 | 145 | 141 | 138 | 133 | 136 | 130 | 128 | 137 | 132 | 124 | 136 | 131 | 139 | 143 | 158 | 188 | 197 | 194 | 142 | SE | 24 |
| 29 | 195 | 207 | 222 | 286 | 295 | 279 | 274 | 302 | 357 | 39 | 65 | 348 | 160 | 230 | 279 | 262 | 259 | 253 | 260 | 253 | 259 | 253 | 238 | 260 | 256 | WSW | 24 |
| 30 | 324 | 282 | 252 | 121 | 95 | 121 | 98 | 105 | 108 | 97 | 93 | 113 | 97 | 100 | 104 | 117 | 124 | 114 | 103 | 104 | 109 | 119 | 101 | 107 | 108 | ESE | 24 |
| HOURLY AVG | 335 | 329 | 335 | 327 | 358 | 346 | 341 | 345 | 357 | 345 | 358 | 356 | 351 | 349 | 359 | 352 | 357 | 347 | 347 | 349 | 341 | 351 | 346 | 358 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

| | |
|---|---|
| LAST CALIBRATION: | November 24, 2011 |
| DECLINATION : | 19 DEGREES FROM MAGNETIC NORTH |

| | | | | | |
|---|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 720 | HRS |
| STANDARD DEVIATION: | 103.52 | | AMD OPERATION UPTIME: | 100.0 | % |
| | | | MONTHLY AVERAGE: | 320 | DEG |






JOB #: 2833-13-11-35-C

# Standard Deviation Wind Direction

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

NOVEMBER 2013

**STANDARD DEVIATION WIND DIRECTION (STDWDIR)** hourly averages in degrees

MST

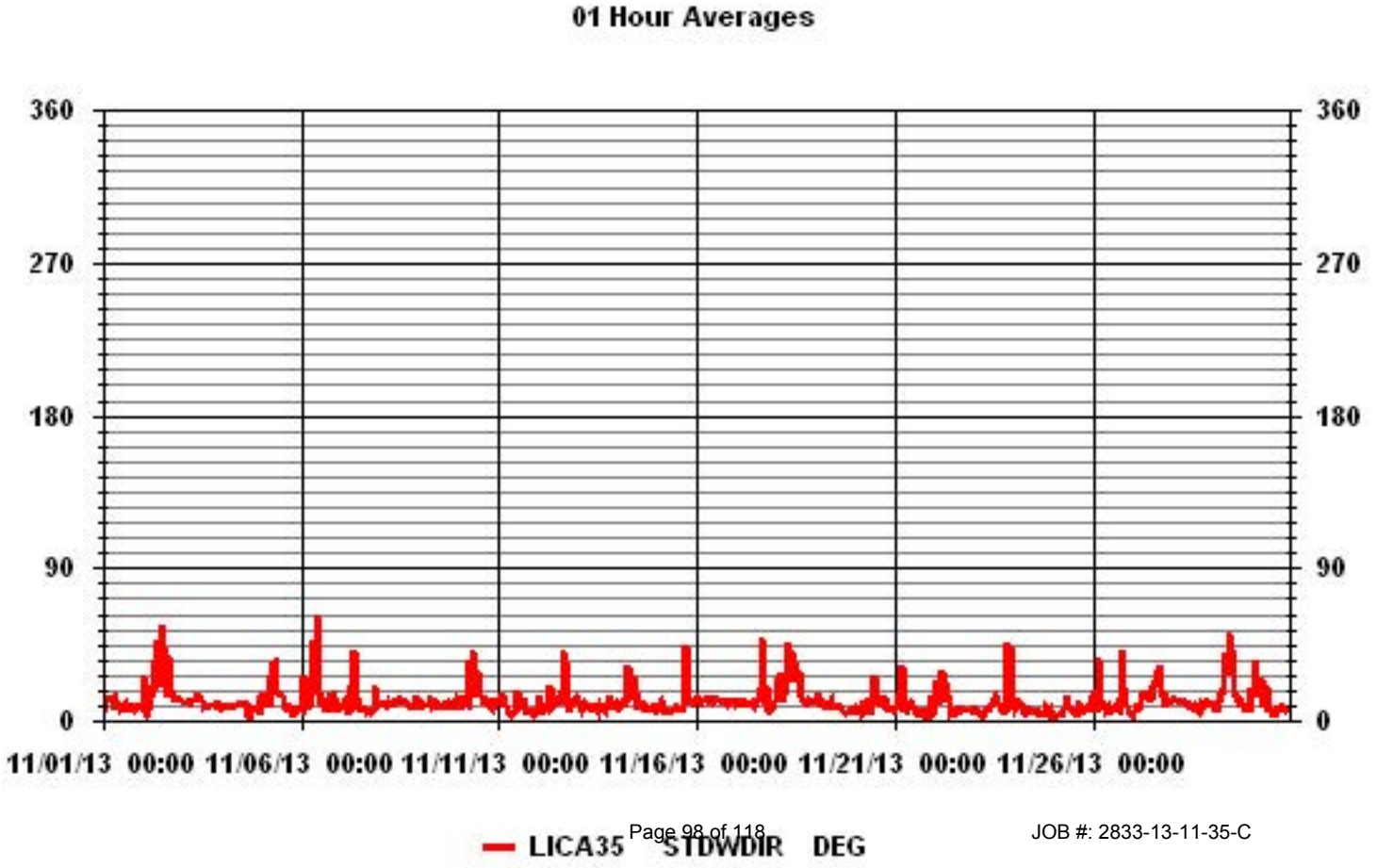
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 9 | 8 | 13 | 13 | 13 | 13 | 14 | 8 | 8 | 11 | 7 | 8 | 9 | 8 | 10 | 8 | 9 | 9 | 5 | 10 | 7 | 8 | 8 | 9 |
| 2 | 7 | 26 | 6 | 4 | 6 | 20 | 14 | 18 | 35 | 48 | 25 | 19 | 56 | 44 | 21 | 13 | 39 | 16 | 18 | 13 | 13 | 13 | 13 | 13 |
| 3 | 12 | 12 | 11 | 11 | 12 | 11 | 12 | 12 | 14 | 13 | 14 | 14 | 13 | 8 | 9 | 8 | 8 | 9 | 9 | 9 | 10 | 9 | 10 | 9 |
| 4 | 8 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 9 | 9 | 9 | 10 | 11 | 10 | 10 | 10 | 4 | 3 | 8 | 6 | 7 | 7 | 5 | 5 |
| 5 | 14 | 16 | 8 | 10 | 10 | 10 | 27 | 33 | 34 | 19 | 17 | 15 | 15 | 15 | 8 | 6 | 6 | 10 | 5 | 6 | 5 | 6 | 7 | 8 |
| 6 | 7 | 26 | 10 | 10 | 15 | 7 | 25 | 37 | 47 | 28 | 62 | 17 | 12 | 11 | 13 | 7 | 7 | 7 | 15 | 16 | 12 | 12 | 6 | 6 |
| 7 | 7 | 9 | 6 | 10 | 8 | 4 | 18 | 17 | 41 | 25 | 14 | 8 | 8 | 7 | 8 | 7 | 5 | 6 | 5 | 6 | 8 | 21 | 10 | 9 |
| 8 | 10 | 11 | 10 | 11 | 10 | 12 | 10 | 10 | 12 | 11 | 11 | 12 | 15 | 12 | 12 | 11 | 11 | 10 | 9 | 6 | 9 | 6 | 15 | 9 |
| 9 | 8 | 8 | 10 | 10 | 9 | 9 | 15 | 9 | 10 | 11 | 9 | 8 | 8 | 8 | 8 | 10 | 10 | 9 | 11 | 10 | 9 | 11 | 7 | 14 |
| 10 | 13 | 7 | 9 | 14 | 12 | 11 | 35 | 15 | 41 | 14 | 21 | 29 | 17 | 16 | 9 | 14 | 11 | 10 | 11 | 8 | 7 | 10 | 12 | 12 |
| 11 | 9 | 14 | 16 | 9 | 9 | 5 | 5 | 3 | 4 | 5 | 9 | 18 | 14 | 9 | 10 | 11 | 8 | 6 | 5 | 5 | 6 | 4 | 5 | 6 |
| 12 | 14 | 5 | 5 | 6 | 8 | 9 | 11 | 20 | 7 | 8 | 11 | 13 | 9 | 14 | 12 | 41 | 36 | 11 | 5 | 12 | 10 | 11 | 12 | 14 |
| 13 | 12 | 11 | 7 | 9 | 6 | 11 | 9 | 8 | 9 | 8 | 9 | 8 | 6 | 9 | 7 | 7 | 6 | 9 | 9 | 14 | 6 | 10 | 11 | 9 |
| 14 | 8 | 10 | 9 | 9 | 13 | 16 | 32 | 14 | 15 | 27 | 21 | 17 | 7 | 9 | 10 | 10 | 7 | 7 | 7 | 7 | 8 | 9 | 8 | 7 |
| 15 | 9 | 9 | 11 | 8 | 5 | 5 | 5 | 5 | 5 | 6 | 7 | 9 | 9 | 6 | 6 | 8 | 21 | 44 | 12 | 13 | 13 | 12 | 11 | 12 |
| 16 | 14 | 12 | 11 | 12 | 12 | 13 | 12 | 13 | 12 | 13 | 11 | 12 | 13 | 12 | 12 | 12 | 11 | 11 | 10 | 12 | 11 | 11 | 12 | 10 |
| 17 | 11 | 11 | 10 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 9 | 12 | 12 | 13 | 19 | 49 | 15 | 9 | 20 | 7 | 6 | 7 | 8 | 11 |
| 18 | 19 | 25 | 28 | 15 | 11 | 15 | 28 | 46 | 26 | 41 | 23 | 36 | 31 | 23 | 30 | 15 | 12 | 12 | 11 | 13 | 12 | 11 | 11 | 11 |
| 19 | 12 | 16 | 11 | 12 | 12 | 8 | 8 | 8 | 10 | 12 | 9 | 8 | 8 | 8 | 8 | 8 | 6 | 6 | 5 | 6 | 6 | 7 | 6 | 8 |
| 20 | 6 | 5 | 5 | 3 | 5 | 11 | 4 | 13 | 4 | 9 | 14 | 27 | 13 | 12 | 11 | 9 | 9 | 15 | 8 | 7 | 6 | 6 | 7 | 6 |
| 21 | 7 | 8 | 16 | 21 | 32 | 6 | 8 | 7 | 10 | 11 | 9 | 8 | 5 | 5 | 4 | 5 | 5 | 4 | 3 | 7 | 4 | 14 | 5 | 6 |
| 22 | 16 | 24 | 9 | 27 | 29 | 12 | 24 | 11 | 15 | 4 | 5 | 6 | 5 | 7 | 7 | 7 | 6 | 7 | 6 | 6 | 6 | 6 | 7 | 6 |
| 23 | 7 | 6 | 5 | 5 | 4 | 6 | 5 | 6 | 7 | 7 | 9 | 11 | 12 | 14 | 11 | 7 | 7 | 6 | 4 | 46 | 13 | 27 | 44 | 12 |
| 24 | 8 | 10 | 12 | 12 | 8 | 8 | 6 | 5 | 6 | 7 | 6 | 5 | 5 | 6 | 5 | 5 | 4 | 5 | 6 | 9 | 8 | 4 | 6 | 3 |
| 25 | 2 | 3 | 3 | 3 | 3 | 5 | 7 | 9 | 15 | 8 | 8 | 7 | 5 | 5 | 3 | 12 | 7 | 3 | 7 | 7 | 9 | 8 | 13 | 12 |
| 26 | 18 | 6 | 6 | 37 | 6 | 10 | 10 | 6 | 7 | 9 | 7 | 6 | 7 | 9 | 8 | 7 | 13 | 42 | 20 | 8 | 10 | 5 | 4 | 3 |
| 27 | 6 | 8 | 8 | 7 | 8 | 16 | 12 | 18 | 14 | 13 | 14 | 12 | 20 | 23 | 29 | 23 | 33 | 16 | 16 | 8 | 14 | 11 | 11 | 13 |
| 28 | 14 | 13 | 12 | 12 | 12 | 11 | 11 | 11 | 10 | 9 | 10 | 9 | 8 | 10 | 9 | 7 | 10 | 8 | 10 | 11 | 12 | 12 | 9 | 9 |
| 29 | 10 | 7 | 7 | 7 | 11 | 16 | 19 | 40 | 27 | 38 | 52 | 43 | 29 | 15 | 15 | 11 | 15 | 9 | 11 | 5 | 8 | 7 | 5 | 19 |
| 30 | 16 | 14 | 36 | 13 | 24 | 22 | 25 | 8 | 11 | 21 | 7 | 7 | 4 | 4 | 4 | 5 | 8 | 5 | 8 | 8 | 6 | 7 | 7 | 8 |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

LAST CALIBRATION: November 24, 2011

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 720 HRS






JOB #: 2833-13-11-35-C

# Calibration Reports

# Sulphur Dioxide

## SO2 Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 13, 2013 | Previous Calibration | October 15, 2013 |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | Portable / ELK Point Airport | | |
| Start Time (MST) | 9:30 | End Time (MST) | 12:21 |
| Reason: | Monthly calibration | | |
| Barometric Pressure | 27.8 in HG | Station Temperature | 24 Deg C |
| Cal Gas | 49.7 ppm | Gas Cyl. # | BAL3165 |
| Cal Gas Expiry date | December 29, 2016 | | |
| DAS Output Voltage | 0-1 Volts | Chart Rec. Output | N/A Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 100E | S/N : | 467 | Method: | Fluorescent |
| Converter Make / Model: | N/A | S/N : | N/A | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0-1000 ppb | | | | | |
| Sample Flow / Box Temp | 622 ccm | | 35.4 Deg C | | 628 ccm | | 34.6 Deg C | |
| HVPS / Lamp Setting | 628 | | 1361 | | 628 | | 1361 | |
| PMT / RxCell Temp | 8.2 Deg C | | 50 Deg C | | 8.2 Deg C | | 50 Deg C | |
| Converter / IZS Temp | N/A Deg C | | 45 Deg C | | N/A Deg C | | 45.0 Deg C | |
| Offset / Slope | 134.5 | | 1.148 | | 139.5 | | 1.135 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4994 | 0 | 0 | 3 | N/A |
| 4994 | 0 | 0 | 0 | N/A |
| 4920 | 80.5 | 800 | 811 | 0.9862 |
| 4920 | 80.5 | 800 | 801 | 0.9985 |
| 4960 | 40.1 | 398 | 398 | 1.0000 |
| 4980 | 20.0 | 199 | 200 | 0.9955 |
| 5000 | 0 | 0 | 1 | N/A |
| | | | | |
| | | | Sum of Least Squares | 0.9988 |
| | | | New Correction Factor | 0.9985 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 1.6 |
| Auto Span | 335.8 | 329.5 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 0.9862 |
| Percent Change: | 1.4% |

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

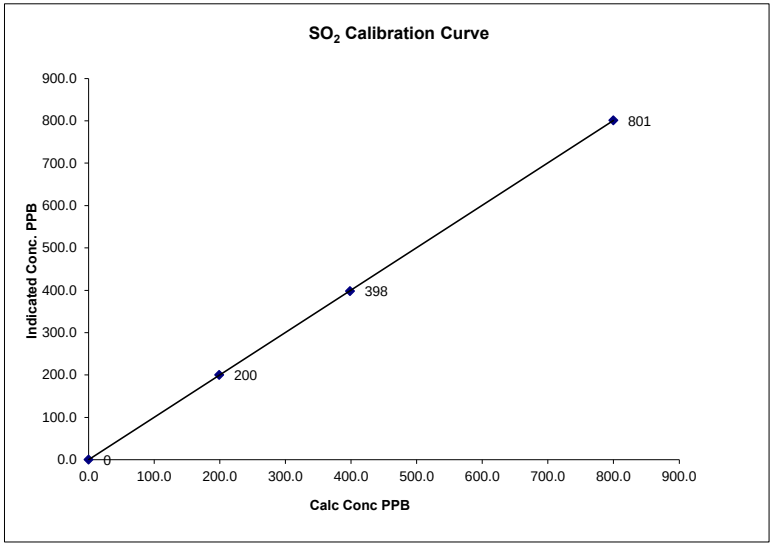
Calibration Performed by: Waseem Ahmed

## $SO_2$ Calibration Curve

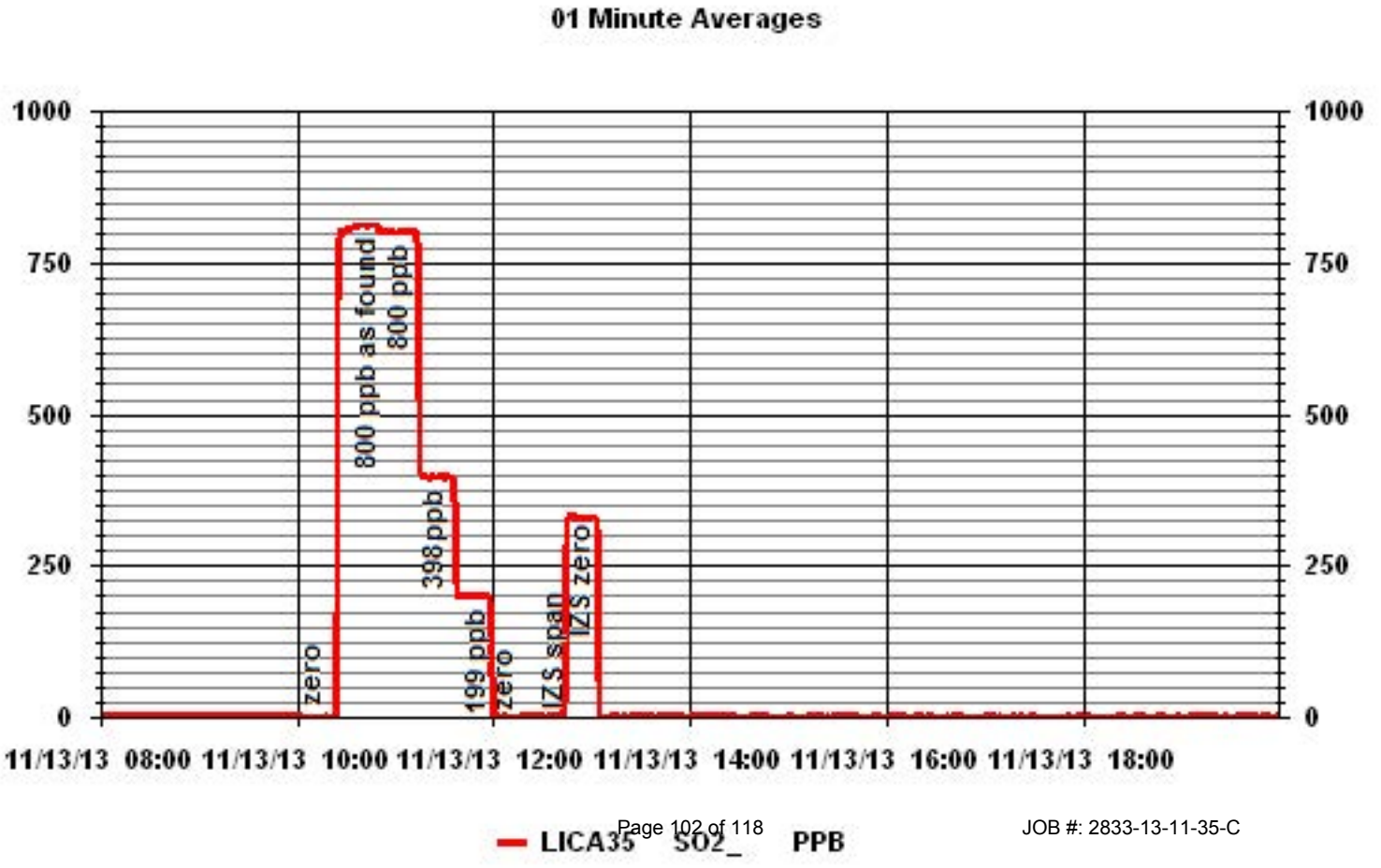
| | | | |
|---|---|---|---|
| Calibration Date | November 13, 2013 | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | Portable / ELK Point Airport | | |
| Start Time (MST) | 9:30 | End Time (MST) | 12:21 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 199 | 200 | 0.9955 |
| 398 | 398 | 1.0000 |
| 800 | 801 | 0.9985 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999996 |
| Slope | (0.85 to 1.15) | 1.001107 |
| Intercept | (± 3% F.S.) | 0.042696 |




**Notes:**






JOB #: 2833-13-11-35-C

# Hydrogen Sulphide

## H2S Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 13, 2013 | | Previous Calibration | October 15, 2013 | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | Portable / ELK Point Airport | | | | |
| Start Time (MST) | 9:30 | | End Time (MST) | 12:17 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure | 27.81 | in Hg | Station Temperature | 24 | Deg C |
| Cal Gas | 10.1 ppm | | Gas Cyl. # | BLM0059 | Cal Gas Expiry date: December 25, 2015 |
| DAS Output Voltage | 0-1 | Volts | Chart Rec. Output | NA | Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 509 | Method: | Fluorescent |
| Converter Make / Model: | Internal | S/N : | N/A | | |
| Calibrator Make / Model: | API 700 | S/N : | 690 | Method: | Dilution |
| DAS Make / Model: | ESC8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 690 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0-100 | ppb | | | | |
| Sample Flow / Box Temp | 502 | ccm | 34.9 | Deg C | 504 | ccm | 32.2 | Deg C |
| HVPS / Lamp Setting | 540 | | 1593 | | 540 | | 1595 | |
| PMT / RxCell Temp | 8 | Deg C | 50 | Deg C | 7.9 | Deg C | 50 | Deg C |
| Converter / IZS Temp | 315.6 | Deg C | 45 | Deg C | 314.1 | Deg C | 45.0 | Deg C |
| Offset / Slope | 106 | | 1.17 | | 108.3 | | 1.161 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 5000 | 0 | 0 | 1 | NA |
| 5000 | 0 | 0 | 0 | NA |
| 4958 | 40.0 | 81 | 83 | 0.9739 |
| 4958 | 40.0 | 81 | 82 | 0.9858 |
| 4978 | 20.0 | 40 | 41 | 0.9858 |
| 4988 | 12.0 | 24 | 24 | 1.0000 |
| 5000 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 0.9874 |
| | | | New Correction Factor | 0.9858 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.8 | 0.8 |
| Auto Span | 56.5 | 56.5 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9858 |
| Current Correction Factor Before Span Adjust: | 0.9739 |
| Percent Change: | 1.2% |

Notes: **NA : Not Applicable**

Change sample filter.

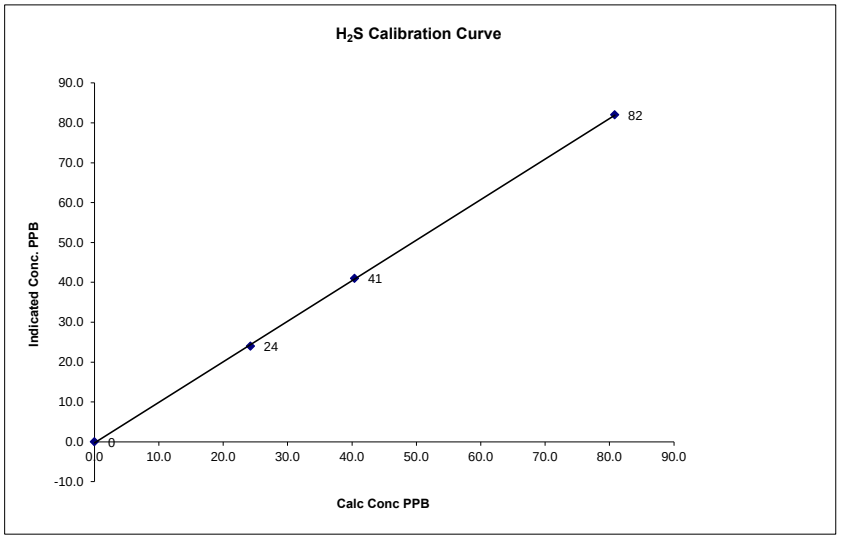
Calibration Performed by: Waseem Ahmed

## $H_2S$ Calibration Curve

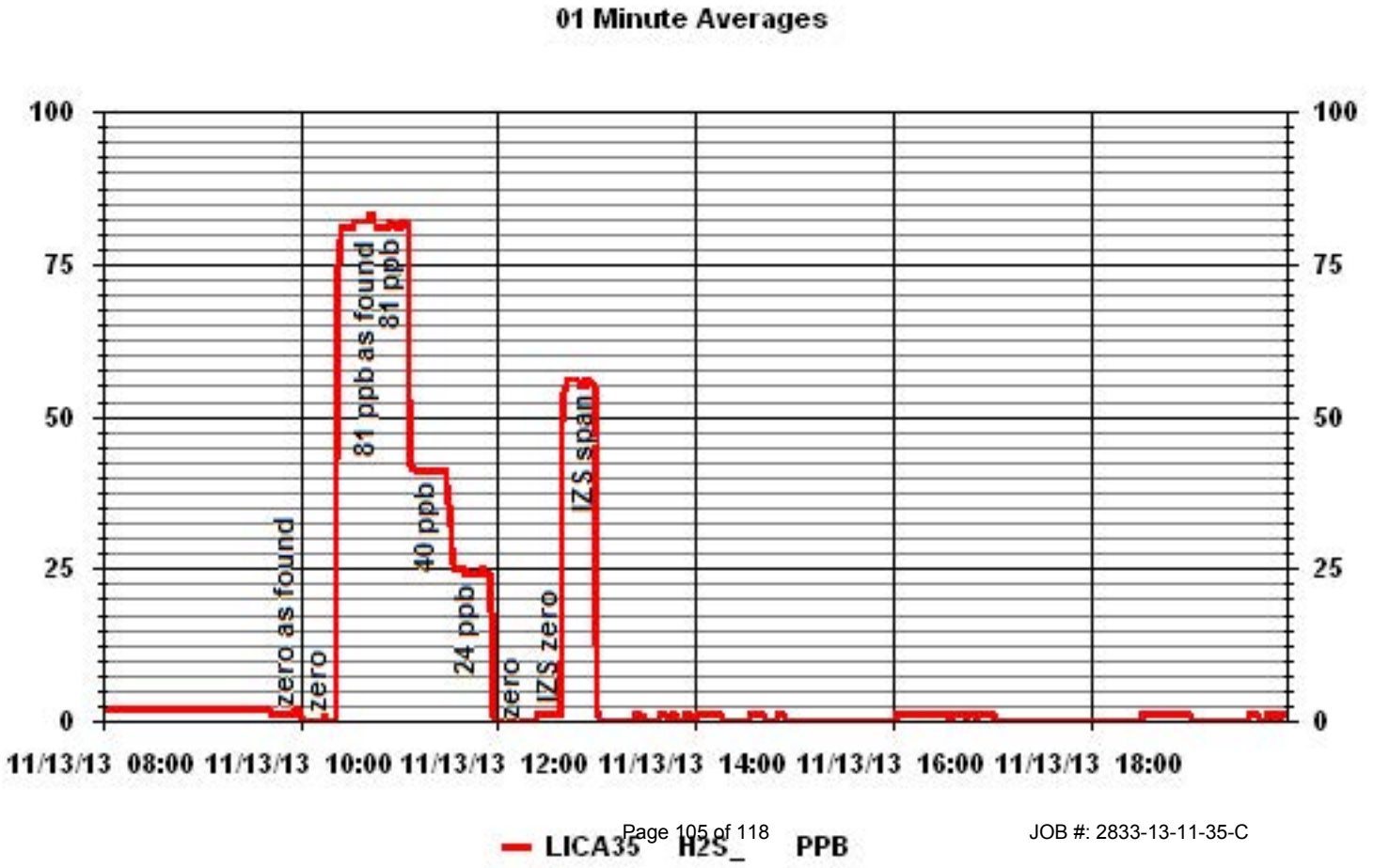
| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 13, 2013 | | | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | Portable / ELK Point Airport | | | | |
| Start Time (MST) | 9:30 | | End Time (MST) | 12:17 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 24 | 24 | 1.0100 |
| 40 | 41 | 0.9858 |
| 81 | 82 | 0.9858 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999931 |
| Slope | (0.85 to 1.15) | 1.016513 |
| Intercept | (± 3% F.S.) | -0.222737 |




**Notes:**






JOB #: 2833-13-11-35-C

# Total Hydrocarbons (55i)

## Methane - Non Methane Hydrocarbon Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | November 13, 2013 | | Previous Calibration | October 15, 2013 | |
| Company: | **Lakeland Industry and Community Association** | | | | |
| Plant / Location: | **ELK Point Airport** | | | | |
| Start Time (MST) | 12:58 | | End Time (MST) | 14:14 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure: | 27.81 | inHg | Station Temperature: | 24.0 | Deg C |
| Calibrator: | API700 | | S/N: | 690 | |
| Cal Gas Concentration: | CH4 593 PPM | | C3H8 205 PPM= | 563.75 | CH4 |
| | Cyl. # LL84567 | | Cal Gas Expiry Date: | June 7, 2014 | |
| DAS make & Model: | ESC8832 | | S/N : | AO717 | |
| Chart Recorder: | N/A | | S/N: | N/A | |
| Output Voltage Range: | 0-10 | | Chart Speed: | N/A | cm/hr |

**Analyzer Information**

| | | | | | |
|---|---|---|---|---|---|
| Make / Model | Thermo 55i | S/N : | 1236656107 | Method: | GC FID |

**Analyzer Settings**

| Concentration Range (PPM) | CH4= 0-20 | NMHC= 0-20 | THC = 0-40 |
|---|---|---|---|

| | Befor Calibration | | After Calibration | |
|---|---|---|---|---|
| Hydrogen Pressure | 40.3 | psi | 40.3 | psi |
| Air Pressure | 32.4 | psi | 32.4 | psi |
| Carrier Pressure | 31.1 | psi | 31.1 | psi |
| Detector Oven | 175 | Deg C | 175 | Deg C |
| Filter Temp | 175 | Deg C | 175 | Deg C |
| Column Oven Temp | 75 | Deg C | 75 | Deg C |
| Flame Temp | 377.6 | Deg C | 377.4 | Deg C |
| Box Temp | 34.9 | Deg C | 35.1 | Deg C |

**Calibration Data**

| Gas Flows (sccm) | | Calculated Concentration | | Actual Concentration | | Correction factors | |
|---|---|---|---|---|---|---|---|
| Dilution Flow | Cal Gas Flow | CH4 | NMHC | CH4 | NMHC | CH4 | NMHC |
| 3000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.000 |
| | No zero adj. | | | | | | |
| 2982 | 18.00 | 3.56 | 3.38 | 3.57 | 3.40 | 0.9966 | 0.9949 |
| | No span Adj. | | | | | | |
| 2964 | 36.00 | 7.12 | 6.77 | 7.18 | 6.73 | 0.9911 | 1.0052 |
| 2991 | 9.00 | 1.78 | 1.69 | 1.81 | 1.77 | 0.9829 | 0.9555 |
| 3000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0000 | 0.0000 |
| | | | | | Correction Factors: | 0.9966 | 0.9949 |

**Percent Change from Previous Calibration**

| | CH4 | NMHC |
|---|---|---|
| Previous Calibration Correction Factor: | 0.9994 | 1.0037 |
| Current Correction Factor Before Span Adjust: | 0.9966 | 0.9949 |
| Percent Change: | 0.3% | 0.9% |

**IZS Calibration Data**

| | | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | (ppm) | CH4 | 0.00 | NMHC | 0.00 | CH4 | 0.00 | NMHC | 0.00 |
| Auto Span | (ppm) | CH4 | 10.67 | NMHC | 13.74 | CH4 | 10.67 | NMHC | 13.74 |
| Sample Lines Connected | | | | | | YES | | | |

Notes: Cylinder Pressures

| | | |
|---|---|---|
| Span | 1450 | psi |
| Hydrogen | 950 | psi |
| Zero Air | 45 | psi |
| Nitrogen | 650 | psi |

Notes:

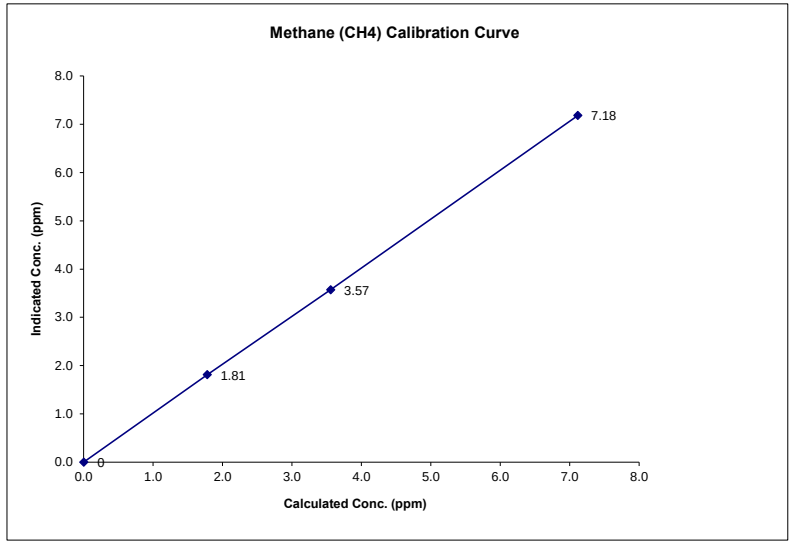
Spare cylinders: N2=0, H2=1 & Span =2

Calibration Performed by: Waseem ahmed

## Methane (CH4) Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 13, 2013 | | | | |
| Company | Lakeland Industry and Community Association | | | | |
| Plant / Location | ELK Point Airport | | | | |
| Start Time (MST) | 12:58 | End Time (MST) | 14:14 | | |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999979 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 1.007950 |
| 0 | 0 | 0.0000 | Intercept (± 3% F.S.) | 0.002000 |
| 1.78 | 1.81 | 0.9829 | | |
| 3.56 | 3.57 | 0.9966 | | |
| 7.12 | 7.18 | 0.9911 | | |

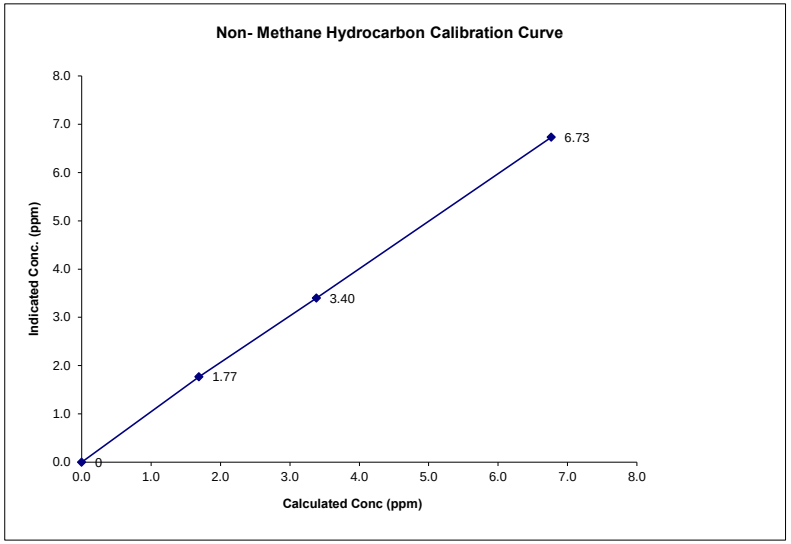



Notes:

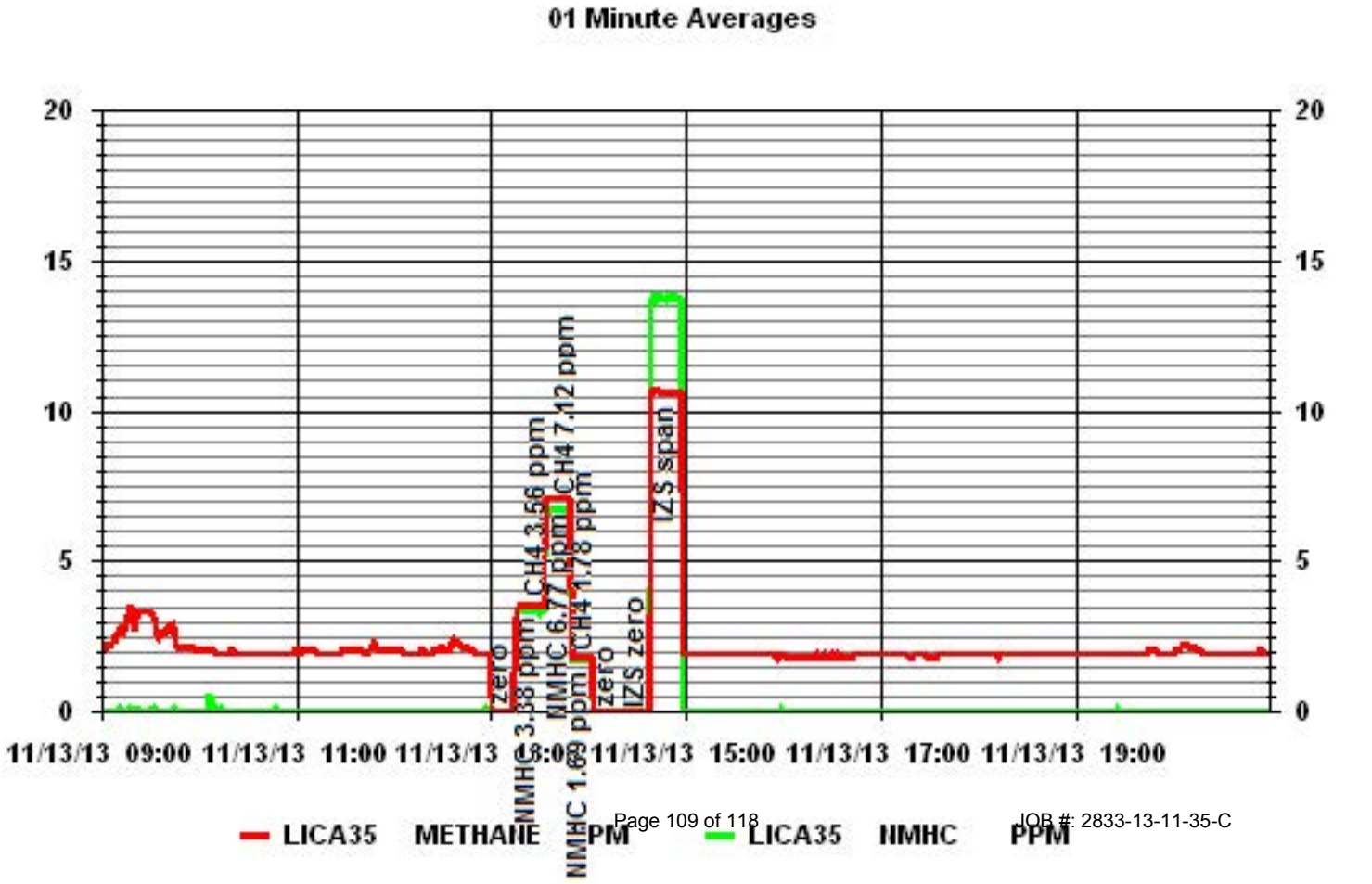
## Non-Methane Hydrocarbon Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 13, 2013 | | | | |
| Company | Lakeland Industry and Community Association | | | | |
| Plant / Location | ELK Point Airport | | | | |
| Start Time (MST) | 12:58 | End Time (MST) | 14:14 | | |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999806 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 0.990983 |
| 0 | 0 | 0.0000 | Intercept (± 3% F.S.) | 0.042000 |
| 1.69 | 1.77 | 0.9555 | | |
| 3.38 | 3.40 | 0.9949 | | |
| 6.77 | 6.73 | 1.0052 | | |




Notes:


01 Minute Averages
20
15
10
5
0
zero
NMHC 3.38 ppm
CH4 3.56 ppm
NMHC 6.77 ppm
CH4 7.12 ppm
NMHC 1.69 ppm
CH4 1.78 ppm
zero
IZS zero
IZS span
11/13/13 09:00
11/13/13 11:00
11/13/13 13:00
11/13/13 15:00
11/13/13 17:00
11/13/13 19:00
LICA35 METHANE PPM
LICA35 NMHC PPM

# Particulate Matter 2.5

**TEOM 1405F Audit**

| Station | | Audit Transfer Standard | |
|---|---|---|---|
| Date: | November 20, 2013 | Make/Model: | Fisher Brand |
| Station Name: | LICA Portable (CASA # 35) | Serial Number: | 15-021B |
| Location: | ELK Point Air Port | Cell s/n: | N/A |
| Operator: | LICA | Thermometer s/n: | N/A |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | Thermo Scientific Series 1405F | F-Main Set Pt (l/min) | 3.00 |
| Unit # | N/A | F-Aux Set Pt (l/min) | 13.67 |
| Unit s/n | 1405A208301003 | Filter Load (%) | 52.0% |
| Firmware Ver. | 1.52 | $K_o$ Factor | 13125.0 |
| Parameter | PM 2.5 (with FDMS) | Temp ($^oC$) | -22.5 |
| | | Press (ATM) | 0.927 |

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

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

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

**Audit**

**Status**

| | | | |
|---|---|---|---|
| Noise **<0.10*u* g** | 0.005 | Warnings | None |
| Pump Vacuum **<0.40atm** | 0.34 | Pump Gauge (inHg) | -19 |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 2 °C)** | -23.10 | **D °C** | 0.6 |
| Measured Press **(± 0.01atm)** | 0.944 | **DATM** | -0.017 |

**Flow Audit**

| | | | |
|---|---|---|---|
| Indicated Main Flow (l/min) | 3.00 | Main Flow Drift **(±10.0%)** | 0.43% |
| Measured Main Flow (l/min) | 3.06 | Flow Adjusted to Measured? | Yes |
| Indicated Bypass Flow (l/min) | 13.67 | Bypass Flow Drift **(±10.0%)** | 1.45% |
| Measured Bypass Flow (l/min) | 14.07 | Flow Adjusted to Measured? | Yes |

**Leak Check**

| | |
|---|---|
| Main **(< 0.15 l/min)** | Base=NA, Ref.=NA |
| Aux **(< 0.6 l/min)** | Base=NA, Ref.=NA |

**Instrument Setup**

Flow Control = Active

Report Condition = Actual

**$K_o$ Factor**

| | |
|---|---|
| Measured | N/A |
| $K_o$ Difference **(± 2.5%)** | N/A |

**Start Time:** 14:00 **Finish Time:** 15:00

**Sample Inlet Cleaned:** NO **New Filters Installed:** NO

**New Filter Loading %:** NA

**Comments:**

**Auditor/s:** Tom Bourque

# Nitrogen Dioxide

## NOx - NO- $NO_2$ Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 13, 2013 | Previous Calibration | October 15, 2013 |
| Company | LICA | Plant/Location | ELK Point Airport |
| Start Time (MST) | 9:30 | End Time (MST) | 14:26 |
| Reason: | Monthly calibration | | |
| Barometric Pressure | 27.81 in HG | Station Temperature | 24 Deg C |
| Cal Gas Concentration | NOx 49.0 ppm NO 48.9 ppm | Cal Gas Expiry date | December 29, 2016 |
| Cal Gas Cylinder # | BAL3165 | | |
| DAS Output Voltage | 0-1 Volts | Chart Rec. Output | NA Volts |

### Equipment Information

| | | | |
|---|---|---|---|
| Analyzer Make / Model: | API 200E | S/N : | 593 |
| Calibrator Make / Model: | Environics 6100 | S/N: | 4760 |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 |
| Chart Recorder Make / Model: | NA | S/N: | NA |
| Flow Meter: | Environics 6100 | S/N : | 4760 |

### Analyzer Settings

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | 0-1000 | | | ppb | | |
| Sample Flow/Conv. Temp | 417 | ccm | 314.2 | Deg C | | 420 | ccm | 314.5 | Deg C |
| Ozone Flow / Vacuum | 78 | ccm | 4.6 | "Hg-A | | 78 | ccm | 4.6 | "Hg-A |
| HVPS / A ZERO | 674 | Volts | 9.3 | MV | | 674 | Volts | 8.7 | MV |
| Rx/ Temp / PMT Temp | 50.0 | Deg C | 6.7 | Deg C | | 50.0 | Deg C | 6.7 | Deg C |
| Box Temp / IZS Temp | 33.5 | Deg C | 45.3 | Deg C | | 30.3 | Deg C | 45.2 | Deg C |
| Offset | 0.4 | NOx | 0.5 | NO | | 2 | NOx | 1.5 | NO |
| Slope | 1.019 | NOx | 1.013 | NO | | 1.116 | NOx | 1.098 | NO |
| $NO_2$ COEF / Conv Efficency | NA | NO2 | 0.997 | | | NA | NO2 | 0.997 | |

### Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 5000 | 0.0 | NA | 0 | 0 | NA | -1 | 0 | 0 | NA | NA |
| | No zero adj. | | | | | | | | | |
| 4920 | 80.5 | NA | 789 | 787 | NA | 718 | 725 | -7 | 1.0967 | 1.0854 |
| 4920 | 80.5 | NA | 789 | 787 | NA | 787 | 785 | 2 | 1.0007 | 1.0024 |
| 4960 | 40.1 | NA | 393 | 392 | NA | 391 | 391 | 1 | 1.0020 | 1.0025 |
| 4980 | 20.0 | NA | 196 | 196 | NA | 197 | 198 | -1 | 0.9914 | 0.9894 |
| 5000 | 0.0 | NA | 0 | 0 | NA | -1 | 0 | 0 | NA | NA |

### Gas Phase Titration Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | $NO_2$ Correction Factor | NO2 Conv Efficency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | | |
| 4920 | 80.4 | NA | 788 | 786 | NA | 787 | 785 | 2 | NA | NA |
| 4920 | 80.4 | 600 | 788 | NA | 499 | 783 | 288 | 495 | 1.0081 | 99.20% |
| | No adj. | | | | | | | | | |
| 4920 | 80.4 | 300 | 788 | NA | 257 | 789 | 530 | 260 | 0.9885 | 101.18% |
| 4920 | 80.4 | 120 | 788 | NA | 101 | 790 | 686 | 105 | 0.9619 | 104.04% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Linearity | | | Sum of Least Squares | NOx= | 1.002 | NO= | 1.002 | NO2= 1.003 |
| OK? | Yes | No | Correction Factors: | NOx= | 1.0007 | NO= | 1.0024 | NO2= 1.0081 |
| | | | | Average Converter Efficiency= | | 101.47% | | |

### IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | 0.0 | NOx | 0.0 | NO2 | | 0.0 | NOx | 0.0 | NO2 |
| Auto Span | 479 | NOx | 464 | NO2 | | 526 | NOx | 507 | NO2 |
| | | | | Sample Lines Connected | | YES | | | |

### Percent Change

| | NOx | NO | NO2 |
|---|---|---|---|
| Previous Month's Calibration Correction Factor | 1.000 | 0.998 | 1.002 |
| Current Correction Factor Before Span Adjust | 1.097 | 1.085 | 1.008 |
| Percent Change | -8.8% | -8.0% | -0.6% |

Notes

**NA : Not Applicable**

O3=450 Dilution 4920 Source flow 80.75

Nox 786 NO 406 NO2 380

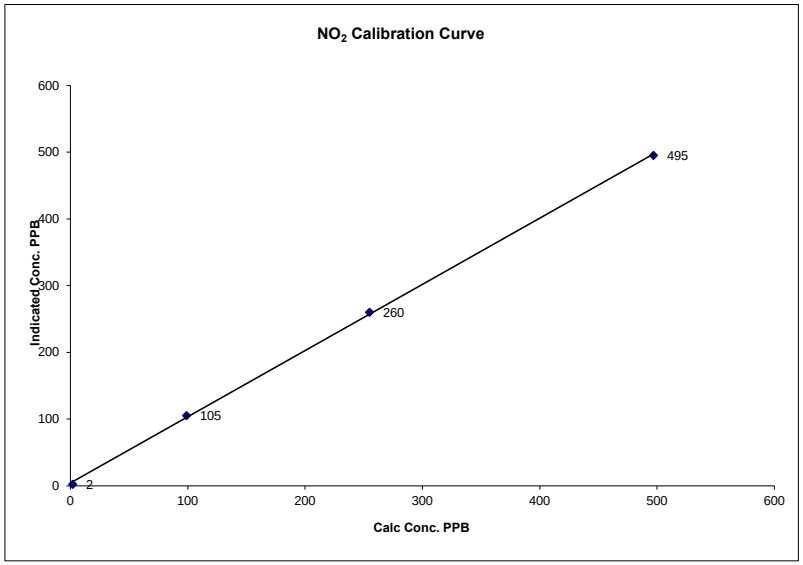
Calibration Performed by: Waseem Ahmed

## $NO_2$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 13, 2013 | | |
| Company | LICA | | |
| Plant / Location | ELK Point Airport | | |
| Start Time (MST) | 9:30 | End Time (MST) | 14:26 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 2 | 2 | NA |
| 99 | 105 | 0.9429 |
| 255 | 260 | 0.9808 |
| 497 | 495 | 1.0040 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999732 |
| Slope | (0.85 to 1.15) | 0.992538 |
| Intercept | (± 3% F.S.) | 3.84134 |

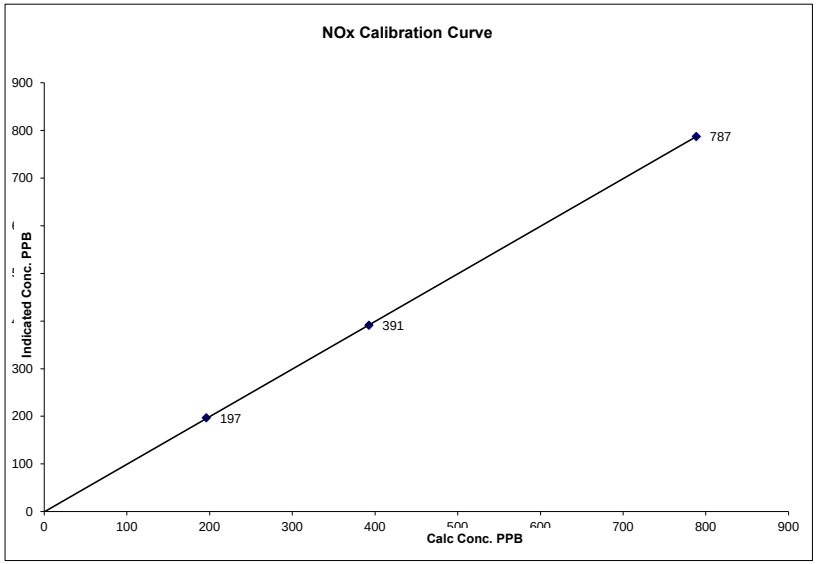



Notes:

## NOx Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 13, 2013 | | |
| Company | LICA | | |
| Plant / Location | ELK Point Airport | | |
| Start Time (MST) | 9:30 | End Time (MST) | 14:26 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999991 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 0.998452 |
| 0 | -1 | NA | Intercept (± 3% F.S.) | -0.36731 |
| 196 | 197 | 0.9914 | | |
| 393 | 391 | 1.0020 | | |
| 789 | 787 | 1.0007 | | |

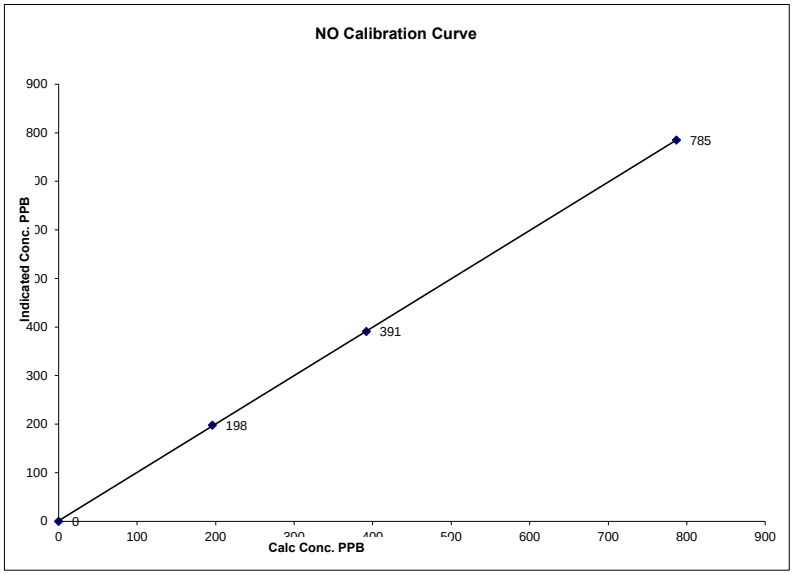



Notes:

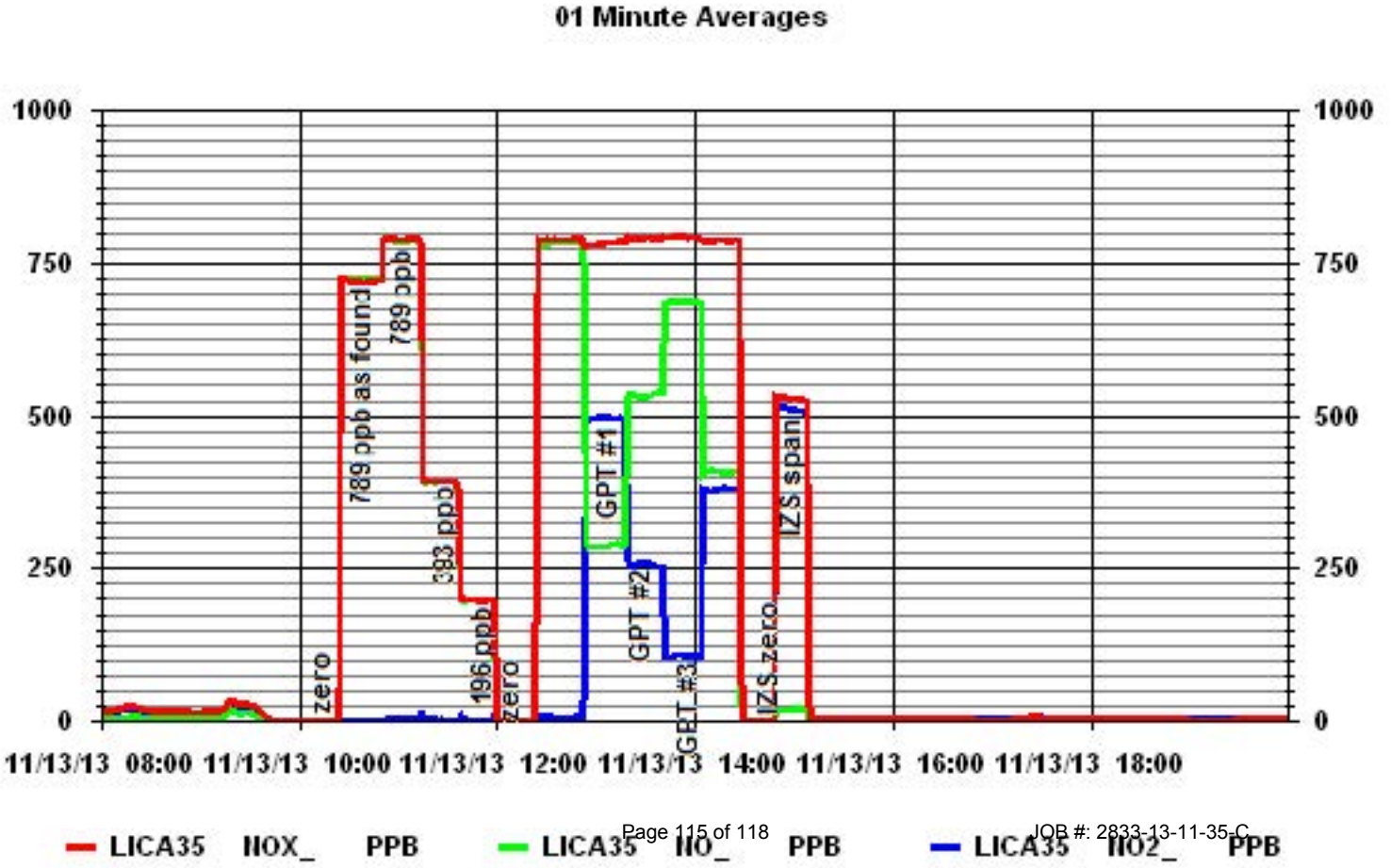
## NO Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 13, 2013 | | |
| Company | LICA | | |
| Plant / Location | ELK Point Airport | | |
| Start Time (MST) | 9:30 | End Time (MST) | 14:26 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999986 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 0.996426 |
| 0 | 0 | NA | Intercept (± 3% F.S.) | 1.03075 |
| 196 | 198 | 0.9894 | | |
| 392 | 391 | 1.0025 | | |
| 787 | 785 | 1.0024 | | |




Notes:


01 Minute Averages
1000
750
500
250
0
789 ppb as found
789 ppb
383 ppb
196 ppb
zero
zero
GPT #1
GPT #2
GPT #3
IZS span
IZS zero
11/13/13 08:00
11/13/13 10:00
11/13/13 12:00
11/13/13 14:00
11/13/13 16:00
11/13/13 18:00
LICA35 NOX_ PPB
LICA35 NO_ PPB
LICA35 NO2_ PPB

# Ozone

## $O_3$ Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 13, 2013 | Previous Calibration | October 23, 2013 |
| Company | **Lakeland Industry & Community Association** | | |
| Plant / Location | **EIK Point Airport** | | |
| Start Time (MST) | 14:30 | End Time (MST) | 16:54 |
| Reason: | Monthly calibration | | |
| Barometric Pressure | 27.8 in HG | Station Temperature | 24 Deg C |
| DAS Output Voltage | 0-10 Volts | | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 49i | S/N : | 1002240372 | Method: | Photometric |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | GPT |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0-500 | ppb | | | | |
| Cell A Flow / Cell B Flow | 760 | LPM | 766 | LPM | 750 | LPM | 758 | LPM |
| $O_3$ Set Level | 690 | mmHg | | | 691 | mmHg | | |
| Bench Lamp | 54.1 | Deg C | | | 54 | Deg C | | |
| O3 Lamp / Box Temp | 68.2 | Deg | 30.1 | Deg C | 68.2 | Deg C | 29.4 | Deg C |
| Offset / Slope | -0.2 | | 1.047 | | -0.2 | | 0.972 | |

### Calibration Data

| Dilution Flow Rate | Ozone Set Point | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4994 | 0 | 0 | 0 | N/A |
| | No zero adj | | | |
| 4994 | 450 | 379 | 405 | 0.9358 |
| 4994 | 450 | 379 | 379 | 1.0000 |
| 4994 | 300 | 255 | 253 | 1.0079 |
| 4994 | 120 | 99 | 101 | 0.9802 |
| 4994 | 0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 1.0014 |
| | | | New Correction Factor | 1.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 348 | 321 |
| Sample Lines Connected | | Yes |
| Previous Calibration Correction Factor: | | 1.0105 |
| Current Correctio Factor Before Span Adjust: | | 0.9358 |
| Percent Change: | | 8.0% |

Note:

**N/A : Not Applicable**
Change sample filter.

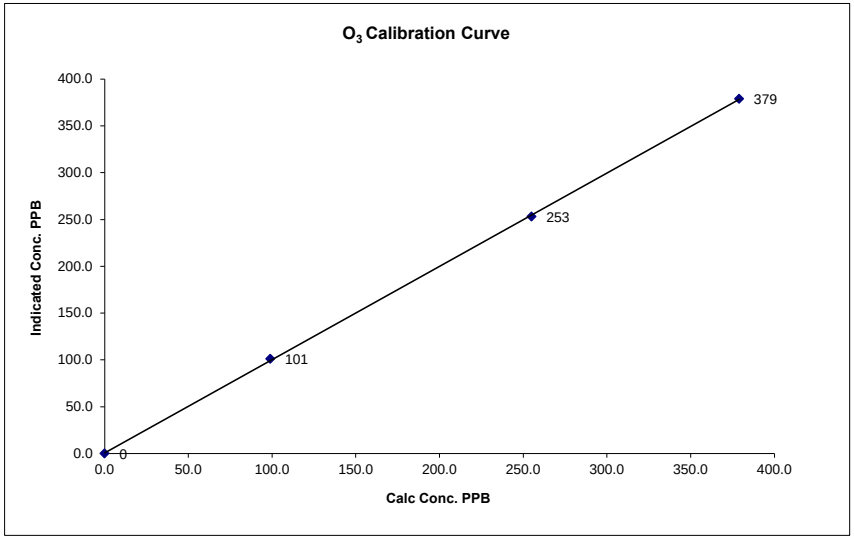
Calibration Performed by: Waseem Ahmed

## $O_3$ Calibration Curve

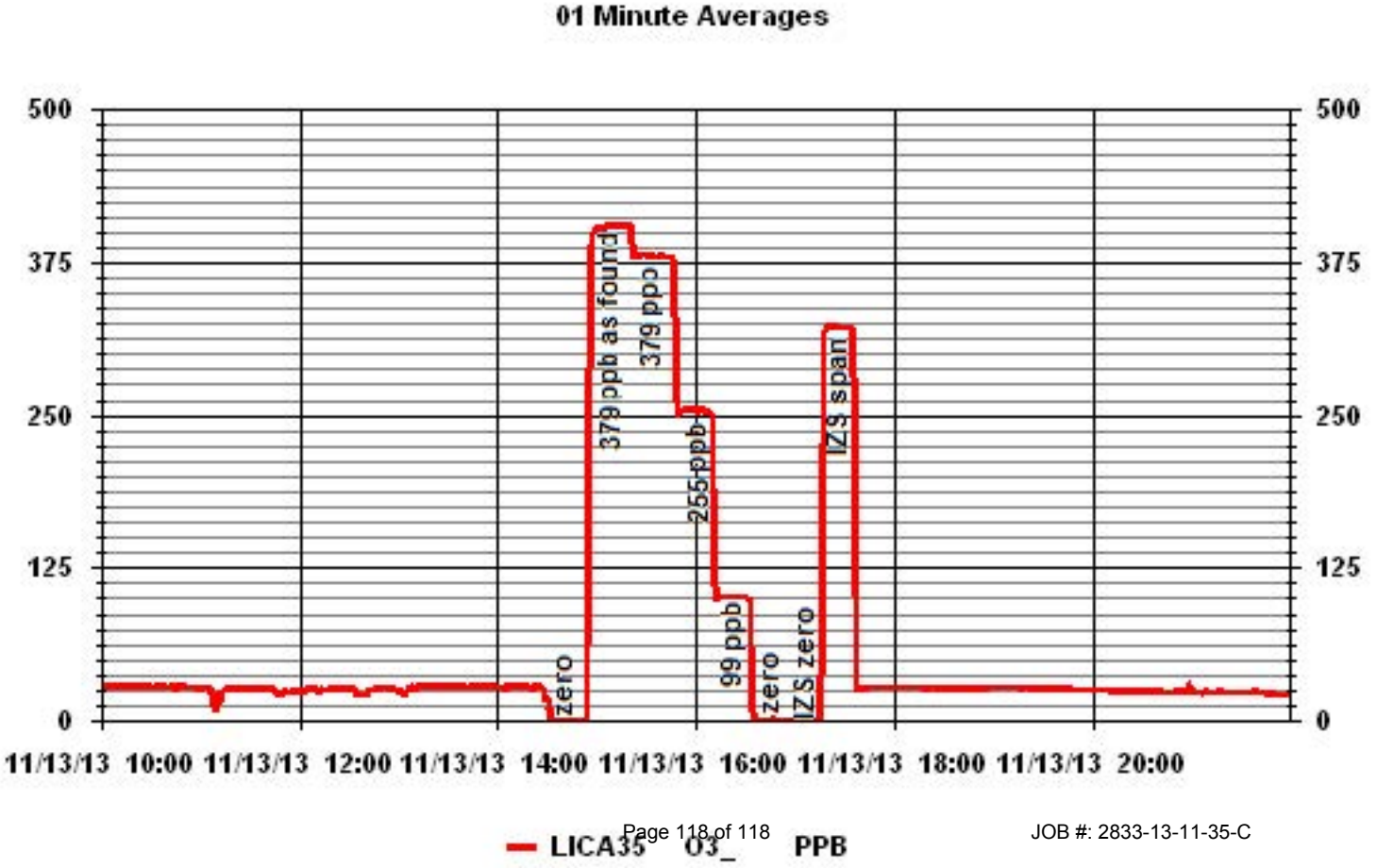
| | |
|---|---|
| Calibration Date | November 13, 2013 |
| Company | **Lakeland Industry & Community Association** |
| Plant / Location | **EIK Point Airport** |
| Start Time (MST) | 14:30 |
| End Time (MST) | 16:54 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 99 | 101 | 0.9802 |
| 255 | 253 | 1.0079 |
| 379 | 379 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999918 |
| Slope | (0.85 to 1.15) | 0.996292 |
| Intercept | (± 3% F.S.) | 0.679472 |




Notes:






JOB #: 2833-13-11-35-C

# Lakeland Industry & Community Association

Maskwa Monitoring Site
Ambient Air Monitoring
Data Report
For
November 2013

Prepared By:


December 19, 2013

# 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: November 2013

The monthly ambient data report:

- Prepared by Lili Zhou
- Reviewed by Lily Lin

# Calibration Procedure

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

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

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

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

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

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

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

# MONTHLY CONTINUOUS DATA SUMMARY
## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – MASKWA

### Continuous Ambient Monitoring – November 2013

| LICA MASKWA SITE | | | | | | MAXIMUM VALUES | | | | | | | OPERATIONAL TIME (PERCENT) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-HOUR | | | | | 24-HOUR | | |
| PARAMETER | OBJECTIVES | | EXCEEDENCES | | MONTHLY AVERAGE | READING | DAY | HOUR | WIND SPEED (KPH) | WIND DIRECTION (DEGREES) | READING | DAY | |
| | 1-HR | 24-HR | 1-HR | 24-HR | | | | | | | | | |
| SO2 (PPB) | 172 | 48 | 0 | 0 | 0.76 | 16 | 25 | 8 | 6.4 | 303(WNW) | 3.8 | 24 | 100.0 |
| H2S (PPB) | 10 | 3 | 0 | 0 | 0.14 | 5 | 30 | 3 | 1.3 | 60(WNW) | 0.7 | 30 | 100.0 |
| THC (PPM) | - | - | - | - | 2.33 | 3.7 | 12 | 8 | 2.5 | 54(NE) | 3.0 | 12 | 98.9 |
| NOx (PPB) | - | - | - | - | 5.47 | 30.6 | 10 | 9 | 0.7 | 264(W) | 13.1 | 12 | 100.0 |
| NO (PPB) | - | - | - | - | 0.94 | 16.7 | 2 | 9 | 2 | 311(NW) | 2.9 | 12 | 100.0 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 4.53 | 20.3 | 25 | 8 | 6.4 | 303(WNW) | 10.2 | 12 | 100.0 |
| VECTOR WS (KPH) | - | - | - | - | 6.46 | 16.8 | 16 | 9 | - | 32(NNE) | 13.4 | 16 | 100.0 |
| VECTOR WD (DEGREES) | - | - | - | - | 338(NNW) | - | - | - | - | - | - | - | 100.0 |
| RELATIVE HUMIDITY (%) | - | - | - | - | 74.80 | 90 | 1 | VAR | VAR | VAR | 85.0 | 8 | 100.0 |
| TEMPERATURE (DEG C) | - | - | - | - | -9.17 | 8.8 | 1 | 13 | 7.3 | 286(WNW) | 2.6 | 1 | 100.0 |
| BAROMETRIC PRESSURE (MILIBAR) | - | - | - | - | 941 | 964 | 22 | VAR | VAR | VAR | 961.7 | 22 | 100.0 |
| PRECIPITATION (MM) | - | - | - | - | 0.03 | 3.3 | 5 | 10 | 4.7 | 207(SSW) | 13.6 | 8 | 100.0 |

NA-NOT AVAILABLE VAR-VARIOUS

# General Monthly Summary

**Equipment Operation**

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

**AQM STATION – LICA – Maskwa**

**Sulphur Dioxide (PPB)**

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

No operational issues were observed during the month. Following the as found points check on November 7th, the analog output was calibrated and the inlet filter was changed. After that, the multi-points calibration was performed. Data was corrected using daily zero information.

**Hydrogen Sulphide (PPB)**

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

No operational issues were observed during the month. The monthly calibration was performed on November 7th. The inlet filter was changed before the monthly calibration was started. Data was corrected using daily zero information.

**Total Hydrocarbon (PPM)**

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

The analyzer flamed out on November 5th during the hour 2 caused by a low shelter temperature. The heater was replaced to improve the shelter temperature on November 5th. The analyzer was relit after the shelter temperature reached above 20 degree Celsius. 8 hours of data were invalidated due to this event. The monthly calibration was performed on November 7th. The inlet filter was changed before the monthly calibration was started. Data was corrected using daily zero information.

# General Monthly Summary

**AQM STATION – LICA – Maskwa**

**Nitrogen Dioxide (PPB)**

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

No operational issues were observed during the month. Following the as found points check on November 7th, the analog output was calibrate and the inlet filter was changed. After that, the monthly calibration was performed. Data was corrected using daily zero information.

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

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

The wind system is reported as vector wind speed and vector wind direction. The last wind system calibration was performed by manufacturer on December 20th, 2011.
No operational issues were observed this month. The hourly maximum reading for wind speed collected on November 21th at hour 7 went above the full scale. The real-readings may be higher than indicated.

**Relative Humidity (PERCENT)**

- System make / model - Met One 083

No operational issues were observed during the month.

**Precipitation (MM)**

- System make / model - Met One 387

No operational issues were observed during the month.

# General Monthly Summary

**AQM STATION – LICA – Maskwa**

**Barometric Pressure (MILLIBAR)**

- System make / model - Met One 092

No operation issues were observed during the month.

**Ambient Temperature (DEGC)**

- System make / model - Met One 060

No operational issues were observed during the month.

**Trailer Temperature (DEG C)**

- System make / model – R&R 61

No operational issues were observed during the month.

**Standard Deviation Wind Direction (DEG)**

- System make / model –Met One 50.5H

No operational issues were observed during the month.

# General Monthly Summary

**AQM STATION – LICA – Maskwa**

**Datalogger**

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

No operational issues were observed during the month.

**Trailer**

The manifold was cleaned on November 7th.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Sulphur Dioxide

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

NOVEMBER 2013

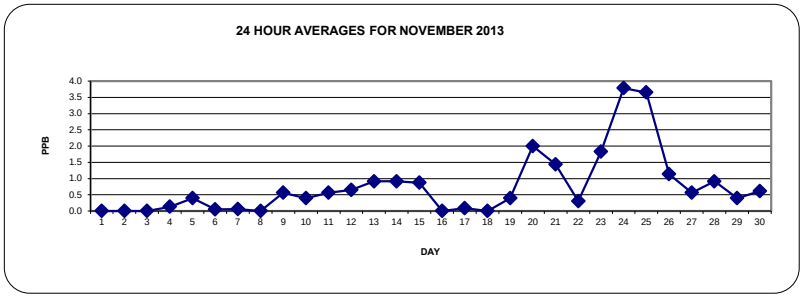
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 3 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 0.1 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | **S** | 0 | 0 | 2 | 0.4 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 1 | 1 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | **C** | 1 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 1 | 0 | **S** | 1 | 1 | 0 | 0 | 3 | 2 | 3 | 0.6 | 24 |
| 10 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 11 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **S** | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0.6 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | **S** | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0.7 | 24 |
| 13 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 4 | 7 | **S** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.9 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0.9 | 24 |
| 15 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | **S** | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.9 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 3 | 1 | 4 | 0.4 | 24 |
| 20 | 2 | 1 | 1 | 8 | 1 | 4 | **S** | 4 | 4 | 4 | 8 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 8 | 2.0 | 24 |
| 21 | 2 | 2 | 2 | 1 | 1 | **S** | 0 | 1 | 1 | 3 | 7 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 1.4 | 24 |
| 22 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 0.3 | 24 |
| 23 | 2 | 2 | 2 | **S** | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1.8 | 24 |
| 24 | 4 | 2 | **S** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 10 | 12 | 2 | 2 | 4 | 2 | 4 | 7 | 14 | 5 | 9 | 14 | **3.8** | 24 |
| 25 | 11 | **S** | 6 | 1 | 1 | 10 | 13 | 7 | **16** | 11 | 1 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **16** | 3.7 | 24 |
| 26 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 3 | **S** | 4 | 1.1 | 24 |
| 27 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 4 | 0.6 | 24 |
| 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 0 | 1 | 0.9 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | **S** | 0 | 1 | 1 | 1 | 2 | 0.6 | 24 |
| HOURLY MAX | 11 | 4 | 6 | 8 | 2 | 10 | 13 | 7 | 16 | 11 | 8 | 4 | 7 | 10 | 12 | 2 | 2 | 4 | 2 | 4 | 7 | 14 | 5 | 9 | | | |
| HOURLY AVG | 1.0 | 0.6 | 0.7 | 0.5 | 0.3 | 0.7 | 0.6 | 0.8 | 1.0 | 1.1 | 1.1 | 0.9 | 1.4 | 1.0 | 0.9 | 0.5 | 0.4 | 0.5 | 0.3 | 0.5 | 0.7 | 1.1 | 0.9 | 0.9 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |



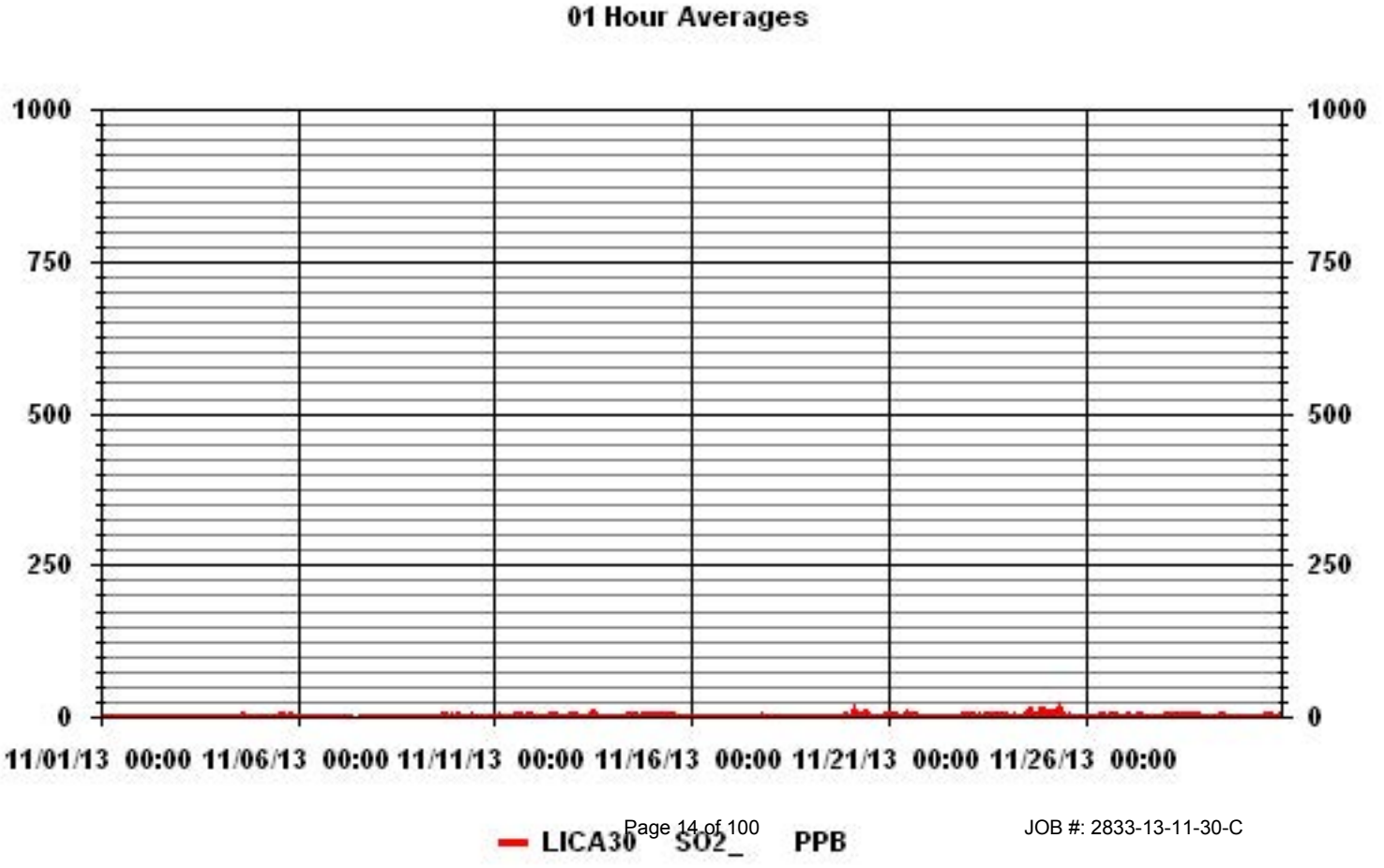

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 249 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 16 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 25 |
| MAXIMUM 24-HR AVERAGE: | 3.8 | PPB | | | ON DAY(S) | 24 |
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 1.72 | | MONTHLY AVERAGE: | | 0.76 | PPB |



JOB #: 2833-13-11-30-C






JOB #: 2833-13-11-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 2 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 3 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 4 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | **S** | 0 | 2 | 0.9 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 0 | 1 | 3 | 0.7 | 24 |
| 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | **S** | 0 | 0 | 1 | 1 | 1 | 0.7 | 24 |
| 8 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 | 9 | 7 | 9 | 1 | 0 | 2 | 1 | **S** | 2 | 2 | 1 | 1 | 5 | 4 | 9 | 2.2 | 24 |
| 10 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1.3 | 24 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 2 | 2 | 2 | **S** | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 1.5 | 24 |
| 13 | 3 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 7 | 2 | 15 | 16 | **S** | 6 | 4 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 16 | 3.1 | 24 |
| 14 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1.7 | 24 |
| 15 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | **S** | 13 | 3 | 3 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 13 | 2.2 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 1 | 1 | 3 | 0.3 | 24 |
| 18 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 5 | 4 | 2 | 5 | 1.0 | 24 |
| 20 | 4 | 1 | 15 | 18 | 2 | 10 | **S** | 7 | 7 | 6 | 15 | 8 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 18 | 4.8 | 24 |
| 21 | 3 | 3 | 3 | 2 | 1 | **S** | 1 | 2 | 3 | 8 | 13 | 5 | 5 | 7 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 13 | 3.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 0.8 | 24 |
| 23 | 3 | 3 | 2 | **S** | 3 | 2 | 2 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 5 | 5 | 2.3 | 24 |
| 24 | 6 | 3 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 18 | 16 | 19 | 6 | 3 | 10 | 3 | 9 | 18 | 23 | 17 | 16 | 23 | 8.0 | 24 |
| 25 | 18 | **S** | 15 | 3 | 3 | 18 | 23 | 17 | **26** | 24 | 2 | 5 | 5 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **26** | 7.6 | 24 |
| 26 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 8 | 4 | **S** | 8 | 2.4 | 24 |
| 27 | 2 | 8 | 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 3 | 0 | 1 | **S** | 1 | 11 | 1.9 | 24 |
| 28 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 | 2 | **S** | 1 | 1 | 3 | 1.3 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | **S** | 0 | 0 | 0 | 3 | 1.3 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 4 | 3 | 3 | 2 | 3 | 4 | 1 | **S** | 1 | 1 | 1 | 1 | 4 | 1.3 | 24 |
| HOURLY MAX | 18 | 8 | 15 | 18 | 3 | 18 | 23 | 17 | 26 | 24 | 15 | 15 | 18 | 16 | 19 | 6 | 3 | 10 | 3 | 9 | 18 | 23 | 17 | 16 | | | |
| HOURLY AVG | 1.9 | 1.2 | 2.2 | 1.3 | 0.8 | 1.6 | 1.6 | 1.8 | 2.2 | 2.7 | 2.4 | 2.5 | 3.3 | 1.9 | 1.9 | 1.2 | 0.9 | 1.3 | 1.0 | 1.4 | 1.8 | 2.0 | 1.9 | 1.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

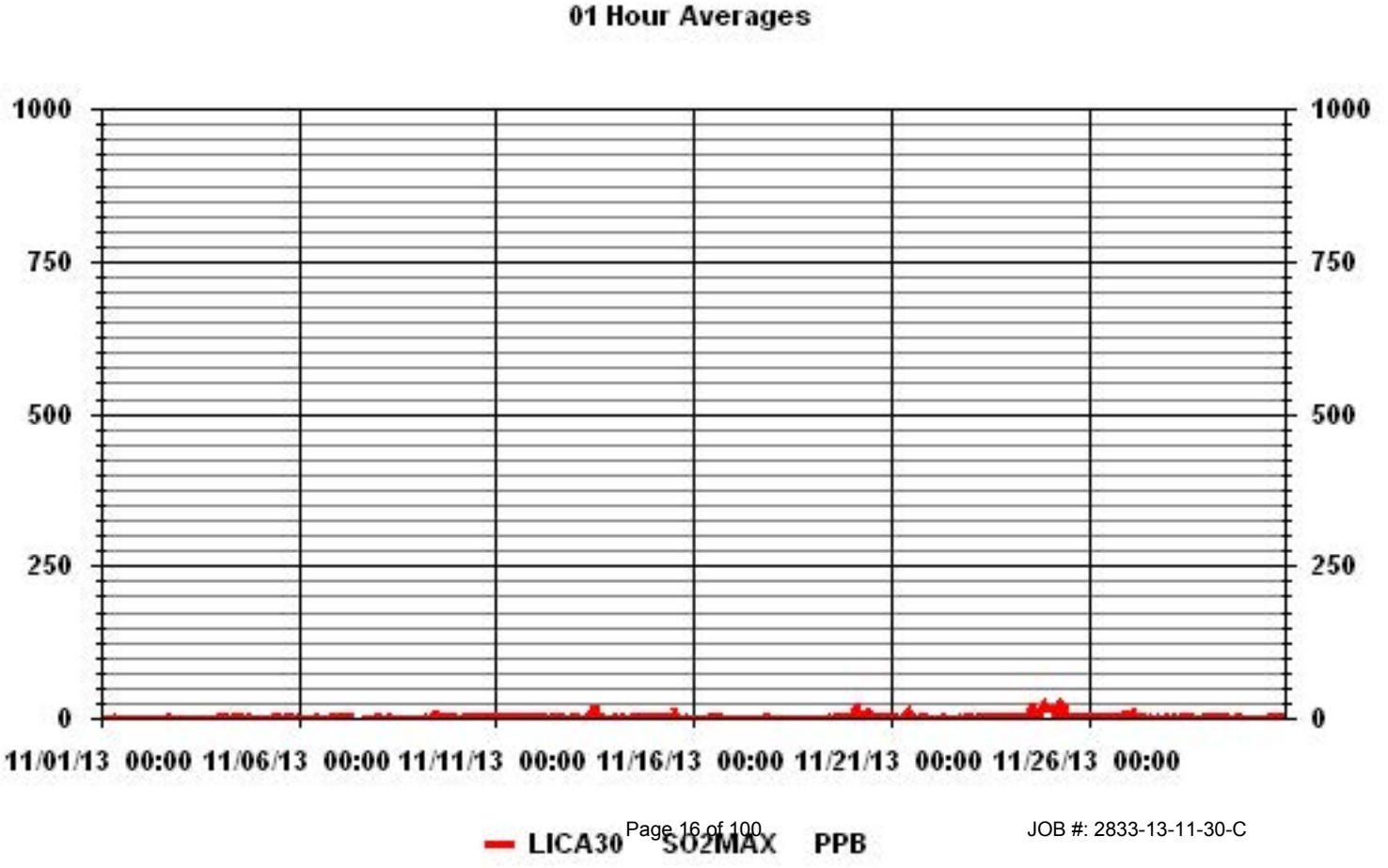
NUMBER OF NON-ZERO READINGS: 461

MAXIMUM INSTANTANEOUS VALUE: 26 PPB @ HOUR(S) 8 ON DAY(S) 25

IZS CALIBRATION TIME: 33 HRS OPERATIONAL TIME: 720 HRS

MONTHLY CALIBRATION TIME: 7 HRS

STANDARD DEVIATION: 3.32






JOB #: 2833-13-11-30-C

LICA30
SO2_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 | 8.51 | 11.60 | 8.66 | 3.96 | 1.32 | 1.46 | 4.69 | 5.58 | 7.04 | 11.74 | 11.60 | 3.81 | 5.28 | 6.46 | 5.13 | 3.08 | 100.00 |
| < | 60 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 170 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 8.51 | 11.60 | 8.66 | 3.96 | 1.32 | 1.46 | 4.69 | 5.58 | 7.04 | 11.74 | 11.60 | 3.81 | 5.28 | 6.46 | 5.13 | 3.08 | |

Calm : .00 %

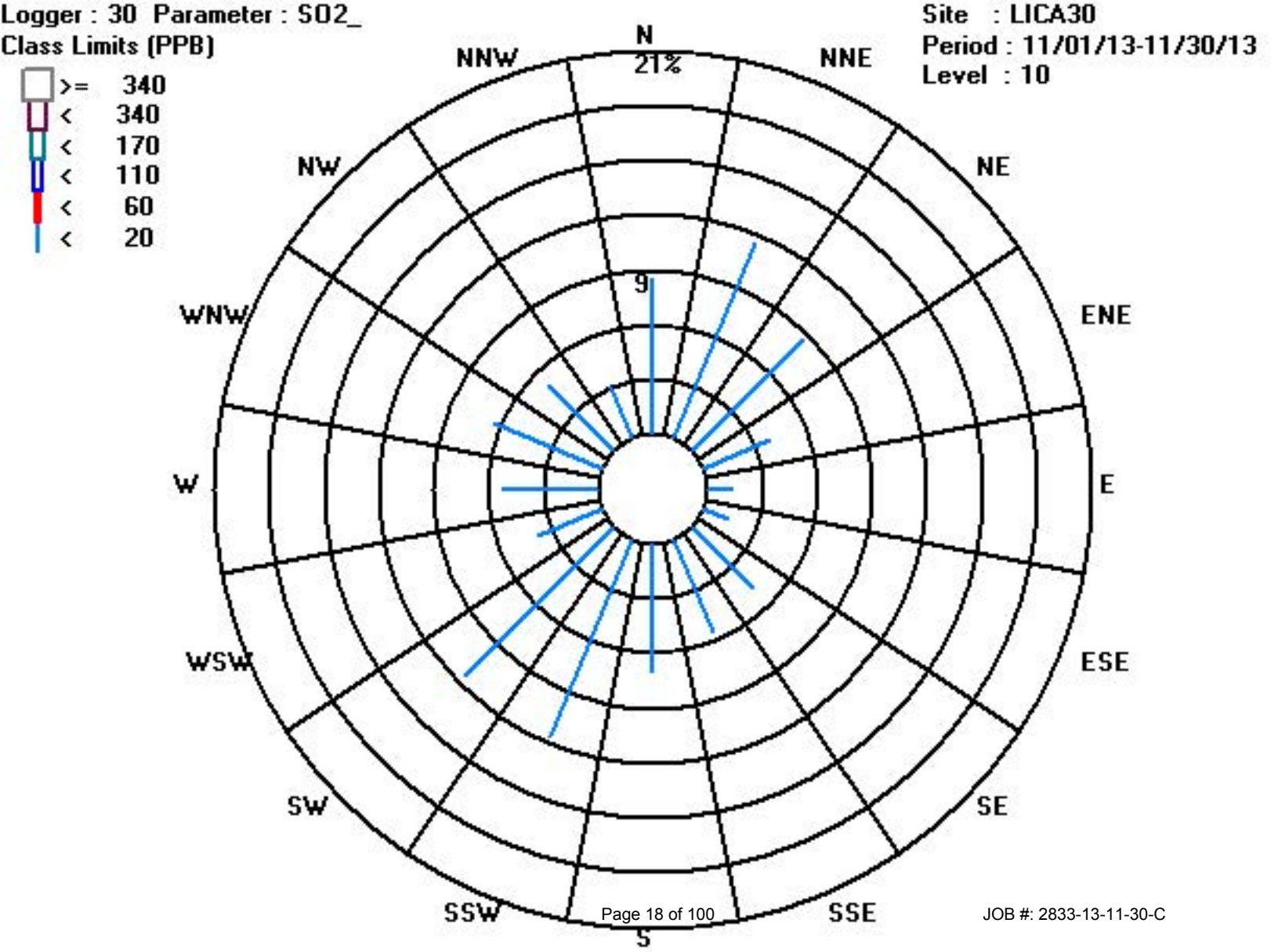
Total # Operational Hours : 681

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 20 | 58 | 79 | 59 | 27 | 9 | 10 | 32 | 38 | 48 | 80 | 79 | 26 | 36 | 44 | 35 | 21 | 681 |
| < | 60 | | | | | | | | | | | | | | | | | |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 170 | | | | | | | | | | | | | | | | | |
| < | 340 | | | | | | | | | | | | | | | | | |
| >= | 340 | | | | | | | | | | | | | | | | | |
| | Totals | 58 | 79 | 59 | 27 | 9 | 10 | 32 | 38 | 48 | 80 | 79 | 26 | 36 | 44 | 35 | 21 | |

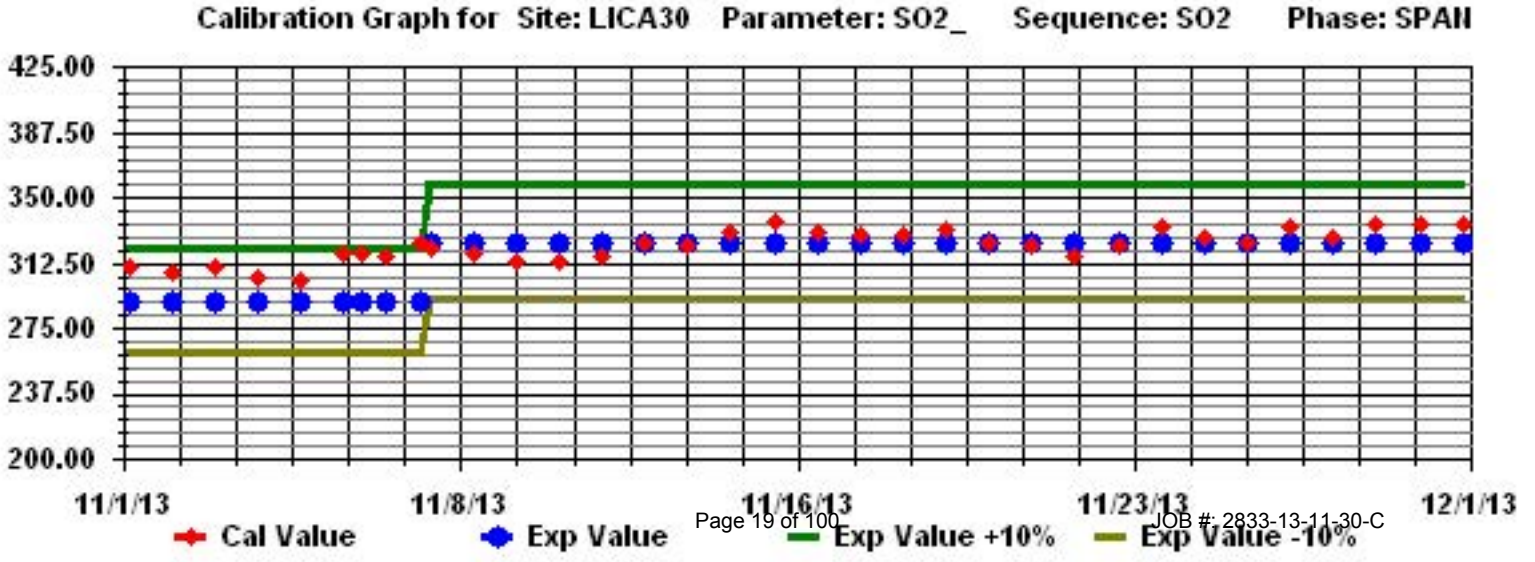
Calm : .00 %

Total # Operational Hours : 681






JOB #: 2833-13-11-30-C


Calibration Graph for Site: LICA30 Parameter: SO2_ Sequence: SO2 Phase: SPAN
425.00
387.50
350.00
312.50
275.00
237.50
200.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Hydrogen Sulphide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

NOVEMBER 2013

**HYDROGEN SULPHIDE ($H_2S$)** hourly averages in ppb

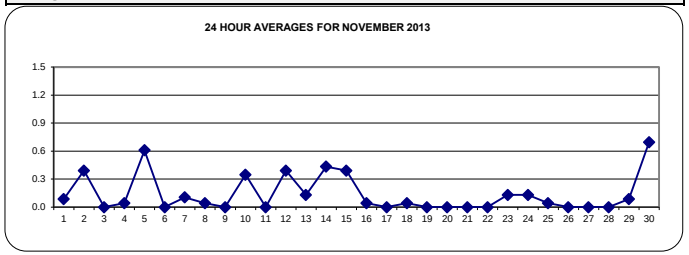
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY 24-HOUR | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 2 | 0 | **S** | 0 | 0 | 0 | 0 | 2 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.4 | 24 |
| 3 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 0.0 | 24 |
| 5 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 2 | 0.6 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.3 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | **S** | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0.4 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | **S** | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 15 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 16 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0.1 | 24 |
| 24 | 1 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 25 | 0 | **S** | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 26 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 30 | 0 | 0 | 2 | **5** | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | **5** | **0.7** | 24 |
| HOURLY MAX | 1 | 1 | 2 | 5 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.1 | 0.1 | 0.1 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | | | |

**STATUS FLAG CODES**

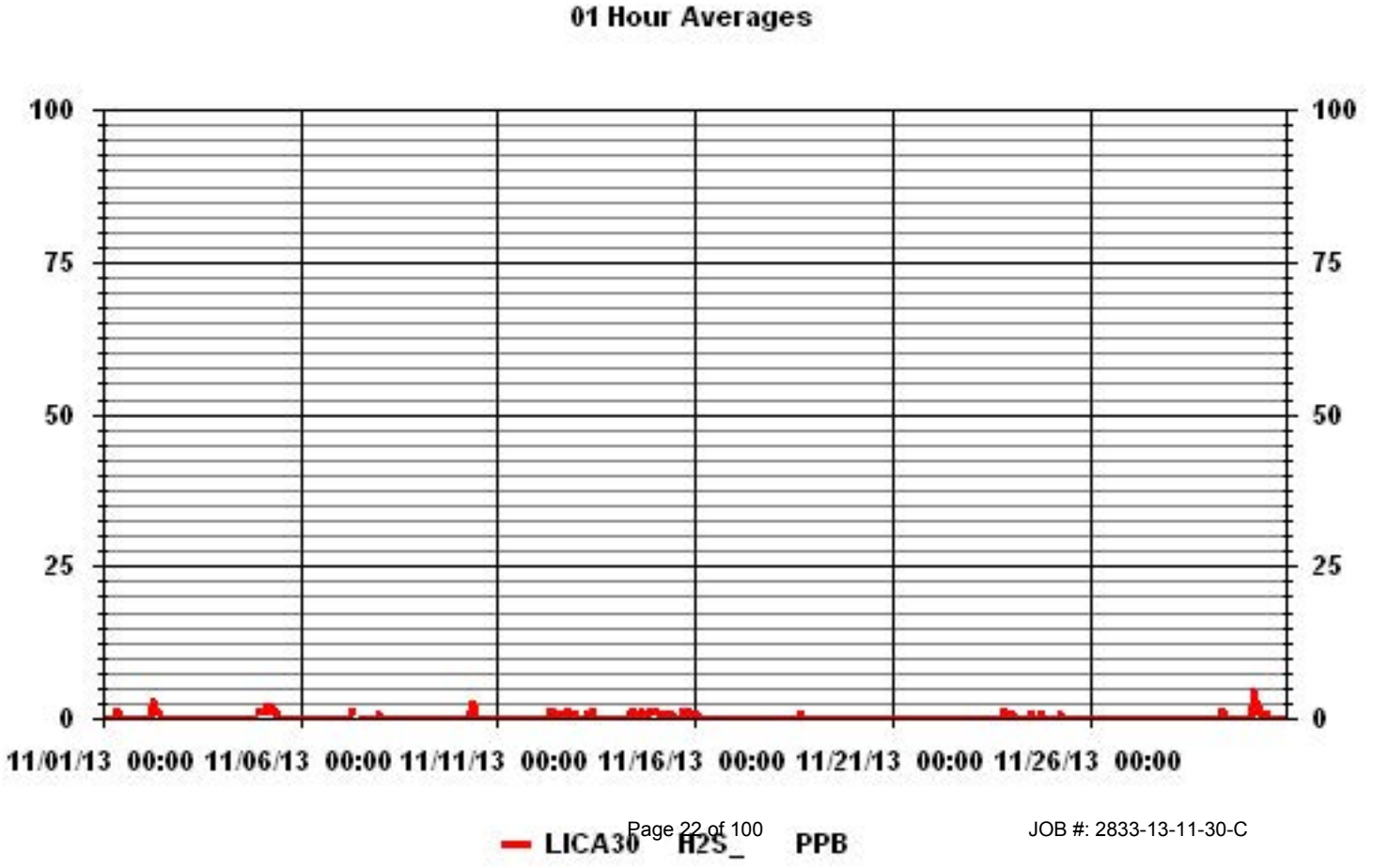
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 74 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 5 | PPB | @ HOUR(S) | 3 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | 0.7 | PPB | | | ON DAY(S) | 30 |
| | | | | | VAR-VARIOUS | |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 0.46 | | MONTHLY AVERAGE: | | 0.14 | PPB |






JOB #: 2833-13-11-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**HYDROGEN SULPHIDE MAX instantaneous maximum in ppb**

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.8 | 24 |
| 2 | 1 | **S** | 1 | 1 | 1 | 0 | 4 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 4 | 1.2 | 24 |
| 3 | **S** | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **S** | 1 | 0.5 | 24 |
| 4 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | **S** | 2 | 2 | 0.6 | 24 |
| 5 | 2 | 1 | 1 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | **S** | 0 | 1 | 3 | 1.3 | 24 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | **S** | 1 | 0 | 0 | 1 | 0.7 | 24 |
| 7 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | **C** | **C** | **C** | **C** | **C** | 0 | 1 | 0 | 0 | 1 | **S** | 1 | 1 | 1 | 1 | 2 | 0.6 | 24 |
| 8 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | **S** | 0 | 1 | 1 | 1 | 0 | 1 | 0.7 | 24 |
| 9 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.4 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0.6 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | **S** | 4 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 4 | 0.5 | 24 |
| 12 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.9 | 24 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0.9 | 24 |
| 14 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1.0 | 24 |
| 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0.8 | 24 |
| 17 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0.9 | 24 |
| 18 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 0.5 | 24 |
| 19 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0.7 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 21 | 0 | 0 | 1 | 0 | 0 | **S** | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 22 | 0 | 0 | 0 | 1 | **S** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.1 | 24 |
| 23 | 0 | 0 | 0 | **S** | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.6 | 24 |
| 24 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1.0 | 24 |
| 25 | 1 | **S** | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0.5 | 24 |
| 26 | **S** | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 0.7 | 24 |
| 27 | 1 | 4 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | **S** | 0 | 4 | 0.5 | 24 |
| 28 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | **S** | 1 | 1 | 1 | 0.7 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 2 | 1.0 | 24 |
| 30 | 1 | 1 | 6 | **7** | 6 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | **S** | 1 | 1 | 1 | 1 | 1 | **7** | 1.8 | 24 |
| HOURLY MAX | 2 | 4 | 6 | 7 | 6 | 3 | 4 | 4 | 4 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | | | |
| HOURLY AVG | 0.6 | 0.6 | 0.8 | 0.9 | 0.8 | 0.8 | 1.1 | 1.0 | 1.0 | 0.9 | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

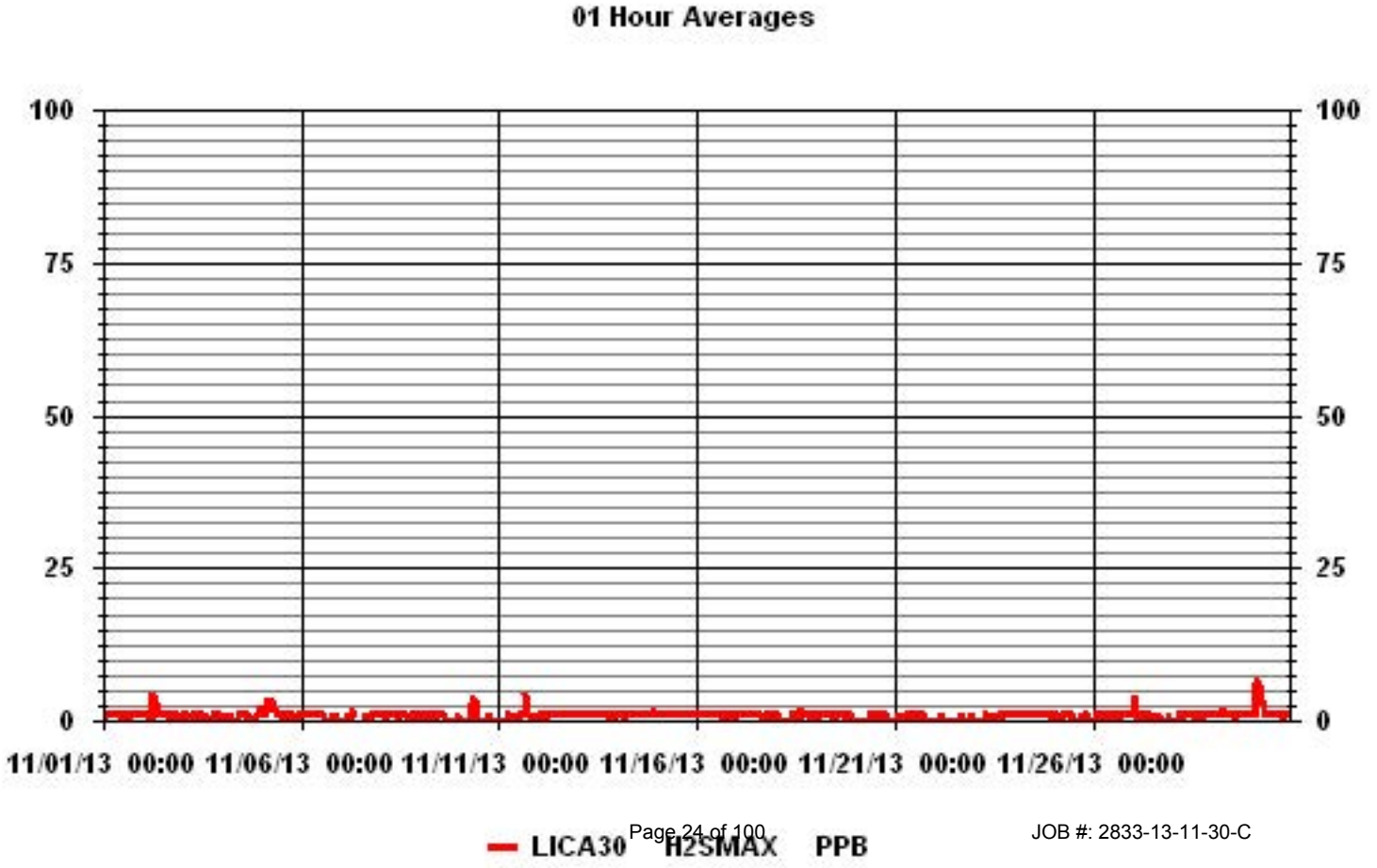
NUMBER OF NON-ZERO READINGS: 450

MAXIMUM INSTANTANEOUS VALUE: 7 PPB @ HOUR(S) 3 ON DAY(S) 30

IZS CALIBRATION TIME: 32 HRS OPERATIONAL TIME: 720 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 0.74






JOB #: 2833-13-11-30-C

LICA30
H2S_ / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 3 | 8.47 | 11.54 | 8.62 | 3.94 | 1.46 | 1.46 | 4.53 | 5.26 | 7.01 | 11.84 | 11.54 | 3.80 | 5.26 | 6.43 | 5.11 | 3.07 | 99.41 |
| < | 10 | .00 | .00 | .00 | .14 | .00 | .00 | .14 | .29 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .58 |
| < | 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 8.47 | 11.54 | 8.62 | 4.09 | 1.46 | 1.46 | 4.67 | 5.55 | 7.01 | 11.84 | 11.54 | 3.80 | 5.26 | 6.43 | 5.11 | 3.07 | |

Calm : .00 %

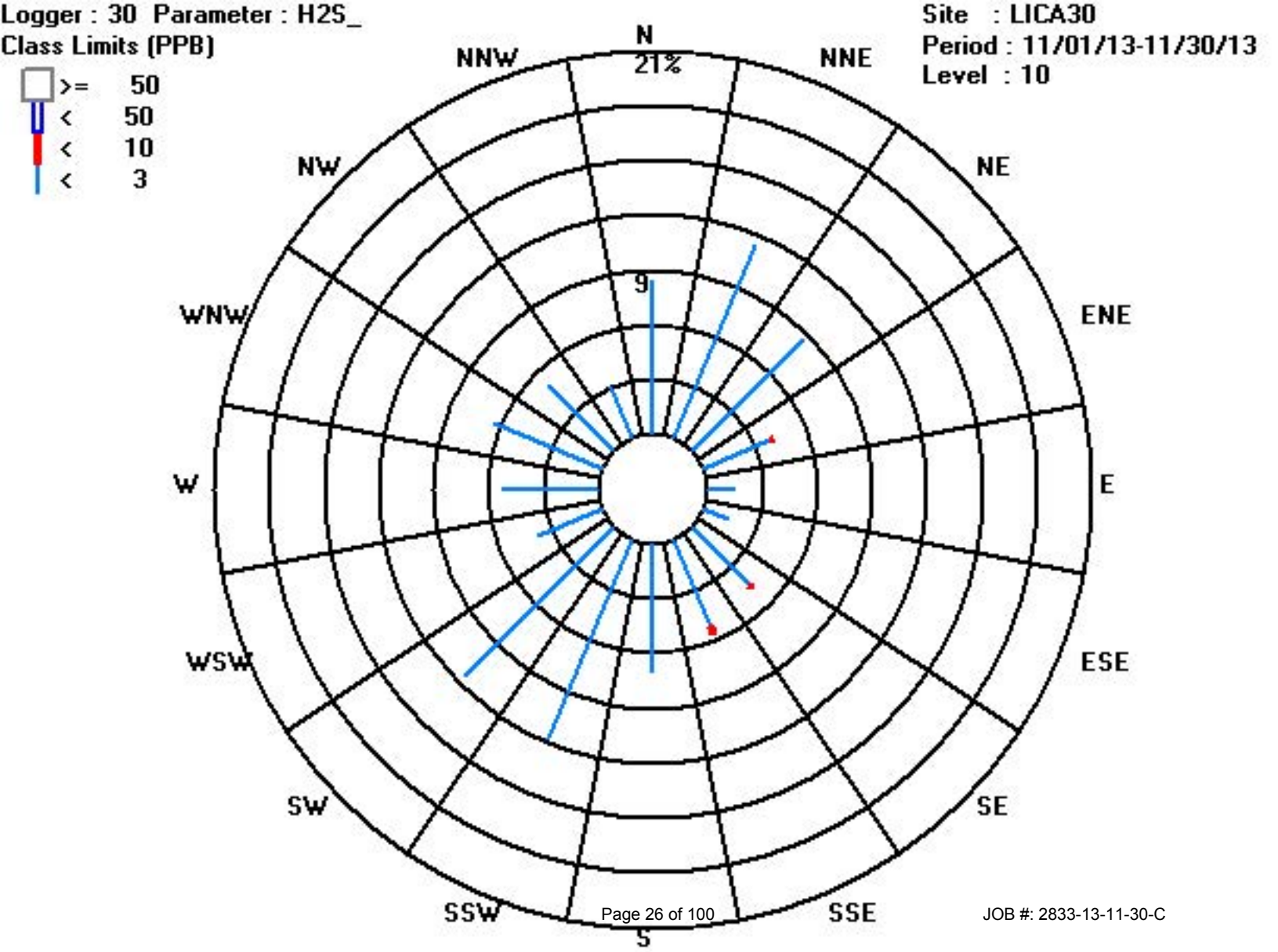
Total # Operational Hours : 684

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 3 | 58 | 79 | 59 | 27 | 10 | 10 | 31 | 36 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | 680 |
| < | 10 | | | | 1 | | | 1 | 2 | | | | | | | | | 4 |
| < | 50 | | | | | | | | | | | | | | | | | |
| >= | 50 | | | | | | | | | | | | | | | | | |
| | Totals | 58 | 79 | 59 | 28 | 10 | 10 | 32 | 38 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | |

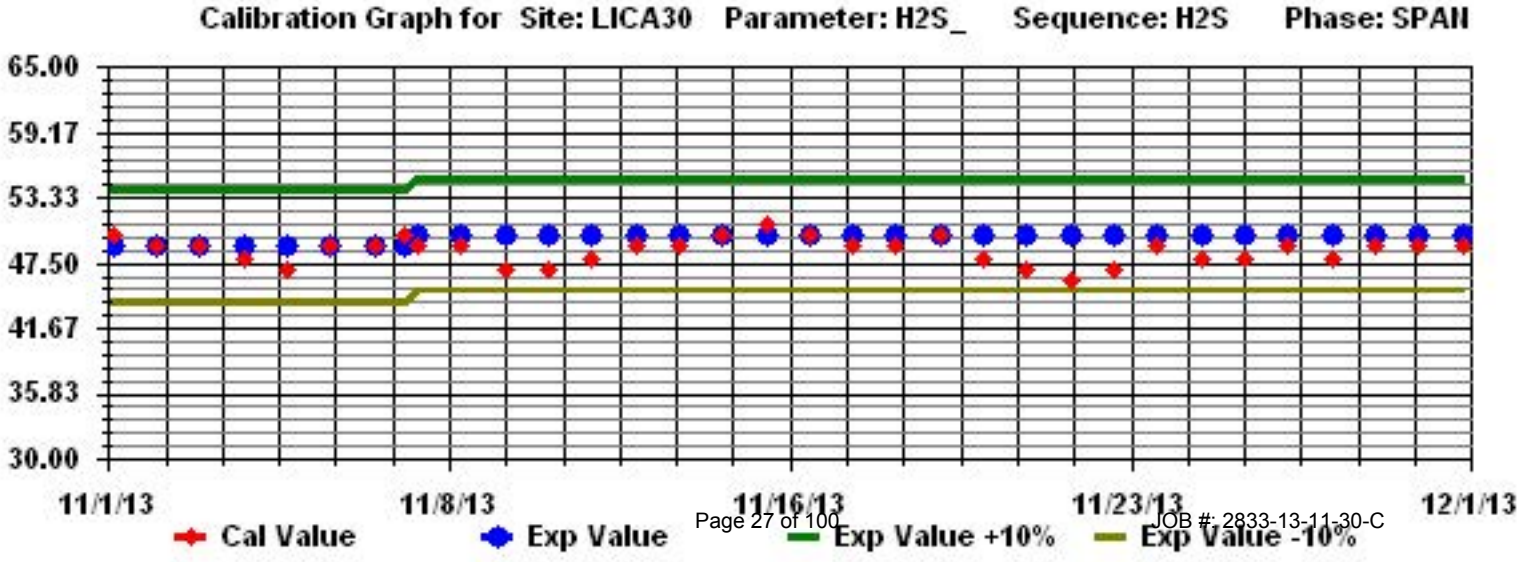
Calm : .00 %

Total # Operational Hours : 684






JOB #: 2833-13-11-30-C


Calibration Graph for Site: LICA30 Parameter: H2S_ Sequence: H2S Phase: SPAN
65.00
59.17
53.33
47.50
41.67
35.83
30.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

NOVEMBER 2013

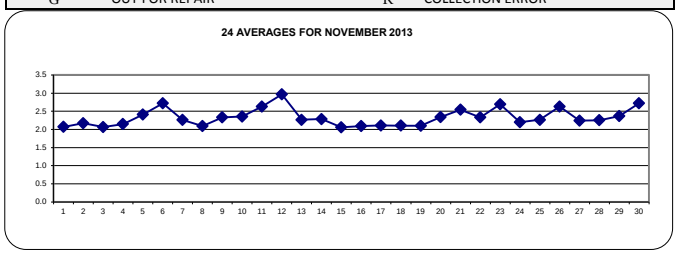
**TOTAL HYDROCARBONS** hourly averages in ppm

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 2 | **S** | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 2 | 2.1 | **S** | 2.1 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.5 | 2.3 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2 | 2 | 2.5 | 2.2 | 24 |
| 3 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 24 |
| 4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.6 | 2.6 | 2.1 | 24 |
| 5 | 2.7 | 2.8 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.4 | **S** | 2.8 | 2.8 | 2.8 | 2.4 | 16 |
| 6 | 3.1 | 3.1 | 3.2 | 3.1 | 3.1 | 3.1 | 3.1 | 3 | 3.1 | 3.1 | 2.9 | 2.7 | 2.7 | 2.4 | 2.2 | 2.6 | 2.7 | 2.3 | 2.2 | 2.2 | **S** | 2.2 | 2.2 | 2.3 | 3.2 | 2.7 | 24 |
| 7 | 2.4 | 2.2 | 2.1 | 2.3 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.2 | 2.1 | **C** | **C** | **C** | **C** | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.5 | 2.3 | 24 |
| 8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 9 | 2.1 | 2.1 | 2.2 | 2.6 | 2.8 | 2.9 | 2.7 | 2.6 | 2.5 | 2.5 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | **S** | 2.2 | 2.2 | 2.2 | 2.2 | 2.5 | 2.3 | 2.9 | 2.3 | 24 |
| 10 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.5 | 3.1 | 3.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 3.2 | 2.4 | 24 |
| 11 | 2.5 | 2.6 | 2.5 | 2.5 | 2.5 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.6 | 2.6 | **S** | 2.5 | 2.7 | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.6 | 24 |
| 12 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 3.3 | **3.7** | 3 | 2.9 | 2.8 | 2.7 | 2.7 | **S** | 2.8 | 2.8 | 3 | 3.1 | 3.1 | 3 | 3.2 | 3.4 | 3.1 | **3.7** | **3.0** | 24 |
| 13 | 2.9 | 2.6 | 2.6 | 2.6 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.4 | 2.3 | 2.2 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.9 | 2.3 | 24 |
| 14 | 2.2 | 2.4 | 2.1 | 2.1 | 2.2 | 2.5 | 2.8 | 2.6 | 2.5 | 2.5 | 2.4 | 2.4 | **S** | 2.5 | 2.2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.8 | 2.3 | 24 |
| 15 | 2.2 | 2.1 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 16 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 17 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 24 |
| 18 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 19 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 20 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.7 | 2.7 | 2.5 | 2.3 | 2.2 | 2.3 | 2.4 | 2.6 | 2.6 | 2.5 | 2.5 | 2.7 | 2.3 | 24 |
| 21 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | **S** | 2.7 | 2.7 | 2.9 | 2.9 | 2.8 | 2.5 | 2.5 | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.9 | 2.5 | 24 |
| 22 | 2.4 | 2.4 | 2.4 | 2.4 | **S** | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | 2.5 | 2.3 | 24 |
| 23 | 2.5 | 2.6 | 2.7 | **S** | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.7 | 2.8 | 2.8 | 2.7 | 24 |
| 24 | 2.8 | 2.7 | **S** | 2.1 | 2 | 2.1 | 2.1 | 2 | 2.1 | 2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 2.1 | 2.1 | 2.8 | 2.2 | 24 |
| 25 | 2.2 | **S** | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.5 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.3 | 24 |
| 26 | **S** | 2.8 | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 | 2.5 | 2.4 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 | 2.7 | 2.6 | 2.5 | **S** | 2.8 | 2.6 | 24 |
| 27 | 2.6 | 3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | **S** | 2.1 | 3.0 | 2.2 | 24 |
| 28 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.3 | 2.3 | 2.4 | 2.3 | 24 |
| 29 | 2.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.5 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.1 | 2.2 | 2.2 | 2.7 | 2.4 | 24 |
| 30 | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 | 2.6 | 2.8 | 2.8 | 2.9 | 2.8 | 2.7 | 2.9 | 3 | **S** | 3.2 | 3.3 | 3.3 | 3.3 | 3.3 | 2.7 | 24 |
| HOURLY MAX | 3.1 | 3.1 | 3.2 | 3.1 | 3.1 | 3.1 | 3.1 | 3.3 | 3.7 | 3.1 | 3.2 | 2.8 | 2.8 | 2.8 | 2.9 | 2.8 | 2.8 | 3.0 | 3.1 | 3.1 | 3.2 | 3.3 | 3.4 | 3.3 | | | |
| HOURLY AVG | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | | | |

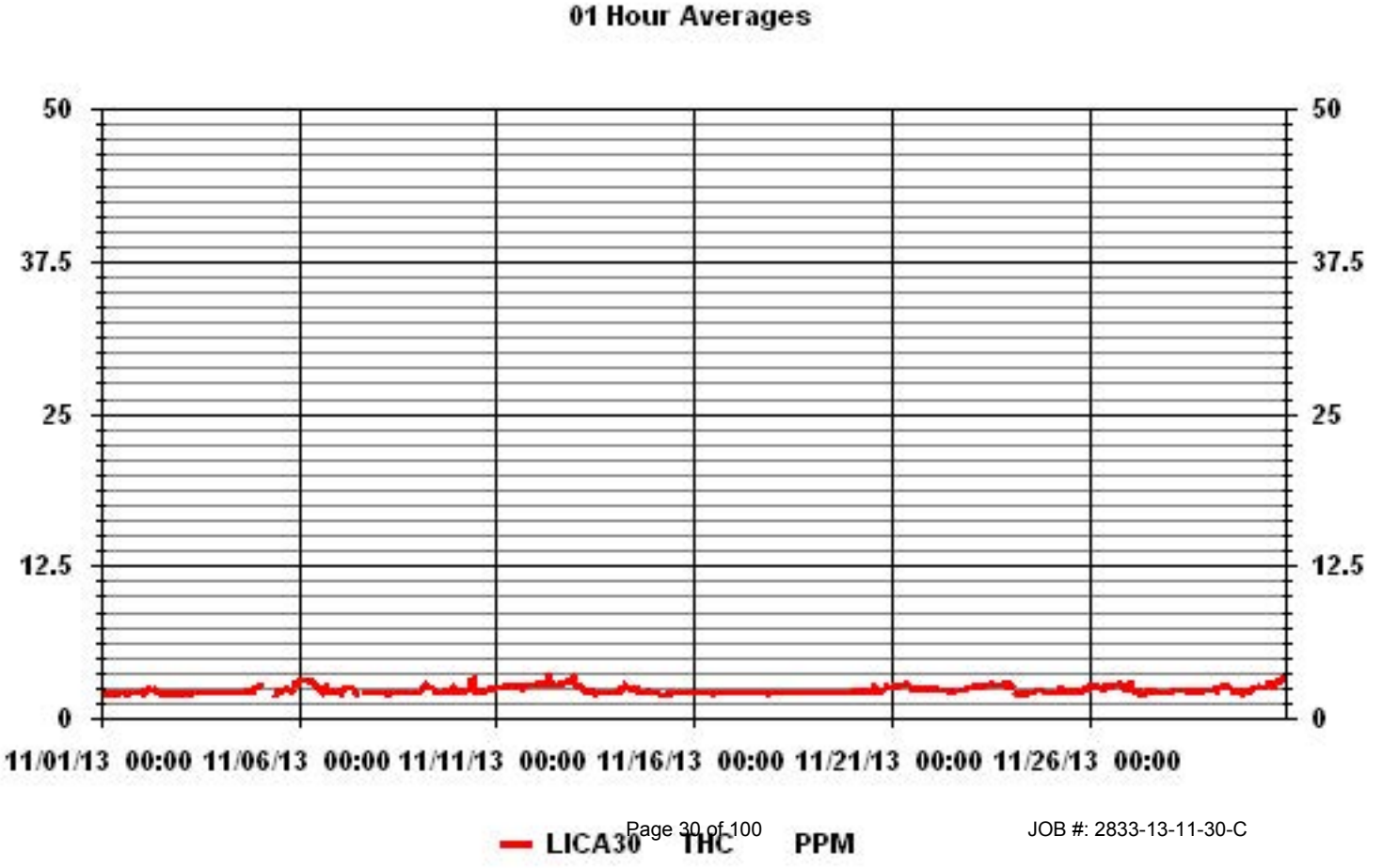
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 676 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 3.7 | PPM | @ HOUR(S) | 8 | ON DAY(S) | 12 | |
| MAXIMUM 24-HR AVERAGE: | 3.0 | PPM | | | ON DAY(S) | 12 | |
| | | | | | VAR- VARIOUS | | |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | | 712 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | | | 98.9 | % |
| STANDARD DEVIATION: | 0.29 | | MONTHLY AVERAGE: | | | 2.33 | PPM |






JOB #: 2833-13-11-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**TOTAL HYDROCARBONS MAX** instantaneous maximum in ppm

MST

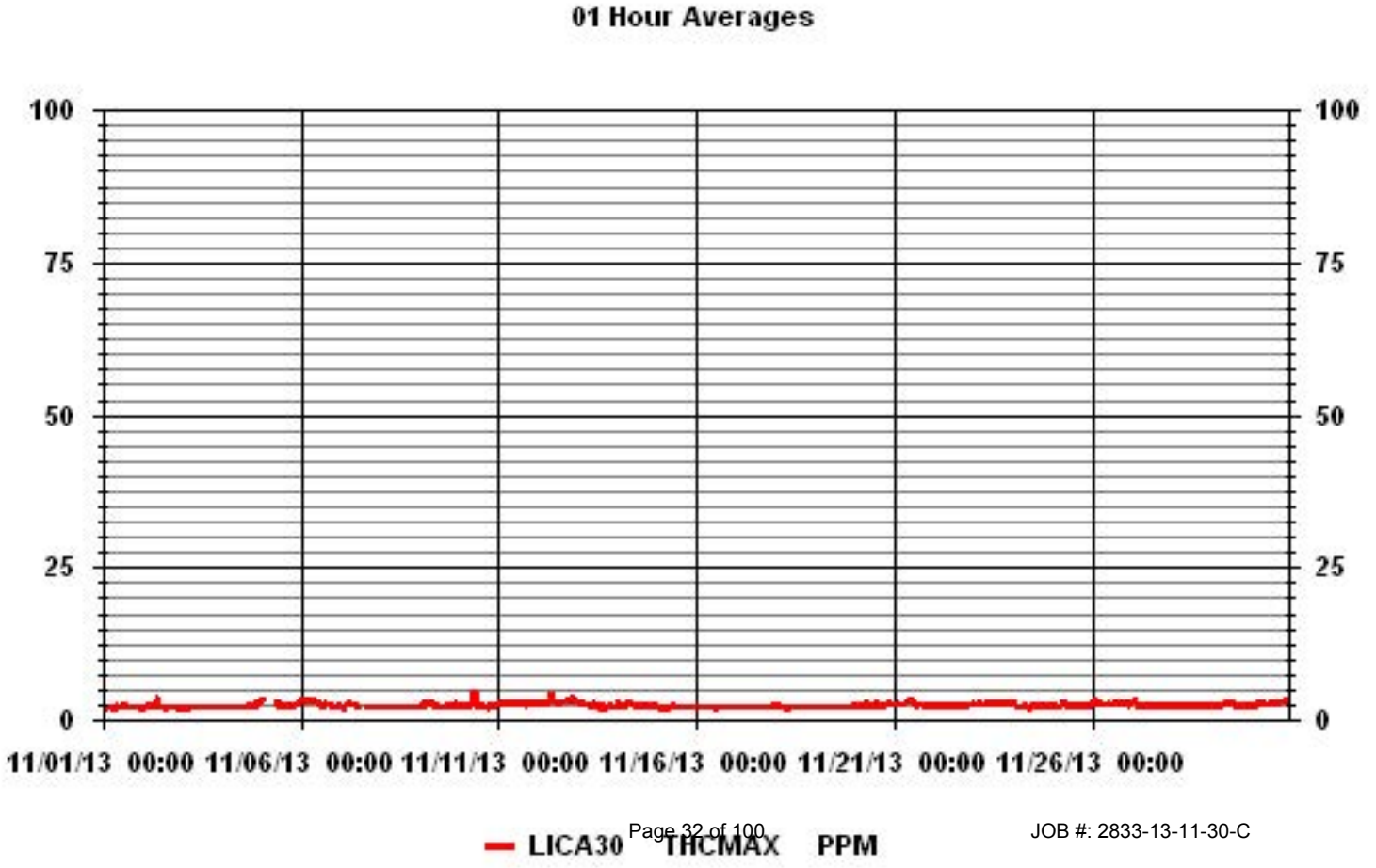
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 2 | **S** | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 24 |
| 2 | 2.1 | **S** | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 3.3 | 2.8 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 3.3 | 2.3 | 24 |
| 3 | **S** | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 24 |
| 4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.5 | **S** | 3 | 3 | 2.2 | 24 |
| 5 | 3.1 | 3.3 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 2.6 | 2.6 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.5 | **S** | 2.8 | 3 | 3.3 | 2.6 | 16 |
| 6 | 3.2 | 3.2 | 3.2 | 3.2 | 3.1 | 3.1 | 3.2 | 3.1 | 3.2 | 3.2 | 3 | 2.8 | 2.7 | 2.6 | 2.4 | 2.7 | 2.7 | 2.6 | 2.2 | 2.2 | **S** | 2.2 | 2.3 | 2.4 | 3.2 | 2.8 | 24 |
| 7 | 2.4 | 2.4 | 2.2 | 2.5 | 2.5 | 2.6 | 2.6 | 2.5 | 2.5 | 2.7 | 2.3 | 2.2 | **C** | **C** | **C** | **C** | **C** | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.7 | 2.3 | 24 |
| 8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 9 | 2.2 | 2.2 | 2.3 | 2.9 | 2.9 | 2.9 | 2.8 | 2.7 | 2.6 | 2.6 | 2.4 | 2.4 | 2.3 | 2.1 | 2.1 | 2.2 | 2.2 | **S** | 2.2 | 2.2 | 2.2 | 2.2 | 2.8 | 2.6 | 2.9 | 2.4 | 24 |
| 10 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 3.4 | **4.9** | 4.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | **S** | 2.2 | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.5 | **4.9** | 2.6 | 24 |
| 11 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | **S** | 2.6 | 2.8 | 2.8 | 2.8 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.7 | 24 |
| 12 | 2.8 | 2.9 | 2.9 | 2.8 | 2.9 | 2.8 | 3.1 | 3.8 | 4.4 | 3.3 | 3 | 2.9 | 2.8 | 2.8 | **S** | 2.9 | 2.9 | 3.1 | 3.1 | 3.1 | 3 | 3.6 | 3.6 | 3.3 | 4.4 | 3.1 | 24 |
| 13 | 3.1 | 2.7 | 2.7 | 2.6 | 2.6 | 2.6 | 2.7 | 2.5 | 2.3 | 2.8 | 2.5 | 2.6 | 2.3 | **S** | 2.1 | 2.4 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 3.1 | 2.4 | 24 |
| 14 | 3 | 2.9 | 2.2 | 2.2 | 2.3 | 2.6 | 2.9 | 2.8 | 2.6 | 2.6 | 2.5 | 2.4 | **S** | 2.7 | 2.3 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 3 | 2.4 | 24 |
| 15 | 2.2 | 2.2 | 2.1 | 2 | 2 | 1.9 | 2 | 2 | 2.1 | 2.2 | 2.2 | **S** | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 24 |
| 16 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | **S** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 17 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 24 |
| 18 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.1 | **S** | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 19 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 24 |
| 20 | 2.2 | 2.2 | 2.3 | 2.4 | 2.2 | 2.3 | **S** | 2.8 | 2.4 | 2.4 | 2.6 | 2.2 | 2.3 | 3.1 | 3 | 2.7 | 2.3 | 2.3 | 2.4 | 2.5 | 2.6 | 2.6 | 2.6 | 2.5 | 3.1 | 2.5 | 24 |
| 21 | 2.5 | 2.6 | 2.6 | 2.6 | 2.7 | **S** | 2.7 | 3.1 | 3.3 | 3.3 | 3.2 | 2.8 | 2.7 | 2.4 | 2.6 | 2.8 | 2.6 | 2.5 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | 3.3 | 2.7 | 24 |
| 22 | 2.4 | 2.4 | 2.5 | 2.4 | **S** | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 | 24 |
| 23 | 2.6 | 2.6 | 2.7 | **S** | 2.7 | 2.7 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.9 | 2.9 | 2.8 | 2.9 | 2.9 | 2.7 | 24 |
| 24 | 2.8 | 2.8 | **S** | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 | 2.3 | 2.3 | 2.2 | 2.8 | 2.3 | 24 |
| 25 | 2.4 | **S** | 2.2 | 2.1 | 2.3 | 2.7 | 2.7 | 2.8 | 2.8 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5 | 2.2 | 2.2 | 2.2 | 2.4 | 2.5 | 2.4 | 2.4 | 2.6 | 2.8 | 2.4 | 24 |
| 26 | **S** | 3.3 | 2.8 | 2.6 | 2.7 | 2.6 | 2.6 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 | 3.1 | 2.9 | 2.5 | **S** | 3.3 | 2.7 | 24 |
| 27 | 3.3 | 3.5 | 3.1 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | **S** | 2.2 | 3.5 | 2.4 | 24 |
| 28 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.3 | 2.4 | 2.4 | 2.3 | 24 |
| 29 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.2 | 2.2 | 2.2 | 2.8 | 2.4 | 24 |
| 30 | 2.2 | 2.5 | 2.4 | 2.6 | 2.6 | 2.7 | 2.9 | 2.9 | 2.8 | 2.5 | 2.5 | 2.8 | 2.8 | 2.9 | 2.9 | 2.8 | 2.8 | 3 | 3.1 | **S** | 3.2 | 3.4 | 3.3 | 3.3 | 3.4 | 2.8 | 24 |
| HOURLY MAX | 3.3 | 3.5 | 3.2 | 3.2 | 3.1 | 3.1 | 3.2 | 3.8 | 4.4 | 4.9 | 4.2 | 2.9 | 2.8 | 3.1 | 3.0 | 2.9 | 2.9 | 3.1 | 3.1 | 3.1 | 3.2 | 3.6 | 3.6 | 3.3 | | | |
| HOURLY AVG | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.6 | 2.5 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 675 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 4.9 | PPM | @ HOUR(S) | 9 | ON DAY(S) | 10 | |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | | 712 | HRS |
| MONTHLY CALIBRATION TIME: | 5 | HRS | | | | | |
| STANDARD DEVIATION: | 0.36 | | | | | | |






JOB #: 2833-13-11-30-C

LICA30
THC / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3.0 | 8.43 | 11.68 | 8.72 | 3.84 | 1.18 | 1.33 | 4.58 | 5.32 | 5.76 | 11.24 | 10.79 | 3.25 | 5.17 | 6.21 | 5.17 | 3.10 | 95.85 |
| < 10.0 | .00 | .00 | .14 | .00 | .14 | .00 | .00 | .29 | 1.18 | .44 | .88 | .59 | .14 | .29 | .00 | .00 | 4.14 |
| < 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 8.43 | 11.68 | 8.87 | 3.84 | 1.33 | 1.33 | 4.58 | 5.62 | 6.95 | 11.68 | 11.68 | 3.84 | 5.32 | 6.50 | 5.17 | 3.10 | |

Calm : .00 %

Total # Operational Hours : 676

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3.0 | 57 | 79 | 59 | 26 | 8 | 9 | 31 | 36 | 39 | 76 | 73 | 22 | 35 | 42 | 35 | 21 | 648 |
| < 10.0 | | | 1 | | 1 | | | 2 | 8 | 3 | 6 | 4 | 1 | 2 | | | 28 |
| < 50.0 | | | | | | | | | | | | | | | | | |
| >= 50.0 | | | | | | | | | | | | | | | | | |
| Totals | 57 | 79 | 60 | 26 | 9 | 9 | 31 | 38 | 47 | 79 | 79 | 26 | 36 | 44 | 35 | 21 | |

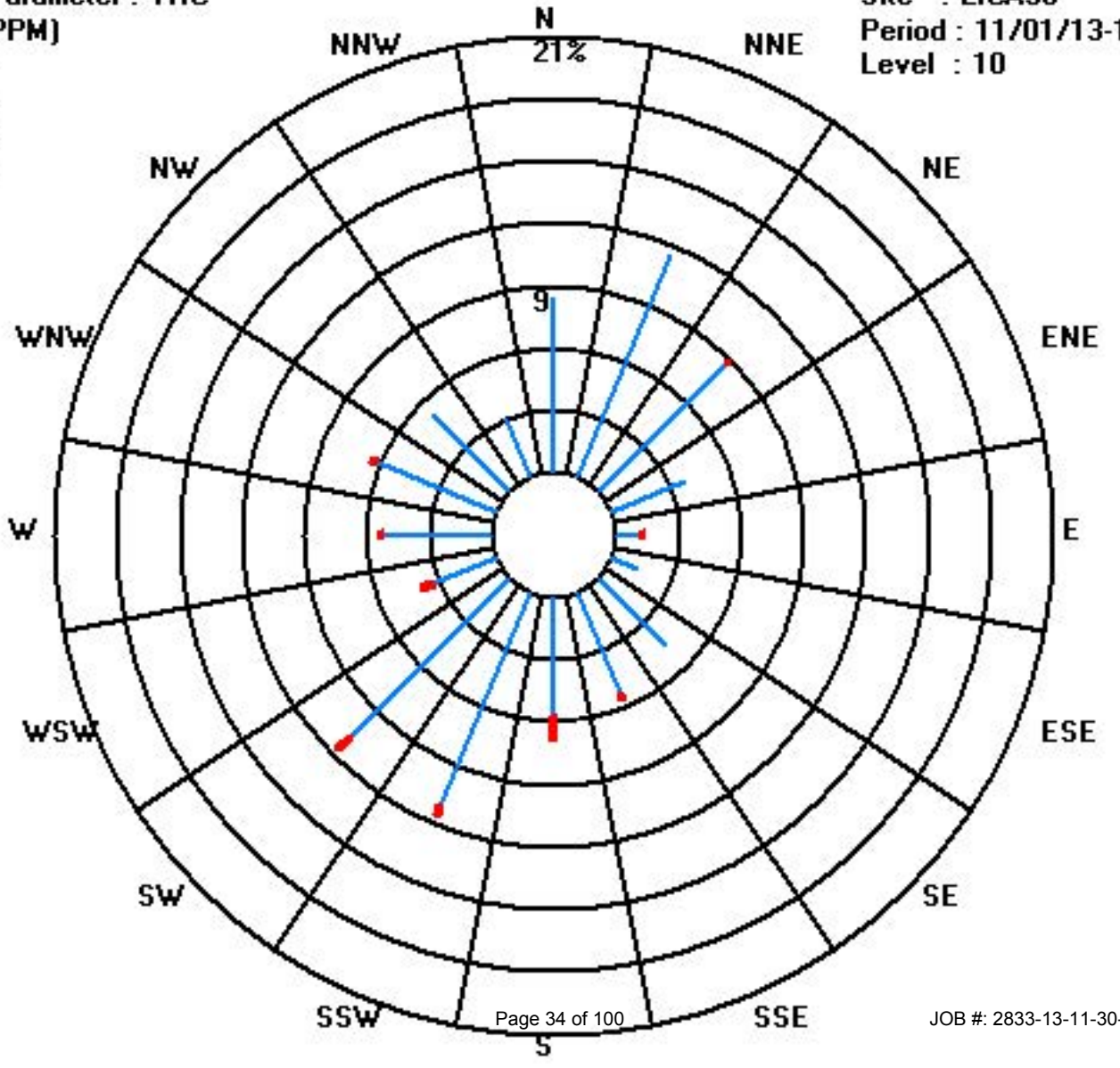
Calm : .00 %

Total # Operational Hours : 676

Logger : 30 Parameter : THC
Class Limits (PPM)

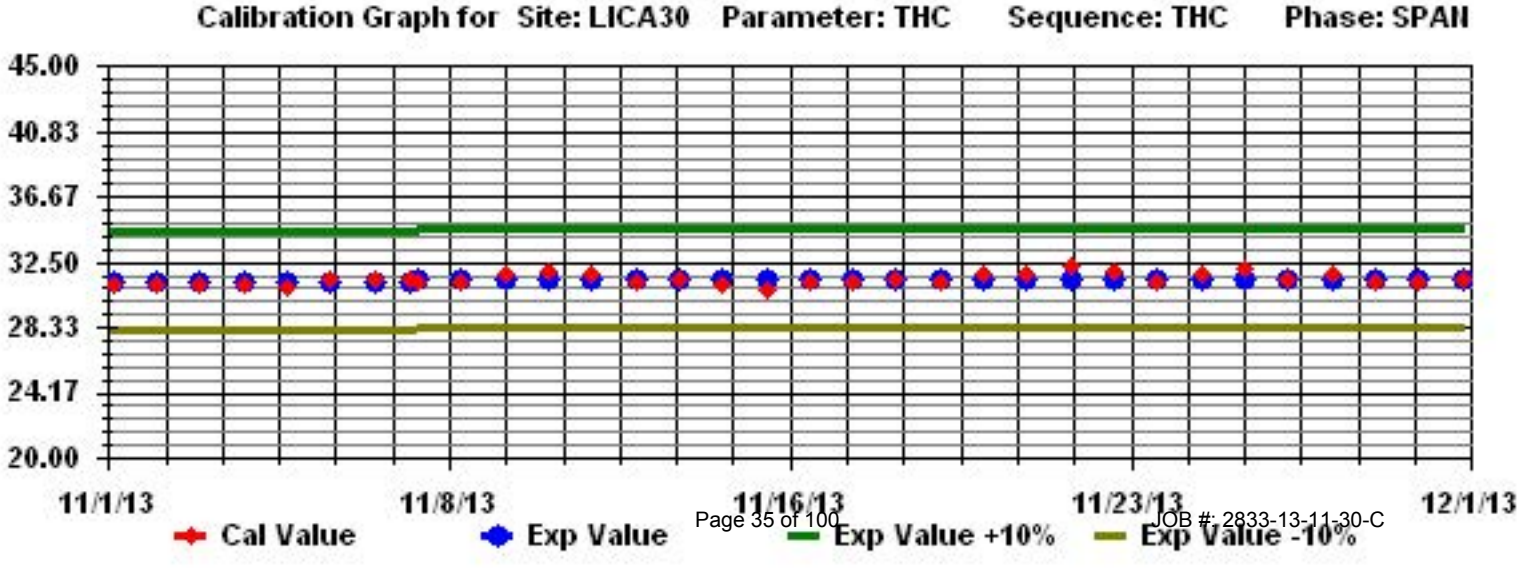
>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA30
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-30-C


Calibration Graph for Site: LICA30 Parameter: THC Sequence: THC Phase: SPAN
45.00
40.83
36.67
32.50
28.33
24.17
20.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

NOVEMBER 2013

**NITROGEN DIOXIDE** hourly averages in ppb

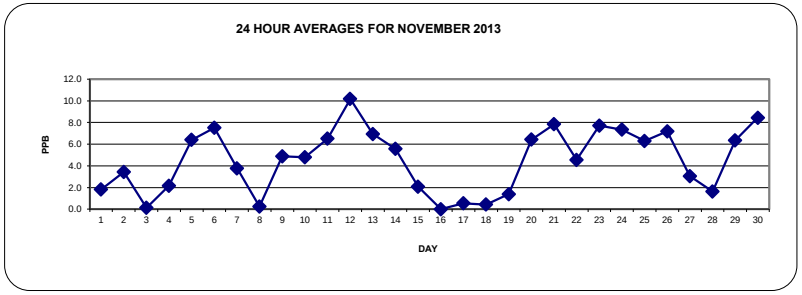
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.7 | 0.6 | **S** | 1.3 | 1.9 | 2.7 | 2.2 | 5.2 | 6.1 | 6.1 | 1.7 | 1.0 | 0.8 | 0.7 | 0.6 | 1.2 | 2.0 | 0.6 | 1.3 | 1.3 | 1.0 | 0.7 | 1.5 | 0.6 | 6.1 | 1.8 | 24 |
| 2 | 0.9 | **S** | 1.3 | 7.2 | 11.1 | 8.2 | 7.1 | 7.7 | 8.8 | 11.5 | 6.0 | 2.2 | 2.5 | 1.1 | 0.6 | 0.3 | 0.1 | 0.3 | 1.0 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 11.5 | 3.4 | 24 |
| 3 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 0.5 | 0.9 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.9 | 0.1 | 24 |
| 4 | 0.1 | 0.4 | 0.4 | 0.5 | 0.7 | 0.4 | 0.4 | 0.5 | 0.5 | 0.9 | 0.9 | 1.1 | 1.4 | 2.4 | 2.8 | 2.7 | 3.9 | 5.3 | 3.6 | 4.5 | 5.5 | 6.3 | **S** | 4.5 | 6.3 | 2.2 | 24 |
| 5 | 5.9 | 6.9 | 7.3 | 6.4 | 5.1 | 5.7 | 5.7 | 6.2 | 4.3 | 5.0 | 5.3 | 8.0 | 7.5 | 6.7 | 7.1 | 6.5 | 8.3 | 12.8 | 6.7 | 2.1 | 3.3 | **S** | 6.2 | 8.1 | 12.8 | 6.4 | 24 |
| 6 | 9.1 | 7.6 | 7.3 | 7.1 | 6.8 | 7.5 | 9.1 | 9.0 | 9.6 | 8.5 | 9.3 | 8.0 | 8.9 | 6.6 | 5.4 | 11.2 | 16.5 | 8.3 | 4.9 | 3.6 | **S** | 2.1 | 2.6 | 3.8 | 16.5 | 7.5 | 24 |
| 7 | 4.6 | 2.2 | 1.2 | 2.5 | 5.3 | 6.4 | 6.4 | 14.2 | 10.3 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0.8 | 0.8 | **S** | 0.5 | 0.5 | 0.6 | 0.4 | 14.2 | 3.8 | 24 |
| 8 | 0.5 | 0.5 | 0.1 | 0.0 | 0.2 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.6 | 0.8 | **S** | 0.6 | 0.2 | 0.3 | 0.4 | 0.6 | 0.8 | 0.2 | 24 |
| 9 | 0.4 | 0.5 | 1.9 | 8.9 | 10.0 | 12.1 | 8.2 | 7.9 | 8.4 | 7.1 | 5.1 | 4.2 | 4.0 | 2.0 | 2.8 | 2.3 | 1.8 | **S** | 1.3 | 0.9 | 0.7 | 2.3 | 12.1 | 7.3 | 12.1 | 4.9 | 24 |
| 10 | 4.4 | 4.6 | 5.0 | 4.8 | 4.0 | 4.2 | 3.8 | 8.8 | 15.8 | 14.2 | 12.0 | 3.7 | 2.5 | 1.5 | 1.8 | 2.4 | **S** | 1.7 | 2.7 | 3.3 | 2.6 | 2.5 | 2.0 | 2.1 | 15.8 | 4.8 | 24 |
| 11 | 2.4 | 2.7 | 3.4 | 3.5 | 3.6 | 4.4 | 6.1 | 6.9 | 5.6 | 4.8 | 4.2 | 4.1 | 4.9 | 5.0 | 6.3 | **S** | 9.1 | 11.2 | 11.2 | 10.4 | 10.6 | 10.3 | 10.0 | 8.9 | 11.2 | 6.5 | 24 |
| 12 | 8.4 | 7.3 | 6.8 | 7.6 | 6.8 | 7.5 | 7.7 | 13.2 | 11.2 | 7.8 | 7.5 | 5.6 | 5.9 | 6.4 | **S** | 9.1 | 11.0 | 13.4 | 13.4 | 13.6 | 13.6 | 14.3 | 18.6 | 17.3 | 18.6 | **10.2** | 24 |
| 13 | 17.3 | 15.7 | 15.3 | 12.7 | 8.7 | 11.6 | 13.5 | 8.3 | 7.5 | 10.2 | 9.4 | 7.6 | 7.5 | **S** | 2.9 | 2.8 | 2.0 | 0.9 | 1.7 | 1.4 | 0.8 | 0.8 | 0.3 | 0.9 | 17.3 | 6.9 | 24 |
| 14 | 1.5 | 1.8 | 1.4 | 0.6 | 2.2 | 7.6 | 10.1 | 9.5 | 8.8 | 6.5 | 5.7 | 5.7 | **S** | 5.3 | 4.6 | 3.9 | 7.1 | 8.4 | 6.1 | 5.9 | 7.2 | 6.5 | 5.5 | 6.0 | 10.1 | 5.6 | 24 |
| 15 | 6.8 | 5.1 | 4.0 | 1.1 | 0.6 | 0.6 | 0.6 | 1.1 | 4.8 | 6.2 | 5.4 | **S** | 5.8 | 1.0 | 0.7 | 1.0 | 1.3 | 0.6 | 0.2 | 0.1 | 0.4 | 0.1 | 0.0 | 0.0 | 6.8 | 2.1 | 24 |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 24 |
| 17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.5 | 0.6 | 0.3 | 0.4 | 2.6 | 4.3 | 1.1 | 1.3 | 1.2 | 4.3 | 0.6 | 24 |
| 18 | 0.3 | 0.0 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | **S** | 3.4 | 1.7 | 0.1 | 0.0 | 0.1 | 0.6 | 1.2 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.4 | 0.4 | 24 |
| 19 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.6 | 0.7 | 0.1 | 0.1 | 0.1 | 1.3 | 1.4 | 2.2 | 2.3 | 2.6 | 2.7 | 2.7 | 3.6 | 4.7 | 3.8 | 3.0 | 4.7 | 1.4 | 24 |
| 20 | 3.6 | 1.6 | 2.8 | 11.6 | 4.1 | 8.4 | **S** | 8.3 | 13.9 | 11.6 | 9.7 | 5.3 | 2.5 | 6.9 | 7.1 | 6.1 | 6.8 | 5.3 | 4.5 | 4.6 | 6.5 | 5.8 | 5.4 | 5.5 | 13.9 | 6.4 | 24 |
| 21 | 5.2 | 7.3 | 7.7 | 5.8 | 6.2 | **S** | 8.5 | 11.6 | 12.8 | 12.5 | 12.1 | 10.4 | 5.6 | 5.4 | 7.6 | 9.6 | 13.2 | 7.0 | 5.9 | 5.5 | 5.6 | 5.5 | 4.9 | 4.4 | 13.2 | 7.8 | 24 |
| 22 | 3.5 | 3.0 | 2.6 | 1.1 | **S** | 2.0 | 3.7 | 6.3 | 7.9 | 8.6 | 6.1 | 3.0 | 1.8 | 2.1 | 2.6 | 7.9 | 9.5 | 6.8 | 3.6 | 2.4 | 3.9 | 4.9 | 5.7 | 5.5 | 9.5 | 4.5 | 24 |
| 23 | 5.2 | 5.2 | 5.2 | **S** | 5.0 | 3.9 | 4.3 | 5.1 | 6.3 | 4.7 | 4.1 | 4.6 | 5.9 | 6.5 | 7.7 | 10.4 | 11.4 | 10.1 | 11.1 | 10.5 | 11.3 | 12.6 | 11.2 | 15.0 | 15.0 | 7.7 | 24 |
| 24 | 18.1 | 14.7 | **S** | 2.0 | 1.2 | 2.2 | 1.2 | 0.7 | 3.5 | 0.5 | 0.7 | 3.2 | 9.0 | 10.2 | 13.3 | 8.7 | 8.5 | 8.0 | 8.4 | 11.9 | 9.9 | 16.5 | 5.7 | 10.9 | 18.1 | 7.3 | 24 |
| 25 | 13.8 | **S** | 6.2 | 0.6 | 1.0 | 12.8 | 16.5 | 13.3 | **20.3** | 12.7 | 1.6 | 2.0 | 2.1 | 1.6 | 1.9 | 3.0 | 3.9 | 3.9 | 2.3 | 2.6 | 5.5 | 4.7 | 7.1 | 5.2 | **20.3** | 6.3 | 24 |
| 26 | **S** | 5.4 | 5.7 | 6.2 | 5.1 | 6.0 | 6.0 | 5.0 | 4.4 | 4.1 | 4.3 | 4.1 | 5.0 | 5.1 | 4.8 | 6.5 | 8.2 | 12.7 | 10.3 | 8.9 | 11.4 | 15.3 | 13.4 | **S** | 15.3 | 7.2 | 24 |
| 27 | 12.6 | 15.2 | 8.6 | 3.7 | 3.9 | 1.4 | 0.9 | 1.5 | 2.0 | 2.2 | 1.8 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 2.1 | 3.8 | 0.9 | 0.3 | 0.0 | 0.2 | **S** | 0.5 | 15.2 | 3.0 | 24 |
| 28 | 0.3 | 1.0 | 1.3 | 1.9 | 2.4 | 2.5 | 1.7 | 0.9 | 1.3 | 1.9 | 1.8 | 1.3 | 1.4 | 1.3 | 1.3 | 1.4 | 1.4 | 1.7 | 2.0 | 2.5 | 2.4 | **S** | 1.8 | 2.3 | 2.5 | 1.6 | 24 |
| 29 | 2.3 | 1.8 | 1.7 | 2.4 | 2.2 | 3.4 | 6.9 | 14.6 | 17.1 | 14.5 | 13.0 | 12.0 | 11.5 | 9.9 | 3.9 | 4.7 | 5.9 | 3.9 | 3.6 | 3.2 | **S** | 2.6 | 2.8 | 2.3 | 17.1 | 6.4 | 24 |
| 30 | 6.4 | 4.8 | 7.3 | 9.0 | 7.8 | 8.2 | 12.3 | 10.7 | 7.1 | 6.1 | 7.4 | 8.3 | 11.2 | 9.8 | 9.7 | 9.4 | 8.9 | 10.0 | 8.2 | **S** | 8.2 | 8.7 | 7.6 | 7.1 | 12.3 | 8.4 | 24 |
| HOURLY MAX | NA | 15.7 | 15.3 | 12.7 | 11.1 | 12.8 | 16.5 | 14.6 | 20.3 | 14.5 | 13.0 | 12.0 | 11.5 | 10.2 | 13.3 | 11.2 | 16.5 | 13.4 | 13.4 | 13.6 | 13.6 | 16.5 | 18.6 | 17.3 | | | |
| HOURLY AVG | NA | 4.1 | 3.8 | 3.7 | 3.7 | 4.5 | 4.9 | 6.1 | 6.9 | 6.2 | 4.9 | 3.8 | 3.9 | 3.6 | 3.6 | 4.2 | 5.3 | 4.9 | 4.1 | 3.8 | 4.3 | 4.6 | 4.7 | 4.4 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

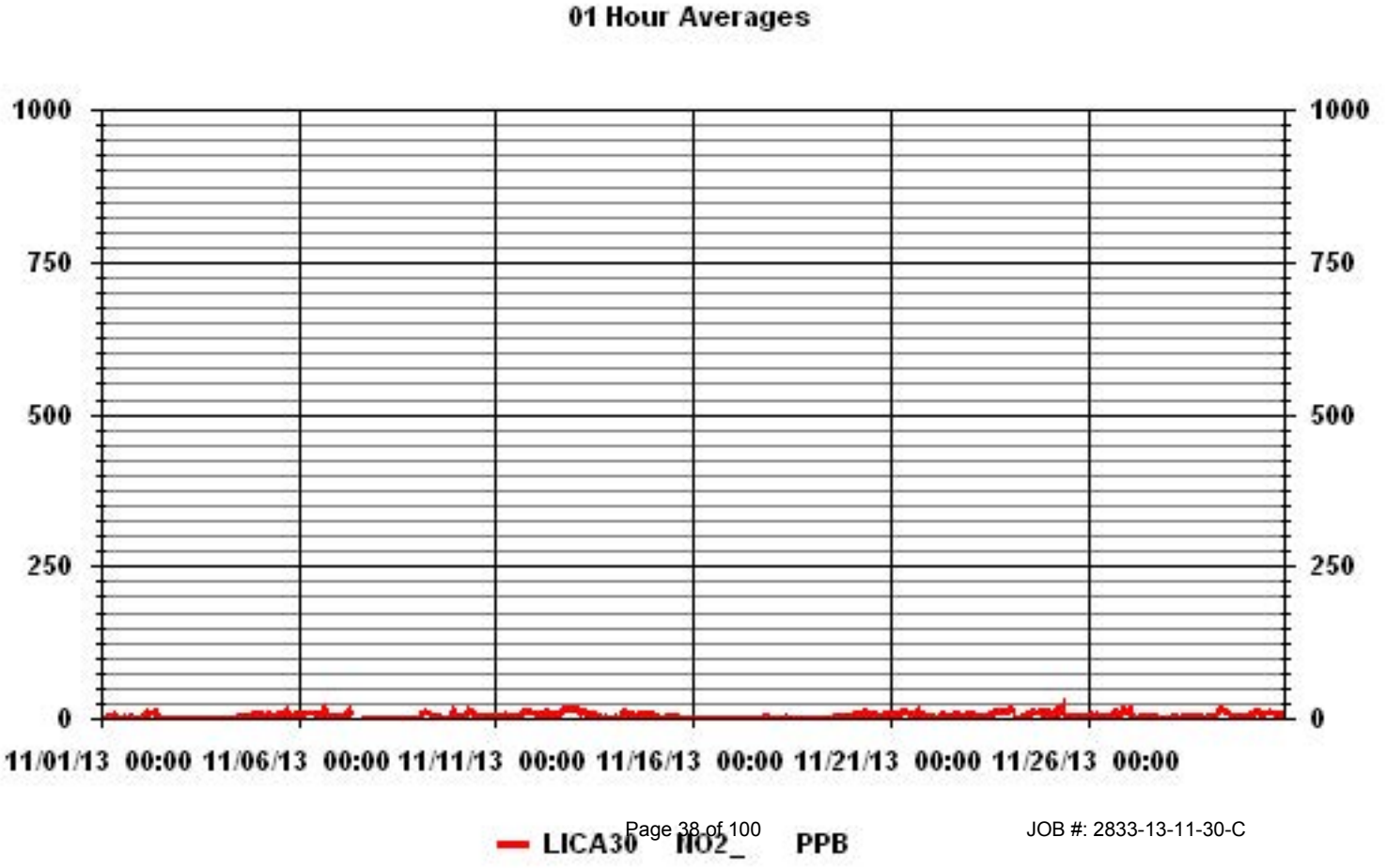
**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 159 PPB




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 596 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 20.3 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 25 |
| MAXIMUM 24-HR AVERAGE: | 10.2 | PPB | | | ON DAY(S) | 12 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 4.25 | | MONTHLY AVERAGE: | 4.53 | PPB |






JOB #: 2833-13-11-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**NITROGEN DIOXIDE MAX** instantaneous maximum in ppb

MST

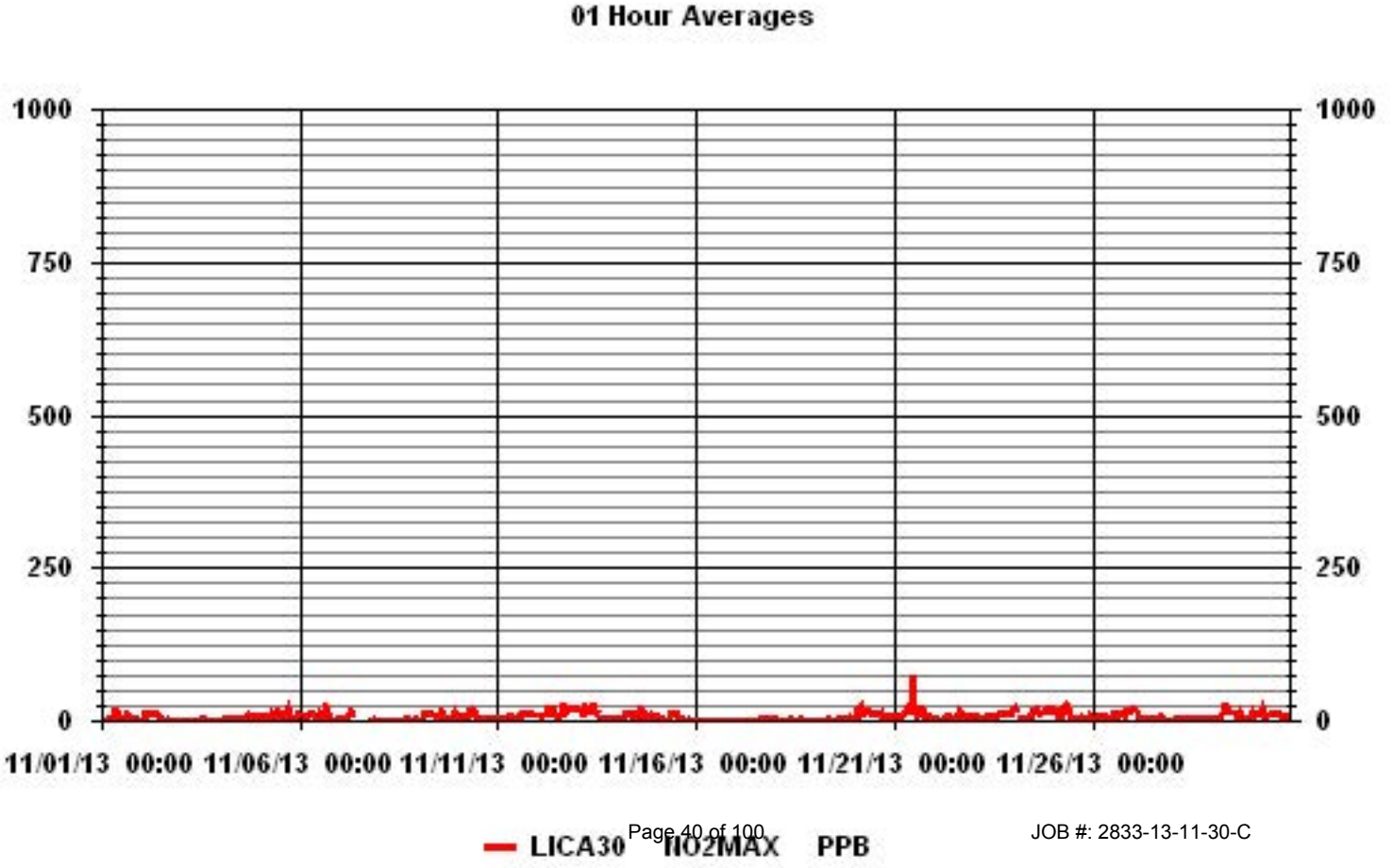
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1.3 | **S** | 1.6 | 3.4 | 5 | 4.1 | 8.1 | 14.7 | 14.6 | 3.3 | 1.6 | 1 | 1.6 | 1.3 | 10.2 | 10.7 | 1.7 | 2.2 | 1.7 | 1.6 | 2.4 | 4 | 1.3 | 14.7 | 4.3 | 24 |
| 2 | 2.8 | **S** | 4 | 11.5 | 13.7 | 10.5 | 9.6 | 10.1 | 13.8 | 14.4 | 13.1 | 3.1 | 3.4 | 1.9 | 1 | 0.6 | 0.7 | 1.2 | 1.5 | 1 | 0.7 | 0.7 | 0.7 | 0.5 | 14.4 | 5.2 | 24 |
| 3 | **S** | 0.7 | 0.5 | 0.6 | 0.7 | 0.6 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.8 | 1.1 | 1.5 | 1.7 | 2.3 | 1.5 | 0.9 | 0.9 | 1 | 0.8 | 0.9 | 0.8 | **S** | 2.3 | 1.0 | 24 |
| 4 | 0.9 | 1.3 | 1.1 | 1.2 | 1.9 | 1.1 | 1.7 | 1.3 | 1.6 | 2 | 1.9 | 2.6 | 2.6 | 3.4 | 4.7 | 3.6 | 5.6 | 10.5 | 5 | 6.9 | 6.9 | 8.3 | **S** | 5.8 | 10.5 | 3.6 | 24 |
| 5 | 7.7 | 9.2 | 10.6 | 8.7 | 7.5 | 10 | 8.1 | 12.8 | 8.5 | 8.6 | 6.4 | 19.1 | 8.1 | 10.7 | 6.7 | 7.1 | 12.6 | 19.1 | 9.9 | 3.8 | 5.3 | **S** | 6.6 | 10.3 | 19.1 | 9.5 | 24 |
| 6 | 10.6 | 8.2 | 7.9 | 7.7 | 7.7 | 8.4 | 11.3 | 10.5 | 10.4 | 9.6 | 10.5 | 8.9 | 14.2 | 9.4 | 7.4 | 15.1 | 28.2 | 14.3 | 6.3 | 4.5 | **S** | 2.7 | 4.1 | 4.5 | 28.2 | 9.7 | 24 |
| 7 | 5.4 | 4.3 | 2.7 | 5.3 | 6 | 8.8 | 10.8 | 21 | 13.2 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 1.5 | **S** | 0.8 | 1.1 | 1.1 | 0.9 | 21 | 5.9 | 24 |
| 8 | 0.9 | 1 | 0.7 | 0.6 | 0.8 | 0.7 | 0.8 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.4 | 0.3 | 0.8 | 1.4 | 1.4 | **S** | 1.5 | 0.8 | 0.9 | 1.1 | 1.2 | 1.5 | 0.8 | 24 |
| 9 | 1.1 | 1.6 | 3.8 | 11.9 | 11.7 | 13.5 | 9.8 | 10.9 | 11.8 | 12 | 9.1 | 10.7 | 9.3 | 3 | 19 | 3.6 | 3.2 | **S** | 2 | 1.9 | 1.6 | 6.5 | 15.1 | 10.2 | 19 | 8.0 | 24 |
| 10 | 5.4 | 5.9 | 6.5 | 5.8 | 5.4 | 8.3 | 4.7 | 17.6 | 19.2 | 18.2 | 16.4 | 4.9 | 4.3 | 1.7 | 2.4 | 4.7 | **S** | 2.4 | 3.8 | 4.4 | 3.1 | 3.3 | 2.7 | 2.7 | 19.2 | 6.7 | 24 |
| 11 | 3.2 | 3.3 | 4.8 | 4.2 | 4.8 | 6.1 | 8.4 | 7.4 | 6.9 | 6 | 4.6 | 4.5 | 7.2 | 5.8 | 7.7 | **S** | 11.3 | 12.1 | 12 | 11.2 | 11.3 | 10.9 | 10.9 | 9.5 | 12.1 | 7.6 | 24 |
| 12 | 9.2 | 8.3 | 7.9 | 8.8 | 8.1 | 9 | 21.7 | 21.5 | 14.9 | 17.9 | 8.5 | 8.5 | 6.8 | 8.4 | **S** | 11 | 29.8 | 17.6 | 16 | 16.4 | 17.1 | 19.7 | 20.9 | 19.1 | 29.8 | 14.2 | 24 |
| 13 | 18.9 | 19.1 | 18.1 | 14.5 | 12.6 | 22 | 21.7 | 22.6 | 12.5 | 19.2 | 27.4 | 17.5 | 15.2 | **S** | 5.9 | 6.8 | 5.3 | 1.9 | 2.8 | 2.4 | 1.5 | 1.6 | 1.3 | 2.5 | 27.4 | 11.9 | 24 |
| 14 | 2.4 | 3.9 | 2.5 | 1.9 | 3.5 | 11 | 11.6 | 13.6 | 14.1 | 7.6 | 15.8 | 6.2 | **S** | 7.4 | 22.8 | 6.4 | 9.8 | 10.2 | 9.7 | 8.6 | 11.2 | 10.3 | 7.8 | 6.3 | 22.8 | 8.9 | 24 |
| 15 | 9 | 7.1 | 5.6 | 2.2 | 1 | 1 | 1 | 2.2 | 12 | 10 | 10.1 | **S** | 12.5 | 3.5 | 3.1 | 2.9 | 4.2 | 1.4 | 0.9 | 1.1 | 1.2 | 0.8 | 0.5 | 0.5 | 12.5 | 4.1 | 24 |
| 16 | 0.1 | 0.1 | 0.1 | 0.1 | 0 | 0 | 0.3 | 0.1 | 0.1 | 0 | **S** | 0.3 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.6 | 0.3 | 24 |
| 17 | 0.4 | 0.3 | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.5 | 1.2 | **S** | 0.4 | 0.7 | 0.7 | 0.8 | 1.3 | 1.3 | 1.5 | 1.2 | 1.3 | 5.7 | 5.3 | 3.2 | 2.3 | 1.9 | 5.7 | 1.4 | 24 |
| 18 | 1.3 | 1.1 | 2.5 | 0.7 | 0.6 | 0.7 | 0.9 | 0.9 | **S** | 4.8 | 2.8 | 0.8 | 0.5 | 0.6 | 1.9 | 2.4 | 1.8 | 0.6 | 0.6 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 4.8 | 1.2 | 24 |
| 19 | 0.3 | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | **S** | 1.5 | 1.3 | 1 | 0.6 | 1 | 2.2 | 2 | 3 | 3.6 | 3.5 | 3.5 | 4.1 | 4.5 | 5.5 | 5.2 | 4.2 | 5.5 | 2.1 | 24 |
| 20 | 5.5 | 2.6 | 18.8 | 23 | 6.4 | 13 | **S** | 16.9 | 15.9 | 16.4 | 12.9 | 12.2 | 4.4 | 12.7 | 10 | 6.5 | 12.6 | 6.8 | 5.5 | 5.7 | 7.4 | 6.2 | 6.9 | 6.1 | 23 | 10.2 | 24 |
| 21 | 6.3 | 8.5 | 8.8 | 6.4 | 9.4 | **S** | 13.1 | 13.7 | 23.9 | 22.5 | 24 | **75.2** | 13.9 | 8.3 | 13.4 | 13.3 | 25.4 | 9.9 | 7.2 | 6.1 | 6.9 | 6.2 | 5.9 | 5.2 | **75.2** | 14.5 | 24 |
| 22 | 4.6 | 3.9 | 3.6 | 2.3 | **S** | 2.5 | 4.6 | 7.5 | 8.9 | 9.4 | 8.8 | 4 | 2.5 | 3 | 10 | 17.8 | 13.7 | 8.1 | 6.5 | 3.2 | 5.2 | 6 | 6.4 | 6.1 | 17.8 | 6.5 | 24 |
| 23 | 5.8 | 6 | 5.9 | **S** | 5.8 | 4.3 | 5.2 | 6.9 | 7.1 | 5.7 | 4.7 | 5.7 | 7 | 7.3 | 8.4 | 12.9 | 14.6 | 11.7 | 12.3 | 11 | 12 | 14.9 | 13 | 18.9 | 18.9 | 9.0 | 24 |
| 24 | 22.3 | 18.5 | **S** | 2.9 | 1.9 | 4.7 | 3.5 | 2.2 | 7.1 | 3.4 | 3.2 | 8.7 | 16.2 | 15.8 | 18.1 | 11.5 | 13.6 | 15.7 | 14.2 | 14.1 | 22.4 | 23.5 | 20 | 16.9 | 23.5 | 12.2 | 24 |
| 25 | 20.2 | **S** | 16.5 | 2.2 | 3.7 | 20.1 | 24.9 | 21 | 27.5 | 24.2 | 2.2 | 4.6 | 6.8 | 3.9 | 5.1 | 4.5 | 7.1 | 5.8 | 4.2 | 4.8 | 6.3 | 5.3 | 10.4 | 7.1 | 27.5 | 10.4 | 24 |
| 26 | **S** | 6.2 | 7.1 | 6.8 | 5.5 | 6.3 | 9.4 | 5.9 | 6 | 4.7 | 4.8 | 5.1 | 5.7 | 14.5 | 5.7 | 10.7 | 9.7 | 14.2 | 13.1 | 10.1 | 18 | 19.6 | 15.6 | **S** | 19.6 | 9.3 | 24 |
| 27 | 19 | 18.9 | 18.2 | 5.5 | 5.4 | 2.5 | 1.8 | 2.7 | 3.2 | 5.4 | 2.7 | 2.7 | 2.9 | 2.5 | 2.5 | 2.5 | 5.6 | 5.9 | 2.8 | 3.8 | 0.6 | 1.7 | **S** | 0.9 | 19 | 5.2 | 24 |
| 28 | 0.8 | 2.1 | 1.9 | 2.4 | 2.9 | 3.3 | 2.1 | 1.6 | 2 | 2.6 | 2.2 | 1.7 | 1.9 | 1.9 | 1.9 | 2 | 1.9 | 2.7 | 2.9 | 4.2 | 4.2 | **S** | 2.7 | 3.1 | 4.2 | 2.4 | 24 |
| 29 | 3.3 | 2.7 | 2.9 | 3.2 | 3.2 | 5.2 | 11.2 | 16.8 | 26.2 | 16.2 | 15.2 | 14.4 | 13.1 | 12.9 | 4.3 | 5.9 | 12.9 | 6.7 | 4.7 | 4.4 | **S** | 3.5 | 4.2 | 3.3 | 26.2 | 8.5 | 24 |
| 30 | 13.7 | 9.3 | 12.2 | 12.1 | 9.4 | 9.3 | 20.9 | 15.6 | 7.9 | 7.1 | 8.9 | 11.2 | 12.4 | 11.1 | 10.6 | 10.3 | 10.8 | 11.4 | 9.2 | **S** | 7.7 | 8.2 | 7.1 | 7.1 | 20.9 | 10.6 | 24 |
| HOURLY MAX | 22.3 | 19.1 | 18.8 | 23.0 | 13.7 | 22.0 | 24.9 | 22.6 | 27.5 | 24.2 | 27.4 | 75.2 | 16.2 | 15.8 | 22.8 | 17.8 | 29.8 | 19.1 | 16.0 | 16.4 | 22.4 | 23.5 | 20.9 | 19.1 | | | |
| HOURLY AVG | 6.5 | 5.6 | 6.3 | 5.3 | 5.0 | 6.5 | 7.7 | 9.4 | 10.1 | 9.5 | 7.9 | 8.5 | 6.3 | 5.6 | 6.4 | 6.4 | 9.3 | 7.1 | 5.6 | 5.2 | 5.9 | 6.2 | 6.4 | 5.6 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 676 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 75.2 | PPB | @ HOUR(S) | 11 | ON DAY(S) | 21 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 9 | HRS | | | | |
| STANDARD DEVIATION: | 6.60 | | | | | |






JOB #: 2833-13-11-30-C

LICA30
NO2_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 |
| < | 50.0 | 8.52 | 11.61 | 8.67 | 3.67 | 1.32 | 1.47 | 4.70 | 5.58 | 7.05 | 11.91 | 11.61 | 3.82 | 5.29 | 6.47 | 5.14 | 3.08 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 8.52 | 11.61 | 8.67 | 3.67 | 1.32 | 1.47 | 4.70 | 5.58 | 7.05 | 11.91 | 11.61 | 3.82 | 5.29 | 6.47 | 5.14 | 3.08 | |

Calm : .00 %

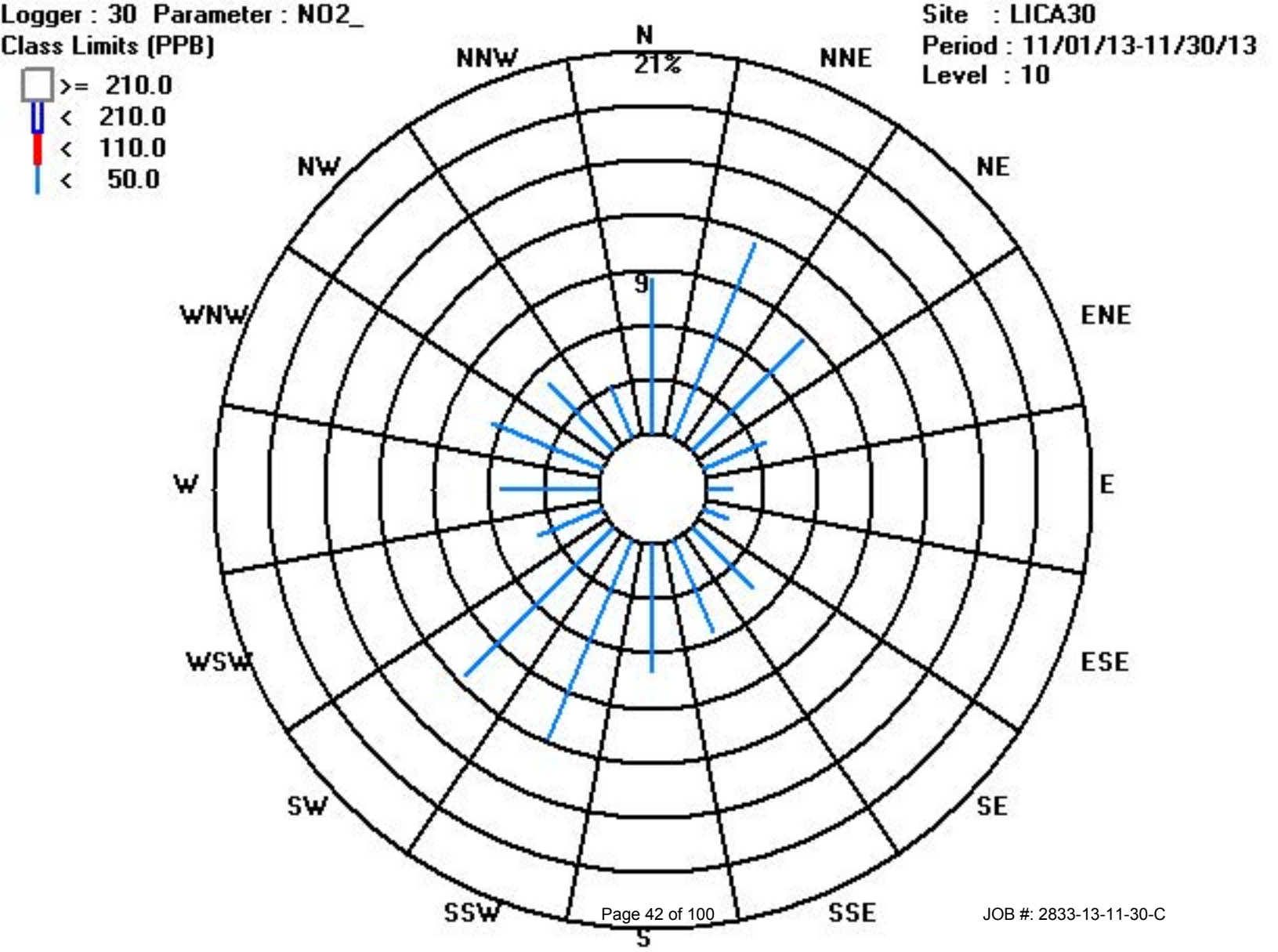
Total # Operational Hours : 680

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50.0 | 58 | 79 | 59 | 25 | 9 | 10 | 32 | 38 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | 680 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 58 | 79 | 59 | 25 | 9 | 10 | 32 | 38 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | |

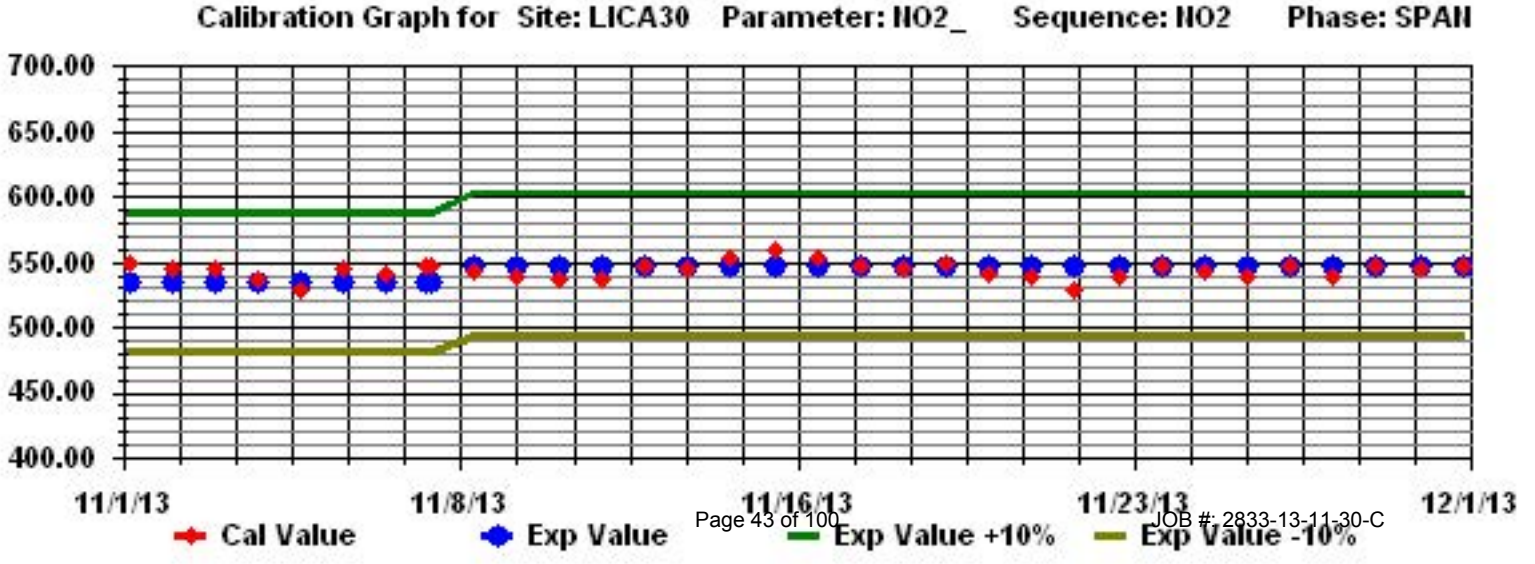
Calm : .00 %

Total # Operational Hours : 680






JOB #: 2833-13-11-30-C


Calibration Graph for Site: LICA30 Parameter: NO2_ Sequence: NO2 Phase: SPAN
700.00
650.00
600.00
550.00
500.00
450.00
400.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSCOICATION - MASKWA

NOVEMBER 2013

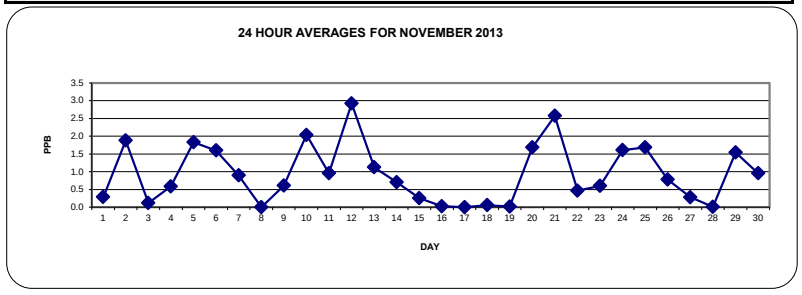
**NITRIC OXIDE** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.0 | 0.0 | **S** | 0.0 | 0.1 | 0.7 | 0.5 | 0.3 | 1.5 | 2.5 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.5 | 0.3 | 24 |
| 2 | 0.0 | **S** | 0.1 | 0.4 | 0.6 | 0.7 | 1.4 | 1.3 | 15.7 | **16.7** | 4.5 | 1.1 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **16.7** | 1.9 | 24 |
| 3 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0.1 | 0.3 | 0.5 | 0.5 | 0.4 | **S** | 0.5 | 0.1 | 24 |
| 4 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.2 | 0.4 | 0.4 | 0.7 | 0.8 | 1.0 | 0.7 | 1.3 | 1.5 | 0.9 | 0.7 | 1.0 | 0.7 | 0.9 | 1.0 | 1.1 | **S** | 0.0 | 1.5 | 0.6 | 24 |
| 5 | 0.3 | 0.5 | 0.6 | 0.7 | 0.9 | 2.4 | 1.4 | 5.5 | 5.1 | 6.2 | 4.8 | 7.0 | 4.7 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 7.0 | 1.8 | 24 |
| 6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.4 | 2.1 | 5.1 | 4.2 | 5.8 | 6.7 | 2.7 | 1.5 | 2.5 | 4.3 | 0.2 | 0.1 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 6.7 | 1.6 | 24 |
| 7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.2 | 7.8 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0.2 | 0.2 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 7.8 | 0.9 | 24 |
| 8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 24 |
| 9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.6 | 1.5 | 3.8 | 3.0 | 3.3 | 0.6 | 0.9 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8 | 0.6 | 24 |
| 10 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 9.3 | 16.4 | 15.6 | 2.3 | 1.1 | 0.1 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 16.4 | 2.0 | 24 |
| 11 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.1 | 0.8 | 2.0 | 2.6 | 3.2 | 4.2 | 3.6 | 3.3 | **S** | 1.2 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.2 | 1.0 | 24 |
| 12 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 11.7 | 15.5 | 10.2 | 8.9 | 3.6 | 3.1 | 3.7 | **S** | 2.2 | 1.7 | 0.5 | 0.2 | 0.4 | 0.7 | 0.5 | 2.8 | 1.2 | 15.5 | **2.9** | 24 |
| 13 | 0.5 | 0.2 | 0.4 | 0.1 | 0.2 | 0.6 | 0.9 | 0.5 | 1.4 | 5.2 | 4.2 | 4.9 | 5.6 | **S** | 0.8 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.6 | 1.1 | 24 |
| 14 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 1.7 | 1.9 | 3.4 | 2.9 | **S** | 2.4 | 1.7 | 0.4 | 0.7 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 3.4 | 0.7 | 24 |
| 15 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.1 | 1.7 | **S** | 2.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.8 | 0.3 | 24 |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 24 |
| 17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 24 |
| 18 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.8 | 0.3 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.1 | 24 |
| 19 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.3 | 0.0 | 24 |
| 20 | 0.2 | 0.0 | 0.4 | 3.4 | 0.1 | 0.5 | **S** | 0.7 | 3.2 | 6.1 | 8.1 | 5.0 | 1.7 | 4.5 | 3.0 | 0.9 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 8.1 | 1.7 | 24 |
| 21 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | **S** | 0.1 | 0.2 | 4.7 | 8.1 | 14.4 | 13.6 | 6.2 | 3.6 | 3.8 | 2.2 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 14.4 | 2.6 | 24 |
| 22 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.6 | 2.7 | 2.2 | 1.3 | 0.7 | 0.7 | 0.6 | 1.4 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.7 | 0.5 | 24 |
| 23 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.8 | 1.1 | 2.2 | 2.7 | 2.2 | 1.9 | 1.2 | 0.6 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.4 | 2.7 | 0.6 | 24 |
| 24 | 0.7 | 0.3 | **S** | 0.1 | 0.0 | 0.3 | 0.0 | 0.0 | 0.4 | 0.1 | 0.4 | 1.6 | 5.2 | 6.1 | 6.6 | 0.9 | 0.4 | 1.1 | 0.1 | 1.2 | 2.4 | 5.3 | 1.4 | 2.4 | 6.6 | 1.6 | 24 |
| 25 | 3.6 | **S** | 1.6 | 0.1 | 0.2 | 4.0 | 5.8 | 3.3 | 9.9 | 6.2 | 0.2 | 0.9 | 1.5 | 0.6 | 0.4 | 0.3 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.9 | 1.7 | 24 |
| 26 | **S** | 0.1 | 0.2 | 0.1 | 0.3 | 0.0 | 1.0 | 0.1 | 0.0 | 0.4 | 0.8 | 1.5 | 1.6 | 1.7 | 1.5 | 1.5 | 0.4 | 0.4 | 0.1 | 0.1 | 1.2 | 2.8 | 1.3 | **S** | 2.8 | 0.8 | 24 |
| 27 | 0.1 | 2.7 | 2.2 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 2.7 | 0.3 | 24 |
| 28 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.1 | 0.0 | 24 |
| 29 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 2.2 | 5.0 | 7.1 | 8.6 | 7.8 | 4.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 8.6 | 1.5 | 24 |
| 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.5 | 0.0 | 0.9 | 4.3 | 6.7 | 4.7 | 2.7 | 1.4 | 0.2 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.1 | 6.7 | 1.0 | 24 |
| HOURLY MAX | 3.6 | 2.7 | 2.2 | 3.4 | 0.9 | 4.0 | 5.8 | 11.7 | 15.7 | 16.7 | 15.6 | 13.6 | 7.8 | 6.1 | 6.6 | 2.5 | 4.3 | 1.1 | 0.7 | 1.2 | 2.4 | 5.3 | 2.8 | 2.4 | | | |
| HOURLY AVG | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.3 | 0.5 | 1.1 | 2.9 | 3.6 | 3.4 | 2.7 | 2.3 | 1.6 | 1.1 | 0.6 | 0.5 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.2 | 0.2 | | | |

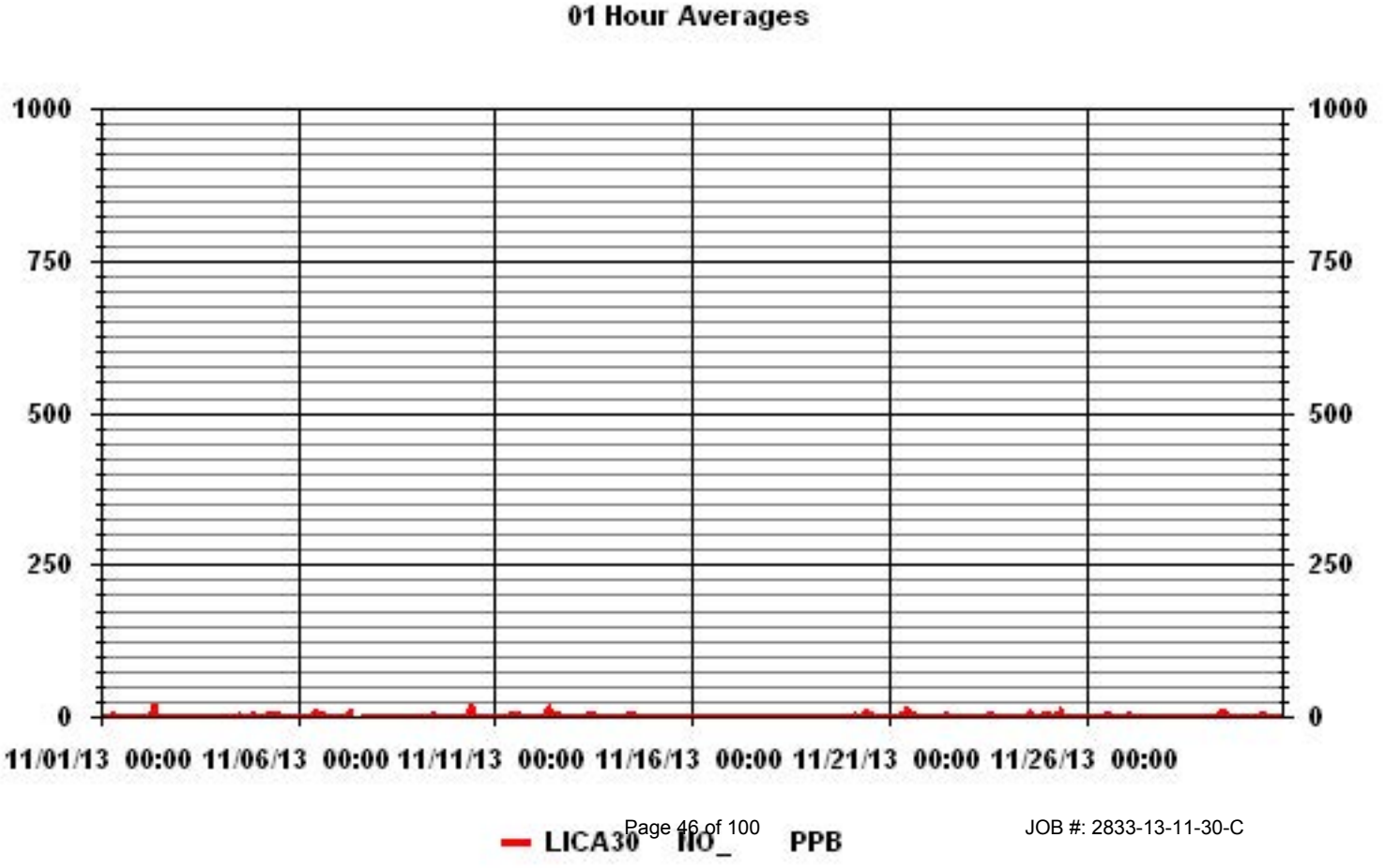
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 300 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 16.7 | PPB | @ HOUR(S) | 9 | ON DAY(S) | 2 |
| MAXIMUM 24-HR AVERAGE: | 2.9 | PPB | | | ON DAY(S) | 12 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 2.25 | | MONTHLY AVERAGE: | | 0.94 | PPB |






JOB #: 2833-13-11-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**NITRIC OXIDE MAX** instantaneous maximum in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.1 | 0 | **S** | 0.8 | 1.8 | 3.4 | 2.5 | 1.7 | 6.2 | 6.7 | 2.5 | 1.5 | 1.2 | 1 | 0.2 | 5.5 | 26 | 0 | 0 | 0.1 | 0 | 0.1 | 0.4 | 0.3 | 26.0 | 2.7 | 24 |
| 2 | 0.3 | **S** | 0.6 | 3.6 | 4.3 | 2.7 | 4.5 | 2.7 | 32.2 | 27.4 | 13.8 | 1.9 | 1.2 | 0.7 | 0.1 | 0.3 | 0.1 | 0.2 | 0.4 | 0.2 | 0.3 | 0.1 | 0.3 | 0.3 | 32.2 | 4.3 | 24 |
| 3 | **S** | 0.3 | 0.3 | 0.3 | 0.1 | 0.2 | 0.3 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7 | 0.9 | 0.8 | 1.3 | 0.5 | 0.7 | 0.9 | 0.9 | 1.1 | 1.1 | 1 | **S** | 1.3 | 0.6 | 24 |
| 4 | 0.2 | 0.2 | 0.4 | 0.6 | 0.5 | 0.6 | 0.9 | 0.8 | 1.3 | 1.3 | 1.7 | 2.5 | 1.6 | 2.1 | 3 | 1.7 | 1.7 | 4.5 | 1.1 | 1.5 | 1.6 | 1.6 | **S** | 0.6 | 4.5 | 1.4 | 24 |
| 5 | 0.8 | 0.9 | 1.3 | 1.2 | 1.4 | 10.2 | 3 | 20.3 | 11.3 | 8.7 | 6.1 | 19.3 | 6.8 | 17.1 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0.4 | 0.5 | 20.3 | 4.8 | 24 |
| 6 | 0.5 | 0.2 | 0.5 | 0.5 | 0.4 | 1.6 | 4.6 | 2.4 | 4.6 | 7.6 | 7 | 7.6 | 22.4 | 6 | 4.3 | 5.1 | 28.5 | 0.9 | 0.7 | 0.5 | **S** | 0.2 | 0.1 | 0.1 | 28.5 | 4.6 | 24 |
| 7 | 0 | 0 | 0 | 0.3 | 0.1 | 0.1 | 0.6 | 45.8 | 15.8 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0.8 | **S** | 0.5 | 0.3 | 0.3 | 0.5 | 45.8 | 4.7 | 24 |
| 8 | 0.5 | 0.2 | 0 | 0 | 0.2 | 0.4 | 0.3 | 0 | 0 | 0 | 0.1 | 0.3 | 0.5 | 0.3 | 0 | 0.1 | 0.2 | 0.4 | **S** | 0.6 | 0.4 | 0.2 | 0.2 | 0.6 | 0.6 | 0.2 | 24 |
| 9 | 0.7 | 0.3 | 0 | 0.5 | 0.5 | 1.2 | 0.7 | 1.9 | 2.5 | 7.1 | 10.3 | 10 | 11.5 | 2.5 | 36.5 | 0.9 | 0.2 | **S** | 0.1 | 0 | 0 | 0 | 0.1 | 0.2 | 36.5 | 3.8 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 13 | 20.9 | 20.7 | 26.1 | 3.9 | 2.9 | 0.8 | 0.4 | 0.3 | **S** | 0.4 | 0.2 | 0.4 | 0.8 | 0.6 | 0.3 | 0.2 | 26.1 | 4.0 | 24 |
| 11 | 0.4 | 0.5 | 0.8 | 0.5 | 1.8 | 1.9 | 5.2 | 1.9 | 2.2 | 2.6 | 3.6 | 4 | 8.8 | 4.1 | 4.5 | **S** | 3 | 0.8 | 0.4 | 0.3 | 0.6 | 0.6 | 0.4 | 0.2 | 8.8 | 2.1 | 24 |
| 12 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 19 | 27.6 | 23.8 | 54.4 | 10.5 | 9.6 | 4.6 | 6.2 | **S** | 4.4 | 34.4 | 1.2 | 0.7 | 2.6 | 3.4 | 4.5 | 5.9 | 5.9 | 54.4 | 9.6 | 24 |
| 13 | 1.3 | 1.1 | 3.5 | 0.8 | 0.9 | 1.8 | 2.9 | 2.3 | 2.7 | 14.7 | 33 | 14.8 | 13.3 | **S** | 2.9 | 2.4 | 1.4 | 0.2 | 0.3 | 0.4 | 0.2 | 0.1 | 0 | 0 | 33.0 | 4.4 | 24 |
| 14 | 0.3 | 0.1 | 0.2 | 0 | 0 | 0.2 | 1.1 | 3 | 16 | 3 | 24.7 | 4.1 | **S** | 4.1 | 26.9 | 2.4 | 3.9 | 0.5 | 0.7 | 0.5 | 2.8 | 0.5 | 0.4 | 0.5 | 26.9 | 4.2 | 24 |
| 15 | 0.6 | 0.6 | 0.6 | 0.3 | 0.4 | 0.2 | 0.4 | 0.6 | 1.6 | 2.2 | 4.1 | **S** | 7.7 | 1.8 | 1 | 0.7 | 0.3 | 0.4 | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | 0.2 | 7.7 | 1.1 | 24 |
| 16 | 0 | 0 | 0.1 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0.4 | 0.3 | 0.7 | 0.9 | 0.7 | 0.8 | 0.4 | 0.4 | 0.4 | 0.2 | 0.4 | 0.4 | 0.2 | 0.9 | 0.3 | 24 |
| 17 | 0.3 | 0.3 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.3 | 0.8 | **S** | 0.5 | 0.4 | 0.3 | 0.3 | 0.1 | 0.7 | 0.2 | 0.2 | 0.2 | 0.3 | 0 | 0 | 0.3 | 0.3 | 0.8 | 0.3 | 24 |
| 18 | 0.4 | 0.4 | 0.1 | 0.1 | 0 | 0 | 0.2 | 0.5 | **S** | 2 | 1 | 0.6 | 0.4 | 0.4 | 0.8 | 1 | 0.3 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0 | 0 | 2.0 | 0.4 | 24 |
| 19 | 0 | 0 | 0.3 | 0.4 | 0.2 | 0 | 0 | **S** | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.9 | 0.7 | 0.5 | 0.2 | 0.3 | 0.3 | 0.2 | 0.5 | 0.6 | 1.1 | 0.6 | 1.9 | 0.4 | 24 |
| 20 | 1.4 | 0.4 | 7.4 | 9.6 | 0.7 | 2.7 | **S** | 2.5 | 5.6 | 8.2 | 13.4 | 12.7 | 3.4 | 21.1 | 6.1 | 1.7 | 4.5 | 0.8 | 0.6 | 0.4 | 0.5 | 0.4 | 0.7 | 0.7 | 21.1 | 4.6 | 24 |
| 21 | 0.6 | 0.6 | 0.3 | 0.5 | 0.5 | **S** | 1.5 | 1.4 | 31.1 | 22.9 | 42.7 | **162.1** | 59.4 | 7.6 | 12.4 | 5.9 | 14.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 | 0.4 | 0.4 | **162.1** | 15.9 | 24 |
| 22 | 0.3 | 0.4 | 0.3 | 0.2 | **S** | 0.4 | 0.5 | 0.8 | 1.6 | 4.4 | 4.8 | 2.5 | 1.7 | 1.9 | 10.3 | 7 | 6.4 | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0 | 0.1 | 10.3 | 1.9 | 24 |
| 23 | 0.1 | 0 | 0.1 | **S** | 0.7 | 0.6 | 0.4 | 0.3 | 1.2 | 1.5 | 2.2 | 3 | 3.5 | 3.2 | 2.9 | 2.4 | 2.1 | 0.4 | 0.4 | 0.5 | 0.7 | 0.8 | 0.8 | 1.3 | 3.5 | 1.3 | 24 |
| 24 | 1.8 | 0.7 | **S** | 0.8 | 0.7 | 0.8 | 0.7 | 0.9 | 2.4 | 1 | 1.2 | 6.1 | 11.7 | 10.4 | 11.5 | 2.2 | 1.3 | 3.9 | 0.8 | 4.1 | 8.1 | 9.7 | 5.7 | 5.1 | 11.7 | 4.0 | 24 |
| 25 | 6.7 | **S** | 6.1 | 0.6 | 1.3 | 7.9 | 11.5 | 8.6 | 20.5 | 16.6 | 0.9 | 2.4 | 6.5 | 1.5 | 1.5 | 1.4 | 0.6 | 0.7 | 0.5 | 0.2 | 0.3 | 0.1 | 0.5 | 0.3 | 20.5 | 4.2 | 24 |
| 26 | **S** | 0.7 | 0.8 | 0.8 | 0.7 | 0.6 | 6.1 | 0.6 | 0.6 | 1.2 | 1.4 | 2.2 | 2.3 | 15.2 | 2.2 | 13.8 | 1.3 | 2.6 | 0.6 | 0.7 | 4.6 | 5.3 | 3.2 | **S** | 15.2 | 3.1 | 24 |
| 27 | 1.9 | 8.4 | 9 | 0.6 | 0.8 | 0.5 | 0.2 | 0.3 | 0.4 | 0.8 | 0.7 | 0.8 | 1 | 0.8 | 0.7 | 0.8 | 0.7 | 0.4 | 0.4 | 0.2 | 0.3 | 0.4 | **S** | 0.9 | 9.0 | 1.3 | 24 |
| 28 | 0.2 | 0.2 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.1 | 0 | 0.7 | 0.5 | 0.6 | 0.6 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.6 | 0.5 | 0.5 | **S** | 0.5 | 0.4 | 0.7 | 0.4 | 24 |
| 29 | 0.2 | 0.4 | 0.1 | 0 | 0 | 0 | 1.1 | 3.3 | 18 | 8.3 | 9.6 | 15.4 | 11.1 | 7 | 0.7 | 0.7 | 4.3 | 1 | 0.2 | 0.2 | **S** | 0.3 | 0.1 | 0.1 | 18.0 | 3.6 | 24 |
| 30 | 0 | 0 | 0.5 | 0.2 | 0.3 | 0.5 | 4.7 | 5.7 | 0.7 | 2.4 | 6.6 | 8.6 | 5.5 | 3.8 | 2.5 | 1.3 | 0.2 | 0.2 | 0.3 | **S** | 0.6 | 0.6 | 0.6 | 1 | 8.6 | 2.0 | 24 |
| HOURLY MAX | 6.7 | 8.4 | 9.0 | 9.6 | 4.3 | 10.2 | 19.0 | 45.8 | 32.2 | 54.4 | 42.7 | 162.1 | 59.4 | 21.1 | 36.5 | 13.8 | 34.4 | 4.5 | 1.1 | 4.1 | 8.1 | 9.7 | 5.9 | 5.9 | | | |
| HOURLY AVG | 0.7 | 0.6 | 1.2 | 0.8 | 0.7 | 1.4 | 2.5 | 5.2 | 7.8 | 8.1 | 8.2 | 10.7 | 6.8 | 4.4 | 4.8 | 2.3 | 4.9 | 0.8 | 0.4 | 0.6 | 1.0 | 1.1 | 0.9 | 0.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

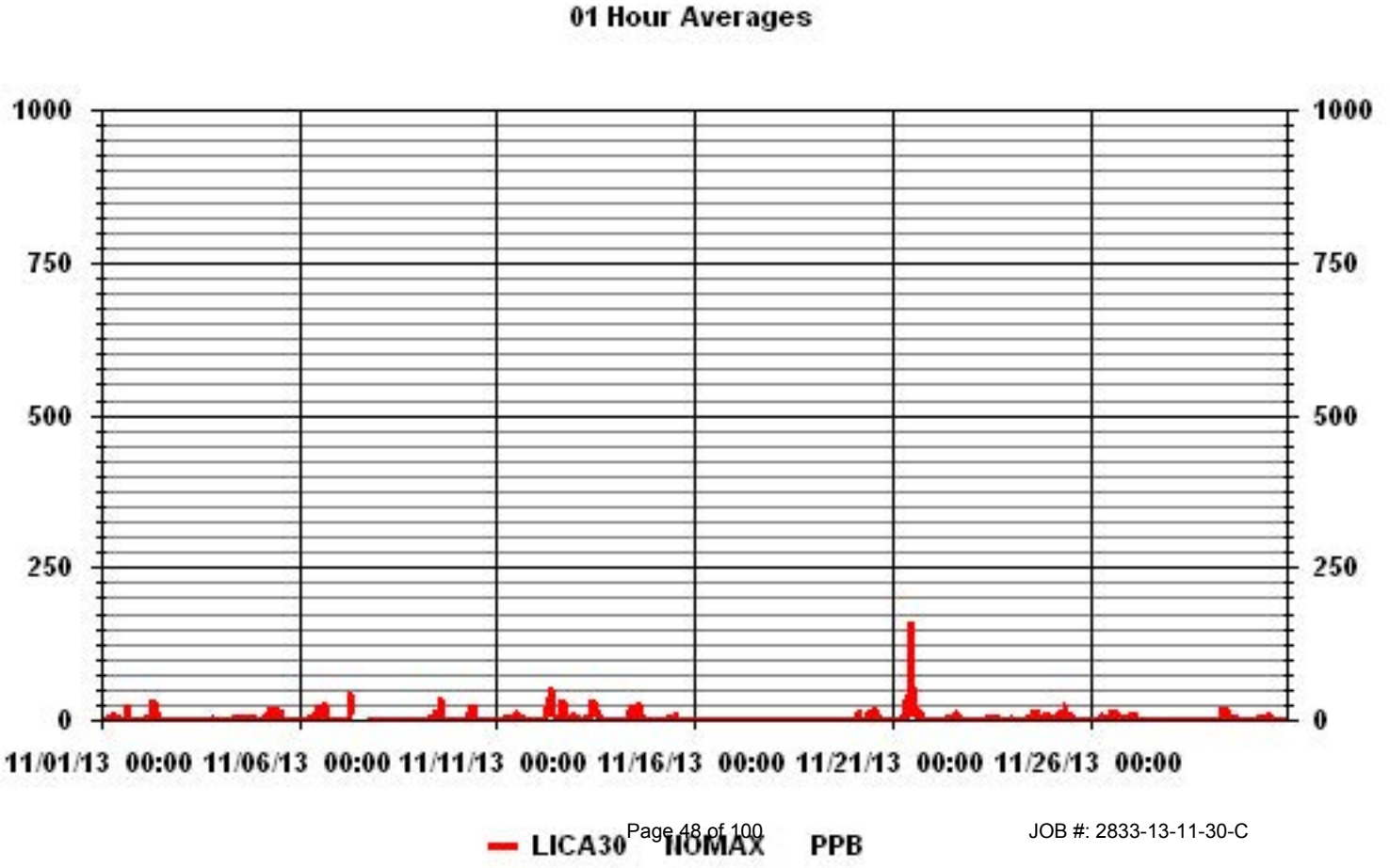
NUMBER OF NON-ZERO READINGS: 620

MAXIMUM INSTANTANEOUS VALUE: 162.1 PPB @ HOUR(S) 11 ON DAY(S) 21

IZS CALIBRATION TIME: 32 HRS OPERATIONAL TIME: 720 HRS

MONTHLY CALIBRATION TIME: 9 HRS

STANDARD DEVIATION: 8.89






JOB #: 2833-13-11-30-C

LICA30
NO_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 8.52 | 11.61 | 8.67 | 3.67 | 1.32 | 1.47 | 4.70 | 5.58 | 7.05 | 11.91 | 11.61 | 3.82 | 5.29 | 6.47 | 5.14 | 3.08 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 8.52 | 11.61 | 8.67 | 3.67 | 1.32 | 1.47 | 4.70 | 5.58 | 7.05 | 11.91 | 11.61 | 3.82 | 5.29 | 6.47 | 5.14 | 3.08 | |

Calm : .00 %

Total # Operational Hours : 680

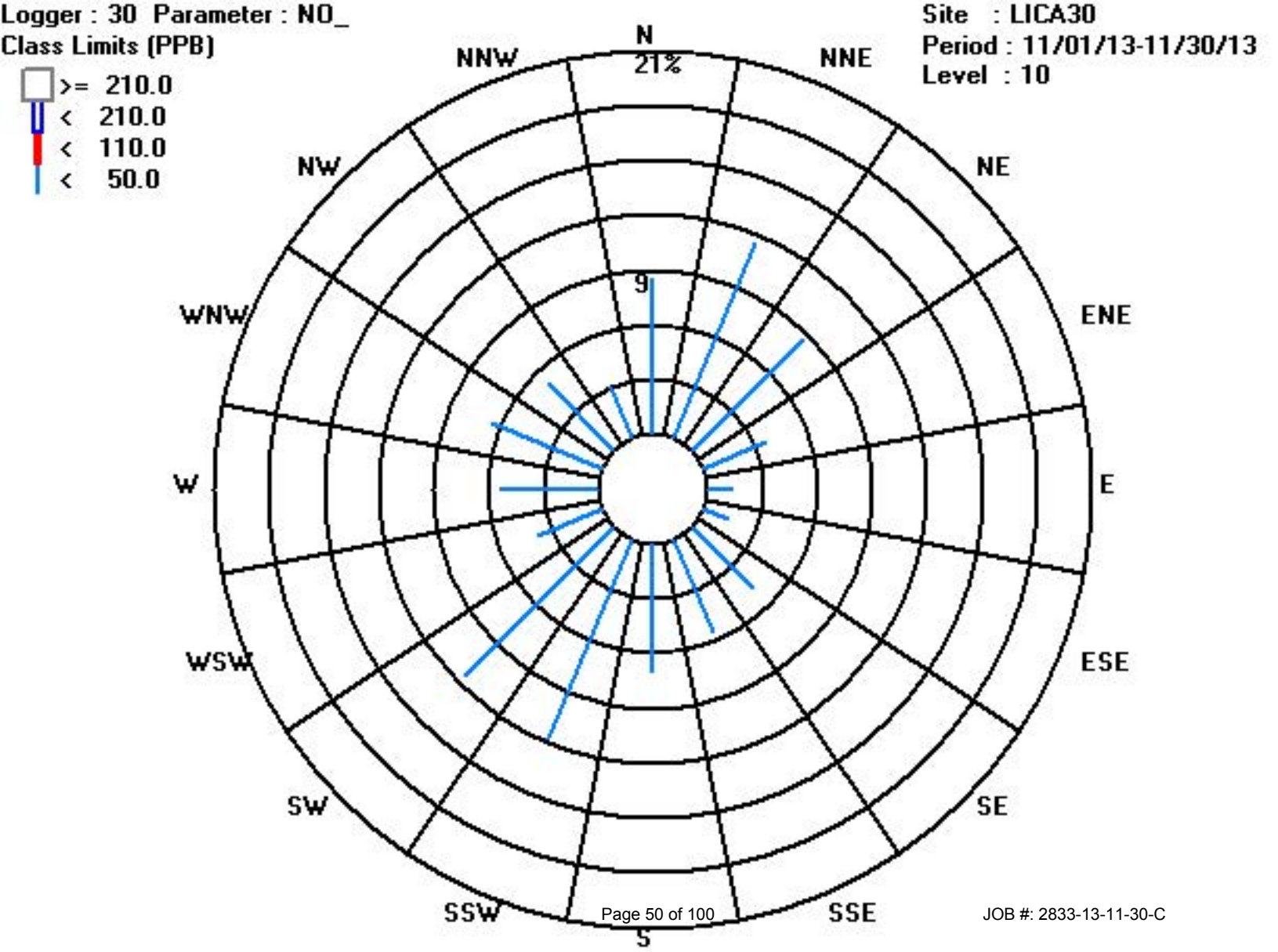
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 58 | 79 | 59 | 25 | 9 | 10 | 32 | 38 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | 680 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 58 | 79 | 59 | 25 | 9 | 10 | 32 | 38 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | |

Calm : .00 %

Total # Operational Hours : 680






JOB #: 2833-13-11-30-C

# Oxides of Nitrogen

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

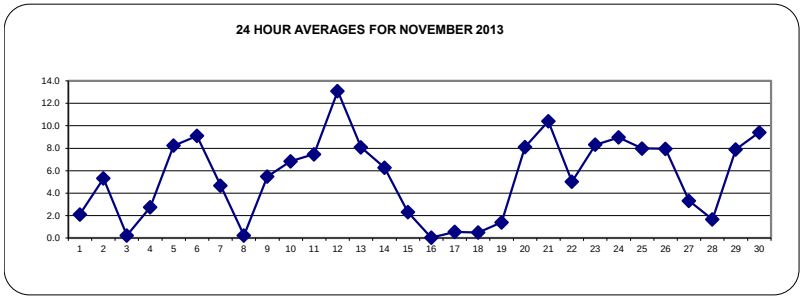
NOVEMBER 2013

**OXIDES OF NITROGEN** hourly averages in ppb

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.7 | 0.6 | **S** | 1.3 | 2.0 | 3.4 | 2.7 | 5.5 | 7.6 | 8.6 | 2.3 | 1.0 | 0.8 | 0.7 | 0.6 | 1.2 | 2.4 | 0.6 | 1.3 | 1.3 | 1.0 | 0.7 | 1.5 | 0.6 | 8.6 | 2.1 | 24 |
| 2 | 0.9 | **S** | 1.4 | 7.6 | 11.7 | 8.9 | 8.5 | 9.0 | 24.5 | 28.2 | 10.5 | 3.3 | 3.2 | 1.1 | 0.6 | 0.3 | 0.1 | 0.3 | 1.0 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 28.2 | 5.3 | 24 |
| 3 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 0.7 | 1.2 | 0.6 | 0.2 | 0.1 | 0.3 | 0.5 | 0.5 | 0.4 | **S** | 1.2 | 0.2 | 24 |
| 4 | 0.1 | 0.4 | 0.4 | 0.6 | 0.7 | 0.5 | 0.6 | 0.9 | 0.9 | 1.6 | 1.7 | 2.1 | 2.1 | 3.7 | 4.3 | 3.6 | 4.6 | 6.3 | 4.3 | 5.4 | 6.5 | 7.4 | **S** | 4.5 | 7.4 | 2.7 | 24 |
| 5 | 6.2 | 7.4 | 7.9 | 7.1 | 6.0 | 8.1 | 7.1 | 11.7 | 9.4 | 11.2 | 10.1 | 15.0 | 12.2 | 8.7 | 7.1 | 6.5 | 8.3 | 12.8 | 6.7 | 2.1 | 3.3 | **S** | 6.2 | 8.1 | 15.0 | 8.2 | 24 |
| 6 | 9.1 | 7.6 | 7.3 | 7.1 | 6.8 | 7.6 | 10.1 | 9.4 | 11.7 | 13.6 | 13.5 | 13.8 | 15.6 | 9.3 | 6.9 | 13.7 | 20.8 | 8.5 | 5.0 | 3.6 | **S** | 2.1 | 2.6 | 3.8 | 20.8 | 9.1 | 24 |
| 7 | 4.6 | 2.2 | 1.2 | 2.5 | 5.3 | 6.4 | 6.4 | 19.4 | 18.1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 1.0 | 1.0 | **S** | 0.5 | 0.5 | 0.6 | 0.4 | 19.4 | 4.7 | 24 |
| 8 | 0.5 | 0.5 | 0.1 | 0.0 | 0.2 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.6 | 0.8 | **S** | 0.6 | 0.2 | 0.3 | 0.4 | 0.6 | 0.8 | 0.2 | 24 |
| 9 | 0.4 | 0.5 | 1.9 | 8.9 | 10.0 | 12.3 | 8.3 | 7.9 | 9.0 | 8.6 | 8.9 | 7.2 | 7.3 | 2.6 | 3.7 | 2.3 | 1.8 | **S** | 1.3 | 0.9 | 0.7 | 2.3 | 12.1 | 7.3 | 12.3 | 5.5 | 24 |
| 10 | 4.4 | 4.6 | 5.0 | 4.8 | 4.0 | 4.2 | 3.8 | 10.6 | 25.1 | **30.6** | 27.6 | 6.0 | 3.6 | 1.6 | 1.8 | 2.4 | **S** | 1.7 | 2.7 | 3.3 | 2.8 | 2.5 | 2.0 | 2.1 | **30.6** | 6.8 | 24 |
| 11 | 2.4 | 2.7 | 3.4 | 3.5 | 3.6 | 4.4 | 6.8 | 7.0 | 6.4 | 6.8 | 6.8 | 7.3 | 9.1 | 8.6 | 9.6 | **S** | 10.3 | 11.5 | 11.2 | 10.4 | 10.6 | 10.3 | 10.0 | 8.9 | 11.5 | 7.5 | 24 |
| 12 | 8.4 | 7.3 | 6.8 | 7.6 | 6.8 | 7.5 | 7.9 | 24.9 | 26.7 | 18.0 | 16.4 | 9.2 | 9.0 | 10.1 | **S** | 11.3 | 12.7 | 13.9 | 13.6 | 14.0 | 14.3 | 14.8 | 21.4 | 18.5 | 26.7 | **13.1** | 24 |
| 13 | 17.8 | 15.9 | 15.7 | 12.8 | 8.9 | 12.2 | 14.4 | 8.8 | 8.9 | 15.4 | 13.6 | 12.5 | 13.1 | **S** | 3.7 | 3.1 | 2.0 | 0.9 | 1.7 | 1.4 | 0.8 | 0.8 | 0.3 | 0.9 | 17.8 | 8.1 | 24 |
| 14 | 1.5 | 1.8 | 1.4 | 0.6 | 2.2 | 7.6 | 10.1 | 10.3 | 10.5 | 8.4 | 9.1 | 8.6 | **S** | 7.7 | 6.3 | 4.3 | 7.8 | 8.4 | 6.2 | 5.9 | 7.4 | 6.5 | 5.5 | 6.0 | 10.5 | 6.3 | 24 |
| 15 | 6.8 | 5.1 | 4.0 | 1.1 | 0.6 | 0.6 | 0.6 | 1.1 | 5.1 | 7.3 | 7.1 | **S** | 8.6 | 1.0 | 0.7 | 1.0 | 1.3 | 0.6 | 0.2 | 0.1 | 0.4 | 0.1 | 0.0 | 0.0 | 8.6 | 2.3 | 24 |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 24 |
| 17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.5 | 0.6 | 0.3 | 0.4 | 2.6 | 4.3 | 1.1 | 1.3 | 1.2 | 4.3 | 0.6 | 24 |
| 18 | 0.3 | 0.0 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | **S** | 4.2 | 2.0 | 0.1 | 0.0 | 0.1 | 0.8 | 1.3 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.2 | 0.5 | 24 |
| 19 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.6 | 0.7 | 0.1 | 0.1 | 1.6 | 1.4 | 2.2 | 2.3 | 2.6 | 2.7 | 2.7 | 3.6 | 4.7 | 3.9 | 3.0 | 4.7 | 1.4 | 24 |
| 20 | 3.8 | 1.6 | 3.2 | 15.0 | 4.2 | 8.9 | **S** | 9.0 | 17.1 | 17.7 | 17.8 | 10.3 | 4.2 | 11.4 | 10.1 | 7.0 | 7.4 | 5.3 | 4.5 | 4.6 | 6.5 | 5.8 | 5.6 | 5.6 | 17.8 | 8.1 | 24 |
| 21 | 5.2 | 7.4 | 7.7 | 5.8 | 6.2 | **S** | 8.6 | 11.8 | 17.5 | 20.6 | 26.5 | 24.0 | 11.8 | 9.0 | 11.4 | 11.8 | 15.3 | 7.0 | 5.9 | 5.5 | 5.6 | 5.5 | 4.9 | 4.4 | 26.5 | 10.4 | 24 |
| 22 | 3.5 | 3.0 | 2.6 | 1.1 | **S** | 2.0 | 3.7 | 6.3 | 8.5 | 11.3 | 8.3 | 4.3 | 2.5 | 2.8 | 3.2 | 9.3 | 10.1 | 6.8 | 3.6 | 2.4 | 3.9 | 4.9 | 5.7 | 5.5 | 11.3 | 5.0 | 24 |
| 23 | 5.2 | 5.2 | 5.2 | **S** | 5.0 | 3.9 | 4.3 | 5.1 | 6.5 | 5.5 | 5.2 | 6.8 | 8.6 | 8.7 | 9.6 | 11.6 | 12.0 | 10.1 | 11.1 | 10.5 | 11.4 | 12.8 | 11.4 | 15.4 | 15.4 | 8.3 | 24 |
| 24 | 18.8 | 15.0 | **S** | 2.1 | 1.2 | 2.5 | 1.2 | 0.7 | 3.9 | 0.6 | 1.1 | 4.8 | 14.2 | 16.3 | 19.9 | 9.6 | 8.9 | 9.1 | 8.5 | 13.1 | 12.3 | 21.8 | 7.1 | 13.3 | 21.8 | 9.0 | 24 |
| 25 | 17.4 | **S** | 7.8 | 0.7 | 1.2 | 16.8 | 22.3 | 16.6 | 30.2 | 18.9 | 1.8 | 2.9 | 3.6 | 2.2 | 2.3 | 3.3 | 3.9 | 4.1 | 2.3 | 2.6 | 5.5 | 4.7 | 7.1 | 5.2 | 30.2 | 8.0 | 24 |
| 26 | **S** | 5.5 | 5.9 | 6.3 | 5.4 | 6.0 | 7.0 | 5.1 | 4.4 | 4.5 | 5.1 | 5.6 | 6.6 | 6.8 | 6.3 | 8.0 | 8.6 | 13.1 | 10.4 | 9.0 | 12.6 | 18.1 | 14.7 | **S** | 18.1 | 8.0 | 24 |
| 27 | 12.7 | 17.9 | 10.8 | 3.7 | 4.1 | 1.4 | 0.9 | 1.5 | 2.0 | 2.2 | 1.9 | 2.1 | 2.1 | 1.9 | 1.7 | 1.7 | 2.2 | 3.8 | 0.9 | 0.3 | 0.0 | 0.2 | **S** | 0.5 | 17.9 | 3.3 | 24 |
| 28 | 0.3 | 1.0 | 1.3 | 1.9 | 2.4 | 2.5 | 1.7 | 0.9 | 1.3 | 1.9 | 1.8 | 1.4 | 1.5 | 1.3 | 1.3 | 1.4 | 1.4 | 1.7 | 2.0 | 2.5 | 2.4 | **S** | 1.8 | 2.3 | 2.5 | 1.7 | 24 |
| 29 | 2.3 | 1.8 | 1.7 | 2.4 | 2.2 | 3.4 | 6.9 | 14.9 | 19.3 | 19.5 | 20.1 | 20.6 | 19.3 | 14.4 | 3.9 | 4.7 | 5.9 | 3.9 | 3.6 | 3.2 | **S** | 2.6 | 2.8 | 2.3 | 20.6 | 7.9 | 24 |
| 30 | 6.4 | 4.8 | 7.3 | 9.0 | 7.8 | 8.2 | 12.8 | 11.2 | 7.1 | 7.0 | 11.7 | 15.0 | 15.9 | 12.5 | 11.1 | 9.6 | 8.9 | 10.0 | 8.2 | **S** | 8.2 | 8.7 | 7.6 | 7.2 | 15.9 | 9.4 | 24 |
| HOURLY MAX | 18.8 | 17.9 | 15.7 | 15.0 | 11.7 | 16.8 | 22.3 | 24.9 | 30.2 | 30.6 | 27.6 | 24.0 | 19.3 | 16.3 | 19.9 | 13.7 | 20.8 | 13.9 | 13.6 | 14.0 | 14.3 | 21.8 | 21.4 | 18.5 | | | |
| HOURLY AVG | 5.0 | 4.3 | 4.0 | 3.9 | 3.7 | 4.8 | 5.4 | 7.2 | 9.7 | 9.7 | 8.3 | 6.6 | 6.3 | 5.2 | 4.6 | 4.8 | 5.8 | 5.0 | 4.2 | 3.9 | 4.5 | 5.0 | 4.9 | 4.6 | | | |

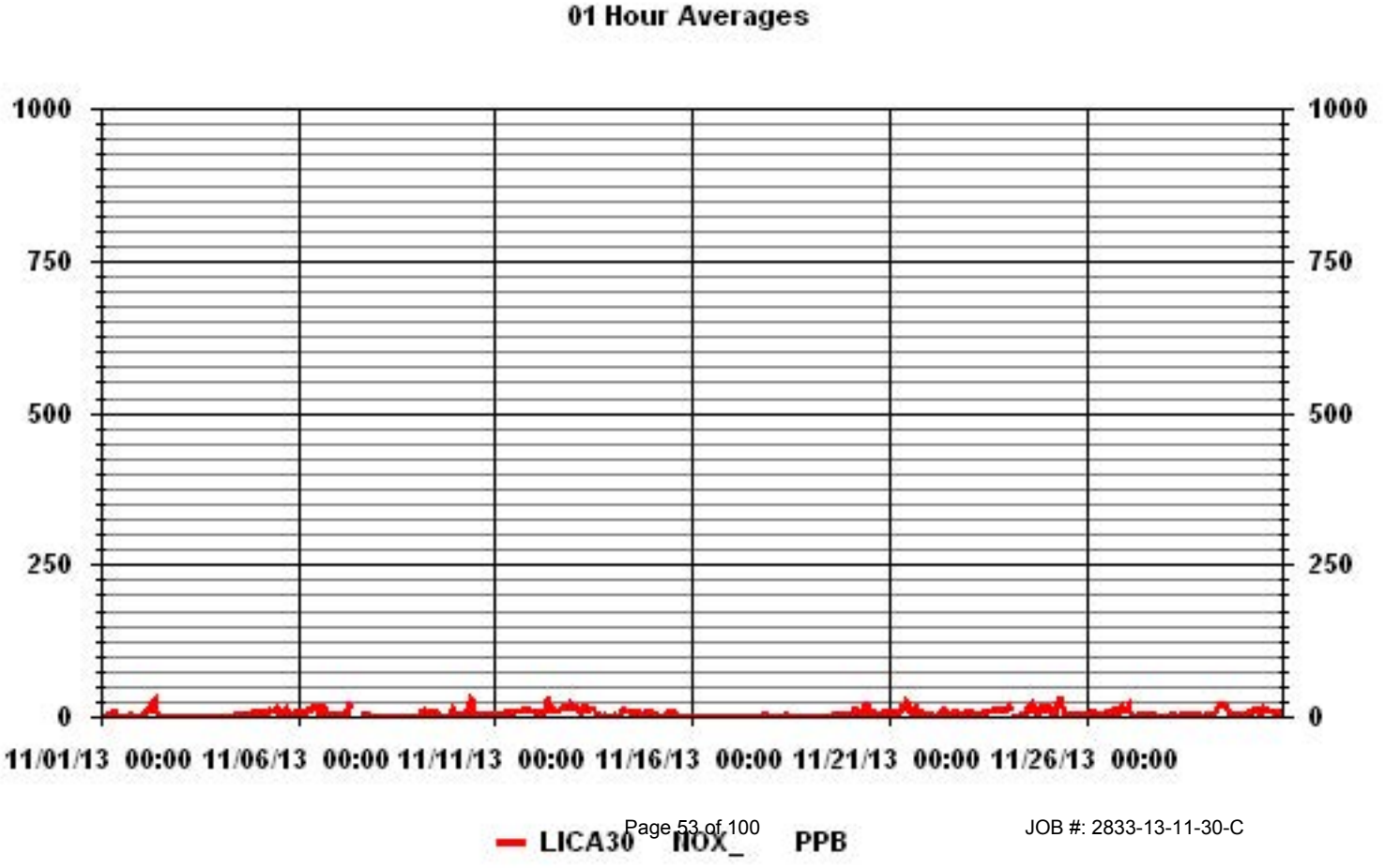
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 604 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 30.6 | PPB | @ HOUR(S) | 9 | ON DAY(S) | 10 | |
| MAXIMUM 24-HR AVERAGE: | 13.1 | PPB | | | ON DAY(S) | 12 | |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 720 | HRS | |
| MONTHLY CALIBRATION TIME: | 8 | HRS | AMD OPERATION UPTIME: | | 100.0 | % | |
| STANDARD DEVIATION: | 5.67 | | MONTHLY AVERAGE: | | 5.47 | PPB | |






JOB #: 2833-13-11-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**OXIDES OF NITROGEN MAX** instantaneous maximum in ppb

MST

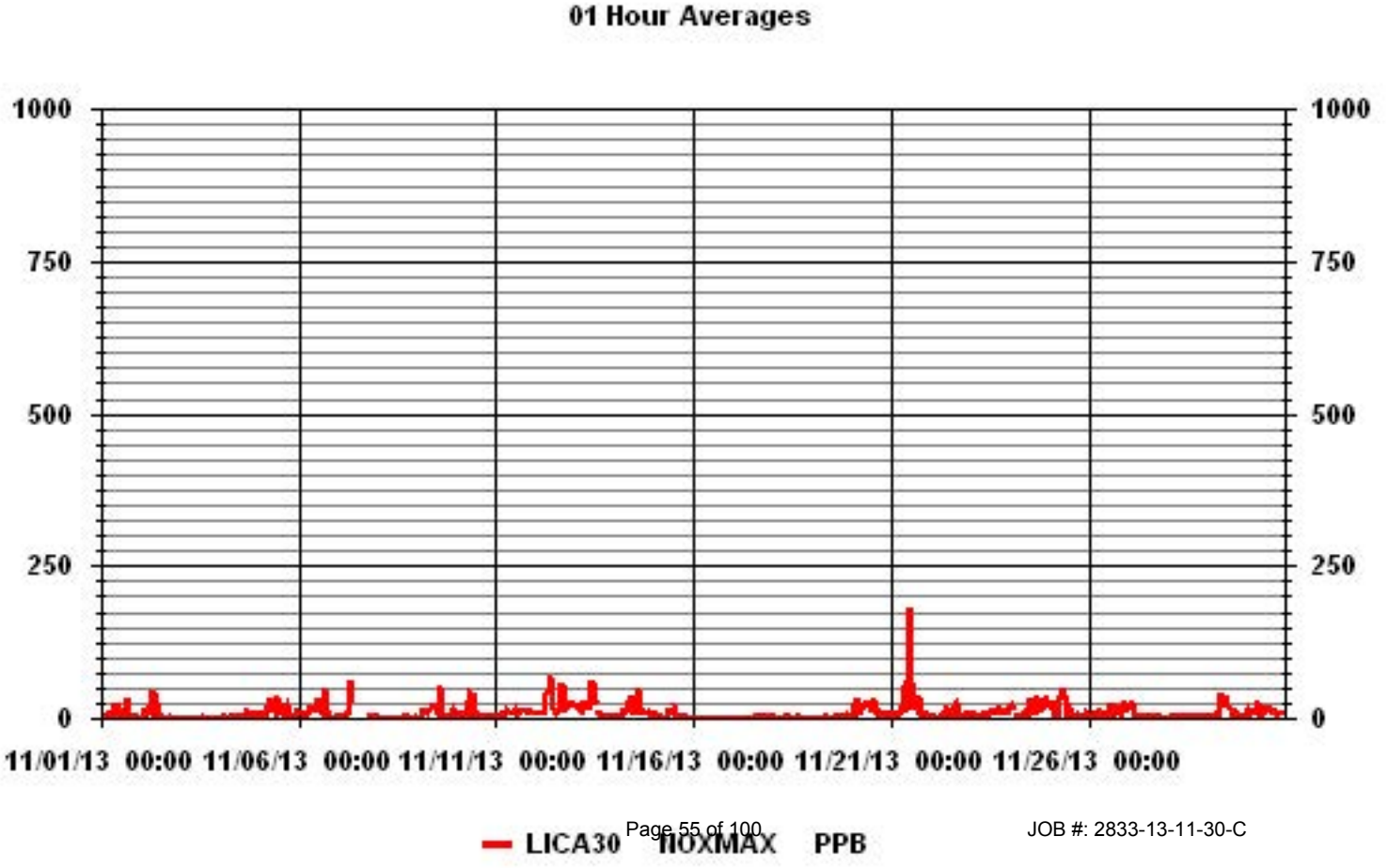
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.2 | 1.2 | **S** | 1.8 | 5.3 | 8.4 | 6.4 | 9.8 | 20.7 | 21.3 | 5.7 | 3.3 | 2.3 | 2.4 | 1.9 | 14.1 | 34.8 | 1.7 | 2.2 | 1.8 | 1.7 | 2.6 | 4.2 | 1.3 | 34.8 | 6.8 | 24 |
| 2 | 2.7 | **S** | 4.4 | 15 | 17.4 | 10.9 | 13.8 | 12 | 45.3 | 39.4 | 26.6 | 4.5 | 4.5 | 2.3 | 1.2 | 0.7 | 0.5 | 0.9 | 1.5 | 1.1 | 0.9 | 0.8 | 0.9 | 0.3 | 45.3 | 9.0 | 24 |
| 3 | **S** | 0.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.5 | 0.6 | 0.9 | 0.7 | 0.3 | 0.9 | 0.9 | 1.7 | 1.6 | 2.8 | 1.3 | 0.8 | 0.7 | 0.8 | 0.8 | 1 | 0.7 | **S** | 2.8 | 0.8 | 24 |
| 4 | 0.7 | 1.3 | 1 | 1.3 | 1.8 | 1 | 1.6 | 1.4 | 2.3 | 2.3 | 2.9 | 4.3 | 3.6 | 4.7 | 7.1 | 4.5 | 5.9 | 14 | 5.2 | 7.1 | 7.2 | 8.7 | **S** | 6 | 14.0 | 4.2 | 24 |
| 5 | 8.2 | 9.6 | 10.9 | 9 | 7.8 | 19 | 8.8 | 31.5 | 18.2 | 15.9 | 12.3 | 38.7 | 15.3 | 25.5 | 10.5 | 8.5 | 14.1 | 19.9 | 9.7 | 3.2 | 4.7 | **S** | 6.9 | 11.1 | 38.7 | 13.9 | 24 |
| 6 | 11 | 8.4 | 7.9 | 7.6 | 7.6 | 9.6 | 15.4 | 12.3 | 14.7 | 16.3 | 16.4 | 15.5 | 33.2 | 15.1 | 11.5 | 17.9 | 50.5 | 14.8 | 6.6 | 4.5 | **S** | 2.9 | 4 | 4.5 | 50.5 | 13.4 | 24 |
| 7 | 5.5 | 4.2 | 2.5 | 5.4 | 6 | 8.9 | 11.2 | 63.7 | 29 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 1.6 | **S** | 1.1 | 1.1 | 1.2 | 1.1 | 63.7 | 10.2 | 24 |
| 8 | 1 | 1.1 | 0.7 | 0.4 | 0.7 | 0.9 | 0.8 | 0.5 | 0.4 | 0.3 | 0.3 | 0.8 | 0.9 | 0.4 | 0.4 | 0.9 | 1.3 | 1.5 | **S** | 1.6 | 0.9 | 0.9 | 1 | 1.1 | 1.6 | 0.8 | 24 |
| 9 | 1.1 | 1.4 | 3.9 | 12.3 | 11.9 | 14.1 | 10.2 | 12.7 | 14.6 | 19.2 | 19.2 | 20.5 | 20.5 | 5.4 | 54.3 | 4.7 | 2.9 | **S** | 1.9 | 1.6 | 1.3 | 6.3 | 15.6 | 10.7 | 54.3 | 11.6 | 24 |
| 10 | 5.1 | 5.6 | 6.2 | 5.6 | 5.3 | 8.5 | 4.4 | 29.6 | 39.9 | 35.8 | 42.2 | 8.9 | 7.3 | 2.4 | 2.8 | 5.5 | **S** | 2.3 | 3.6 | 4.3 | 3.4 | 3.1 | 2.8 | 2.6 | 42.2 | 10.3 | 24 |
| 11 | 3 | 3.4 | 5.3 | 4.5 | 6.6 | 8.2 | 13.3 | 9.2 | 8.1 | 8.1 | 8.1 | 8.3 | 15.8 | 9.5 | 11.7 | **S** | 14 | 12.8 | 12.5 | 11.6 | 11.3 | 11.1 | 11.1 | 9.5 | 15.8 | 9.4 | 24 |
| 12 | 9.5 | 8.6 | 8.1 | 8.9 | 8.3 | 9.1 | 37.9 | 42.9 | 38.8 | 69.6 | 18.3 | 17.9 | 10.8 | 14.3 | **S** | 15 | 58.8 | 18.4 | 16.5 | 19.1 | 20.6 | 24 | 26.4 | 24.8 | 69.6 | 22.9 | 24 |
| 13 | 20.2 | 20.2 | 19.9 | 14.8 | 12.7 | 23.7 | 24.5 | 24.8 | 15.2 | 33.6 | 60.4 | 30.9 | 28.2 | **S** | 9.1 | 9.5 | 6.5 | 1.7 | 2.8 | 2.1 | 1.4 | 1.5 | 1.1 | 2 | 60.4 | 15.9 | 24 |
| 14 | 2.2 | 3.6 | 2.4 | 1.5 | 3.1 | 11.2 | 11.7 | 16.6 | 29.5 | 10 | 37.7 | 10.3 | **S** | 11.2 | 47.7 | 8.7 | 13.7 | 10.4 | 10.1 | 9 | 11.3 | 10.6 | 7.8 | 6.7 | 47.7 | 12.5 | 24 |
| 15 | 9 | 7.4 | 5.8 | 2.5 | 1.2 | 1.1 | 1.2 | 2.2 | 13.6 | 12.1 | 14.5 | **S** | 20.3 | 5.4 | 4.1 | 3.6 | 4.7 | 1.5 | 1 | 1 | 1.1 | 0.7 | 0.4 | 0.4 | 20.3 | 5.0 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | **S** | 0.3 | 0.3 | 0.6 | 0.5 | 0.6 | 0.6 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.6 | 0.2 | 24 |
| 17 | 0.3 | 0 | 0 | 0 | 0.3 | 0.1 | 0.1 | 0.2 | 1.6 | **S** | 0.2 | 0.5 | 0.6 | 1.1 | 1.2 | 1.8 | 1.2 | 1 | 1.2 | 5.8 | 5.1 | 3.1 | 2.2 | 1.7 | 5.8 | 1.3 | 24 |
| 18 | 1.4 | 1.2 | 2.5 | 0.6 | 0.3 | 0.6 | 0.6 | 0.9 | **S** | 6.9 | 3.8 | 1.2 | 0.6 | 0.7 | 2.3 | 2.8 | 1.6 | 0.6 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 6.9 | 1.3 | 24 |
| 19 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | **S** | 1.5 | 1.2 | 1.2 | 0.8 | 1.2 | 3.4 | 2.2 | 3.3 | 3.5 | 3.6 | 3.5 | 3.6 | 4.5 | 5.4 | 5.3 | 3.9 | 5.4 | 2.2 | 24 |
| 20 | 5.9 | 2.4 | 25.6 | 32 | 5.8 | 15.2 | **S** | 19.2 | 19.9 | 24.1 | 26 | 24.6 | 7.6 | 30.9 | 16.4 | 8.1 | 17.1 | 7.4 | 5.9 | 5.7 | 7.4 | 6.6 | 7.3 | 6.4 | 32.0 | 14.2 | 24 |
| 21 | 6.7 | 8.8 | 8.8 | 6.6 | 9.5 | **S** | 14.3 | 14.5 | 52.4 | 41.1 | 60.6 | **183.2** | 63.7 | 15.6 | 25.5 | 19.2 | 36.5 | 9.5 | 7.1 | 6 | 6.5 | 6 | 5.9 | 5.2 | **183.2** | 26.7 | 24 |
| 22 | 4.3 | 3.6 | 3.4 | 2.1 | **S** | 2.5 | 4.7 | 8.1 | 10.2 | 13.7 | 13.6 | 5.9 | 4.1 | 5 | 18.4 | 24.8 | 19.6 | 8.2 | 6.3 | 3.3 | 5.2 | 6 | 6.6 | 6.3 | 24.8 | 8.1 | 24 |
| 23 | 5.9 | 6.1 | 6.1 | **S** | 5.9 | 4.8 | 5.3 | 6.7 | 7.6 | 7 | 6.3 | 8.2 | 10.2 | 9.5 | 10.5 | 14 | 16.3 | 11.7 | 12.5 | 11.2 | 12.4 | 15.2 | 13.3 | 19.9 | 19.9 | 9.9 | 24 |
| 24 | 23.9 | 18.9 | **S** | 3 | 1.9 | 5 | 3.5 | 2.7 | 9.3 | 3.9 | 4.3 | 14.4 | 28 | 26.2 | 29.4 | 12.6 | 14.1 | 18.9 | 14.6 | 16.1 | 30.5 | 33.1 | 25.7 | 22.1 | 33.1 | 15.7 | 24 |
| 25 | 26.6 | **S** | 22.4 | 2.6 | 4.3 | 26.8 | 36 | 29.3 | 46.9 | 40.7 | 3 | 6.8 | 13.2 | 5.3 | 6.2 | 5.7 | 7.3 | 6 | 4.3 | 5 | 6.8 | 5.2 | 10.7 | 7.1 | 46.9 | 14.3 | 24 |
| 26 | **S** | 6.7 | 8 | 7.7 | 6.1 | 6.9 | 15.5 | 6.8 | 6.6 | 5.9 | 6 | 7 | 7.3 | 23.1 | 7.7 | 21.9 | 10.7 | 15.3 | 13.6 | 10.6 | 22.5 | 24.8 | 16.6 | **S** | 24.8 | 11.7 | 24 |
| 27 | 21.1 | 27 | 26.3 | 5.4 | 5.6 | 2.4 | 1.4 | 2.8 | 3 | 5.6 | 2.7 | 2.6 | 3.2 | 2.6 | 2.1 | 2.4 | 5.3 | 5.8 | 2.9 | 3.6 | 0.1 | 1.4 | **S** | 1.4 | 27.0 | 5.9 | 24 |
| 28 | 0.8 | 2.3 | 2 | 2.4 | 3 | 3.5 | 2.3 | 1.8 | 2.2 | 2.7 | 2.7 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2 | 2.7 | 2.9 | 4.6 | 4.6 | **S** | 2.4 | 3 | 4.6 | 2.6 | 24 |
| 29 | 2.9 | 2.5 | 2.6 | 2.9 | 2.9 | 4.7 | 12.1 | 19.9 | 38.9 | 24.5 | 24.6 | 29.5 | 24.2 | 19.6 | 4.7 | 6.3 | 16.6 | 7.4 | 4.5 | 3.9 | **S** | 3.3 | 4 | 3.1 | 38.9 | 11.5 | 24 |
| 30 | 13.7 | 9.2 | 12.8 | 12 | 9.1 | 9.3 | 22.4 | 20.5 | 8.6 | 9.6 | 14.9 | 17.7 | 17.1 | 14.8 | 12.3 | 11.1 | 10.9 | 11.2 | 9.1 | **S** | 9 | 9.6 | 8.2 | 8.9 | 22.4 | 12.3 | 24 |
| HOURLY MAX | 26.6 | 27.0 | 26.3 | 32.0 | 17.4 | 26.8 | 37.9 | 63.7 | 52.4 | 69.6 | 60.6 | 183.2 | 63.7 | 30.9 | 54.3 | 24.8 | 58.8 | 19.9 | 16.5 | 19.1 | 30.5 | 33.1 | 26.4 | 24.8 | | | |
| HOURLY AVG | 6.9 | 5.9 | 7.1 | 5.8 | 5.2 | 7.5 | 9.7 | 13.9 | 17.2 | 16.8 | 15.5 | 16.8 | 12.4 | 9.3 | 10.9 | 8.3 | 13.3 | 7.5 | 5.7 | 5.3 | 6.5 | 7.0 | 6.9 | 6.1 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 667 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 183.2 | PPB | @ HOUR(S) | 11 | ON DAY(S) | 21 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 9 | HRS | | | | |
| STANDARD DEVIATION: | 12.68 | | | | | |






JOB #: 2833-13-11-30-C

LICA30
NOX_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 8.52 | 11.61 | 8.67 | 3.67 | 1.32 | 1.47 | 4.70 | 5.58 | 7.05 | 11.91 | 11.61 | 3.82 | 5.29 | 6.47 | 5.14 | 3.08 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 8.52 | 11.61 | 8.67 | 3.67 | 1.32 | 1.47 | 4.70 | 5.58 | 7.05 | 11.91 | 11.61 | 3.82 | 5.29 | 6.47 | 5.14 | 3.08 | |

Calm : .00 %

Total # Operational Hours : 680

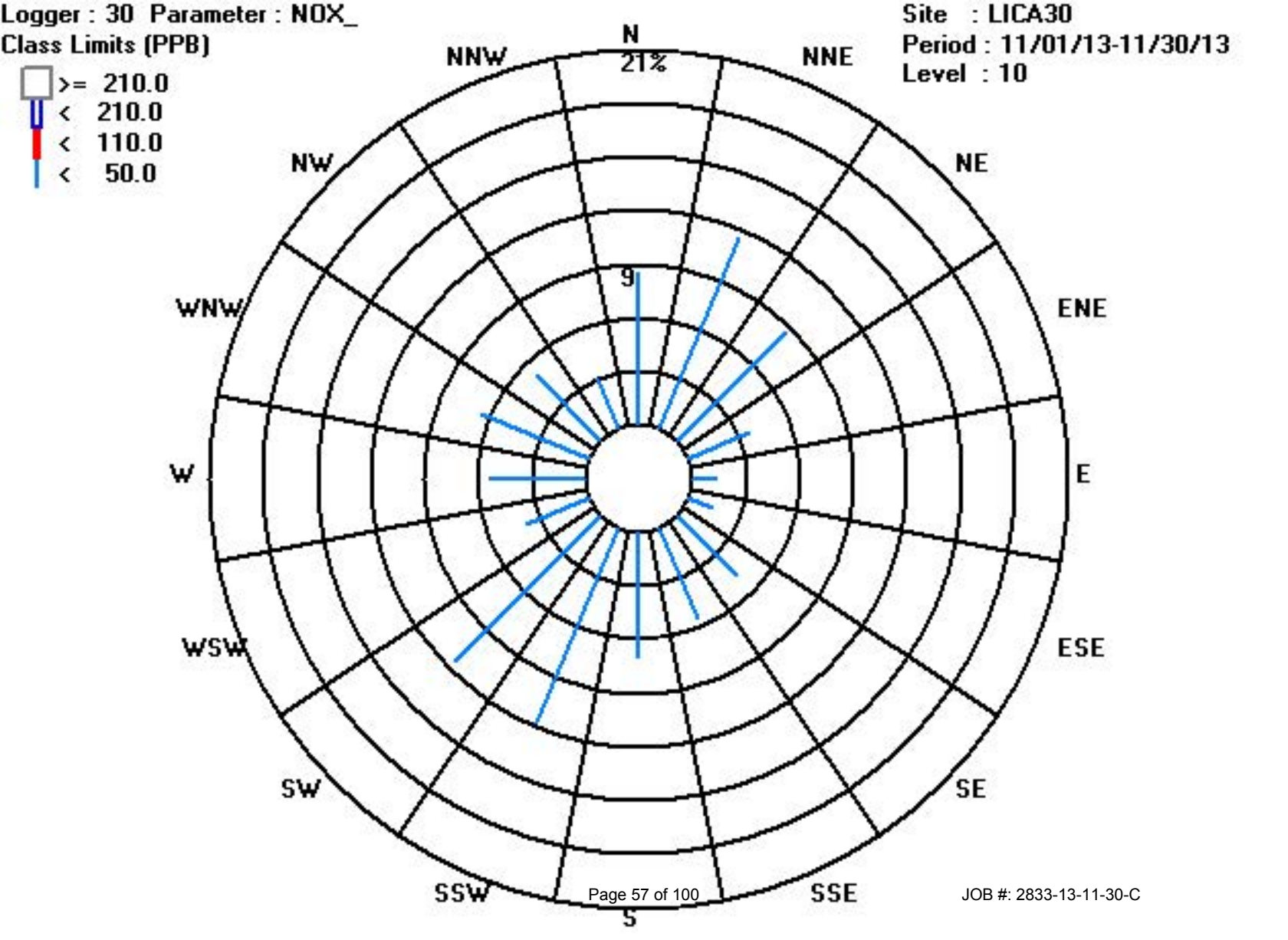
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 58 | 79 | 59 | 25 | 9 | 10 | 32 | 38 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | 680 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 58 | 79 | 59 | 25 | 9 | 10 | 32 | 38 | 48 | 81 | 79 | 26 | 36 | 44 | 35 | 21 | |

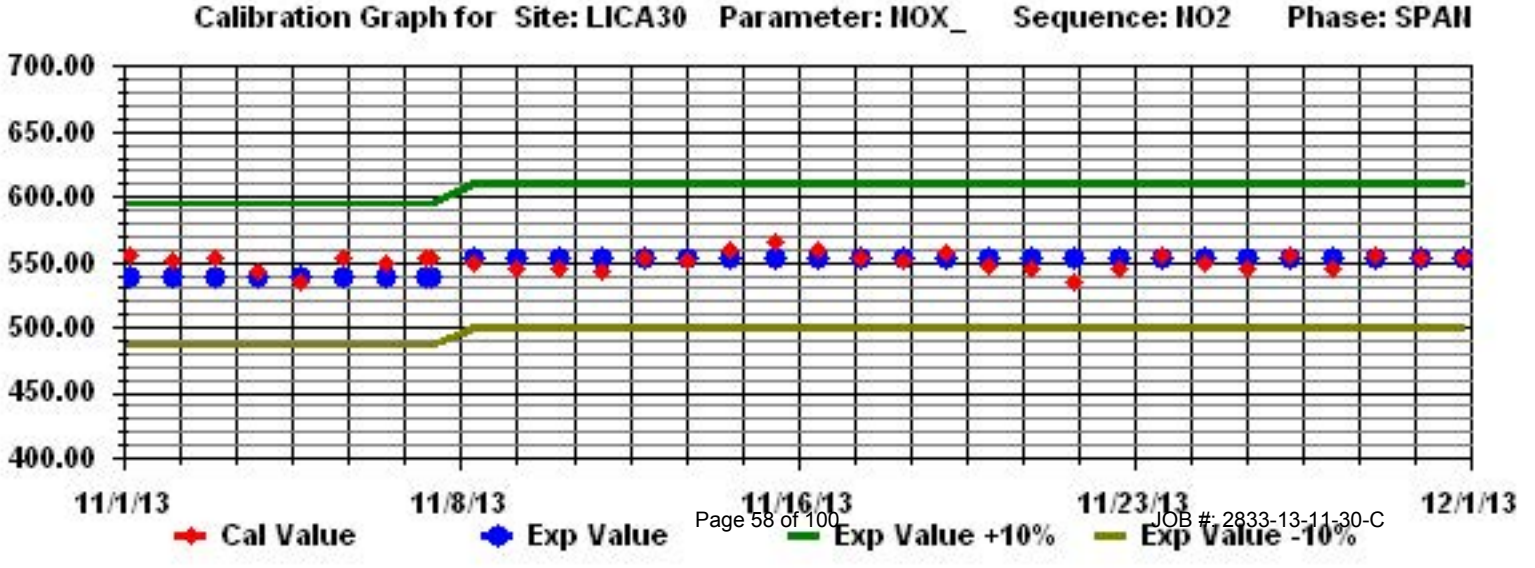
Calm : .00 %

Total # Operational Hours : 680






JOB #: 2833-13-11-30-C


Calibration Graph for Site: LICA30 Parameter: NOX_ Sequence: NO2 Phase: SPAN
700.00
650.00
600.00
550.00
500.00
450.00
400.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Temperature

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA**

NOVEMBER 2013

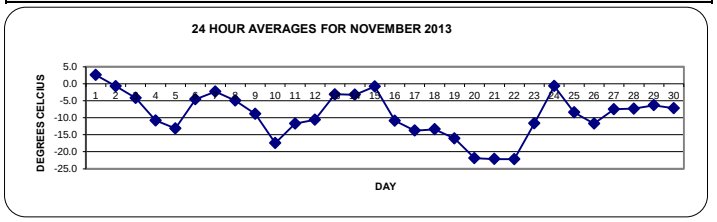
**AMBIENT TEMPERATURE** hourly averages (Degrees C)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.4 | 0.4 | -0.4 | -0.7 | -0.9 | -0.9 | -0.5 | 0.3 | 2 | 3.7 | 6.4 | 7.9 | 8.3 | **8.8** | 8.4 | 7.4 | 5.5 | 3.1 | 2.3 | 1.7 | 0.7 | 0.3 | -0.5 | -2 | **8.8** | **2.6** | 24 |
| 2 | -3.1 | -3.7 | -3.9 | -3.4 | -4.4 | -6 | -6.9 | -6.4 | -4.3 | -0.5 | 1.2 | 3.9 | 4.5 | 4.8 | 4.3 | 3.6 | 2.1 | 1.4 | 1.4 | 0.8 | -0.1 | -0.8 | -1.1 | -1.1 | 4.8 | -0.7 | 24 |
| 3 | -1.2 | -1.3 | -1.5 | -1.6 | -1.8 | -2.2 | -2.5 | -2.5 | -2.8 | -3.4 | -3.3 | -3.8 | -4.4 | -4.5 | -4.8 | -5.1 | -5.6 | -5.9 | -6.3 | -6.5 | -6.8 | -7.3 | -7.9 | -8.1 | -1.2 | -4.2 | 24 |
| 4 | -8.2 | -8.6 | -8.9 | -9.2 | -9.6 | -10 | -10.3 | -10.2 | -9.9 | -9 | -8.5 | -7.9 | -7.7 | -7.1 | -7.1 | -7.2 | -8.9 | -12.5 | -13.5 | -14.5 | -15.8 | -17.1 | -18.5 | -19 | -7.1 | -10.8 | 24 |
| 5 | -20.3 | -21 | -21 | -21.6 | -21.6 | -21.2 | -21.8 | -21.8 | -18.7 | -12.2 | -9.5 | -6.4 | -4.9 | -4.1 | -4 | -5.1 | -7.3 | -10.3 | -11.7 | -10 | -10.1 | -9.7 | -10.5 | -10.9 | -4.0 | -13.2 | 24 |
| 6 | -10.3 | -10.1 | -10 | -9.9 | -9.7 | -9.5 | -9.3 | -8.9 | -8.6 | -6.6 | -5.8 | -3.1 | 0 | 1.5 | 1.8 | -0.6 | -1.3 | -1.5 | -1.2 | -1 | -1 | -1 | -1.3 | -1.5 | 1.8 | -4.5 | 24 |
| 7 | -1.6 | -1.4 | -1.5 | -2.7 | -3.9 | -5.4 | -7.6 | -9.1 | -8.1 | -3.3 | -0.8 | 1.1 | 1.5 | 1.2 | 0.1 | -0.5 | -0.7 | -1.1 | -1.1 | -1.1 | -1.4 | -2.2 | -2.9 | -3.8 | 1.5 | -2.3 | 24 |
| 8 | -4.2 | -4.2 | -4.3 | -4.6 | -4.7 | -4.8 | -4.7 | -4.5 | -4.5 | -4.8 | -4.9 | -4.5 | -4.1 | -4.4 | -4.1 | -4.3 | -4.6 | -4.9 | -5.1 | -5.3 | -5.8 | -6.4 | -7.2 | -8 | -4.1 | -5.0 | 24 |
| 9 | -9 | -8 | -7.1 | -6.4 | -6.8 | -6.8 | -6.1 | -5.7 | -5.2 | -4.7 | -5.6 | -5.4 | -5.7 | -6.3 | -7 | -8.2 | -9.8 | -10.4 | -10.8 | -12.3 | -14.6 | -16.3 | -17.1 | -17.9 | -4.7 | -8.9 | 24 |
| 10 | -18.4 | -19.3 | -20 | -22.1 | -24.1 | -25.3 | -25.9 | -27.5 | -26.3 | -18.3 | -13.9 | -12.8 | -12.1 | -10.3 | -12.5 | -13.8 | -16.1 | -14.8 | -14.3 | -14.1 | -13.9 | -13.8 | -14.1 | -15.1 | -10.3 | -17.5 | 24 |
| 11 | -14.7 | -15.4 | -15.6 | -16.4 | -15.8 | -16.2 | -16.6 | -16.2 | -15.7 | -13.6 | -11.2 | -9.1 | -8 | -6.7 | -6.1 | -6.9 | -8.2 | -9.4 | -11 | -10 | -9.5 | -10.1 | -9.5 | -10 | -6.1 | -11.7 | 24 |
| 12 | -12.3 | -15.1 | -16.9 | -18.3 | -19.5 | -20.2 | -20.4 | -19.9 | -18.7 | -13.5 | -8.7 | -5.8 | -4.5 | -3.3 | -3.4 | -4.8 | -5.4 | -5.7 | -5.8 | -5.7 | -5.5 | -6.3 | -7.3 | -6.9 | -3.3 | -10.6 | 24 |
| 13 | -6.7 | -5.4 | -5.3 | -4.9 | -4.7 | -1.6 | -1.3 | -2 | -1.5 | -0.2 | 0.4 | 0.8 | 0.5 | 1.1 | -0.4 | -2.2 | -4 | -4.6 | -4.9 | -5.1 | -5.4 | -5.7 | -5.7 | -5.8 | 1.1 | -3.1 | 24 |
| 14 | -6.6 | -8.1 | -9.2 | -8.8 | -8.6 | -7.3 | -7.2 | -6.5 | -5.9 | -5.3 | -3.1 | -1.3 | -1.2 | 0 | 1.3 | 0.8 | 0.1 | -0.2 | -0.2 | -0.2 | -0.1 | 0.1 | 0.5 | -0.1 | 1.3 | -3.2 | 24 |
| 15 | 0 | 0.5 | 0.8 | 1.6 | 1.6 | 1.4 | 0.9 | 1 | 1.2 | 1.3 | 2.1 | 2.5 | 3.5 | 2.8 | 3.2 | -0.4 | -3.3 | -2.5 | -3.2 | -4.8 | -6.3 | -7.5 | -8 | -8.1 | 3.5 | -0.8 | 24 |
| 16 | -8.2 | -9.4 | -10.1 | -10.6 | -10.8 | -10.9 | -10.9 | -10.8 | -10.8 | -10.5 | -10.5 | -10.3 | -10.3 | -10.3 | -10 | -10.4 | -11 | -11.4 | -11.6 | -11.7 | -12.1 | -12.7 | -13.2 | -13.4 | -8.2 | -10.9 | 24 |
| 17 | -13.4 | -13.5 | -13.7 | -13.9 | -13.8 | -13.9 | -14.1 | -14.4 | -14.6 | -14 | -13.4 | -12.1 | -11.6 | -11.5 | -12.3 | -12.6 | -13.6 | -15.2 | -14.4 | -14.2 | -14.5 | -15.5 | -15.5 | -15.2 | -11.5 | -13.8 | 24 |
| 18 | -14.7 | -14.6 | -14.5 | -14.4 | -14.4 | -14.3 | -14.6 | -14.6 | -14.5 | -14.1 | -12.5 | -11.4 | -11.2 | -11 | -10.9 | -11.4 | -12.1 | -12.8 | -13.4 | -13.9 | -14 | -13.8 | -14 | -14.1 | -10.9 | -13.4 | 24 |
| 19 | -14.3 | -14.4 | -14.5 | -14.5 | -14.6 | -14.8 | -14.8 | -14.9 | -14.9 | -14.7 | -14.3 | -14.5 | -14.4 | -14.1 | -14.5 | -15.6 | -17.1 | -17.5 | -17.3 | -17.5 | -19.1 | -20.4 | -21.2 | -22.1 | -14.1 | -16.1 | 24 |
| 20 | -22.6 | -23.4 | -24.1 | -23.8 | -24.6 | -24.6 | -25.2 | -26.7 | -26 | -22.3 | -19 | -17 | -16.7 | -17.2 | -18.1 | -20 | -22 | -22.3 | -22.2 | -21.2 | -21.6 | -21.9 | -21.3 | -20.8 | -16.7 | -21.9 | 24 |
| 21 | -20.4 | -20.5 | -20.6 | -22.7 | -24.5 | -26 | -25.8 | -26 | -25.9 | -22.2 | -18.9 | -17.2 | -15.6 | -14.4 | -16.1 | -19.2 | -20.6 | -21.8 | -22.7 | -24 | -24.9 | -26.6 | -26.7 | -28.1 | -14.4 | -22.1 | 24 |
| 22 | -29.2 | **-29.6** | -28.9 | -26.8 | -26.3 | -25.6 | -25 | -24.9 | -24.4 | -22.8 | -20.8 | -19.6 | -18.1 | -17.3 | -17.6 | -20.4 | -22 | -20.2 | -19.6 | -19 | -18.8 | -18.6 | -18.3 | -18 | -17.3 | -22.2 | 24 |
| 23 | -17.7 | -17.1 | -16.7 | -17 | -17 | -16.2 | -15.8 | -15.5 | -15 | -13.9 | -12.3 | -10.7 | -9.2 | -8.7 | -8.6 | -8.9 | -9 | -9 | -8.2 | -7.6 | -7.1 | -6.7 | -6.1 | -5.6 | -5.6 | -11.7 | 24 |
| 24 | -4.5 | -4.3 | -3.5 | -2.5 | -1.7 | -2.2 | -1.8 | -0.7 | -0.3 | 1.2 | 2.5 | 2.7 | 2.8 | 2.9 | 2.7 | 0.9 | -0.2 | -0.7 | -0.8 | -0.9 | -1.3 | -2.1 | -2 | -2.2 | 2.9 | -0.7 | 24 |
| 25 | -2.3 | -2.5 | -3.1 | -3.7 | -4.5 | -6.2 | -7.8 | -8.8 | -9.3 | -7.6 | -6.2 | -4.6 | -3.5 | -2.7 | -2.8 | -6.8 | -9.7 | -11.5 | -13.8 | -15.1 | -15 | -16.3 | -18 | -19.7 | -2.3 | -8.4 | 24 |
| 26 | -20.1 | -20.4 | -21 | -20.7 | -19.3 | -17.2 | -14.9 | -10.5 | -9.2 | -8.7 | -7.3 | -5.5 | -5.9 | -6 | -5.8 | -6.8 | -8.5 | -10.5 | -11.1 | -10.9 | -10.2 | -10.2 | -10 | -10.4 | -5.5 | -11.7 | 24 |
| 27 | -10.8 | -10.5 | -9 | -8.6 | -7.6 | -6.7 | -6.5 | -6.5 | -6.5 | -6.3 | -6.2 | -6.1 | -6.1 | -6.2 | -6.5 | -6.9 | -7.2 | -7.4 | -7.7 | -7.8 | -8 | -8.3 | -8.7 | -8.5 | -6.1 | -7.5 | 24 |
| 28 | -8.5 | -8.5 | -8.4 | -8.3 | -8.3 | -8.3 | -8.4 | -8.4 | -8.4 | -8 | -7.7 | -7.2 | -6.6 | -6.1 | -6.3 | -6.3 | -6.5 | -6.5 | -6.6 | -6.8 | -6.8 | -6.7 | -6.4 | -6.2 | -6.1 | -7.3 | 24 |
| 29 | -5.8 | -6 | -7.1 | -7.9 | -8.8 | -9.5 | -10.2 | -11 | -11.3 | -9.4 | -6 | -3.2 | -1.9 | 0 | 0.4 | -2.2 | -3.9 | -4.5 | -5.5 | -6.1 | -6.3 | -7.4 | -8.6 | -9.8 | 0.4 | -6.3 | 24 |
| 30 | -10.8 | -11.8 | -13.9 | -15.2 | -15.8 | -15.5 | -12.4 | -12.3 | -11.6 | -10.2 | -7.3 | -3 | -1.3 | -0.2 | -1.1 | -3.5 | -3.5 | -3 | -3.1 | -3 | -3.2 | -3.5 | -4 | -4.3 | -0.2 | -7.2 | 24 |
| HOURLY MAX | 0.4 | 0.5 | 0.8 | 1.6 | 1.6 | 1.4 | 0.9 | 1.0 | 2.0 | 3.7 | 6.4 | 7.9 | 8.3 | 8.8 | 8.4 | 7.4 | 5.5 | 3.1 | 2.3 | 1.7 | 0.7 | 0.3 | 0.5 | -0.1 | | | |
| HOURLY AVG | -10.7 | -10.9 | -11.1 | -11.3 | -11.6 | -11.6 | -11.6 | -11.5 | -11.0 | -9.1 | -7.5 | -6.1 | -5.5 | -5.0 | -5.3 | -6.6 | -7.8 | -8.5 | -8.8 | -8.9 | -9.3 | -9.8 | -10.2 | -10.6 | | | |

**STATUS FLAG CODES**

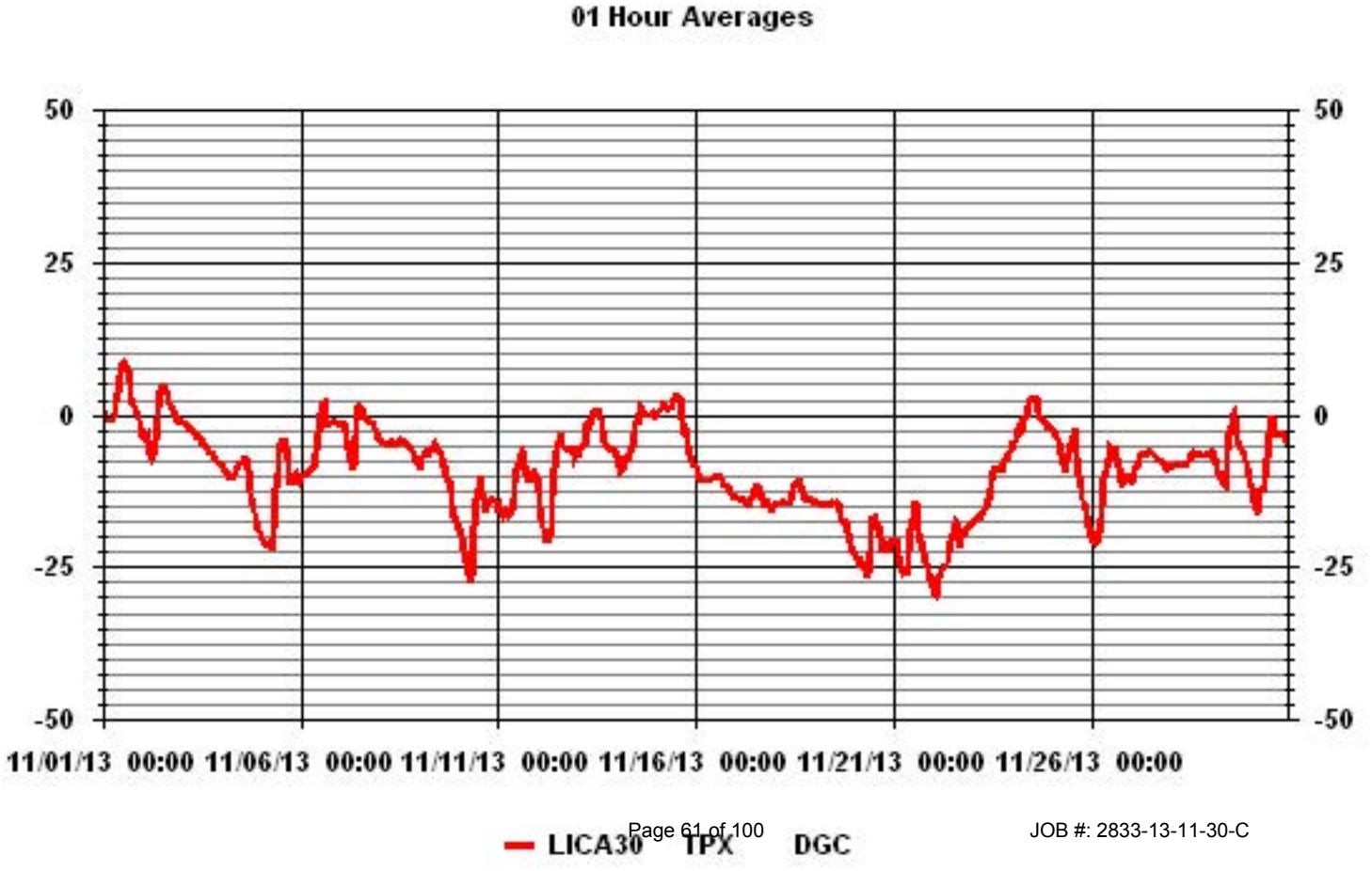
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MINIMUM 1-HR AVERAGE: | -29.6 | $^{O}C$ | @ HOUR(S) | 1 | ON DAY(S) | 22 |
| MAXIMUM 1-HR AVERAGE: | 8.8 | $^{O}C$ | @ HOUR(S) | 13 | ON DAY(S) | 1 |
| MAXIMUM 24-HR AVERAGE: | 2.6 | $^{O}C$ | | | ON DAY(S) | 1 |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 720 | HRS |
| | | | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 7.41 | | MONTHLY AVERAGE: | -9.17 | $^{O}C$ |






JOB #: 2833-13-11-30-C

# Precipitation

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

NOVEMBER 2013

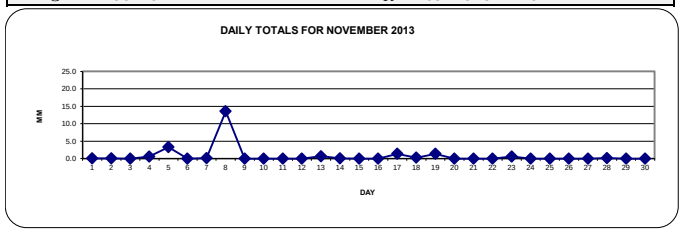
**PRECIPITATION hourly averages (mm)**

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | DAILY | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | TOTAL | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.6 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3.3** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3.3** | 3.3 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.2 | 0.2 | 24 |
| 8 | 0.8 | 0.9 | 1.6 | 1.2 | 0.8 | 0.6 | 0.7 | 0.8 | 0.9 | 0.8 | 0.5 | 0.4 | 0.5 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 1.3 | 0.2 | 0 | 0 | 0 | 1.6 | **13.6** | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.2 | 0.3 | 0.1 | 0.3 | 0.7 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.3 | 0.3 | 0.3 | 1.4 | 24 |
| 18 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 0.3 | 24 |
| 19 | 0.2 | 0 | 0 | 0 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 1.4 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.6 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0.2 | 0.2 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| HOURLY MAX | 0.8 | 0.9 | 1.6 | 1.2 | 0.8 | 0.6 | 0.7 | 0.8 | 0.9 | 0.8 | 3.3 | 0.4 | 0.5 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 1.3 | 0.2 | 0.2 | 0.3 | 0.3 | | | |

**STATUS FLAG CODES**

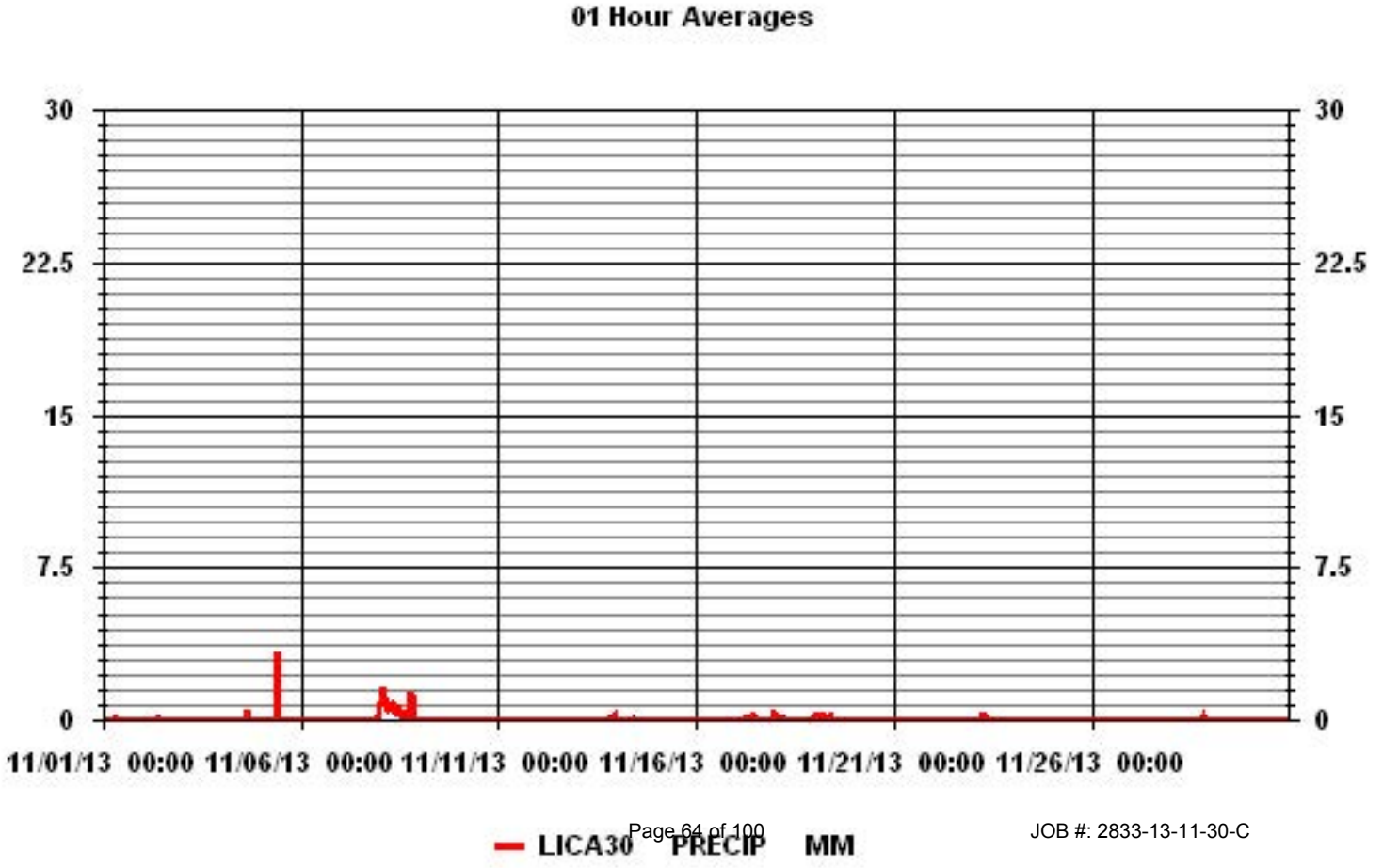
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 3.3 | MM | HOUR(S) | 10 | ON DAY(S) | 5 |
| MAXIMUM DAILY TOTAL | 13.6 | MM | | | ON DAY(S) | 8 |
| MONTHLY TOTAL | 22.6 | MM | | | | |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 720 | HRS |
| | | | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 0.18 | | MONTHLY AVERAGE: | 0.03 | MM |






JOB #: 2833-13-11-30-C

# Relative Humidity

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

NOVEMBER 2013

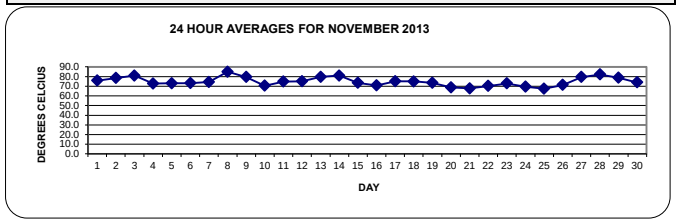
**RELATIVE HUMIDITY** hourly averages (%)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 89 | 89 | 90 | 90 | 90 | 90 | 90 | 88 | 83 | 77 | 66 | 59 | 56 | 54 | 54 | 56 | 63 | 72 | 74 | 75 | 76 | 76 | 79 | 84 | **90** | 75.8 | 24 |
| 2 | 87 | 89 | 89 | 88 | 87 | 88 | 87 | 87 | 85 | 81 | 75 | 65 | 62 | 59 | 60 | 59 | 63 | 70 | 75 | 79 | 84 | 88 | 89 | 89 | 89 | 78.5 | 24 |
| 3 | 89 | 89 | 89 | 88 | 87 | 87 | 86 | 84 | 82 | 81 | 80 | 79 | 78 | 78 | 79 | 78 | 79 | 78 | 78 | 76 | 75 | 74 | 75 | 74 | 89 | 81.0 | 24 |
| 4 | 74 | 75 | 76 | 76 | 73 | 74 | 73 | 73 | 71 | 70 | 69 | 67 | 67 | 65 | 62 | 62 | 67 | 78 | 81 | 81 | 80 | 78 | 77 | 76 | 81 | 72.7 | 24 |
| 5 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 74 | 76 | 74 | 70 | 66 | 60 | 58 | 62 | 70 | 79 | 80 | 77 | 80 | 80 | 81 | 81 | 81 | 73.0 | 24 |
| 6 | 80 | 79 | 79 | 80 | 80 | 80 | 80 | 79 | 78 | 71 | 71 | 65 | 59 | 60 | 61 | 67 | 70 | 74 | 74 | 74 | 73 | 73 | 74 | 75 | 80 | 73.2 | 24 |
| 7 | 76 | 76 | 77 | 79 | 83 | 86 | 87 | 85 | 84 | 79 | 69 | 61 | 60 | 61 | 66 | 67 | 67 | 70 | 71 | 75 | 73 | 72 | 76 | 84 | 87 | 74.3 | 24 |
| 8 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 84 | 83 | 83 | 83 | 82 | 84 | 84 | 84 | 84 | 85 | 86 | 86 | 86 | 86 | **85.0** | 24 |
| 9 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 86 | 86 | 85 | 79 | 75 | 77 | 76 | 71 | 72 | 72 | 72 | 73 | 74 | 78 | 80 | 79 | 77 | 86 | 79.5 | 24 |
| 10 | 77 | 77 | 76 | 74 | 72 | 71 | 70 | 68 | 69 | 70 | 70 | 66 | 61 | 56 | 65 | 69 | 74 | 72 | 72 | 72 | 71 | 72 | 73 | 75 | 77 | 70.5 | 24 |
| 11 | 75 | 77 | 78 | 80 | 78 | 78 | 77 | 77 | 77 | 75 | 71 | 68 | 66 | 64 | 63 | 67 | 72 | 75 | 80 | 78 | 78 | 80 | 80 | 81 | 81 | 74.8 | 24 |
| 12 | 82 | 80 | 78 | 77 | 75 | 74 | 74 | 74 | 74 | 75 | 74 | 72 | 68 | 65 | 66 | 73 | 75 | 77 | 76 | 77 | 78 | 79 | 81 | 80 | 82 | 75.2 | 24 |
| 13 | 82 | 80 | 81 | 83 | 87 | 88 | 87 | 88 | 87 | 81 | 78 | 75 | 73 | 65 | 65 | 71 | 76 | 77 | 77 | 78 | 81 | 84 | 84 | 84 | 88 | 79.7 | 24 |
| 14 | 85 | 86 | 85 | 85 | 84 | 85 | 85 | 85 | 85 | 85 | 81 | 76 | 76 | 76 | 76 | 79 | 81 | 82 | 81 | 80 | 79 | 77 | 74 | 74 | 86 | 80.9 | 24 |
| 15 | 74 | 81 | 81 | 78 | 79 | 81 | 81 | 81 | 79 | 76 | 74 | 66 | 59 | 64 | 56 | 66 | 79 | 72 | 70 | 74 | 73 | 73 | 74 | 73 | 81 | 73.5 | 24 |
| 16 | 73 | 72 | 73 | 72 | 72 | 72 | 72 | 72 | 71 | 70 | 70 | 69 | 67 | 66 | 65 | 67 | 69 | 70 | 72 | 73 | 72 | 74 | 74 | 74 | 74 | 70.9 | 24 |
| 17 | 76 | 76 | 76 | 76 | 76 | 73 | 75 | 74 | 74 | 75 | 75 | 73 | 72 | 73 | 72 | 73 | 76 | 78 | 78 | 77 | 76 | 77 | 77 | 77 | 78 | 75.2 | 24 |
| 18 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 76 | 75 | 72 | 71 | 71 | 72 | 72 | 73 | 74 | 74 | 74 | 74 | 75 | 76 | 76 | 77 | 77 | 74.9 | 24 |
| 19 | 77 | 77 | 76 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 73 | 71 | 70 | 71 | 72 | 72 | 73 | 73 | 72 | 71 | 71 | 71 | 72 | 77 | 73.5 | 24 |
| 20 | 72 | 71 | 71 | 71 | 70 | 70 | 70 | 68 | 69 | 68 | 66 | 63 | 61 | 61 | 61 | 68 | 72 | 73 | 72 | 71 | 71 | 70 | 70 | 70 | 73 | 68.7 | 24 |
| 21 | 69 | 70 | 70 | 71 | 70 | 69 | 69 | 69 | 70 | 68 | 63 | 59 | 56 | 55 | 61 | 71 | 73 | 73 | 73 | 71 | 71 | 69 | 69 | 67 | 73 | 67.8 | 24 |
| 22 | 67 | 66 | 66 | 67 | 68 | 69 | 68 | 68 | 68 | 69 | 71 | 72 | 72 | 72 | 71 | 72 | 71 | 72 | 72 | 73 | 73 | 72 | 73 | 73 | 73 | 70.2 | 24 |
| 23 | 74 | 74 | 74 | 74 | 75 | 75 | 75 | 75 | 75 | 74 | 73 | 71 | 67 | 67 | 68 | 70 | 72 | 73 | 73 | 73 | 73 | 74 | 74 | 75 | 75 | 72.8 | 24 |
| 24 | 76 | 80 | 86 | 86 | 85 | 84 | 83 | 81 | 79 | 73 | 65 | 59 | 56 | 55 | 55 | 60 | 62 | 62 | 62 | 61 | 62 | 64 | 65 | 66 | 86 | 69.5 | 24 |
| 25 | 67 | 68 | 69 | 69 | 70 | 72 | 75 | 78 | 78 | 71 | 64 | 56 | 50 | 45 | 41 | 51 | 59 | 68 | 76 | 79 | 80 | 80 | 77 | 75 | 80 | 67.4 | 24 |
| 26 | 74 | 73 | 73 | 72 | 73 | 75 | 77 | 71 | 60 | 59 | 57 | 55 | 58 | 61 | 62 | 67 | 72 | 78 | 80 | 82 | 81 | 83 | 83 | 84 | 84 | 71.3 | 24 |
| 27 | 85 | 84 | 85 | 84 | 83 | 82 | 81 | 80 | 80 | 77 | 76 | 75 | 74 | 74 | 75 | 77 | 77 | 78 | 79 | 80 | 80 | 80 | 81 | 81 | 85 | 79.5 | 24 |
| 28 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 83 | 84 | 83 | 82 | 82 | 81 | 80 | 80 | 81 | 81 | 82 | 81 | 82 | 82 | 83 | 83 | 83 | 84 | 82.1 | 24 |
| 29 | 84 | 83 | 85 | 85 | 84 | 83 | 83 | 83 | 82 | 80 | 75 | 69 | 69 | 64 | 62 | 70 | 75 | 76 | 80 | 81 | 82 | 85 | 86 | 86 | 86 | 78.8 | 24 |
| 30 | 84 | 82 | 80 | 78 | 78 | 78 | 80 | 80 | 80 | 81 | 80 | 72 | 64 | 59 | 61 | 69 | 70 | 68 | 68 | 68 | 70 | 71 | 75 | 78 | 84 | 73.9 | 24 |
| HOURLY MAX | 89 | 89 | 90 | 90 | 90 | 90 | 90 | 88 | 87 | 86 | 85 | 84 | 83 | 83 | 83 | 82 | 84 | 84 | 84 | 84 | 85 | 88 | 89 | 89 | | | |
| HOURLY AVG | 78.4 | 78.6 | 78.9 | 78.8 | 78.6 | 78.8 | 78.8 | 78.2 | 77.4 | 75.5 | 72.6 | 68.9 | 66.7 | 65.3 | 65.4 | 69.0 | 72.2 | 74.3 | 75.3 | 75.7 | 76.1 | 76.7 | 77.2 | 77.7 | | | |

**STATUS FLAG CODES**

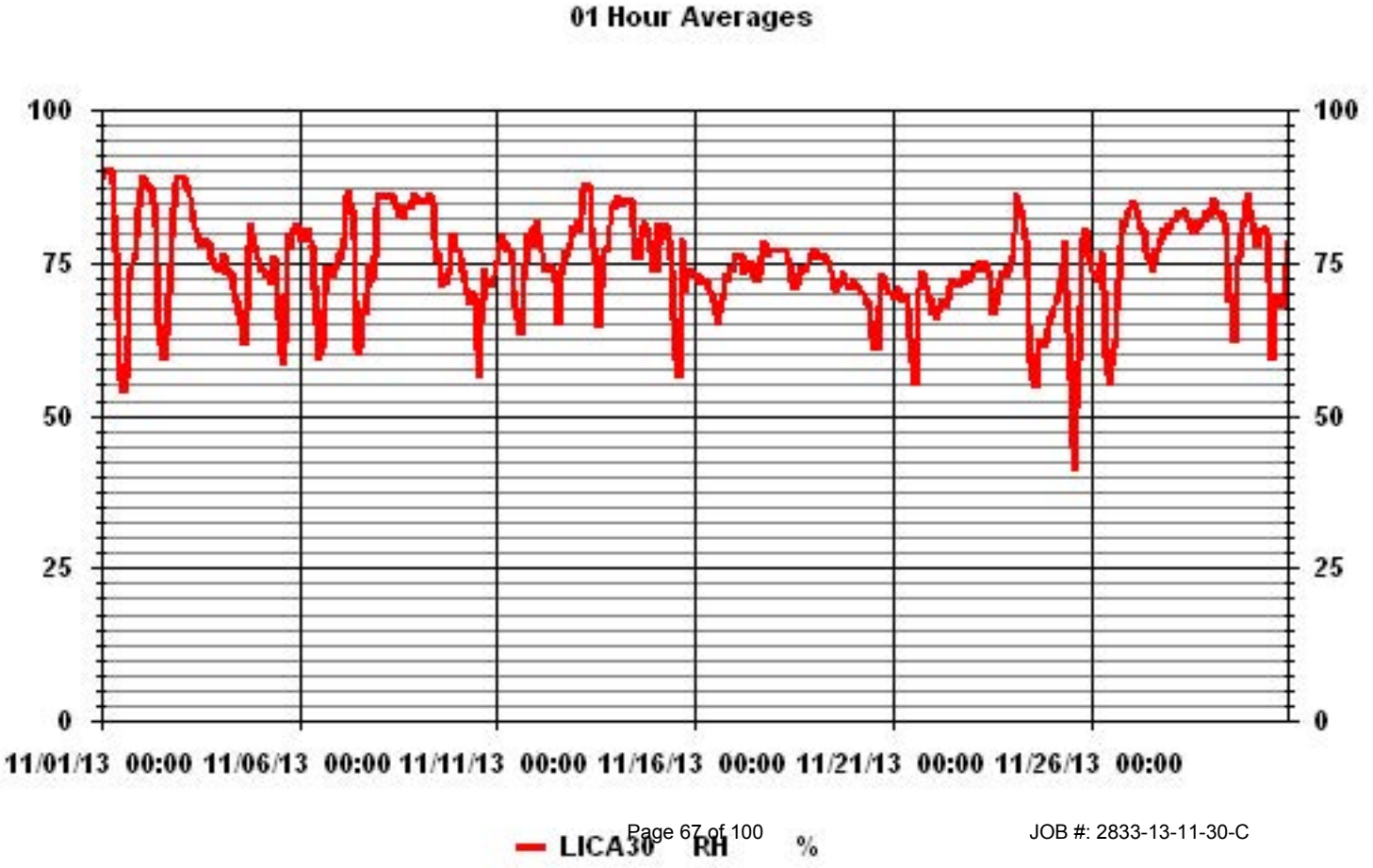
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 90 | % | @ HOUR(S) | VAR | ON DAY(S) | 1 |
| MAXIMUM 24-HR AVERAGE: | 85.0 | % | | | ON DAY(S) | 8 |
| | | | | VAR-VARIOUS | | |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 720 | HRS |
| | | | AMD OPERATION UPTIME: | 100.0 | % |
| STANDARD DEVIATION: | 7.69 | | MONTHLY AVERAGE: | 74.80 | % |






JOB #: 2833-13-11-30-C

# Barometric Pressure

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

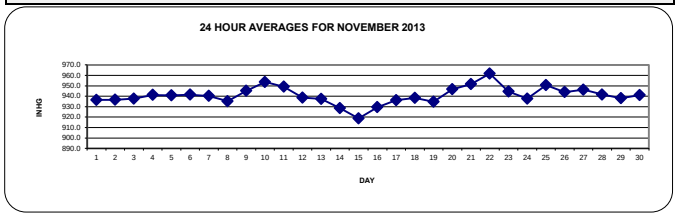
**BAROMETRIC PRESSURE** hourly averages (millibar)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 933 | 934 | 934 | 934 | 934 | 935 | 935 | 936 | 936 | 937 | 937 | 938 | 938 | 938 | 938 | 938 | 938 | 938 | 937 | 937 | 937 | 938 | 938 | 938 | 938 | 936.5 | 24 |
| 2 | 938 | 938 | 938 | 938 | 938 | 937 | 937 | 937 | 937 | 938 | 937 | 937 | 937 | 937 | 936 | 936 | 935 | 935 | 935 | 936 | 935 | 936 | 935 | 935 | 938 | 936.6 | 24 |
| 3 | 935 | 936 | 935 | 935 | 936 | 936 | 936 | 936 | 937 | 937 | 937 | 938 | 938 | 938 | 939 | 939 | 939 | 939 | 939 | 939 | 940 | 940 | 940 | 940 | 940 | 937.7 | 24 |
| 4 | 940 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 942 | 941.3 | 24 |
| 5 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 942 | 942 | 941 | 941 | 941 | 940 | 940 | 940 | 940 | 940 | 940 | 940 | 940 | 942 | 940.8 | 24 |
| 6 | 940 | 940 | 939 | 939 | 940 | 940 | 940 | 940 | 940 | 941 | 941 | 941 | 942 | 942 | 942 | 942 | 943 | 943 | 943 | 944 | 944 | 944 | 944 | 944 | 944 | 941.6 | 24 |
| 7 | 944 | 944 | 944 | 944 | 944 | 944 | 944 | 944 | 944 | 944 | 944 | 943 | 942 | 941 | 940 | 939 | 938 | 937 | 936 | 935 | 935 | 934 | 933 | 932 | 944 | 940.4 | 24 |
| 8 | 932 | 932 | 932 | 932 | 931 | 932 | 931 | 932 | 933 | 933 | 934 | 934 | 935 | 935 | 936 | 937 | 938 | 938 | 939 | 939 | 939 | 940 | 941 | 941 | 941 | 935.3 | 24 |
| 9 | 940 | 941 | 941 | 941 | 942 | 942 | 942 | 942 | 943 | 943 | 944 | 944 | 945 | 945 | 946 | 947 | 947 | 948 | 949 | 950 | 950 | 951 | 951 | 952 | 952 | 945.3 | 24 |
| 10 | 952 | 952 | 953 | 953 | 954 | 955 | 955 | 955 | 956 | 955 | 955 | 955 | 955 | 954 | 954 | 954 | 953 | 953 | 953 | 953 | 953 | 952 | 952 | 952 | 956 | 953.7 | 24 |
| 11 | 951 | 951 | 951 | 951 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 949 | 949 | 947 | 948 | 948 | 947 | 946 | 947 | 947 | 951 | 949.3 | 24 |
| 12 | 947 | 946 | 945 | 945 | 944 | 943 | 942 | 942 | 941 | 940 | 939 | 939 | 937 | 936 | 936 | 935 | 934 | 934 | 933 | 934 | 934 | 934 | 935 | 935 | 947 | 938.8 | 24 |
| 13 | 936 | 936 | 936 | 936 | 936 | 936 | 936 | 937 | 937 | 937 | 938 | 938 | 938 | 938 | 938 | 939 | 938 | 939 | 939 | 938 | 938 | 938 | 938 | 937 | 939 | 937.4 | 24 |
| 14 | 937 | 936 | 936 | 935 | 935 | 934 | 933 | 933 | 932 | 931 | 930 | 930 | 929 | 928 | 927 | 925 | 925 | 924 | 923 | 922 | 921 | 921 | 919 | 918 | 937 | 928.5 | 24 |
| 15 | 917 | 917 | 916 | 916 | 916 | 917 | 916 | 917 | 918 | 918 | 918 | 919 | 919 | 919 | 919 | 919 | 919 | 920 | 921 | 921 | 922 | 922 | 923 | 923 | 923 | 918.8 | 24 |
| 16 | 924 | 924 | 925 | 926 | 926 | 927 | 926 | 928 | 928 | 929 | 929 | 929 | 930 | 930 | 930 | 931 | 931 | 932 | 933 | 933 | 933 | 934 | 934 | 935 | 935 | 929.5 | 24 |
| 17 | 935 | 935 | 934 | 935 | 935 | 935 | 935 | 936 | 936 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 936 | 937 | 937 | 936.3 | 24 |
| 18 | 937 | 937 | 937 | 937 | 938 | 938 | 939 | 939 | 939 | 939 | 940 | 939 | 939 | 939 | 939 | 939 | 939 | 939 | 939 | 939 | 939 | 938 | 938 | 937 | 940 | 938.5 | 24 |
| 19 | 937 | 936 | 935 | 933 | 934 | 933 | 933 | 933 | 933 | 932 | 933 | 933 | 932 | 933 | 933 | 933 | 934 | 935 | 936 | 936 | 937 | 939 | 940 | 940 | 940 | 934.7 | 24 |
| 20 | 940 | 942 | 943 | 944 | 944 | 945 | 946 | 947 | 947 | 948 | 948 | 948 | 948 | 948 | 948 | 948 | 948 | 949 | 949 | 949 | 948 | 948 | 948 | 947 | 947 | 946.6 | 24 |
| 21 | 947 | 947 | 947 | 947 | 948 | 948 | 949 | 950 | 950 | 950 | 951 | 951 | 951 | 951 | 952 | 952 | 953 | 954 | 955 | 954 | 956 | 957 | 958 | 959 | 959 | 951.5 | 24 |
| 22 | 960 | 961 | 961 | 961 | 962 | 962 | 963 | 963 | 964 | 964 | 964 | 964 | 964 | 963 | 963 | 962 | 962 | 962 | 961 | 960 | 960 | 959 | 958 | 958 | **964** | **961.7** | 24 |
| 23 | 957 | 956 | 955 | 954 | 953 | 952 | 951 | 949 | 948 | 947 | 947 | 945 | 944 | 943 | 942 | 940 | 939 | 938 | 936 | 936 | 936 | 935 | 934 | 934 | 957 | 944.6 | 24 |
| 24 | 934 | 934 | 934 | 934 | 933 | 933 | 934 | 934 | 935 | 935 | 936 | 937 | 937 | 938 | 938 | 939 | 940 | 941 | 942 | 942 | 943 | 944 | 944 | 945 | 945 | 937.8 | 24 |
| 25 | 945 | 946 | 947 | 947 | 948 | 948 | 949 | 950 | 951 | 951 | 952 | 952 | 952 | 953 | 953 | 953 | 953 | 952 | 952 | 952 | 953 | 953 | 953 | 953 | 953 | 950.8 | 24 |
| 26 | 953 | 952 | 952 | 951 | 950 | 949 | 948 | 947 | 946 | 945 | 944 | 943 | 942 | 941 | 939 | 940 | 939 | 938 | 939 | 938 | 939 | 939 | 940 | 940 | 953 | 943.9 | 24 |
| 27 | 941 | 941 | 942 | 943 | 943 | 944 | 944 | 945 | 946 | 946 | 946 | 947 | 948 | 948 | 948 | 948 | 948 | 948 | 949 | 949 | 949 | 949 | 949 | 948 | 949 | 946.2 | 24 |
| 28 | 948 | 948 | 947 | 947 | 946 | 945 | 945 | 944 | 944 | 943 | 943 | 942 | 941 | 940 | 939 | 938 | 938 | 938 | 937 | 937 | 937 | 938 | 938 | 937 | 948 | 941.7 | 24 |
| 29 | 937 | 937 | 937 | 937 | 937 | 936 | 936 | 936 | 937 | 937 | 937 | 938 | 937 | 938 | 938 | 938 | 938 | 939 | 940 | 940 | 940 | 941 | 941 | 941 | 941 | 938.0 | 24 |
| 30 | 941 | 941 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 942 | 941 | 941 | 941 | 940 | 940 | 940 | 939 | 939 | 939 | 942 | 941.2 | 24 |
| HOURLY MAX | 960 | 961 | 961 | 961 | 962 | 962 | 963 | 963 | 964 | 964 | 964 | 964 | 964 | 963 | 963 | 962 | 962 | 962 | 961 | 960 | 960 | 959 | 958 | 959 | | | |
| HOURLY AVG | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | 941 | | | |

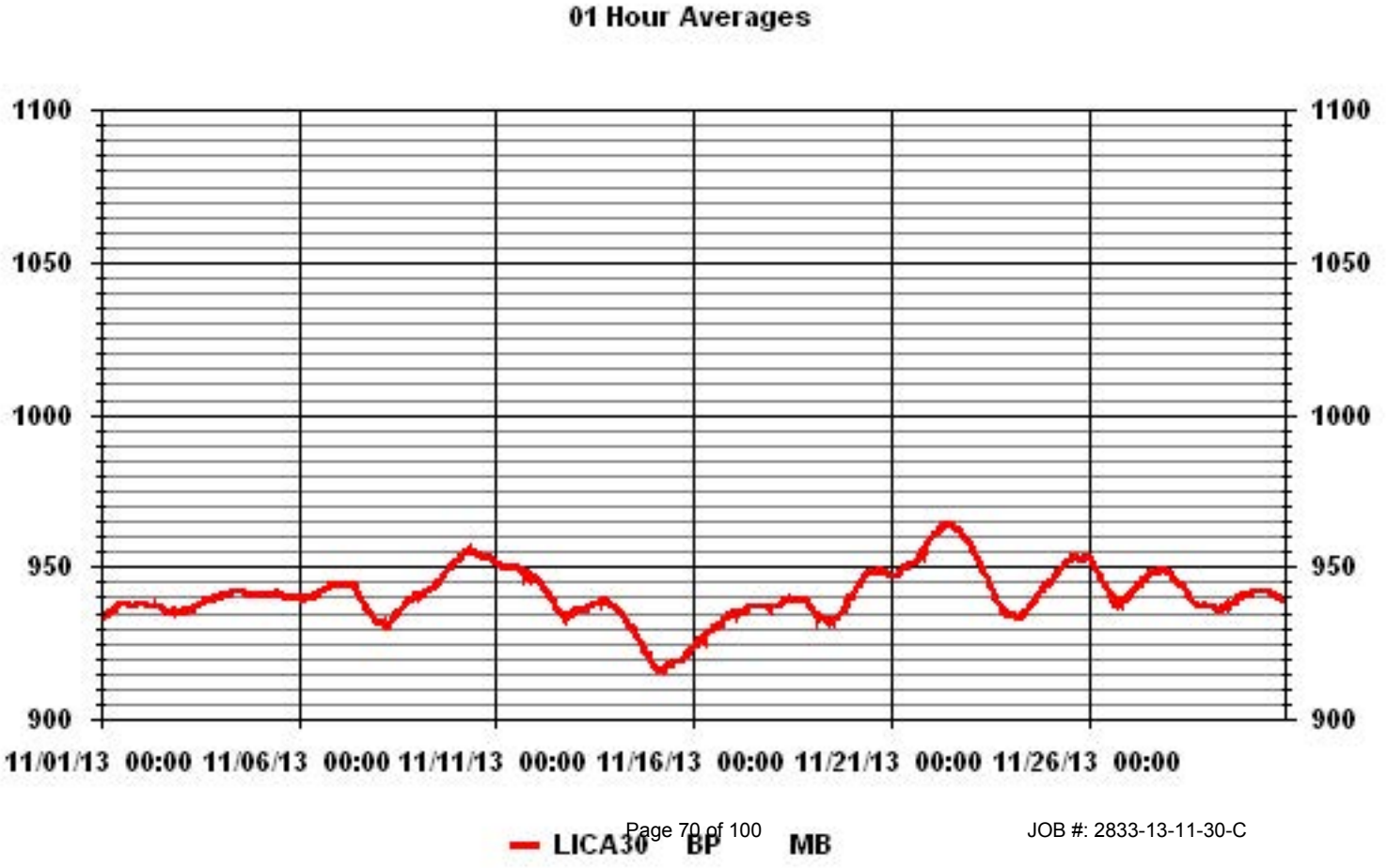
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 964 | MB | @ HOUR(S) | VAR | ON DAY(S) | 22 |
| MAXIMUM 24-HR AVERAGE: | 961.7 | MB | | | ON DAY(S) | 22 |
| | | | | VAR-VARIOUS | | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| | | | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 8.59 | | MONTHLY AVERAGE: | | 941 | MB |






JOB #: 2833-13-11-30-C

# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

NOVEMBER 2013

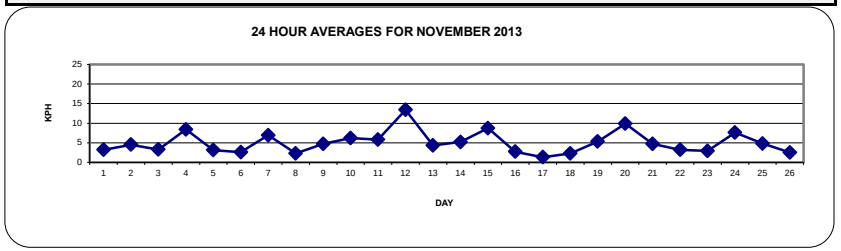
**WIND SPEED** hourly averages (km/hr)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 4 | 3.5 | 3.4 | 3.4 | 4 | 3.9 | 4.4 | 3.3 | 5.1 | 4.6 | 6.7 | 7.5 | 7.6 | 7.3 | 7.7 | 9 | 6.4 | 4 | 5.7 | 5.2 | 5.5 | 5.4 | 4.4 | 3.5 | 9 | 4.9 | 24 |
| 2 | 3.1 | 4.5 | 4.9 | 5.9 | 4.2 | 0.7 | 3.4 | 1.5 | 2.6 | 2 | 7.1 | 5.2 | 5.3 | 5.1 | 6 | 7.3 | 6.3 | 7.3 | 9.3 | 11.1 | 11 | 11 | 11.2 | 11.9 | 11.9 | 3.7 | 24 |
| 3 | 12.7 | 13.3 | 14.4 | 14.9 | 14.8 | 14.9 | 15.7 | 15.8 | 15.5 | 14.9 | 12.7 | 11.8 | 11 | 9.8 | 10.7 | 9 | 12.1 | 12.5 | 10.6 | 11.1 | 11.1 | 11 | 10.4 | 10.3 | 15.8 | 12.3 | 24 |
| 4 | 8.6 | 8.5 | 7.7 | 7.8 | 9.6 | 8.6 | 9.7 | 8.8 | 8.9 | 9.1 | 9.5 | 9.5 | 8.3 | 7.4 | 7.5 | 5.9 | 5.2 | 2.7 | 0.1 | 2.6 | 1.7 | 1.4 | 2.1 | 2.6 | 9.7 | 5.5 | 24 |
| 5 | 2.5 | 0.6 | 0.9 | 1.5 | 0.8 | 1.2 | 2 | 1.5 | 1.5 | 2.4 | 4.7 | 4.8 | 6.2 | 6.9 | 7.6 | 7.5 | 5.2 | 4.8 | 4.7 | 6.2 | 5.1 | 5.7 | 4.7 | 4.7 | 7.6 | 3.2 | 24 |
| 6 | 5.9 | 5 | 5.3 | 4.9 | 6 | 5 | 5.5 | 5.8 | 5.5 | 6.1 | 5 | 5.6 | 5.4 | 7.5 | 8 | 5.1 | 4.7 | 4.7 | 5.1 | 4.2 | 4.6 | 4.2 | 4.5 | 5.6 | 8 | 4.5 | 24 |
| 7 | 4.5 | 5.2 | 3.9 | 5.3 | 5.1 | 3.2 | 1.8 | 1.9 | 0.7 | 2.5 | 6.5 | 4.9 | 5.7 | 5.8 | 6.4 | 5.8 | 5.4 | 6.7 | 7.4 | 9.1 | 9.5 | 9.9 | 10.2 | 10.6 | 10.6 | 3.3 | 24 |
| 8 | 10.5 | 11.2 | 11.4 | 12 | 11.2 | 11.9 | 12 | 10.7 | 11.5 | 12.8 | 12.5 | 11.6 | 13.3 | 13.4 | 11.5 | 10 | 7.4 | 6.3 | 5.1 | 3.2 | 1.6 | 0.6 | 1.7 | 3.2 | 13.4 | 8.4 | 24 |
| 9 | 3.1 | 4.6 | 4.6 | 5.5 | 6.6 | 6.1 | 6.9 | 6.3 | 5.4 | 5.7 | 8.9 | 6.3 | 8.7 | 7.5 | 8.6 | 8.8 | 8.1 | 6.5 | 5.9 | 6.1 | 3.8 | 2.7 | 4.1 | 3.1 | 8.9 | 3.1 | 24 |
| 10 | 4.3 | 4.6 | 2.7 | 1 | 2.3 | 1.8 | 2.5 | 0.4 | 0.5 | 0.7 | 2.4 | 4.5 | 4.7 | 2.2 | 6.1 | 6 | 3.4 | 3.7 | 5.8 | 7.1 | 7.8 | 7.2 | 7.2 | 6.4 | 7.8 | 2.6 | 24 |
| 11 | 6.6 | 6.2 | 5.4 | 5.9 | 6.7 | 6.8 | 5.3 | 6.7 | 6.5 | 8.1 | 7.6 | 9.2 | 9.8 | 9.2 | 8.9 | 8.1 | 6.4 | 5.4 | 4.1 | 7.3 | 7.3 | 6.3 | 8.6 | 5.6 | 9.8 | 6.9 | 24 |
| 12 | 1.5 | 0.9 | 1.6 | 2.1 | 0.8 | 0.4 | 2.3 | 1.8 | 2.5 | 2.1 | 2.3 | 5.4 | 3.8 | 5.2 | 4.5 | 3.5 | 4.8 | 4.5 | 4.8 | 5.2 | 5.1 | 6.9 | 5.3 | 7.7 | 7.7 | 2.3 | 24 |
| 13 | 7.1 | 7.8 | 7.7 | 7.7 | 5.2 | 9.4 | 9.5 | 8.4 | 9.5 | 8.5 | 9 | 8.6 | 7.8 | 7.6 | 8.4 | 6.9 | 5.2 | 5.4 | 4.8 | 3.7 | 4.5 | 5 | 2.8 | 2 | 9.5 | 4.7 | 24 |
| 14 | 3.3 | 2.3 | 3.1 | 4.9 | 4 | 5.8 | 6.7 | 5.8 | 6.8 | 7.3 | 6.9 | 5.4 | 7.5 | 8 | 8.1 | 8.2 | 7.1 | 6.4 | 7.5 | 7.7 | 5.3 | 6.8 | 8.8 | 7.9 | 8.8 | 6.2 | 24 |
| 15 | 6.6 | 5.7 | 5.9 | 9.2 | 9.8 | 9.3 | 8.8 | 8.6 | 9 | 9.6 | 8.2 | 8.8 | 7.7 | 6 | 6.4 | 4.9 | 5.5 | 9.9 | 11.2 | 13.3 | 16.2 | 14.2 | 16.4 | 15.2 | 16.4 | 5.8 | 24 |
| 16 | 15.2 | 16.3 | 13.6 | 15.1 | 13.2 | 16.4 | 16.6 | 15.9 | 16.1 | **16.8** | 16 | 15 | 14.3 | 13.9 | 11.1 | 13.3 | 14.2 | 13.8 | 10 | 7.8 | 10 | 9.6 | 10.8 | 9.8 | **16.8** | **13.4** | 24 |
| 17 | 8 | 8.3 | 7.7 | 8.2 | 7.4 | 7.8 | 7.5 | 9.2 | 9.2 | 8.5 | 7.7 | 6.3 | 5.7 | 4.1 | 6.1 | 4 | 2.6 | 3 | 1 | 2.4 | 3.6 | 1.6 | 3.1 | 2.3 | 9.2 | 4.3 | 24 |
| 18 | 4.2 | 0.5 | 2.7 | 4.3 | 3.4 | 0.6 | 2.1 | 1.8 | 3.7 | 6 | 5 | 5.9 | 4.9 | 5 | 6.3 | 5.8 | 8.5 | 7.2 | 7.7 | 7.2 | 8.3 | 8.4 | 8.4 | 8.5 | 8.5 | 5.2 | 24 |
| 19 | 10.3 | 10.6 | 10.8 | 11 | 11.2 | 11.6 | 10.9 | 12.3 | 12 | 10.8 | 10 | 10.2 | 10 | 9 | 8.7 | 8.8 | 7.5 | 7.8 | 6.9 | 8.2 | 7.3 | 6.7 | 5.8 | 4.3 | 12.3 | 8.7 | 24 |
| 20 | 5.4 | 4.4 | 3.9 | 5.6 | 4.3 | 5.2 | 3.4 | 1.7 | 3.5 | 3.6 | 3.1 | 3.4 | 5.9 | 9 | 9.1 | 7.7 | 5.2 | 7.4 | 5.8 | 8.6 | 8.5 | 5.5 | 3.9 | 4.9 | 9.1 | 2.7 | 24 |
| 21 | 5.6 | 4.1 | 4.9 | 1.3 | 2.6 | 1.4 | 1.3 | 3.1 | 3.7 | 4.9 | 5.2 | 5.6 | 6.3 | 5.3 | 4 | 2.8 | 3.9 | 3.7 | 1.9 | 1.3 | 3.4 | 3.7 | 4.1 | 3.9 | 6.3 | 1.3 | 24 |
| 22 | 3.4 | 4.5 | 3.6 | 3.2 | 3.1 | 3.3 | 3.8 | 3.6 | 3.8 | 1.6 | 4.7 | 7.1 | 6.3 | 6.4 | 6.9 | 3.3 | 2.7 | 3.9 | 4.2 | 5.4 | 6.1 | 5.7 | 5 | 5.3 | 7.1 | 2.3 | 24 |
| 23 | 6.6 | 6.7 | 6.4 | 6.2 | 6.2 | 7 | 7 | 5.6 | 6 | 5.7 | 7.2 | 7.3 | 6 | 6.6 | 7.5 | 4.7 | 3.8 | 3.5 | 4.2 | 4.3 | 4.6 | 6 | 9.1 | 7.7 | 9.1 | 5.3 | 24 |
| 24 | 6.6 | 6.7 | 7.7 | 6.9 | 7.5 | 5.8 | 7.8 | 11.2 | 12.5 | 8.8 | 15 | 14.6 | 14.8 | 14.6 | 12 | 12.3 | 11.6 | 11.4 | 10.7 | 11.9 | 10.8 | 8.1 | 9.6 | 8.7 | 15 | 9.9 | 24 |
| 25 | 9.2 | 9.5 | 8.6 | 8.8 | 7.4 | 9.1 | 7.7 | 7.7 | 6.4 | 8 | 7.3 | 6.6 | 6 | 5 | 3.9 | 4.1 | 2.9 | 2.7 | 2.4 | 3.5 | 4.2 | 3.5 | 3 | 0.8 | 9.5 | 4.7 | 24 |
| 26 | 3.4 | 0.8 | 0.5 | 1.6 | 1.6 | 2.3 | 1.4 | 6.7 | 8.7 | 7 | 8.7 | 8.7 | 8.8 | 6 | 9.6 | 5.9 | 5 | 3.7 | 4.4 | 4.9 | 5.8 | 3.9 | 4.4 | 4.1 | 9.6 | 3.2 | 24 |
| 27 | 4.4 | 6 | 5.4 | 5.6 | 6.3 | 8.4 | 8.5 | 7.5 | 5.7 | 7.6 | 6.8 | 7.2 | 6 | 4.5 | 4.5 | 2.9 | 2.8 | 3.9 | 3.8 | 4.8 | 4.7 | 5.5 | 6.9 | 6.6 | 8.5 | 2.9 | 24 |
| 28 | 7.2 | 5.8 | 5.7 | 7.1 | 6.8 | 8.5 | 9 | 7.5 | 8.4 | 8.7 | 9.6 | 8.1 | 9.1 | 8.7 | 9.5 | 9.7 | 8.4 | 9 | 9.7 | 8.4 | 7 | 5.8 | 5.7 | 7.7 | 9.7 | 7.6 | 24 |
| 29 | 7.5 | 7.2 | 6.7 | 6.9 | 7.1 | 5.9 | 6.5 | 4.9 | 5.3 | 3.8 | 3.6 | 3.6 | 5.6 | 5.9 | 7 | 4.7 | 3.5 | 4.6 | 4.1 | 5.3 | 4.5 | 3.8 | 3 | 3.1 | 7.5 | 4.8 | 24 |
| 30 | 3.2 | 3.8 | 1.8 | 1.3 | 1 | 0.4 | 4.6 | 2.6 | 1.4 | 2.8 | 2.5 | 0.4 | 4.5 | 5.9 | 4.4 | 3.8 | 2.9 | 3.5 | 5.2 | 5.3 | 4.6 | 4.4 | 4.2 | 4.5 | 5.9 | 2.5 | 24 |
| HOURLY MAX | 15.2 | 16.3 | 14.4 | 15.1 | 14.8 | 16.4 | 16.6 | 15.9 | 16.1 | 16.8 | 16.0 | 15.0 | 14.8 | 14.6 | 12.0 | 13.3 | 14.2 | 13.8 | 11.2 | 13.3 | 16.2 | 14.2 | 16.4 | 15.2 | | | |
| HOURLY AVG | 6.2 | 6.0 | 5.8 | 6.2 | 6.0 | 6.1 | 6.5 | 6.3 | 6.6 | 6.7 | 7.4 | 7.3 | 7.6 | 7.3 | 7.6 | 6.7 | 6.0 | 6.0 | 5.8 | 6.4 | 6.5 | 6.0 | 6.3 | 6.1 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |



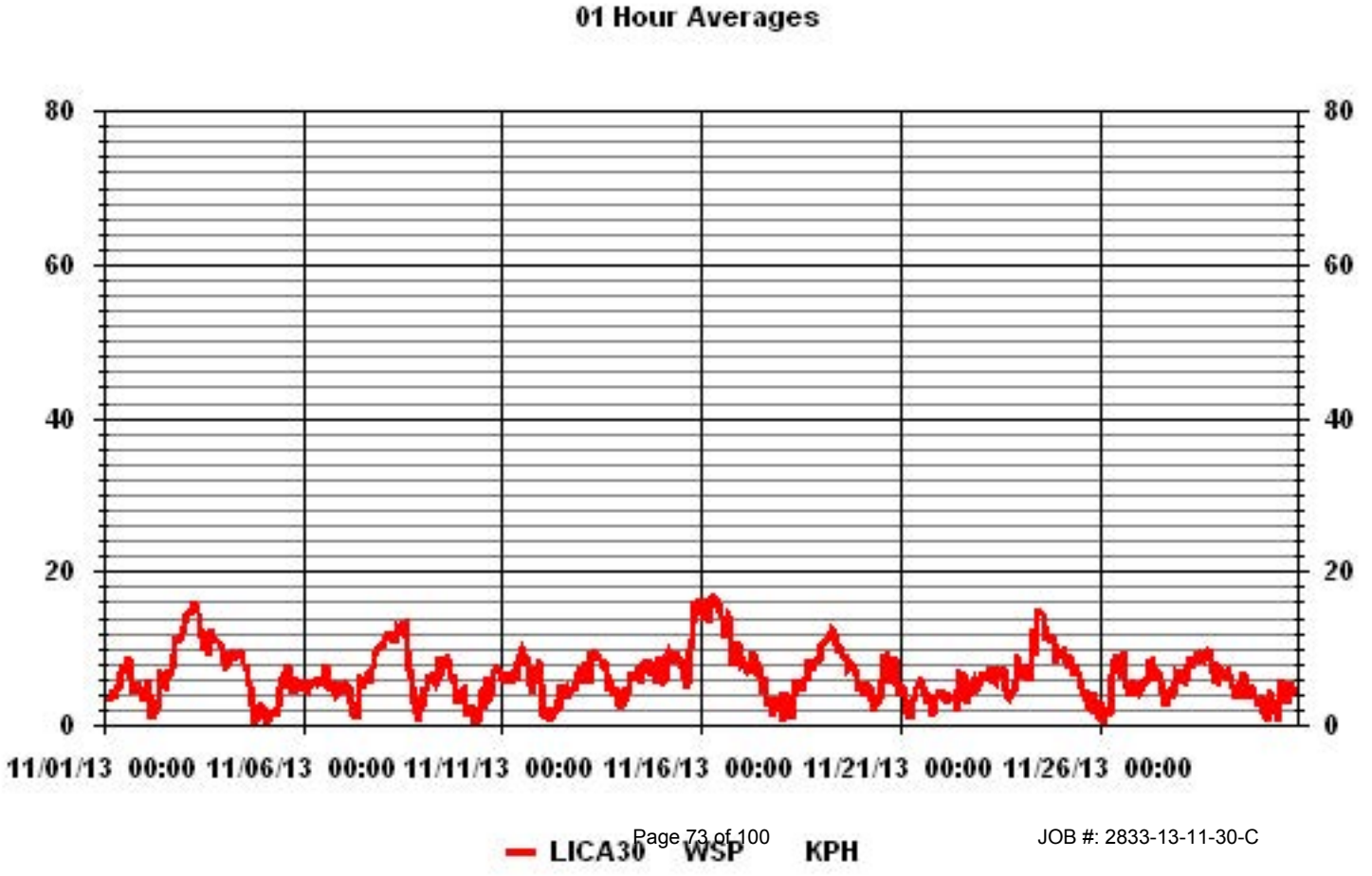

LAST CALIBRATION: December 20, 2011

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | | | 16.8 | KPH | @ HOUR(S) | 9 | ON DAY(S) 16 |
| MAXIMUM 24-HR AVERAGE: | | | 13.4 | KPH | | | ON DAY(S) 16 |
| CALMS (≤ 1 KPH) | 2.42 | % | OPERATIONAL TIME: | | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 0 | HRS | AMD OPERATION UPTIME: | | | 100.0 | % |
| STANDARD DEVIATION: | 3.35 | | MONTHLY AVERAGE: | | | 6.46 | KPH |



JOB #: 2833-13-11-30-C






JOB #: 2833-13-11-30-C

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**VECTOR WIND SPEED MAX instantaneous maximum in km/hr**

MST

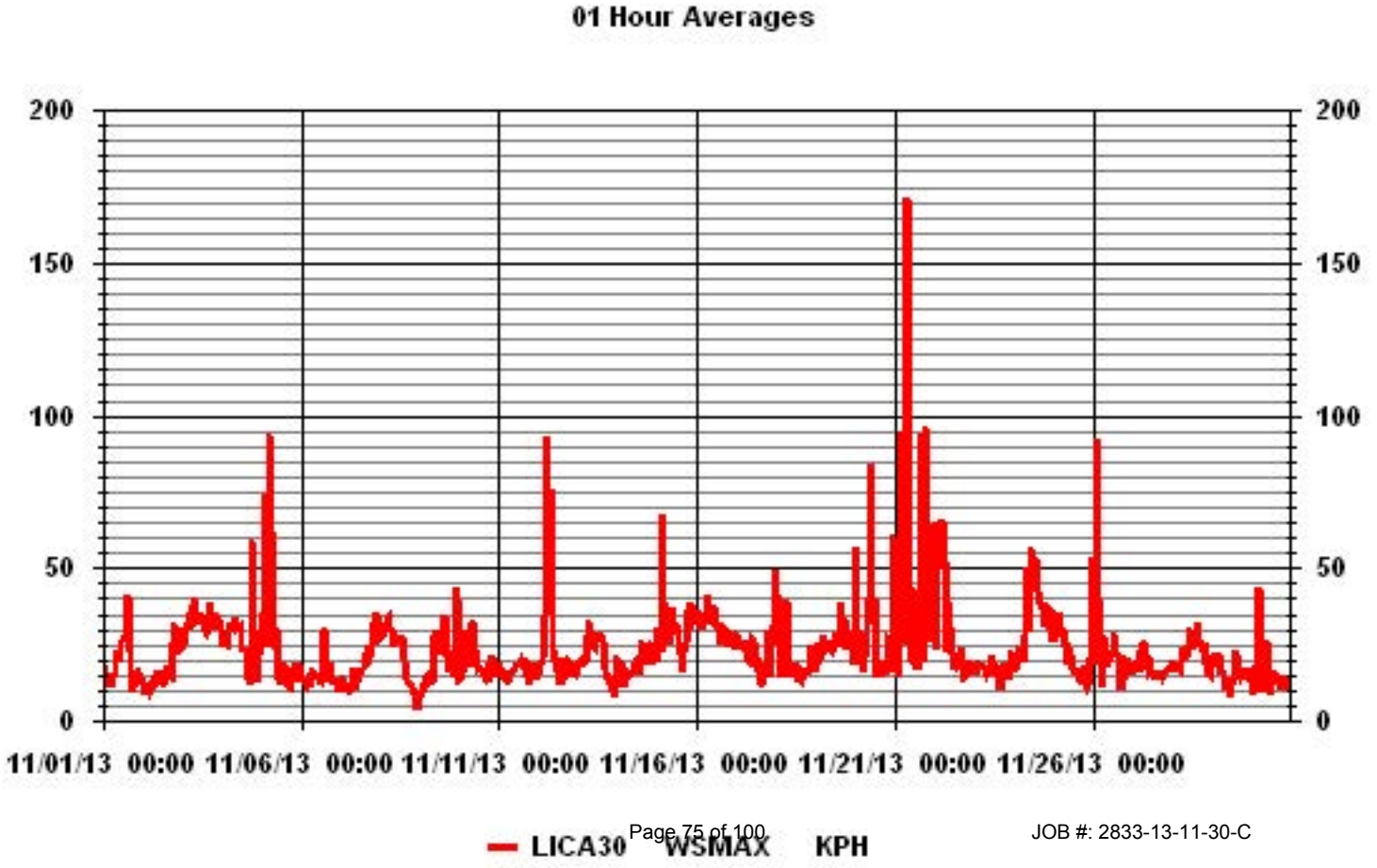
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 16.2 | 18.4 | 11.5 | 12.6 | 12.4 | 12.3 | 15.6 | 14.4 | 22.7 | 19 | 21.4 | 26.4 | 27.5 | 27.1 | 27.7 | 40.8 | 22.9 | 9.1 | 13.6 | 14.9 | 15.7 | 16.2 | 13.3 | 14.1 | 40.8 |
| 2 | 13 | 8.3 | 11.6 | 11.8 | 9.7 | 10.7 | 13 | 14.1 | 12.1 | 12.8 | 14.3 | 16.3 | 13.2 | 11.4 | 15.2 | 17.8 | 14.7 | 14.3 | 25.7 | 32.1 | 30.7 | 22.4 | 23.4 | 23.4 | 32.1 |
| 3 | 23.7 | 24.8 | 30 | 31.8 | 35 | 30.2 | 37.5 | 40.3 | 38.1 | 31.1 | 35 | 34.5 | 34.3 | 30.3 | 30.1 | 29.1 | 30.5 | 38.7 | 33.2 | 30 | 32.4 | 35.2 | 31.5 | 32.6 | 40.3 |
| 4 | 23.9 | 26.6 | 25.6 | 25.1 | 29.8 | 32.1 | 30.2 | 30.3 | 33.5 | 30.4 | 30.8 | 31.3 | 23.4 | 23.3 | 24.2 | 19.4 | 14.6 | 12.1 | 59.6 | 18.4 | 16.9 | 22.4 | 12.6 | 21.6 | 59.6 |
| 5 | 29.9 | 35.1 | 74.1 | 24 | 29.6 | 93.8 | 45.3 | 61.4 | 23.5 | 30.7 | 13.9 | 12 | 14.3 | 17.9 | 18 | 15.4 | 12.1 | 11.6 | 15.1 | 17 | 13.5 | 19.1 | 12.2 | 18.9 | 93.8 |
| 6 | 13.7 | 13.8 | 13.5 | 12.2 | 13.6 | 12.4 | 12.3 | 17.1 | 15.8 | 15.2 | 14.5 | 13.2 | 12.9 | 28.8 | 30.1 | 15.3 | 12.7 | 19.3 | 17 | 12.7 | 12.9 | 12.9 | 9.2 | 10.9 | 30.1 |
| 7 | 11.3 | 14.8 | 12.6 | 10.6 | 10.8 | 10.2 | 10.8 | 17.6 | 10.5 | 12.4 | 13 | 17.6 | 15.6 | 17.1 | 20.4 | 19.6 | 17.9 | 23.3 | 22.8 | 27.9 | 32.5 | 24.8 | 35.1 | 29.4 | 35.1 |
| 8 | 26.9 | 27.4 | 31 | 31.6 | 34 | 34.5 | 30.3 | 30 | 24 | 27.1 | 25.6 | 25.7 | 26.9 | 27.9 | 21 | 19.8 | 14 | 13 | 12.6 | 11.5 | 9.5 | 9.2 | 3.3 | 5.3 | 34.5 |
| 9 | 7.9 | 9.7 | 12.3 | 14.2 | 14.9 | 13.6 | 15.2 | 16.5 | 12.1 | 27.6 | 29.5 | 21.5 | 26.9 | 22.8 | 31.4 | 34.2 | 21.4 | 19.7 | 15.8 | 19.9 | 14 | 23.3 | 43.5 | 40.5 | 43.5 |
| 10 | 13.9 | 14.3 | 16.1 | 29.7 | 20.2 | 19.8 | 17.6 | 31.5 | 32.6 | 19 | 22.9 | 17.1 | 17.6 | 17.5 | 15.3 | 14.6 | 17.5 | 12.5 | 17.9 | 17.9 | 21.1 | 17 | 18.1 | 14.2 | 32.6 |
| 11 | 18.6 | 14 | 17.5 | 14.6 | 14 | 15.7 | 12.9 | 15.1 | 16 | 17.3 | 18.5 | 18.3 | 18.7 | 20.1 | 18.5 | 19.2 | 16.5 | 14.9 | 12 | 17.7 | 17 | 15.2 | 18.5 | 13.6 | 20.1 |
| 12 | 15.2 | 18.3 | 19.7 | 21 | 34.6 | 93.3 | 37.5 | 53.9 | 75.4 | 24.1 | 19.8 | 16.9 | 13.2 | 11.7 | 20.5 | 13.1 | 15.6 | 16.7 | 19.9 | 19.2 | 14.6 | 17.1 | 15.7 | 16.9 | 93.3 |
| 13 | 18.8 | 19.7 | 17.3 | 18.9 | 19.6 | 27.9 | 33 | 29.1 | 25.3 | 24.5 | 28.9 | 27.7 | 25.8 | 27.1 | 28.5 | 26.2 | 17.3 | 13.4 | 15.8 | 11.7 | 12.4 | 11.6 | 7.3 | 21.4 | 33 |
| 14 | 14.8 | 15.9 | 19.7 | 12.1 | 11.9 | 14.6 | 16 | 15.1 | 15.9 | 16.4 | 18.8 | 17.9 | 15.1 | 21.5 | 25.9 | 23.2 | 21.6 | 22.1 | 18.2 | 25.7 | 18.4 | 24.9 | 24.5 | 19.4 | 25.9 |
| 15 | 30.2 | 24.2 | 24 | 67.2 | 39.4 | 30.6 | 31.7 | 24.5 | 36.1 | 37.4 | 30 | 32.2 | 28.7 | 25.1 | 22.5 | 15.7 | 22.2 | 25.9 | 36.4 | 30.1 | 38.8 | 33.8 | 35.9 | 33.9 | 67.2 |
| 16 | 31.6 | 36 | 31.2 | 31 | 33.1 | 34.3 | 41.5 | 31.6 | 34.7 | 34.5 | 37.8 | 31.5 | 30.8 | 28.2 | 24.9 | 32.2 | 28.4 | 28 | 24.2 | 28.9 | 28.4 | 24.3 | 25.3 | 23.9 | 41.5 |
| 17 | 27.8 | 27 | 23.2 | 25.8 | 24.5 | 25.9 | 20 | 19.5 | 23.5 | 26.7 | 25.8 | 21.8 | 20.9 | 16.9 | 12.6 | 11.7 | 18.6 | 17.8 | 23.1 | 29.9 | 14.3 | 31.6 | 28.3 | 49.4 | 49.4 |
| 18 | 24.6 | 41.6 | 15.4 | 15.2 | 24.9 | 30.6 | 39.5 | 17.6 | 15.9 | 15.5 | 15.6 | 15.4 | 19.2 | 12.5 | 14.5 | 13.5 | 16 | 15.4 | 16.7 | 15.7 | 19.1 | 24.5 | 16.9 | 16.9 | 41.6 |
| 19 | 19.7 | 25.6 | 20.8 | 21.6 | 27.8 | 22.8 | 23.4 | 26.3 | 24.1 | 23.1 | 24.7 | 29.1 | 25.8 | 26.7 | 26 | 39 | 23.7 | 33.5 | 23.6 | 26.3 | 29.3 | 26.8 | 21.4 | 18.3 | 39 |
| 20 | 57.2 | 20.2 | 29.5 | 26.4 | 16 | 28.4 | 20.5 | 40.6 | 31.5 | 83.7 | 36.3 | 40.1 | 14 | 19.2 | 19.3 | 14.3 | 15.8 | 16.9 | 15.2 | 27.2 | 26.7 | 16.7 | 61.3 | 15.6 | 83.7 |
| 21 | 19.5 | 16.7 | 13.9 | 94.4 | 24.6 | 35.1 | 77.5 | **171.5** | 45.3 | 19.2 | 43.8 | 18.8 | 20.3 | 16.8 | 36.2 | 93.9 | 19.4 | 21.9 | 96.7 | 29.4 | 31.1 | 25.9 | 63.9 | 38.8 | 171.5 |
| 22 | 22.8 | 65.2 | 55.3 | 49.7 | 66.1 | 54 | 52.8 | 22 | 38.8 | 31.5 | 22.2 | 16.6 | 18.2 | 17.3 | 17.7 | 22.4 | 24.1 | 14.3 | 14.6 | 17.4 | 17.8 | 19.3 | 16.1 | 16.1 | 66.1 |
| 23 | 16.1 | 18.3 | 19.8 | 16.7 | 18.3 | 18.3 | 17.6 | 15.4 | 16.5 | 14.8 | 21.3 | 18.9 | 18.2 | 14.8 | 15.9 | 10.7 | 12.2 | 18.8 | 14.9 | 14.8 | 14.7 | 18.5 | 22.9 | 17.8 | 22.9 |
| 24 | 19 | 16.3 | 23.5 | 23.1 | 22.9 | 19.2 | 28.2 | 50 | 35.8 | 29.1 | 56.9 | 48.9 | 52.4 | 52.4 | 42.6 | 38.6 | 36.2 | 38.4 | 31 | 38.6 | 33.3 | 29.6 | 36.9 | 25.9 | 56.9 |
| 25 | 31.8 | 33.2 | 31.4 | 35.6 | 27.3 | 30.4 | 24.1 | 26.2 | 18.1 | 24.6 | 22 | 17.7 | 16.4 | 16.5 | 14.4 | 14.8 | 13.4 | 12.5 | 18 | 12.6 | 11.1 | 12.2 | 20.5 | 53.6 | 53.6 |
| 26 | 18 | 41.5 | 92.6 | 40.7 | 20.1 | 10.7 | 27.8 | 17.6 | 23.3 | 19 | 21.3 | 22.7 | 29.1 | 23.1 | 22.7 | 20 | 10.4 | 14.9 | 21 | 13.6 | 18 | 15.2 | 18.5 | 17.8 | 92.6 |
| 27 | 16.6 | 17 | 19.5 | 15.5 | 22.8 | 25 | 26.1 | 20.6 | 16.9 | 21.2 | 15.8 | 16.5 | 15.3 | 14 | 14 | 14.3 | 15.6 | 15.8 | 14.5 | 15.5 | 16.9 | 17.6 | 17.4 | 17.1 | 26.1 |
| 28 | 19.4 | 16.9 | 16.9 | 17.4 | 16.8 | 22.8 | 23 | 23.5 | 21.5 | 22.1 | 30.6 | 23.1 | 26.2 | 27 | 27.4 | 32.3 | 24.2 | 25.9 | 23.3 | 23.9 | 19 | 15.9 | 15 | 17.6 | 32.3 |
| 29 | 20.9 | 22 | 18.7 | 18.9 | 21.8 | 15.1 | 16.1 | 11.1 | 11.2 | 11.4 | 7.7 | 12.6 | 12.6 | 23.3 | 21.8 | 16.4 | 15.1 | 16.9 | 13.4 | 17.4 | 15.8 | 14.7 | 14.1 | 17.5 | 23.3 |
| 30 | 8.1 | 12.2 | 18.2 | 16 | 43.6 | 9.6 | 13.8 | 14.4 | 11.6 | 26 | 10.5 | 8.5 | 13.3 | 16.5 | 13.4 | 14.9 | 12.4 | 10.7 | 12.3 | 14.7 | 11 | 10.9 | 11.9 | 14 | 43.6 |
| PEAK | 57.2 | 65.2 | 92.6 | 94.4 | 66.1 | 93.8 | 77.5 | 171.5 | 75.4 | 83.7 | 56.9 | 48.9 | 52.4 | 52.4 | 42.6 | 93.9 | 36.2 | 38.7 | 96.7 | 38.6 | 38.8 | 35.2 | 63.9 | 53.6 | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 171.5 | KPH | @ HOUR(S) | 7 |
| | | | ON DAY(S) | 21 |






JOB #: 2833-13-11-30-C

LICA30
WSP / WDR Joint Frequency Distribution (Percent)

November 2013

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 | 2.50 | 2.63 | 3.61 | 2.77 | 1.11 | 1.38 | 2.36 | 2.91 | 5.13 | 6.11 | 7.08 | 3.75 | 3.33 | 1.38 | 2.36 | 1.25 | 49.72 |
| < | 12.0 | 5.69 | 3.88 | 4.58 | 1.52 | .27 | .00 | 2.22 | 2.63 | 2.08 | 5.83 | 4.16 | .27 | 1.66 | 4.02 | 2.77 | 1.66 | 43.33 |
| < | 20.0 | .27 | 5.13 | .55 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .97 | .00 | .00 | 6.94 |
| < | 29.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 8.47 | 11.66 | 8.75 | 4.30 | 1.38 | 1.38 | 4.58 | 5.55 | 7.22 | 11.94 | 11.25 | 4.02 | 5.00 | 6.38 | 5.13 | 2.91 | |

Calm : .00 %

Total # Operational Hours : 720

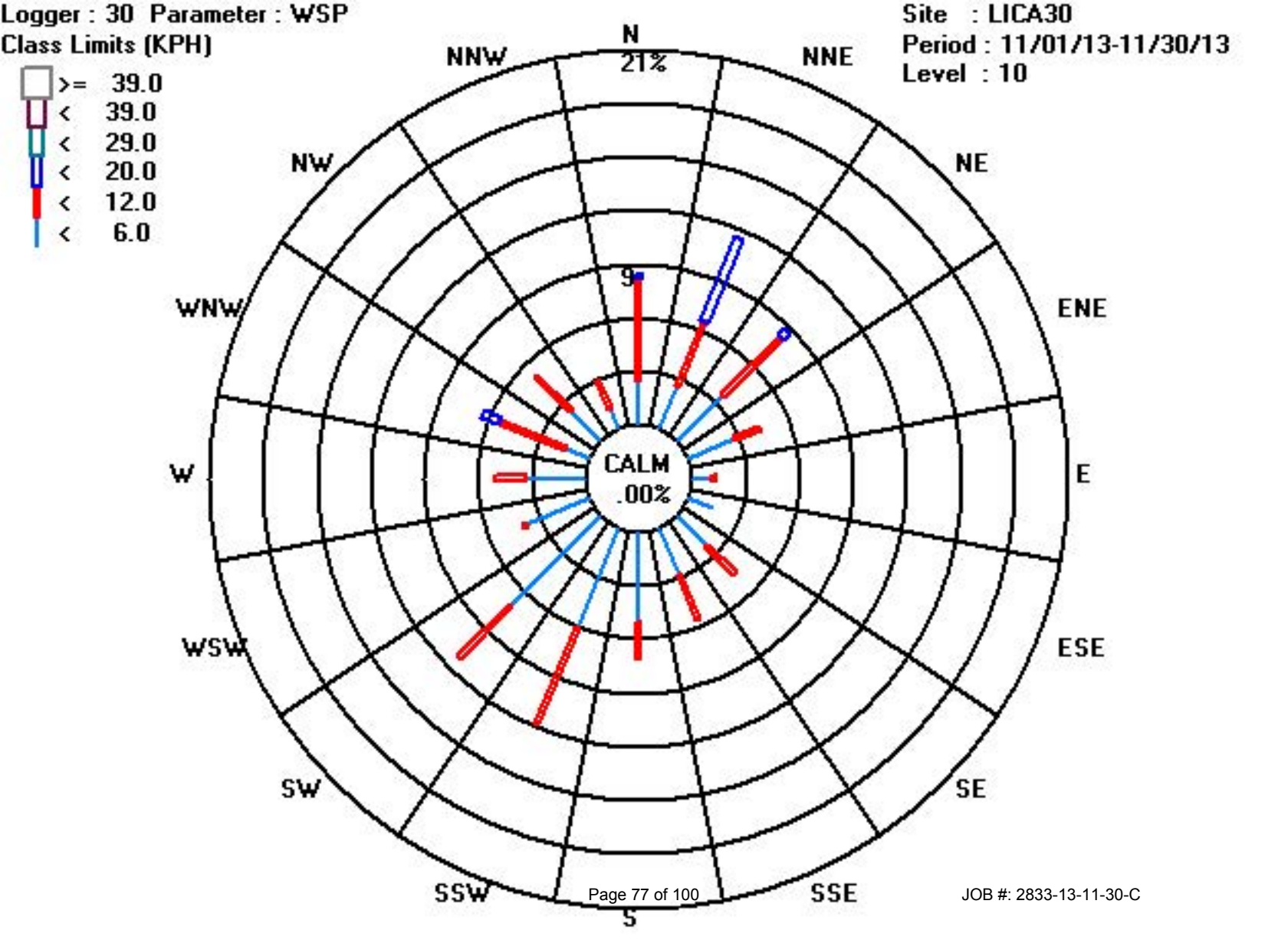
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 18 | 19 | 26 | 20 | 8 | 10 | 17 | 21 | 37 | 44 | 51 | 27 | 24 | 10 | 17 | 9 | 358 |
| < | 12.0 | 41 | 28 | 33 | 11 | 2 | | 16 | 19 | 15 | 42 | 30 | 2 | 12 | 29 | 20 | 12 | 312 |
| < | 20.0 | 2 | 37 | 4 | | | | | | | | | | | 7 | | | 50 |
| < | 29.0 | | | | | | | | | | | | | | | | | |
| < | 39.0 | | | | | | | | | | | | | | | | | |
| >= | 39.0 | | | | | | | | | | | | | | | | | |
| | Totals | 61 | 84 | 63 | 31 | 10 | 10 | 33 | 40 | 52 | 86 | 81 | 29 | 36 | 46 | 37 | 21 | |

Calm : .00 %

Total # Operational Hours : 720






JOB #: 2833-13-11-30-C

# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

NOVEMBER 2013

**WIND DIRECTION** hourly averages in degrees

MST

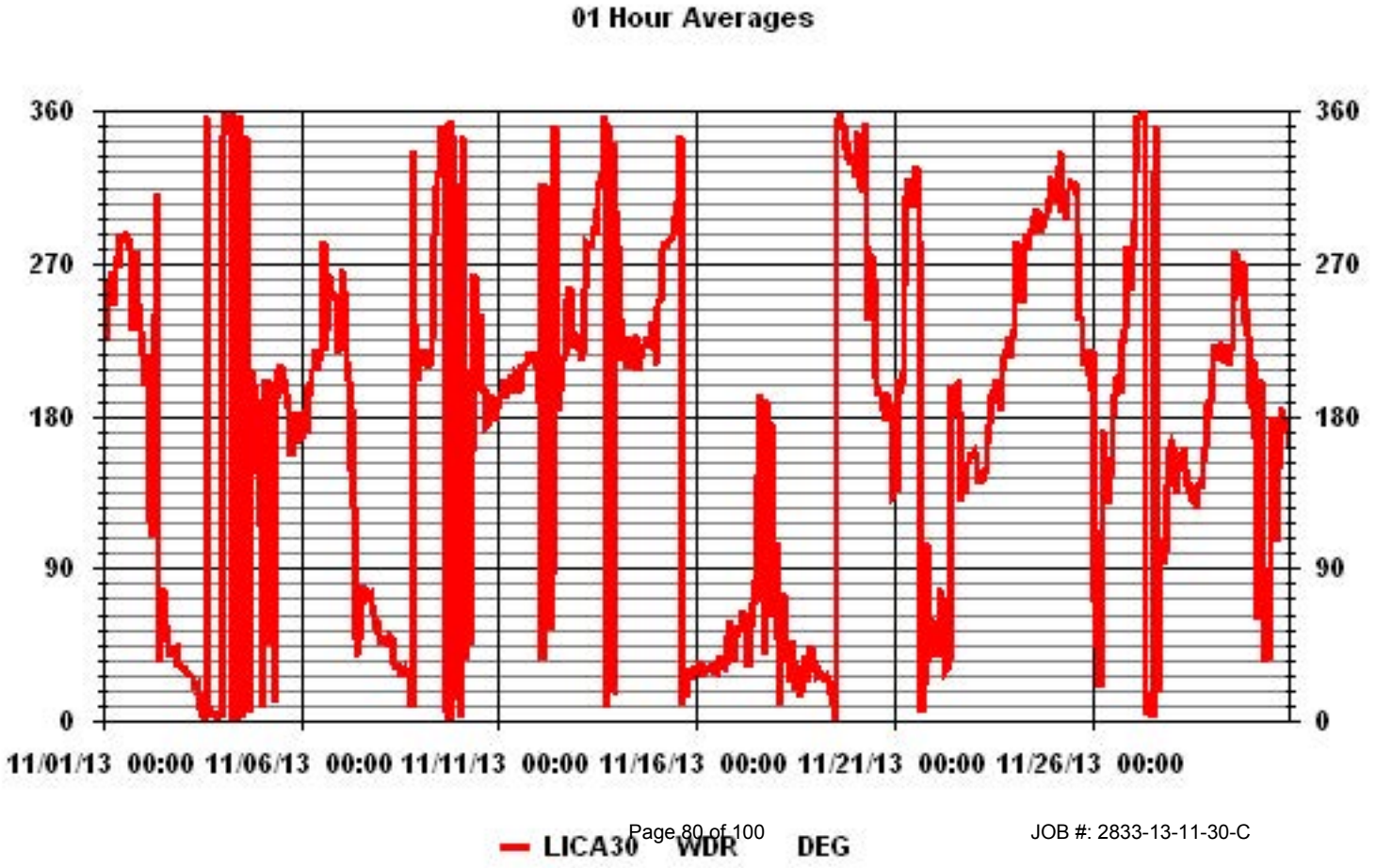
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24-HOUR | 24-HOUR AVG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | AVG. | QUANDRANT | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 261 | 259 | 224 | 250 | 256 | 259 | 266 | 245 | 274 | 267 | 286 | 286 | 282 | 286 | 289 | 286 | 279 | 234 | 231 | 242 | 261 | 277 | 247 | 231 | 267 | W | 24 |
| 2 | 217 | 197 | 217 | 214 | 204 | 119 | 108 | 135 | 240 | 311 | 34 | 71 | 66 | 79 | 46 | 57 | 43 | 37 | 43 | 42 | 43 | 32 | 34 | 34 | 49 | NE | 24 |
| 3 | 32 | 30 | 31 | 30 | 28 | 27 | 27 | 25 | 19 | 21 | 17 | 8 | 4 | 2 | 2 | 357 | 4 | 8 | 4 | 4 | 4 | 0 | 4 | 4 | 16 | NNE | 24 |
| 4 | 2 | 346 | 359 | 352 | 352 | 357 | 0 | 359 | 355 | 0 | 346 | 357 | 2 | 334 | 340 | 346 | 5 | 28 | 208 | 146 | 200 | 189 | 149 | 190 | 355 | N | 24 |
| 5 | 115 | 7 | 201 | 44 | 133 | 202 | 62 | 103 | 11 | 190 | 207 | 203 | 211 | 203 | 202 | 194 | 186 | 157 | 157 | 172 | 182 | 178 | 167 | 164 | 180 | S | 24 |
| 6 | 183 | 166 | 184 | 169 | 197 | 191 | 200 | 207 | 215 | 219 | 207 | 212 | 217 | 278 | 283 | 218 | 230 | 262 | 261 | 248 | 253 | 251 | 217 | N | 221 | SW | 24 |
| 7 | 227 | 267 | 255 | 222 | 213 | 201 | 147 | 185 | 128 | 49 | 38 | 60 | 47 | 68 | 80 | 70 | 77 | 75 | 76 | 69 | 64 | 53 | 60 | 53 | 69 | ENE | 24 |
| 8 | 48 | 45 | 50 | 46 | 49 | 43 | 51 | 50 | 34 | 31 | 31 | 32 | 29 | 30 | 29 | 31 | 27 | 30 | 25 | 8 | 337 | 235 | 221 | 200 | 37 | NE | 24 |
| 9 | 216 | 210 | 216 | 216 | 219 | 208 | 210 | 217 | 226 | 286 | 315 | 325 | 321 | 349 | 349 | 350 | 6 | 1 | 1 | 355 | 347 | 318 | 296 | 302 | 303 | WNW | 24 |
| 10 | 13 | 2 | 345 | 147 | 35 | 208 | 194 | 45 | 158 | 264 | 239 | 195 | 222 | 240 | 195 | 195 | 173 | 174 | 177 | 189 | 192 | 185 | 177 | 184 | 192 | S | 24 |
| 11 | 188 | 190 | 194 | 201 | 190 | 194 | 198 | 204 | 193 | 199 | 206 | 205 | 196 | 194 | 210 | 206 | 211 | 212 | 218 | 214 | 213 | 218 | 210 | 210 | 203 | SSW | 24 |
| 12 | 187 | 317 | 35 | 98 | 317 | 89 | 113 | 286 | 54 | 86 | 351 | 205 | 183 | 194 | 200 | 212 | 215 | 249 | 242 | 257 | 233 | 219 | 230 | 224 | 220 | SW | 24 |
| 13 | 222 | 220 | 213 | 217 | 255 | 283 | 282 | 279 | 283 | 292 | 287 | 303 | 319 | 314 | 322 | 324 | 357 | 7 | 353 | 20 | 21 | 20 | 341 | 302 | 295 | WNW | 24 |
| 14 | 282 | 268 | 238 | 214 | 214 | 217 | 208 | 227 | 215 | 218 | 220 | 229 | 206 | 216 | 216 | 221 | 222 | 227 | 220 | 226 | 236 | 229 | 219 | 210 | 221 | SW | 24 |
| 15 | 245 | 248 | 249 | 278 | 281 | 281 | 281 | 283 | 284 | 285 | 287 | 298 | 307 | 339 | 345 | 9 | 24 | 14 | 24 | 31 | 26 | 26 | 28 | 33 | 334 | NNW | 24 |
| 16 | 31 | 28 | 35 | 28 | 28 | 29 | 30 | 31 | 32 | 32 | 33 | 30 | 29 | 32 | 39 | 35 | 32 | 31 | 33 | 50 | 59 | 43 | 35 | 42 | 33 | NNE | 24 |
| 17 | 49 | 56 | 52 | 58 | 65 | 58 | 43 | 32 | 49 | 55 | 69 | 83 | 70 | 145 | 193 | 181 | 74 | 39 | 190 | 159 | 159 | 177 | 61 | 73 | 68 | ENE | 24 |
| 18 | 48 | 106 | 9 | 44 | 48 | 75 | 35 | 41 | 26 | 23 | 48 | 37 | 18 | 23 | 15 | 17 | 33 | 38 | 30 | 22 | 35 | 44 | 32 | 33 | 32 | NNE | 24 |
| 19 | 27 | 28 | 30 | 28 | 26 | 26 | 23 | 26 | 24 | 17 | 11 | 0 | 4 | 356 | 349 | 359 | 354 | 352 | 337 | 342 | 333 | 329 | 332 | 335 | 8 | N | 24 |
| 20 | 320 | 349 | 324 | 314 | 346 | 312 | 353 | 282 | 236 | 270 | 276 | 262 | 204 | 191 | 197 | 195 | 194 | 184 | 176 | 194 | 188 | 183 | 133 | 134 | 215 | SSW | 24 |
| 21 | 152 | 135 | 201 | 193 | 199 | 206 | 257 | 310 | 320 | 310 | 303 | 313 | 309 | 328 | 311 | 284 | 5 | 14 | 21 | 105 | 35 | 50 | 61 | 55 | 332 | NNW | 24 |
| 22 | 38 | 57 | 37 | 78 | 74 | 55 | 28 | 29 | 30 | 36 | 195 | 194 | 180 | 198 | 199 | 184 | 130 | 135 | 135 | 140 | 152 | 156 | 156 | 157 | 139 | SE | 24 |
| 23 | 159 | 156 | 150 | 142 | 140 | 146 | 145 | 150 | 163 | 175 | 193 | 196 | 187 | 202 | 200 | 191 | 182 | 206 | 215 | 219 | 227 | 221 | 214 | 225 | 183 | S | 24 |
| 24 | 231 | 246 | 283 | 277 | 280 | 246 | 276 | 285 | 288 | 278 | 287 | 290 | 297 | 300 | 302 | 290 | 290 | 294 | 291 | 297 | 300 | 308 | 321 | 311 | 289 | WNW | 24 |
| 25 | 310 | 314 | 319 | 328 | 337 | 300 | 307 | 295 | 303 | 313 | 320 | 314 | 317 | 317 | 311 | 289 | 236 | 238 | 209 | 216 | 220 | 203 | 215 | 195 | 302 | WNW | 24 |
| 26 | 219 | 72 | 43 | 112 | 22 | 22 | 172 | 157 | 153 | 127 | 144 | 153 | 179 | 192 | 203 | 204 | 193 | 225 | 222 | 231 | 280 | 273 | 262 | 254 | 188 | S | 24 |
| 27 | 277 | 295 | 323 | 356 | 356 | 357 | 358 | 360 | 3 | 12 | 14 | 15 | 1 | 325 | 351 | 16 | 72 | 100 | 107 | 93 | 99 | 140 | 162 | 165 | 14 | NNE | 24 |
| 28 | 163 | 140 | 134 | 158 | 153 | 147 | 149 | 162 | 149 | 140 | 134 | 140 | 131 | 130 | 131 | 125 | 139 | 139 | 143 | 153 | 162 | 183 | 182 | 189 | 147 | SE | 24 |
| 29 | 208 | 223 | 213 | 222 | 217 | 222 | 221 | 211 | 218 | 219 | 210 | 222 | 218 | 247 | 277 | 273 | 251 | 263 | 266 | 271 | 239 | 240 | 228 | 188 | 231 | SW | 24 |
| 30 | 185 | 214 | 167 | 60 | 161 | 163 | 202 | 77 | 34 | 90 | 36 | 52 | 140 | 180 | 130 | 106 | 148 | 179 | 185 | 176 | 170 | 180 | 172 | 162 | 161 | SSE | 24 |
| HOURLY AVG | 320 | 349 | 359 | 356 | 356 | 357 | 358 | 360 | 355 | 313 | 351 | 357 | 321 | 356 | 351 | 359 | 357 | 352 | 353 | 355 | 347 | 329 | 341 | 335 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

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

| | | | | |
|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 720 HRS |
| STANDARD DEVIATION: | 105.52 | | AMD OPERATION UPTIME: | 100.0 % |
| | | | MONTHLY AVERAGE: | 338 DEG |






JOB #: 2833-13-11-30-C

# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

NOVEMBER 2013

**STANDARD DEVIATION WIND DIRECTION (STDWDIR)** hourly averages in degrees

MST

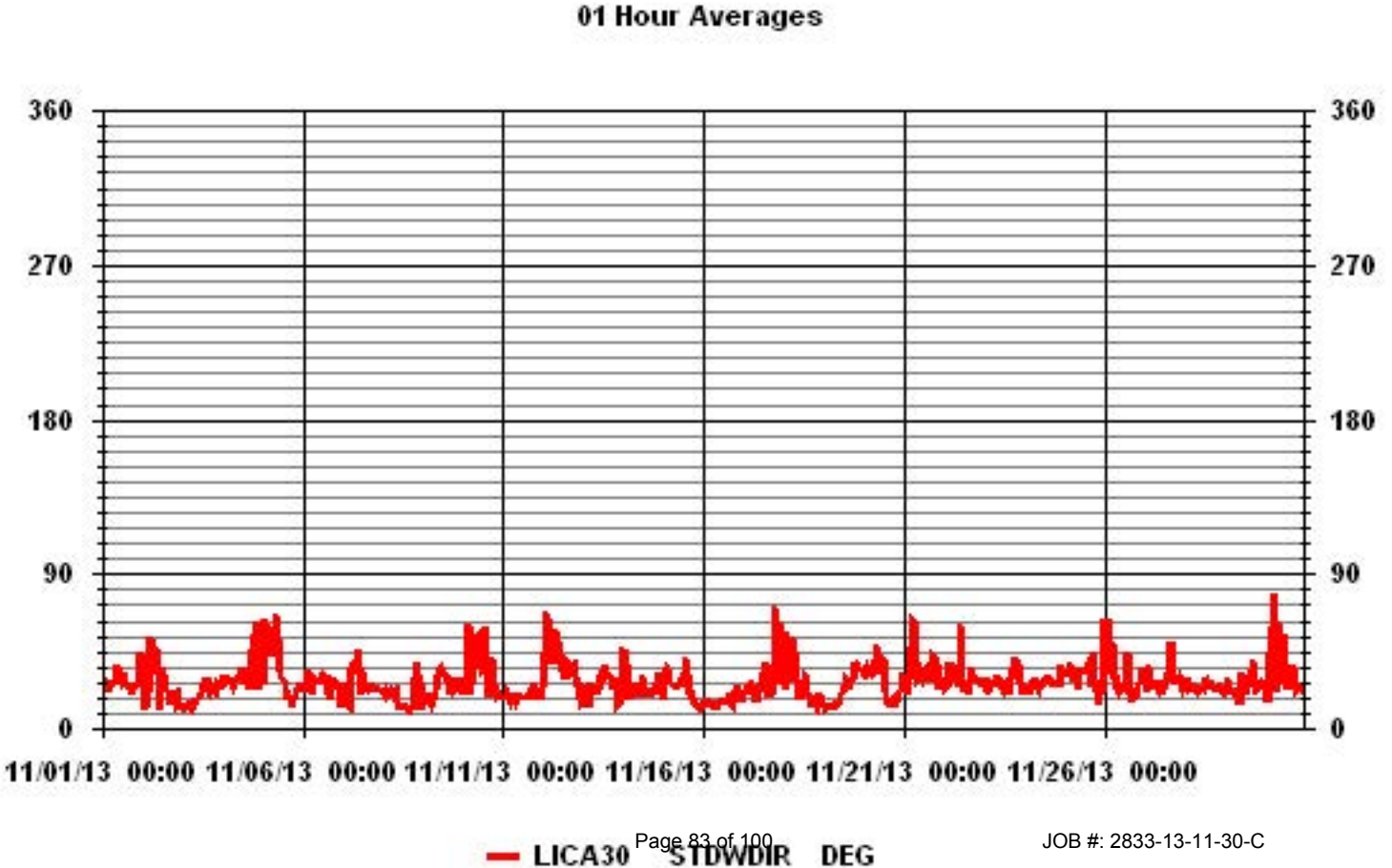
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 30 | 29 | 21 | 25 | 22 | 26 | 26 | 28 | 31 | 37 | 32 | 28 | 30 | 32 | 26 | 25 | 25 | 22 | 22 | 25 | 25 | 26 | 29 | 44 |
| 2 | 32 | 11 | 19 | 12 | 21 | 54 | 31 | 45 | 45 | 36 | 11 | 32 | 35 | 32 | 23 | 22 | 17 | 15 | 20 | 20 | 21 | 14 | 15 | 15 |
| 3 | 13 | 12 | 13 | 13 | 14 | 14 | 12 | 14 | 16 | 17 | 19 | 21 | 26 | 29 | 26 | 27 | 23 | 21 | 23 | 22 | 27 | 26 | 24 | 24 |
| 4 | 25 | 31 | 25 | 31 | 28 | 27 | 25 | 28 | 29 | 29 | 32 | 30 | 26 | 35 | 32 | 34 | 22 | 46 | 55 | 25 | 43 | 62 | 23 | 28 |
| 5 | 28 | 64 | 46 | 61 | 45 | 46 | 43 | 43 | 67 | 54 | 35 | 31 | 29 | 28 | 23 | 19 | 18 | 13 | 18 | 18 | 22 | 23 | 26 | 21 |
| 6 | 23 | 23 | 26 | 34 | 23 | 27 | 20 | 27 | 29 | 28 | 30 | 26 | 29 | 32 | 28 | 21 | 17 | 28 | 27 | 23 | 26 | 24 | 16 | 13 |
| 7 | 18 | 24 | 27 | 14 | 13 | 35 | 37 | 35 | 37 | 46 | 19 | 35 | 33 | 28 | 25 | 23 | 24 | 25 | 24 | 23 | 24 | 23 | 23 | 22 |
| 8 | 22 | 20 | 23 | 21 | 23 | 21 | 22 | 23 | 17 | 13 | 13 | 13 | 14 | 13 | 13 | 12 | 11 | 12 | 12 | 30 | 38 | 33 | 28 | 11 |
| 9 | 18 | 14 | 20 | 18 | 19 | 15 | 17 | 19 | 23 | 31 | 35 | 36 | 34 | 32 | 29 | 29 | 20 | 27 | 22 | 23 | 26 | 30 | 26 | 30 |
| 10 | 21 | 21 | 44 | 61 | 19 | 26 | 34 | 53 | 54 | 55 | 49 | 35 | 36 | 60 | 21 | 18 | 31 | 42 | 30 | 24 | 20 | 22 | 20 | 18 |
| 11 | 18 | 18 | 21 | 19 | 16 | 18 | 21 | 17 | 19 | 20 | 19 | 19 | 18 | 18 | 19 | 19 | 19 | 23 | 26 | 19 | 19 | 22 | 17 | 24 |
| 12 | 45 | 68 | 65 | 45 | 41 | 37 | 47 | 58 | 41 | 52 | 39 | 33 | 43 | 28 | 34 | 40 | 32 | 36 | 37 | 31 | 25 | 17 | 26 | 15 |
| 13 | 16 | 17 | 14 | 14 | 26 | 23 | 23 | 22 | 22 | 28 | 27 | 33 | 34 | 37 | 34 | 32 | 30 | 23 | 30 | 25 | 13 | 14 | 30 | 47 |
| 14 | 24 | 46 | 39 | 17 | 26 | 22 | 19 | 27 | 19 | 21 | 23 | 31 | 18 | 21 | 22 | 22 | 19 | 22 | 20 | 26 | 32 | 29 | 21 | 17 |
| 15 | 33 | 36 | 35 | 30 | 27 | 26 | 25 | 26 | 25 | 26 | 24 | 30 | 33 | 42 | 32 | 22 | 22 | 19 | 16 | 14 | 14 | 13 | 15 | 14 |
| 16 | 15 | 12 | 17 | 14 | 14 | 14 | 13 | 13 | 15 | 16 | 16 | 16 | 16 | 16 | 19 | 19 | 14 | 13 | 16 | 22 | 25 | 20 | 15 | 19 |
| 17 | 22 | 24 | 23 | 25 | 26 | 23 | 20 | 15 | 23 | 23 | 26 | 33 | 36 | 38 | 22 | 23 | 19 | 30 | 71 | 43 | 31 | 62 | 25 | 37 |
| 18 | 23 | 56 | 31 | 27 | 31 | 53 | 40 | 44 | 28 | 16 | 26 | 25 | 32 | 31 | 21 | 20 | 13 | 19 | 15 | 13 | 16 | 21 | 15 | 14 |
| 19 | 11 | 12 | 13 | 13 | 13 | 13 | 14 | 14 | 15 | 16 | 20 | 23 | 23 | 30 | 29 | 23 | 27 | 29 | 38 | 33 | 37 | 36 | 35 | 33 |
| 20 | 32 | 36 | 34 | 34 | 32 | 33 | 40 | 49 | 32 | 34 | 42 | 41 | 23 | 19 | 16 | 15 | 16 | 12 | 17 | 17 | 20 | 22 | 33 | 28 |
| 21 | 26 | 30 | 20 | 48 | 29 | 64 | 63 | 40 | 28 | 29 | 33 | 29 | 31 | 35 | 36 | 39 | 27 | 43 | 42 | 38 | 24 | 24 | 29 | 26 |
| 22 | 23 | 24 | 39 | 37 | 37 | 29 | 29 | 34 | 24 | 61 | 36 | 22 | 25 | 22 | 22 | 28 | 35 | 29 | 29 | 29 | 28 | 27 | 28 | 27 |
| 23 | 25 | 28 | 28 | 24 | 25 | 26 | 24 | 31 | 28 | 30 | 25 | 23 | 26 | 22 | 20 | 29 | 35 | 40 | 40 | 33 | 34 | 27 | 20 | 22 |
| 24 | 24 | 22 | 20 | 25 | 28 | 24 | 29 | 26 | 24 | 28 | 24 | 27 | 28 | 29 | 29 | 27 | 27 | 26 | 26 | 26 | 26 | 37 | 35 | 33 |
| 25 | 32 | 32 | 36 | 36 | 35 | 29 | 29 | 23 | 33 | 33 | 33 | 33 | 35 | 38 | 36 | 29 | 25 | 45 | 30 | 22 | 14 | 20 | 22 | 64 |
| 26 | 31 | 55 | 63 | 46 | 50 | 28 | 32 | 25 | 22 | 24 | 22 | 27 | 30 | 45 | 21 | 21 | 16 | 23 | 21 | 18 | 27 | 36 | 33 | 31 |
| 27 | 27 | 21 | 37 | 29 | 26 | 27 | 26 | 24 | 28 | 20 | 24 | 22 | 28 | 33 | 32 | 51 | 48 | 31 | 26 | 28 | 30 | 27 | 23 | 25 |
| 28 | 22 | 29 | 24 | 25 | 24 | 25 | 23 | 24 | 22 | 23 | 25 | 29 | 25 | 27 | 24 | 28 | 25 | 23 | 23 | 23 | 25 | 25 | 22 | 21 |
| 29 | 23 | 30 | 20 | 23 | 20 | 23 | 20 | 20 | 14 | 33 | 26 | 31 | 19 | 25 | 28 | 34 | 40 | 29 | 23 | 24 | 24 | 27 | 26 | 24 |
| 30 | 17 | 17 | 45 | 53 | 60 | 79 | 21 | 63 | 25 | | | | | | | | | | | | | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

LAST CALIBRATION: December 20, 2011

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 720 HRS






JOB #: 2833-13-11-30-C

# Calibration Reports

# Sulphur Dioxide

## SO2 Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 7, 2013 | Previous Calibration | October 17, 2013 |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | LICA Maskwa | | |
| Start Time (MST) | 9:40 | End Time (MST) | 11:09 |
| Reason: | As found | | |
| Barometric Pressure | 27.93 in HG | Station Temperature | 21 Deg C |
| Cal Gas | 49.7 ppm | Gas Cyl. # | BAL3165 |
| Cal Gas Expiry date | December 29, 2016 | | |
| DAS Output Voltage | 0-1 Volts | Chart Rec. Output | N/A Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 100E | S/N : | 508 | Method: | Fluorescent |
| Converter Make / Model: | N/A | S/N : | N/A | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO791 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0-1000 ppb | | | | | | | |
| Sample Flow / Box Temp | 454 ccm | | 30.4 Deg C | | 454 ccm | | 31.3 Deg C | |
| HVPS / Lamp Setting | 491 | | 3004 | | 491 | | 3003 | |
| PMT / RxCell Temp | 7.7 Deg C | | 50 Deg C | | 7.7 Deg C | | 50 Deg C | |
| Converter / IZS Temp | N/A Deg C | | 45 Deg C | | N/A Deg C | | 45.0 Deg C | |
| Offset / Slope | 79.2 | | 1.097 | | 79.2 | | 1.097 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4994 | 0 | 0 | 0 | N/A |
| | No zero adj. | | | |
| 4920 | 80.5 | 800 | 798 | 1.0025 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | Sum of Least Squares | | |
| | | New Correction Factor | | 1.0025 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 290.5 | 290.5 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 1.0025 |
| Percent Change: | -0.2% |

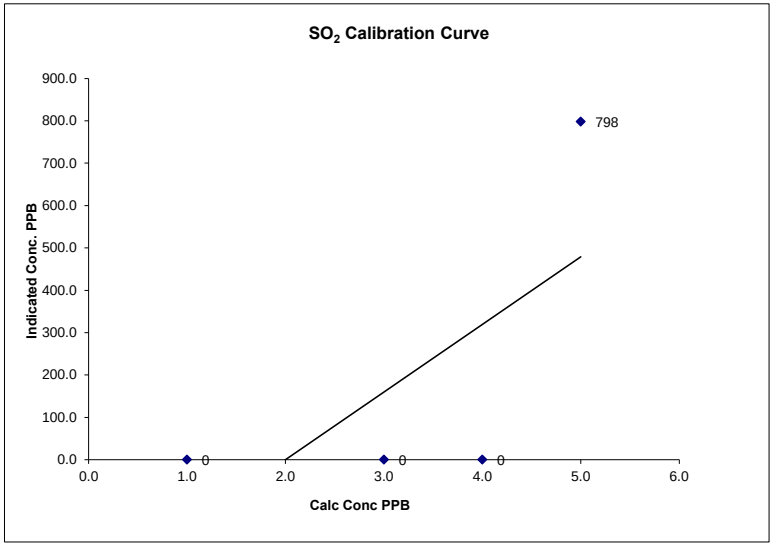
Notes: **N/A : Not applicable**

Calibration Performed by: Waseem Ahmed

## $SO_2$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 7, 2013 | | |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | LICA Maskwa | | |
| Start Time (MST) | 9:40 | End Time (MST) | 11:09 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) |
|---|---|---|---|
| 0 | | N/A | Slope (0.85 to 1.15) |
| | | | Intercept (± 3% F.S.) |
| 800 | 798 | 1.0025 | |




**Notes:**

## SO2 Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 7, 2013 | Previous Calibration | October 17, 2013 |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | LICA Maskwa | | |
| Start Time (MST) | 11:41 | End Time (MST) | 14:20 |
| Reason: | Monthly calibration | | |
| Barometric Pressure | 27.89 in HG | Station Temperature | 23 Deg C |
| Cal Gas | 49.7 ppm | Gas Cyl. # | BAL3165 |
| Cal Gas Expiry date | December 29, 2016 | | |
| DAS Output Voltage | 0-1 Volts | Chart Rec. Output | N/A Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 100E | S/N : | 508 | Method: | Fluorescent |
| Converter Make / Model: | N/A | S/N : | N/A | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO791 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0-1000 ppb | | | | | |
| Sample Flow / Box Temp | 453 ccm | | 31.3 Deg C | | 449 ccm | | 32.9 Deg C | |
| HVPS / Lamp Setting | 491 | | 3004 | | 491 | | 3000 | |
| PMT / RxCell Temp | 7.7 Deg C | | 50 Deg C | | 7.7 Deg C | | 50 Deg C | |
| Converter / IZS Temp | N/A Deg C | | 45 Deg C | | N/A Deg C | | 45.0 Deg C | |
| Offset / Slope | 79.2 | | 1.097 | | 69.8 | | 1.238 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4994 | 0 | 0 | 0 | N/A |
| | No zero adj. | | | |
| 4920 | 80.5 | 800 | 802 | 0.9970 |
| | No span adj. | | | |
| 4960 | 40.3 | 400 | 398 | 1.0052 |
| 4978 | 20.1 | 200 | 200 | 1.0000 |
| 4994 | 0 | 0 | 1 | N/A |
| | | | | |
| | | | Sum of Least Squares | 0.9986 |
| | | | New Correction Factor | 0.9970 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.6 |
| Auto Span | 290.5 | 324.5 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | NA |
| Current Correction Factor Before Span Adjust: | 0.9970 |
| Percent Change: | #VALUE! |

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

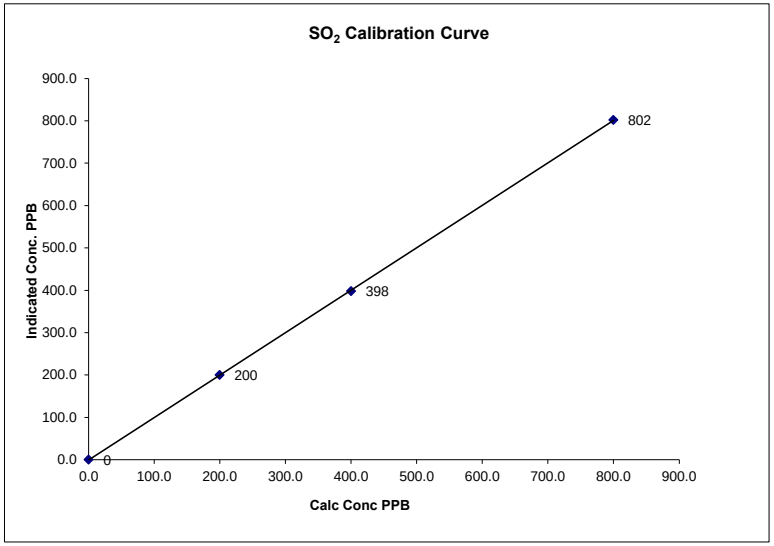
Calibration Performed by: Waseem Ahmed

## $SO_2$ Calibration Curve

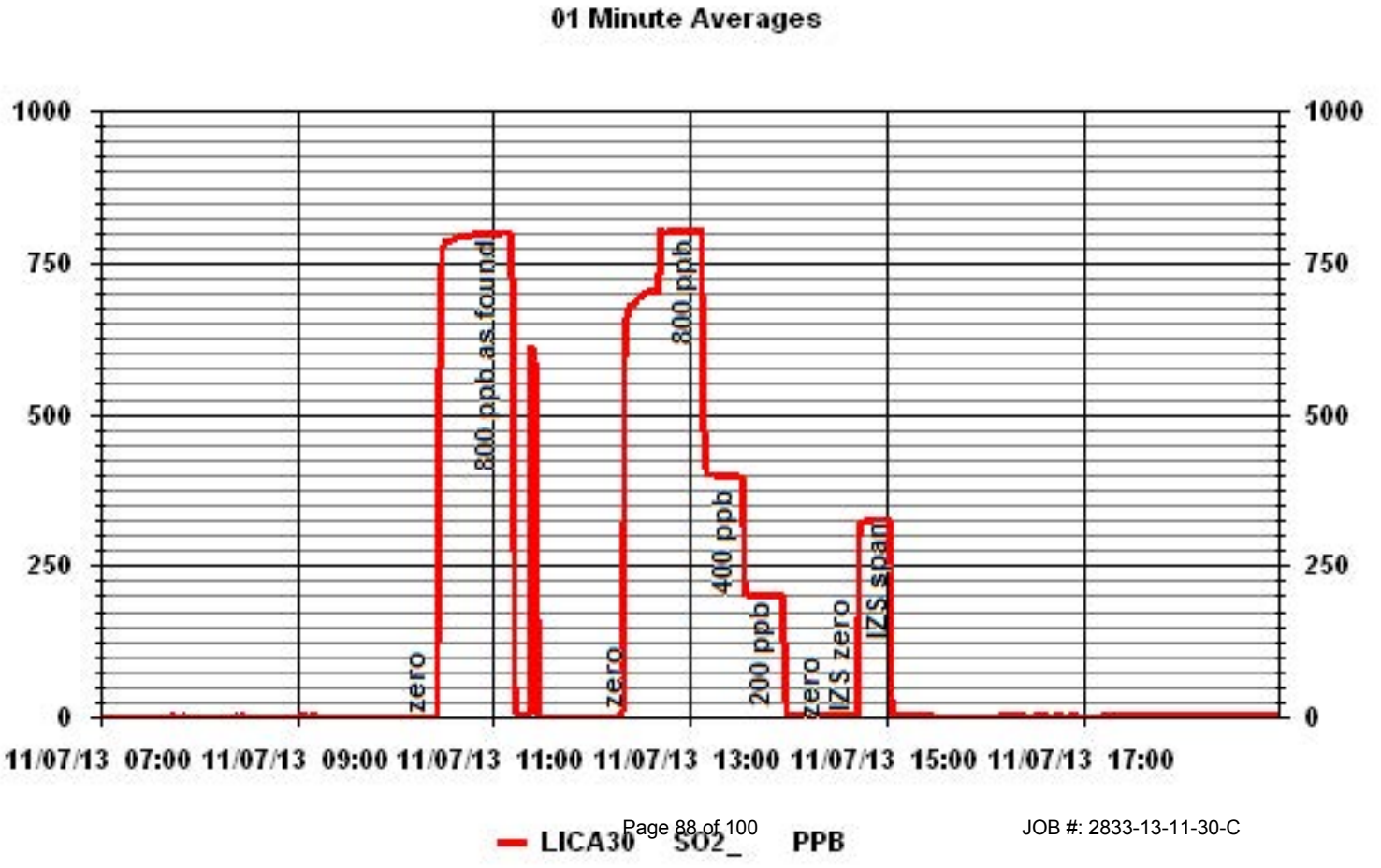
| | | | |
|---|---|---|---|
| Calibration Date | November 7, 2013 | | |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | LICA Maskwa | | |
| Start Time (MST) | 11:41 | End Time (MST) | 14:20 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 200 | 200 | 1.0000 |
| 400 | 398 | 1.0052 |
| 800 | 802 | 0.9970 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999979 |
| Slope | (0.85 to 1.15) | 1.002690 |
| Intercept | (± 3% F.S.) | -0.800477 |




**Notes:**






JOB #: 2833-13-11-30-C

# Hydrogen Sulphide

## H2S Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | Previous Calibration | October 17, 2013 | |
| Company | Lakeland Industry & Community Association | | | | |
| Plant / Location | LICA Maskwa | | | | |
| Start Time (MST) | 9:40 | | End Time (MST) | 12:06 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure | 27.93 | in HG | Station Temperature | 21 | Deg C |
| Cal Gas | 10.1 ppm | | Gas Cyl. # | BLM00504 | Cal Gas Expiry date: December 25, 2015 |
| DAS Output Voltage | 0-1 | Volts | Chart Rec. Output | N/A | Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 511 | Method: | Fluorescent |
| Converter Make / Model: | N/A | S/N : | N/A | | |
| Calibrator Make / Model: | API 700 | S/N : | 690 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO791 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | API 700 | S/N : | 690 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0-100 | ppb | | | | |
| Sample Flow / Box Temp | 668 | ccm | 30 | Deg C | 665 | ccm | 31.1 | Deg C |
| HVPS / Lamp Setting | 584 | | 3534 | | 584 | | 3532 | |
| PMT / RxCell Temp | 7.9 | Deg C | 50 | Deg C | 7.9 | Deg C | 50 | Deg C |
| Converter / IZS Temp | 315.3 | Deg C | 45 | Deg C | 314.5 | Deg C | 45.0 | Deg C |
| Offset / Slope | 30.8 | | 1.161 | | 30.8 | | 1.164 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 5000 | 0 | 0 | 0 | NA |
| | No zero adj. | | | |
| 4958 | 40.0 | 81 | 80 | 1.0104 |
| 4958 | 40.0 | 81 | 81 | 1.0000 |
| 4978 | 20.1 | 41 | 41 | 1.0000 |
| 4988 | 12.0 | 24 | 25 | 0.9696 |
| 5000 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 0.9946 |
| | | | New Correction Factor | 1.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 49.0 | 49.63 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 1.0104 |
| Percent Change: | -1.0% |

Notes: **NA : Not Applicable**

after calibration, the SOX test at 62ppb was tested for 10 mins.

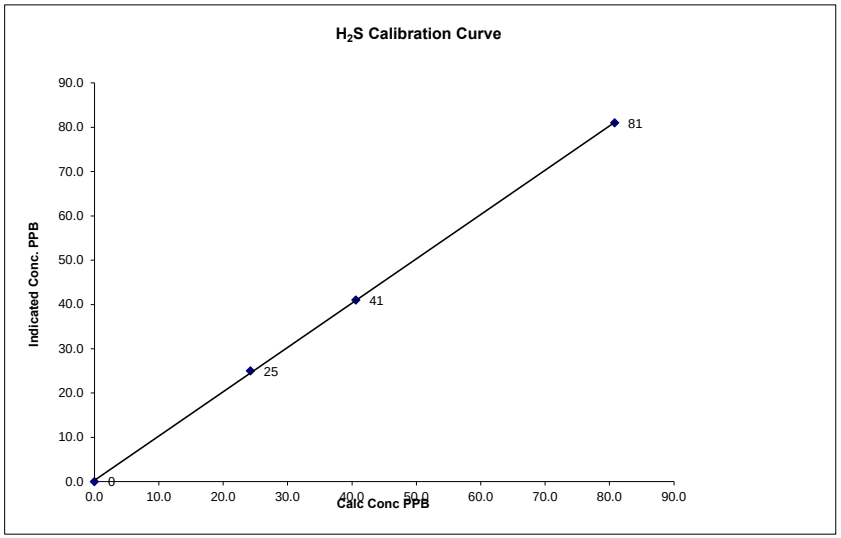
Calibration Performed by: Waseem Ahmed

## $H_2S$ Calibration Curve

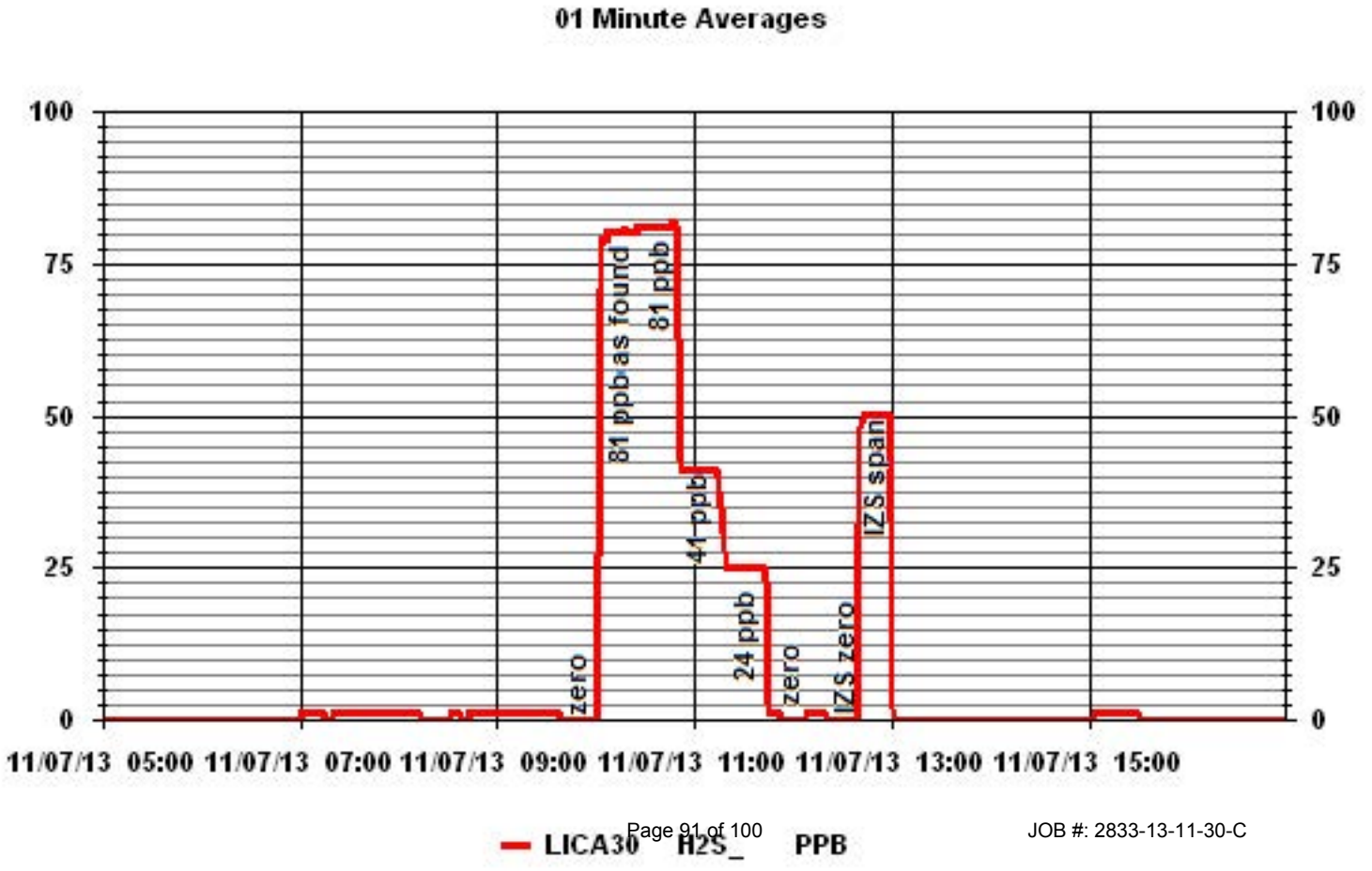
| | | | | |
|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | | |
| Company | Lakeland Industry & Community Association | | | |
| Plant / Location | LICA Maskwa | | | |
| Start Time (MST) | 9:40 | End Time (MST) | 12:06 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 24 | 25 | 0.9696 |
| 41 | 41 | 0.9907 |
| 81 | 81 | 0.9979 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999907 |
| Slope | (0.85 to 1.15) | 0.999940 |
| Intercept | (± 3% F.S.) | 0.329742 |




**Notes:**






JOB #: 2833-13-11-30-C

# Total Hydrocarbons

## THC Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | November 7, 2013 | | Previous Calibration | October 17, 2013 | |
| Company: | **Lakeland Industry & Community Association** | | | | |
| Plant / Location: | **LICA Maskwa** | | | | |
| Start Time (MST) | 13:07 | | End Time (MST) | 15:26 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure: | 27.84 | in HG | Station Temperature: | 23 | Deg C |
| Calibrator: | API 700 | | S/N: | 690 | |
| Cal Gas Concentration: | CH4 593 PPM | | C3H8 | 205 PPM | |
| | TOTAL CH4 1156.8 PPM | | Gas Cyl. # | LL84567 | Cal Gas Expiry Date: June 7, 2013 |
| DAS make & Model: | ESC 8832 | | S/N : | AO791 | |
| Chart Recorder: | N/A | | S/N: | N/A | |
| Output Voltage Range: | 0-10 | VDC | Chart Speed: | N/A | mm/hr |

**Analyzer Information**

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

**Analyzer Settings**

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

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 1995 | 0.0 | 0.0 | 0.0 | N/A |
| | | | | |
| 1995 | 74.0 | 41.4 | 41.2 | 1.0042 |
| 1995 | 74.0 | 41.4 | 41.4 | 1.0000 |
| 1995 | 37.0 | 21.1 | 21.2 | 0.9935 |
| 1995 | 20.0 | 11.5 | 11.3 | 1.0161 |
| 1995 | 0.0 | 0.0 | 0.0 | N/A |
| | | | New Correction Factor: | 1.0000 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | 0.9969 |
| Current Correction Factor Before Span Adjust: | 1.0042 |
| Percent Change: | -0.7% |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 31.27 | 31.41 |
| Sample Lines Connected | | **Yes** |

Cylinder Pressures

Span 1250 psi Hydrogen 1250 psi Zero Air 32 psi

Notes: **N/A : Not Applicable**

Calibrator malfuction at 13:34

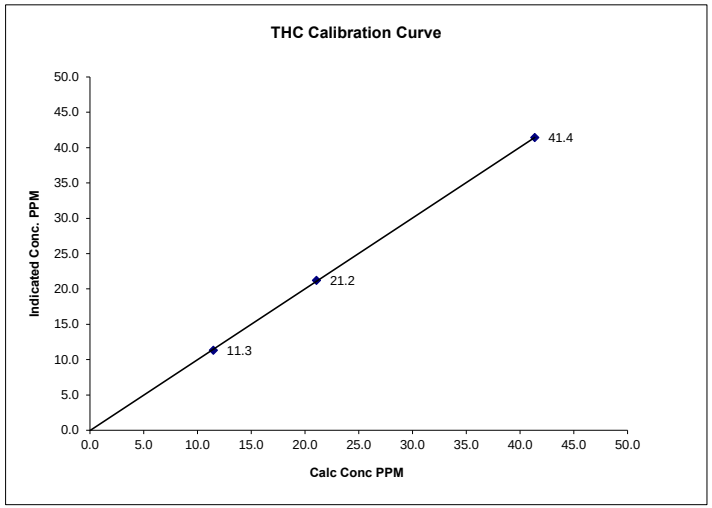
Calibration Performed by: Waseem Ahmed

## THC Calibration Curve

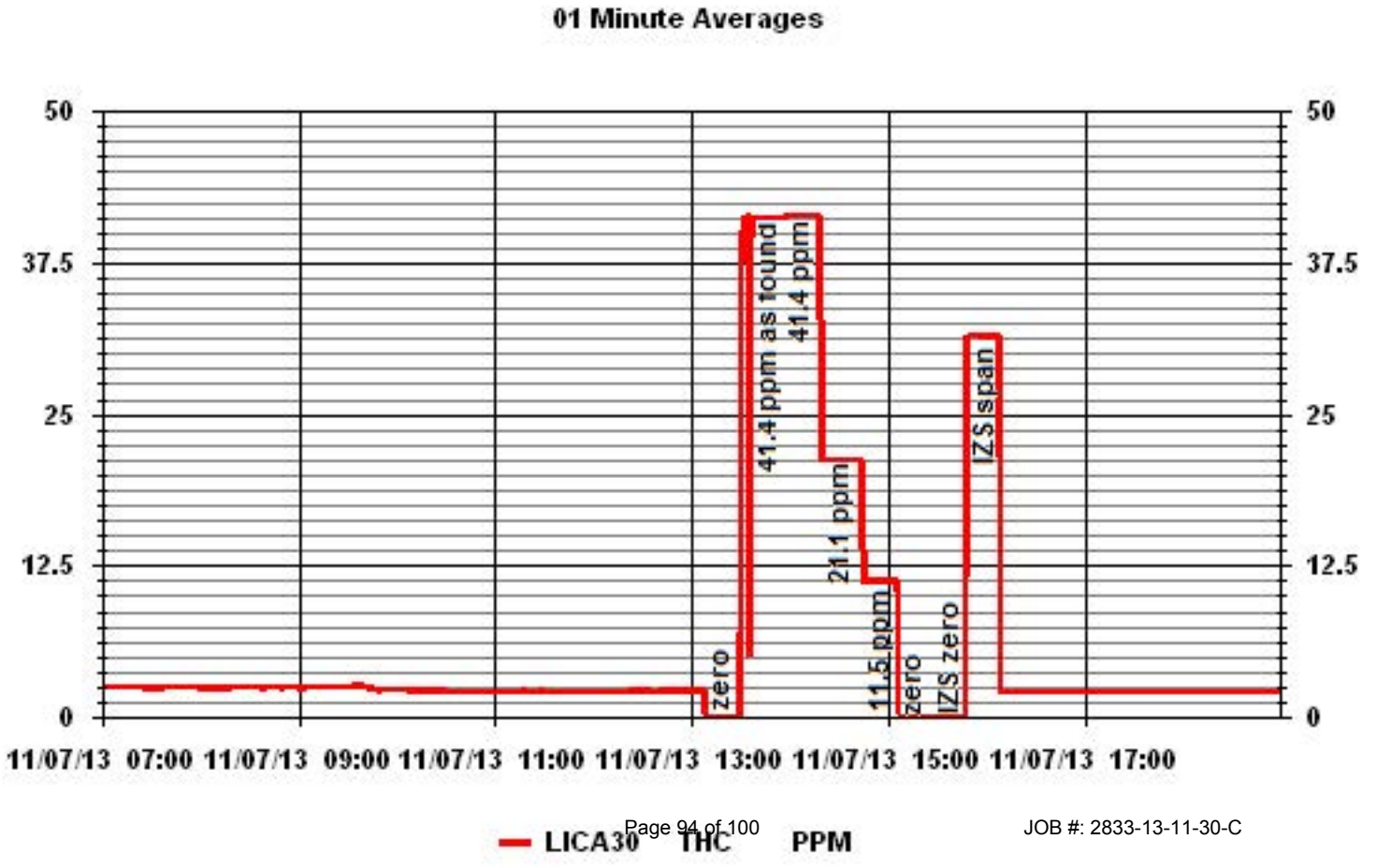
| | | | | |
|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | | |
| Company | **Lakeland Industry & Community Association** | | | |
| Plant / Location | **LICA Maskwa** | | | |
| Start Time (MST) | 13:07 | End Time (MST) | 15:26 | |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor |
|---|---|---|
| 0.0 | 0.0 | N/A |
| 11.5 | 11.3 | 1.0161 |
| 21.1 | 21.2 | 0.9935 |
| 41.4 | 41.4 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999951 |
| Slope | (0.85 to 1.15) | 1.002849 |
| Intercept | (± 3% F.S.) | -0.06182 |




Notes:






JOB #: 2833-13-11-30-C

# Nitrogen Dioxide

## NOx - NO- $NO_2$ Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | Previous Calibration | October 17, 2013 | |
| Company | LICA | | Plant/Location | LICA Maskwa | |
| Start Time (MST) | 9:40 | | End Time (MST) | 11:09 | |
| Reason: | As found | | | | |
| Barometric Pressure | 27.93 in HG | Station Temperature | 21 Deg C | MFCF | N/A |
| Cal Gas Concentration | NOx 49.0 ppm | NO 48.9 ppm | Cal Gas Expiry date | December 29, 2016 | |
| Cal Gas Cylinder # | BAL 3165 | | | | |
| DAS Output Voltage | 0-1 Volts | | Chart Rec. Output | N/A Volts | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 200E | S/N : | 594 | Method: | Chemiluminescent |
| Calibrator Make / Model: | Environics 6100 | S/N: | 4760 | | |
| DAS Make / Model: | ESC 8832 | S/N : | AO791 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | | After Calibration | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | 0-1000 | | | ppb | | | |
| Sample Flow/Conv. Temp | 452 | ccm | 316.2 | Deg C | | 452 | ccm | 315.4 | Deg C | |
| Ozone Flow / Vacuum | 79 | ccm | 4.9 | "Hg-A | | 79 | ccm | 4.9 | "Hg-A | |
| HVPS / A ZERO | 751 | Volts | 14.8 | MV | | 751 | Volts | 14.8 | MV | |
| Rx/ Temp / PMT Temp | 50.0 | Deg C | 6.6 | Deg C | | 50.0 | Deg C | 6.6 | Deg C | |
| Box Temp / IZS Temp | 28.7 | Deg C | 42.1 | Deg C | | 29.8 | Deg C | 42.1 | Deg C | |
| Offset | 0.2 | NOx | 0.0 | NO | | 0.2 | NOx | 0.0 | NO | |
| Slope | 1.093 | NOx | 1.087 | NO | | 1.093 | NOx | 1.087 | NO | |
| $NO_2$ COEF / Conv Efficency | N/A | NO2 | 0.994 | | | N/A | NO2 | 0.994 | | |

### Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 4994 | 0.0 | NA | 0 | 0 | NA | 1 | 1 | 0 | NA | NA |
| 4994 | 0.0 | NA | 0 | 0 | NA | 1 | 0 | 0 | NA | NA |
| 4920 | 80.5 | NA | 789 | 787 | NA | 789 | 787 | 3 | 1.0000 | 1.0000 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

### Gas Phase Titration Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | $NO_2$ Correction Factor | NO2 Conv Efficency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

### IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | 0.0 | NOx | 0.0 | NO2 | | 0.0 | NOx | 0.0 | NO2 |
| Auto Span | 540 | NOx | 534 | NO2 | | 540 | NOx | 534 | NO2 |
| | | | | | Sample Lines Connected | YES | | | |

### Percent Change

| | NOx | NO | NO2 |
|---|---|---|---|
| Previous Month's Calibration Correction Factor | 1.000 | 1.000 | |
| Current Correction Factor Before Span Adjust | 1.000 | 1.000 | |
| Percent Change | 0.0% | 0.0% | |

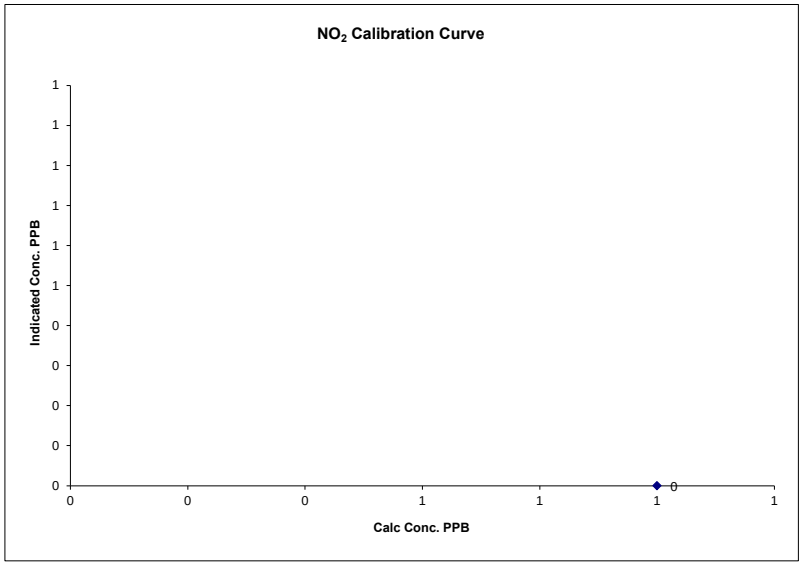
Notes **NA : Not Applicable**

Calibration Performed by: Waseem Ahmed

## $NO_2$ Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | | | |
| Company | LICA | | | | |
| Plant / Location | LICA Maskwa | | | | |
| Start Time (MST) | 9:40 | End Time | (MST) | 11:09 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | |
|---|---|---|---|---|
| 3 | | | Slope (0.85 to 1.15) | |
| | | | Intercept (± 3% F.S.) | |

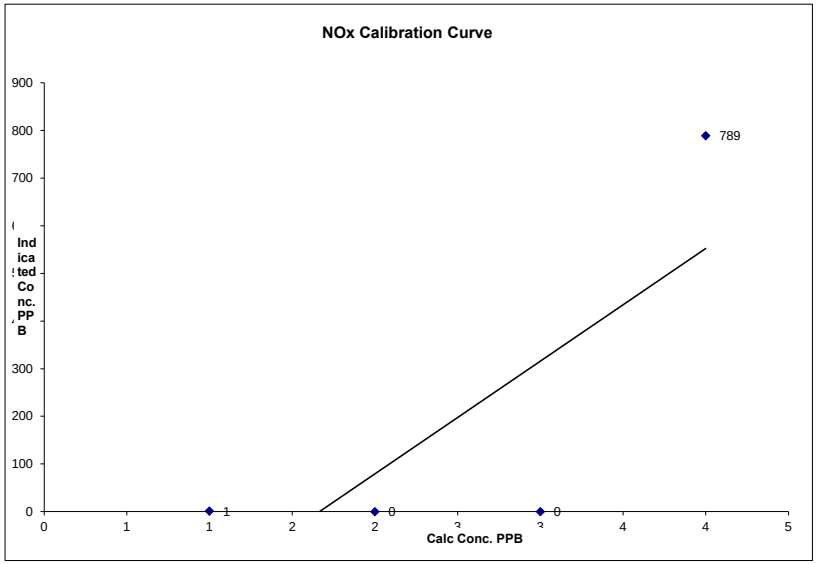



Notes:

## NOx Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | | | |
| Company | LICA | | | | |
| Plant / Location | LICA Maskwa | | | | |
| Start Time (MST) | 9:40 | End Time (MST) | 11:09 | | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) / Slope (0.85 to 1.15) / Intercept (± 3% F.S.) |
|---|---|---|---|
| 0 | 1 | NA | |
| 789 | 789 | 1.0000 | |

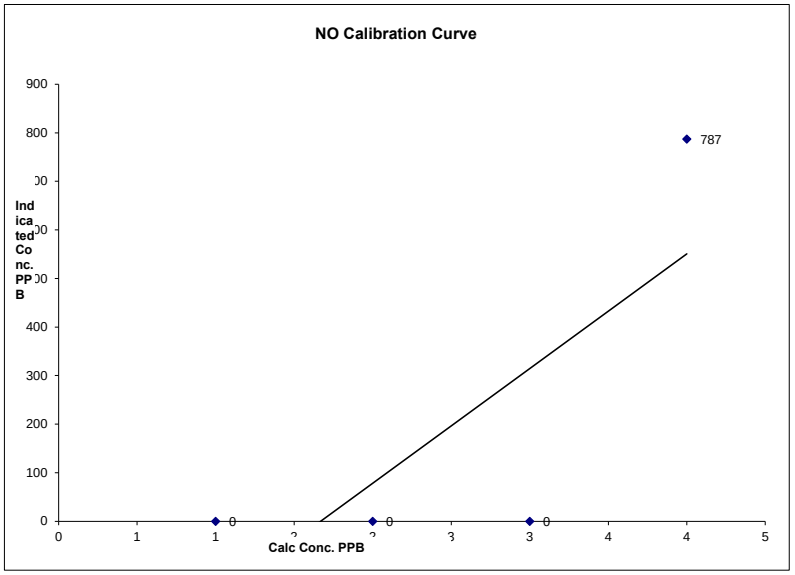



Notes:

## NO Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | | | |
| Company | LICA | | | | |
| Plant / Location | LICA Maskwa | | | | |
| Start Time (MST) | 9:40 | End Time (MST) | 11:09 | | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) / Slope (0.85 to 1.15) / Intercept (± 3% F.S.) |
|---|---|---|---|
| | 0 | | |
| 787 | 787 | 1.0000 | |




Notes:

## NOx - NO- $NO_2$ Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 7, 2013 | | Previous Calibration | October 17, 2013 | |
| Company | LICA | | Plant/Location | LICA Maskwa | |
| Start Time (MST) | 11:41 | | End Time (MST) | 16:27 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure | 27.89 in HG | Station Temperature | 23 Deg C | MFCF | N/A |
| Cal Gas Concentration | NOx 49.0 ppm | NO 48.9 ppm | Cal Gas Expiry date | December 29, 2016 | |
| Cal Gas Cylinder # | BAL 3165 | | | | |
| DAS Output Voltage | 0-1 Volts | | Chart Rec. Output | N/A Volts | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 200E | S/N : | 594 | Method: | Chemiluminescent |
| Calibrator Make / Model: | Environics 6100 | S/N: | 4760 | | |
| DAS Make / Model: | ESC 8832 | S/N : | AO791 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | 0-1000 | | | ppb | | |
| Sample Flow/Conv. Temp | 452 | ccm | 315.8 | Deg C | | 450 | ccm | 315.7 | Deg C |
| Ozone Flow / Vacuum | 79 | ccm | 4.9 | "Hg-A | | 79 | ccm | 4.8 | "Hg-A |
| HVPS / A ZERO | 751 | Volts | 14.8 | MV | | 751 | Volts | 15.8 | MV |
| Rx/ Temp / PMT Temp | 50.0 | Deg C | 6.6 | Deg C | | 50.0 | Deg C | 6.6 | Deg C |
| Box Temp / IZS Temp | 31.0 | Deg C | 42.4 | Deg C | | 31.8 | Deg C | 42.1 | Deg C |
| Offset | 0.7 | NOx | 0.4 | NO | | 0.7 | NOx | 0.4 | NO |
| Slope | 1.093 | NOx | 1.087 | NO | | 1.091 | NOx | 1.086 | NO |
| $NO_2$ COEF / Conv Efficency | N/A | NO2 | 0.994 | | | N/A | NO2 | 0.994 | |

### Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 4994 | 0.0 | NA | 0 | 0 | NA | 0 | 0 | 0 | NA | NA |
| | No zero adj. | | | | | | | | | |
| 4920 | 80.5 | NA | 788 | 787 | NA | 788 | 787 | 1 | 1.0000 | 1.0000 |
| | No span adj. | | | | | | | | | |
| 4960 | 40.3 | NA | 394 | 394 | NA | 393 | 392 | 1 | 1.0036 | 1.0041 |
| 4978 | 20.1 | NA | 197 | 197 | NA | 198 | 197 | 1 | 0.9947 | 1.0000 |
| 4994 | 0.0 | NA | 0 | 0 | NA | 0 | 0 | 0 | NA | NA |

### Gas Phase Titration Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | $NO_2$ Correction Factor | NO2 Conv Efficency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | | |
| 4920 | 80.5 | NA | 789 | 787 | NA | 792 | 789 | 2 | NA | NA |
| 4920 | 80.5 | 600 | 789 | NA | 518 | 791 | 273 | 518 | 1.0000 | 100.00% |
| | No adj. | | | | | | | | | |
| 4920 | 80.5 | 300 | 789 | NA | 261 | 792 | 530 | 263 | 0.9924 | 100.77% |
| 4920 | 80.5 | 120 | 789 | NA | 105 | 792 | 686 | 105 | 1.0000 | 100.00% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Linearity | | | Sum of Least Squares | NOx= 1.001 | NO= 1.000 | NO2= 0.998 | |
| OK? | Yes | No | Correction Factors: | NOx= 1.0000 | NO= 1.0000 | NO2= 1.0000 | |
| | | | | Average Converter Efficiency= 100.26% | | | |

### IZS Calibration Data

| | Before Calibration | | | | | After Calibration | |
|---|---|---|---|---|---|---|---|
| Auto Zero | 0.0 | NOx | 0.0 | NO2 | | NOx | NO2 |
| Auto Span | 540 | NOx | 534 | NO2 | | NOx | NO2 |
| | | | | | Sample Lines Connected | YES | |

### Percent Change

| | NOx | NO | NO2 |
|---|---|---|---|
| Previous Month's Calibration Correction Factor | NA | NA | 1.002 |
| Current Correction Factor Before Span Adjust | 1.000 | 1.000 | 1.000 |
| Percent Change | #VALUE! | #VALUE! | 0.2% |

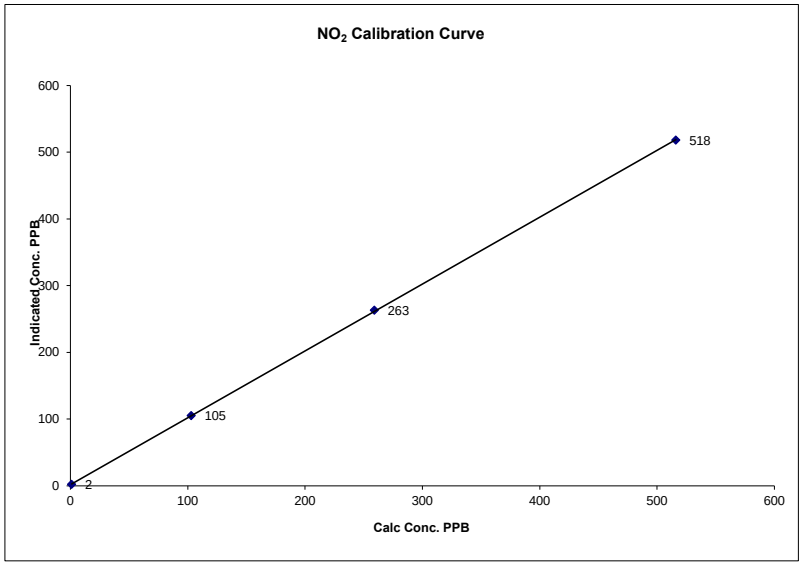
Notes **NA : Not Applicable**

Calibration Performed by: Waseem Ahmed

## $NO_2$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 7, 2013 | | |
| Company | LICA | | |
| Plant / Location | LICA Maskwa | | |
| Start Time (MST) | 11:41 | End Time (MST) | 16:27 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999972 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 1.001971 |
| 1 | 2 | NA | Intercept (± 3% F.S.) | 1.81680 |
| 103 | 105 | 0.9810 | | |
| 259 | 263 | 0.9848 | | |
| 516 | 518 | 0.9961 | | |




Notes:



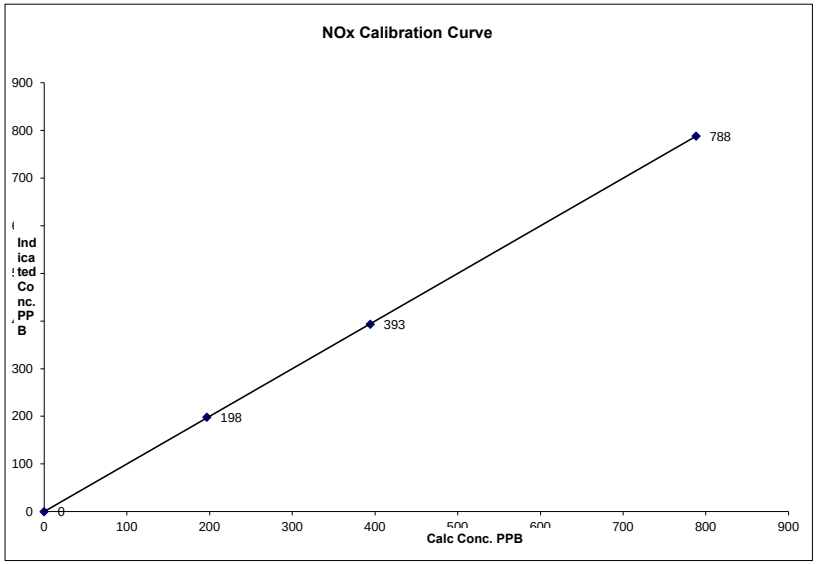
JOB #: 2833-13-11-30-C

## NOx Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 7, 2013 | | |
| Company | LICA | | |
| Plant / Location | LICA Maskwa | | |
| Start Time (MST) | 11:41 | End Time (MST) | 16:27 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 197 | 198 | 0.9947 |
| 394 | 393 | 1.0036 |
| 788 | 788 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999992 |
| Slope | (0.85 to 1.15) | 0.998896 |
| Intercept | (± 3% F.S.) | 0.19931 |



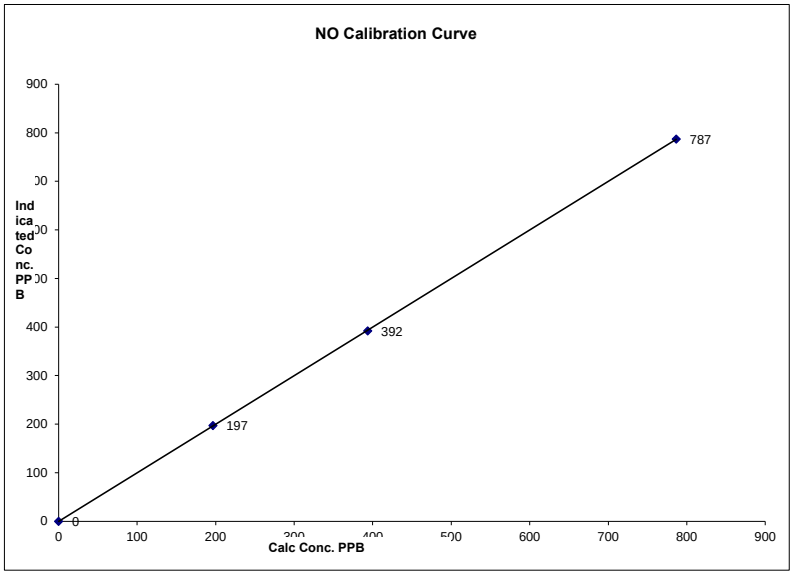

Notes:

## NO Calibration Curve

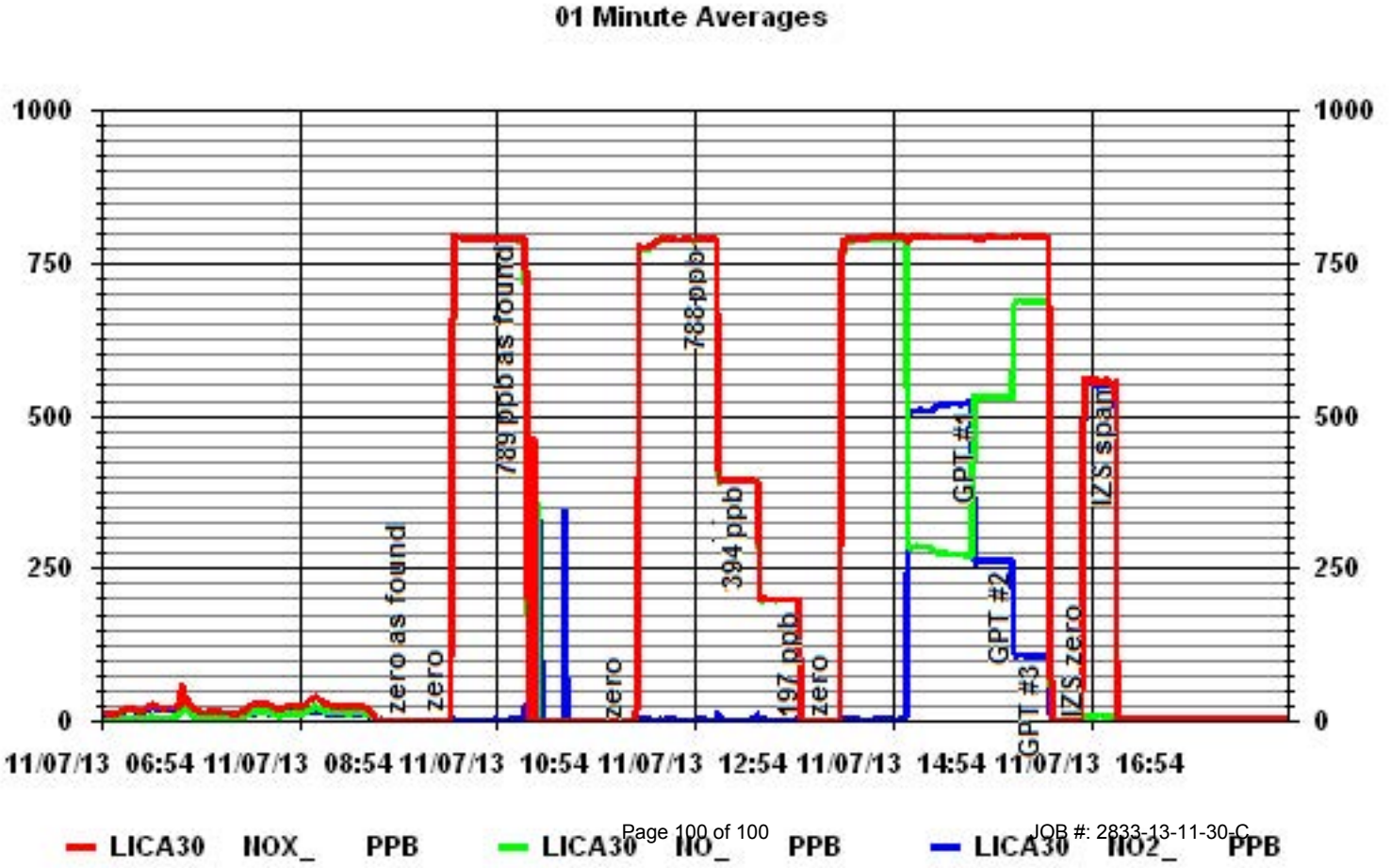
| | | | |
|---|---|---|---|
| Calibration Date | November 7, 2013 | | |
| Company | LICA | | |
| Plant / Location | LICA Maskwa | | |
| Start Time (MST) | 11:41 | End Time (MST) | 16:27 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 197 | 197 | 1.0000 |
| 394 | 392 | 1.0041 |
| 787 | 787 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999992 |
| Slope | (0.85 to 1.15) | 0.999922 |
| Intercept | (± 3% F.S.) | -0.20068 |




Notes:


01 Minute Averages
1000
750
500
250
0
zero as found
zero
789 ppb as found
zero
788 ppb
394 ppb
197 ppb
zero
GPT #1
GPT #2
GPT #3
IZS zero
IZS span
11/07/13 06:54
11/07/13 08:54
11/07/13 10:54
11/07/13 12:54
11/07/13 14:54
11/07/13 16:54
LICA30 NOX_ PPB
LICA30 NO_ PPB
LICA30 NO2_ PPB

# Lakeland Industry & Community Association

St. Lina Monitoring Site
Ambient Air Monitoring
Data Report
For
November 2013

Prepared By:


December 19, 2013

# 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: November 2013

The monthly ambient data report:

- Prepared by Lili Zhou
- Reviewed by Lily Lin

# Calibration Procedure

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

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

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

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

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

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

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

# MONTHLY CONTINUOUS DATA SUMMARY
## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – ST. LINA

### Continuous Ambient Monitoring – November 2013

| LICA ST. LINA SITE | | | | | | MAXIMUM VALUES | | | | | | | OPERATIONAL TIME (PERCENT) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-HOUR | | | | | 24-HOUR | | |
| PARAMETER | OBJECTIVES | | EXCEEDENCES | | MONTHLY AVERAGE | READING | DAY | HOUR | WIND SPEED (KPH) | WIND DIRECTION (DEGREES) | READING | DAY | |
| | 1-HR | 24-HR | 1-HR | 24-HR | | | | | | | | | |
| SO2 (PPB) | 172 | 48 | 0 | 0 | 2.35 | 8 | 19 | 18 | 14.9 | 324(NW) | 4.3 | 29 | 99.4 |
| H2S (PPB) | 10 | 3 | 0 | 0 | 1.54 | 3 | VAR | VAR | VAR | VAR | 2.6 | 26 | 92.5 |
| THC (PPM) | - | - | - | - | 2.20 | 3.6 | 22 | 17, 18 | 9.5, 9.3 | 125(SE), 149(SSE) | 2.8 | 22 | 99.4 |
| OZONE (PPB) | 82 | - | 0 | - | 24.9 | 40 | 24 | VAR | VAR | VAR | 36.5 | 24 | 99.4 |
| NOx (PPB) | - | - | - | - | 4.55 | 46.5 | 30 | 3 | 10.3 | 209(SSW) | 14.9 | 30 | 99.4 |
| NO (PPB) | - | - | - | - | 0.61 | 14.3 | 29 | 10 | 8.9 | 267(W) | 2.7 | 29 | 99.4 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 3.94 | 39.6 | 30 | 3 | 10.3 | 209(SSW) | 13.6 | 30 | 99.4 |
| PM2.5 (ug/m3) | - | 30 | - | 0 | 3.79 | 22 | 30 | 2 | 8.9 | 218(SW) | 11.0 | 21 | 99.4 |
| TEMPERATURE (DEGREE C) | - | - | - | - | -7.92 | 10.1 | 1 | 13 | 12.8 | 281(W) | 4.0 | 1 | 99.4 |
| BP (MILLIBAR) | - | - | - | - | 925 | 946 | 22 | VAR | VAR | VAR | 943.0 | 22 | 99.4 |
| RH (%) | - | - | - | - | 73.35 | 89 | 2 | VAR | VAR | VAR | 85.6 | 8 | 99.4 |
| PRECIPITATION (MM) | - | - | - | - | 0.03 | 1.1 | 6, 11 | 14, 15 | 12.9, 16.6 | 283(W), 213(SSW) | 4.3 | 8 | 99.9 |
| VECTOR WS (KPH) | - | - | - | - | 11.83 | 26.2 | 28 | 11 | - | 19(NNE) | 16.2 | 24 | 95.7 |
| VECTOR WD (DEGREES) | - | - | - | - | 268(W) | - | - | - | - | - | - | - | 95.7 |

VAR-VARIOUS

# General Monthly Summary

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

**AQM STATION – LICA – St. Lina**

**Sulphur Dioxide (PPB)**
Analyzer make / model - API 100E, S/N: 468
The analyzer was working well throughout the month. The monthly calibration was performed on November 11th. The inlet filter was changed before the calibration was started. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event. Data was corrected using daily zero information.

**Hydrogen Sulphide (PPB)**
Analyzer make / model - API 101E, S/N: 510
The monthly calibration was performed on November 11th. The inlet filter was changed before the calibration was started. The 3-point calibration was repeated on November 15th to correct baseline drift. The analyzer spanned low on November 20th. An as found points check was performed on November 21st. The analyzer failed the check. It was found an insect entered shutter mechanism which affected the analyzer. Performed troubleshooting by removing the insect, cleaning inside the analyzer. A post-repair calibration was then performed. Data was invalidated back to the last good calibration date, which was November 19th. A total of 45 hours of data was invalidated due to this event. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event. Data was corrected using daily zero information.

# General Monthly Summary

**AQM STATION – LICA – St. Lina**

**Total Hydrocarbon (PPM)**
Analyzer make / model – Thermo 51C-LT, S/N: 04366-09739
No operational issue was observed this month. The monthly calibration was performed on November 11th. The inlet filter was changed before the monthly calibration was started. The multi-point calibration was repeated on November 15th to correct the baseline drift. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event. Data was corrected using daily zero information.

**Nitrogen Dioxide (PPB)**
Analyzer make / model - API 200E, S/N: 592
The monthly calibration was performed on November 11th. The inlet filter was changed before the monthly calibration was started. The analyzer did not span on November 14th due to a loose wire on the zero/span system. The wire was reconnected and a zero/span check was run on November 15th. The analyzer spanned well on the zero/span check. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event. Data was corrected using daily zero information.

**Ozone (PPB)**
Analyzer make / model - Thermo 49i, S/N: 1002240371
The analyzer was working well throughout the month. The monthly calibration was performed on November 12th. The inlet filter was changed before the calibration was started. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event. Data was corrected using daily zero information.

# General Monthly Summary

**AQM STATION – LICA – St. Lina**

**Particulate Matter 2.5 (UG/M3)**
Analyzer make / model –R&P Teom 1400a, S/N: 20001
Two Teom audits were performed in November: one was on November 11th and the other one was on November 18th. Both audits passed the manufacturer requirements. The sample inlet was cleaned and both the flow audit and leak check were performed on November 11th. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event. Data was corrected using Alberta air quality guideline. If the data was between 0 to –3, the data was corrected to 0. If the data was below –3, the data was invalidated. No data was invalidated as the data was all above –3 ug/m3.

**Temperature (Degree C)**
Analyzer make / model – Met One 060
The temperature sensor was working well throughout the month. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event.

**Barometric Pressure (Millibar)**
Analyzer make / model - Met One 092
The BP sensor was working well throughout the month. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event.

**Relative Humidity (%)**
Analyzer make / model - Met One 083
The RH sensor was working well throughout the month. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event.

# General Monthly Summary

**AQM STATION – LICA – St. Lina**

**Precipitation (MM)**
Analyzer make / model - Met One 387
No issues were recorded this month. Hourly data collected on November 8th at hour 10 is missing due to a power failure event.

**Vector Wind Speed (KPH) & Vector Wind Direction (DEG)**
System make / model –MetOne 50.5H Sonic, S/N: H12635
The wind system is reported as vector wind speed and vector wind direction. The last wind system calibration was performed on June 12th, 2012 by the manufacturer.
Both WS and WD data collected on November 5th from hour 5 to hour 9, on November 17th from hour 23 to November 18th hour 12, on November 22nd from hour 7 to hour 10 and on November 28th from hour 12 to hour 15 were invalidated due to the wind system to be frozen. A total of 27 hours of data was invalidated due to these four events. Hourly data collected on November 8th between hour 09 and hour 12 are missing due to a power failure event.

**Datalogger**
System make / model - ESC 8832, S/N: AO717
Software make/version - ESC v 5.51a
The station is connected to a modem to allow for daily polling of the station.

**Trailer**
The glass manifold was cleaned on November 11th.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Sulphur Dioxide

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

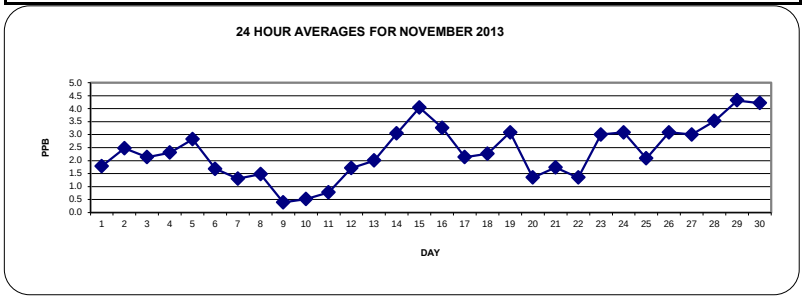
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.8 | 24 |
| 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 2.5 | 24 |
| 3 | 3 | 3 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2.1 | 24 |
| 4 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 5 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 2.3 | 24 |
| 5 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 2.8 | 24 |
| 6 | **S** | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **S** | 3 | 1.7 | 24 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 1.3 | 24 |
| 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **P** | **P** | **P** | **P** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 2 | 1.5 | 20 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **S** | 0 | 0 | 0 | 0 | 3 | 0.5 | 24 |
| 11 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | 1 | 0 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 0.8 | 24 |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | **S** | **S** | 2 | 2 | 2 | **S** | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 1.7 | 24 |
| 13 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 24 |
| 14 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **S** | 3 | 4 | 3 | 4 | 4 | 5 | 4 | 5 | 5 | 3.0 | 24 |
| 15 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | **S** | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 5 | 4.0 | 24 |
| 16 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3.3 | 24 |
| 17 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2.1 | 24 |
| 18 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2.3 | 24 |
| 19 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | **S** | 3 | 2 | 3 | 3 | 3 | 3 | 5 | **8** | 6 | 3 | 2 | 2 | 2 | **8** | 3.1 | 24 |
| 20 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1.3 | 24 |
| 21 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1.7 | 24 |
| 22 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | **S** | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1.3 | 24 |
| 23 | 2 | 2 | 2 | 2 | 2 | 3 | **S** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3.0 | 24 |
| 24 | 3 | 3 | 3 | 4 | 3 | **S** | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 4 | 3.1 | 24 |
| 25 | 3 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2.1 | 24 |
| 26 | 2 | 2 | 2 | **S** | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3.1 | 24 |
| 27 | 3 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3.0 | 24 |
| 28 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3.5 | 24 |
| 29 | **S** | 4 | 4 | 4 | 5 | 6 | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | **S** | 7 | **4.3** | 24 |
| 30 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 6 | 5 | 5 | 5 | 4 | 4 | 4 | **S** | 3 | 6 | 4.2 | 24 |
| HOURLY MAX | 4 | 4 | 4 | 4 | 5 | 6 | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 6 | 5 | 5 | 8 | 6 | 4 | 5 | 5 | 5 | | | |
| HOURLY AVG | 2.2 | 2.3 | 2.2 | 2.1 | 2.0 | 2.2 | 2.3 | 2.4 | 2.4 | 2.5 | 2.4 | 2.6 | 2.4 | 2.3 | 2.3 | 2.4 | 2.3 | 2.4 | 2.6 | 2.6 | 2.4 | 2.4 | 2.3 | 2.4 | | | |

**STATUS FLAG CODES**

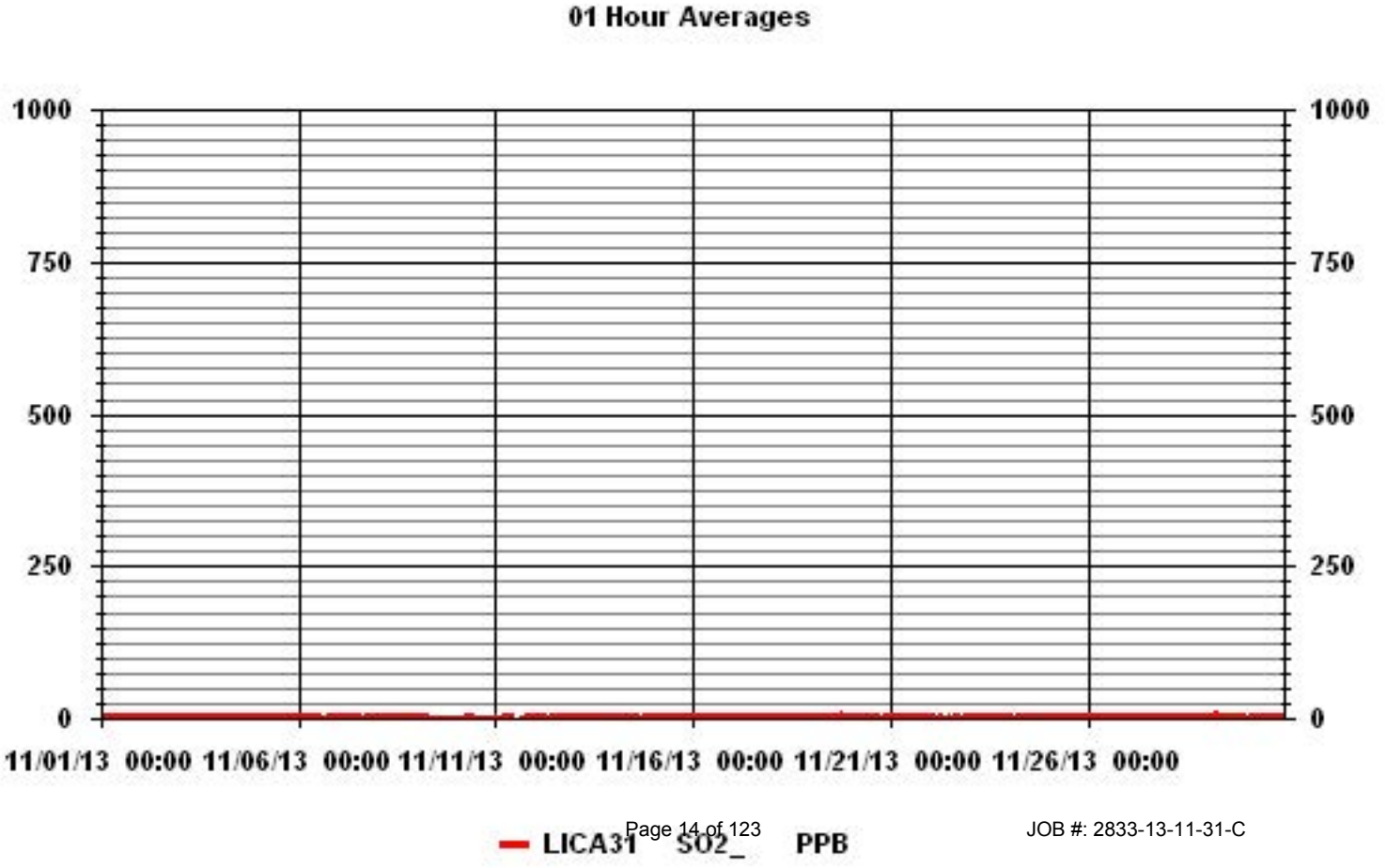
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 637 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 8 | PPB | @ HOUR(S) | 18 | ON DAY(S) | 19 |
| MAXIMUM 24-HR AVERAGE: | 4.3 | PPB | | | ON DAY(S) | 29 |
| IZS CALIBRATION TIME: | 34 | HRS | OPERATIONAL TIME: | | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 5 | HRS | AMD OPERATION UPTIME: | | 99.4 | % |
| STANDARD DEVIATION: | 1.20 | | MONTHLY AVERAGE: | | 2.35 | PPB |






JOB #: 2833-13-11-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 2 | 2 | 2 | 2 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 2.9 | 24 |
| 2 | 3 | 3 | 3 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 3.6 | 24 |
| 3 | 4 | 4 | 4 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3.1 | 24 |
| 4 | 3 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 6 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 3.3 | 24 |
| 5 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 6 | 6 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 4.0 | 24 |
| 6 | **S** | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 4 | 2.7 | 24 |
| 7 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | **S** | 3 | 3 | 2.4 | 24 |
| 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **P** | **P** | **P** | **P** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 3 | 2.5 | 20 |
| 9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 0 | 0 | 2 | 1.3 | 24 |
| 10 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 5 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 5 | 1.6 | 24 |
| 11 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | **C** | **C** | **C** | **C** | **C** | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 1.8 | 24 |
| 12 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | **S** | **S** | 3 | 3 | 3 | **S** | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 2.7 | 24 |
| 13 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3.0 | 24 |
| 14 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | **S** | 4 | 4 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 4.2 | 24 |
| 15 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | **S** | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 5 | 6 | 5.1 | 24 |
| 16 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | **S** | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4.3 | 24 |
| 17 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3.1 | 24 |
| 18 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | **S** | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3.3 | 24 |
| 19 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | **S** | 4 | 3 | 4 | 4 | 4 | 4 | 8 | **10** | 8 | 5 | 4 | 3 | 3 | **10** | 4.3 | 24 |
| 20 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2.5 | 24 |
| 21 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **S** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 2.8 | 24 |
| 22 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | **S** | 2 | 2 | 1 | 2 | 2 | 3 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 2.5 | 24 |
| 23 | 3 | 3 | 3 | 3 | 3 | 4 | **S** | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4.0 | 24 |
| 24 | 4 | 4 | 4 | 5 | 4 | **S** | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 4.1 | 24 |
| 25 | 4 | 3 | 3 | 3 | **S** | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 3.2 | 24 |
| 26 | 3 | 3 | 3 | **S** | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4.2 | 24 |
| 27 | 5 | 4 | **S** | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | 4.3 | 24 |
| 28 | 4 | **S** | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 5 | 5 | 6 | 4.6 | 24 |
| 29 | **S** | 5 | 5 | 6 | 6 | 7 | 8 | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | **S** | 8 | 5.4 | 24 |
| 30 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 7 | 7 | 7 | 6 | 6 | 5 | 5 | 5 | **S** | 4 | 7 | 5.3 | 24 |
| HOURLY MAX | 5 | 5 | 5 | 6 | 6 | 7 | 8 | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 7 | 7 | 7 | 8 | 10 | 8 | 6 | 6 | 6 | 6 | | | |
| HOURLY AVG | 3.1 | 3.2 | 3.2 | 3.2 | 3.1 | 3.2 | 3.4 | 3.5 | 3.4 | 3.7 | 3.6 | 3.6 | 3.4 | 3.4 | 3.4 | 3.5 | 3.3 | 3.6 | 3.7 | 3.6 | 3.6 | 3.6 | 3.4 | 3.5 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

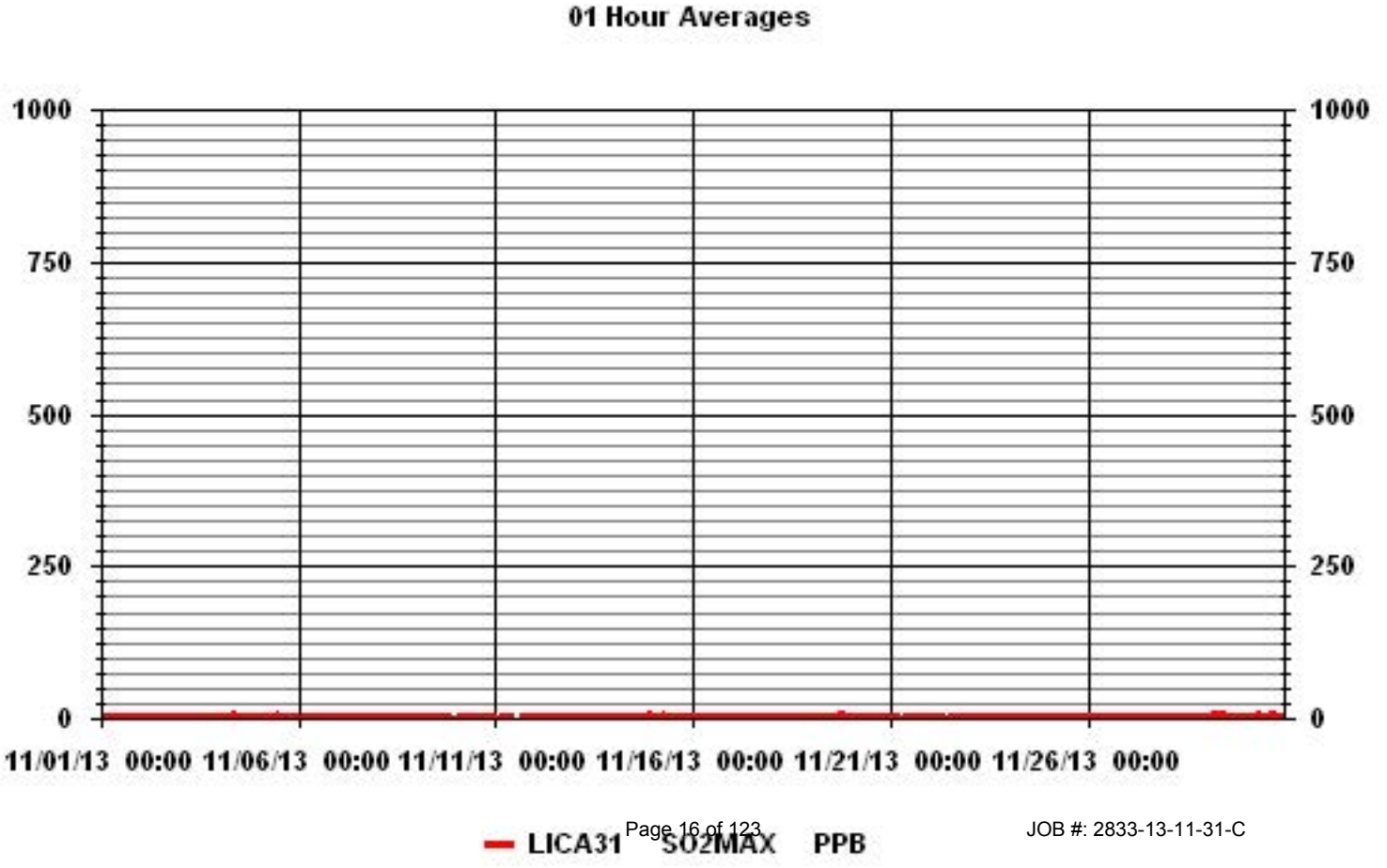
NUMBER OF NON-ZERO READINGS: 674

MAXIMUM INSTANTANEOUS VALUE: 10 PPB @ HOUR(S) 18 ON DAY(S) 19

IZS CALIBRATION TIME: 34 HRS OPERATIONAL TIME: 716 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 1.27






JOB #: 2833-13-11-31-C

LICA31
SO2_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 | 5.20 | 4.90 | 7.35 | 6.27 | 5.05 | 1.68 | 1.53 | 3.36 | 6.12 | 9.34 | 11.17 | 6.43 | 10.87 | 5.97 | 7.19 | 7.50 | 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 | 5.20 | 4.90 | 7.35 | 6.27 | 5.05 | 1.68 | 1.53 | 3.36 | 6.12 | 9.34 | 11.17 | 6.43 | 10.87 | 5.97 | 7.19 | 7.50 | |

Calm : .00 %

Total # Operational Hours : 653

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 20 | 34 | 32 | 48 | 41 | 33 | 11 | 10 | 22 | 40 | 61 | 73 | 42 | 71 | 39 | 47 | 49 | 653 |
| < | 60 | | | | | | | | | | | | | | | | | |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 170 | | | | | | | | | | | | | | | | | |
| < | 340 | | | | | | | | | | | | | | | | | |
| >= | 340 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 32 | 48 | 41 | 33 | 11 | 10 | 22 | 40 | 61 | 73 | 42 | 71 | 39 | 47 | 49 | |

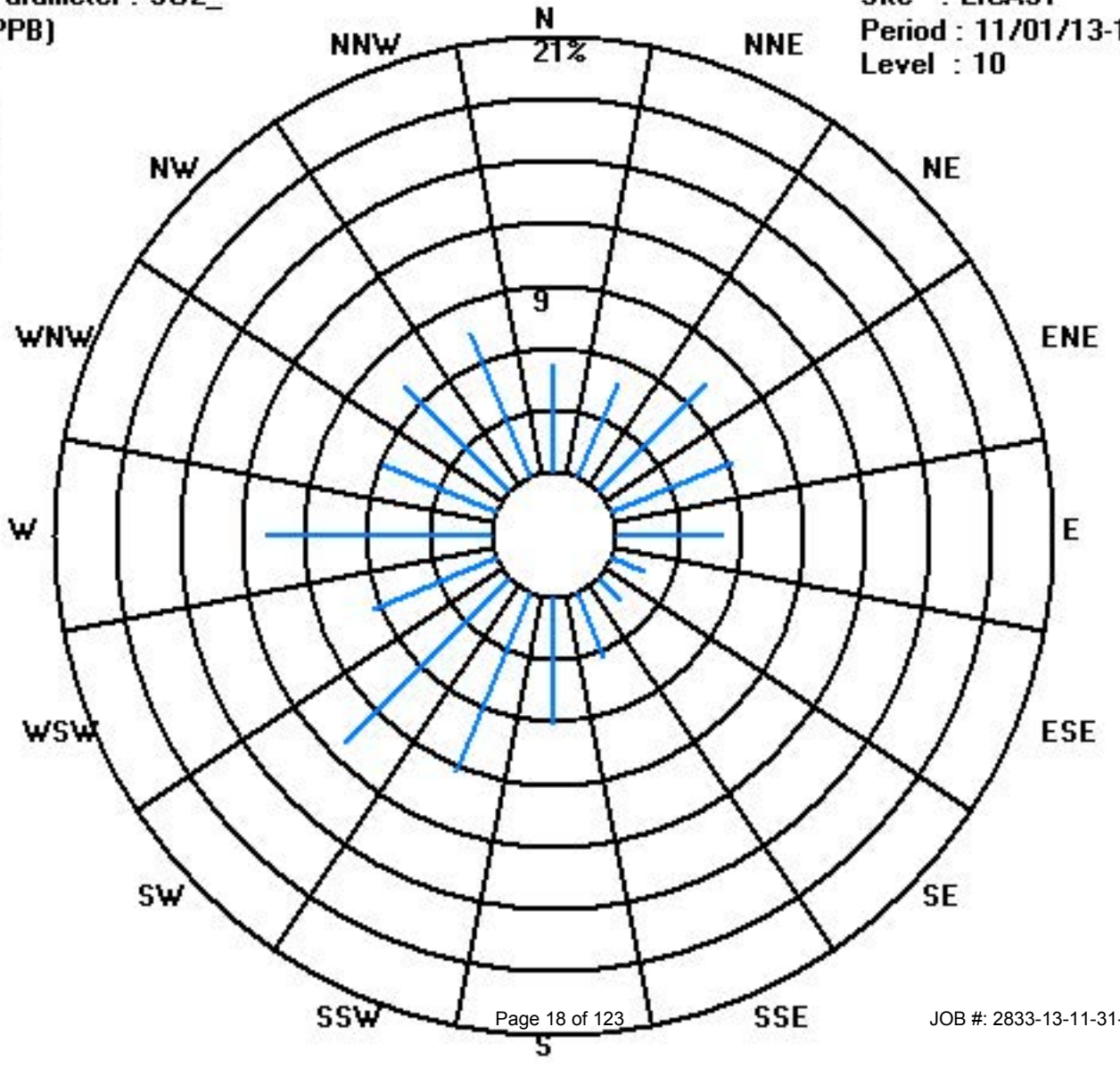
Calm : .00 %

Total # Operational Hours : 653

Logger : 31 Parameter : SO2_
Class Limits (PPB)

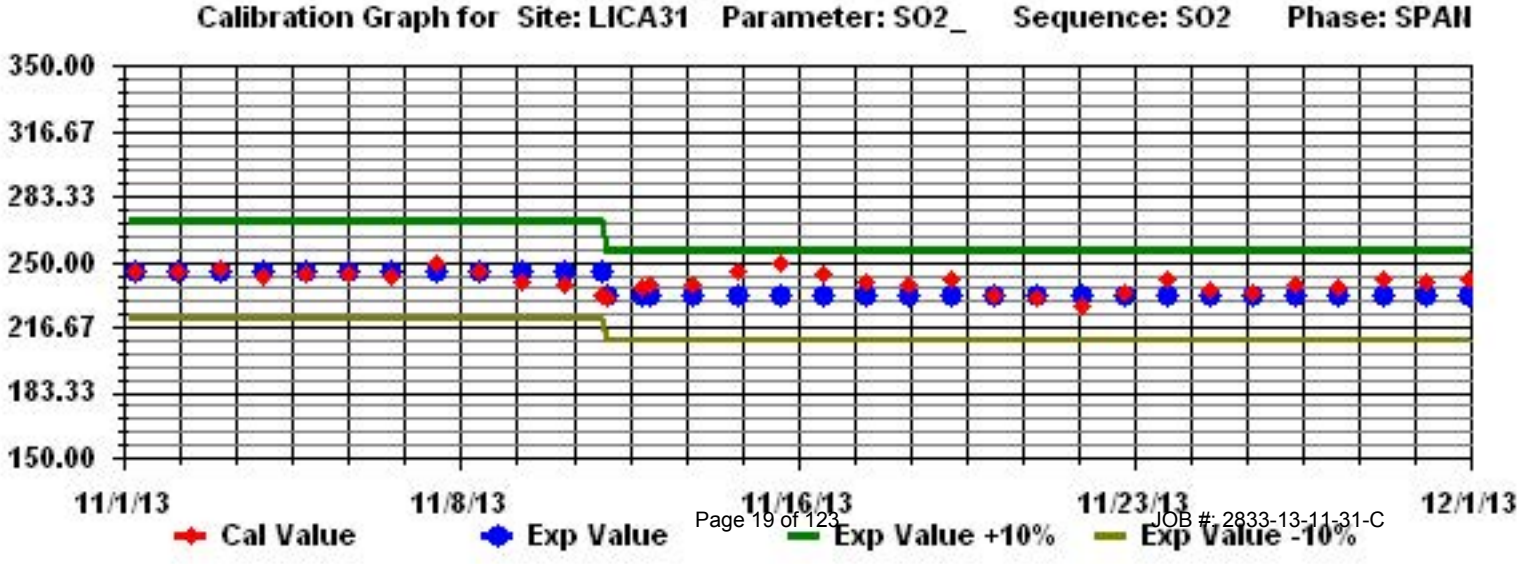
>= 340
< 340
< 170
< 110
< 60
< 20

Site : LICA31
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-31-C


Calibration Graph for Site: LICA31 Parameter: SO2_ Sequence: SO2 Phase: SPAN
350.00
316.67
283.33
250.00
216.67
183.33
150.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Hydrogen Sulphide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

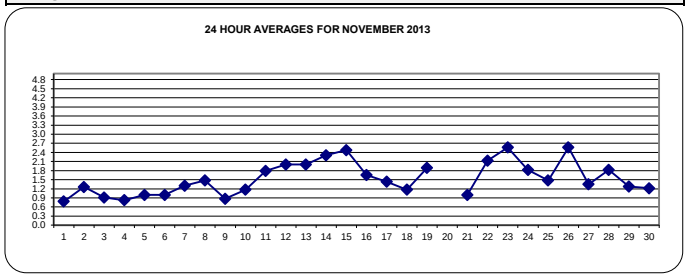
**HYDROGEN SULPHIDE ($H_2S$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY 24-HOUR | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.8 | 24 |
| 2 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1.3 | 24 |
| 3 | 1 | 1 | 2 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 2 | 0.9 | 24 |
| 4 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0.8 | 24 |
| 5 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 6 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1.0 | 24 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 1.3 | 24 |
| 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **P** | **P** | **P** | **P** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 2 | 1.5 | 20 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | **S** | 1 | 1 | 1 | 1 | 0.9 | 24 |
| 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 2 | 2 | 2 | 2 | 2 | 1.2 | 24 |
| 11 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | **C** | **C** | **C** | **C** | 1 | 1 | 1 | **S** | 1 | 1 | 2 | 2 | 2 | 3 | 1.8 | 24 |
| 12 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 24 |
| 13 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 24 |
| 14 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | **S** | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.3 | 24 |
| 15 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **C** | **C** | **C** | **C** | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2.5 | 24 |
| 16 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.7 | 24 |
| 17 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | **S** | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.4 | 24 |
| 18 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.2 | 24 |
| 19 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | **S** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 2 | 1.9 | 11 |
| 20 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | | | 0 |
| 21 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **C** | **C** | **Y** | **Y** | **Y** | **Y** | **Y** | **C** | **C** | **C** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 11 |
| 22 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | **S** | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2.1 | 24 |
| 23 | 3 | 3 | 3 | 3 | 3 | 3 | **S** | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2.6 | 24 |
| 24 | 3 | 3 | 3 | 3 | 3 | **S** | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 1.8 | 24 |
| 25 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1.5 | 24 |
| 26 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **2.6** | 24 |
| 27 | 3 | 3 | **S** | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1.3 | 24 |
| 28 | 1 | **S** | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 1.8 | 24 |
| 29 | **S** | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 2 | 1.3 | 24 |
| 30 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | **S** | 2 | 2 | 1.2 | 24 |
| HOURLY MAX | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | |
| HOURLY AVG | 1.5 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.5 | 1.6 | 1.5 | 1.4 | 1.4 | 1.5 | 1.4 | 1.5 | 1.4 | 1.5 | 1.4 | 1.4 | 1.4 | 1.6 | 1.6 | 1.6 | 1.7 | | | |

**STATUS FLAG CODES**

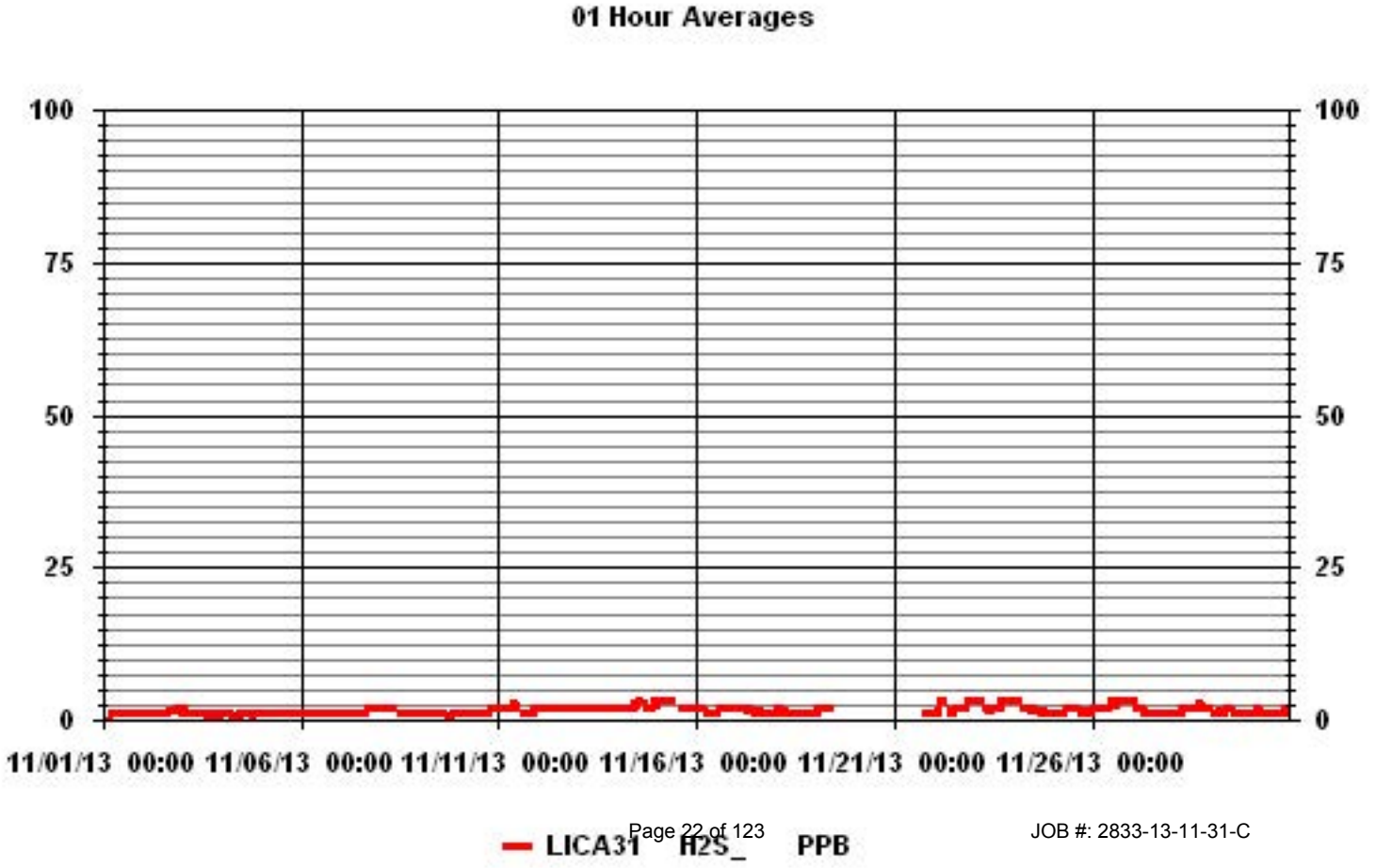
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 607 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 3 | PPB | @ HOUR(S) | VAR | ON DAY(S) | VAR |
| MAXIMUM 24-HR AVERAGE: | 2.6 | PPB | | | ON DAY(S) | 26 |
| | | | | | VAR-VARIOUS | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 666 | HRS |
| MONTHLY CALIBRATION TIME: | 13 | HRS | AMD OPERATION UPTIME: | | 92.5 | % |
| STANDARD DEVIATION: | 0.70 | | MONTHLY AVERAGE: | | 1.54 | PPB |






JOB #: 2833-13-11-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**HYDROGEN SULPHIDE MAX instantaneous maximum in ppb**

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.0 | 24 |
| 2 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.6 | 24 |
| 3 | 2 | 2 | 2 | **S** | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.2 | 24 |
| 4 | 1 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 5 | 1 | **S** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 6 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 2 | 1.0 | 24 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 1.5 | 24 |
| 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **P** | **P** | **P** | **P** | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | **S** | 1 | 1 | 2 | 1.5 | 20 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **S** | 2 | 1 | 1 | 2 | 1.0 | 24 |
| 10 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | **S** | 3 | 3 | 3 | 3 | 3 | 1.6 | 24 |
| 11 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | **C** | **C** | **C** | **C** | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 3 | 2.4 | 24 |
| 12 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | **S** | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2.2 | 24 |
| 13 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 24 |
| 14 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **S** | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2.6 | 24 |
| 15 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **C** | **C** | **C** | **C** | **C** | **S** | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2.6 | 24 |
| 16 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.8 | 24 |
| 17 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 24 |
| 18 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 24 |
| 19 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | **S** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 2 | 2.0 | 11 |
| 20 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | | | 0 |
| 21 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **C** | **C** | **Y** | **Y** | **Y** | **Y** | **Y** | **C** | **C** | **C** | **C** | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 11 |
| 22 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | **S** | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | **5** | 3 | 3 | 3 | 3 | 3 | 3 | **5** | 2.7 | 24 |
| 23 | 3 | 4 | 3 | 4 | 4 | 4 | **S** | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 3.1 | 24 |
| 24 | 4 | 4 | 4 | 3 | 3 | **S** | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 4 | 2.3 | 24 |
| 25 | 1 | 1 | 1 | 1 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.8 | 24 |
| 26 | 2 | 2 | 2 | **S** | 2 | 2 | **5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **5** | 2.9 | 24 |
| 27 | 3 | 3 | **S** | 2 | 2 | 2 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 4 | 2.0 | 24 |
| 28 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2.4 | 24 |
| 29 | 0 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | **S** | 2 | 1.7 | 24 |
| 30 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2.0 | 24 |
| HOURLY MAX | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 3 | 4 | 4 | 4 | 4 | 3 | | | |
| HOURLY AVG | 1.8 | 1.9 | 1.9 | 1.9 | 2.0 | 1.8 | 2.0 | 1.9 | 1.9 | 1.7 | 1.8 | 1.7 | 1.8 | 1.9 | 1.9 | 1.8 | 1.9 | 1.9 | 1.8 | 1.9 | 2.1 | 2.0 | 1.9 | 2.0 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

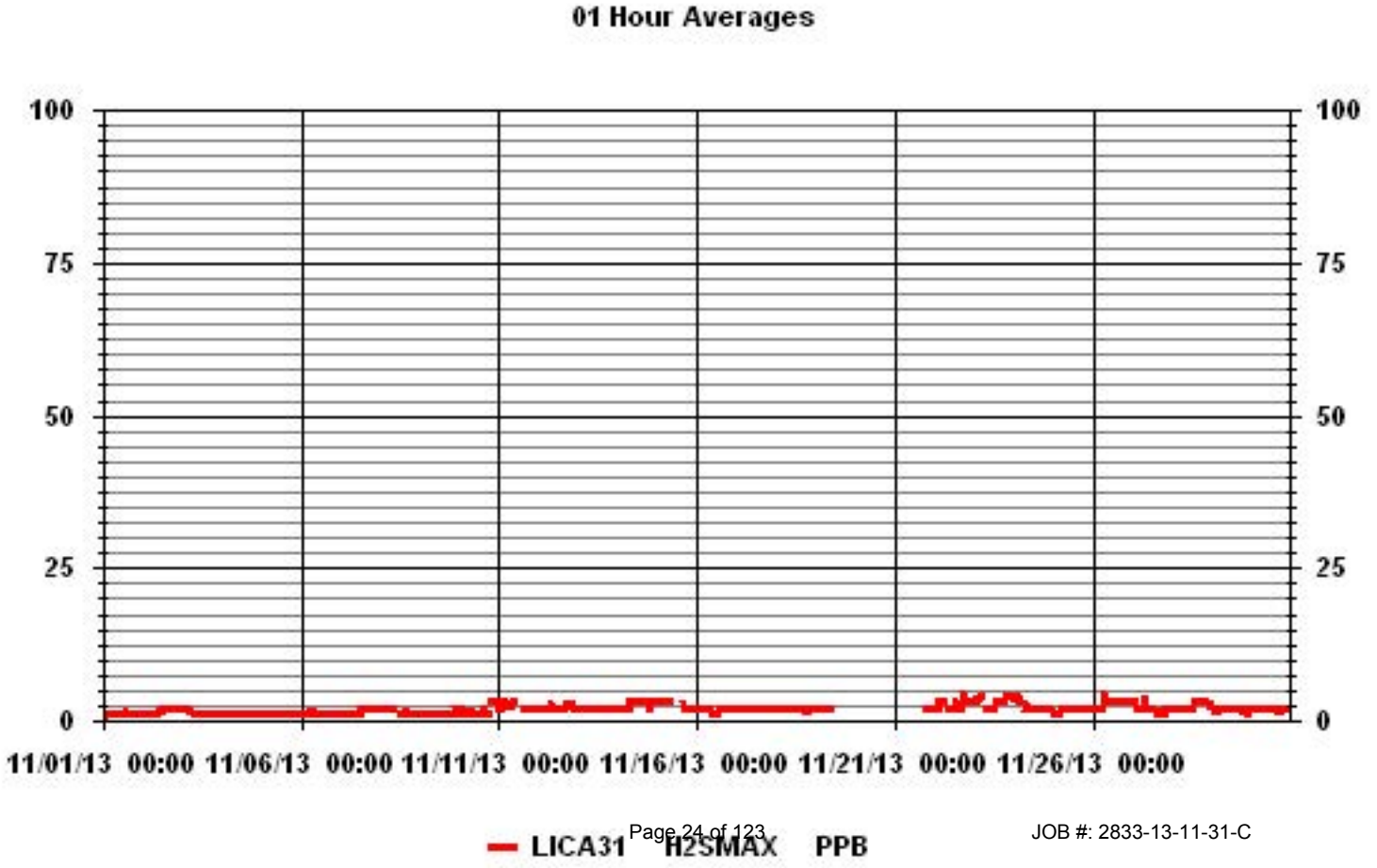
NUMBER OF NON-ZERO READINGS: 619

MAXIMUM INSTANTANEOUS VALUE: 5 PPB @ HOUR(S) 17, 6 ON DAY(S) 22, 26

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 666 HRS

MONTHLY CALIBRATION TIME: 15 HRS

STANDARD DEVIATION: 0.76






JOB #: 2833-13-11-31-C

LICA31
H2S_ / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 5.50 | 5.17 | 8.01 | 6.67 | 5.17 | 1.50 | 1.66 | 2.50 | 5.00 | 9.34 | 9.34 | 5.67 | 10.01 | 3.67 | 5.34 | 5.34 | 89.98 |
| < 10 | .00 | .00 | .00 | .16 | .33 | .33 | .00 | .50 | .83 | 1.00 | 1.83 | 1.33 | 1.16 | 1.66 | .83 | .00 | 10.01 |
| < 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 | 5.50 | 5.17 | 8.01 | 6.84 | 5.50 | 1.83 | 1.66 | 3.00 | 5.84 | 10.35 | 11.18 | 7.01 | 11.18 | 5.34 | 6.17 | 5.34 | |

Calm : .00 %

Total # Operational Hours : 599

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 33 | 31 | 48 | 40 | 31 | 9 | 10 | 15 | 30 | 56 | 56 | 34 | 60 | 22 | 32 | 32 | 539 |
| < 10 | | | | 1 | 2 | 2 | | 3 | 5 | 6 | 11 | 8 | 7 | 10 | 5 | | 60 |
| < 50 | | | | | | | | | | | | | | | | | |
| >= 50 | | | | | | | | | | | | | | | | | |
| Totals | 33 | 31 | 48 | 41 | 33 | 11 | 10 | 18 | 35 | 62 | 67 | 42 | 67 | 32 | 37 | 32 | |

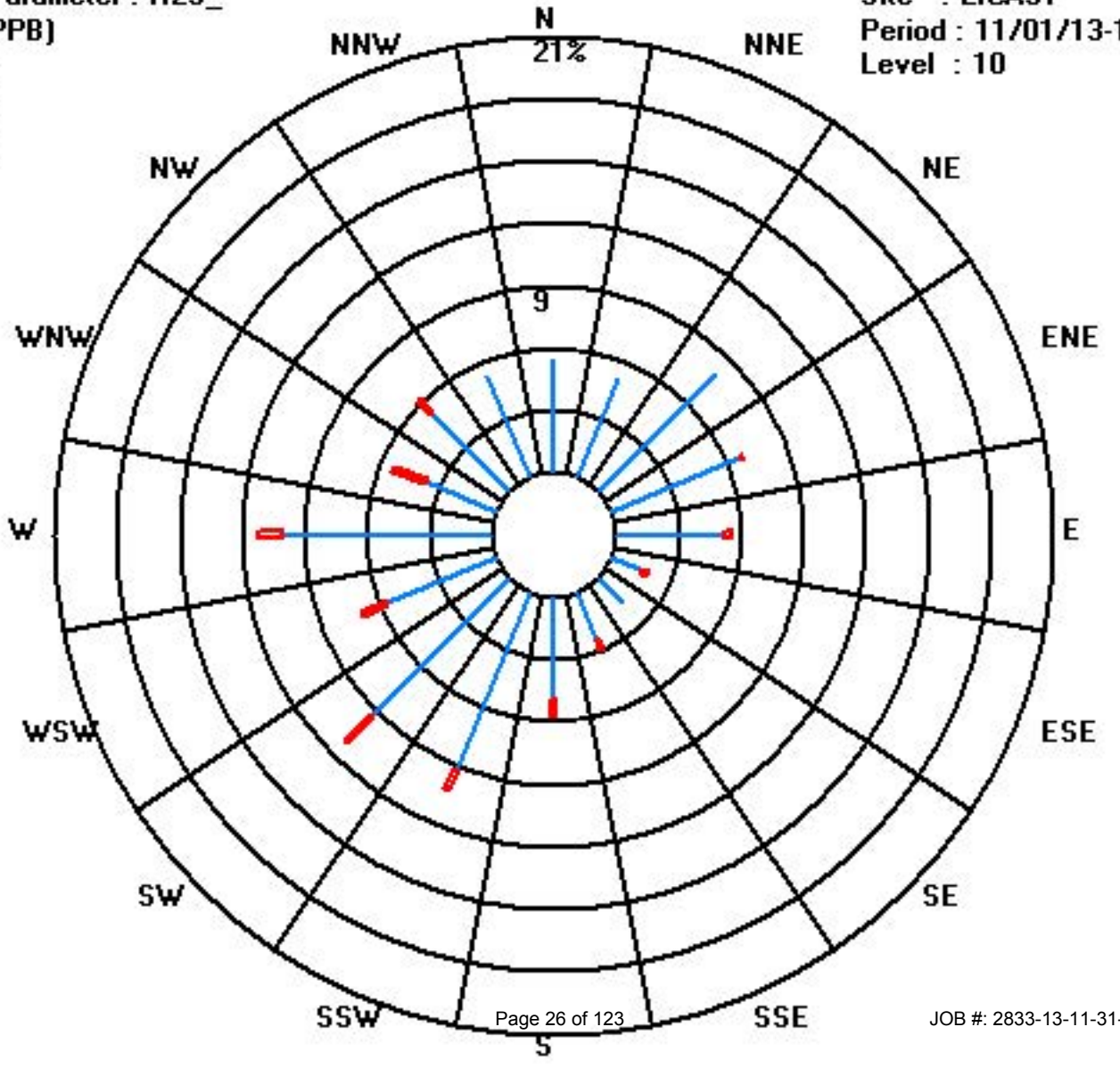
Calm : .00 %

Total # Operational Hours : 599

Logger : 31 Parameter : H2S_
Class Limits (PPB)

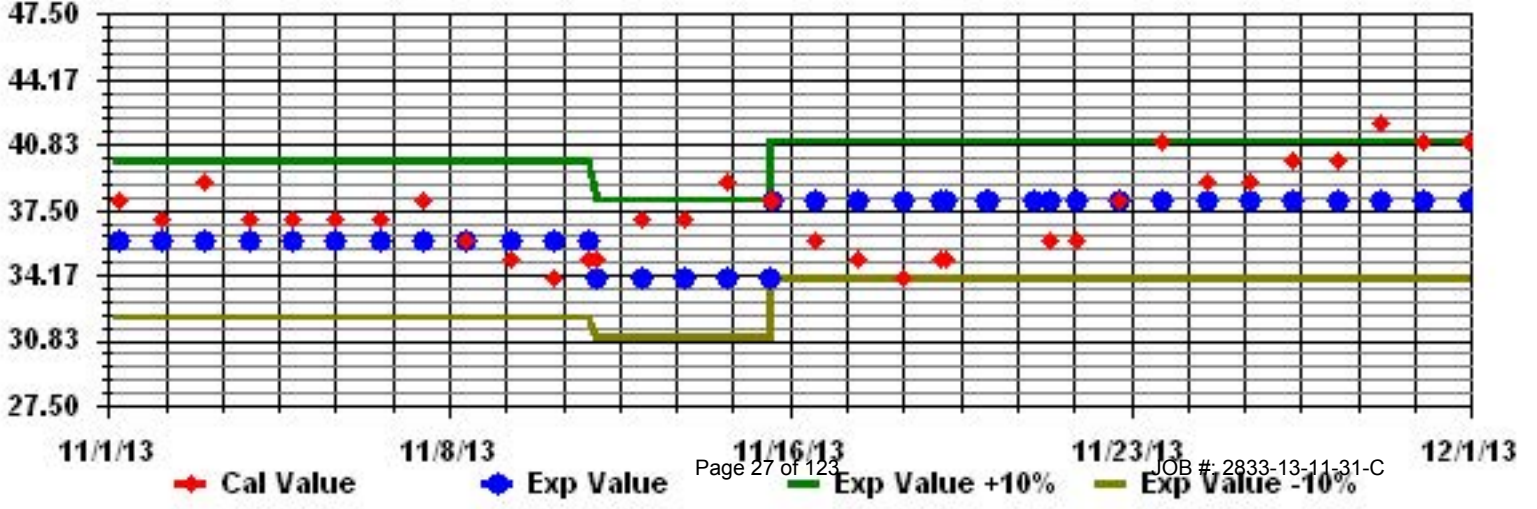
>= 50
< 50
< 10
< 3

Site : LICA31
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-31-C


Calibration Graph for Site: LICA31 Parameter: H2S_ Sequence: H2S Phase: SPAN
47.50
44.17
40.83
37.50
34.17
30.83
27.50
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

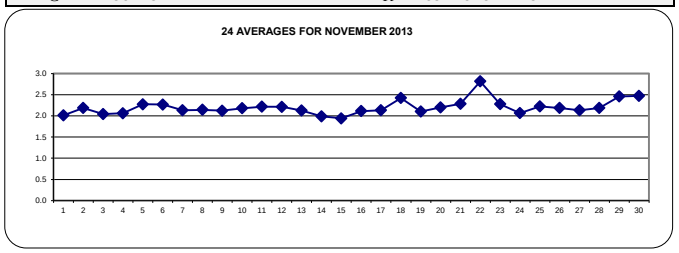
**TOTAL HYDROCARBONS** hourly averages in ppm

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.0 | 24 |
| 2 | 2.1 | 2.1 | 2 | 2.1 | **S** | 2 | 2.1 | 2.2 | 2.1 | 2 | 2 | 2 | 2 | 2.1 | 2.3 | 2.7 | 2.8 | 2.6 | 2.5 | 2.4 | 2.2 | 2 | 2 | 2 | 2.8 | 2.2 | 24 |
| 3 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 24 |
| 4 | 2.1 | 2.1 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2.1 | 2.2 | 2.3 | 2.3 | 2.1 | 2 | 2 | 2.1 | 2.3 | 2.1 | 24 |
| 5 | 2.1 | **S** | 2.2 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 24 |
| 6 | **S** | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.4 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.5 | 2.3 | 24 |
| 7 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2 | 2 | 2.1 | 2.2 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.3 | 2.1 | 24 |
| 8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **P** | **P** | **P** | **P** | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | **S** | 2 | 2 | 2.3 | 2.1 | 20 |
| 9 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2 | 2 | 2.8 | 2.8 | 2.1 | 24 |
| 10 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | **S** | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 24 |
| 11 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | **C** | **C** | **C** | **C** | 2.3 | **S** | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 24 |
| 12 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.1 | 2.1 | 2 | 2 | 1.9 | 1.9 | **S** | 2.2 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.2 | 24 |
| 13 | 2.4 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2 | 2.1 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.4 | 2.1 | 24 |
| 14 | 2.2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.9 | 1.9 | **S** | **S** | **S** | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.0 | 24 |
| 15 | 2 | 1.9 | 1.9 | 1.8 | 1.9 | 1.9 | 1.8 | 1.8 | 1.9 | 1.9 | **C** | **C** | **C** | **C** | **S** | 1.9 | 1.9 | 1.9 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 1.9 | 24 |
| 16 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 17 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | **S** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.3 | 2.5 | 2.5 | 2.1 | 24 |
| 18 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.7 | 2.4 | **S** | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.6 | 2.5 | 2.2 | 2.2 | 2.8 | 2.4 | 24 |
| 19 | 2.3 | 2.2 | 2.2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.3 | 2.1 | 24 |
| 20 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4 | 2.2 | 24 |
| 21 | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.5 | 2.5 | **S** | 2.2 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.5 | 2.3 | 24 |
| 22 | 2.5 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | **S** | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.6 | 2.9 | 3 | 3.3 | **3.6** | **3.6** | 3.4 | 3.5 | 3.5 | 3.4 | 3 | **3.6** | **2.8** | 24 |
| 23 | 2.6 | 2.6 | 2.5 | 2.3 | 2.2 | 2.2 | **S** | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.6 | 2.3 | 24 |
| 24 | 2 | 2 | 1.9 | 1.9 | 1.8 | **S** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 24 |
| 25 | 2.2 | 2.2 | 2.2 | 2.3 | **S** | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 24 |
| 26 | 2.2 | 2.2 | 2.2 | **S** | 2.1 | 2.3 | 2.5 | 2.6 | 2.5 | 2.3 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.6 | 2.2 | 24 |
| 27 | 2.1 | 2.1 | **S** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 24 |
| 28 | 2.3 | **S** | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.3 | 2.2 | 24 |
| 29 | **S** | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.5 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | **S** | 2.8 | 2.5 | 24 |
| 30 | 2.5 | 2.6 | 2.7 | 2.7 | 2.6 | 2.5 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.4 | 2.7 | 2.9 | 2.9 | **S** | 2.8 | 2.9 | 2.5 | 24 |
| HOURLY MAX | 2.6 | 2.6 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.5 | 2.6 | 2.9 | 3.0 | 3.3 | 3.6 | 3.6 | 3.4 | 3.5 | 3.5 | 3.4 | 3.0 | | | |
| HOURLY AVG | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | | | |

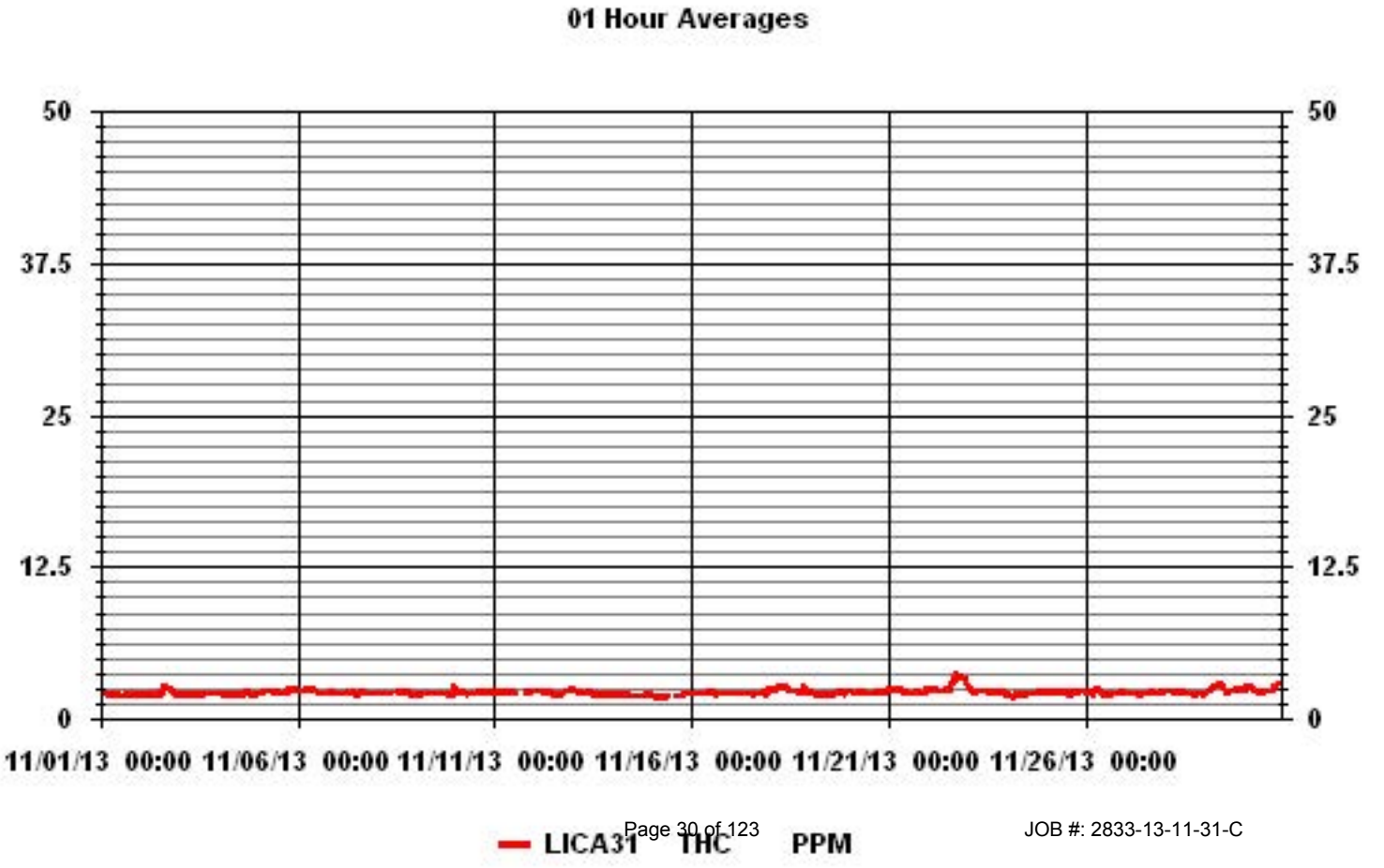
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 674 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 3.6 | PPM | @ HOUR(S) | 17, 18 | ON DAY(S) | 22 | |
| MAXIMUM 24-HR AVERAGE: | 2.8 | PPM | | | ON DAY(S) | 22 | |
| | | | | | VAR- VARIOUS | | |
| IZS CALIBRATION TIME: | 34 | HRS | OPERATIONAL TIME: | | 716 | HRS | |
| MONTHLY CALIBRATION TIME: | 8 | HRS | AMD OPERATION UPTIME: | | 99.4 | % | |
| STANDARD DEVIATION: | 0.23 | | MONTHLY AVERAGE: | | 2.20 | PPM | |






JOB #: 2833-13-11-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**TOTAL HYDROCARBONS MAX** instantaneous maximum in ppm

MST

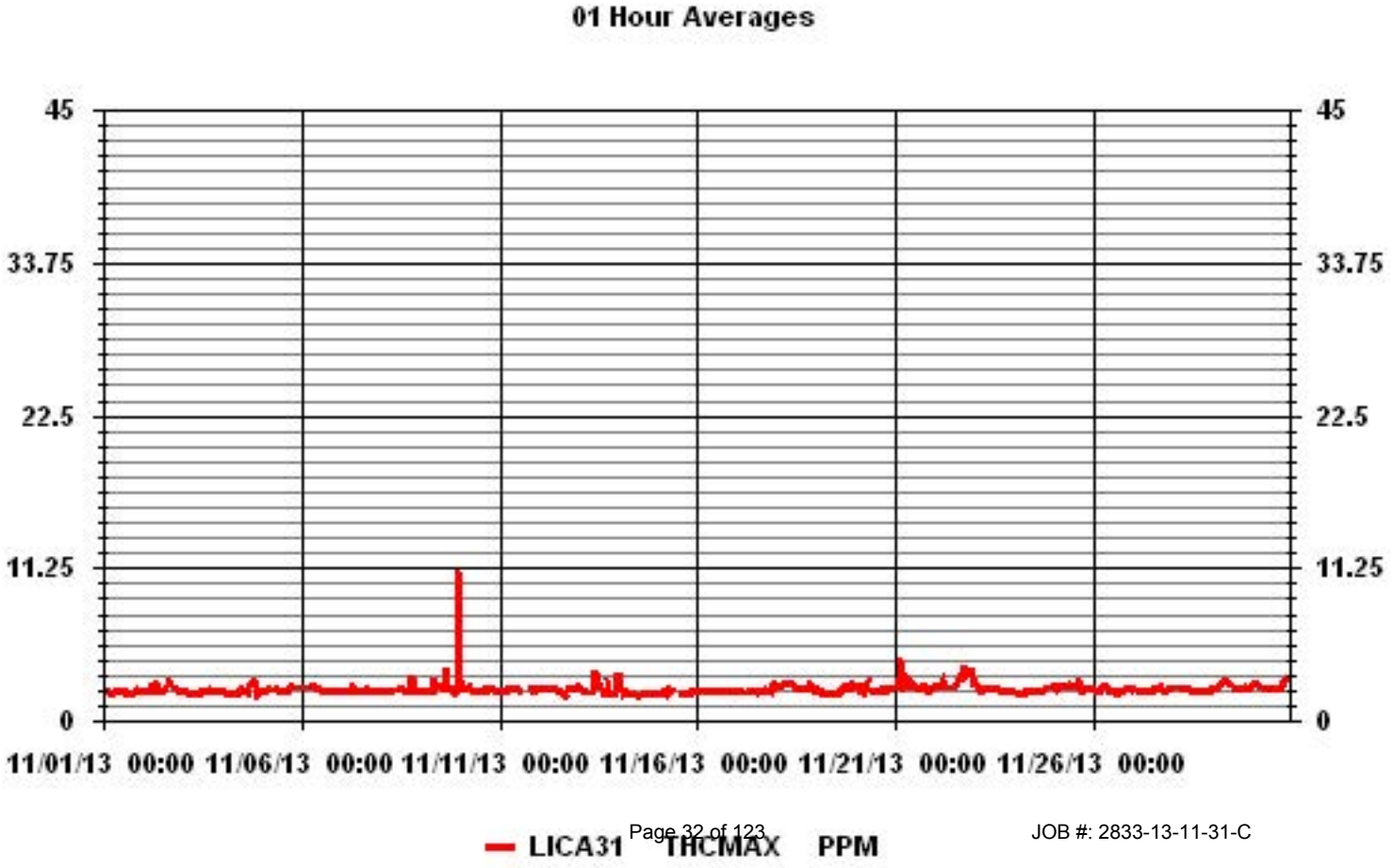
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | **S** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2.1 | 2.3 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 24 |
| 2 | 2.1 | 2.1 | 2.1 | 2.1 | **S** | 2.2 | 2.7 | 2.8 | 2.8 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.5 | 2.9 | 2.9 | 2.6 | 2.6 | 2.5 | 2.4 | 2.1 | 2.1 | 2.1 | 2.9 | 2.4 | 24 |
| 3 | 2.1 | 2.1 | 2.1 | **S** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 24 |
| 4 | 2.1 | 2.1 | **S** | 2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.3 | 2.3 | 2.2 | 2.1 | 2.6 | 2.7 | 2.7 | 2.9 | 2.8 | 2 | 2.1 | 2.1 | 2.9 | 2.2 | 24 |
| 5 | 2.1 | **S** | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.3 | 24 |
| 6 | **S** | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.6 | 2.5 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.6 | 2.3 | 24 |
| 7 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.7 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | **S** | 2.1 | 2.7 | 2.2 | 24 |
| 8 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | **P** | **P** | **P** | **P** | 2.3 | 2.3 | 2.2 | 2.2 | 2.5 | 2.4 | 3.3 | 2.2 | **S** | 2.1 | 2.1 | 3.3 | 2.2 | 20 |
| 9 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 3.2 | 2.6 | 2.7 | 2.6 | 2.7 | 2.6 | 2.1 | 3 | 3.9 | 2.8 | 2.1 | 2.4 | **S** | 2 | 2.1 | **11.1** | **11.1** | 2.8 | 24 |
| 10 | 3.2 | 2.1 | 2.3 | 2.4 | 2.5 | 2.6 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.4 | **S** | 2.3 | 2.3 | 2.2 | 2.2 | 3.2 | 2.3 | 24 |
| 11 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | **C** | **C** | **C** | **C** | **C** | **S** | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.4 | 2.3 | 24 |
| 12 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.2 | 2.1 | 2.1 | 2 | 1.9 | **S** | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | 2.3 | 24 |
| 13 | 2.5 | 2.5 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.6 | 3.6 | 3.2 | 2.3 | 2.8 | 2.5 | 2 | **S** | 2.9 | 2 | 2 | 2 | 2 | 2 | 2.2 | 3.6 | 2.4 | 24 |
| 14 | 3.6 | 2.7 | 2.4 | 2 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 1.9 | **S** | **S** | **S** | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2 | 3.6 | 2.1 | 24 |
| 15 | 2.1 | 2 | 1.9 | 1.9 | 2.3 | 2.4 | 2 | 2.1 | 2.3 | **C** | **C** | **C** | **C** | **C** | **S** | 1.9 | 1.9 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.1 | 24 |
| 16 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **S** | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 24 |
| 17 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | **S** | 2.1 | 2.2 | 2.3 | 2.1 | 2.1 | 2.4 | 2.3 | 2.4 | 2.2 | 2.6 | 2.7 | 2.7 | 2.2 | 24 |
| 18 | 2.5 | 2.6 | 2.5 | 2.6 | 2.6 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 | 2.5 | **S** | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.8 | 2.7 | 2.3 | 2.2 | 2.8 | 2.5 | 24 |
| 19 | 2.3 | 2.3 | 2.3 | 2.2 | 2 | 2.1 | 2 | 2 | 2 | 2 | **S** | 2 | 2 | 2 | 2.1 | 2.3 | 2.4 | 2.5 | 2.5 | 2.4 | 2.5 | 2.2 | 2.8 | 2.8 | 2.8 | 2.2 | 24 |
| 20 | 2.6 | 2.6 | 2.4 | 2.3 | 2.2 | 2.7 | 2.2 | 2.9 | 3.1 | **S** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.4 | 3.1 | 2.4 | 24 |
| 21 | 2.4 | 2.5 | 3.2 | 4.7 | 2.5 | 2.6 | 3.2 | 3.1 | **S** | 2.6 | 2.8 | 2.7 | 2.6 | 2.5 | 2.4 | 2.3 | 2.4 | 2.8 | 2.3 | 2.1 | 2.1 | 2.2 | 2.4 | 2.5 | 4.7 | 2.6 | 24 |
| 22 | 2.5 | 2.5 | 2.5 | 2.5 | 2.7 | 3 | 2.6 | **S** | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.7 | 3 | 3 | 3.4 | 3.8 | 3.8 | 3.4 | 3.5 | 3.5 | 3.6 | 3.2 | 3.8 | 2.9 | 24 |
| 23 | 2.8 | 2.6 | 2.6 | 2.4 | 2.2 | 2.2 | **S** | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.8 | 2.3 | 24 |
| 24 | 2.1 | 2.1 | 2 | 1.9 | 1.9 | **S** | 2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.2 | 24 |
| 25 | 2.5 | 2.3 | 2.5 | 2.6 | **S** | 2.5 | 2.6 | 2.5 | 2.5 | 2.7 | 2.5 | 2.5 | 2.6 | 2.5 | 2.6 | 3.2 | 2.5 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 3.2 | 2.5 | 24 |
| 26 | 2.3 | 2.3 | 2.2 | **S** | 2.2 | 2.5 | 2.6 | 2.6 | 2.6 | 2.5 | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.5 | 2.4 | 2.5 | 2.6 | 2.3 | 24 |
| 27 | 2.3 | 2.4 | **S** | 2.2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.3 | 2.4 | 2.5 | 2.4 | 2.5 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.5 | 2.3 | 24 |
| 28 | 2.4 | **S** | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.4 | 2.3 | 24 |
| 29 | **S** | 2.3 | 2.3 | 2.4 | 2.5 | 2.6 | 2.8 | 2.9 | 2.9 | 2.9 | 2.9 | 2.8 | 2.7 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.5 | 2.4 | **S** | 2.9 | 2.5 | 24 |
| 30 | 2.6 | 2.7 | 2.8 | 2.8 | 2.7 | 2.6 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.5 | 2.9 | 3 | 3.1 | **S** | 2.9 | 3.1 | 2.6 | 24 |
| HOURLY MAX | 3.6 | 2.7 | 3.2 | 4.7 | 2.7 | 3.0 | 3.2 | 3.1 | 3.2 | 2.9 | 3.6 | 3.2 | 2.7 | 2.8 | 3.0 | 3.2 | 3.9 | 3.8 | 3.8 | 3.4 | 3.5 | 3.5 | 3.6 | 11.1 | | | |
| HOURLY AVG | 2.4 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.7 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 672 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 11.1 | PPM | @ HOUR(S) | 23 | ON DAY(S) | 9 | |
| IZS CALIBRATION TIME: | 34 | HRS | OPERATIONAL TIME: | | | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 10 | HRS | | | | | |
| STANDARD DEVIATION: | 0.46 | | | | | | |






JOB #: 2833-13-11-31-C

LICA31
THC / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3.0 | 5.23 | 4.92 | 7.38 | 6.30 | 5.07 | 1.69 | 1.07 | 2.76 | 5.84 | 9.53 | 11.53 | 6.15 | 10.92 | 6.00 | 7.07 | 7.07 | 98.61 |
| < 10.0 | .00 | .00 | .00 | .00 | .00 | .00 | .46 | .61 | .30 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 1.38 |
| < 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 5.23 | 4.92 | 7.38 | 6.30 | 5.07 | 1.69 | 1.53 | 3.38 | 6.15 | 9.53 | 11.53 | 6.15 | 10.92 | 6.00 | 7.07 | 7.07 | |

Calm : .00 %

Total # Operational Hours : 650

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3.0 | 34 | 32 | 48 | 41 | 33 | 11 | 7 | 18 | 38 | 62 | 75 | 40 | 71 | 39 | 46 | 46 | 641 |
| < 10.0 | | | | | | | 3 | 4 | 2 | | | | | | | | 9 |
| < 50.0 | | | | | | | | | | | | | | | | | |
| >= 50.0 | | | | | | | | | | | | | | | | | |
| Totals | 34 | 32 | 48 | 41 | 33 | 11 | 10 | 22 | 40 | 62 | 75 | 40 | 71 | 39 | 46 | 46 | |

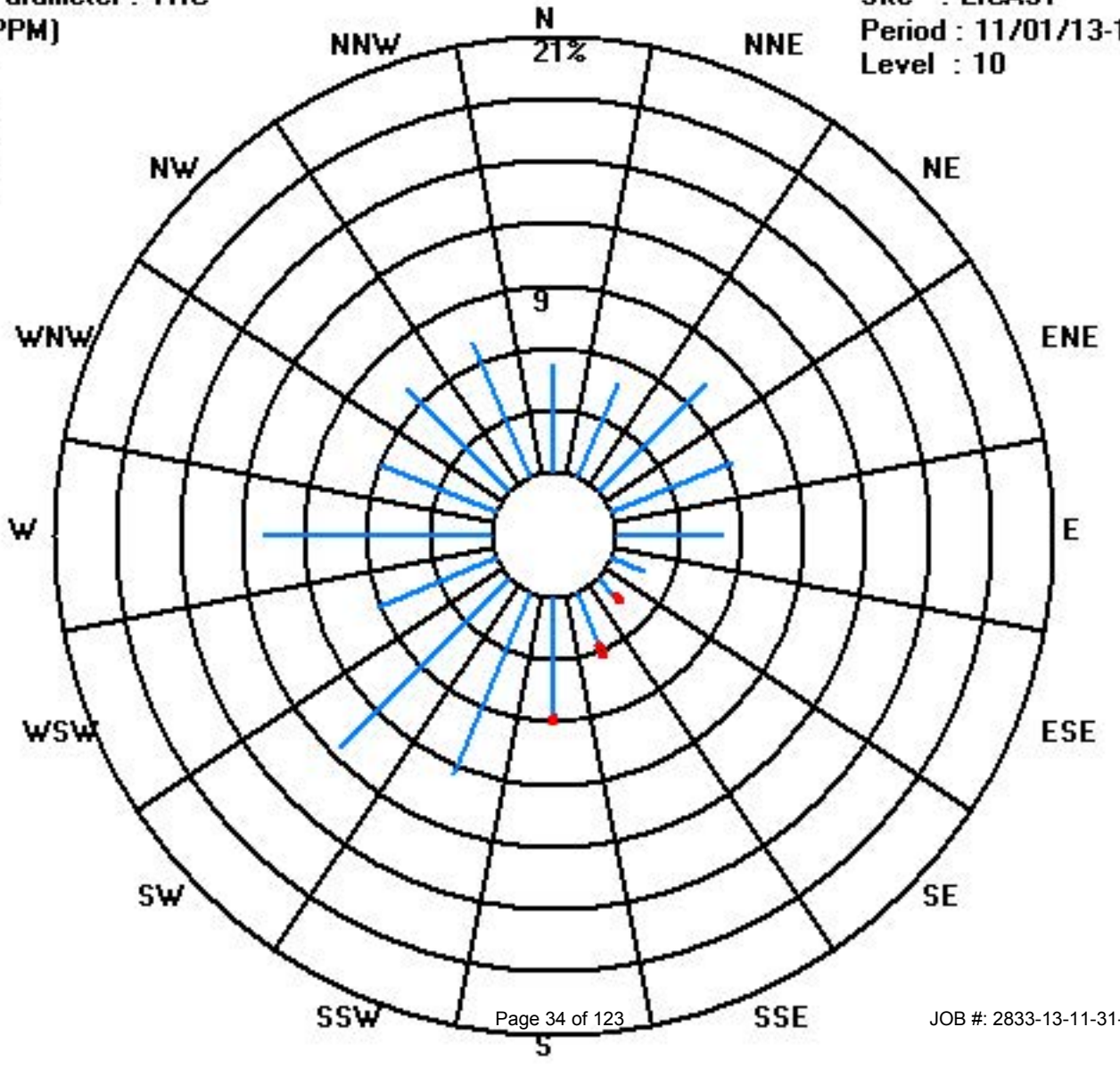
Calm : .00 %

Total # Operational Hours : 650

Logger : 31 Parameter : THC
Class Limits (PPM)

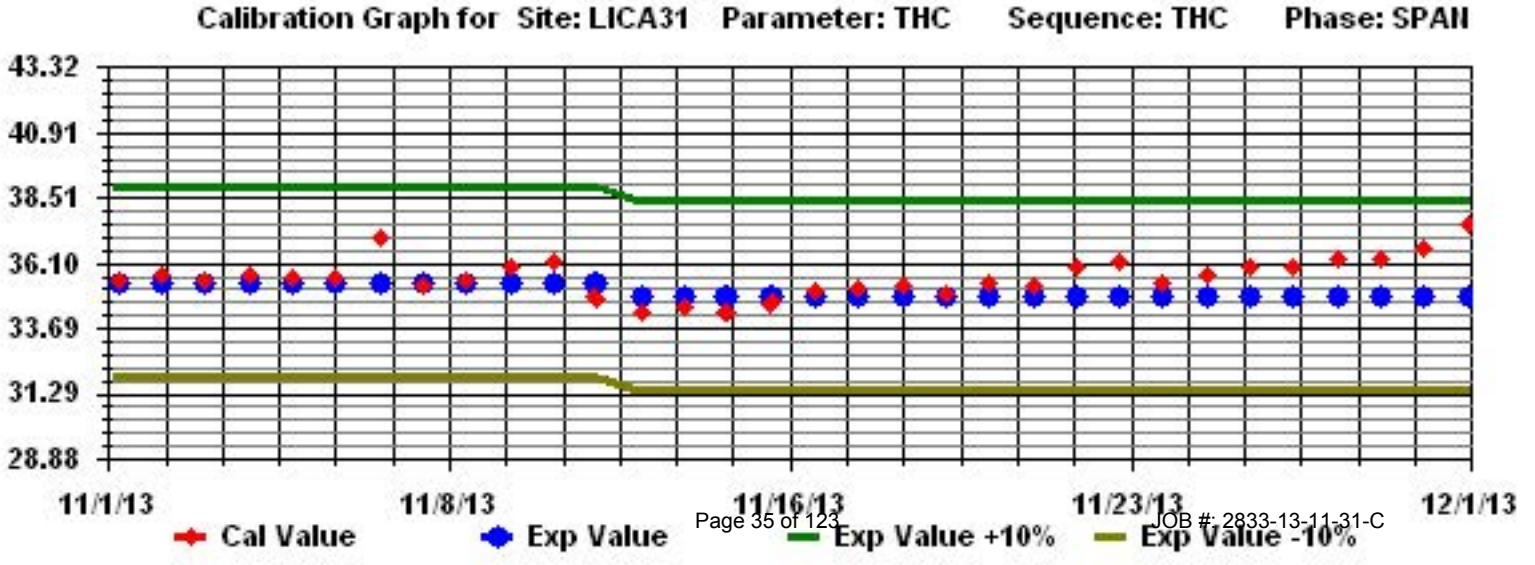
>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA31
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-31-C


Calibration Graph for Site: LICA31 Parameter: THC Sequence: THC Phase: SPAN
43.32
40.91
38.51
36.10
33.69
31.29
28.88
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ozone

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

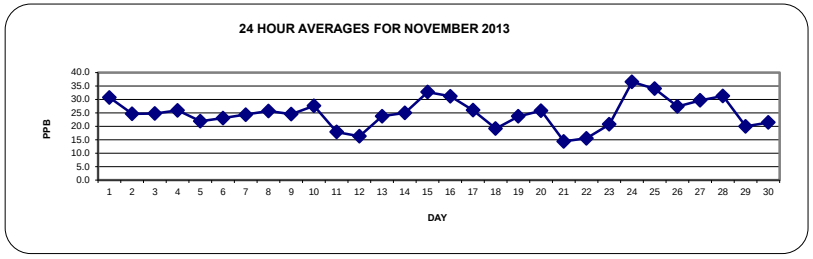
**OZONE ($O_3$)** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 24 | 22 | 21 | 23 | 23 | **S** | 26 | 26 | 26 | 27 | 30 | 33 | 35 | 36 | 36 | 37 | 37 | 36 | 35 | 35 | 36 | 35 | 35 | 33 | 37 | 30.7 | 24 |
| 2 | 29 | 32 | 33 | 30 | **S** | 32 | 33 | 31 | 27 | 27 | 25 | 28 | 27 | 26 | 22 | 16 | 13 | 14 | 15 | 17 | 23 | 23 | 22 | 23 | 33 | 24.7 | 24 |
| 3 | 23 | 24 | 24 | **S** | 26 | 26 | 27 | 23 | 20 | 20 | 20 | 22 | 24 | 25 | 27 | 27 | 27 | 27 | 28 | 27 | 26 | 25 | 26 | 26 | 28 | 24.8 | 24 |
| 4 | 26 | 26 | **S** | 25 | 25 | 26 | 25 | 25 | 24 | 25 | 26 | 26 | 27 | 27 | 27 | 27 | 26 | 27 | 27 | 28 | 27 | 27 | 27 | 20 | 28 | 25.9 | 24 |
| 5 | 22 | **S** | 20 | 18 | 15 | 13 | 12 | 13 | 16 | 19 | 22 | 25 | 27 | 30 | 29 | 30 | 34 | 28 | 21 | 20 | 23 | 23 | 23 | 22 | 34 | 22.0 | 24 |
| 6 | **S** | 20 | 19 | 17 | 16 | 15 | 12 | 11 | 12 | 16 | 21 | 24 | 26 | 29 | 30 | 32 | 33 | 32 | 29 | 28 | 28 | 29 | 29 | **S** | 33 | 23.1 | 24 |
| 7 | 26 | 27 | 26 | 22 | 24 | 23 | 20 | 20 | 26 | 22 | 22 | 29 | 28 | 26 | 24 | 22 | 22 | 23 | 24 | 25 | 25 | 27 | **S** | 27 | 29 | 24.3 | 24 |
| 8 | 28 | 27 | 28 | 29 | 29 | 28 | 25 | 25 | 24 | **P** | **P** | **P** | **P** | 24 | 25 | 25 | 26 | 26 | 24 | 25 | 25 | **S** | 23 | 22 | 29 | 25.7 | 20 |
| 9 | 20 | 20 | 25 | 26 | 26 | 25 | 23 | 21 | 21 | 19 | 20 | 20 | 22 | 23 | 23 | 24 | 25 | 27 | 30 | 31 | **S** | 31 | 31 | 30 | 31 | 24.5 | 24 |
| 10 | 31 | 30 | 28 | 28 | 26 | 25 | 25 | 25 | 25 | 27 | 29 | 30 | 30 | 30 | 30 | 28 | 28 | 28 | 27 | **S** | 27 | 26 | 26 | 26 | 31 | 27.6 | 24 |
| 11 | 24 | 23 | 22 | 21 | 19 | 18 | 16 | 15 | 14 | 15 | 17 | 17 | 18 | 19 | 18 | **S** | 16 | 15 | **S** | 17 | 17 | 17 | 18 | 18 | 24 | 17.9 | 24 |
| 12 | 17 | 16 | 17 | 16 | 16 | 15 | 15 | 16 | 18 | 19 | **C** | **C** | **C** | **C** | 21 | 20 | 18 | **S** | 17 | 13 | 16 | 16 | 12 | 11 | 21 | 16.3 | 24 |
| 13 | 10 | 13 | 16 | 17 | 24 | 24 | 26 | 26 | 26 | 27 | 27 | 25 | 26 | 25 | 27 | 28 | **S** | 28 | 27 | 26 | 26 | 25 | 25 | 23 | 28 | 23.8 | 24 |
| 14 | 22 | 23 | 25 | 25 | 23 | 22 | 21 | 20 | 19 | 20 | 22 | 27 | 30 | 28 | 31 | **S** | 32 | 30 | 30 | 27 | 22 | 25 | 26 | 25 | 32 | 25.0 | 24 |
| 15 | 28 | 30 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 35 | 34 | 33 | 34 | 34 | **S** | 33 | 32 | 31 | 31 | 33 | 32 | 30 | 30 | 31 | 35 | 32.7 | 24 |
| 16 | 32 | 31 | 31 | 31 | 31 | 32 | 31 | 31 | 31 | 31 | 30 | 31 | 31 | **S** | 32 | 31 | 31 | 31 | 31 | 31 | 32 | 32 | 31 | 31 | 32 | 31.2 | 24 |
| 17 | 30 | 29 | 28 | 28 | 28 | 27 | 27 | 27 | 27 | 27 | 27 | 27 | **S** | 27 | 27 | 26 | 25 | 24 | 24 | 24 | 23 | 22 | 22 | 21 | 30 | 26.0 | 24 |
| 18 | 21 | 20 | 19 | 20 | 19 | 16 | 15 | 15 | 15 | 17 | 20 | **S** | 22 | 23 | 23 | 22 | 22 | 21 | 19 | 19 | 15 | 17 | 21 | 21 | 23 | 19.2 | 24 |
| 19 | 20 | 20 | 20 | 20 | 22 | 23 | 23 | 23 | 24 | 23 | **S** | 23 | 26 | 27 | 25 | 23 | 24 | 23 | 22 | 24 | 26 | 28 | 28 | 28 | 28 | 23.7 | 24 |
| 20 | 28 | 29 | 30 | 31 | 31 | 31 | 29 | 29 | 28 | **S** | 24 | 25 | 26 | 27 | 28 | 24 | 23 | 23 | 22 | 24 | 23 | 21 | 19 | 18 | 31 | 25.8 | 24 |
| 21 | 17 | 17 | 17 | 17 | 17 | 16 | 15 | 15 | **S** | 15 | 14 | 14 | 15 | 15 | 15 | 12 | 10 | 11 | 13 | 15 | 14 | 14 | 12 | 11 | 17 | 14.4 | 24 |
| 22 | 10 | 11 | 11 | 11 | 11 | 12 | 17 | **S** | 23 | 24 | 24 | 24 | 23 | 20 | 16 | 15 | 13 | 10 | 11 | 14 | 13 | 14 | 14 | 17 | 24 | 15.6 | 24 |
| 23 | 19 | 19 | 20 | 23 | 24 | 23 | **S** | 21 | 20 | 21 | 21 | 21 | 22 | 23 | 22 | 21 | 21 | 21 | 20 | 20 | 20 | 18 | 17 | 20 | 24 | 20.7 | 24 |
| 24 | 23 | 25 | 30 | 31 | 35 | **S** | 36 | 36 | 38 | 39 | 39 | 40 | 39 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 37 | **40** | **36.5** | 24 |
| 25 | 37 | 37 | 36 | 36 | **S** | 35 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 36 | 36 | 36 | 35 | 35 | 32 | 30 | 30 | 31 | 30 | 29 | 37 | 34.0 | 24 |
| 26 | 31 | 34 | 34 | **S** | 34 | 33 | 31 | 29 | 29 | 30 | 31 | 31 | 31 | 30 | 29 | 27 | 25 | 22 | 20 | 19 | 19 | 19 | 20 | 22 | 34 | 27.4 | 24 |
| 27 | 23 | 23 | **S** | 27 | 26 | 30 | 26 | 29 | 32 | 33 | 33 | 33 | 33 | 32 | 31 | 31 | 30 | 30 | 30 | 31 | 29 | 29 | 29 | 31 | 33 | 29.6 | 24 |
| 28 | 32 | **S** | 29 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 31 | 32 | 32 | 31 | 30 | 30 | 29 | 33 | 31.3 | 24 |
| 29 | **S** | 27 | 25 | 21 | 17 | 11 | 5 | 3 | 6 | 11 | 13 | 17 | 24 | 30 | 30 | 27 | 28 | 28 | 26 | 23 | 20 | 23 | 24 | **S** | 30 | 20.0 | 24 |
| 30 | 17 | 7 | 3 | 2 | 5 | 11 | 16 | 22 | 23 | 27 | 31 | 32 | 34 | 33 | 31 | 29 | 28 | 28 | 26 | 23 | 21 | 22 | **S** | 21 | 34 | 21.4 | 24 |
| HOURLY MAX | 37 | 37 | 36 | 36 | 35 | 35 | 36 | 36 | 38 | 39 | 39 | 40 | 39 | 40 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 38 | 38 | 37 | | | |
| HOURLY AVG | 23.9 | 23.6 | 24.0 | 23.5 | 23.4 | 23.5 | 23.3 | 23.3 | 23.9 | 24.3 | 25.5 | 26.9 | 27.7 | 27.8 | 27.2 | 26.6 | 26.0 | 25.8 | 25.2 | 24.8 | 24.4 | 24.7 | 24.6 | 24.0 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 82 PPB

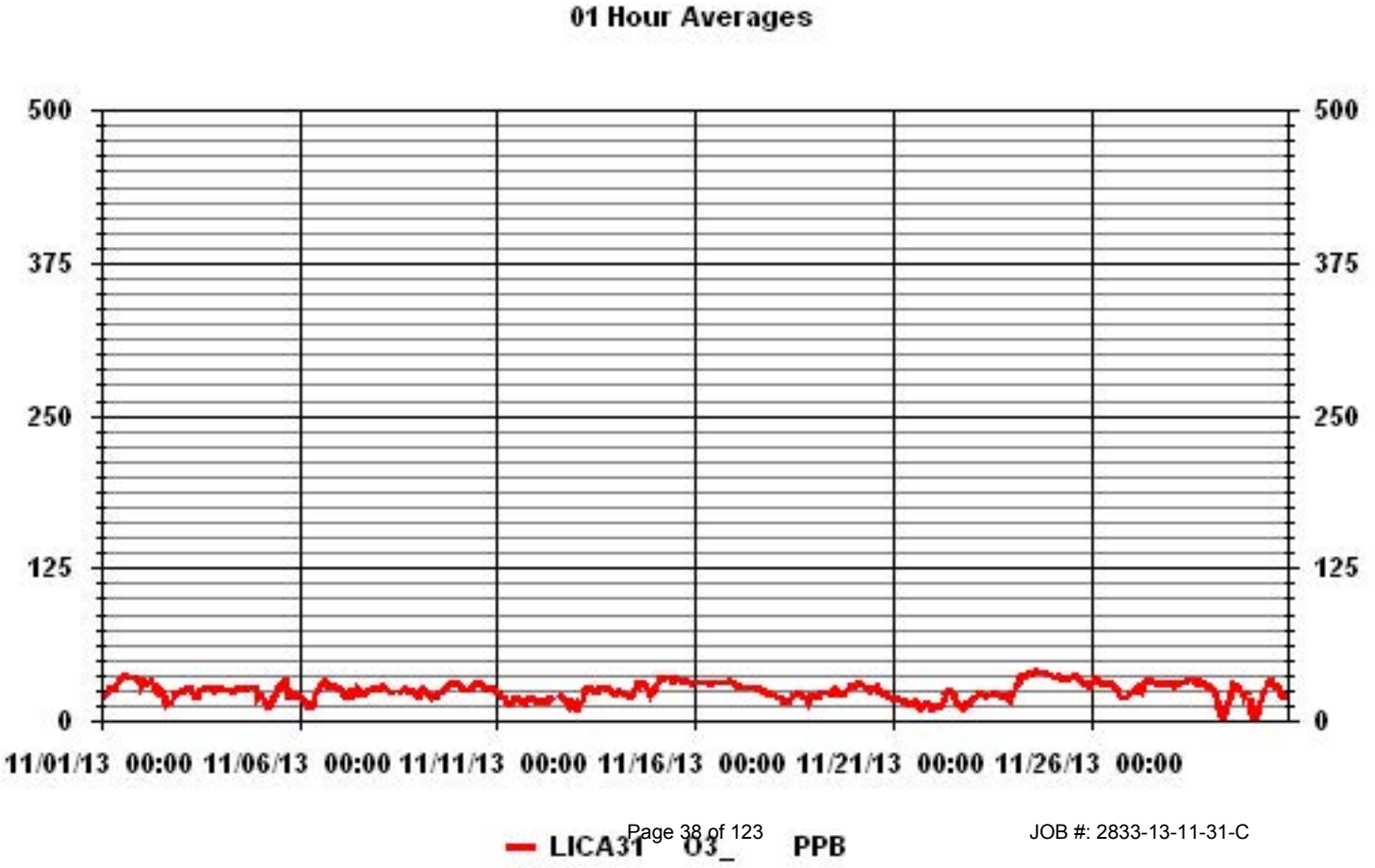
**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 679 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 40 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 24 |
| MAXIMUM 24-HR AVERAGE: | 36.5 | PPB | | | ON DAY(S) | 24 |
| | | | | | VAR-VARIOUS | |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 99.4 | % |
| STANDARD DEVIATION: | 6.79 | | MONTHLY AVERAGE: | 24.9 | PPB |



JOB #: 2833-13-11-31-C






JOB #: 2833-13-11-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**OZONE MAX** instantaneous maximum in ppb

MST

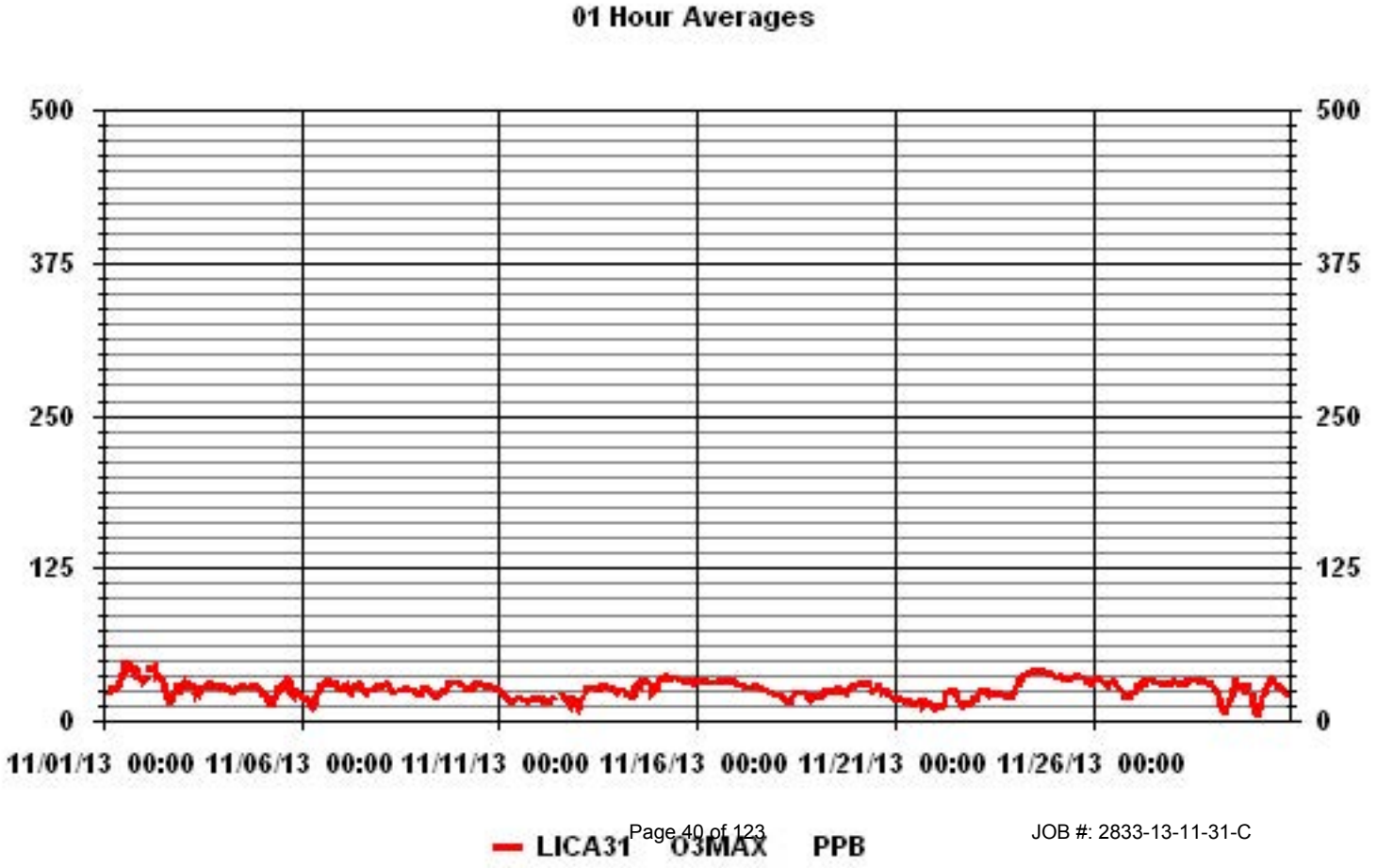
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 25 | 23 | 23 | 23 | 24 | **S** | 26 | 26 | 27 | 28 | 32 | 35 | 38 | **50** | 44 | 44 | 47 | 46 | 41 | 36 | 46 | 36 | 36 | 34 | **50** | 34.3 | 24 |
| 2 | 32 | 34 | 34 | 36 | **S** | 43 | 43 | 44 | 36 | 37 | 37 | 34 | 34 | 32 | 25 | 19 | 15 | 15 | 17 | 21 | 25 | 31 | 26 | 25 | 44 | 30.2 | 24 |
| 3 | 27 | 31 | 28 | **S** | 30 | 30 | 28 | 28 | 22 | 24 | 22 | 25 | 27 | 27 | 28 | 29 | 31 | 29 | 31 | 31 | 29 | 28 | 29 | 27 | 31 | 27.9 | 24 |
| 4 | 29 | 29 | **S** | 26 | 26 | 26 | 26 | 25 | 27 | 26 | 27 | 28 | 28 | 28 | 28 | 27 | 27 | 27 | 28 | 29 | 29 | 28 | 28 | 27 | 29 | 27.3 | 24 |
| 5 | 25 | **S** | 21 | 20 | 17 | 14 | 13 | 14 | 18 | 21 | 26 | 26 | 30 | 31 | 30 | 34 | 34 | 33 | 23 | 21 | 24 | 24 | 24 | 23 | 34 | 23.7 | 24 |
| 6 | **S** | 20 | 20 | 19 | 17 | 16 | 14 | 11 | 13 | 20 | 23 | 25 | 29 | 29 | 32 | 33 | 33 | 33 | 30 | 29 | 29 | 30 | 30 | **S** | 33 | 24.3 | 24 |
| 7 | 27 | 28 | 28 | 23 | 27 | 24 | 23 | 26 | 29 | 28 | 28 | 30 | 30 | 27 | 25 | 24 | 23 | 24 | 25 | 25 | 27 | 28 | **S** | 28 | 30 | 26.4 | 24 |
| 8 | 28 | 28 | 29 | 29 | 30 | 30 | 26 | 26 | 25 | **P** | **P** | **P** | **P** | 25 | 25 | 27 | 27 | 27 | 25 | 25 | 25 | **S** | 24 | 23 | 30 | 26.5 | 20 |
| 9 | 21 | 21 | 27 | 27 | 26 | 26 | 24 | 22 | 22 | 21 | 20 | 21 | 23 | 24 | 24 | 25 | 26 | 30 | 30 | 31 | **S** | 32 | 31 | 31 | 32 | 25.4 | 24 |
| 10 | 32 | 31 | 29 | 29 | 27 | 26 | 25 | 25 | 26 | 29 | 30 | 31 | 31 | 31 | 30 | 28 | 28 | 28 | 28 | **S** | 27 | 27 | 27 | 26 | 32 | 28.3 | 24 |
| 11 | 25 | 24 | 22 | 21 | 20 | 19 | 17 | 16 | 15 | 16 | 17 | 18 | 19 | **S** | **S** | **S** | 17 | 16 | **S** | 18 | 17 | 18 | 18 | 18 | 25 | 18.6 | 24 |
| 12 | 18 | 17 | 17 | 17 | 16 | 16 | 16 | 17 | 18 | 19 | **C** | **C** | **C** | **C** | 22 | 20 | 19 | **S** | 18 | 14 | 17 | 17 | 15 | 13 | 22 | 17.2 | 24 |
| 13 | 11 | 15 | 17 | 21 | 26 | 26 | 27 | 27 | 27 | 28 | 27 | 26 | 26 | 26 | 29 | 29 | **S** | 28 | 28 | 27 | 26 | 26 | 26 | 25 | 29 | 25.0 | 24 |
| 14 | 23 | 24 | 26 | 25 | 25 | 22 | 22 | 21 | 20 | 21 | 28 | 30 | 31 | 29 | 33 | **S** | 33 | 31 | 31 | 31 | 24 | 26 | 26 | 26 | 33 | 26.4 | 24 |
| 15 | 30 | 33 | 35 | 35 | 34 | 36 | 36 | 35 | 36 | 35 | 35 | 35 | 35 | 34 | **S** | 33 | 33 | 32 | 33 | 34 | 33 | 32 | 31 | 32 | 36 | 33.8 | 24 |
| 16 | 32 | 32 | 32 | 32 | 32 | 33 | 32 | 31 | 31 | 31 | 31 | 31 | 32 | **S** | 32 | 32 | 32 | 33 | 32 | 32 | 32 | 33 | 32 | 31 | 33 | 31.9 | 24 |
| 17 | 31 | 29 | 29 | 29 | 29 | 28 | 28 | 27 | 27 | 28 | 28 | 28 | **S** | 27 | 27 | 27 | 26 | 25 | 25 | 24 | 23 | 23 | 22 | 21 | 31 | 26.6 | 24 |
| 18 | 21 | 21 | 21 | 20 | 19 | 18 | 16 | 16 | 16 | 20 | 21 | **S** | 23 | 23 | 24 | 23 | 23 | 23 | 20 | 20 | 18 | 20 | 21 | 22 | 24 | 20.4 | 24 |
| 19 | 21 | 20 | 20 | 22 | 22 | 25 | 24 | 24 | 24 | 24 | **S** | 24 | 27 | 27 | 27 | 24 | 24 | 24 | 23 | 25 | 28 | 29 | 28 | 28 | 29 | 24.5 | 24 |
| 20 | 29 | 29 | 31 | 31 | 32 | 31 | 30 | 30 | 30 | **S** | 25 | 26 | 28 | 28 | 29 | 27 | 23 | 24 | 23 | 24 | 24 | 22 | 20 | 19 | 32 | 26.7 | 24 |
| 21 | 18 | 18 | 17 | 17 | 17 | 16 | 15 | 15 | **S** | 16 | 15 | 14 | 15 | 16 | 15 | 15 | 11 | 12 | 16 | 16 | 15 | 14 | 13 | 12 | 18 | 15.1 | 24 |
| 22 | 10 | 11 | 11 | 12 | 12 | 13 | 20 | **S** | 24 | 25 | 25 | 25 | 24 | 22 | 18 | 16 | 15 | 13 | 14 | 15 | 14 | 14 | 16 | 19 | 25 | 16.9 | 24 |
| 23 | 20 | 19 | 22 | 24 | 24 | 24 | **S** | 26 | 23 | 21 | 22 | 22 | 23 | 23 | 23 | 22 | 22 | 22 | 21 | 20 | 20 | 20 | 20 | 22 | 26 | 22.0 | 24 |
| 24 | 24 | 28 | 33 | 32 | 36 | **S** | 37 | 37 | 39 | 39 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 38 | 38 | 40 | 37.3 | 24 |
| 25 | 37 | 37 | 36 | 36 | **S** | 35 | 35 | 34 | 34 | 34 | 34 | 35 | 36 | 37 | 36 | 37 | 37 | 36 | 35 | 31 | 31 | 32 | 32 | 31 | 37 | 34.7 | 24 |
| 26 | 33 | 35 | 35 | **S** | 35 | 34 | 32 | 30 | 29 | 31 | 31 | 31 | 32 | 32 | 30 | 28 | 26 | 25 | 20 | 20 | 20 | 20 | 22 | 23 | 35 | 28.4 | 24 |
| 27 | 23 | 24 | **S** | 28 | 28 | 32 | 28 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 31 | 31 | 32 | 30 | 31 | 31 | 30 | 30 | 30 | 32 | 33 | 30.5 | 24 |
| 28 | 33 | **S** | 31 | 30 | 31 | 31 | 32 | 31 | 32 | 32 | 33 | 34 | 33 | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 32 | 31 | 30 | 30 | 34 | 31.9 | 24 |
| 29 | **S** | 28 | 26 | 23 | 19 | 13 | 9 | 4 | 9 | 12 | 15 | 19 | 27 | 32 | 32 | 28 | 28 | 29 | 27 | 23 | 23 | 28 | 28 | **S** | 32 | 21.9 | 24 |
| 30 | 21 | 13 | 7 | 2 | 10 | 13 | 20 | 23 | 25 | 29 | 32 | 34 | 35 | 34 | 32 | 29 | 28 | 28 | 27 | 25 | 22 | 23 | **S** | 22 | 35 | 23.2 | 24 |
| HOURLY MAX | 37 | 37 | 36 | 36 | 36 | 43 | 43 | 44 | 39 | 39 | 40 | 40 | 40 | 50 | 44 | 44 | 47 | 46 | 41 | 40 | 46 | 39 | 38 | 38 | | | |
| HOURLY AVG | 25.2 | 25.1 | 25.3 | 24.6 | 24.7 | 25.0 | 25.0 | 25.0 | 25.4 | 26.0 | 27.3 | 28.1 | 29.2 | 29.6 | 28.7 | 28.0 | 27.3 | 27.4 | 26.7 | 25.9 | 25.8 | 26.2 | 25.8 | 25.3 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 677 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 50 | PPB | @ HOUR(S) | 13 | ON DAY(S) | 1 |
| IZS CALIBRATION TIME: | 35 | HRS | OPERATIONAL TIME: | | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | | | | |
| STANDARD DEVIATION: | 6.96 | | | | | |






JOB #: 2833-13-11-31-C

LICA31
O3_ / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50 | 5.19 | 4.88 | 7.32 | 6.25 | 5.03 | 1.67 | 1.52 | 3.35 | 6.10 | 9.31 | 11.45 | 6.41 | 10.83 | 5.95 | 7.17 | 7.48 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 5.19 | 4.88 | 7.32 | 6.25 | 5.03 | 1.67 | 1.52 | 3.35 | 6.10 | 9.31 | 11.45 | 6.41 | 10.83 | 5.95 | 7.17 | 7.48 | |

Calm : .00 %

Total # Operational Hours : 655

Distribution By Samples

| | | Direction | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
| < | 50 | 34 | 32 | 48 | 41 | 33 | 11 | 10 | 22 | 40 | 61 | 75 | 42 | 71 | 39 | 47 | 49 | 655 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 32 | 48 | 41 | 33 | 11 | 10 | 22 | 40 | 61 | 75 | 42 | 71 | 39 | 47 | 49 | |

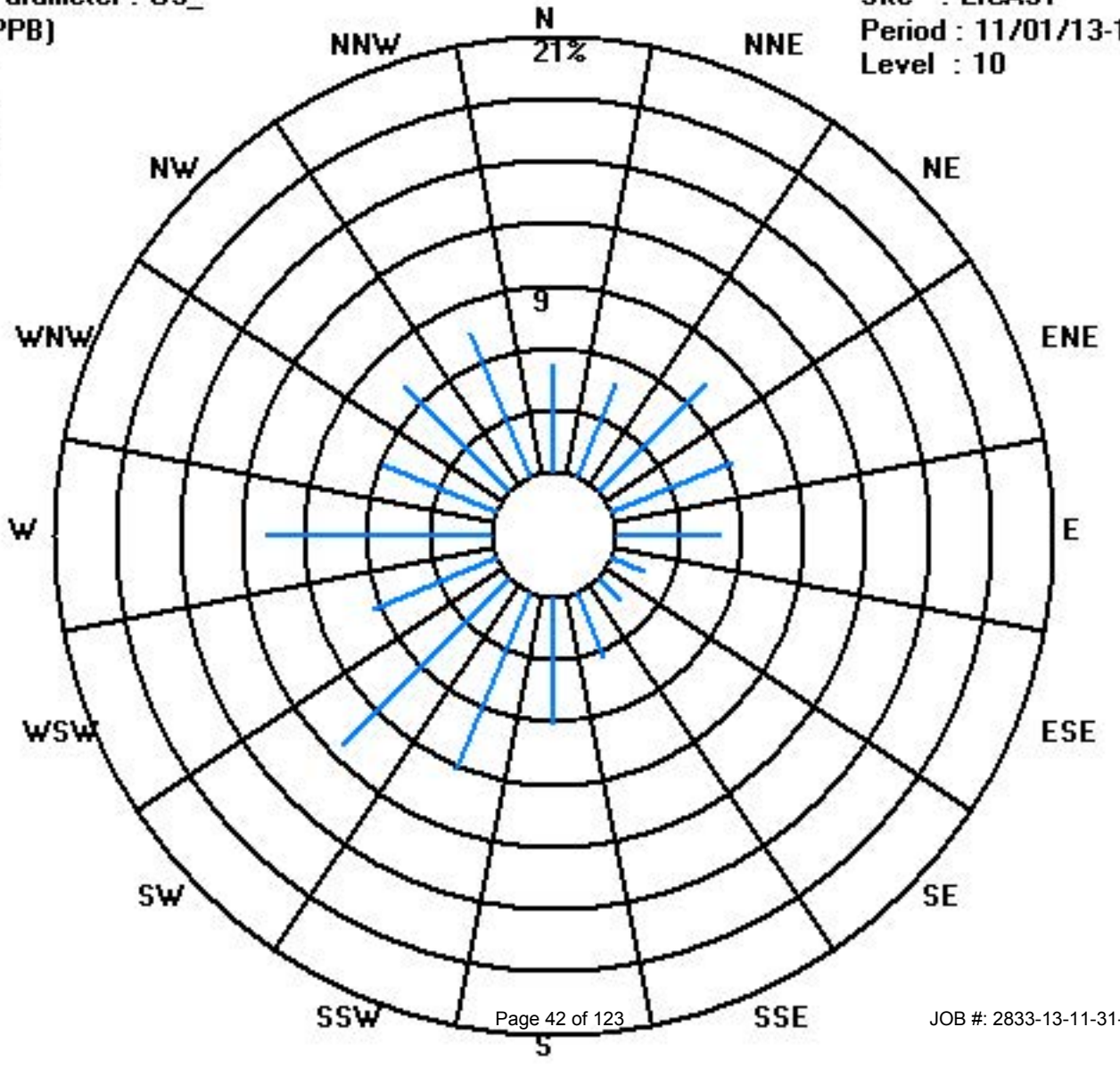
Calm : .00 %

Total # Operational Hours : 655

Logger : 31 Parameter : 03_
Class Limits (PPB)

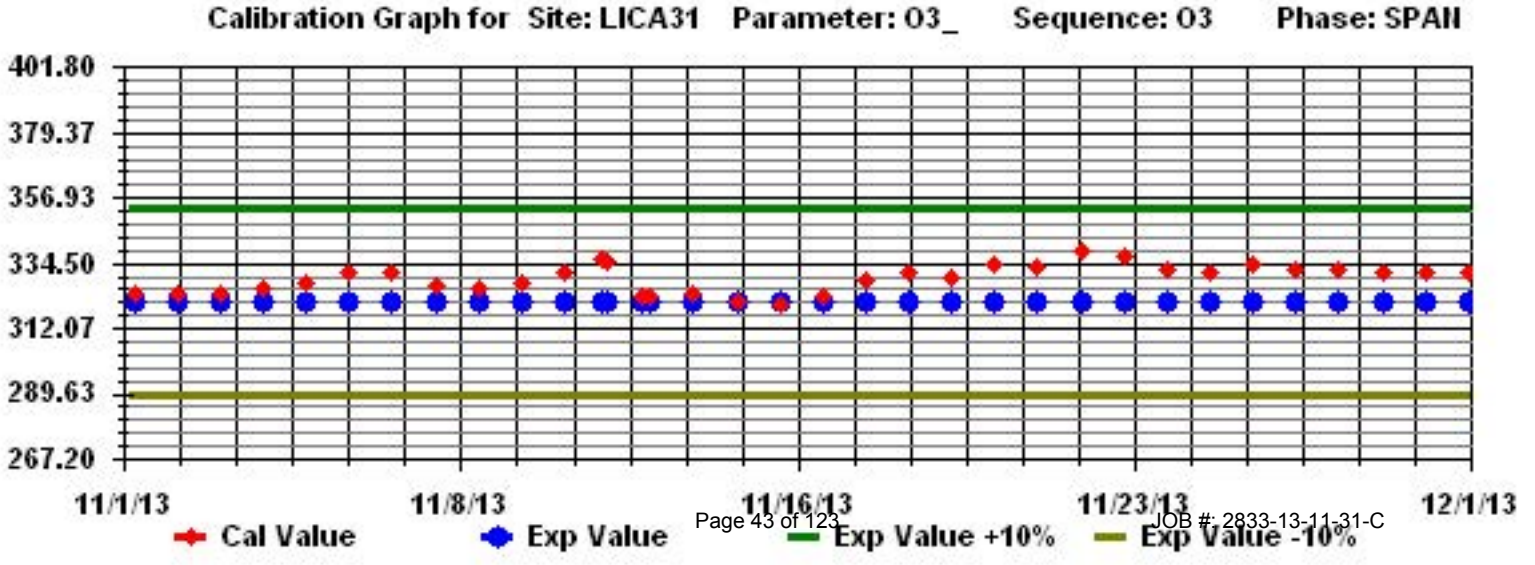
>= 210
< 210
< 110
< 50

Site : LICA31
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-31-C


Calibration Graph for Site: LICA31 Parameter: O3_ Sequence: O3 Phase: SPAN
401.80
379.37
356.93
334.50
312.07
289.63
267.20
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION. - *ST. LINA*

NOVEMBER 2013

**NITROGEN DIOXIDE** hourly averages in ppb

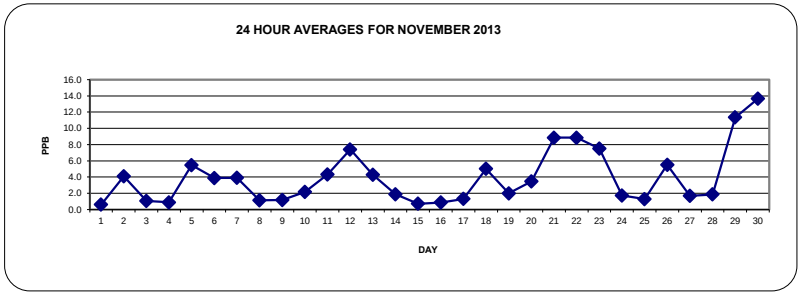
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.0 | 0.0 | 0.4 | 0.4 | 0.5 | **S** | 1.1 | 1.2 | 1.2 | 1.1 | 0.9 | 0.6 | 0.3 | 0.3 | 0.2 | 0.4 | 0.4 | 0.6 | 0.9 | 0.9 | 0.4 | 0.5 | 0.4 | 1.2 | 1.2 | 0.6 | 24 |
| 2 | 1.6 | 1.2 | 1.2 | 1.9 | **S** | 1.0 | 0.8 | 1.2 | 2.8 | 1.7 | 2.2 | 1.2 | 1.6 | 2.6 | 5.6 | 11.2 | 12.7 | 11.9 | 10.9 | 8.6 | 4.2 | 2.9 | 3.0 | 2.0 | 12.7 | 4.1 | 24 |
| 3 | 2.0 | 1.6 | 1.5 | **S** | 1.1 | 0.7 | 0.8 | 0.7 | 0.3 | 0.3 | 0.6 | 1.0 | 1.3 | 1.1 | 0.9 | 1.3 | 1.4 | 1.4 | 1.4 | 1.1 | 0.8 | 1.0 | 1.0 | 1.1 | 2.0 | 1.1 | 24 |
| 4 | 0.8 | 1.1 | **S** | 0.2 | 0.6 | 0.5 | 0.6 | 0.9 | 0.9 | 1.1 | 1.0 | 1.0 | 0.2 | 0.4 | 0.4 | 0.5 | 1.0 | 0.7 | 0.7 | 0.6 | 1.2 | 0.9 | 1.1 | 4.1 | 4.1 | 0.9 | 24 |
| 5 | 3.9 | **S** | 1.9 | 3.0 | 4.8 | 6.8 | 8.1 | 9.0 | 6.8 | 4.4 | 4.2 | 4.4 | 3.9 | 3.6 | 3.8 | 4.6 | 5.2 | 5.8 | 7.8 | 7.9 | 6.8 | 6.6 | 6.3 | 6.1 | 9.0 | 5.5 | 24 |
| 6 | **S** | 4.8 | 5.4 | 6.5 | 6.6 | 7.4 | 8.8 | **S** | 8.4 | 7.5 | 6.0 | 4.6 | 3.5 | 2.0 | 1.4 | 0.7 | 0.5 | 0.5 | 1.2 | 2.4 | 1.7 | 1.2 | 0.7 | **S** | 8.8 | 3.9 | 24 |
| 7 | 2.4 | 2.3 | 2.5 | 3.3 | 2.9 | 3.0 | 4.1 | 5.5 | 3.0 | 3.7 | 5.8 | 3.0 | 3.2 | 4.2 | 5.0 | 7.3 | 7.1 | 5.2 | 4.6 | 3.8 | 3.3 | 3.0 | **S** | 1.8 | 7.3 | 3.9 | 24 |
| 8 | 2.0 | 1.6 | 1.4 | 1.2 | 0.7 | 1.1 | 1.6 | **S** | 1.8 | **P** | **P** | **P** | **P** | 2.2 | 1.0 | 0.6 | 0.8 | 0.8 | 1.7 | 0.6 | 0.2 | **S** | 0.2 | 0.7 | 2.2 | 1.1 | 20 |
| 9 | 2.1 | 2.0 | 0.7 | 1.2 | 1.5 | 2.5 | 4.0 | 4.7 | 2.4 | 0.9 | 0.5 | 0.7 | 0.4 | 0.5 | 0.8 | 0.5 | 0.4 | 0.5 | 0.1 | 0.2 | **S** | 0.1 | 0.2 | 0.5 | 4.7 | 1.2 | 24 |
| 10 | 0.9 | 0.6 | 1.5 | 1.7 | 3.0 | 3.0 | 2.8 | 3.0 | 3.3 | 3.1 | 2.1 | 2.1 | 1.7 | 1.7 | 1.8 | 2.3 | 2.6 | 2.4 | 2.5 | **S** | 1.8 | 2.0 | 2.1 | 1.8 | 3.3 | 2.2 | 24 |
| 11 | 2.1 | 2.3 | 2.7 | 3.2 | 3.3 | 4.6 | 5.0 | 5.5 | 5.6 | 4.5 | 4.1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **S** | 6.3 | 5.7 | 5.0 | 4.8 | 4.4 | 6.3 | 4.3 | 24 |
| 12 | 4.4 | 4.9 | 4.3 | 4.3 | 4.6 | 4.8 | 5.2 | 4.7 | 4.3 | 4.1 | 3.8 | 4.1 | 4.2 | 4.4 | 5.4 | 6.3 | 7.4 | **S** | 10.9 | 17.0 | 14.8 | 13.0 | 16.0 | 17.0 | 17.0 | 7.4 | 24 |
| 13 | 19.0 | 17.3 | 13.1 | 12.0 | 6.9 | 5.9 | 4.8 | **S** | 3.1 | 2.4 | 1.7 | 1.6 | 1.5 | 1.4 | 0.9 | 0.7 | **S** | 0.2 | 0.4 | 0.4 | 0.1 | 0.1 | 0.0 | 1.0 | 19.0 | 4.3 | 24 |
| 14 | 1.2 | 1.0 | 0.0 | 0.0 | 0.3 | 0.3 | 0.6 | 0.5 | 0.7 | 1.4 | 2.1 | 1.8 | 1.1 | 1.4 | 0.9 | **S** | 1.1 | 2.7 | 2.1 | 3.0 | 7.1 | 5.0 | 4.1 | 4.9 | 7.1 | 1.9 | 24 |
| 15 | 4.3 | 2.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.2 | 0.2 | 0.5 | **S** | 0.7 | 0.9 | 0.5 | 0.6 | 0.5 | 0.8 | 1.5 | 1.4 | 1.2 | 4.3 | 0.7 | 24 |
| 16 | 1.1 | 1.3 | 1.1 | 0.4 | 0.7 | 1.0 | 0.8 | 0.6 | 0.7 | 0.5 | 0.9 | 0.9 | 0.9 | **S** | 0.7 | 1.3 | 1.5 | 2.0 | 1.4 | 1.0 | 0.7 | 0.3 | 0.3 | 0.2 | 2.0 | 0.9 | 24 |
| 17 | 0.4 | 0.3 | 0.6 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 0.6 | 0.8 | 0.3 | 0.2 | **S** | 0.2 | 0.6 | 1.0 | 1.7 | 2.5 | 2.4 | 2.6 | 3.0 | 3.2 | 3.7 | 4.9 | 4.9 | 1.3 | 24 |
| 18 | 4.4 | 4.4 | 4.6 | 4.6 | 5.0 | 6.9 | 7.8 | 8.0 | 7.7 | 6.2 | 4.0 | **S** | 2.1 | 2.4 | 2.5 | 3.4 | 3.8 | 4.4 | 5.7 | 5.0 | 8.8 | 7.2 | 3.8 | 2.7 | 8.8 | 5.0 | 24 |
| 19 | 3.5 | 3.5 | 3.4 | 1.8 | 0.6 | 0.5 | 0.3 | 0.4 | 0.5 | 0.2 | **S** | 1.2 | 1.0 | 1.0 | 2.1 | 3.2 | 3.4 | 4.1 | 4.8 | 3.7 | 2.4 | 1.8 | 1.6 | 1.1 | 4.8 | 2.0 | 24 |
| 20 | 1.1 | 0.7 | 0.7 | 0.6 | 0.6 | 0.7 | 1.2 | 1.1 | 1.4 | **S** | 3.7 | 2.1 | 2.2 | 1.8 | 2.3 | 5.1 | 5.5 | 6.5 | 6.6 | 6.0 | 6.4 | 7.4 | 7.5 | 8.6 | 8.6 | 3.5 | 24 |
| 21 | 8.9 | 8.4 | 8.2 | 8.3 | 8.0 | 8.5 | 8.6 | 8.6 | **S** | 5.4 | 7.1 | 7.3 | 7.9 | 7.4 | 8.2 | 11.2 | 12.9 | 12.5 | 10.6 | 8.0 | 8.4 | 8.4 | 9.5 | 11.4 | 12.9 | 8.9 | 24 |
| 22 | 12.7 | 11.8 | 11.1 | 10.8 | 10.3 | 10.0 | 6.6 | **S** | 2.5 | 1.8 | 2.0 | 1.9 | 2.9 | 5.0 | 8.0 | 9.3 | 11.5 | 14.7 | 15.4 | 12.4 | 12.5 | 11.6 | 10.8 | 8.0 | 15.4 | 8.9 | 24 |
| 23 | 5.8 | 5.4 | 4.2 | 2.7 | 2.4 | 3.0 | **S** | 3.9 | 4.3 | 4.1 | 4.3 | 4.8 | 5.7 | 6.9 | 7.8 | 8.9 | 9.7 | 10.2 | 11.0 | 11.5 | 11.9 | 12.9 | 15.2 | 16.1 | 16.1 | 7.5 | 24 |
| 24 | 13.0 | 10.5 | 5.6 | 4.2 | 2.1 | **S** | 1.1 | 1.2 | 0.7 | 0.3 | 0.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.2 | 13.0 | 1.7 | 24 |
| 25 | 0.1 | 0.0 | 0.0 | 0.0 | **S** | 0.3 | 0.2 | 0.6 | 0.4 | 0.3 | 0.4 | 0.3 | 0.1 | 0.2 | 0.6 | 1.2 | 1.0 | 1.1 | 2.9 | 4.3 | 3.5 | 3.2 | 4.4 | 4.9 | 4.9 | 1.3 | 24 |
| 26 | 4.3 | 2.0 | 1.7 | **S** | 2.0 | 2.8 | 4.3 | 5.1 | 4.9 | 4.0 | 3.5 | 3.3 | 3.2 | 4.0 | 4.4 | 5.4 | 6.6 | 8.5 | 10.6 | 10.8 | 10.2 | 9.4 | 8.4 | 7.1 | 10.8 | 5.5 | 24 |
| 27 | 6.4 | 6.0 | **S** | 2.6 | 2.5 | 1.6 | 2.0 | 1.1 | 0.5 | 0.0 | 0.0 | 0.1 | 0.1 | 0.4 | 0.4 | 1.0 | 1.6 | 1.5 | 1.4 | 1.1 | 2.1 | 2.8 | 2.2 | 1.6 | 6.4 | 1.7 | 24 |
| 28 | 0.9 | **S** | 2.5 | 2.4 | 1.9 | 1.7 | 1.4 | 1.5 | 1.7 | 2.1 | 1.8 | 1.8 | 1.8 | 2.0 | 2.1 | 1.9 | 1.9 | 1.9 | 1.5 | 1.6 | 2.1 | 2.0 | 2.2 | 2.2 | 2.5 | 1.9 | 24 |
| 29 | **S** | 2.3 | 3.5 | 6.2 | 10.0 | 15.6 | 21.8 | 25.3 | 24.6 | 19.5 | 17.7 | 15.3 | 10.9 | 6.5 | 6.2 | 8.0 | 6.6 | 5.8 | 7.0 | 8.7 | 11.0 | 9.3 | 8.1 | **S** | 25.3 | 11.4 | 24 |
| 30 | 13.4 | 27.9 | 38.2 | **39.6** | 30.5 | 20.8 | 15.6 | 10.9 | 10.0 | 8.0 | 6.2 | 5.6 | 4.7 | 5.6 | 7.4 | 8.6 | 8.3 | 7.6 | 7.8 | 9.4 | 10.8 | 9.5 | **S** | 7.3 | **39.6** | **13.6** | 24 |
| HOURLY MAX | 19 | 28 | 38 | 40 | 31 | 21 | 22 | 25 | 25 | 20 | 18 | 15 | 11 | 7 | 8 | 11 | 13 | 15 | 15 | 17 | 15 | 13 | 16 | 17 | | | |
| HOURLY AVG | 4.4 | 4.6 | 4.4 | 4.4 | 4.1 | 4.1 | 4.1 | 4.1 | 3.6 | 3.2 | 3.2 | 2.6 | 2.5 | 2.5 | 2.9 | 3.8 | 4.2 | 4.2 | 4.7 | 4.8 | 4.9 | 4.5 | 4.3 | 4.4 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

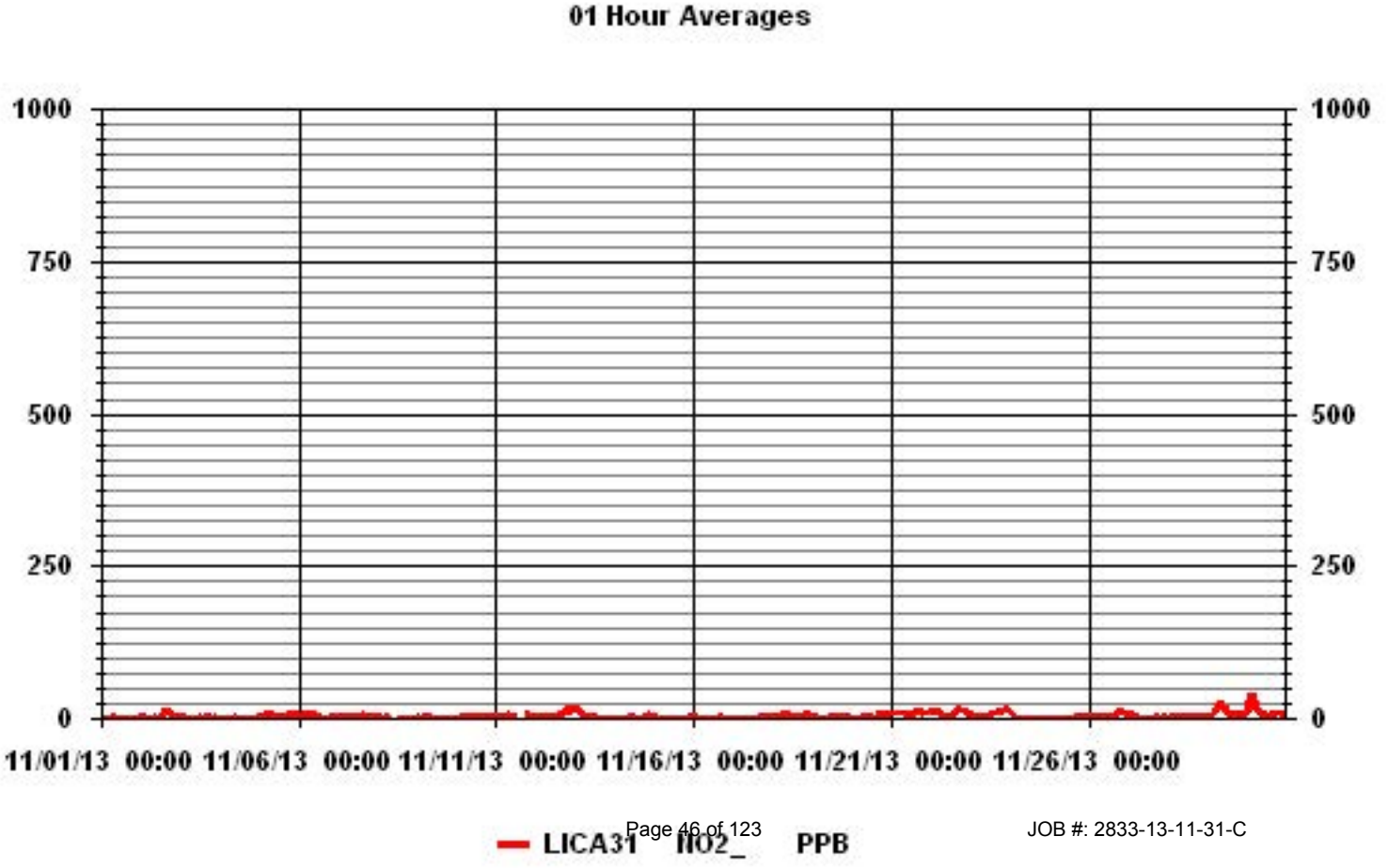
**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 159 PPB




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 649 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 39.6 | PPB | @ HOUR(S) | 3 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | 13.6 | PPB | | | ON DAY(S) | 30 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 36 | HRS | OPERATIONAL TIME: | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME: | 99.4 | % |
| STANDARD DEVIATION: | 4.66 | | MONTHLY AVERAGE: | 3.94 | PPB |






JOB #: 2833-13-11-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**NITROGEN DIOXIDE MAX** instantaneous maximum in ppb

MST

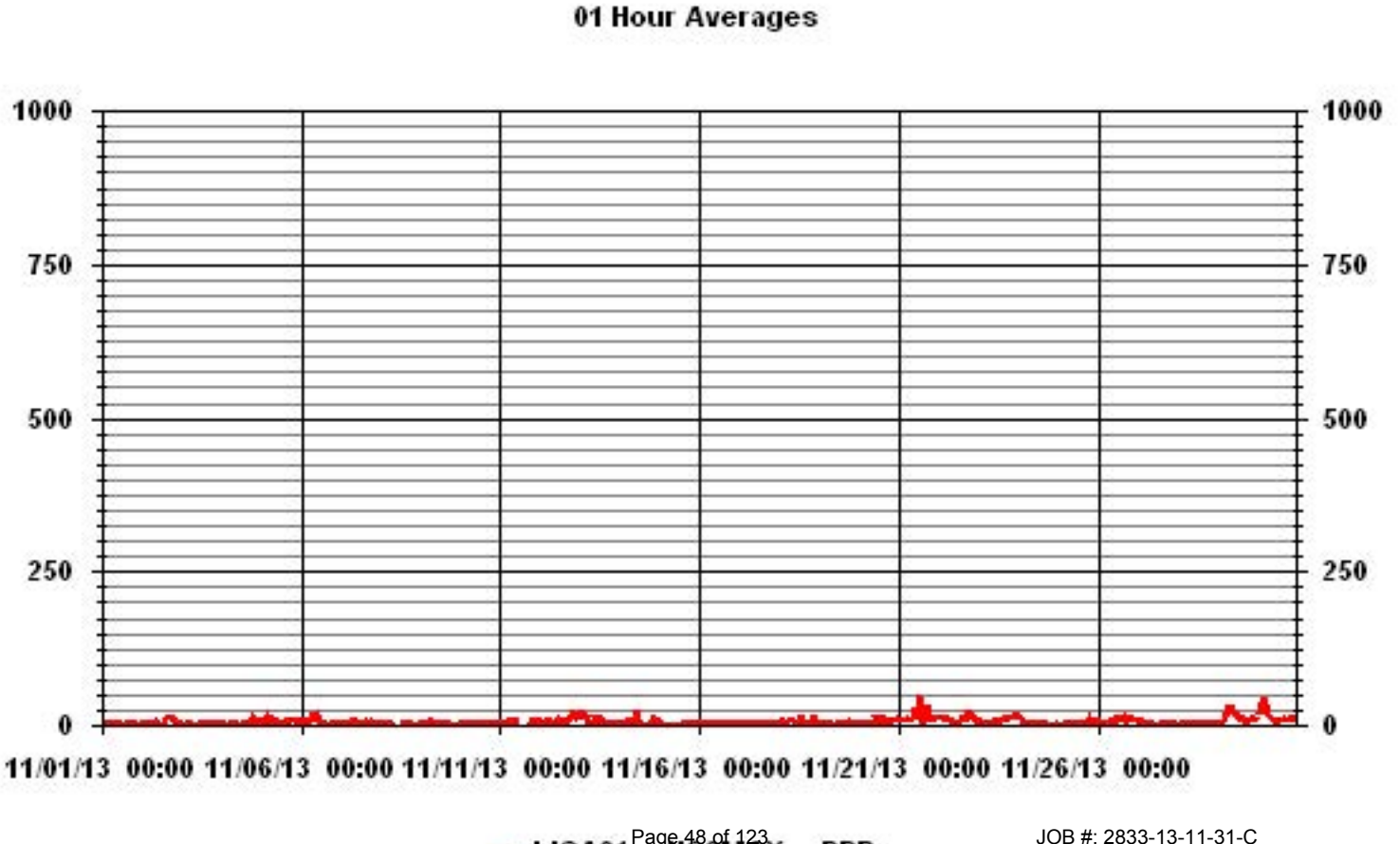
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.1 | 1.7 | 2.0 | 1.8 | 2.2 | **S** | 2.0 | 2.0 | 2.0 | 2.2 | 1.8 | 1.4 | 1.2 | 1.2 | 0.9 | 1.2 | 1.2 | 1.6 | 2.0 | 2.0 | 1.7 | 1.6 | 1.3 | 2.6 | 2.6 | 1.7 | 24 |
| 2 | 2.6 | 2.6 | 2.0 | 3.4 | **S** | 1.7 | 1.6 | 2.2 | 7.1 | 2.8 | 4.2 | 1.9 | 2.2 | 3.6 | 9.9 | 13.2 | 14.3 | 13.6 | 11.8 | 10.8 | 6.6 | 3.6 | 3.4 | 3.0 | 14.3 | 5.6 | 24 |
| 3 | 2.6 | 2.5 | 2.0 | **S** | 1.6 | 1.2 | 1.4 | 1.1 | 0.8 | 0.9 | 1.2 | 1.6 | 1.7 | 1.6 | 1.7 | 2.1 | 1.8 | 2.4 | 1.9 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 2.6 | 1.7 | 24 |
| 4 | 1.4 | 2.3 | **S** | 1.0 | 1.5 | 1.3 | 1.4 | 1.7 | 1.8 | 2.1 | 1.9 | 2.4 | 1.1 | 2.0 | 1.5 | 1.5 | 3.1 | 2.5 | 8.8 | 1.8 | 17.4 | 2.2 | 2.1 | 6.4 | 17.4 | 3.0 | 24 |
| 5 | 6.0 | **S** | 2.8 | 12.3 | 6.0 | 8.5 | 10.5 | 10.2 | 8.7 | 5.5 | 5.4 | 5.7 | 5.1 | 4.4 | 4.4 | 6.0 | 6.0 | 7.7 | 8.5 | 9.1 | 8.3 | 7.5 | 7.3 | 6.9 | 12.3 | 7.1 | 24 |
| 6 | **S** | 6.0 | 6.5 | 7.6 | 7.5 | 9.1 | 16.5 | **S** | 9.2 | 8.7 | 15.2 | 8.2 | 4.7 | 2.2 | 1.5 | 1.8 | 0.6 | 1.0 | 1.8 | 2.5 | 2.2 | 1.8 | 1.1 | **S** | 16.5 | 5.5 | 24 |
| 7 | 3.3 | 3.1 | 3.8 | 3.9 | 3.6 | 4.0 | 5.3 | 7.7 | 4.4 | 6.3 | 7.3 | 3.9 | 4.4 | 4.9 | 6.1 | 8.9 | 8.9 | 6.4 | 5.5 | 5.1 | 4.3 | 3.7 | **S** | 2.1 | 8.9 | 5.1 | 24 |
| 8 | 2.3 | 2.1 | 1.9 | 1.7 | 1.5 | 2.2 | 2.5 | **S** | 2.3 | **P** | **P** | **P** | **P** | 2.5 | 1.8 | 1.2 | 1.4 | 2.0 | 4.3 | 2.2 | 1.0 | **S** | 2.2 | 3.0 | 4.3 | 2.1 | 20 |
| 9 | 3.7 | 3.4 | 2.2 | 2.3 | 2.7 | 5.3 | 5.3 | 6.0 | 4.8 | 2.5 | 2.2 | 2.0 | 1.7 | 1.8 | 2.2 | 1.9 | 1.8 | 2.0 | 1.7 | 1.4 | **S** | 0.6 | 0.8 | 1.2 | 6.0 | 2.6 | 24 |
| 10 | 2.0 | 1.2 | 2.5 | 2.8 | 4.1 | 3.7 | 4.0 | 3.9 | 3.9 | 3.9 | 2.7 | 2.4 | 2.5 | 2.5 | 2.8 | 3.0 | 3.3 | 2.9 | 3.7 | **S** | 3.0 | 2.5 | 2.7 | 2.4 | 4.1 | 3.0 | 24 |
| 11 | 2.8 | 3.3 | 3.9 | 4.0 | 4.0 | 5.6 | 6.1 | 6.7 | 6.6 | 5.9 | 5.8 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **S** | 7.0 | 6.6 | 6.0 | 5.5 | 5.4 | 7.0 | 5.3 | 24 |
| 12 | 5.5 | 5.7 | 5.1 | 5.5 | 6.0 | 5.8 | 5.8 | 5.5 | 5.1 | 4.8 | 9.8 | 4.8 | 5.3 | 5.3 | 6.7 | 7.1 | 9.0 | **S** | 15.0 | 18.8 | 18.4 | 15.0 | 18.4 | 19.9 | 19.9 | 9.1 | 24 |
| 13 | 20.7 | 21.2 | 15.1 | 13.5 | 11.0 | 7.8 | 6.6 | **S** | **S** | 13.6 | 3.5 | 3.2 | 9.6 | 4.1 | 3.1 | 2.5 | **S** | 2.0 | 1.8 | 1.8 | 2.1 | 2.5 | 2.3 | 3.4 | 21.2 | 7.2 | 24 |
| 14 | 3.2 | 3.3 | 1.7 | 1.6 | 2.2 | 2.1 | 11.1 | 2.2 | 2.8 | 3.3 | 22.7 | 12.2 | 2.6 | 3.3 | 2.2 | **S** | 2.5 | 3.6 | 3.0 | 6.5 | 16.3 | 6.8 | 5.4 | 6.1 | 22.7 | 5.5 | 24 |
| 15 | 6.3 | 4.0 | 1.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.5 | 0.1 | **S** | **S** | 1.9 | 1.1 | 3.6 | **S** | 1.9 | 1.9 | 1.5 | 1.4 | 1.5 | 2.0 | 2.6 | 2.6 | 2.4 | 6.3 | 1.8 | 24 |
| 16 | 2.1 | 2.3 | 2.1 | 2.0 | 1.9 | 2.3 | 1.8 | 1.7 | 1.5 | 1.5 | 1.8 | 1.8 | 1.8 | **S** | 1.7 | 2.3 | 2.3 | 2.9 | 2.4 | 2.2 | 2.1 | 1.5 | 1.5 | 1.5 | 2.9 | 2.0 | 24 |
| 17 | 1.5 | 1.3 | 1.5 | 1.5 | 1.5 | 1.4 | 1.5 | 1.7 | 1.7 | 1.8 | 1.4 | 1.3 | **S** | 1.2 | 1.4 | 1.9 | 2.8 | 3.9 | 3.7 | 3.5 | 4.1 | 4.0 | 5.1 | 5.9 | 5.9 | 2.4 | 24 |
| 18 | 5.1 | 5.4 | 5.6 | 5.7 | 6.0 | 8.2 | 8.8 | 9.1 | 8.6 | 7.9 | 4.9 | **S** | 2.8 | 13.9 | 3.9 | 4.4 | 5.1 | 5.3 | 6.8 | 5.8 | 11.6 | 10.5 | 5.0 | 3.9 | 13.9 | 6.7 | 24 |
| 19 | 4.7 | 4.2 | 4.4 | 3.6 | 1.5 | 1.4 | 1.3 | 1.1 | 1.4 | 1.0 | **S** | 2.1 | 1.8 | 2.0 | 3.3 | 4.3 | 4.5 | 5.5 | 5.7 | 4.6 | 4.0 | 3.0 | 2.9 | 2.2 | 5.7 | 3.1 | 24 |
| 20 | 2.2 | 1.7 | 1.7 | 1.6 | 1.3 | 4.0 | 4.6 | 2.6 | 3.0 | **S** | 14.2 | 3.7 | 17.0 | 2.7 | 3.5 | 9.6 | 6.4 | 8.0 | 7.6 | 7.0 | 7.5 | 8.1 | 8.6 | 9.5 | 17.0 | 5.9 | 24 |
| 21 | 10.1 | 9.3 | 9.1 | 9.0 | 9.0 | 9.5 | 9.8 | 9.6 | **S** | 13.1 | 28.8 | 8.8 | **50.2** | 9.4 | 13.1 | 18.6 | 21.6 | 32.2 | 12.3 | 9.2 | 9.6 | 9.4 | 11.0 | 13.4 | **50.2** | 14.6 | 24 |
| 22 | 13.7 | 13.2 | 12.2 | 11.9 | 11.6 | 11.3 | 9.9 | **S** | 3.6 | 2.8 | 2.9 | 2.9 | 5.0 | 7.0 | 9.9 | 10.7 | 13.5 | 18.5 | 18.4 | 13.7 | 13.8 | 12.7 | 12.8 | 9.6 | 18.5 | 10.5 | 24 |
| 23 | 7.0 | 6.7 | 5.3 | 4.3 | 3.7 | 4.0 | **S** | 5.0 | 5.3 | 5.3 | 5.3 | 5.7 | 7.0 | 8.3 | 9.3 | 10.3 | 11.2 | 11.6 | 12.2 | 12.8 | 13.7 | 14.8 | 17.7 | 18.6 | 18.6 | 8.9 | 24 |
| 24 | 14.7 | 13.6 | 9.1 | 6.0 | 4.7 | **S** | 1.9 | 1.9 | 1.4 | 1.3 | 1.3 | 1.1 | 1.1 | 1.1 | 1.0 | 1.1 | 1.3 | 1.1 | 0.8 | 0.7 | 0.8 | 0.7 | 1.0 | 1.0 | 14.7 | 3.0 | 24 |
| 25 | 1.0 | 0.8 | 0.8 | 0.8 | **S** | 1.3 | 1.3 | 1.7 | 1.2 | 1.3 | 1.7 | 1.9 | 1.2 | 1.1 | 1.7 | 4.5 | 6.6 | 2.3 | 11.8 | 6.3 | 5.7 | 4.0 | 7.2 | 7.2 | 11.8 | 3.2 | 24 |
| 26 | 6.3 | 3.5 | 2.9 | **S** | 3.0 | 4.2 | 5.2 | 6.0 | 5.8 | 5.4 | 4.4 | 13.2 | 4.1 | 12.3 | 10.3 | 14.0 | 7.6 | 10.4 | 11.9 | 12.0 | 11.1 | 10.7 | 9.6 | 8.4 | 14.0 | 7.9 | 24 |
| 27 | 7.6 | 7.4 | **S** | 3.6 | 3.4 | 3.0 | 2.9 | 1.9 | 1.2 | 1.0 | 0.8 | 1.5 | 1.0 | 1.2 | 1.2 | 2.5 | 2.5 | 2.4 | 2.3 | 2.0 | 3.1 | 4.0 | 3.6 | 2.7 | 7.6 | 2.7 | 24 |
| 28 | 1.8 | **S** | 4.2 | 3.4 | 2.9 | 2.8 | 2.8 | 2.8 | 2.9 | 3.4 | 2.9 | 2.8 | 2.9 | 3.1 | 3.2 | 3.2 | 3.4 | 3.3 | 2.9 | 3.0 | 3.4 | 3.3 | 3.5 | 3.5 | 4.2 | 3.1 | 24 |
| 29 | **S** | 3.5 | 5.3 | 8.2 | 13.9 | 19.0 | 27.3 | 28.5 | 28.2 | 22.0 | 20.1 | 17.8 | 15.7 | 9.6 | 9.4 | 9.4 | 7.8 | 7.4 | 9.1 | 9.9 | 12.8 | 12.6 | 11.1 | **S** | 28.5 | 14.0 | 24 |
| 30 | 23.2 | 36.5 | 41.6 | 41.9 | 36.6 | 24.7 | 19.4 | 12.9 | 11.6 | 10.1 | 7.6 | 7.2 | 6.1 | 7.7 | 9.1 | 10.0 | 9.9 | 8.9 | 10.1 | 10.7 | 12.1 | 11.9 | **S** | 8.4 | 41.9 | 16.4 | 24 |
| HOURLY MAX | 23.2 | 36.5 | 41.6 | 41.9 | 36.6 | 24.7 | 27.3 | 28.5 | 28.2 | 22.0 | 28.8 | 17.8 | 50.2 | 13.9 | 13.1 | 18.6 | 21.6 | 32.2 | 18.4 | 18.8 | 18.4 | 15.0 | 18.4 | 19.9 | | | |
| HOURLY AVG | 5.9 | 6.1 | 5.7 | 5.9 | 5.6 | 5.6 | 6.2 | 5.2 | 4.9 | 5.2 | 6.7 | 4.6 | 6.0 | 4.4 | 4.5 | 5.7 | 5.8 | 6.2 | 6.5 | 6.1 | 7.1 | 5.8 | 5.6 | 5.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 671 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 50.2 | PPB | @ HOUR(S) | 12 | ON DAY(S) | 21 |
| IZS CALIBRATION TIME: | 38 | HRS | OPERATIONAL TIME: | | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION: | 5.84 | | | | | |






JOB #: 2833-13-11-31-C

LICA31
NO2_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 5.23 | 4.93 | 7.39 | 6.16 | 5.08 | 1.69 | 1.54 | 3.38 | 6.16 | 9.55 | 10.93 | 6.47 | 10.78 | 6.00 | 7.08 | 7.55 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 5.23 | 4.93 | 7.39 | 6.16 | 5.08 | 1.69 | 1.54 | 3.38 | 6.16 | 9.55 | 10.93 | 6.47 | 10.78 | 6.00 | 7.08 | 7.55 | |

Calm : .00 %

Total # Operational Hours : 649

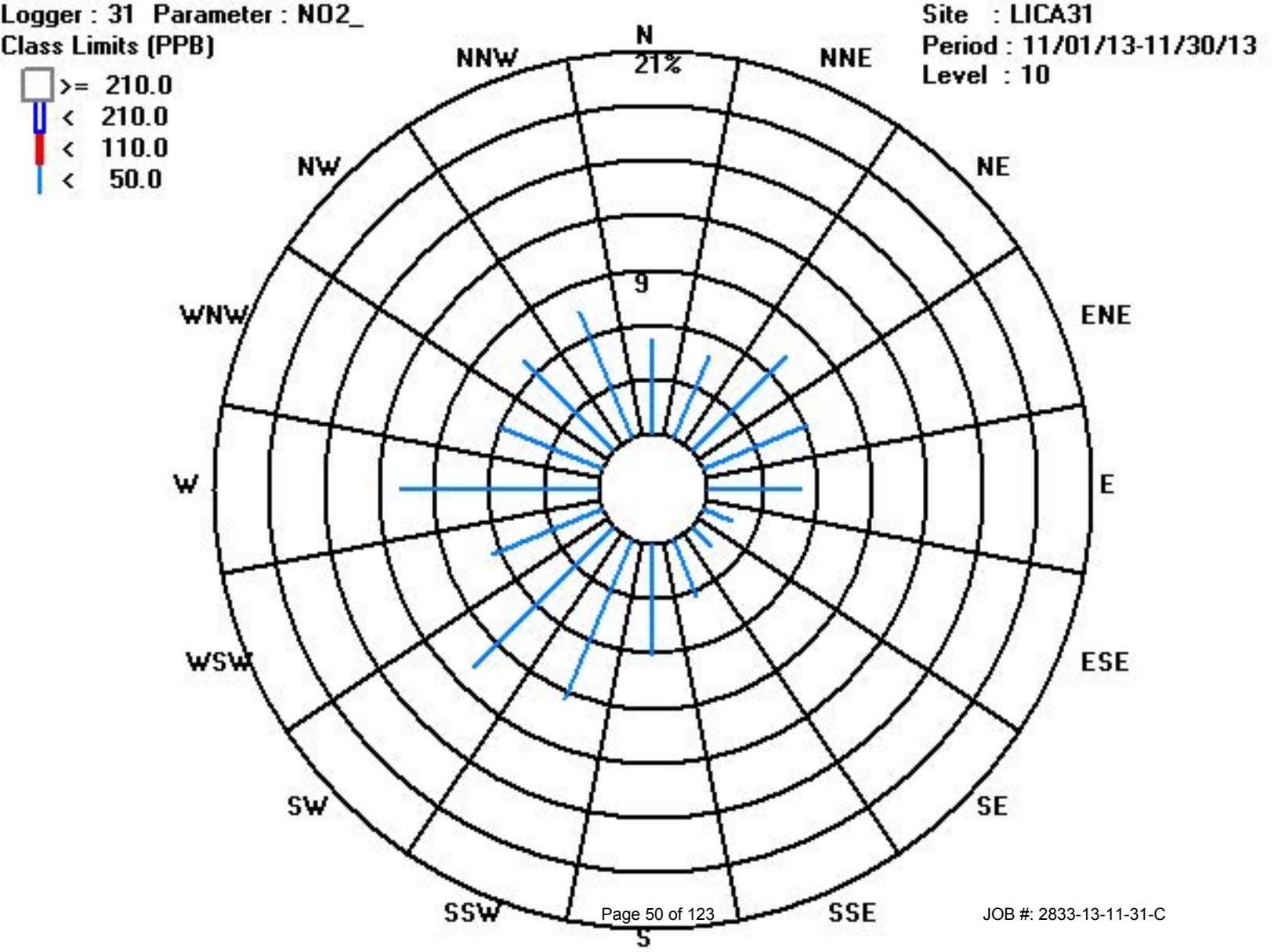
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 34 | 32 | 48 | 40 | 33 | 11 | 10 | 22 | 40 | 62 | 71 | 42 | 70 | 39 | 46 | 49 | 649 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 32 | 48 | 40 | 33 | 11 | 10 | 22 | 40 | 62 | 71 | 42 | 70 | 39 | 46 | 49 | |

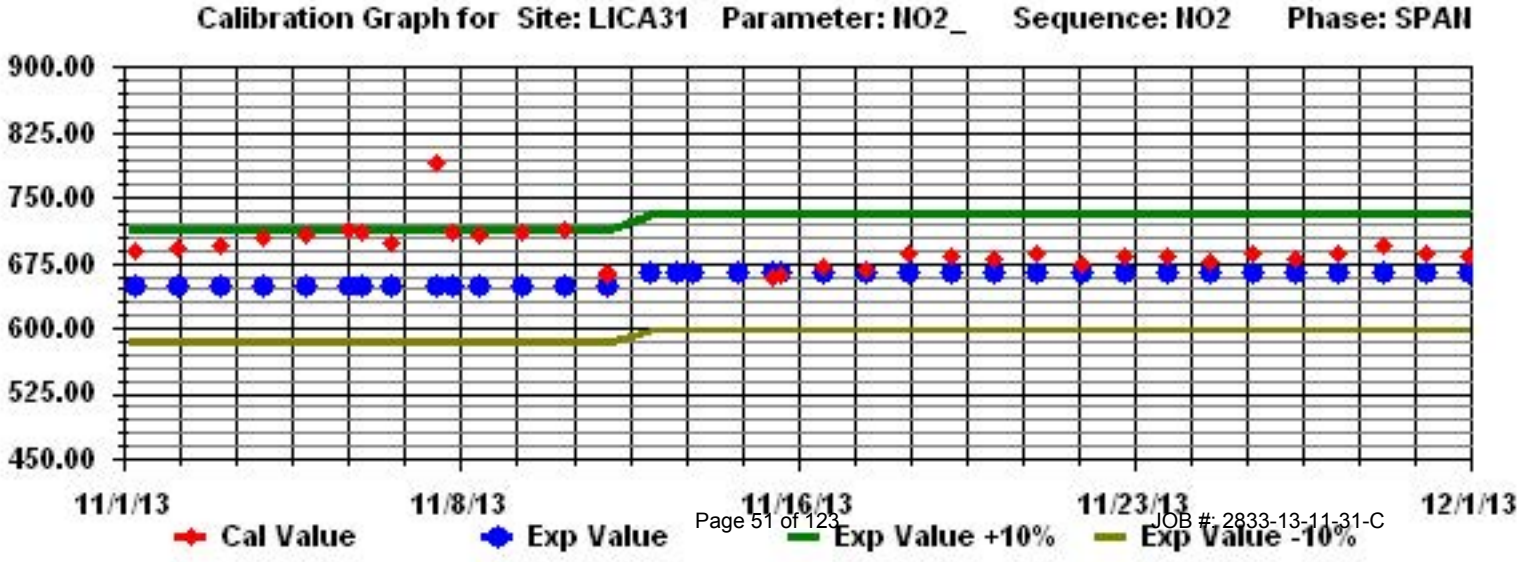
Calm : .00 %

Total # Operational Hours : 649






JOB #: 2833-13-11-31-C


Calibration Graph for Site: LICA31 Parameter: NO2_ Sequence: NO2 Phase: SPAN
900.00
825.00
750.00
675.00
600.00
525.00
450.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

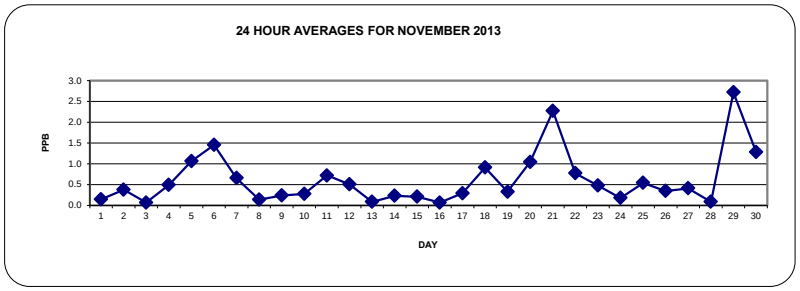
**NITRIC OXIDE** hourly averages in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 1.1 | 0.4 | 0.5 | 0.3 | 0.6 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 1.1 | 0.1 | 24 |
| 2 | 0.0 | 0.0 | 0.1 | 0.3 | **S** | 1.1 | 0.5 | 0.3 | 0.7 | 0.3 | 0.5 | 0.1 | 0.2 | 0.2 | 0.8 | 1.3 | 1.0 | 0.4 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.0 | 1.3 | 0.4 | 24 |
| 3 | 0.0 | 0.0 | 0.3 | **S** | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.1 | 24 |
| 4 | 0.0 | 0.0 | **S** | 0.9 | 0.6 | 0.2 | 0.5 | 0.2 | 0.5 | 0.6 | 0.7 | 1.1 | 0.5 | 0.3 | 0.4 | 0.5 | 0.4 | 0.6 | 0.8 | 0.6 | 0.9 | 0.3 | 0.2 | 0.5 | 1.1 | 0.5 | 24 |
| 5 | 0.4 | **S** | 0.9 | 1.6 | 0.3 | 0.8 | 0.8 | 1.1 | 2.6 | 3.2 | 3.4 | 3.0 | 2.4 | 1.4 | 1.4 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 3.4 | 1.1 | 24 |
| 6 | **S** | 1.3 | 1.0 | 0.5 | 0.6 | 0.8 | 0.9 | **S** | 6.3 | 6.8 | 6.0 | 3.8 | 1.8 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 6.8 | 1.5 | 24 |
| 7 | 1.0 | 0.5 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 1.5 | 2.9 | 0.6 | 1.0 | 1.2 | 1.4 | 1.0 | 0.5 | 0.2 | 0.0 | 0.1 | 0.1 | 0.0 | **S** | 0.9 | 2.9 | 0.7 | 24 |
| 8 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.6 | **P** | **P** | **P** | **P** | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 1.0 | 0.3 | 1.0 | 0.1 | 20 |
| 9 | 0.0 | 0.1 | 0.2 | 0.1 | 0.3 | 0.0 | 0.1 | 0.3 | 0.6 | 0.0 | 0.6 | 0.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.1 | 0.0 | 0.2 | 0.0 | **S** | 1.0 | 0.6 | 0.0 | 1.0 | 0.2 | 24 |
| 10 | 0.3 | 0.3 | 0.0 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.2 | 0.4 | 0.8 | 0.7 | 0.6 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.9 | 0.5 | 0.4 | 0.3 | 0.9 | 0.3 | 24 |
| 11 | 0.2 | 0.1 | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.4 | 1.9 | 3.1 | 4.0 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **S** | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 4.0 | 0.7 | 24 |
| 12 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.9 | 2.3 | 1.7 | 1.8 | 1.7 | 1.2 | 0.8 | 0.0 | **S** | 0.0 | 0.3 | 0.3 | 0.2 | 0.1 | 0.0 | 2.3 | 0.5 | 24 |
| 13 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.1 | 0.7 | 0.0 | 0.1 | 0.1 | 0.4 | 0.0 | 0.0 | **S** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.1 | 24 |
| 14 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.1 | 1.2 | 0.8 | 0.1 | 0.4 | 0.0 | **S** | 0.1 | 0.0 | 0.3 | 0.1 | 0.6 | 0.5 | 0.5 | 0.4 | 1.2 | 0.2 | 24 |
| 15 | 0.5 | 0.3 | 0.3 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | **S** | 1.4 | 0.3 | 0.2 | **S** | 1.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 0.2 | 24 |
| 16 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | **S** | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.1 | 24 |
| 17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 1.4 | 0.9 | 0.7 | 0.6 | 0.3 | 0.5 | 0.5 | 0.4 | 0.4 | 0.7 | 0.2 | 1.4 | 0.3 | 24 |
| 18 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.6 | 1.5 | 3.0 | 2.3 | **S** | 2.9 | 2.1 | 1.2 | 1.1 | 0.6 | 0.3 | 0.5 | 0.4 | 0.5 | 0.7 | 0.5 | 0.4 | 3.0 | 0.9 | 24 |
| 19 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | **S** | 1.8 | 1.0 | 0.4 | 0.8 | 0.8 | 0.3 | 0.1 | 0.4 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 1.8 | 0.3 | 24 |
| 20 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | **S** | 5.3 | 2.9 | 2.7 | 1.7 | 1.4 | 2.1 | 1.0 | 0.8 | 0.9 | 1.0 | 0.7 | 1.1 | 1.1 | 0.9 | 5.3 | 1.0 | 24 |
| 21 | 0.9 | 1.1 | 1.1 | 1.3 | 1.0 | 1.0 | 1.2 | 0.9 | **S** | 4.3 | 6.8 | 6.0 | 6.7 | 5.4 | 4.5 | 4.9 | 2.3 | 1.7 | 0.5 | 0.4 | 0.0 | 0.0 | 0.2 | 0.1 | 6.8 | 2.3 | 24 |
| 22 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 1.3 | 0.9 | 1.3 | 1.2 | 1.6 | 2.3 | 2.8 | 2.0 | 0.8 | 0.4 | 0.6 | 0.4 | 0.3 | 0.5 | 0.5 | 0.4 | 2.8 | 0.8 | 24 |
| 23 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.4 | 0.0 | 0.7 | 1.3 | 1.6 | 2.1 | 2.3 | 1.4 | 0.4 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 2.3 | 0.5 | 24 |
| 24 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.8 | 0.4 | 0.1 | 0.2 | 0.1 | 0.4 | 0.3 | 0.2 | 0.0 | 0.3 | 0.1 | 0.2 | 0.3 | 0.2 | 0.0 | 0.1 | 0.2 | 0.2 | 0.8 | 0.2 | 24 |
| 25 | 0.0 | 0.2 | 0.1 | 0.2 | **S** | 1.2 | 1.0 | 0.8 | 0.5 | 0.7 | 0.7 | 0.6 | 0.5 | 0.5 | 0.7 | 0.5 | 0.6 | 0.8 | 0.3 | 0.6 | 0.5 | 0.2 | 0.6 | 0.6 | 1.2 | 0.5 | 24 |
| 26 | 0.5 | 0.3 | 0.4 | **S** | 0.7 | 0.4 | 0.1 | 0.2 | 0.2 | 0.3 | 0.6 | 0.9 | 0.5 | 0.8 | 0.5 | 0.6 | 0.2 | 0.0 | 0.1 | 0.2 | 0.3 | 0.2 | 0.0 | 0.0 | 0.9 | 0.3 | 24 |
| 27 | 0.0 | 0.0 | **S** | 1.2 | 0.9 | 0.6 | 0.8 | 0.1 | 0.0 | 0.5 | 0.5 | 0.5 | 0.5 | 0.2 | 0.4 | 0.3 | 0.4 | 0.5 | 0.3 | 0.6 | 0.2 | 0.4 | 0.2 | 0.3 | 1.2 | 0.4 | 24 |
| 28 | 0.3 | **S** | 0.6 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.6 | 0.1 | 24 |
| 29 | **S** | 0.8 | 0.1 | 0.0 | 0.1 | 0.6 | 1.3 | 2.2 | 4.6 | 10.7 | **14.3** | 12.2 | 6.6 | 2.1 | 1.6 | 1.1 | 0.2 | 0.2 | 0.0 | 0.2 | 0.3 | 0.4 | 0.2 | **S** | **14.3** | **2.7** | 24 |
| 30 | 1.9 | 1.2 | 6.4 | 6.9 | 1.7 | 1.2 | 0.8 | 0.5 | 0.8 | 1.3 | 1.4 | 1.5 | 1.1 | 0.7 | 0.6 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **S** | 0.9 | 6.9 | 1.3 | 24 |
| HOURLY MAX | 1.9 | 1.3 | 6.4 | 6.9 | 1.7 | 1.2 | 1.3 | 2.2 | 6.3 | 10.7 | 14.3 | 12.2 | 6.7 | 5.4 | 4.5 | 4.9 | 2.3 | 1.7 | 0.9 | 1.0 | 0.9 | 1.1 | 1.1 | 0.9 | | | |
| HOURLY AVG | 0.3 | 0.3 | 0.5 | 0.5 | 0.3 | 0.3 | 0.4 | 0.4 | 0.8 | 1.5 | 2.1 | 1.6 | 1.3 | 1.0 | 0.8 | 0.8 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | | | |

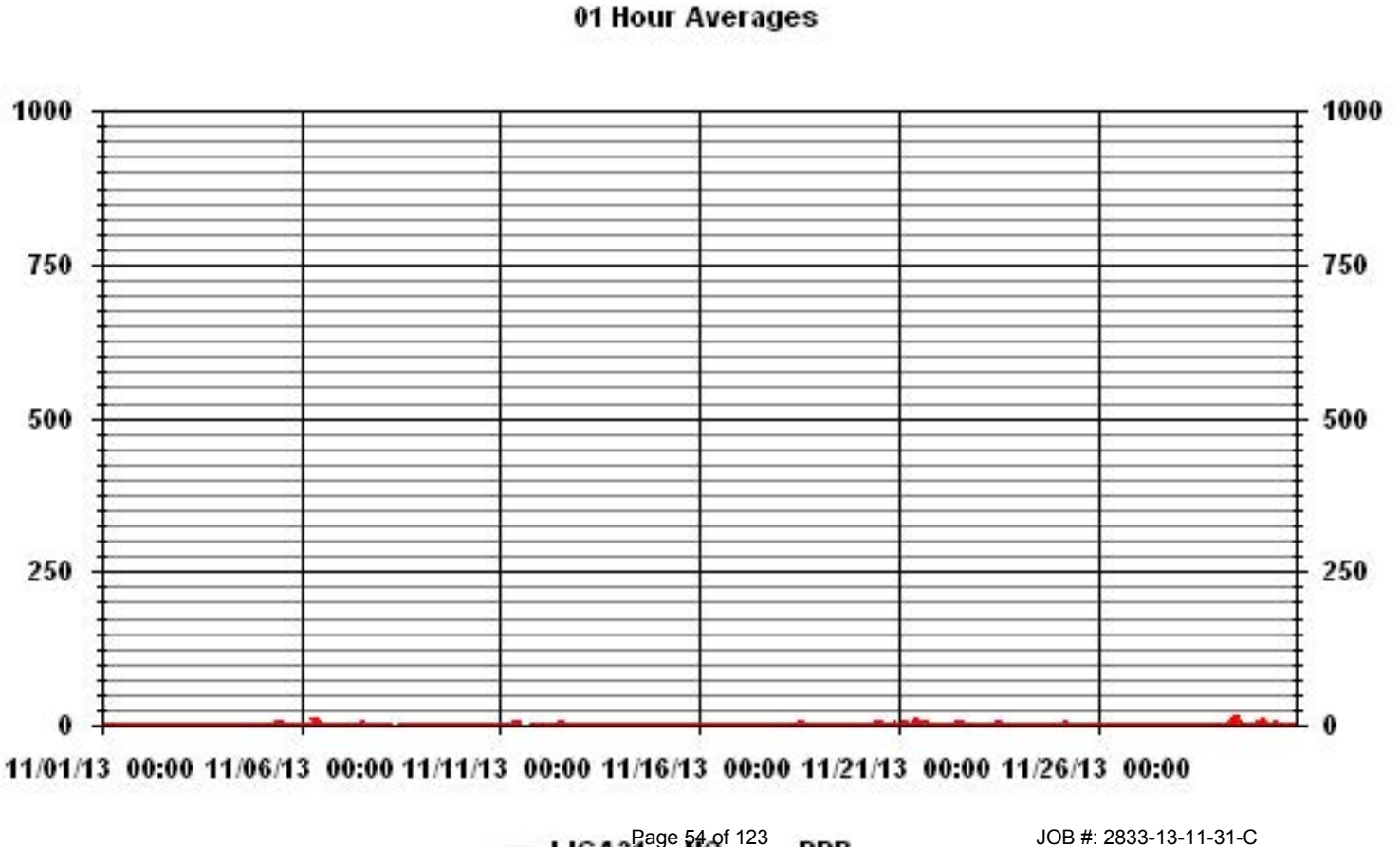
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 448 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 14.3 | PPB | @ HOUR(S) | 10 | ON DAY(S) | 29 | |
| MAXIMUM 24-HR AVERAGE: | 2.7 | PPB | | | ON DAY(S) | 29 | |
| IZS CALIBRATION TIME: | 36 | HRS | OPERATIONAL TIME: | | 716 | HRS | |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME: | | 99.4 | % | |
| STANDARD DEVIATION: | 1.29 | | MONTHLY AVERAGE: | | 0.61 | PPB | |






JOB #: 2833-13-11-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**NITRIC OXIDE MAX** instantaneous maximum in ppb

MST

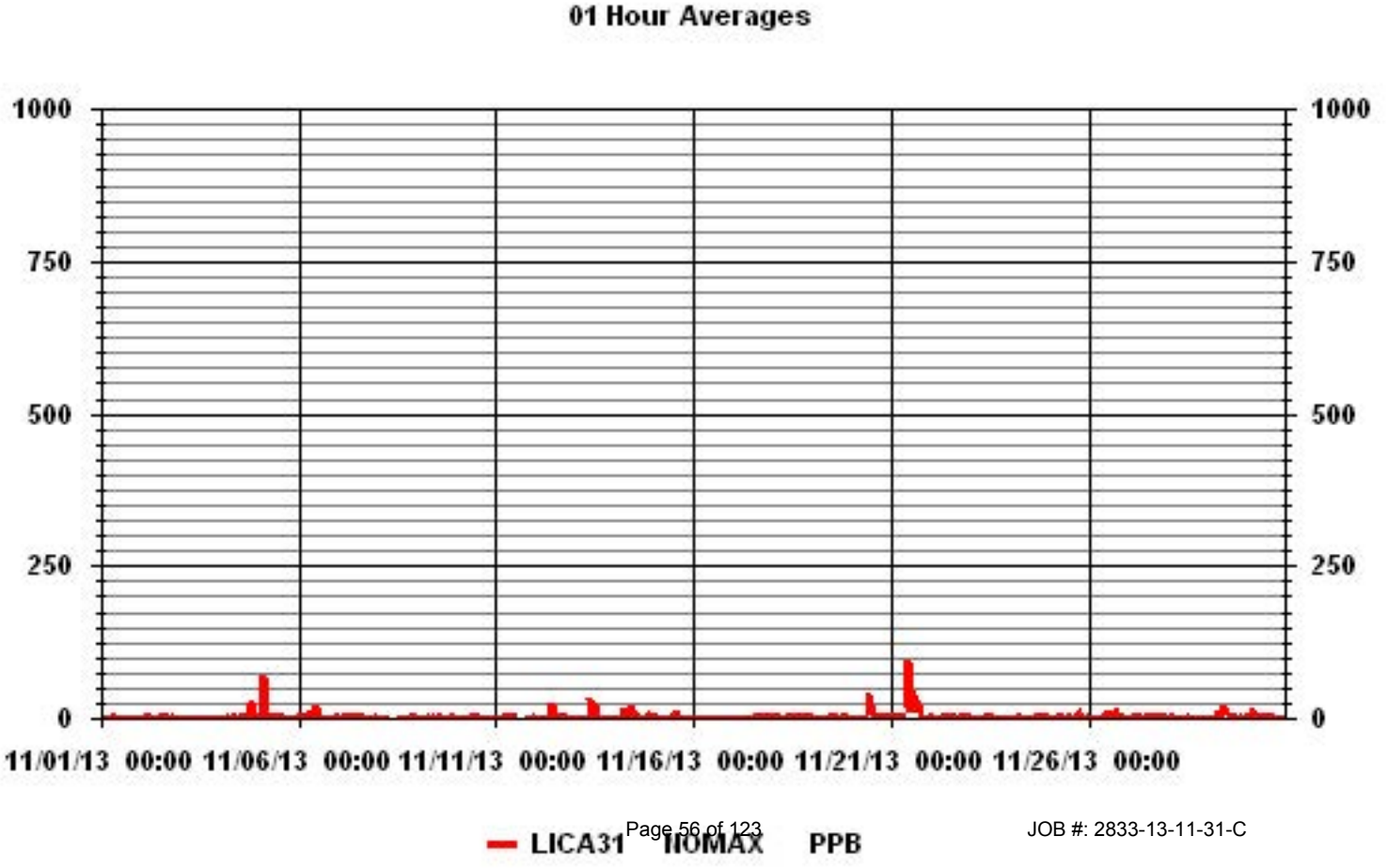
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.3 | **S** | 2.5 | 1.2 | 1.5 | 1.8 | 2.3 | 1.0 | 0.6 | 0.6 | 0.7 | 0.8 | 0.7 | 0.8 | 1.0 | 0.8 | 0.6 | 0.8 | 0.8 | 0.7 | 2.5 | 0.9 | 24 |
| 2 | 0.7 | 1.0 | 0.8 | 2.9 | **S** | 2.1 | 1.4 | 1.3 | 2.4 | 0.9 | 1.9 | 0.7 | 1.0 | 1.2 | 1.6 | 2.2 | 1.9 | 1.3 | 0.9 | 1.1 | 1.3 | 1.0 | 0.9 | 0.8 | 2.9 | 1.4 | 24 |
| 3 | 0.9 | 0.8 | 1.2 | **S** | 2.1 | 0.8 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.9 | 0.8 | 0.9 | 2.7 | 0.8 | 0.5 | 1.1 | 0.8 | 0.3 | 0.3 | 0.3 | 0.8 | 2.7 | 0.9 | 24 |
| 4 | 0.6 | 1.7 | **S** | 2.8 | 1.3 | 1.2 | 1.2 | 0.9 | 1.4 | 1.4 | 1.4 | 3.3 | 1.5 | 2.3 | 1.4 | 1.5 | 2.1 | 2.4 | 26.2 | 1.9 | 30.1 | 2.2 | 0.9 | 1.2 | 30.1 | 4.0 | 24 |
| 5 | 1.2 | **S** | 2.0 | 70.4 | 1.4 | 3.0 | 2.4 | 2.0 | 4.1 | 4.3 | 4.5 | 4.7 | 3.4 | 2.3 | 2.6 | 2.3 | 0.7 | 0.4 | 0.7 | 0.8 | 0.7 | 0.8 | 1.0 | 0.6 | 70.4 | 5.1 | 24 |
| 6 | **S** | 2.6 | 1.7 | 1.2 | 1.7 | 2.2 | 8.5 | **S** | 8.6 | 7.7 | 15.1 | 15.1 | 7.2 | 2.2 | 0.9 | 0.7 | 0.9 | 0.4 | 1.0 | 0.6 | 0.7 | 0.7 | 0.2 | **S** | 15.1 | 3.8 | 24 |
| 7 | 2.2 | 1.6 | 0.9 | 1.0 | 1.2 | 1.0 | 2.2 | 1.3 | 1.2 | 4.5 | 4.8 | 1.2 | 1.8 | 1.8 | 2.1 | 1.8 | 1.3 | 1.0 | 0.6 | 0.7 | 0.9 | 0.7 | **S** | 3.2 | 4.8 | 1.7 | 24 |
| 8 | 1.2 | 0.4 | 0.4 | 0.4 | 0.0 | 0.1 | 0.1 | **S** | 2.6 | **P** | **P** | **P** | **P** | 1.1 | 0.6 | 0.4 | 0.5 | 0.6 | 1.4 | 0.6 | 0.3 | **S** | 2.3 | 2.4 | 2.6 | 0.9 | 20 |
| 9 | 0.7 | 0.8 | 1.2 | 0.9 | 0.9 | 0.8 | 1.0 | 1.9 | 1.8 | 0.8 | 2.4 | 1.8 | 0.8 | 1.0 | 1.0 | 1.0 | 0.8 | 0.7 | 1.3 | 0.8 | **S** | 2.1 | 1.4 | 0.9 | 2.4 | 1.2 | 24 |
| 10 | 0.9 | 1.2 | 0.9 | 0.8 | 0.9 | 0.8 | 0.6 | 0.6 | 1.1 | 1.2 | 1.5 | 1.3 | 1.4 | 1.2 | 1.0 | 0.8 | 0.8 | 0.8 | 0.7 | **S** | 2.5 | 1.2 | 1.1 | 0.9 | 2.5 | 1.1 | 24 |
| 11 | 0.9 | 1.0 | 0.9 | 0.8 | 1.3 | 1.3 | 1.3 | 1.3 | 3.5 | 4.1 | 5.1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **S** | 1.0 | 0.5 | 0.2 | 1.1 | 1.2 | 5.1 | 1.6 | 24 |
| 12 | 0.5 | 0.4 | 0.5 | 0.6 | 0.7 | 0.4 | 1.0 | 0.7 | 1.5 | 2.4 | 23.4 | 2.5 | 2.7 | 2.3 | 4.0 | 1.4 | 1.1 | **S** | 1.1 | 1.1 | 1.4 | 1.0 | 0.8 | 0.8 | 23.4 | 2.3 | 24 |
| 13 | 1.0 | 0.8 | 0.8 | 0.7 | 0.4 | 0.4 | 0.7 | **S** | **S** | 28.4 | 1.3 | 0.9 | 25.4 | 3.0 | 2.6 | 0.7 | **S** | 0.1 | 0.4 | 0.6 | 0.7 | 0.0 | 0.3 | 0.4 | 28.4 | 3.3 | 24 |
| 14 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 2.0 | 15.5 | 0.3 | 0.3 | 1.9 | 20.3 | 11.9 | 1.9 | 6.0 | 0.8 | **S** | 1.7 | 0.9 | 1.5 | 0.9 | 6.5 | 1.4 | 1.4 | 1.3 | 20.3 | 3.4 | 24 |
| 15 | 1.3 | 1.2 | 1.0 | 0.8 | 0.7 | 0.6 | 0.6 | 0.5 | 0.6 | **S** | **S** | 3.4 | 1.2 | 9.1 | **S** | 2.8 | 0.7 | 0.6 | 0.9 | 0.7 | 0.7 | 0.5 | 0.5 | 0.8 | 9.1 | 1.4 | 24 |
| 16 | 0.8 | 1.0 | 0.7 | 0.3 | 0.8 | 0.8 | 0.6 | 0.7 | 0.6 | 0.7 | 0.8 | 0.9 | 0.7 | **S** | 2.8 | 0.7 | 0.7 | 0.8 | 0.5 | 0.4 | 0.5 | 0.5 | 0.6 | 0.2 | 2.8 | 0.7 | 24 |
| 17 | 0.4 | 0.2 | 0.5 | 0.2 | 0.1 | 0.4 | 0.2 | 0.8 | 0.4 | 0.4 | 0.6 | 0.4 | **S** | 2.9 | 1.9 | 1.6 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.1 | 1.2 | 1.0 | 2.9 | 0.9 | 24 |
| 18 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.4 | 1.0 | 1.4 | 2.8 | 3.9 | 3.3 | **S** | 4.6 | 3.0 | 2.2 | 2.0 | 1.4 | 1.2 | 1.2 | 1.4 | 1.4 | 1.2 | 1.4 | 1.2 | 4.6 | 1.8 | 24 |
| 19 | 1.2 | 0.9 | 1.0 | 0.8 | 0.9 | 0.6 | 0.9 | 0.8 | 0.6 | 0.6 | **S** | 3.0 | 1.9 | 1.1 | 1.7 | 1.9 | 1.1 | 0.9 | 1.5 | 1.3 | 2.2 | 2.5 | 0.6 | 0.5 | 3.0 | 1.2 | 24 |
| 20 | 1.0 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.9 | 1.5 | 0.7 | **S** | 37.4 | 5.4 | 19.1 | 3.5 | 2.4 | 5.6 | 1.6 | 1.6 | 1.6 | 1.7 | 1.5 | 1.9 | 1.9 | 1.7 | 37.4 | 4.1 | 24 |
| 21 | 1.7 | 1.9 | 2.0 | 2.2 | 1.7 | 2.0 | 2.2 | 1.9 | **S** | 24.5 | **93.0** | 8.7 | 49.9 | 9.8 | 21.7 | 27.2 | 19.1 | 17.0 | 1.2 | 1.0 | 0.6 | 0.6 | 0.9 | 1.0 | **93.0** | 12.7 | 24 |
| 22 | 1.0 | 1.1 | 0.9 | 0.8 | 0.9 | 0.6 | 0.5 | **S** | 2.5 | 1.6 | 1.9 | 1.9 | 2.3 | 3.3 | 3.7 | 3.5 | 1.6 | 1.2 | 1.4 | 1.0 | 1.2 | 1.4 | 1.4 | 1.3 | 3.7 | 1.6 | 24 |
| 23 | 1.2 | 1.1 | 0.8 | 0.5 | 0.4 | 0.8 | **S** | 1.9 | 0.9 | 2.0 | 2.3 | 3.0 | 2.9 | 3.7 | 2.9 | 1.5 | 0.7 | 0.7 | 0.4 | 0.8 | 1.0 | 0.7 | 0.6 | 0.6 | 3.7 | 1.4 | 24 |
| 24 | 0.6 | 0.8 | 0.0 | -0.1 | 0.0 | **S** | 1.7 | 1.2 | 0.9 | 0.8 | 0.8 | 1.2 | 1.3 | 0.8 | 1.0 | 1.3 | 1.1 | 1.0 | 1.3 | 1.0 | 1.1 | 1.0 | 1.0 | 1.0 | 1.7 | 0.9 | 24 |
| 25 | 0.8 | 0.8 | 0.8 | 1.0 | **S** | 3.0 | 1.9 | 1.6 | 1.2 | 1.4 | 2.7 | 1.7 | 1.3 | 1.6 | 1.7 | 3.3 | 2.5 | 2.1 | 7.3 | 1.7 | 2.9 | 1.1 | 1.9 | 1.8 | 7.3 | 2.0 | 24 |
| 26 | 1.3 | 0.8 | 1.0 | **S** | 1.8 | 1.1 | 0.8 | 1.1 | 1.2 | 1.4 | 1.6 | 12.5 | 1.3 | 5.7 | 9.1 | 10.7 | 1.2 | 1.0 | 0.9 | 1.4 | 1.3 | 1.0 | 0.8 | 1.0 | 12.5 | 2.6 | 24 |
| 27 | 0.6 | 0.7 | **S** | 2.8 | 2.0 | 1.6 | 1.6 | 1.2 | 0.7 | 1.4 | 1.2 | 1.3 | 1.3 | 1.1 | 1.1 | 1.0 | 1.3 | 1.3 | 1.1 | 1.6 | 1.1 | 1.2 | 1.0 | 1.3 | 2.8 | 1.3 | 24 |
| 28 | 0.9 | **S** | 1.6 | 1.2 | 0.9 | 1.0 | 0.9 | 0.5 | 1.1 | 0.9 | 0.6 | 0.9 | 1.2 | 1.2 | 0.8 | 0.6 | 0.6 | 0.9 | 0.6 | 0.7 | 1.5 | 0.7 | 0.5 | 0.4 | 1.6 | 0.9 | 24 |
| 29 | **S** | 1.9 | 0.7 | 0.6 | 1.1 | 1.2 | 11.0 | 4.1 | 9.0 | 15.5 | 17.7 | 14.1 | 10.9 | 3.5 | 2.6 | 2.6 | 1.6 | 1.9 | 0.6 | 1.3 | 1.2 | 1.2 | 1.0 | **S** | 17.7 | 4.8 | 24 |
| 30 | 3.2 | 2.6 | 9.6 | 9.7 | 4.1 | 2.2 | 1.9 | 1.2 | 1.7 | 2.4 | 2.5 | 2.7 | 2.6 | 1.4 | 2.3 | 1.9 | 1.2 | 0.6 | 0.9 | 0.9 | 0.8 | 0.3 | **S** | 2.3 | 9.7 | 2.6 | 24 |
| HOURLY MAX | 3.2 | 2.6 | 9.6 | 70.4 | 4.1 | 3.0 | 15.5 | 4.1 | 9.0 | 28.4 | 93.0 | 15.1 | 49.9 | 9.8 | 21.7 | 27.2 | 19.1 | 17.0 | 26.2 | 1.9 | 30.1 | 2.5 | 2.3 | 3.2 | | | |
| HOURLY AVG | 1.0 | 1.1 | 1.2 | 3.8 | 1.1 | 1.2 | 2.3 | 1.3 | 2.0 | 4.4 | 9.3 | 3.9 | 5.6 | 2.8 | 2.8 | 3.0 | 1.8 | 1.6 | 2.1 | 1.0 | 2.3 | 1.0 | 1.0 | 1.1 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 663 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 93.0 | PPB | @ HOUR(S) | 10 | ON DAY(S) | 21 |
| IZS CALIBRATION TIME: | 38 | HRS | OPERATIONAL TIME: | | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION: | 6.11 | | | | | |






JOB #: 2833-13-11-31-C

LICA31
NO_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 5.23 | 4.93 | 7.39 | 6.16 | 5.08 | 1.69 | 1.54 | 3.38 | 6.16 | 9.55 | 10.93 | 6.47 | 10.78 | 6.00 | 7.08 | 7.55 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 5.23 | 4.93 | 7.39 | 6.16 | 5.08 | 1.69 | 1.54 | 3.38 | 6.16 | 9.55 | 10.93 | 6.47 | 10.78 | 6.00 | 7.08 | 7.55 | |

Calm : .00 %

Total # Operational Hours : 649

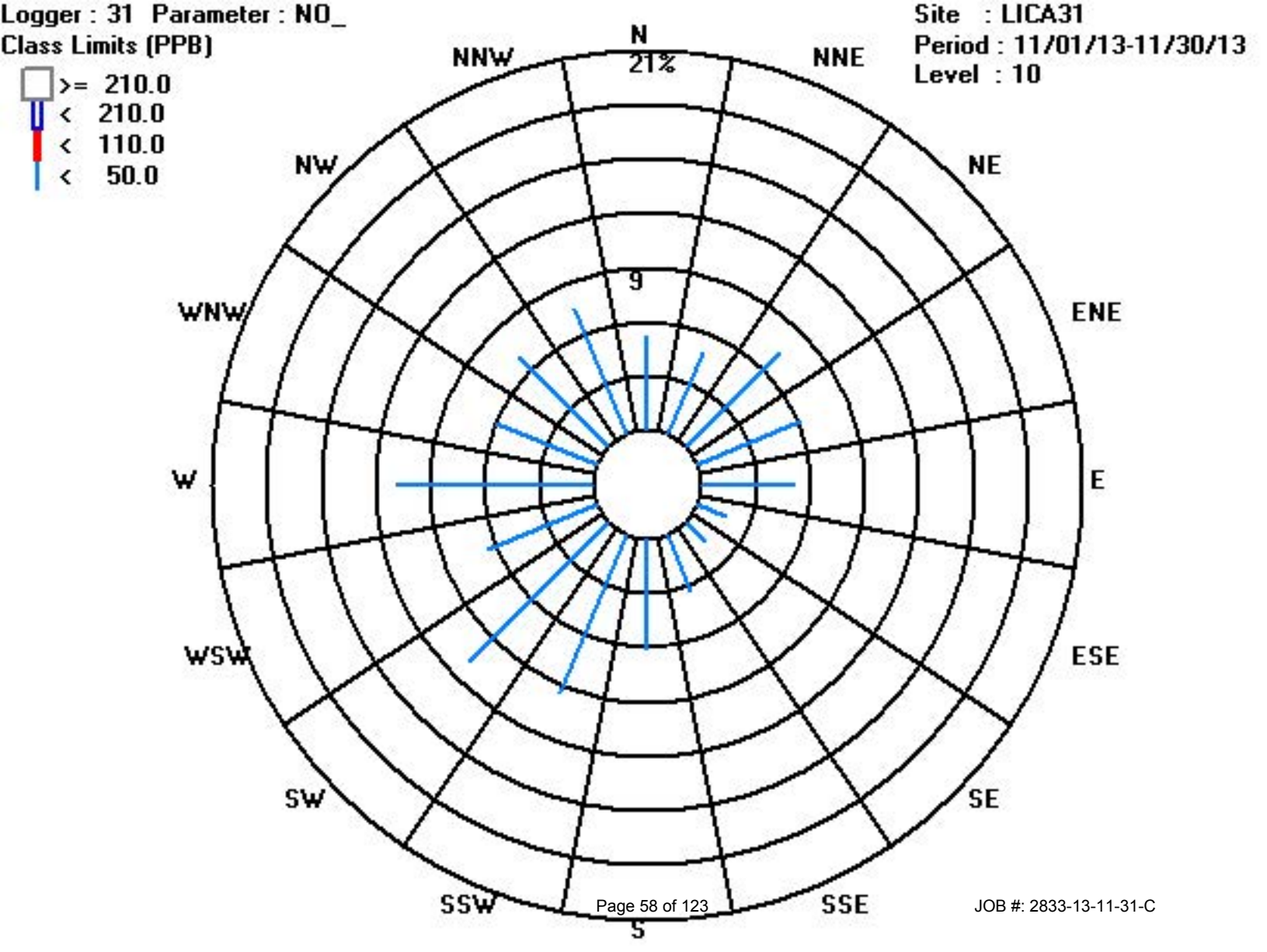
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 34 | 32 | 48 | 40 | 33 | 11 | 10 | 22 | 40 | 62 | 71 | 42 | 70 | 39 | 46 | 49 | 649 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 32 | 48 | 40 | 33 | 11 | 10 | 22 | 40 | 62 | 71 | 42 | 70 | 39 | 46 | 49 | |

Calm : .00 %

Total # Operational Hours : 649






JOB #: 2833-13-11-31-C

# Oxides of Nitrogen

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

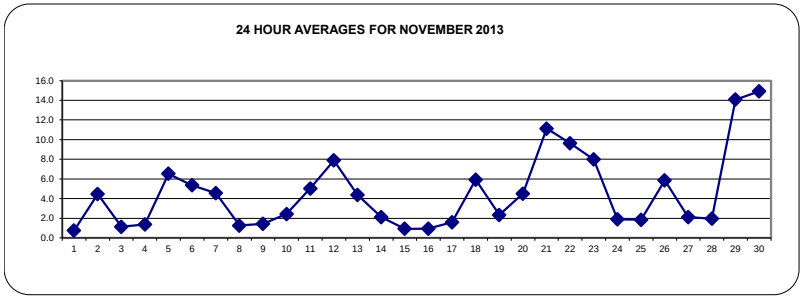
NOVEMBER 2013

**OXIDES OF NITROGEN** hourly averages in ppb

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.0 | 0.0 | 0.4 | 0.4 | 0.5 | **S** | 2.2 | 1.6 | 1.7 | 1.4 | 1.5 | 0.8 | 0.3 | 0.3 | 0.2 | 0.4 | 0.4 | 0.6 | 0.9 | 1.0 | 0.4 | 0.6 | 0.4 | 1.2 | 2.2 | 0.7 | 24 |
| 2 | 1.6 | 1.2 | 1.3 | 2.2 | **S** | 2.1 | 1.3 | 1.5 | 3.5 | 2.0 | 2.7 | 1.3 | 1.8 | 2.8 | 6.4 | 12.5 | 13.7 | 12.3 | 11.1 | 8.9 | 4.4 | 3.0 | 3.1 | 2.0 | 13.7 | 4.5 | 24 |
| 3 | 2.0 | 1.6 | 1.8 | **S** | 1.8 | 0.7 | 0.8 | 0.7 | 0.3 | 0.3 | 0.6 | 1.1 | 1.3 | 1.1 | 1.0 | 1.5 | 1.4 | 1.4 | 1.4 | 1.2 | 0.8 | 1.0 | 1.0 | 1.1 | 2.0 | 1.1 | 24 |
| 4 | 0.8 | 1.1 | **S** | 1.1 | 1.2 | 0.7 | 1.1 | 1.1 | 1.4 | 1.7 | 1.7 | 2.1 | 0.7 | 0.7 | 0.8 | 1.0 | 1.4 | 1.3 | 1.5 | 1.2 | 2.1 | 1.2 | 1.3 | 4.6 | 4.6 | 1.4 | 24 |
| 5 | 4.3 | **S** | 2.8 | 4.6 | 5.1 | 7.6 | 8.9 | 10.1 | 9.4 | 7.6 | 7.6 | 7.4 | 6.3 | 5.0 | 5.2 | 5.4 | 5.2 | 5.8 | 7.8 | 7.9 | 6.9 | 6.7 | 6.3 | 6.2 | 10.1 | 6.5 | 24 |
| 6 | **S** | 6.1 | 6.4 | 7.0 | 7.2 | 8.2 | 9.7 | **S** | 14.7 | 14.3 | 12.0 | 8.4 | 5.3 | 2.8 | 1.4 | 0.7 | 0.5 | 0.5 | 1.2 | 2.4 | 1.7 | 1.2 | 0.7 | **S** | 14.7 | 5.4 | 24 |
| 7 | 3.4 | 2.8 | 2.7 | 3.6 | 3.2 | 3.3 | 4.5 | 5.8 | 3.4 | 5.2 | 8.7 | 3.6 | 4.2 | 5.4 | 6.4 | 8.3 | 7.6 | 5.4 | 4.6 | 3.9 | 3.4 | 3.0 | **S** | 2.7 | 8.7 | 4.6 | 24 |
| 8 | 2.3 | 1.6 | 1.4 | 1.2 | 0.7 | 1.1 | 1.6 | **S** | 2.4 | **P** | **P** | **P** | **P** | 2.4 | 1.0 | 0.6 | 0.8 | 0.8 | 1.7 | 0.6 | 0.2 | **S** | 1.2 | 1.0 | 2.4 | 1.3 | 20 |
| 9 | 2.1 | 2.1 | 0.9 | 1.3 | 1.8 | 2.5 | 4.1 | 5.0 | 3.0 | 0.9 | 1.1 | 1.1 | 0.6 | 0.7 | 1.0 | 0.8 | 0.5 | 0.5 | 0.3 | 0.2 | **S** | 1.1 | 0.8 | 0.5 | 5.0 | 1.4 | 24 |
| 10 | 1.2 | 0.9 | 1.5 | 1.9 | 3.2 | 3.1 | 2.8 | 3.0 | 3.5 | 3.5 | 2.9 | 2.8 | 2.3 | 2.0 | 1.9 | 2.3 | 2.6 | 2.4 | 2.5 | **S** | 2.7 | 2.5 | 2.5 | 2.1 | 3.5 | 2.4 | 24 |
| 11 | 2.3 | 2.4 | 3.0 | 3.4 | 3.7 | 5.0 | 5.4 | 5.9 | 7.5 | 7.6 | 8.1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **S** | 6.4 | 5.7 | 5.0 | 4.8 | 4.4 | 8.1 | 5.0 | 24 |
| 12 | 4.4 | 4.9 | 4.3 | 4.3 | 4.6 | 4.8 | 5.2 | 4.7 | 4.7 | 5.0 | 6.1 | 5.8 | 6.0 | 6.1 | 6.6 | 7.1 | 7.4 | **S** | 10.9 | 17.3 | 15.1 | 13.2 | 16.1 | 17.0 | 17.3 | 7.9 | 24 |
| 13 | 19.1 | 17.5 | 13.2 | 12.0 | 6.9 | 5.9 | 4.8 | **S** | 3.2 | 3.1 | 1.7 | 1.7 | 1.6 | 1.8 | 0.9 | 0.7 | **S** | 0.2 | 0.4 | 0.4 | 0.1 | 0.1 | 0.0 | 1.0 | 19.1 | 4.4 | 24 |
| 14 | 1.2 | 1.0 | 0.0 | 0.0 | 0.3 | 0.3 | 0.8 | 0.5 | 0.7 | 1.5 | 3.3 | 2.6 | 1.2 | 1.8 | 0.9 | **S** | 1.2 | 2.7 | 2.4 | 3.1 | 7.7 | 5.5 | 4.6 | 5.3 | 7.7 | 2.1 | 24 |
| 15 | 4.8 | 2.7 | 0.4 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | **S** | 1.6 | 0.5 | 0.7 | **S** | 1.7 | 1.0 | 0.5 | 0.7 | 0.5 | 0.8 | 1.5 | 1.4 | 1.2 | 4.8 | 0.9 | 24 |
| 16 | 1.1 | 1.5 | 1.1 | 0.4 | 0.7 | 1.1 | 0.8 | 0.6 | 0.7 | 0.5 | 1.0 | 0.9 | 0.9 | **S** | 1.8 | 1.3 | 1.5 | 2.0 | 1.4 | 1.0 | 0.7 | 0.3 | 0.3 | 0.2 | 2.0 | 0.9 | 24 |
| 17 | 0.4 | 0.3 | 0.6 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 0.6 | 0.8 | 0.3 | 0.2 | **S** | 1.6 | 1.5 | 1.7 | 2.3 | 2.8 | 2.9 | 3.1 | 3.4 | 3.6 | 4.4 | 5.1 | 5.1 | 1.6 | 24 |
| 18 | 4.7 | 4.7 | 5.0 | 4.9 | 5.4 | 7.2 | 8.1 | 8.6 | 9.2 | 9.2 | 6.3 | **S** | 5.0 | 4.5 | 3.7 | 4.5 | 4.4 | 4.7 | 6.2 | 5.4 | 9.3 | 7.9 | 4.3 | 3.1 | 9.3 | 5.9 | 24 |
| 19 | 3.8 | 3.7 | 3.6 | 2.0 | 0.8 | 0.6 | 0.5 | 0.4 | 0.5 | 0.2 | **S** | 3.0 | 2.0 | 1.4 | 2.9 | 4.0 | 3.7 | 4.2 | 5.2 | 3.9 | 2.6 | 1.9 | 1.6 | 1.1 | 5.2 | 2.3 | 24 |
| 20 | 1.2 | 0.7 | 0.7 | 0.6 | 0.6 | 0.8 | 1.3 | 1.2 | 1.4 | **S** | 9.0 | 5.0 | 4.9 | 3.5 | 3.7 | 7.2 | 6.5 | 7.3 | 7.5 | 7.0 | 7.1 | 8.5 | 8.6 | 9.5 | 9.5 | 4.5 | 24 |
| 21 | 9.8 | 9.5 | 9.3 | 9.6 | 9.0 | 9.5 | 9.8 | 9.5 | **S** | 9.7 | 13.9 | 13.3 | 14.6 | 12.8 | 12.7 | 16.1 | 15.2 | 14.2 | 11.1 | 8.4 | 8.4 | 8.4 | 9.7 | 11.5 | 16.1 | 11.1 | 24 |
| 22 | 12.8 | 12.0 | 11.2 | 10.8 | 10.3 | 10.0 | 6.6 | **S** | 3.8 | 2.7 | 3.3 | 3.1 | 4.5 | 7.3 | 10.8 | 11.3 | 12.3 | 15.1 | 16.0 | 12.8 | 12.8 | 12.1 | 11.3 | 8.4 | 16.0 | 9.6 | 24 |
| 23 | 6.0 | 5.6 | 4.2 | 2.7 | 2.4 | 3.0 | **S** | 4.3 | 4.3 | 4.8 | 5.6 | 6.4 | 7.8 | 9.2 | 9.2 | 9.3 | 9.7 | 10.2 | 11.0 | 11.6 | 12.1 | 12.9 | 15.2 | 16.1 | 16.1 | 8.0 | 24 |
| 24 | 13.0 | 10.5 | 5.6 | 4.2 | 2.1 | **S** | 1.9 | 1.6 | 0.8 | 0.5 | 0.4 | 0.5 | 0.4 | 0.2 | 0.0 | 0.4 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.3 | 0.4 | 13.0 | 1.9 | 24 |
| 25 | 0.1 | 0.2 | 0.1 | 0.2 | **S** | 1.5 | 1.2 | 1.4 | 0.9 | 1.0 | 1.1 | 0.9 | 0.6 | 0.7 | 1.3 | 1.7 | 1.6 | 1.9 | 3.2 | 4.9 | 4.0 | 3.4 | 5.0 | 5.5 | 5.5 | 1.8 | 24 |
| 26 | 4.8 | 2.3 | 2.1 | **S** | 2.7 | 3.2 | 4.4 | 5.3 | 5.1 | 4.3 | 4.1 | 4.2 | 3.7 | 4.8 | 4.9 | 6.0 | 6.8 | 8.5 | 10.7 | 11.0 | 10.5 | 9.6 | 8.4 | 7.1 | 11.0 | 5.8 | 24 |
| 27 | 6.4 | 6.0 | **S** | 3.8 | 3.4 | 2.2 | 2.8 | 1.2 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 1.3 | 2.0 | 2.0 | 1.7 | 1.7 | 2.3 | 3.2 | 2.4 | 1.9 | 6.4 | 2.1 | 24 |
| 28 | 1.2 | **S** | 3.1 | 2.4 | 1.9 | 1.8 | 1.4 | 1.5 | 1.7 | 2.1 | 1.8 | 1.9 | 2.2 | 2.3 | 2.1 | 1.9 | 1.9 | 1.9 | 1.5 | 1.6 | 2.2 | 2.0 | 2.2 | 2.2 | 3.1 | 1.9 | 24 |
| 29 | **S** | 3.1 | 3.6 | 6.2 | 10.1 | 16.2 | 23.1 | 27.5 | 29.2 | 30.2 | 32.0 | 27.5 | 17.5 | 8.6 | 7.8 | 9.1 | 6.8 | 6.0 | 7.0 | 8.9 | 11.3 | 9.7 | 8.3 | **S** | 32.0 | 14.1 | 24 |
| 30 | 15.3 | 29.1 | 44.6 | **46.5** | 32.2 | 22.0 | 16.4 | 11.4 | 10.8 | 9.3 | 7.6 | 7.1 | 5.8 | 6.3 | 8.0 | 9.2 | 8.3 | 7.6 | 7.8 | 9.4 | 10.8 | 9.5 | **S** | 8.2 | **46.5** | **14.9** | 24 |
| HOURLY MAX | 19.1 | 29.1 | 44.6 | 46.5 | 32.2 | 22.0 | 23.1 | 27.5 | 29.2 | 30.2 | 32.0 | 27.5 | 17.5 | 12.8 | 12.7 | 16.1 | 15.2 | 15.1 | 16.0 | 17.3 | 15.1 | 13.2 | 16.1 | 17.0 | | | |
| HOURLY AVG | 4.6 | 4.8 | 4.8 | 4.9 | 4.4 | 4.5 | 4.5 | 4.4 | 4.4 | 4.7 | 5.4 | 4.3 | 3.8 | 3.5 | 3.7 | 4.6 | 4.5 | 4.4 | 4.9 | 5.0 | 5.2 | 4.8 | 4.5 | 4.7 | | | |

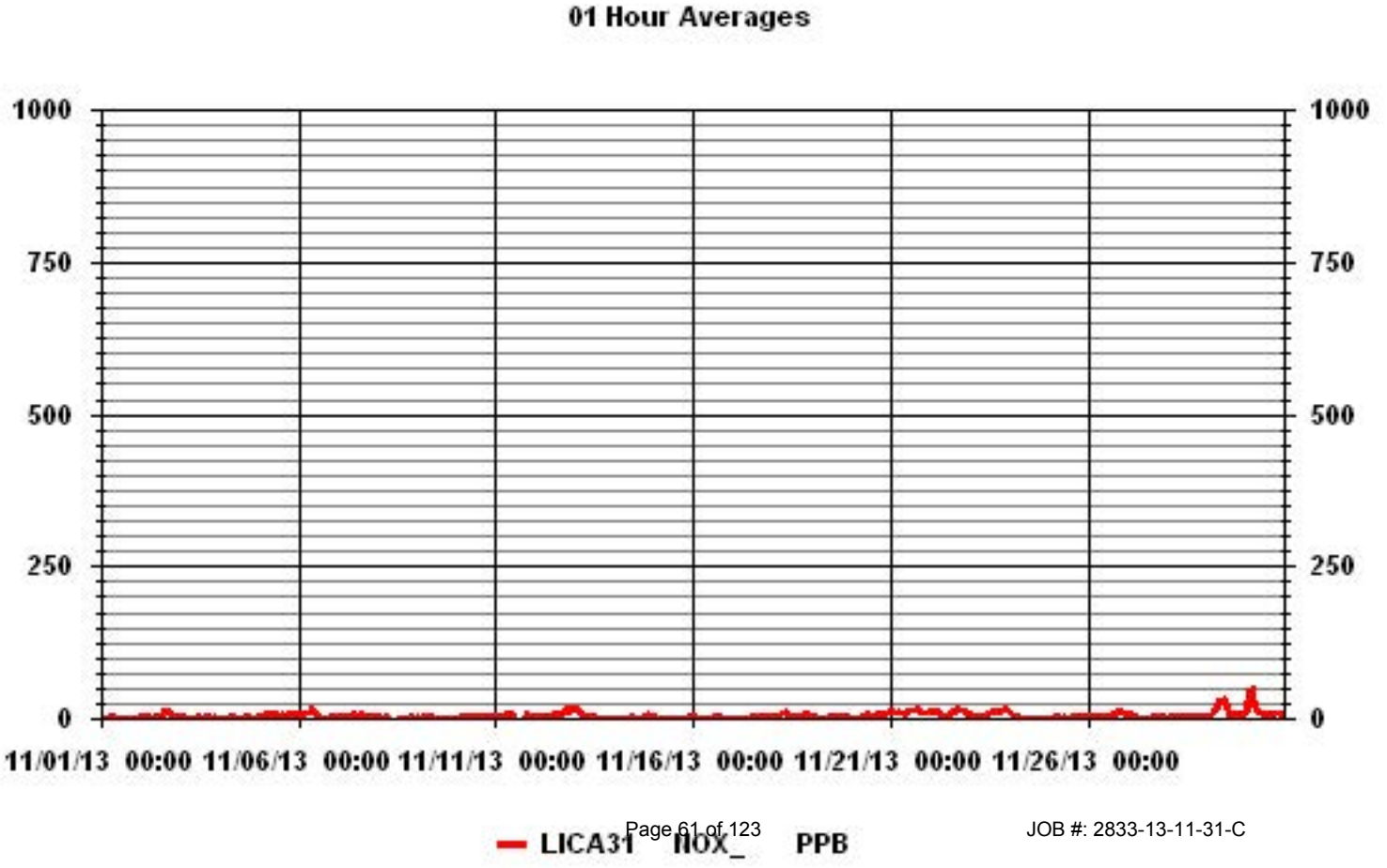
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | | 662 | | | | | |
| MAXIMUM 1-HR AVERAGE: | | 46.5 | PPB | @ HOUR(S) | 3 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | | 14.9 | PPB | | | ON DAY(S) | 30 |
| IZS CALIBRATION TIME: | 36 | HRS | | OPERATIONAL TIME: | | 716 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | AMD OPERATION UPTIME: | | 99.4 | % |
| STANDARD DEVIATION: | 5.31 | | | MONTHLY AVERAGE: | | 4.55 | PPB |






JOB #: 2833-13-11-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**OXIDES OF NITROGEN MAX** instantaneous maximum in ppb

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.4 | 0.9 | 1.2 | 1.3 | 1.6 | **S** | 3.3 | 2.6 | 3.1 | 2.4 | 3.8 | 1.9 | 0.9 | 1.3 | 0.9 | 1.2 | 1.4 | 1.8 | 1.8 | 2 | 1.3 | 1.4 | 1.3 | 2.4 | 3.8 | 1.7 | 24 |
| 2 | 2.4 | 2.9 | 2.1 | 5.3 | **S** | 2.9 | 2.3 | 3.1 | 9.4 | 3.5 | 5.9 | 2.2 | 2.6 | 4.5 | 10.7 | 14.6 | 15.4 | 14.1 | 12.4 | 11.2 | 6.8 | 3.7 | 4.1 | 3.4 | 15.4 | 6.3 | 24 |
| 3 | 2.7 | 2.4 | 2.5 | **S** | 3.3 | 1.5 | 1.7 | 1.4 | 1.2 | 0.9 | 1.5 | 1.9 | 2.3 | 2 | 2.4 | 4.3 | 2.4 | 2.1 | 2.2 | 1.9 | 1.4 | 1.8 | 1.8 | 1.7 | 4.3 | 2.1 | 24 |
| 4 | 1.5 | 3.8 | **S** | 2.4 | 1.9 | 1.6 | 2 | 1.8 | 2.6 | 2.8 | 2.7 | 5 | 1.9 | 3.8 | 2.2 | 2.2 | 4 | 4.2 | 29.9 | 3 | 45.9 | 3.7 | 2.1 | 6.8 | 45.9 | 6.0 | 24 |
| 5 | 5.8 | **S** | 4.2 | 80.5 | 6.7 | 11.1 | 11.3 | 11.6 | 11.6 | 8.9 | 9.4 | 9.7 | 8 | 5.6 | 6.8 | 7.3 | 6.1 | 7.8 | 8.9 | 9.2 | 8 | 7.6 | 7.3 | 7 | 80.5 | 11.3 | 24 |
| 6 | **S** | 6.8 | 7.2 | 7.7 | 8.1 | 10 | 22.3 | **S** | 16.9 | 16.7 | 28.7 | 21.4 | 7.9 | 4.5 | 2.8 | 2.5 | 1.8 | 1.5 | 3.2 | 3.4 | 2.8 | 1.9 | 1.4 | **S** | 28.7 | 8.5 | 24 |
| 7 | 4.3 | 4.2 | 4.4 | 4.3 | 4.1 | 4.3 | 6.8 | 7.8 | 5 | 10.4 | 11.1 | 4.8 | 5.9 | 6.3 | 7.8 | 9.6 | 9.4 | 6.7 | 5.3 | 4.8 | 4.3 | 3.9 | **S** | 3.8 | 11.1 | 6.1 | 24 |
| 8 | 3.4 | 2.5 | 2.5 | 1.9 | 1.4 | 2.2 | 2.5 | **S** | 3.5 | **P** | **P** | **P** | **P** | 3.3 | 2.5 | 1.4 | 1.7 | 1.9 | 5.2 | 2.9 | 1.3 | **S** | 3.5 | 3.5 | 5.2 | 2.6 | 20 |
| 9 | 3.2 | 3 | 1.7 | 1.9 | 2.5 | 4.9 | 5.1 | 7.1 | 5.5 | 1.9 | 3.8 | 2.5 | 1.6 | 1.6 | 1.8 | 2 | 1.4 | 1.7 | 1.4 | 1.2 | **S** | 1.9 | 1.8 | 1.5 | 7.1 | 2.7 | 24 |
| 10 | 2.5 | 1.7 | 2.4 | 2.8 | 4.6 | 3.8 | 4.3 | 3.8 | 4.3 | 4.4 | 3.7 | 3.7 | 3.2 | 3.2 | 3.2 | 3.4 | 3.7 | 3 | 3.6 | **S** | 4 | 3.2 | 3.2 | 2.7 | 4.6 | 3.4 | 24 |
| 11 | 3.1 | 3.2 | 4 | 4.1 | 4.8 | 5.9 | 6.2 | 7.4 | 8.6 | 9.2 | 10 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **S** | 7.3 | 6.8 | 5.8 | 5.6 | 5.7 | 10 | 6.1 | 24 |
| 12 | 5.3 | 5.7 | 4.9 | 5.3 | 5.4 | 5.7 | 6.1 | 5.7 | 5.5 | 6.7 | 28.7 | 6.9 | 7.2 | 7.1 | 9.6 | 8.1 | 8.7 | **S** | 14.4 | 19 | 17.8 | 14.8 | 18.1 | 19 | 28.7 | 10.2 | 24 |
| 13 | 20.4 | 21 | 14.7 | 13.1 | 10.2 | 7.1 | 6.5 | **S** | **S** | 37.3 | 3.5 | 2.6 | 33.7 | 5.6 | 4.5 | 2.1 | **S** | 1.2 | 1.3 | 1 | 1.1 | 1.2 | 1.1 | 2.1 | 37.3 | 9.1 | 24 |
| 14 | 2.3 | 2.4 | 0.9 | 0.4 | 1.1 | 3.1 | 23.5 | 1.3 | 2 | 4.3 | 40.1 | 19.3 | 3.4 | 2.9 | 1.7 | **S** | 2.5 | 3.8 | 3.6 | 6.4 | 21.8 | 6.6 | 5.6 | 6.6 | 40.1 | 7.2 | 24 |
| 15 | 6.4 | 4.3 | 1.9 | 0.5 | 0.5 | 0.1 | 0.4 | 0.6 | 0 | **S** | **S** | 4.1 | 1.8 | 12.1 | **S** | 3.7 | 1.7 | 1.2 | 1.3 | 1.2 | 2 | 2.2 | 2.3 | 2.3 | 12.1 | 2.4 | 24 |
| 16 | 1.8 | 2.2 | 2 | 1.8 | 1.5 | 2.1 | 1.5 | 1.7 | 1.4 | 1.2 | 1.8 | 2 | 1.5 | **S** | 3.1 | 2 | 2.3 | 3 | 2 | 1.8 | 1.9 | 1.3 | 1.4 | 0.9 | 3.1 | 1.8 | 24 |
| 17 | 1.3 | 1.1 | 1.3 | 0.8 | 1 | 1 | 1 | 1.3 | 1.3 | 1.5 | 1 | 1.1 | **S** | 2.6 | 2.2 | 2.5 | 3.3 | 3.9 | 4.1 | 3.7 | 4.2 | 4.4 | 5.8 | 6.3 | 6.3 | 2.5 | 24 |
| 18 | 5.5 | 5.5 | 6 | 5.9 | 6.5 | 8.3 | 9 | 9.5 | 10.2 | 10.6 | 7.7 | **S** | 6.6 | 16.7 | 5 | 5.5 | 5.4 | 5.8 | 7.2 | 6.3 | 12.1 | 11 | 5.5 | 3.9 | 16.7 | 7.6 | 24 |
| 19 | 4.6 | 4.5 | 4.4 | 4 | 1.5 | 1.3 | 1.5 | 1.3 | 1.3 | 0.9 | **S** | 3.8 | 3.1 | 2.5 | 4.2 | 5.3 | 4.5 | 5.8 | 5.9 | 5.3 | 4.7 | 5 | 2.6 | 1.8 | 5.9 | 3.5 | 24 |
| 20 | 2.1 | 1.6 | 1.6 | 1.3 | 1.4 | 4.1 | 4.8 | 3.1 | 2.9 | **S** | 50.2 | 8.7 | 33.3 | 5.5 | 5.5 | 14.8 | 7.2 | 8.8 | 8.6 | 7.8 | 8.3 | 9.2 | 9.6 | 10.5 | 50.2 | 9.2 | 24 |
| 21 | 10.9 | 10.6 | 10.1 | 10.3 | 10 | 10.9 | 11 | 10.9 | **S** | 37.2 | **117.4** | 16.9 | 100.2 | 18.8 | 33.6 | 42.5 | 35.4 | 46.1 | 12.6 | 9.3 | 9.5 | 9.5 | 10.9 | 13.8 | **117.4** | 26.0 | 24 |
| 22 | 13.9 | 13.4 | 12 | 11.8 | 11.4 | 10.7 | 9.6 | **S** | 5.3 | 3.5 | 4.2 | 4 | 6.7 | 9.9 | 11.8 | 13.1 | 13.6 | 18.7 | 18.8 | 13.6 | 14.1 | 13.3 | 13.2 | 10.2 | 18.8 | 11.2 | 24 |
| 23 | 7 | 6.4 | 5 | 3.9 | 3.4 | 3.8 | **S** | 5.4 | 5.2 | 6.1 | 6.7 | 8.3 | 8.7 | 11.1 | 10.3 | 10.3 | 10.8 | 11.2 | 12 | 13 | 13.8 | 14.6 | 17.8 | 18.6 | 18.6 | 9.3 | 24 |
| 24 | 14.4 | 13.2 | 8.3 | 5 | 3.9 | **S** | 2.6 | 2.4 | 1.5 | 1.4 | 1.2 | 1.5 | 1.7 | 1.2 | 0.7 | 1.4 | 1.2 | 1.1 | 1.1 | 0.9 | 1.1 | 0.9 | 1.2 | 1.2 | 14.4 | 3.0 | 24 |
| 25 | 0.9 | 1 | 0.9 | 0.8 | **S** | 2.8 | 2.3 | 2.8 | 1.6 | 1.7 | 3.6 | 2.4 | 1.6 | 2 | 2.9 | 7.5 | 8.8 | 3.5 | 16.3 | 7.7 | 8 | 4.2 | 8.6 | 8.4 | 16.3 | 4.4 | 24 |
| 26 | 6.6 | 3.4 | 3.3 | **S** | 3.7 | 4.7 | 5.1 | 6.2 | 6.1 | 5.5 | 5.4 | 21.9 | 5 | 16.7 | 17.9 | 22.4 | 8.1 | 10.7 | 12.3 | 12.2 | 11.7 | 10.9 | 9.3 | 8.7 | 22.4 | 9.5 | 24 |
| 27 | 7.5 | 6.9 | **S** | 5.7 | 4.3 | 4.2 | 4.1 | 2.2 | 1.1 | 1.1 | 1.4 | 1.8 | 1.4 | 1.6 | 1.7 | 2.2 | 3 | 3 | 2.6 | 2.6 | 3.4 | 4.4 | 3.4 | 3 | 7.5 | 3.2 | 24 |
| 28 | 2 | **S** | 4.2 | 3.8 | 2.7 | 2.8 | 2.4 | 2.5 | 2.8 | 3.4 | 2.7 | 2.5 | 2.8 | 3.3 | 2.9 | 2.8 | 2.7 | 2.9 | 2.6 | 2.6 | 4 | 3.2 | 3.1 | 2.8 | 4.2 | 2.9 | 24 |
| 29 | **S** | 3.8 | 5.3 | 8 | 14.4 | 19.2 | 37.6 | 31.9 | 31.2 | 34.8 | 37.3 | 29.4 | 25.2 | 12 | 11.2 | 11.4 | 8.8 | 7.8 | 9.1 | 10.1 | 13 | 12.8 | 11.2 | **S** | 37.6 | 17.5 | 24 |
| 30 | 23.7 | 38.4 | 50.4 | 50.3 | 40 | 25.5 | 20.4 | 13.2 | 11.9 | 10.8 | 9.2 | 9.4 | 8.1 | 7.8 | 9.8 | 11.3 | 10.5 | 8.7 | 9.3 | 10.6 | 12 | 11.4 | **S** | 9.2 | 50.4 | 17.9 | 24 |
| HOURLY MAX | 23.7 | 38.4 | 50.4 | 80.5 | 40.0 | 25.5 | 37.6 | 31.9 | 31.2 | 37.3 | 117.4 | 29.4 | 100.2 | 18.8 | 33.6 | 42.5 | 35.4 | 46.1 | 29.9 | 19.0 | 45.9 | 14.8 | 18.1 | 19.0 | | | |
| HOURLY AVG | 5.9 | 6.3 | 6.1 | 8.7 | 5.8 | 5.9 | 7.5 | 5.7 | 5.8 | 8.5 | 14.9 | 7.4 | 10.6 | 6.3 | 6.4 | 7.8 | 6.6 | 6.9 | 7.6 | 6.3 | 8.5 | 6.1 | 5.8 | 6.0 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

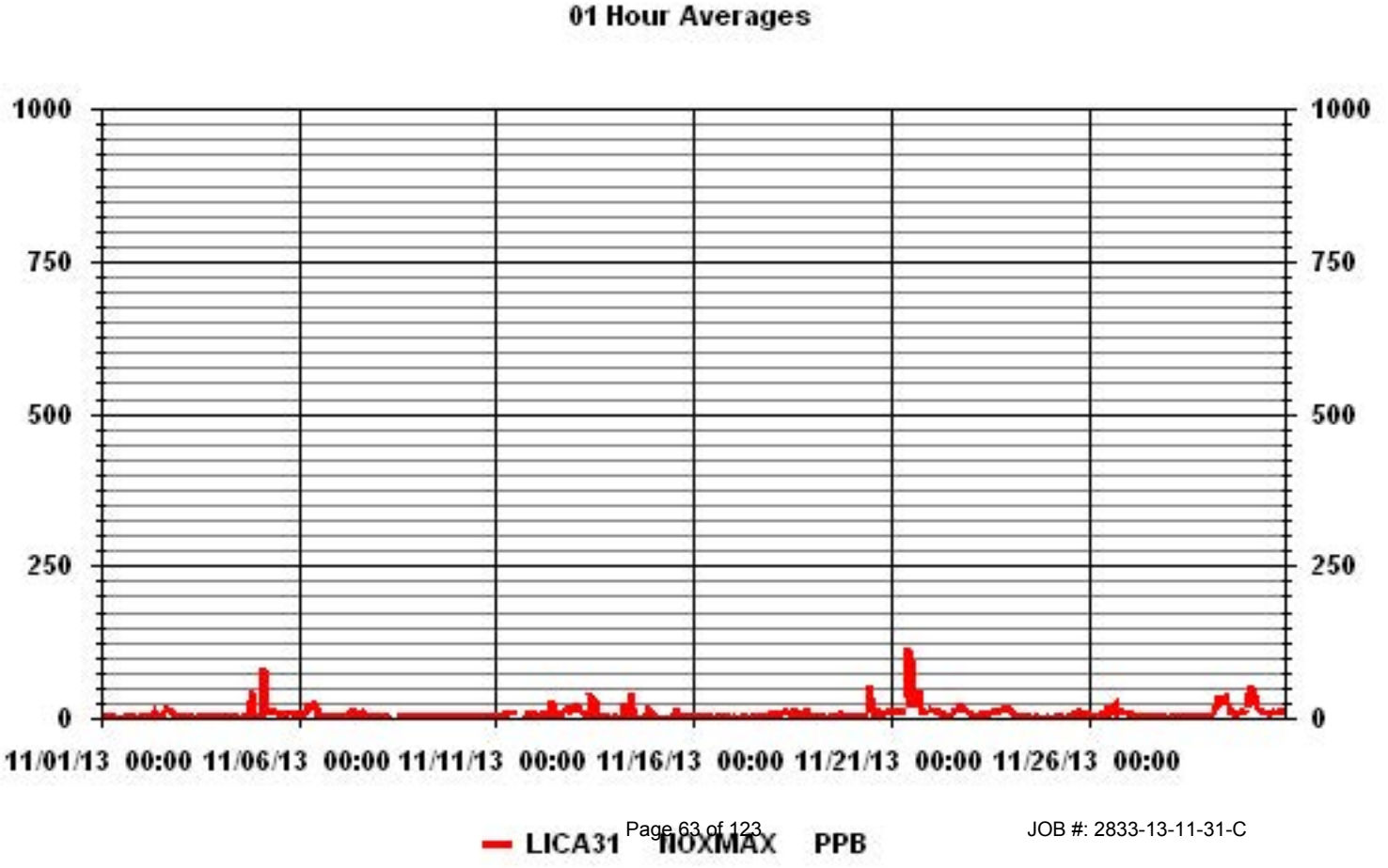
NUMBER OF NON-ZERO READINGS: 670

MAXIMUM INSTANTANEOUS VALUE: 117.4 PPB @ HOUR(S) 10 ON DAY(S) 21

IZS CALIBRATION TIME: 38 HRS OPERATIONAL TIME: 716 HRS

MONTHLY CALIBRATION TIME: 7 HRS

STANDARD DEVIATION: 9.89



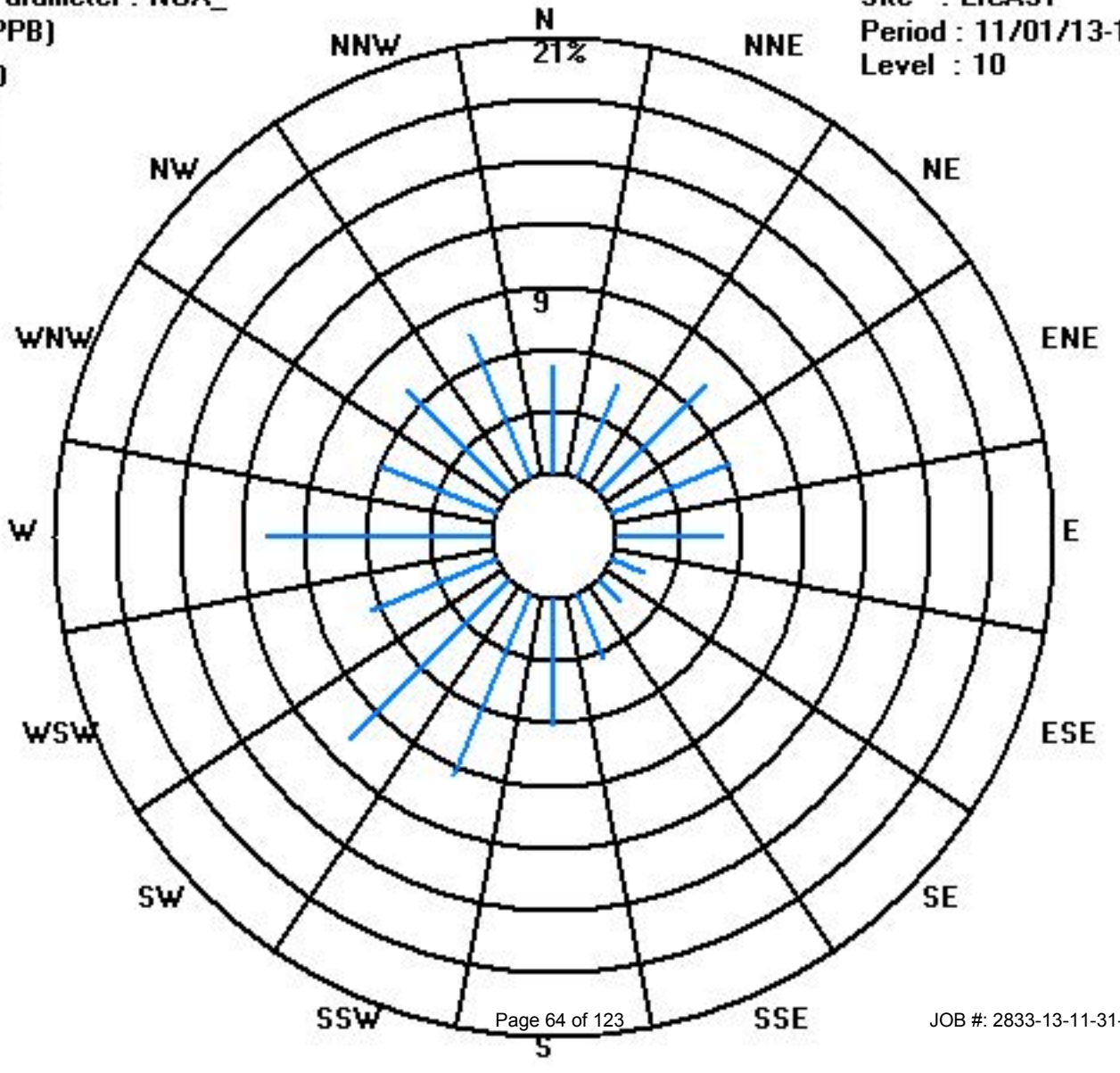



JOB #: 2833-13-11-31-C

Logger : 31 Parameter : NOX_
Class Limits (PPB)

>= 210.0
< 210.0
< 110.0
< 50.0

Site : LICA31
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-31-C

LICA31
NOX_ / WDR Joint Frequency Distribution (Percent)

November 2013

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 5.23 | 4.93 | 7.39 | 6.16 | 5.08 | 1.69 | 1.54 | 3.38 | 6.16 | 9.55 | 10.93 | 6.47 | 10.78 | 6.00 | 7.08 | 7.55 | 100.00 |
| < | 110.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 5.23 | 4.93 | 7.39 | 6.16 | 5.08 | 1.69 | 1.54 | 3.38 | 6.16 | 9.55 | 10.93 | 6.47 | 10.78 | 6.00 | 7.08 | 7.55 | |

Calm : .00 %

Total # Operational Hours : 649

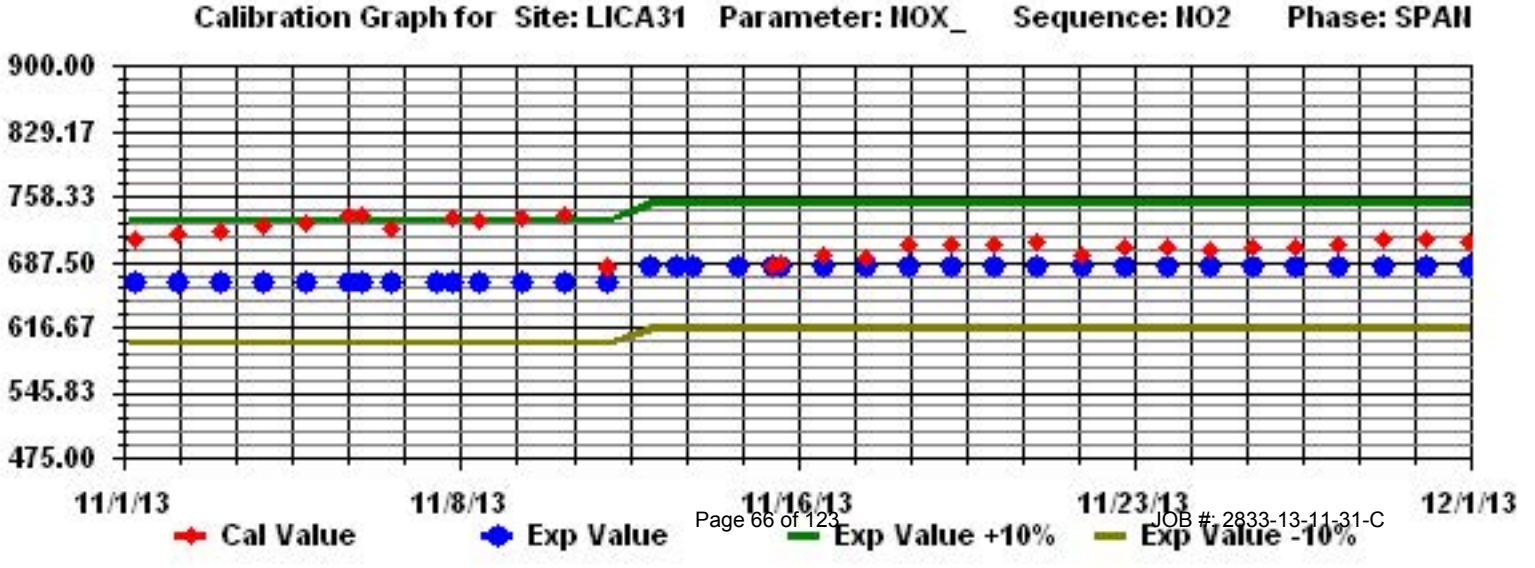
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50.0 | 34 | 32 | 48 | 40 | 33 | 11 | 10 | 22 | 40 | 62 | 71 | 42 | 70 | 39 | 46 | 49 | 649 |
| < | 110.0 | | | | | | | | | | | | | | | | | |
| < | 210.0 | | | | | | | | | | | | | | | | | |
| >= | 210.0 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 32 | 48 | 40 | 33 | 11 | 10 | 22 | 40 | 62 | 71 | 42 | 70 | 39 | 46 | 49 | |

Calm : .00 %

Total # Operational Hours : 649


Calibration Graph for Site: LICA31 Parameter: NOX_ Sequence: NO2 Phase: SPAN
900.00
829.17
758.33
687.50
616.67
545.83
475.00
11/1/13
11/8/13
11/16/13
11/23/13
12/1/13
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Particulate Matter 2.5

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

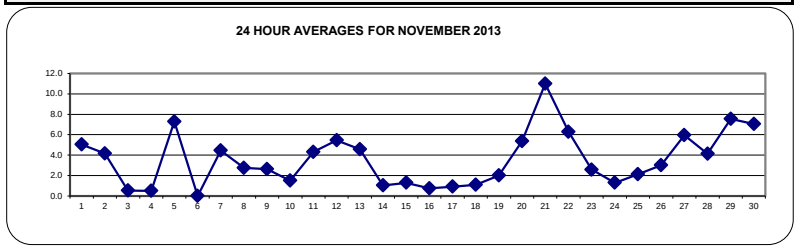
**PARTICULATE MATTER 2.5 (PM2.5)** hourly averages in ug/m$^3$

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 8 | 8 | 9 | 10 | 11 | 8 | 10 | 10 | 7 | 4 | 4 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 11 | 5.0 | 24 |
| 2 | 5 | 4 | 6 | 8 | 6 | 5 | 2 | 3 | 5 | 4 | 3 | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 8 | 4.2 | 24 |
| 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0.5 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 2 | 0.5 | 24 |
| 5 | 1 | 0 | 1 | 7 | 12 | 15 | 11 | 10 | 9 | 7 | 6 | 4 | 4 | 4 | 4 | 7 | 21 | 11 | 8 | 7 | 7 | 6 | 7 | 6 | 21 | 7.3 | 24 |
| 6 | 6 | 6 | 6 | 8 | 8 | 8 | 8 | 8 | 9 | 7 | 5 | 5 | 5 | 6 | 6 | 5 | 5 | 5 | 7 | 10 | 7 | 6 | 6 | 6 | 10 | 0.0 | 24 |
| 7 | 6 | 5 | 7 | 10 | 7 | 6 | 5 | 6 | 4 | 4 | 4 | 2 | 3 | 4 | 4 | 3 | 2 | 2 | 3 | 3 | 4 | 6 | 3 | 4 | 10 | 4.5 | 24 |
| 8 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | **P** | **P** | **P** | **P** | 8 | 6 | 2 | 3 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 8 | 2.8 | 20 |
| 9 | 1 | 2 | 3 | 4 | 5 | 4 | 6 | 7 | 5 | 4 | 5 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 3 | 7 | 2.6 | 24 |
| 10 | 5 | 0 | 2 | 0 | 1 | 3 | 1 | 2 | 2 | 2 | 0 | 2 | 0 | 4 | 0 | 1 | 1 | 2 | 4 | 0 | 2 | 0 | 1 | 1 | 5 | 1.5 | 24 |
| 11 | 0 | 0 | 1 | 1 | 1 | 2 | 4 | 4 | 5 | 6 | 6 | 9 | 8 | 9 | 6 | **C** | **C** | 1 | 2 | 1 | 4 | 6 | 9 | 10 | 10 | 4.3 | 24 |
| 12 | 6 | 4 | 4 | 4 | 3 | 3 | 5 | 3 | 3 | 2 | 2 | 2 | 9 | 2 | 5 | 2 | 4 | 5 | 11 | 11 | 8 | 8 | 13 | 12 | 13 | 5.5 | 24 |
| 13 | 10 | 8 | 7 | 6 | 6 | 5 | 5 | 6 | 5 | 5 | 6 | 3 | 4 | 5 | 4 | 3 | 16 | 1 | 0 | 2 | 0 | 1 | 0 | 2 | 16 | 4.6 | 24 |
| 14 | 2 | 3 | 0 | 1 | 0 | 2 | 2 | 4 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 1.0 | 24 |
| 15 | 2 | 1 | 1 | 2 | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 2 | 3 | 3 | 1.3 | 24 |
| 16 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 3 | 0.8 | 24 |
| 17 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 3 | 0.9 | 24 |
| 18 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 3 | 1 | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 1.1 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 0 | 4 | 4 | 6 | 6 | 4 | 3 | 2 | 3 | 3 | 6 | 2.0 | 24 |
| 20 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 4 | 3 | 4 | 3 | 5 | 5 | 7 | 10 | 13 | 12 | 9 | 9 | 8 | 8 | 7 | 8 | 13 | 5.4 | 24 |
| 21 | 8 | 7 | 8 | 7 | 8 | 8 | 9 | 8 | 8 | 11 | 12 | 11 | 12 | 12 | 13 | 13 | 13 | 13 | 15 | 13 | 16 | 15 | 13 | 11 | 16 | **11.0** | 24 |
| 22 | 10 | 9 | 9 | 8 | 9 | 8 | 6 | 7 | 6 | 5 | 4 | 3 | 5 | 5 | 7 | 7 | 8 | 6 | 5 | 6 | 6 | 5 | 4 | 3 | 10 | 6.3 | 24 |
| 23 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 5 | 6 | 6 | 5 | 6 | 2.6 | 24 |
| 24 | 4 | 3 | 1 | 2 | 0 | 1 | 2 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 2 | 3 | 4 | 1.3 | 24 |
| 25 | 2 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 2 | 2 | 4 | 3 | 2 | 4 | 3 | 2 | 2 | 3 | 4 | 2.1 | 24 |
| 26 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 5 | 7 | 7 | 8 | 8 | 10 | 13 | 13 | 3.0 | 24 |
| 27 | 13 | 14 | 13 | 12 | 12 | 5 | 8 | 5 | 3 | 3 | 2 | 3 | 2 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 14 | 6.0 | 24 |
| 28 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 2 | 3 | 4 | 2 | 7 | 3 | 5 | 4 | 5 | 5 | 4 | 3 | 3 | 7 | 4.1 | 24 |
| 29 | 4 | 5 | 5 | 6 | 7 | 9 | 11 | 13 | 13 | 14 | 14 | 12 | 6 | 2 | 3 | 6 | 5 | 4 | 5 | 8 | 7 | 6 | 7 | 9 | 14 | 7.5 | 24 |
| 30 | 9 | 14 | **22** | 18 | 11 | 12 | 11 | 6 | 9 | 6 | 1 | 2 | 1 | 2 | 3 | 4 | 4 | 4 | 3 | 4 | 6 | 6 | 5 | 6 | **22** | 7.0 | 24 |
| HOURLY MAX | 13 | 14 | 22 | 18 | 12 | 15 | 11 | 13 | 13 | 14 | 14 | 12 | 12 | 12 | 13 | 13 | 21 | 13 | 15 | 13 | 16 | 15 | 13 | 13 | | | |
| HOURLY AVG | 3.8 | 3.5 | 4.1 | 4.2 | 4.1 | 4.2 | 4.2 | 4.1 | 4.1 | 4.0 | 3.4 | 3.0 | 3.1 | 3.2 | 2.9 | 3.2 | 4.4 | 3.6 | 3.7 | 4.0 | 3.9 | 3.9 | 3.9 | 4.4 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |



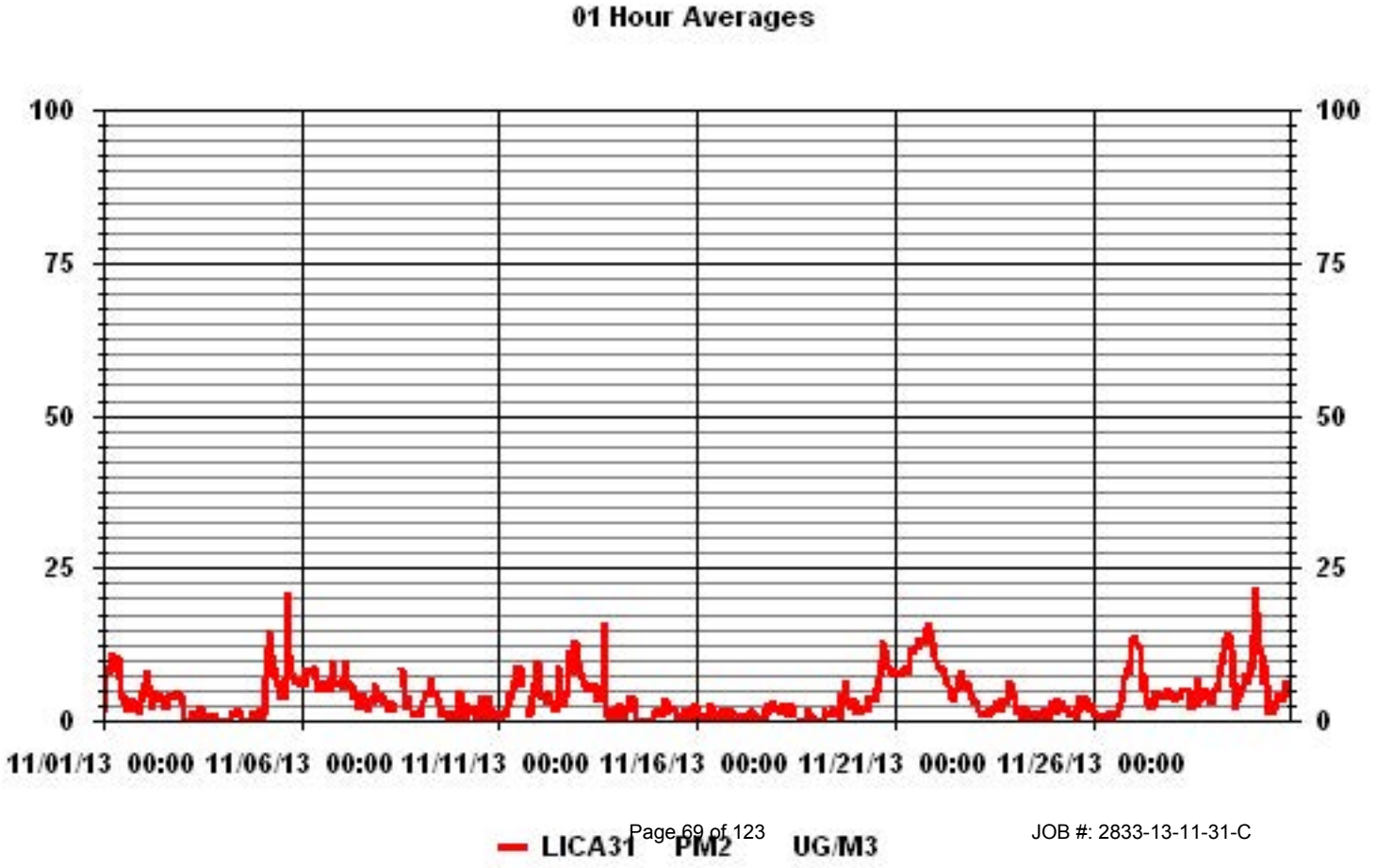

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR - ug/m3 | 24-HR 30 ug/m3

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | - | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 597 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 22 | UG/M$^3$ | @ HOUR(S) | 2 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | 11.0 | UG/M$^3$ | | | ON DAY(S) | 21 |
| | | | OPERATIONAL TIME: | 716 | HRS | |
| MONTHLY CALIBRATION TIME: | 5 | HRS | AMD OPERATION UPTIME: | 99.4 | % | |
| STANDARD DEVIATION: | 3.59 | | MONTHLY AVERAGE: | 3.79 | UG/M$^3$ | |



JOB #: 2833-13-11-31-C






JOB #: 2833-13-11-31-C

LICA31
PM2 / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30 | 5.53 | 4.65 | 7.27 | 5.96 | 4.80 | 1.74 | 1.45 | 3.20 | 6.25 | 9.60 | 11.79 | 6.25 | 11.06 | 5.67 | 7.13 | 7.56 | 100.00 |
| < | 60 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 80 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 120 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 240 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 240 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 5.53 | 4.65 | 7.27 | 5.96 | 4.80 | 1.74 | 1.45 | 3.20 | 6.25 | 9.60 | 11.79 | 6.25 | 11.06 | 5.67 | 7.13 | 7.56 | |

Calm : .00 %

Total # Operational Hours : 687

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30 | 38 | 32 | 50 | 41 | 33 | 12 | 10 | 22 | 43 | 66 | 81 | 43 | 76 | 39 | 49 | 52 | 687 |
| < | 60 | | | | | | | | | | | | | | | | | |
| < | 80 | | | | | | | | | | | | | | | | | |
| < | 120 | | | | | | | | | | | | | | | | | |
| < | 240 | | | | | | | | | | | | | | | | | |
| >= | 240 | | | | | | | | | | | | | | | | | |
| | Totals | 38 | 32 | 50 | 41 | 33 | 12 | 10 | 22 | 43 | 66 | 81 | 43 | 76 | 39 | 49 | 52 | |

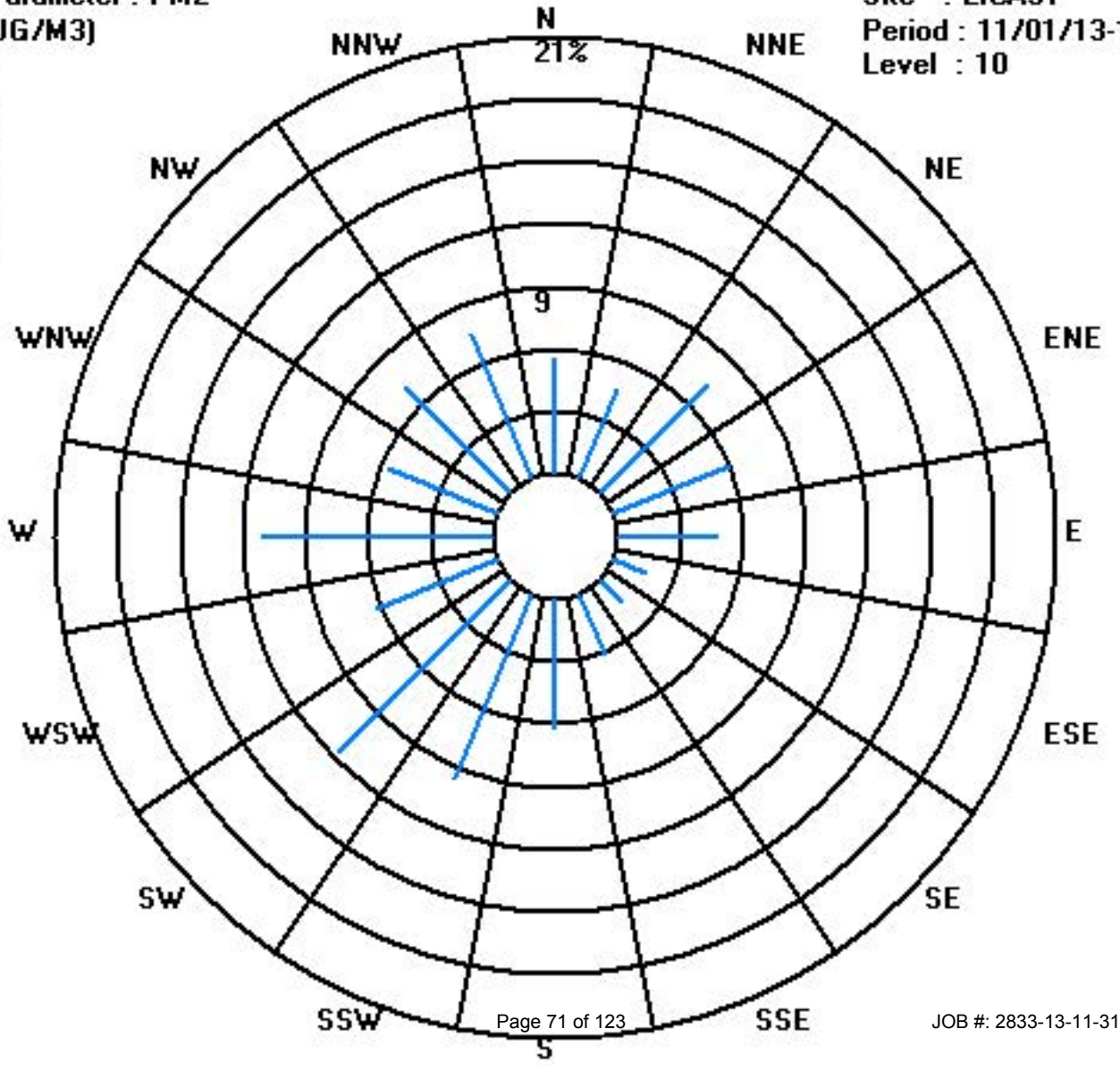
Calm : .00 %

Total # Operational Hours : 687

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

>= 240
< 240
< 120
< 80
< 60
< 30

Site : LICA31
Period : 11/01/13-11/30/13
Level : 10






JOB #: 2833-13-11-31-C

# Temperature

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA**

NOVEMBER 2013

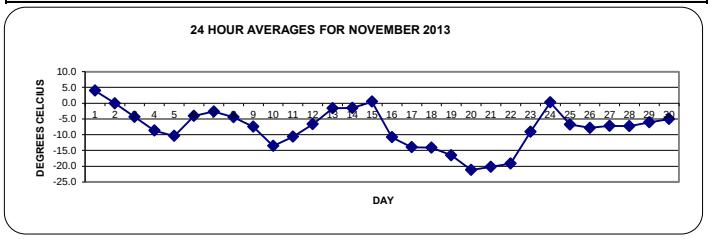
**AMBIENT TEMPERATURE** hourly averages (Degrees C)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0.5 | 0.4 | 0.4 | 1.3 | 1.6 | 1.8 | 1 | 0.6 | 2.4 | 4.4 | 6.8 | 8.4 | 9.3 | **10.1** | 10 | 9.7 | 7.2 | 4.8 | 3.8 | 3.6 | 3 | 2 | 1.7 | 0.2 | **10.1** | **4.0** | 24 |
| 2 | -0.8 | 0.2 | 0.2 | -1.3 | -1.9 | -1.5 | -1.1 | -1.2 | -1.6 | -0.8 | 0.7 | 1.4 | 1.6 | 1.8 | 1.7 | 1.3 | 0.8 | 0.7 | 0.7 | 0.3 | -0.2 | -0.2 | -0.6 | -1.2 | 1.8 | 0.0 | 24 |
| 3 | -1.5 | -1.6 | -1.7 | -1.8 | -1.9 | -2 | -2.4 | -2.8 | -3.3 | -3.6 | -3.2 | -3.1 | -4 | -4 | -4.2 | -4.7 | -5.7 | -6.8 | -7.4 | -7.5 | -7.7 | -7.8 | -8.1 | -8.3 | -1.5 | -4.4 | 24 |
| 4 | -8.6 | -8.9 | -9.1 | -9.1 | -9.2 | -9.4 | -9.4 | -9.4 | -9.2 | -9 | -8.5 | -7.6 | -6.7 | -4.7 | -4.4 | -5 | -7.7 | -9.3 | -9.4 | -9.4 | -9.8 | -10.5 | -11.2 | -12.9 | -4.4 | -8.7 | 24 |
| 5 | -12.7 | -13.5 | -14.7 | -15.3 | -15.7 | -16.2 | -16.4 | -15.3 | -12.6 | -9.9 | -6.8 | -5.9 | -5.2 | -4.7 | -4.2 | -4.8 | -7.7 | -8.8 | -9.6 | -10.1 | -10 | -9.5 | -9.7 | -10.3 | -4.2 | -10.4 | 24 |
| 6 | -10 | -9.5 | -9.3 | -10 | -10.1 | -9.7 | -11 | -11.7 | -9.7 | -5.7 | -1.7 | 0.5 | 1.4 | 2 | 2.9 | 3.4 | 1.9 | -0.1 | -1 | -1.4 | -1.8 | -1.9 | -2.2 | -1.9 | 3.4 | -4.0 | 24 |
| 7 | -2.8 | -3.2 | -4.1 | -5.3 | -5.2 | -5.7 | -6.6 | -6.4 | -3.7 | -1 | -1.3 | -0.2 | 0.3 | -0.1 | -0.3 | -0.9 | -1.3 | -1.6 | -1.7 | -1.8 | -2.2 | -2.5 | -3.2 | -3.4 | 0.3 | -2.7 | 24 |
| 8 | -3.6 | -3.6 | -3.7 | -3.7 | -3.8 | -3.8 | -4.2 | -4.2 | -4.3 | **P** | **P** | **P** | **P** | -3.7 | -3.5 | -3.9 | -4.3 | -5 | -5.6 | -5.5 | -5.6 | -5.6 | -6 | -6.1 | -3.5 | -4.5 | 20 |
| 9 | -5.8 | -5.6 | -5 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 | -4.4 | -5.2 | -6.2 | -5.8 | -6 | -6.7 | -6.9 | -7.4 | -8.8 | -9.5 | -10.2 | -10.9 | -11.5 | -12.2 | -12.2 | -12.7 | -4.4 | -7.5 | 24 |
| 10 | -12.3 | -12.3 | -13.3 | -13.9 | -14.6 | -15.6 | -16 | -16.7 | -16.8 | -15.5 | -13.7 | -11.1 | -10.9 | -11.9 | -12 | -12.1 | -12.6 | -12.8 | -12.8 | -12.9 | -13 | -13.7 | -14.4 | -14.6 | -10.9 | -13.6 | 24 |
| 11 | -15.2 | -15.2 | -15.5 | -15.8 | -15.8 | -15.7 | -15.4 | -15.2 | -13.4 | -11.3 | -9.1 | -7.2 | -5.5 | -4.7 | -5 | -5.7 | -7.6 | -8.6 | -8.6 | -9.1 | -9.2 | -8.7 | -9.1 | -9.5 | -4.7 | -10.7 | 24 |
| 12 | -10.1 | -11.1 | -11.2 | -11.4 | -11.4 | -11.7 | -11.7 | -11.5 | -9.9 | -8.9 | -6 | -5.4 | -3 | -2.8 | -3.5 | -3.6 | -3.9 | -3.8 | -3.7 | -3.1 | -1.9 | -3 | -3.6 | -3.8 | -1.9 | -6.7 | 24 |
| 13 | -3.3 | -2.7 | -2 | -2.4 | -1.4 | -1.9 | -1 | -1.7 | -0.6 | 0 | 0.3 | 0.5 | 1.1 | 1.9 | 2.1 | -0.1 | -2.5 | -2.8 | -3.5 | -3.7 | -3.7 | -3.8 | -4 | -4.3 | 2.1 | -1.6 | 24 |
| 14 | -5.1 | -5.9 | -5.8 | -6.6 | -6.7 | -5.5 | -4.9 | -4.3 | -4.3 | -3.3 | -1.8 | -0.2 | 1.2 | 3 | 4.3 | 3.8 | 2.1 | 1.5 | 1 | 0.6 | 0.4 | -0.1 | -0.3 | 0.7 | 4.3 | -1.5 | 24 |
| 15 | 1.8 | 2 | 2.9 | 3 | 2.8 | 2.4 | 2 | 1.9 | 1.9 | 2.1 | 2.8 | 4.2 | 3.5 | 2.4 | 2 | 1.6 | 0.6 | -0.6 | -2.2 | -3.5 | -4.1 | -5 | -6.3 | -7.3 | 4.2 | 0.5 | 24 |
| 16 | -8.4 | -8.7 | -9.1 | -9.8 | -10.4 | -11 | -11.5 | -11.6 | -11.5 | -11 | -10.2 | -10 | -10.1 | -10.2 | -10.4 | -10.9 | -11.2 | -11.3 | -11.5 | -11.6 | -11.9 | -12.2 | -12.5 | -12.7 | -8.4 | -10.8 | 24 |
| 17 | -13.1 | -13.3 | -13.4 | -13.6 | -13.8 | -14 | -14.2 | -14.4 | -14.5 | -14.1 | -12.8 | -11.3 | -10 | -10.3 | -10.3 | -11.7 | -15.3 | -16 | -15.7 | -16 | -16.5 | -17.2 | -17.2 | -16.8 | -10.0 | -14.0 | 24 |
| 18 | -16.5 | -16.1 | -15.8 | -15.4 | -15.3 | -15.5 | -15.5 | -16.3 | -15.6 | -13.8 | -12.9 | -12.3 | -11 | -11 | -12.6 | -12.8 | -14.3 | -14 | -13.8 | -13.5 | -13.6 | -13.4 | -13.5 | -13.8 | -11.0 | -14.1 | 24 |
| 19 | -14.2 | -14.4 | -14.6 | -15 | -15.3 | -15.5 | -15.6 | -15.7 | -15.6 | -15.2 | -14.5 | -14.4 | -13.5 | -13 | -13.3 | -15.7 | -18.1 | -19.2 | -20 | -20.6 | -20.2 | -20.3 | -21.3 | -21.9 | -13.0 | -16.5 | 24 |
| 20 | -22.3 | -22.6 | -22.5 | -21.6 | -20.8 | -20.9 | -22.2 | -22.4 | -22.8 | -21.2 | -18.9 | -16.8 | -16.4 | -17.1 | -17.9 | -19.9 | -22.8 | -23.1 | **-23.5** | **-23.5** | -23 | -22.9 | -22.1 | -21.8 | -16.4 | -21.2 | 24 |
| 21 | -21.3 | -21.1 | -21 | -22.2 | -22.6 | -22.4 | -22.4 | -22.5 | -22.7 | -22 | -20.6 | -19.4 | -18 | -17.2 | -17.7 | -18.1 | -18.6 | -18.7 | -18.9 | -19.2 | -19.4 | -19.6 | -19.7 | -19.5 | -17.2 | -20.2 | 24 |
| 22 | -20 | -20.7 | -21.3 | -21.3 | -21.2 | -21.4 | -21.8 | -22.2 | -22 | -19.4 | -17.3 | -16.5 | -17.7 | -18.1 | -18.1 | -17.7 | -18.1 | -18.4 | -18.6 | -18.3 | -18.2 | -17.7 | -17.2 | -16.2 | -16.2 | -19.1 | 24 |
| 23 | -15 | -14.9 | -14.8 | -14.5 | -14.4 | -14.2 | -13.7 | -12.7 | -11.9 | -10.5 | -9.2 | -8.7 | -7.2 | -6.3 | -6.1 | -6.3 | -6.2 | -6.2 | -6.1 | -5.7 | -5.1 | -4.4 | -3.3 | -0.7 | -0.7 | -9.1 | 24 |
| 24 | 0.4 | -0.2 | -0.2 | -0.8 | -0.9 | -0.7 | -0.5 | -0.5 | 1.7 | 3.8 | 4.6 | 4.5 | 4.5 | 4.2 | 3.2 | 1.6 | -0.3 | -1.2 | -1.5 | -2 | -2.5 | -3.1 | -3.8 | -4.4 | 4.6 | 0.2 | 24 |
| 25 | -4.5 | -4.8 | -5.3 | -6 | -7 | -7.8 | -8.4 | -8.9 | -8.4 | -6.4 | -3.8 | -2.1 | -1.2 | 0 | -0.8 | -3.7 | -7.4 | -8.5 | -10 | -10.7 | -11.1 | -11.6 | -12.2 | -12.2 | 0.0 | -6.8 | 24 |
| 26 | -12.1 | -12.3 | -12 | -11.1 | -10.4 | -9.4 | -9.8 | -9.9 | -10.2 | -9.2 | -7.3 | -6.3 | -5.8 | -5 | -4.8 | -5.7 | -6.7 | -7.3 | -6.8 | -5.9 | -5.5 | -5.8 | -4.8 | -4.4 | -4.4 | -7.9 | 24 |
| 27 | -4.9 | -5.1 | -4.9 | -5 | -5.7 | -6.3 | -7.9 | -8.1 | -8 | -7.8 | -7.3 | -6.9 | -6.8 | -6.8 | -7.2 | -8 | -8.3 | -8.4 | -8.3 | -8.3 | -8.3 | -8.2 | -8.1 | -8.2 | -4.9 | -7.2 | 24 |
| 28 | -8.3 | -8.4 | -8.3 | -8.4 | -8.5 | -8.6 | -8.7 | -8.7 | -8.6 | -8.2 | -7.7 | -7.1 | -6.9 | -6.6 | -6.2 | -6.1 | -6 | -5.9 | -6 | -6 | -6.1 | -6.2 | -6.7 | -7.6 | -5.9 | -7.3 | 24 |
| 29 | -8.7 | -9.3 | -10.1 | -10.5 | -10.8 | -11 | -10.8 | -10.5 | -8.6 | -6.6 | -5.2 | -3.6 | 0.4 | 2.6 | 1.1 | -0.8 | -2.7 | -3.5 | -4.5 | -5.8 | -6.7 | -6.5 | -6.4 | -7.3 | 2.6 | -6.1 | 24 |
| 30 | -8.3 | -8.7 | -8.7 | -8.8 | -9.3 | -9.3 | -8.5 | -7.7 | -6.7 | -4.9 | -2.8 | -0.9 | 0.2 | -1.9 | -2.5 | -2.8 | -3 | -3.2 | -3.4 | -3.6 | -3.9 | -4.2 | -4.3 | -4.1 | 0.2 | -5.1 | 24 |
| HOURLY MAX | 1.8 | 2.0 | 2.9 | 3.0 | 2.8 | 2.4 | 2.0 | 1.9 | 2.4 | 4.4 | 6.8 | 8.4 | 9.3 | 10.1 | 10.0 | 9.7 | 7.2 | 4.8 | 3.8 | 3.6 | 3.0 | 2.0 | 1.7 | 0.7 | | | |
| HOURLY AVG | -8.9 | -9.0 | -9.1 | -9.4 | -9.5 | -9.6 | -9.8 | -9.8 | -9.2 | -8.1 | -6.7 | -5.6 | -4.9 | -4.6 | -4.8 | -5.6 | -7.0 | -7.6 | -8.0 | -8.2 | -8.3 | -8.5 | -8.7 | -8.9 | | | |

**STATUS FLAG CODES**

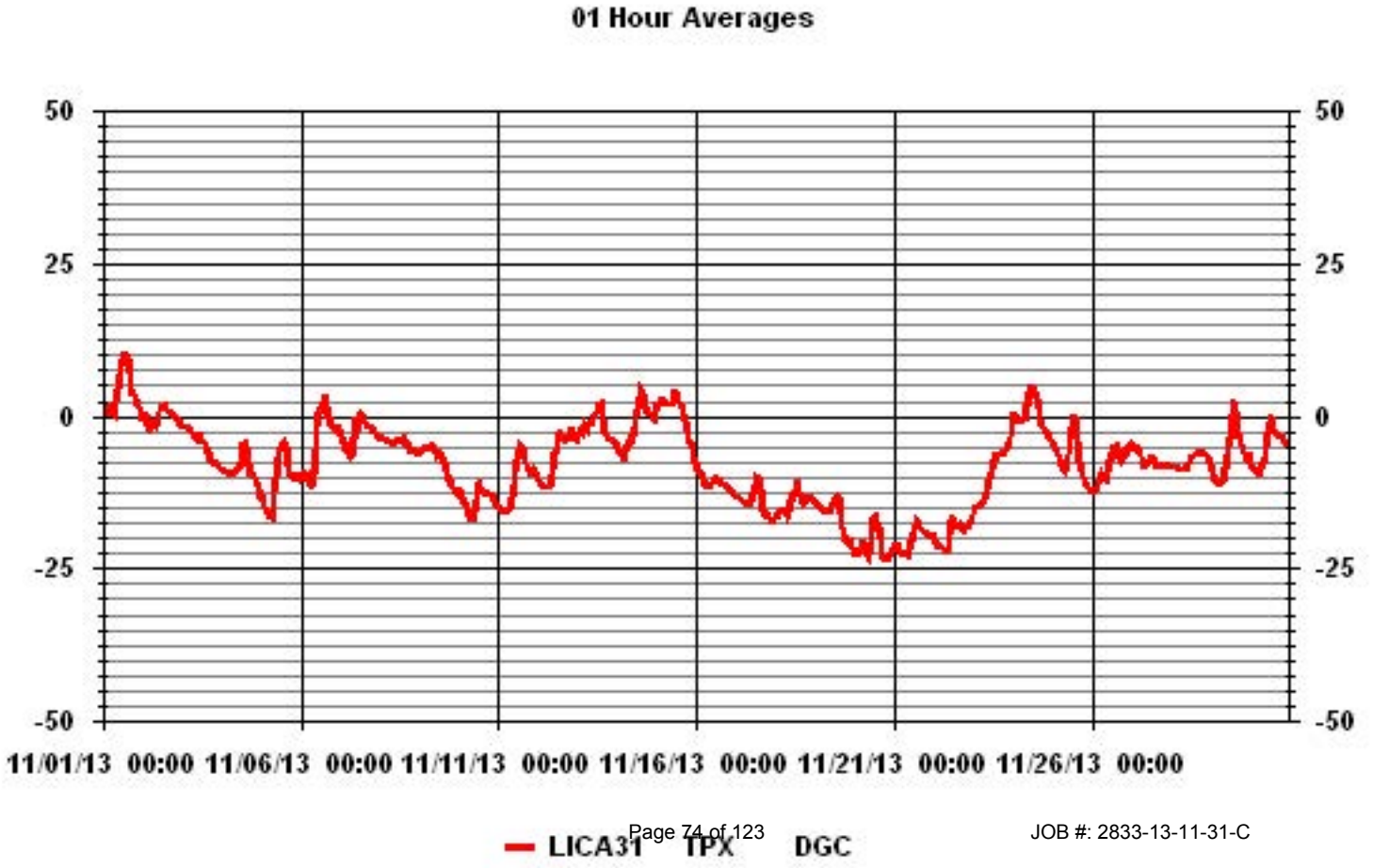
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MINIMUM 1-HR AVERAGE: | -23.5 | °C | @ HOUR(S) | 18, 19 | ON DAY(S) | 20 |
| MAXIMUM 1-HR AVERAGE: | 10.1 | °C | @ HOUR(S) | 13 | ON DAY(S) | 1 |
| MAXIMUM 24-HR AVERAGE: | 4.0 | °C | | | ON DAY(S) | 1 |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 716 | HRS |
| | | | AMD OPERATION UPTIME: | 99.4 | % |
| STANDARD DEVIATION: | 6.82 | | MONTHLY AVERAGE: | -7.92 | °C |






JOB #: 2833-13-11-31-C

# Barometric Pressure

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

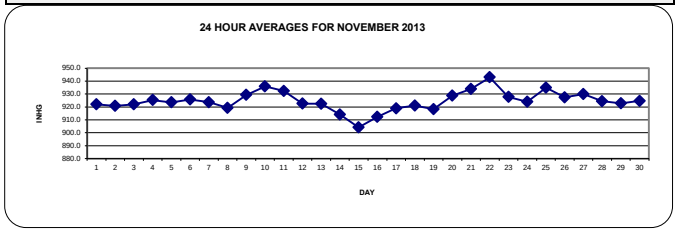
**BAROMETRIC PRESSURE** hourly averages (millibar)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 919 | 920 | 920 | 920 | 920 | 921 | 921 | 921 | 922 | 922 | 923 | 923 | 923 | 923 | 923 | 924 | 924 | 923 | 923 | 923 | 923 | 924 | 923 | 923 | 924 | 922.1 | 24 |
| 2 | 923 | 923 | 923 | 923 | 923 | 922 | 922 | 922 | 922 | 922 | 921 | 921 | 921 | 921 | 920 | 919 | 919 | 919 | 919 | 919 | 919 | 919 | 919 | 919 | 923 | 920.8 | 24 |
| 3 | 919 | 919 | 919 | 919 | 919 | 920 | 920 | 920 | 921 | 921 | 922 | 922 | 922 | 923 | 923 | 923 | 924 | 924 | 924 | 924 | 924 | 925 | 925 | 925 | 925 | 922.0 | 24 |
| 4 | 925 | 925 | 925 | 925 | 925 | 925 | 925 | 926 | 926 | 926 | 926 | 926 | 926 | 926 | 926 | 926 | 925 | 925 | 925 | 925 | 925 | 925 | 925 | 924 | 926 | 925.3 | 24 |
| 5 | 924 | 924 | 924 | 924 | 924 | 924 | 923 | 923 | 923 | 924 | 924 | 925 | 924 | 924 | 924 | 924 | 924 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 925 | 923.6 | 24 |
| 6 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 924 | 924 | 924 | 925 | 926 | 926 | 927 | 927 | 928 | 928 | 928 | 928 | 929 | 929 | 929 | 929 | 929 | 929 | 925.9 | 24 |
| 7 | 929 | 929 | 929 | 929 | 929 | 928 | 928 | 928 | 927 | 927 | 927 | 926 | 925 | 924 | 923 | 922 | 921 | 919 | 918 | 918 | 917 | 916 | 915 | 915 | 929 | 923.7 | 24 |
| 8 | 914 | 914 | 915 | 915 | 915 | 915 | 915 | 916 | 916 | **P** | **P** | **P** | **P** | 919 | 920 | 921 | 922 | 922 | 923 | 924 | 924 | 924 | 925 | 925 | 925 | 919.2 | 20 |
| 9 | 925 | 925 | 925 | 926 | 926 | 926 | 926 | 927 | 927 | 928 | 928 | 929 | 929 | 930 | 930 | 930 | 931 | 932 | 933 | 933 | 934 | 934 | 934 | 935 | 935 | 929.3 | 24 |
| 10 | 935 | 935 | 935 | 936 | 936 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 937 | 936 | 936 | 936 | 936 | 936 | 935 | 935 | 935 | 935 | 934 | 937 | 936.0 | 24 |
| 11 | 934 | 934 | 933 | 933 | 933 | 932 | 932 | 933 | 933 | 933 | 933 | 933 | 933 | 933 | 933 | 933 | 932 | 932 | 931 | 931 | 931 | 931 | 930 | 931 | 934 | 932.4 | 24 |
| 12 | 930 | 929 | 928 | 928 | 927 | 925 | 925 | 924 | 923 | 922 | 922 | 921 | 921 | 920 | 920 | 919 | 919 | 919 | 919 | 919 | 920 | 921 | 921 | 921 | 930 | 922.6 | 24 |
| 13 | 922 | 922 | 922 | 922 | 922 | 922 | 922 | 922 | 922 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 923 | 922 | 922 | 922 | 922 | 922 | 923 | 922.4 | 24 |
| 14 | 921 | 921 | 921 | 920 | 919 | 919 | 918 | 918 | 917 | 917 | 916 | 916 | 915 | 914 | 913 | 912 | 911 | 910 | 909 | 908 | 907 | 906 | 905 | 904 | 921 | 914.0 | 24 |
| 15 | 904 | 903 | 903 | 903 | 903 | 904 | 904 | 904 | 904 | 904 | 905 | 905 | 904 | 904 | 904 | 904 | 904 | 904 | 905 | 905 | 905 | 906 | 906 | 906 | 906 | 904.3 | 24 |
| 16 | 907 | 907 | 908 | 909 | 909 | 909 | 910 | 910 | 911 | 912 | 912 | 913 | 913 | 913 | 914 | 914 | 915 | 915 | 915 | 915 | 916 | 916 | 917 | 917 | 917 | 912.4 | 24 |
| 17 | 917 | 917 | 917 | 917 | 918 | 918 | 918 | 918 | 919 | 919 | 920 | 920 | 920 | 920 | 920 | 920 | 920 | 920 | 920 | 920 | 920 | 919 | 919 | 919 | 920 | 919.0 | 24 |
| 18 | 920 | 919 | 920 | 920 | 920 | 921 | 921 | 921 | 922 | 922 | 922 | 922 | 922 | 922 | 923 | 922 | 922 | 922 | 921 | 921 | 921 | 921 | 920 | 920 | 923 | 921.1 | 24 |
| 19 | 919 | 918 | 918 | 917 | 917 | 917 | 916 | 916 | 916 | 916 | 916 | 917 | 917 | 917 | 917 | 918 | 918 | 919 | 920 | 921 | 922 | 922 | 923 | 924 | 924 | 918.4 | 24 |
| 20 | 925 | 925 | 926 | 926 | 927 | 928 | 928 | 929 | 929 | 930 | 931 | 930 | 931 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 929 | 929 | 929 | 931 | 928.8 | 24 |
| 21 | 929 | 929 | 929 | 930 | 930 | 930 | 931 | 932 | 932 | 933 | 934 | 934 | 934 | 935 | 935 | 935 | 936 | 936 | 937 | 937 | 938 | 938 | 939 | 940 | 940 | 933.9 | 24 |
| 22 | 940 | 941 | 942 | 942 | 943 | 944 | 944 | 945 | 945 | 946 | 946 | 946 | 945 | 945 | 944 | 944 | 943 | 943 | 942 | 941 | 941 | 940 | 940 | 939 | **946** | **943.0** | 24 |
| 23 | 938 | 937 | 936 | 935 | 934 | 934 | 933 | 932 | 931 | 930 | 929 | 928 | 927 | 926 | 925 | 924 | 923 | 922 | 921 | 921 | 920 | 920 | 920 | 920 | 938 | 927.8 | 24 |
| 24 | 920 | 920 | 920 | 920 | 920 | 920 | 920 | 921 | 922 | 922 | 923 | 923 | 924 | 925 | 925 | 926 | 926 | 927 | 927 | 928 | 929 | 929 | 930 | 930 | 930 | 924.0 | 24 |
| 25 | 931 | 931 | 932 | 932 | 933 | 933 | 934 | 934 | 935 | 935 | 935 | 936 | 936 | 936 | 936 | 937 | 937 | 936 | 936 | 937 | 937 | 937 | 936 | 936 | 937 | 934.9 | 24 |
| 26 | 935 | 935 | 934 | 934 | 933 | 932 | 930 | 929 | 928 | 927 | 926 | 926 | 925 | 925 | 924 | 923 | 923 | 923 | 923 | 924 | 924 | 925 | 925 | 926 | 935 | 927.5 | 24 |
| 27 | 926 | 926 | 927 | 927 | 928 | 928 | 929 | 929 | 930 | 930 | 931 | 931 | 931 | 932 | 931 | 931 | 932 | 932 | 932 | 932 | 932 | 932 | 931 | 931 | 932 | 930.0 | 24 |
| 28 | 931 | 930 | 930 | 929 | 929 | 928 | 927 | 927 | 926 | 925 | 925 | 924 | 923 | 923 | 921 | 921 | 921 | 921 | 920 | 921 | 921 | 921 | 921 | 921 | 931 | 924.4 | 24 |
| 29 | 921 | 921 | 921 | 921 | 921 | 921 | 921 | 921 | 921 | 922 | 922 | 922 | 923 | 923 | 923 | 924 | 924 | 924 | 925 | 925 | 925 | 925 | 925 | 925 | 925 | 922.8 | 24 |
| 30 | 925 | 926 | 926 | 926 | 926 | 925 | 925 | 925 | 925 | 925 | 926 | 926 | 925 | 925 | 925 | 924 | 924 | 924 | 924 | 924 | 923 | 923 | 923 | 922 | 926 | 924.7 | 24 |
| HOURLY MAX | 940 | 941 | 942 | 942 | 943 | 944 | 944 | 945 | 945 | 946 | 946 | 946 | 945 | 945 | 944 | 944 | 943 | 943 | 942 | 941 | 941 | 940 | 940 | 940 | | | |
| HOURLY AVG | 924 | 924 | 924 | 924 | 924 | 924 | 924 | 924 | 925 | 925 | 925 | 925 | 925 | 925 | 925 | 925 | 925 | 924 | 924 | 925 | 925 | 925 | 925 | 925 | | | |

**STATUS FLAG CODES**

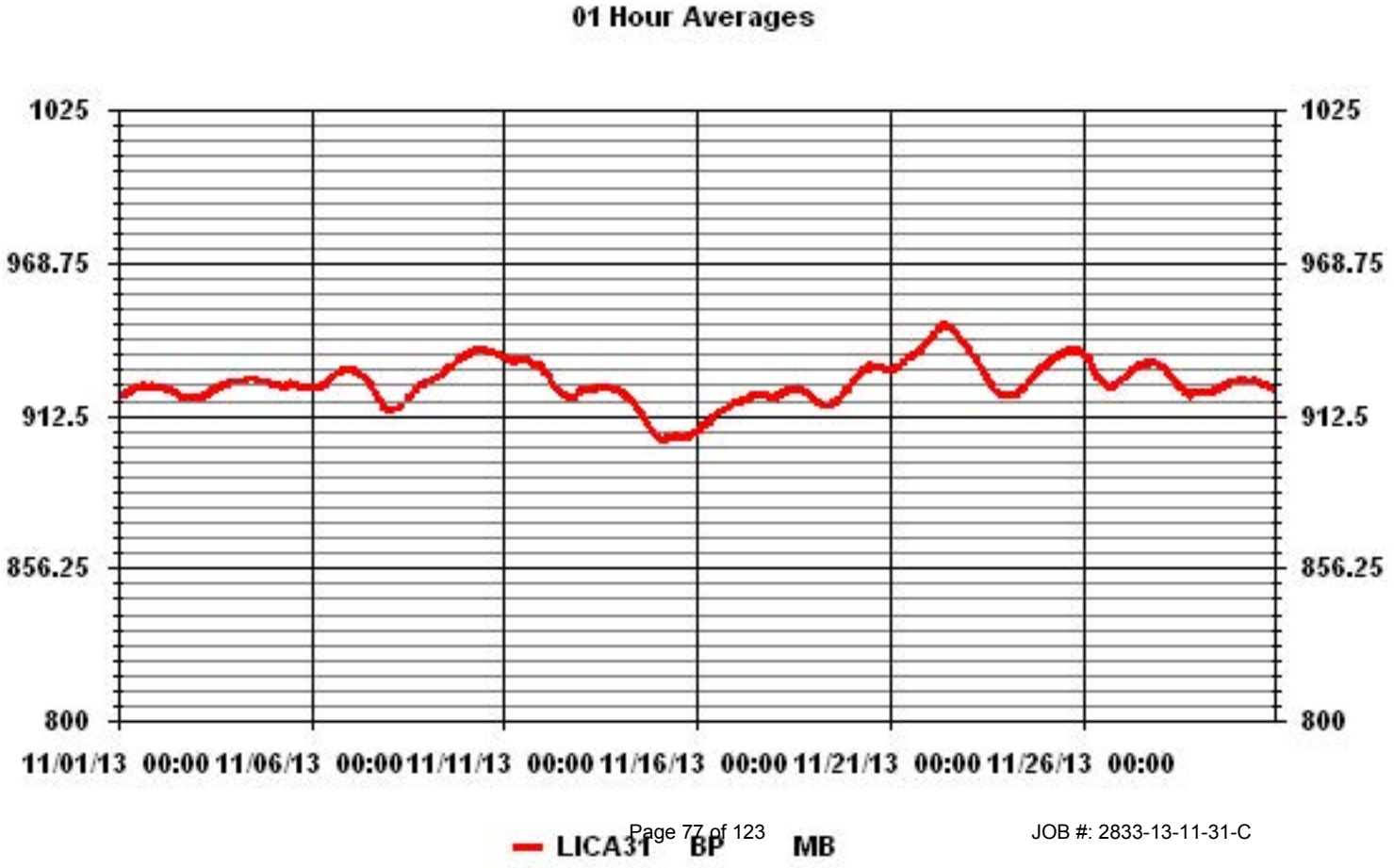
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 946 | MB | @ HOUR(S) | VAR | ON DAY(S) | 22 |
| MAXIMUM 24-HR AVERAGE: | 943.0 | MB | | | ON DAY(S) | 22 |
| | | | | VAR-VARIOUS | | |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 716 | HRS |
| | | | AMD OPERATION UPTIME: | 99.4 | % |
| STANDARD DEVIATION: | 7.90 | | MONTHLY AVERAGE: | 925 | MB |






JOB #: 2833-13-11-31-C

# Relative Humidity

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

**RELATIVE HUMIDITY** hourly averages (%)

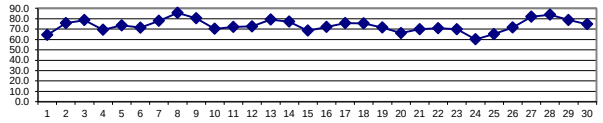
MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 87 | 86 | 84 | 80 | 78 | 76 | 76 | 76 | 69 | 66 | 60 | 54 | 51 | 47 | 45 | 44 | 50 | 56 | 59 | 57 | 58 | 60 | 60 | 66 | 87 | 64.4 | 24 |
| 2 | 70 | 65 | 64 | 70 | 74 | 72 | 72 | 73 | 74 | 74 | 73 | 72 | 73 | 73 | 73 | 74 | 77 | 78 | 79 | 82 | 88 | 89 | 89 | 89 | **89** | 75.7 | 24 |
| 3 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 86 | 84 | 82 | 80 | 78 | 76 | 74 | 68 | 67 | 69 | 71 | 70 | 70 | 73 | 75 | 74 | 73 | 88 | 78.5 | 24 |
| 4 | 72 | 72 | 72 | 73 | 71 | 72 | 73 | 73 | 72 | 70 | 67 | 66 | 64 | 57 | 55 | 56 | 64 | 69 | 69 | 68 | 72 | 77 | 79 | 80 | 80 | 69.3 | 24 |
| 5 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 77 | 71 | 69 | 64 | 64 | 63 | 63 | 60 | 61 | 73 | 77 | 78 | 79 | 79 | 79 | 79 | 81 | 81 | 73.5 | 24 |
| 6 | 80 | 80 | 79 | 79 | 80 | 79 | 81 | 81 | 73 | 68 | 62 | 61 | 62 | 62 | 60 | 57 | 60 | 67 | 71 | 74 | 76 | 75 | 74 | 72 | 81 | 71.4 | 24 |
| 7 | 75 | 76 | 78 | 82 | 82 | 83 | 84 | 86 | 80 | 70 | 72 | 71 | 69 | 71 | 72 | 75 | 77 | 78 | 78 | 78 | 80 | 82 | 85 | 85 | 86 | 77.9 | 24 |
| 8 | 86 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | **P** | **P** | **P** | **P** | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 87 | **85.6** | 20 |
| 9 | 85 | 85 | 85 | 84 | 85 | 86 | 85 | 86 | 85 | 83 | 80 | 79 | 78 | 78 | 77 | 77 | 78 | 78 | 77 | 77 | 76 | 76 | 73 | 74 | 86 | 80.3 | 24 |
| 10 | 72 | 72 | 72 | 72 | 74 | 75 | 76 | 76 | 75 | 71 | 63 | 54 | 56 | 62 | 65 | 69 | 70 | 71 | 72 | 72 | 72 | 73 | 75 | 76 | 76 | 70.2 | 24 |
| 11 | 78 | 78 | 77 | 77 | 77 | 77 | 77 | 77 | 73 | 71 | 67 | 62 | 59 | 58 | 59 | 61 | 67 | 71 | 72 | 74 | 78 | 79 | 80 | 80 | 80 | 72.0 | 24 |
| 12 | 80 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 77 | 76 | 69 | 67 | 62 | 62 | 67 | 69 | 71 | 70 | 69 | 66 | 63 | 67 | 69 | 71 | 81 | 72.6 | 24 |
| 13 | 73 | 75 | 77 | 81 | 80 | 82 | 81 | 83 | 80 | 81 | 81 | 81 | 77 | 72 | 69 | 72 | 75 | 76 | 83 | 83 | 84 | 84 | 85 | 85 | 85 | 79.2 | 24 |
| 14 | 85 | 86 | 86 | 85 | 85 | 86 | 86 | 87 | 86 | 87 | 87 | 85 | 75 | 70 | 64 | 63 | 68 | 69 | 70 | 71 | 69 | 68 | 68 | 65 | 87 | 77.1 | 24 |
| 15 | 65 | 64 | 62 | 65 | 67 | 68 | 69 | 70 | 71 | 69 | 67 | 63 | 63 | 64 | 65 | 67 | 71 | 75 | 74 | 71 | 70 | 75 | 74 | 74 | 75 | 68.5 | 24 |
| 16 | 74 | 74 | 74 | 72 | 73 | 73 | 72 | 72 | 73 | 72 | 70 | 69 | 68 | 67 | 66 | 67 | 68 | 69 | 71 | 74 | 77 | 78 | 78 | 78 | 78 | 72.0 | 24 |
| 17 | 78 | 78 | 78 | 77 | 77 | 77 | 77 | 77 | 77 | 76 | 75 | 74 | 72 | 72 | 70 | 70 | 76 | 77 | 76 | 77 | 77 | 76 | 76 | 76 | 78 | 75.7 | 24 |
| 18 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 74 | 73 | 74 | 72 | 71 | 74 | 74 | 76 | 76 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 75.4 | 24 |
| 19 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 71 | 68 | 63 | 59 | 59 | 65 | 70 | 73 | 72 | 72 | 72 | 72 | 72 | 71 | 77 | 71.4 | 24 |
| 20 | 71 | 70 | 70 | 71 | 71 | 71 | 70 | 70 | 69 | 68 | 59 | 52 | 51 | 53 | 55 | 59 | 69 | 72 | 70 | 70 | 69 | 69 | 69 | 69 | 72 | 66.1 | 24 |
| 21 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 69 | 69 | 70 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 71 | 71 | 71 | 69.8 | 24 |
| 22 | 71 | 71 | 71 | 71 | 71 | 71 | 72 | 71 | 70 | 69 | 68 | 66 | 66 | 69 | 70 | 71 | 72 | 72 | 72 | 72 | 72 | 72 | 73 | 74 | 74 | 70.7 | 24 |
| 23 | 74 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 72 | 69 | 65 | 66 | 63 | 62 | 64 | 67 | 68 | 68 | 68 | 69 | 70 | 71 | 71 | 69 | 75 | 69.8 | 24 |
| 24 | 70 | 73 | 75 | 77 | 77 | 76 | 75 | 75 | 66 | 57 | 51 | 45 | 45 | 44 | 47 | 49 | 53 | 54 | 54 | 54 | 54 | 55 | 57 | 60 | 77 | 60.1 | 24 |
| 25 | 63 | 66 | 68 | 70 | 73 | 75 | 76 | 77 | 74 | 66 | 55 | 49 | 45 | 38 | 38 | 43 | 59 | 65 | 70 | 74 | 78 | 80 | 80 | 81 | 81 | 65.1 | 24 |
| 26 | 81 | 80 | 71 | 66 | 65 | 63 | 62 | 66 | 69 | 70 | 66 | 65 | 66 | 66 | 68 | 72 | 76 | 78 | 77 | 76 | 76 | 78 | 78 | 79 | 81 | 71.4 | 24 |
| 27 | 81 | 83 | 82 | 82 | 83 | 80 | 83 | 83 | 83 | 82 | 80 | 78 | 78 | 79 | 80 | 82 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 81.8 | 24 |
| 28 | 83 | 83 | 84 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 84 | 84 | 84 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 85 | 83.7 | 24 |
| 29 | 83 | 82 | 82 | 81 | 81 | 81 | 81 | 81 | 83 | 83 | 81 | 78 | 70 | 63 | 61 | 67 | 76 | 78 | 81 | 83 | 84 | 84 | 82 | 84 | 84 | 78.8 | 24 |
| 30 | 84 | 84 | 84 | 83 | 82 | 81 | 80 | 78 | 76 | 70 | 65 | 60 | 56 | 63 | 65 | 68 | 70 | 72 | 73 | 74 | 77 | 80 | 83 | 82 | 84 | 74.6 | 24 |
| HOURLY MAX | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 86 | 87 | 87 | 85 | 83 | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 88 | 89 | 89 | 89 | | | |
| HOURLY AVG | 77.0 | 77.2 | 76.9 | 77.1 | 77.3 | 77.1 | 77.2 | 77.5 | 75.7 | 73.1 | 69.8 | 67.3 | 65.3 | 65.2 | 65.1 | 66.8 | 70.9 | 72.8 | 73.5 | 73.9 | 74.8 | 75.8 | 76.1 | 76.5 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

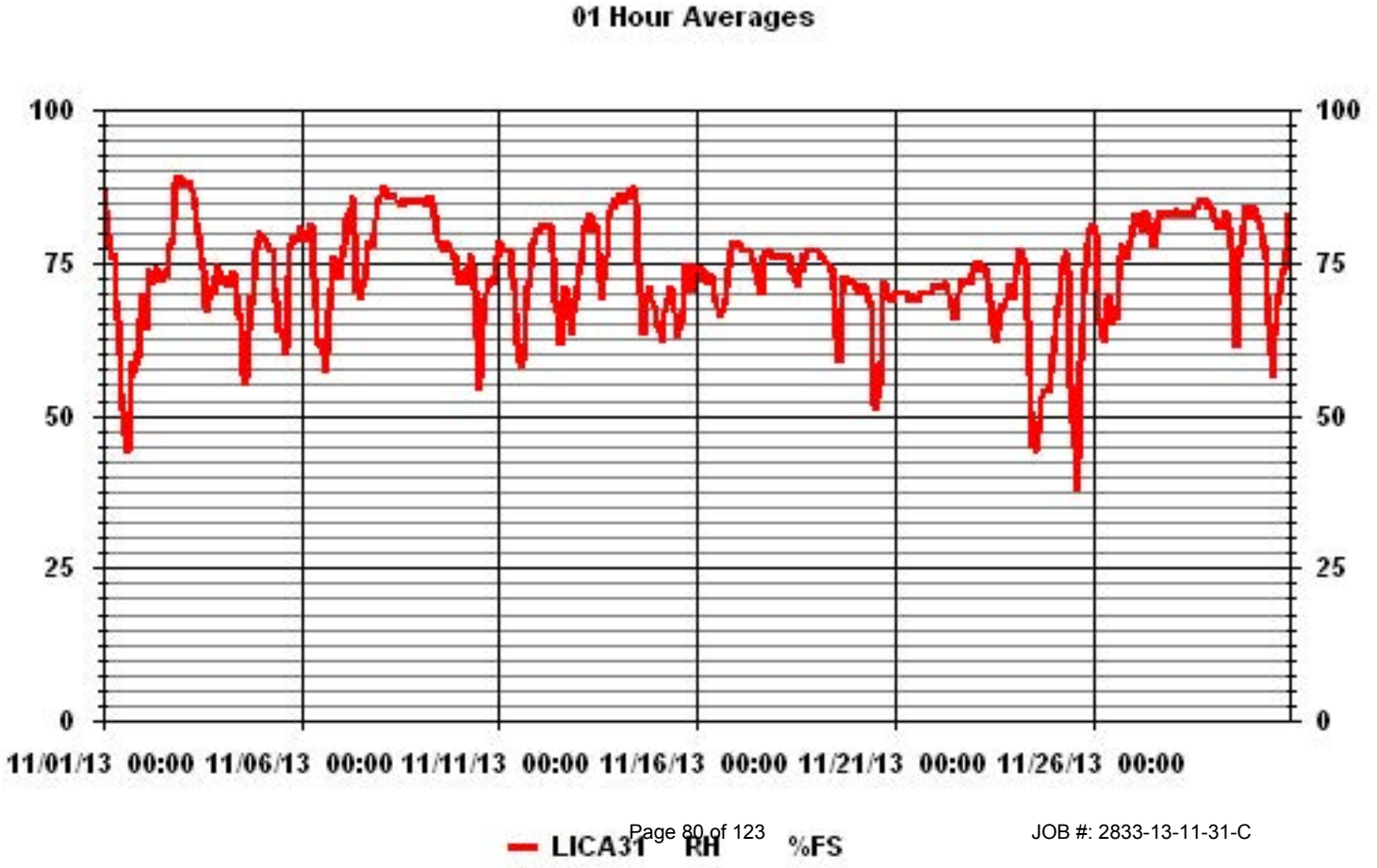
**24 HOUR AVERAGES FOR NOVEMBER 2013**




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 89 | % | @ HOUR(S) | VAR | ON DAY(S) | 2 |
| MAXIMUM 24-HR AVERAGE: | 85.6 | % | | | ON DAY(S) | 8 |
| | | | | VAR-VARIOUS | | |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 716 | HRS |
| | | | AMD OPERATION UPTIME: | 99.4 | % |
| STANDARD DEVIATION: | 8.69 | | MONTHLY AVERAGE: | 73.35 | % |






JOB #: 2833-13-11-31-C

# Precipitation

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA**

NOVEMBER 2013

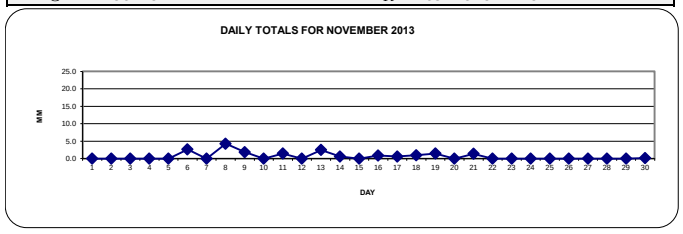
**PRECIPITATION hourly averages (mm)**

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | DAILY | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | TOTAL | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.7 | **1.1** | 0.7 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1.1** | 2.7 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | P | 0.1 | 0.5 | 0.4 | 0.5 | 0.3 | 0.4 | 0.5 | 0.3 | 0.3 | 0.1 | 0.3 | 0.4 | 0.2 | 0.5 | **4.3** | 23 |
| 9 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 1.9 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0.1 | **1.1** | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1.1** | 1.5 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.1 | 0.5 | 0.9 | 0.5 | 0.1 | 0.9 | 2.5 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.6 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.3 | 0.3 | 0.2 | 0.3 | 0.9 | 24 |
| 17 | 0.1 | 0.2 | 0 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.6 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 0.6 | 1.0 | 24 |
| 19 | 0.1 | 0 | 0 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 1.5 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 21 | 0 | 0.9 | 0.4 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | 1.4 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0.2 | 0.2 | 24 |
| HOURLY MAX | 0.2 | 0.9 | 0.4 | 0.2 | 0.2 | 0.2 | 1.0 | 0.2 | 0.1 | 0.5 | 0.2 | 0.6 | 0.5 | 0.7 | 1.1 | 1.1 | 0.4 | 0.5 | 0.4 | 0.3 | 0.5 | 0.9 | 0.5 | 0.2 | | | |

**STATUS FLAG CODES**

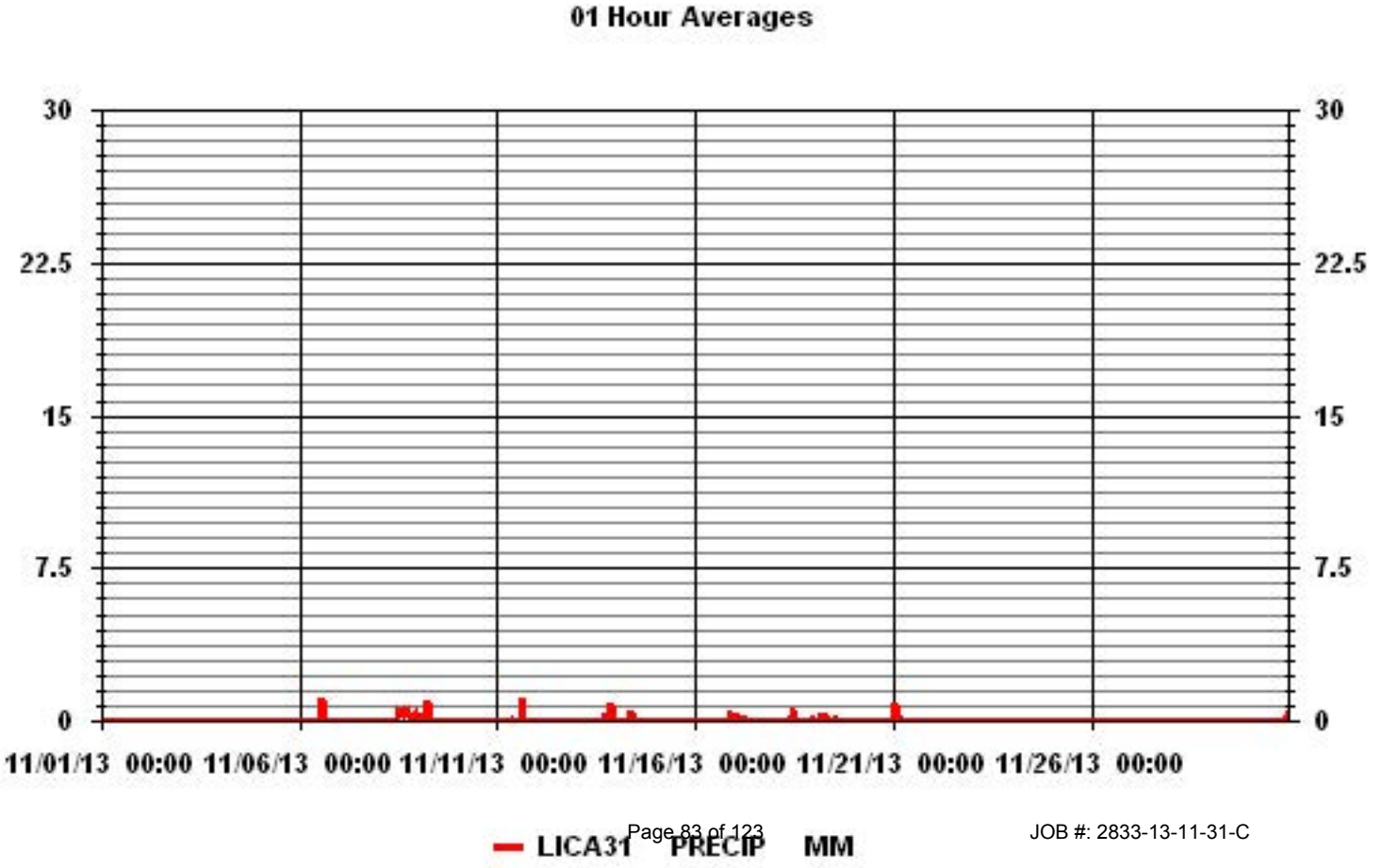
| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 1.1 | MM | HOUR(S) | 14, 15 | ON DAY(S) | 6, 11 |
| MAXIMUM DAILY TOTAL | 4.3 | MM | | | ON DAY(S) | 8 |
| MONTHLY TOTAL | 19.1 | MM | | | | |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 719 | HRS |
| | | | AMD OPERATION UPTIME: | 99.9 | % |
| STANDARD DEVIATION: | 0.12 | | MONTHLY AVERAGE: | 0.03 | MM |






JOB #: 2833-13-11-31-C

# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

NOVEMBER 2013

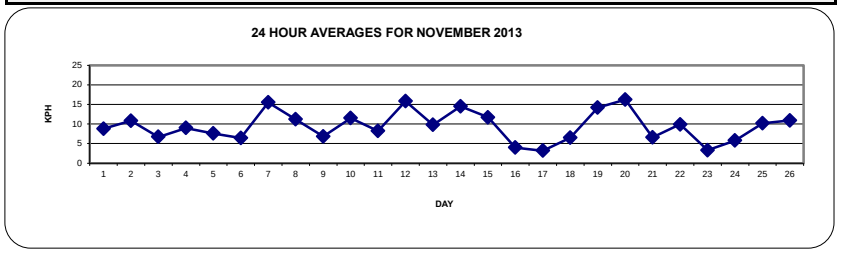
**WIND SPEED** hourly averages (km/hr)

MST

| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. | AVG. | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 10.6 | 11.2 | 12.6 | 12 | 11.9 | 13.5 | 12.1 | 13.2 | 13.5 | 14.2 | 13.4 | 14.1 | 13.7 | 12.8 | 16.4 | 19.9 | 12.7 | 9.7 | 10.2 | 10.4 | 9.1 | 8.8 | 8.7 | 9.1 | 19.9 | 12 | 24 |
| 2 | 10 | 10.4 | 10 | 9 | 7.1 | 6.6 | 8 | 5.8 | 3.6 | 5.7 | 6.9 | 9 | 7 | 8.2 | 9.2 | 11 | 11.4 | 8.7 | 7.8 | 10.3 | 13.6 | 15 | 16 | 16.3 | 16.3 | 5.3 | 24 |
| 3 | 16.5 | 18 | 17.8 | 17.6 | 16.3 | 17.8 | 19.5 | 17.9 | 19.2 | 18.2 | 15.7 | 17.6 | 17.7 | 16.1 | 16.2 | 16.6 | 15.3 | 17.5 | 15.8 | 15 | 13.5 | 12.2 | 12.9 | 13.6 | 19.5 | 15.3 | 24 |
| 4 | 15.6 | 13.9 | 12.9 | 12.9 | 14 | 15.4 | 13.8 | 12.1 | 13.2 | 14.2 | 14.2 | 11.4 | 12.7 | 12.5 | 10.4 | 9.7 | 8.4 | 9.2 | 9.9 | 9 | 8.6 | 7.8 | 7.5 | 8 | 15.6 | 10.4 | 24 |
| 5 | 8.2 | 7.3 | 8 | 7.6 | 4.7 | **X** | **X** | **X** | **X** | **X** | 8.4 | 11 | 11.4 | 10.9 | 9.7 | 6.9 | 7.6 | 9.5 | 11.3 | 10 | 10.7 | 11.6 | 10.6 | 12.4 | 12.4 | 8.8 | 19 |
| 6 | 10.8 | 12.3 | 11.2 | 13.4 | 9.6 | 10.7 | 13.1 | 11.2 | 11.6 | 13.2 | 13.2 | 12.2 | 13 | 14 | 12.9 | 11.2 | 9.6 | 9.7 | 11.4 | 11.2 | 12 | 11.4 | 10.8 | 11.6 | 14 | 10.8 | 24 |
| 7 | 11.4 | 10.9 | 9.8 | 8.8 | 8.1 | 7.6 | 8.3 | 3.8 | 6.1 | 4.3 | 6.6 | 11.8 | 13.7 | 14.2 | 14.8 | 13.6 | 14.8 | 17.5 | 19.8 | 19 | 17.9 | 16.7 | 19.7 | 21.2 | 21.2 | 6.7 | 24 |
| 8 | 19.9 | 20.4 | 19.3 | 19.9 | 19.7 | 19.1 | 13.5 | 10.6 | 8.6 | **P** | **P** | **P** | **P** | 11.9 | 9.6 | 8.9 | 7.6 | 6.4 | 6.2 | 5 | 3.7 | 2.2 | 4.6 | 6.3 | 20.4 | 9 | 20 |
| 9 | 6.6 | 8.8 | 13.8 | 12.7 | 14.7 | 11.3 | 10.8 | 9.1 | 10.4 | 15.8 | 15.5 | 14.3 | 14.3 | 14.8 | 14.1 | 12.5 | 9.8 | 12 | 11 | 11.2 | 8.3 | 6.2 | 6.4 | 4.3 | 15.8 | 7.6 | 24 |
| 10 | 5.6 | 7.7 | 9.3 | 7.1 | 5.3 | 6 | 6.6 | 6.5 | 6.4 | 7 | 8.4 | 9.9 | 8.4 | 8.9 | 10.2 | 10.3 | 10.6 | 13.3 | 13.5 | 14 | 12.2 | 12.3 | 11.6 | 14.3 | 14.3 | 6.4 | 24 |
| 11 | 13.9 | 14.8 | 16 | 14.2 | 13.5 | 14.4 | 14.3 | 14.1 | 15.2 | 15.8 | 17.4 | 15.9 | 14.5 | 16.2 | 16.9 | 16.6 | 15.6 | 16.7 | 18.6 | 15.4 | 17.3 | 16.5 | 14.6 | 15.8 | 18.6 | 15.5 | 24 |
| 12 | 15.8 | 15.3 | 17.1 | 15.6 | 13.5 | 11.1 | 12.9 | 11 | 10.2 | 10.3 | 9.8 | 9.4 | 6.3 | 7.7 | 8.5 | 8.3 | 15 | 17 | 18.1 | 14.2 | 13.4 | 15.8 | 17.4 | 13.3 | 18.1 | 11.2 | 24 |
| 13 | 11.9 | 13.2 | 12.5 | 9.3 | 11 | 11.7 | 12.6 | 12 | 9.9 | 11.7 | 10.4 | 10.1 | 12.5 | 10.8 | 9.4 | 8.1 | 8.3 | 6 | 5.4 | 4.1 | 2.6 | 3.6 | 5.9 | 5 | 13.2 | 6.8 | 24 |
| 14 | 3.6 | 6.5 | 7.6 | 10.8 | 13.1 | 11.3 | 11.5 | 9.8 | 6.8 | 11.7 | 11.7 | 6 | 14.7 | 20.7 | 23.5 | 20.9 | 19.1 | 21.4 | 16.1 | 17.5 | 20.1 | 11.6 | 14.5 | 19 | 23.5 | 11.5 | 24 |
| 15 | 18.4 | 19.5 | 20.1 | 18.3 | 17.5 | 19.8 | 16 | 17 | 14.8 | 13.8 | 13.4 | 8.6 | 9.6 | 8.7 | 4.7 | 5.9 | 6.5 | 9.6 | 16.7 | 17.7 | 16.1 | 20.1 | 21.9 | 19 | 21.9 | 8.2 | 24 |
| 16 | 17.5 | 16.3 | 17.7 | 18.5 | 18.5 | 18.8 | 17.7 | 21.4 | 20.2 | 15.2 | 15.4 | 15.1 | 14.4 | 14.3 | 12.9 | 12.3 | 11.4 | 10.6 | 16.5 | 17.4 | 16.5 | 17.1 | 14.3 | 16.3 | 21.4 | 15.8 | 24 |
| 17 | 16.4 | 15.4 | 12.3 | 11.9 | 9.3 | 10.5 | 11.9 | 11.7 | 12.9 | 12.1 | 10.3 | 8.7 | 6.7 | 5.8 | 7.4 | 7.2 | 6.7 | 8.4 | 8.8 | 8.4 | 7.3 | 7.4 | 10.3 | **X** | 16.4 | 9.8 | 23 |
| 18 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 6.1 | 6 | 7.7 | 8.4 | 9.3 | 10.2 | 9.4 | 9.6 | 7.1 | 8.9 | 11 | 11 | 14.5 | 11 |
| 19 | 12 | 11.1 | 11.1 | 11.1 | 11.7 | 12.4 | 13.5 | 13.5 | 13.3 | 13 | 15.4 | 14.3 | 15.6 | 15.4 | 15.3 | 14.4 | 13.4 | 13.8 | 14.9 | 13.2 | 12.2 | 13.2 | 10.6 | 11.5 | 15.6 | 11.7 | 24 |
| 20 | 12.4 | 14.4 | 11.7 | 9.5 | 9.3 | 5.2 | 5.2 | 5.7 | 4.1 | 5.7 | 4.9 | 5.3 | 7.5 | 8.6 | 8.9 | 7.6 | 9.8 | 11.7 | 13.9 | 11.8 | 13.5 | 8.4 | 8.3 | 6.1 | 14.4 | 4 | 24 |
| 21 | 5.9 | 6.4 | 3.6 | 4.1 | 7.4 | 6.8 | 6.8 | 8.9 | 7.2 | 6.4 | 5.6 | 5.9 | 4.5 | 4.8 | 5.5 | 4.7 | 5.6 | 6 | 5 | 7.7 | 7.1 | 7.2 | 8.1 | 8.3 | 8.9 | 3.2 | 24 |
| 22 | 7.8 | 7.8 | 7.4 | 7.9 | 6 | 5.6 | 8.1 | **X** | **X** | **X** | **X** | 2.7 | 7.6 | 7.6 | 7.3 | 7.7 | 9.3 | 9.5 | 9.3 | 12.1 | 11.3 | 11.6 | 10 | 10.6 | 12.1 | 6.5 | 20 |
| 23 | 13 | 13.7 | 17 | 13.6 | 12.8 | 11.5 | 11.5 | 13.4 | 16.9 | 17.9 | 18.3 | 18 | 17.9 | 17 | 16.1 | 15.7 | 15.4 | 14.8 | 15.2 | 15.9 | 14 | 10.4 | 13.1 | 13.2 | 18.3 | 14.2 | 24 |
| 24 | 14.4 | 13.1 | 16 | 13.8 | 13.3 | 13.9 | 18.2 | 13.9 | 16.8 | 18.2 | 23.7 | 25.7 | 22.1 | 20.7 | 22.9 | 20.2 | 18.3 | 17.4 | 15.8 | 16.8 | 15.6 | 15.2 | 14 | 12.5 | 25.7 | **16.2** | 24 |
| 25 | 13.8 | 15.5 | 14.7 | 11.7 | 11.2 | 9.8 | 11.7 | 10.6 | 11 | 10.4 | 9.1 | 7.9 | 8 | 6 | 4.4 | 3.4 | 4.4 | 7.8 | 8.1 | 8.6 | 9.2 | 9.2 | 10 | 10.9 | 15.5 | 6.6 | 24 |
| 26 | 10.7 | 11.6 | 12.3 | 14 | 15.4 | 14.3 | 16.8 | 16.1 | 20 | 20.4 | 19.8 | 16.2 | 14.6 | 12.1 | 15.9 | 15.7 | 10.8 | 11.5 | 9.5 | 11 | 12.9 | 11.8 | 14.4 | 11.9 | 20.4 | 9.9 | 24 |
| 27 | 11.7 | 13.5 | 15 | 13.7 | 12.4 | 12.2 | 13.2 | 12 | 10 | 9.3 | 9 | 4.8 | 2.7 | 2.5 | 5.1 | 4.5 | 4.7 | 5.8 | 7.7 | 8.9 | 9.2 | 9.2 | 9.4 | 10.3 | 15 | 3.3 | 24 |
| 28 | 12.3 | 10.6 | 12.2 | 13 | 11.8 | 14.4 | 11.8 | 11.5 | 8.3 | 18.3 | 21.6 | **26.2** | **X** | **X** | **X** | **X** | 12.3 | 13.1 | 13.9 | 9.9 | 11.7 | 12 | 13.7 | 15.4 | **26.2** | 5.8 | 20 |
| 29 | 13.8 | 12.6 | 13.7 | 12.2 | 12.2 | 11.2 | 10.4 | 9.6 | 9.2 | 10.1 | 8.9 | 11.7 | 10.1 | 10.1 | 11.6 | 12.1 | 12.1 | 12.1 | 11.7 | 10.2 | 10.2 | 8.5 | 6.5 | 7.8 | 13.8 | 10.2 | 24 |
| 30 | 9.4 | 10 | 8.9 | 10.3 | 11.2 | 11.7 | 10.9 | 11.5 | 13.8 | 14.4 | 13 | 12.4 | 13.3 | 15.4 | 13.2 | 12.9 | 9.9 | 11 | 8.9 | 9.1 | 7.9 | 9.9 | 9.6 | 7.5 | 15.4 | 10.9 | 24 |
| HOURLY MAX | 19.9 | 20.4 | 20.1 | 19.9 | 19.7 | 19.8 | 19.5 | 21.4 | 20.2 | 20.4 | 23.7 | 26.2 | 22.1 | 20.7 | 23.5 | 20.9 | 19.1 | 21.4 | 19.8 | 19.0 | 20.1 | 20.1 | 21.9 | 21.2 | | | |
| HOURLY AVG | 12.1 | 12.5 | 12.8 | 12.2 | 11.8 | 12.0 | 12.2 | 11.6 | 11.6 | 12.6 | 12.6 | 12.0 | 11.6 | 11.5 | 11.7 | 11.3 | 10.8 | 11.6 | 12.0 | 11.8 | 11.6 | 11.0 | 11.5 | 11.8 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |



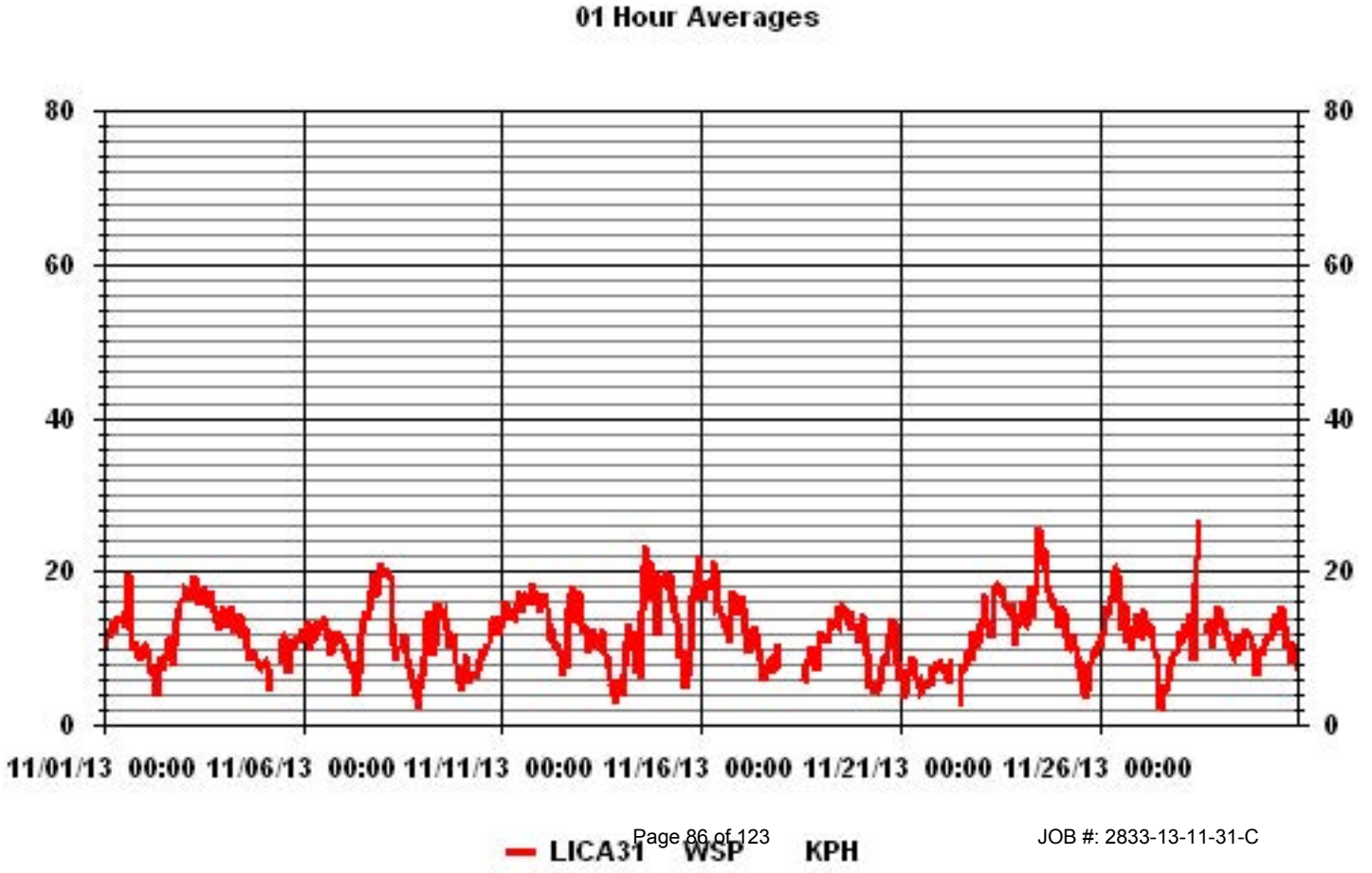

LAST CALIBRATION: June 12, 2012

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | | 26.2 | KPH | @ HOUR(S) | 11 | ON DAY(S) | 28 |
| MAXIMUM 24-HR AVERAGE: | | 16.2 | KPH | | | ON DAY(S) | 24 |
| CALMS (≤ 0 KPH) | 0.00 | % | | OPERATIONAL TIME: | | 689 | HRS |
| MONTHLY CALIBRATION TIME: | 0 | HRS | | AMD OPERATION UPTIME: | | 95.7 | % |
| STANDARD DEVIATION: | 4.18 | | | MONTHLY AVERAGE: | | 11.83 | KPH |



JOB #: 2833-13-11-31-C






JOB #: 2833-13-11-31-C

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**VECTOR WIND SPEED MAX instantaneous maximum in km/hr**

MST

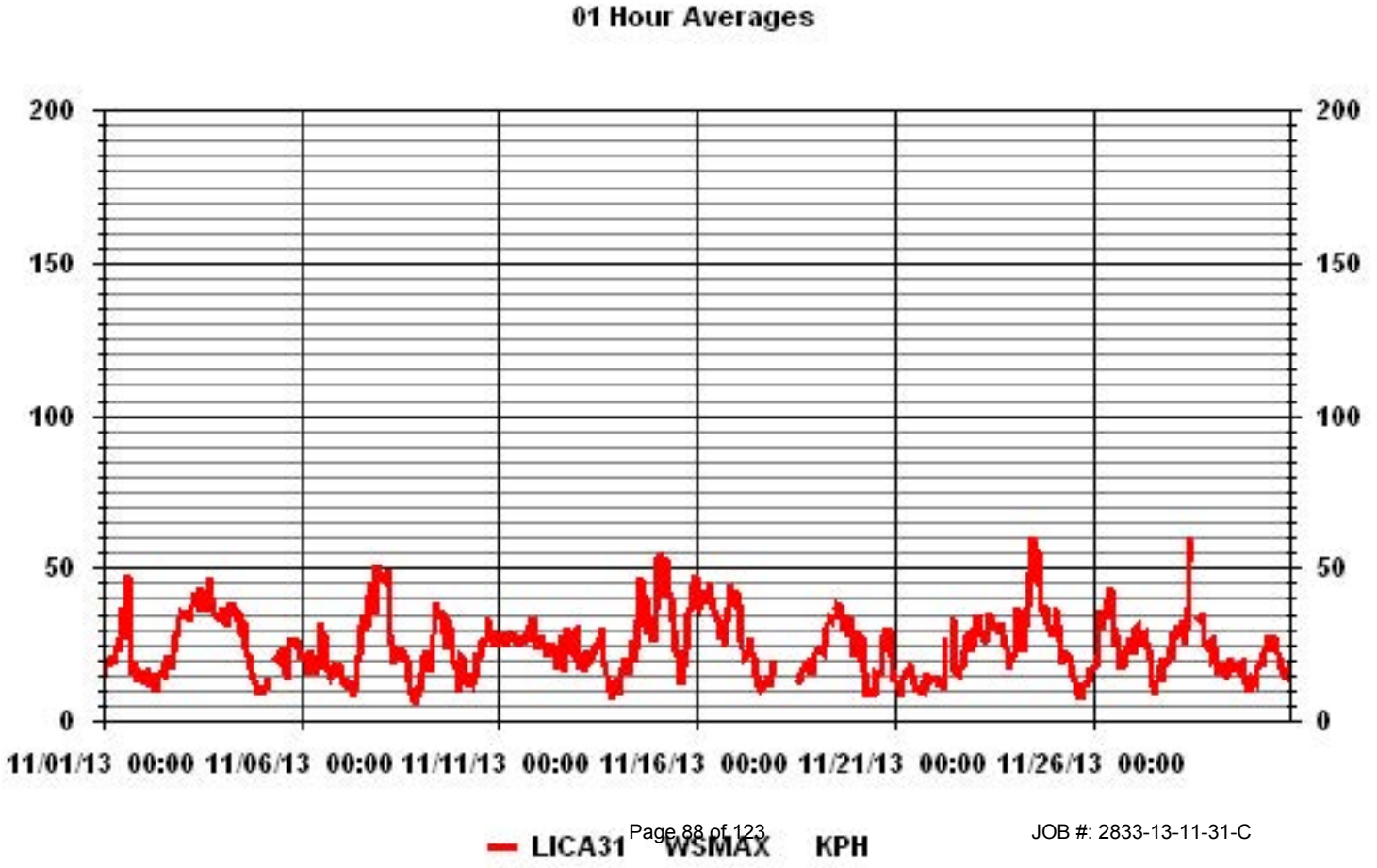
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | MAX. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 14.5 | 15.2 | 19.3 | 19.9 | 17.8 | 21.5 | 18.9 | 20.4 | 24.8 | 22.1 | 27.2 | 31.1 | 37.2 | 26.3 | 41.2 | 47.9 | 34.2 | 14.9 | 16.9 | 19.4 | 18.2 | 12.9 | 14 | 14 | 47.9 |
| 2 | 13.6 | 16 | 16.4 | 13.6 | 11.9 | 11.9 | 15.6 | 12.3 | 9.4 | 11 | 15.6 | 16.3 | 15.8 | 15.4 | 18.4 | 21.5 | 20 | 16.5 | 21.5 | 22.6 | 28 | 29.2 | 33.3 | 35.7 | 35.7 |
| 3 | 35.1 | 34.8 | 34.4 | 35.8 | 32.4 | 36.2 | 37.9 | 39 | 41.5 | 39 | 35.7 | 44 | 43.2 | 41.8 | 41.2 | 41.2 | 35.9 | 47.1 | 41 | 36.2 | 35.1 | 33.1 | 35.1 | 32.4 | 47.1 |
| 4 | 35.1 | 36.6 | 32.2 | 30.7 | 36.2 | 38.3 | 35.7 | 36.8 | 35.3 | 34.2 | 36.2 | 28.9 | 27.2 | 33.1 | 24.3 | 20.8 | 21.9 | 17.8 | 16.5 | 14.7 | 13 | 12.3 | 9 | 10.6 | 38.3 |
| 5 | 10.3 | 9.9 | 11.6 | 10.1 | 12.8 | **X** | **X** | **X** | **X** | **X** | 20.6 | 20 | 22.8 | 23.9 | 20.8 | 15.8 | 13.2 | 24.6 | 26.7 | 25.4 | 25.3 | 27.2 | 24.1 | 23.5 | 27.2 |
| 6 | 19.7 | 22.1 | 19.1 | 22.4 | 14.7 | 20 | 22.8 | 16.9 | 15.4 | 20.6 | 20 | 19.3 | 31.8 | 24.6 | 29.1 | 22.1 | 16.5 | 14.9 | 16.1 | 17.8 | 16.9 | 15.4 | 15.6 | 18.5 | 31.8 |
| 7 | 15.1 | 13.8 | 12.7 | 11.4 | 13.8 | 11.2 | 10.6 | 7.9 | 11 | 10.1 | 18.9 | 21.5 | 31.1 | 29.2 | 34.6 | 29.8 | 31.1 | 41.4 | 44.1 | 44.1 | 41.2 | 34.8 | 51.2 | 50.2 | 51.2 |
| 8 | 49.3 | 45.8 | 46.9 | 46.2 | 48 | 49.7 | 28.5 | 25.7 | 19.7 | **P** | **P** | **P** | **P** | 24.1 | 19.5 | 20.8 | 20 | 13.8 | 11.6 | 9.2 | 7.2 | 5.1 | 7.3 | 11.2 | 49.7 |
| 9 | 10.3 | 15.8 | 21.1 | 18.2 | 23.2 | 19.7 | 18 | 16.1 | 28.1 | 37.7 | 37.5 | 36 | 34.4 | 33.3 | 36.2 | 29.2 | 23.5 | 33.8 | 29.4 | 29.6 | 20.6 | 19.3 | 17.3 | 9.7 | 37.7 |
| 10 | 12.8 | 21.5 | 20.9 | 14.7 | 12.5 | 11.6 | 15.8 | 13.2 | 12.1 | 14.1 | 21.1 | 21.1 | 21.5 | 25.9 | 24.1 | 26.3 | 26.5 | 33.8 | 32 | 30.1 | 27 | 27.8 | 23.9 | 26.6 | 33.8 |
| 11 | 28.3 | 28.1 | 28.3 | 25.7 | 24.3 | 28.5 | 29 | 29 | 27.2 | 27.4 | 28.7 | 25.9 | 24.3 | 26.8 | 26.8 | 26.5 | 27.8 | 28.1 | 31.1 | 25.9 | 33.3 | 33.5 | 23.5 | 24.8 | 33.5 |
| 12 | 25.2 | 23.6 | 27.8 | 24.3 | 25.4 | 20.4 | 25.7 | 23.9 | 23 | 25.3 | 18 | 17.8 | 21.7 | 20.4 | 27.7 | 16 | 26.5 | 30 | 25.7 | 23 | 22.6 | 28.9 | 29.4 | 19.8 | 30 |
| 13 | 16.7 | 20.2 | 21 | 16.2 | 22 | 19.7 | 23 | 19.5 | 20 | 23.7 | 23.2 | 25.2 | 27.2 | 23 | 30.5 | 18 | 19.1 | 15.8 | 11.2 | 10.3 | 7 | 8.6 | 13.2 | 14.3 | 30.5 |
| 14 | 8.6 | 13.6 | 15.6 | 16.9 | 20.7 | 19.1 | 19.7 | 15.1 | 25.2 | 26.5 | 19.3 | 23 | 32.7 | 45.6 | 45.6 | 42.1 | 30.7 | 40.1 | 27.8 | 34 | 30.3 | 25.8 | 30.2 | 36.1 | 45.6 |
| 15 | 53.2 | 53.7 | 49.3 | 42.3 | 41.2 | 53.4 | 44.9 | 42.7 | 40.5 | 33.5 | 30.2 | 23.4 | 21.3 | 22.6 | 12.1 | 14.3 | 17.8 | 22.8 | 34.9 | 35.7 | 36.8 | 44.5 | 46 | 47.8 | 53.7 |
| 16 | 38.3 | 37 | 38.6 | 42.7 | 40.8 | 42.5 | 38.3 | 45.1 | 41.4 | 37.3 | 34.9 | 34.9 | 32.9 | 32.9 | 26.3 | 30 | 25.9 | 26.3 | 32.3 | 37.3 | 44.1 | 42.5 | 38.8 | 38.1 | 45.1 |
| 17 | 42.5 | 39 | 26.3 | 23.7 | 20.2 | 20.6 | 22.1 | 22.2 | 27.5 | 22.4 | 21.5 | 15.4 | 12.5 | 11.2 | 12.5 | 11.2 | 12.1 | 13 | 14.7 | 13 | 11.4 | 15.2 | 19.1 | **X** | 42.5 |
| 18 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 13 | 13.4 | 15.8 | 18 | 17.6 | 18.7 | 18.7 | 20.2 | 14.9 | 16.9 | 21.7 | 21.7 |
| 19 | 22.8 | 23.3 | 23.9 | 23.7 | 22.6 | 24.3 | 30.3 | 31.8 | 33.6 | 32.7 | 34 | 34.4 | 37.5 | 36.6 | 38.4 | 34 | 29 | 30.5 | 34.2 | 27.4 | 32.1 | 34 | 23.3 | 21.1 | 38.4 |
| 20 | 22.8 | 29.9 | 25.7 | 18.7 | 27.8 | 16.3 | 7.5 | 10.8 | 10.3 | 9.5 | 8.9 | 9.2 | 15.6 | 15.1 | 15.6 | 16.5 | 22.4 | 28.1 | 30.1 | 24.4 | 30.1 | 21.5 | 17.4 | 14.1 | 30.1 |
| 21 | 13.6 | 13 | 11 | 7.5 | 13.8 | 14.3 | 15.8 | 17.1 | 18.2 | 18 | 15.2 | 13 | 10.1 | 10.1 | 11.2 | 8.8 | 11.2 | 10.4 | 12.5 | 15.4 | 12.8 | 13.8 | 13.6 | 14.3 | 18.2 |
| 22 | 13.8 | 13.6 | 11 | 13 | 12.3 | 10.3 | 26.5 | **X** | **X** | **X** | **X** | 32.5 | 16.9 | 16 | 15.4 | 16.9 | 18.7 | 17.8 | 23.3 | 27.9 | 28.5 | 22.8 | 25.4 | 23.7 | 32.5 |
| 23 | 30.3 | 33.8 | 34 | 27.6 | 29.4 | 26.8 | 26.3 | 27.6 | 32.7 | 35.3 | 32.9 | 31.8 | 31.4 | 30.5 | 28.1 | 29.8 | 31.6 | 28.8 | 25.4 | 24.3 | 21 | 16.5 | 19.5 | 21.3 | 35.3 |
| 24 | 23 | 22.1 | 37.3 | 29.9 | 25.4 | 22.4 | 36.2 | 30.7 | 36.9 | 48.8 | 55.8 | **59.8** | 51 | 45.8 | 56.1 | 44.2 | 36.8 | 35.1 | 35.1 | 38 | 32 | 30.3 | 29.8 | 27.4 | **59.8** |
| 25 | 31.1 | 36.8 | 32 | 26.5 | 20.6 | 18.9 | 22.8 | 21.9 | 22.1 | 21.7 | 18.4 | 15.4 | 14 | 13 | 9.2 | 7.9 | 6.8 | 11.5 | 12.3 | 11.9 | 11.9 | 13 | 16.5 | 16.9 | 36.8 |
| 26 | 17.3 | 17.8 | 21.5 | 30 | 35.8 | 29.9 | 34.7 | 33.3 | 39.5 | 42.5 | 43.8 | 35.3 | 30.9 | 24.5 | 25.4 | 21.9 | 16.7 | 20 | 17.1 | 22.8 | 24.3 | 23.7 | 27.2 | 24.3 | 43.8 |
| 27 | 21.9 | 29.8 | 30.7 | 27 | 23.9 | 28.5 | 28.1 | 28.7 | 25.9 | 23.9 | 20.6 | 12.1 | 9.9 | 10.1 | 13.2 | 15.8 | 14.9 | 12.3 | 20.9 | 18.5 | 19.1 | 20.2 | 23.7 | 20.2 | 30.7 |
| 28 | 29.2 | 27 | 31.6 | 30.1 | 28.3 | 32.9 | 27.8 | 24.6 | 29.4 | 37.3 | **59.8** | 52.8 | **X** | **X** | **X** | **X** | 32.9 | 31.6 | 35.7 | 25 | 24.8 | 24.1 | 26.1 | 26.5 | **59.8** |
| 29 | 20.9 | 21.7 | 18.9 | 16.5 | 16.9 | 15.6 | 18.9 | 16.9 | 15.8 | 15.2 | 15.8 | 20.4 | 19.3 | 17.6 | 17.5 | 17.1 | 16.5 | 18.4 | 18.9 | 13.2 | 13 | 13.8 | 9.2 | 10.3 | 21.7 |
| 30 | 13.2 | 12.3 | 11.9 | 17.6 | 18 | 20 | 19.6 | 22.2 | 24.1 | 28.1 | 25 | 22.1 | 27 | 28.1 | 24.5 | 22.6 | 18.9 | 19.5 | 16.9 | 16.2 | 13.8 | 16.9 | 17.8 | 14 | 28.1 |
| PEAK | 53.2 | 53.7 | 49.3 | 46.2 | 48.0 | 53.4 | 44.9 | 45.1 | 41.5 | 48.8 | 59.8 | 59.8 | 51.0 | 45.8 | 56.1 | 47.9 | 36.8 | 47.1 | 44.1 | 44.1 | 44.1 | 44.5 | 51.2 | 50.2 | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 59.8 | KPH | @ HOUR(S) | 11, 10 |
| | | | ON DAY(S) | 24, 28 |






JOB #: 2833-13-11-31-C

LICA31
WSP / WDR Joint Frequency Distribution (Percent)

November 2013

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 1.15 | .86 | .14 | .14 | .14 | .72 | .14 | .14 | .00 | .28 | .57 | .14 | .72 | .72 | .57 | 1.15 | 7.67 |
| < | 12.0 | 1.01 | 1.88 | 3.03 | 3.76 | 1.88 | 1.01 | 1.30 | 2.17 | 3.61 | 4.34 | 5.06 | 2.89 | 5.20 | 2.17 | 3.61 | 2.31 | 45.29 |
| < | 20.0 | 3.32 | 1.73 | 3.47 | 2.02 | 2.60 | .00 | .00 | .72 | 2.46 | 5.06 | 6.07 | 2.46 | 4.92 | 2.31 | 2.46 | 4.05 | 43.70 |
| < | 29.0 | .00 | .28 | .57 | .14 | .14 | .00 | .00 | .00 | .14 | .14 | .00 | .72 | .14 | .43 | .43 | .00 | 3.18 |
| < | 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 | .14 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .14 |
| | Totals | 5.49 | 4.77 | 7.23 | 6.07 | 4.77 | 1.73 | 1.44 | 3.18 | 6.22 | 9.84 | 11.72 | 6.22 | 10.99 | 5.64 | 7.09 | 7.52 | |

Calm : .00 %

Total # Operational Hours : 691

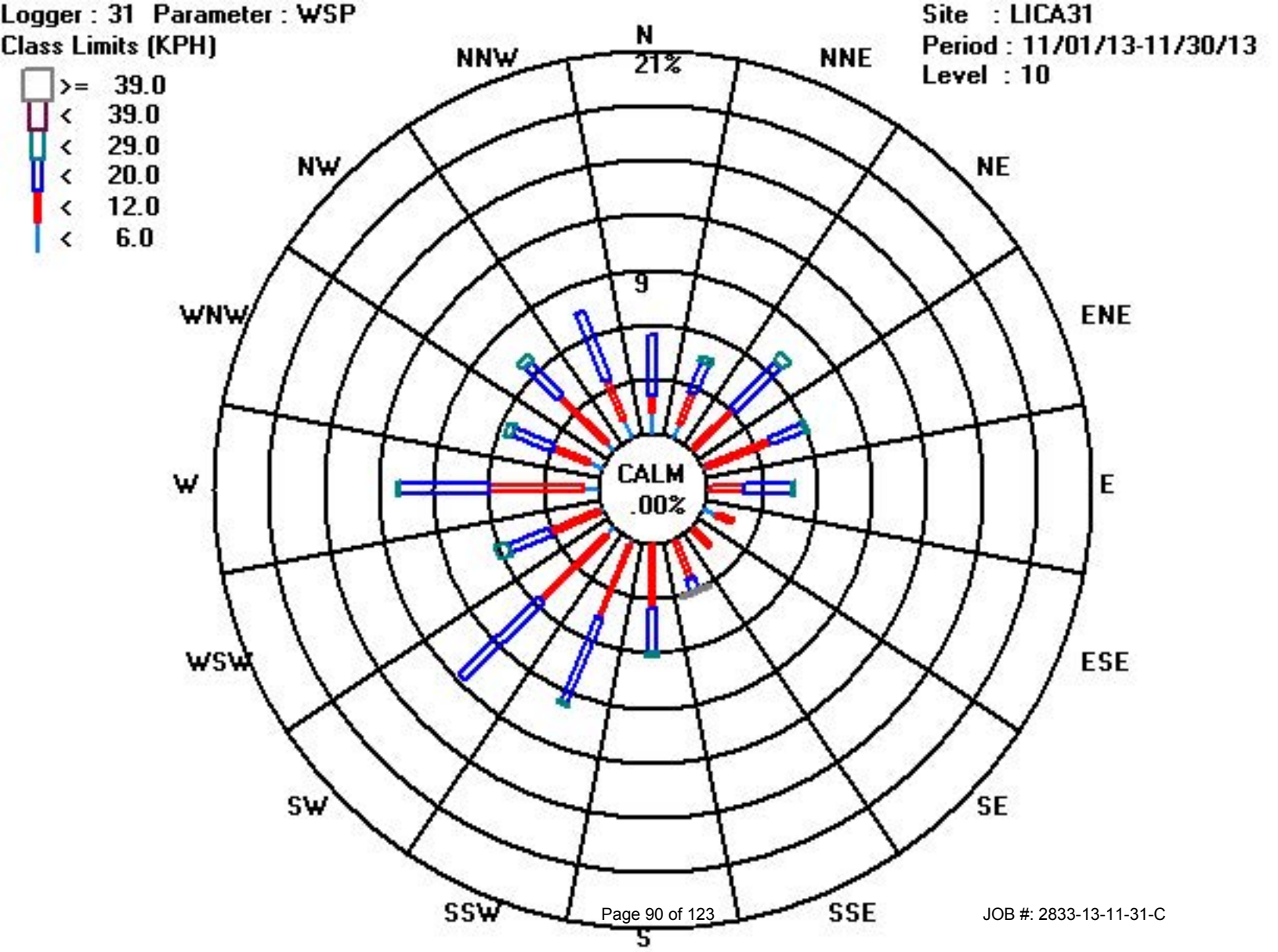
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 8 | 6 | 1 | 1 | 1 | 5 | 1 | 1 | | 2 | 4 | 1 | 5 | 5 | 4 | 8 | 53 |
| < | 12.0 | 7 | 13 | 21 | 26 | 13 | 7 | 9 | 15 | 25 | 30 | 35 | 20 | 36 | 15 | 25 | 16 | 313 |
| < | 20.0 | 23 | 12 | 24 | 14 | 18 | | | 5 | 17 | 35 | 42 | 17 | 34 | 16 | 17 | 28 | 302 |
| < | 29.0 | | 2 | 4 | 1 | 1 | | | | 1 | 1 | | 5 | 1 | 3 | 3 | | 22 |
| < | 39.0 | | | | | | | | | | | | | | | | | |
| >= | 39.0 | | | | | | | | 1 | | | | | | | | | 1 |
| | Totals | 38 | 33 | 50 | 42 | 33 | 12 | 10 | 22 | 43 | 68 | 81 | 43 | 76 | 39 | 49 | 52 | |

Calm : .00 %

Total # Operational Hours : 691






JOB #: 2833-13-11-31-C

# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATE - *ST.LINA*

NOVEMBER 2013

**WIND DIRECTION** hourly averages in degrees

MST

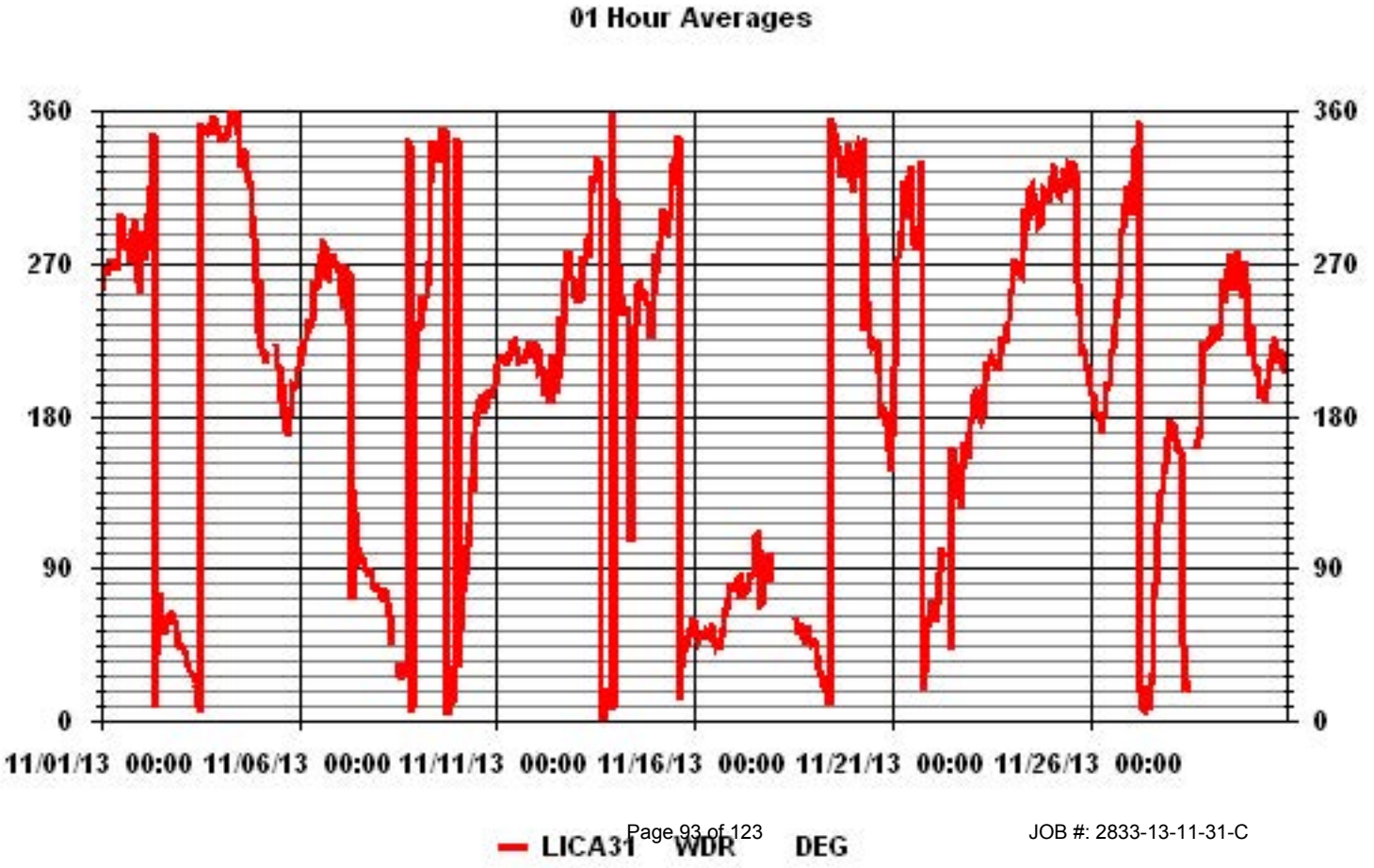
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24-HOUR | 24-HOUR AVG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 | AVG. | QUANDRANT | RDGS. |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 256 | 259 | 268 | 267 | 263 | 273 | 271 | 269 | 270 | 266 | 273 | 295 | 300 | 281 | 285 | 281 | 279 | 275 | 271 | 290 | 297 | 279 | 276 | 259 | 276 | W | 24 |
| 2 | 252 | 285 | 289 | 272 | 278 | 299 | 316 | 329 | 347 | 8 | 38 | 58 | 76 | 61 | 51 | 58 | 60 | 61 | 63 | 65 | 57 | 59 | 53 | 45 | 31 | NNE | 24 |
| 3 | 44 | 44 | 41 | 41 | 35 | 33 | 31 | 28 | 27 | 25 | 21 | 9 | 5 | 353 | 349 | 350 | 348 | 350 | 346 | 349 | 355 | 355 | 352 | 347 | 13 | NNE | 24 |
| 4 | 341 | 346 | 345 | 344 | 345 | 351 | 360 | 358 | 351 | 359 | 359 | 347 | 326 | 333 | 336 | 336 | 326 | 319 | 317 | 317 | 300 | 286 | 260 | 229 | 336 | NNW | 24 |
| 5 | 261 | 221 | 216 | 219 | 213 | **X** | **X** | **X** | **X** | **X** | 221 | 209 | 211 | 189 | 200 | 181 | 173 | 168 | 180 | 185 | 199 | 198 | 200 | 207 | 201 | SSW | 19 |
| 6 | 209 | 219 | 219 | 224 | 225 | 229 | 237 | 231 | 236 | 260 | 257 | 255 | 268 | 276 | 283 | 283 | 281 | 264 | 263 | 270 | 276 | 274 | 268 | 271 | 254 | WSW | 24 |
| 7 | 265 | 268 | 252 | 244 | 270 | 257 | 235 | 265 | 71 | 136 | 125 | 104 | 100 | 95 | 96 | 96 | 90 | 87 | 87 | 90 | 86 | 79 | 76 | 81 | 95 | E | 24 |
| 8 | 79 | 74 | 73 | 75 | 77 | 76 | 71 | 63 | 47 | **P** | **P** | **P** | **P** | 34 | 25 | 29 | 34 | 26 | 344 | 341 | 6 | 8 | 208 | 226 | 58 | ENE | 20 |
| 9 | 235 | 231 | 250 | 242 | 247 | 249 | 256 | 271 | 317 | 343 | 333 | 333 | 329 | 342 | 350 | 347 | 334 | 350 | 3 | 14 | 11 | 12 | 33 | 327 | 317 | NW | 24 |
| 10 | 344 | 32 | 54 | 76 | 104 | 86 | 103 | 117 | 140 | 139 | 169 | 174 | 182 | 189 | 191 | 192 | 182 | 185 | 191 | 193 | 196 | 190 | 197 | 199 | 171 | S | 24 |
| 11 | 210 | 212 | 213 | 216 | 212 | 212 | 209 | 212 | 218 | 223 | 224 | 216 | 220 | 213 | 214 | 213 | 213 | 215 | 218 | 218 | 223 | 219 | 214 | 223 | 216 | SW | 24 |
| 12 | 215 | 216 | 206 | 207 | 203 | 191 | 207 | 203 | 189 | 187 | 216 | 195 | 195 | 202 | 238 | 215 | 235 | 259 | 262 | 275 | 275 | 261 | 263 | 251 | 227 | SW | 24 |
| 13 | 246 | 254 | 257 | 247 | 274 | 270 | 285 | 273 | 287 | 312 | 322 | 318 | 334 | 324 | 330 | 7 | 2 | 1 | 14 | 19 | 11 | 6 | 359 | 7 | 305 | WNW | 24 |
| 14 | 308 | 296 | 270 | 252 | 239 | 246 | 240 | 245 | 234 | 107 | 107 | 180 | 233 | 257 | 258 | 255 | 253 | 255 | 249 | 246 | 242 | 226 | 230 | 252 | 245 | WSW | 24 |
| 15 | 276 | 264 | 278 | 283 | 290 | 303 | 290 | 289 | 297 | 300 | 316 | 329 | 332 | 336 | 346 | 12 | 31 | 40 | 43 | 44 | 50 | 55 | 52 | 60 | 333 | NNW | 24 |
| 16 | 54 | 51 | 47 | 49 | 49 | 53 | 48 | 52 | 50 | 52 | 58 | 49 | 45 | 47 | 46 | 42 | 49 | 55 | 62 | 66 | 73 | 82 | 79 | 76 | 56 | NE | 24 |
| 17 | 81 | 83 | 83 | 84 | 73 | 73 | 81 | 78 | 80 | 85 | 86 | 88 | 109 | 110 | 101 | 103 | 70 | 71 | 92 | 97 | 91 | 82 | 98 | **X** | 86 | E | 23 |
| 18 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 59 | 51 | 57 | 52 | 58 | 50 | 45 | 57 | 49 | 49 | 46 | 130 | SE | 11 |
| 19 | 47 | 45 | 40 | 31 | 27 | 27 | 22 | 18 | 14 | 9 | 356 | 354 | 348 | 347 | 340 | 334 | 329 | 321 | 324 | 327 | 334 | 341 | 323 | 319 | 356 | N | 24 |
| 20 | 312 | 321 | 337 | 341 | 339 | 340 | 230 | 288 | 249 | 236 | 219 | 227 | 221 | 222 | 226 | 206 | 179 | 182 | 186 | 183 | 175 | 161 | 152 | 148 | 225 | SW | 24 |
| 21 | 167 | 209 | 271 | 274 | 277 | 289 | 306 | 319 | 305 | 297 | 322 | 328 | 293 | 282 | 277 | 284 | 292 | 331 | 18 | 28 | 40 | 55 | 61 | 69 | 320 | NW | 24 |
| 22 | 69 | 62 | 59 | 69 | 88 | 102 | 99 | **X** | **X** | **X** | **X** | 43 | 162 | 156 | 152 | 135 | 136 | 125 | 149 | 164 | 159 | 155 | 171 | 176 | 132 | SE | 20 |
| 23 | 180 | 193 | 195 | 194 | 181 | 178 | 180 | 198 | 201 | 211 | 212 | 215 | 213 | 214 | 213 | 206 | 213 | 217 | 226 | 224 | 234 | 222 | 236 | 252 | 209 | SSW | 24 |
| 24 | 255 | 263 | 272 | 266 | 266 | 264 | 263 | 278 | 303 | 289 | 295 | 314 | 316 | 312 | 302 | 300 | 292 | 293 | 306 | 314 | 313 | 307 | 307 | 312 | 294 | WNW | 24 |
| 25 | 322 | 329 | 321 | 316 | 311 | 310 | 317 | 316 | 326 | 319 | 329 | 328 | 314 | 330 | 318 | 325 | 260 | 240 | 223 | 216 | 219 | 207 | 210 | 199 | 297 | WNW | 24 |
| 26 | 192 | 194 | 185 | 182 | 181 | 178 | 170 | 179 | 182 | 194 | 199 | 200 | 217 | 220 | 233 | 238 | 249 | 261 | 288 | 291 | 306 | 314 | 314 | 308 | 217 | SW | 24 |
| 27 | 298 | 318 | 330 | 337 | 339 | 354 | 18 | 8 | 7 | 11 | 20 | 6 | 21 | 28 | 73 | 81 | 116 | 118 | 134 | 136 | 146 | 151 | 167 | 173 | 15 | NNE | 24 |
| 28 | 177 | 174 | 176 | 167 | 159 | 162 | 159 | 155 | 46 | 21 | 22 | 19 | **X** | **X** | **X** | **X** | 163 | 166 | 174 | 199 | 222 | 222 | 221 | 223 | 169 | SSE | 20 |
| 29 | 227 | 222 | 232 | 226 | 226 | 232 | 231 | 246 | 261 | 246 | 267 | 261 | 276 | 274 | 254 | 266 | 273 | 277 | 272 | 259 | 250 | 272 | 260 | 225 | 251 | WSW | 24 |
| 30 | 215 | 234 | 218 | 209 | 209 | 205 | 198 | 190 | 192 | 191 | 196 | 202 | 207 | 214 | 222 | 227 | 213 | 213 | 216 | 219 | 209 | 206 | 212 | 214 | 209 | SSW | 24 |
| HOURLY AVG | 344 | 346 | 345 | 344 | 345 | 354 | 360 | 358 | 351 | 359 | 359 | 354 | 348 | 353 | 350 | 350 | 348 | 350 | 346 | 349 | 355 | 355 | 359 | 347 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

| | |
|---|---|
| LAST CALIBRATION: | June 12, 2012 |
| DECLINATION : | 19 DEGREES FROM MAGNETIC NORTH |

| | | | | | |
|---|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 689 | HRS |
| STANDARD DEVIATION: | 102.12 | | AMD OPERATION UPTIME: | 95.7 | % |
| | | | MONTHLY AVERAGE: | 268 | DEG |






JOB #: 2833-13-11-31-C

# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

NOVEMBER 2013

**STANDARD DEVIATION WIND DIRECTION (STDWDIR)** hourly averages in degrees

MST

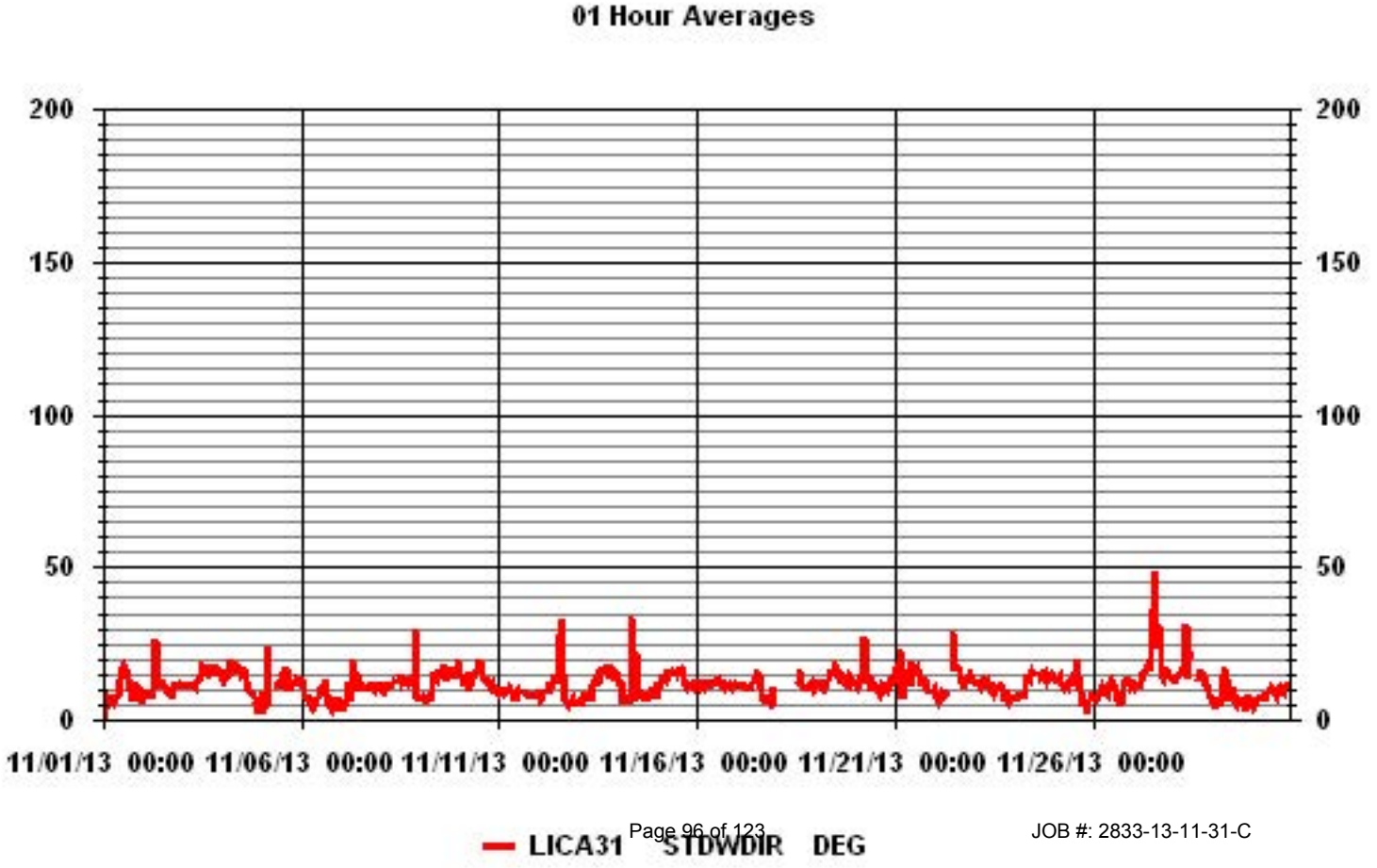
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR END | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 0:00 |
| DAY | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 4 | 3 | 5 | 7 | 6 | 7 | 7 | 6 | 7 | 8 | 13 | 17 | 18 | 16 | 17 | 14 | 10 | 7 | 6 | 11 | 11 | 8 | 10 | 10 |
| 2 | 5 | 7 | 8 | 9 | 9 | 7 | 10 | 12 | 26 | 12 | 11 | 11 | 13 | 11 | 11 | 10 | 9 | 8 | 8 | 11 | 11 | 11 | 12 | 11 |
| 3 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 12 | 11 | 12 | 13 | 15 | 19 | 16 | 16 | 15 | 14 | 18 | 15 | 15 | 15 | 18 | 15 | 15 |
| 4 | 14 | 16 | 14 | 15 | 14 | 20 | 16 | 16 | 15 | 19 | 17 | 17 | 15 | 16 | 16 | 13 | 10 | 9 | 9 | 9 | 8 | 6 | 2 | 6 |
| 5 | 2 | 9 | 5 | 4 | 23 | **X** | **X** | **X** | **X** | **X** | 11 | 11 | 13 | 15 | 15 | 17 | 10 | 10 | 11 | 13 | 11 | 13 | 12 | 11 |
| 6 | 14 | 11 | 9 | 8 | 7 | 7 | 5 | 4 | 5 | 5 | 7 | 8 | 10 | 11 | 12 | 12 | 9 | 5 | 4 | 6 | 6 | 4 | 4 | 7 |
| 7 | 4 | 4 | 5 | 6 | 11 | 11 | 6 | 20 | 15 | 15 | 15 | 10 | 11 | 11 | 10 | 10 | 11 | 10 | 10 | 11 | 11 | 10 | 11 | 11 |
| 8 | 11 | 10 | 11 | 10 | 11 | 11 | 11 | 12 | 13 | **P** | **P** | **P** | **P** | 12 | 13 | 13 | 13 | 12 | 13 | 12 | 13 | 30 | 8 | 7 |
| 9 | 7 | 8 | 7 | 5 | 7 | 7 | 7 | 9 | 15 | 15 | 14 | 16 | 14 | 14 | 15 | 18 | 13 | 15 | 14 | 17 | 14 | 14 | 16 | 20 |
| 10 | 15 | 14 | 11 | 13 | 14 | 9 | 16 | 11 | 14 | 15 | 16 | 15 | 20 | 17 | 14 | 14 | 13 | 13 | 12 | 11 | 12 | 10 | 10 | 9 |
| 11 | 10 | 10 | 10 | 9 | 10 | 10 | 11 | 10 | 9 | 7 | 7 | 9 | 10 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 9 |
| 12 | 9 | 7 | 8 | 9 | 9 | 9 | 12 | 11 | 12 | 15 | 12 | 15 | 28 | 22 | 33 | 16 | 7 | 6 | 5 | 6 | 7 | 5 | 5 | 5 |
| 13 | 6 | 5 | 5 | 7 | 9 | 6 | 9 | 6 | 11 | 12 | 12 | 14 | 13 | 14 | 16 | 16 | 15 | 18 | 16 | 17 | 18 | 14 | 13 | 16 |
| 14 | 14 | 12 | 13 | 5 | 7 | 5 | 8 | 5 | 34 | 7 | 6 | 22 | 9 | 9 | 9 | 8 | 7 | 7 | 8 | 9 | 7 | 10 | 10 | 7 |
| 15 | 12 | 10 | 12 | 14 | 14 | 16 | 14 | 15 | 16 | 15 | 15 | 16 | 15 | 16 | 17 | 16 | 12 | 11 | 12 | 11 | 11 | 12 | 11 | 12 |
| 16 | 12 | 11 | 12 | 12 | 11 | 12 | 12 | 11 | 11 | 12 | 12 | 13 | 13 | 12 | 13 | 12 | 11 | 12 | 11 | 11 | 12 | 11 | 12 | 11 |
| 17 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 12 | 13 | 13 | 16 | 15 | 11 | 8 | 7 | 5 | 8 | 7 | 6 | 4 | 10 | **X** |
| 18 | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | 13 | 16 | 12 | 11 | 10 | 10 | 11 | 11 | 12 | 10 | 11 |
| 19 | 11 | 12 | 12 | 11 | 12 | 11 | 12 | 13 | 16 | 15 | 15 | 19 | 16 | 15 | 16 | 13 | 13 | 12 | 13 | 12 | 14 | 13 | 12 | 12 |
| 20 | 12 | 11 | 13 | 12 | 16 | 27 | 12 | 13 | 15 | 10 | 10 | 12 | 11 | 10 | 9 | 11 | 10 | 11 | 11 | 10 | 11 | 14 | 12 | 15 |
| 21 | 17 | 16 | 19 | 23 | 7 | 14 | 13 | 11 | 16 | 11 | 19 | 17 | 16 | 17 | 15 | 12 | 12 | 11 | 14 | 10 | 9 | 9 | 9 | 10 |
| 22 | 8 | 8 | 6 | 7 | 9 | 8 | 9 | **X** | **X** | **X** | **X** | 28 | 16 | 17 | 17 | 15 | 13 | 10 | 14 | 13 | 14 | 12 | 14 | 13 |
| 23 | 12 | 12 | 12 | 11 | 12 | 13 | 12 | 13 | 11 | 10 | 11 | 11 | 9 | 10 | 10 | 11 | 11 | 10 | 7 | 7 | 6 | 8 | 7 | 7 |
| 24 | 7 | 7 | 8 | 8 | 8 | 8 | 7 | 12 | 15 | 14 | 16 | 15 | 15 | 15 | 15 | 14 | 15 | 14 | 15 | 13 | 14 | 14 | 15 | 14 |
| 25 | 14 | 13 | 13 | 14 | 12 | 12 | 11 | 12 | 11 | 12 | 12 | 14 | 15 | 15 | 20 | 15 | 10 | 5 | 5 | 3 | 3 | 6 | 8 | 8 |
| 26 | 7 | 8 | 7 | 8 | 9 | 11 | 10 | 10 | 9 | 11 | 12 | 13 | 12 | 10 | 7 | 5 | 5 | 6 | 12 | 12 | 13 | 13 | 11 | 12 |
| 27 | 11 | 12 | 11 | 11 | 11 | 13 | 15 | 16 | 17 | 17 | 20 | 23 | 36 | 49 | 27 | **31** | 24 | 15 | 14 | 16 | 16 | 15 | 15 | 14 |
| 28 | 13 | 13 | 14 | 14 | 15 | 16 | 16 | 14 | 31 | 13 | 21 | 21 | **X** | **X** | **X** | **X** | 14 | 16 | 13 | 15 | 12 | 10 | 9 | 8 |
| 29 | 6 | 7 | 4 | 5 | 5 | 7 | 15 | 17 | 14 | 6 | 8 | 6 | 11 | 9 | 6 | 5 | 6 | 6 | 6 | 3 | 4 | 7 | 7 | 7 |
| 30 | 5 | 6 | 5 | 6 | 7 | 7 | 8 | 7 | 7 | 9 | 10 | 11 | 10 | 9 | 9 | 8 | 10 | 11 | 10 | 9 | 10 | 11 | 11 | 10 |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| C | - CALIBRATION | Q | - QUALITY ASSURANCE |
| Y | - MAINTENANCE | R | - RECOVERY |
| S | - DAILY ZERO/SPAN CHECK | X | - MACHINE MALFUNCTION |
| P | - POWER FAILURE | O | - OPERATOR ERROR |
| G | - OUT FOR REPAIR | K | - COLLECTION ERROR |

LAST CALIBRATION: June 12, 2012

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 690 HRS






JOB #: 2833-13-11-31-C

# Calibration Reports

# Sulphur Dioxide

## SO2 Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 11, 2013 | Previous Calibration | October 8, 2013 |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 11:30 | End Time (MST) | 15:08 |
| Reason: | Monthly calibration | | |
| Barometric Pressure | 27.83 in HG | Station Temperature | 18 Deg C |
| Cal Gas | 49.6 ppm | Gas Cyl. # | BAL3031 |
| Cal Gas Expiry date | December 29, 2016 | | |
| DAS Output Voltage | 0-1 Volts | Chart Rec. Output | N/A Volts |

### Equipment Information

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

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0 - 1000 ppb | | | | | | | |
| Sample Flow / Box Temp | 561 ccm | 29.9 Deg C | | | 560 ccm | 30.8 Deg C | | |
| HVPS / Lamp Setting | 580 | 1850 | | | 580 | 1846 | | |
| PMT / RxCell Temp | 7.8 Deg C | 50 Deg C | | | 7.8 Deg C | 50 Deg C | | |
| Converter / IZS Temp | N/A Deg C | 40 Deg C | | | N/A Deg C | 40 Deg C | | |
| Offset / Slope | 164 | 0.811 | | | 164 | 0.787 | | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4995 | 0 | 0 | 0 | N/A |
| | No zero adj. | | | |
| 4920 | 80.5 | 799 | 822 | 0.9715 |
| 4920 | 80.5 | 799 | 799 | 1.0000 |
| 4960 | 40.4 | 401 | 398 | 1.0064 |
| 4980 | 20.2 | 201 | 200 | 1.0039 |
| 5000 | 0 | 0 | 1 | N/A |
| | | | | |
| | | | Sum of Least Squares | 1.0011 |
| | | | New Correction Factor | 1.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | -0.9 | -2.0 |
| Auto Span | 246.0 | 233.1 |
| Sample Lines Connected | | Yes |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9988 |
| Current Correction Factor Before Span Adjust: | 0.9715 |
| Percent Change: | 2.8% |

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

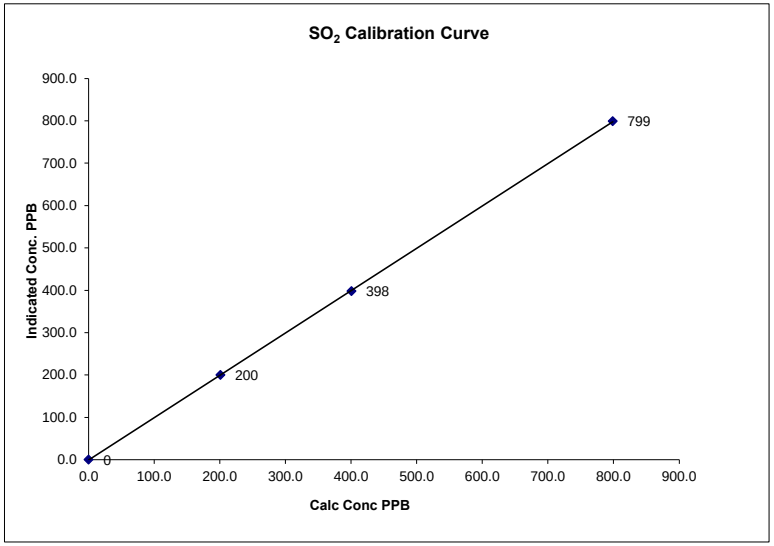
Calibration Performed by: Waseem Ahmed

## $SO_2$ Calibration Curve

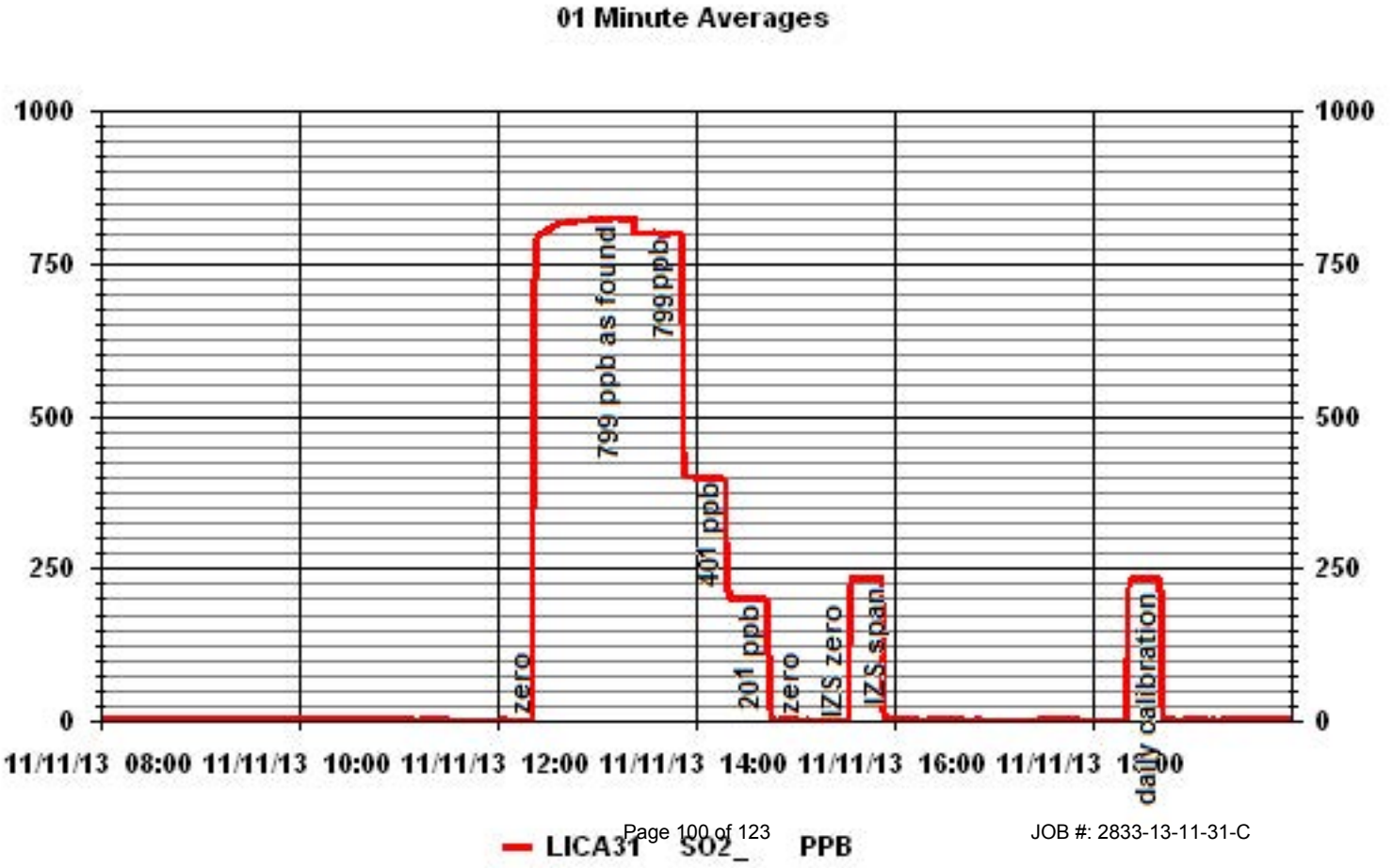
| | | | |
|---|---|---|---|
| Calibration Date | November 11, 2013 | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 11:30 | End Time (MST) | 15:08 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 201 | 200 | 1.0039 |
| 401 | 398 | 1.0064 |
| 799 | 799 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999986 |
| Slope | (0.85 to 1.15) | 1.000380 |
| Intercept | (± 3% F.S.) | -0.879343 |




**Notes:**






JOB #: 2833-13-11-31-C

# Hydrogen Sulphide

## H2S Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 11, 2013 | | Previous Calibration | October 22, 2013 | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST. LINA | | | | |
| Start Time (MST) | 11:30 | | End Time (MST) | 13:48 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure | 27.83 | in HG | Station Temperature | 18 | Deg C |
| Cal Gas | 10.1 ppm | | Gas Cyl. # | BLM00504 | Cal Gas Expiry date: December 25, 2015 |
| DAS Output Voltage | 0-1 | Volts | Chart Rec. Output | N/A | Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 510 | Method: | Fluorescent |
| Converter Make / Model: | N/A | S/N : | N/A | | |
| Calibrator Make / Model: | API 700 | S/N : | 690 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | API 700 | S/N : | 690 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0 - 100 | ppb | | | | |
| Sample Flow / Box Temp | 557 | ccm | 32.7 | Deg C | 555 | ccm | 33.7 | Deg C |
| HVPS / Lamp Setting | 530 | | 1824 | | 530 | | 1822 | |
| PMT / RxCell Temp | 8.4 | Deg C | 50 | Deg C | 8.4 | Deg C | 50 | Deg C |
| Converter / IZS Temp | 315.2 | Deg C | 45 | Deg C | 315.4 | Deg C | 45.0 | Deg C |
| Offset / Slope | 115.9 | | 1.087 | | 115.9 | | 1.067 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 5000 | 0 | 0 | 0 | NA |
| | No zero adj. | | | |
| 4958 | 40.0 | 81 | 82 | 0.9858 |
| 4958 | 40.0 | 81 | 81 | 1.0000 |
| 4977 | 20.0 | 40 | 40 | 1.0000 |
| 4988 | 12.0 | 24 | 24 | 1.0000 |
| 5000 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 1.0011 |
| | | | New Correction Factor | 1.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | -1.0 | -1.5 |
| Auto Span | 36.0 | 34.38 |
| Sample Lines Connected | | YES |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9858 |
| Current Correction Factor Before Span Adjust: | 0.9858 |
| Percent Change: | 0.0% |

Notes: **NA : Not Applicable**

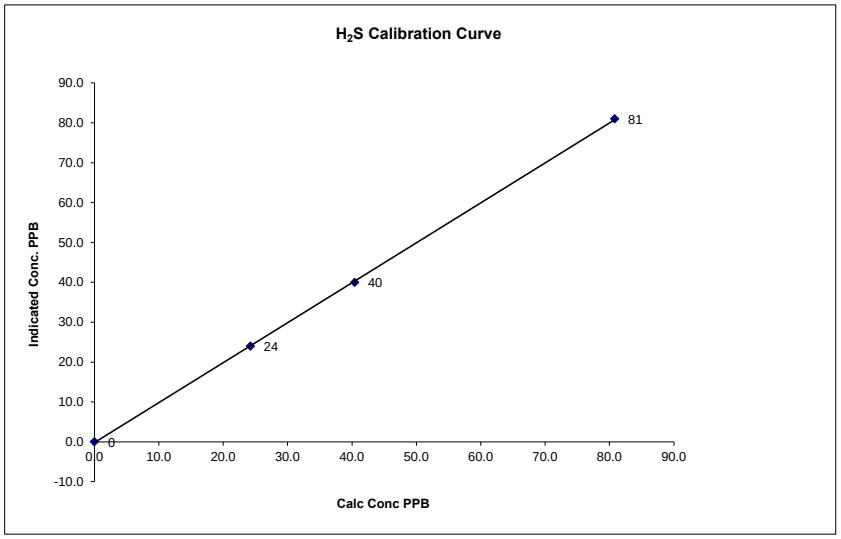
Calibration Performed by: Waseem Ahmed

## $H_2S$ Calibration Curve

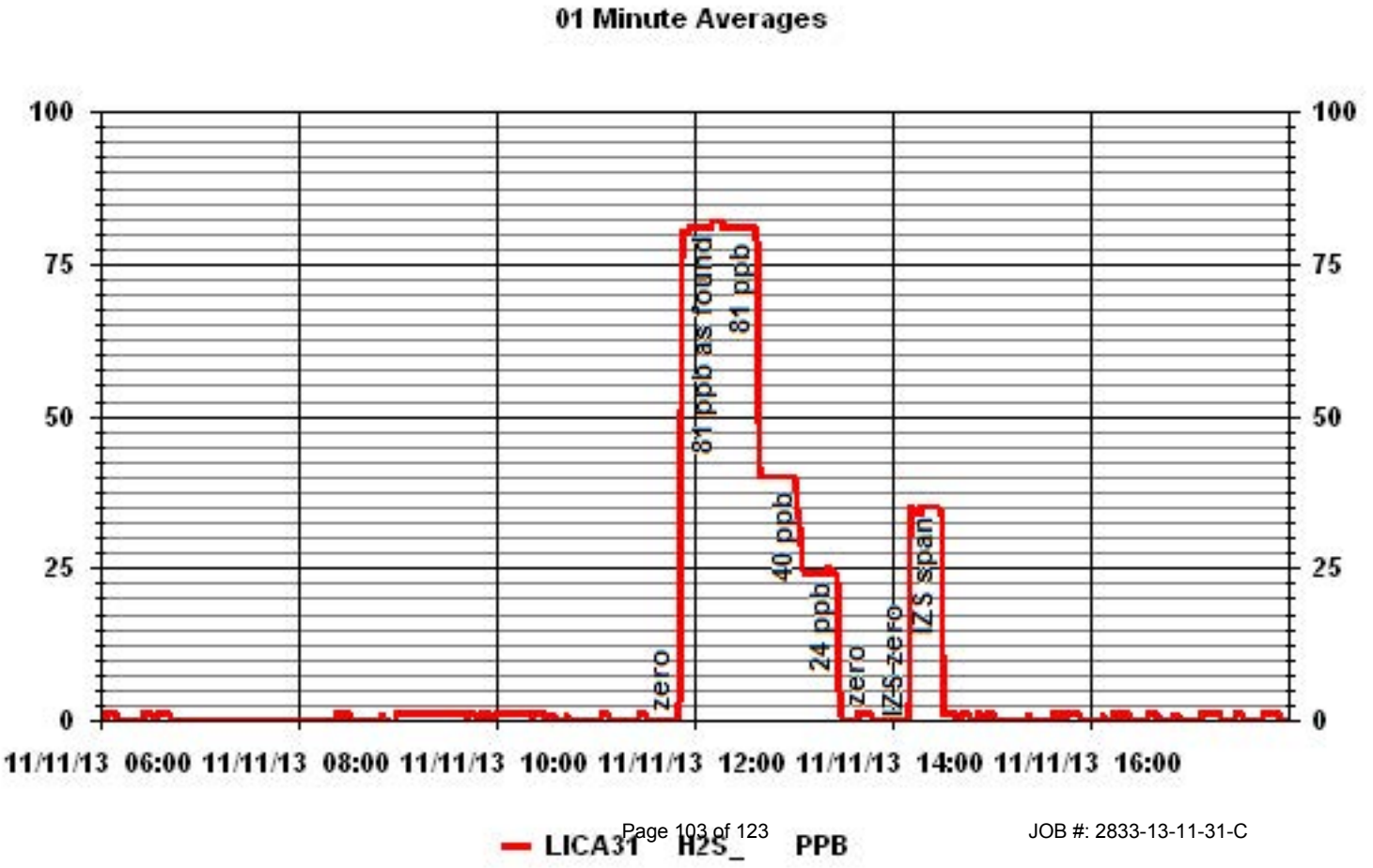
| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 11, 2013 | | | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST. LINA | | | | |
| Start Time (MST) | 11:30 | | End Time (MST) | 13:48 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 24 | 24 | 1.0100 |
| 40 | 40 | 1.0106 |
| 81 | 81 | 0.9979 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999948 |
| Slope | (0.85 to 1.15) | 1.002497 |
| Intercept | (± 3% F.S.) | -0.214977 |




**Notes:**






JOB #: 2833-13-11-31-C

## H2S Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 15, 2013 | | Previous Calibration | November 11, 2013 | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST. LINA | | | | |
| Start Time (MST) | 9:51 | | End Time (MST) | 12:39 | |
| Reason: | 2nd Monthly calibration | | | | |
| Barometric Pressure | 26.95 | in HG | Station Temperature | 22 | Deg C |
| Cal Gas | 10.1 ppm | | Gas Cyl. # | BLM00504 | Cal Gas Expiry date: December 25, 2015 |
| DAS Output Voltage | 0-1 | Volts | Chart Rec. Output | N/A | Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 510 | Method: | Fluorescent |
| Converter Make / Model: | N/A | S/N : | N/A | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0 - 100 | ppb | | | | |
| Sample Flow / Box Temp | 537 | ccm | 34.8 | Deg C | 537 | ccm | 34.5 | Deg C |
| HVPS / Lamp Setting | 530 | | 1811 | | 530 | | 1811 | |
| PMT / RxCell Temp | 8.4 | Deg C | 50 | Deg C | 8.4 | Deg C | 50 | Deg C |
| Converter / IZS Temp | 315.5 | Deg C | 45 | Deg C | 315.4 | Deg C | 45.0 | Deg C |
| Offset / Slope | 115.9 | | 1.067 | | 122.2 | | 1.085 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 5000 | 0 | 0 | 3 | NA |
| 5000 | 0 | 0 | 0 | NA |
| 4960 | 40.0 | 81 | 83 | 0.9735 |
| 4960 | 40.0 | 81 | 82 | 0.9854 |
| 4980 | 20.0 | 40 | 40 | 1.0000 |
| 4988 | 12.0 | 24 | 24 | 1.0000 |
| 5000 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 0.9915 |
| | | | New Correction Factor | 0.9854 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | -1.5 | -1.36 |
| Auto Span | 34.38 | 37.61 |
| Sample Lines Connected | | YES |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 0.9735 |
| Percent Change: | 2.7% |

Notes: **NA : Not Applicable**

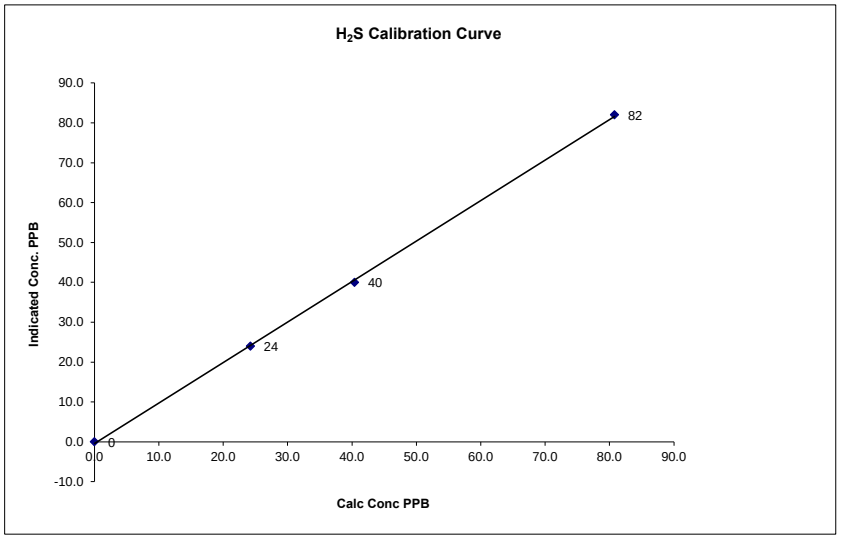
Calibration Performed by: Waseem Ahmed

## $H_2S$ Calibration Curve

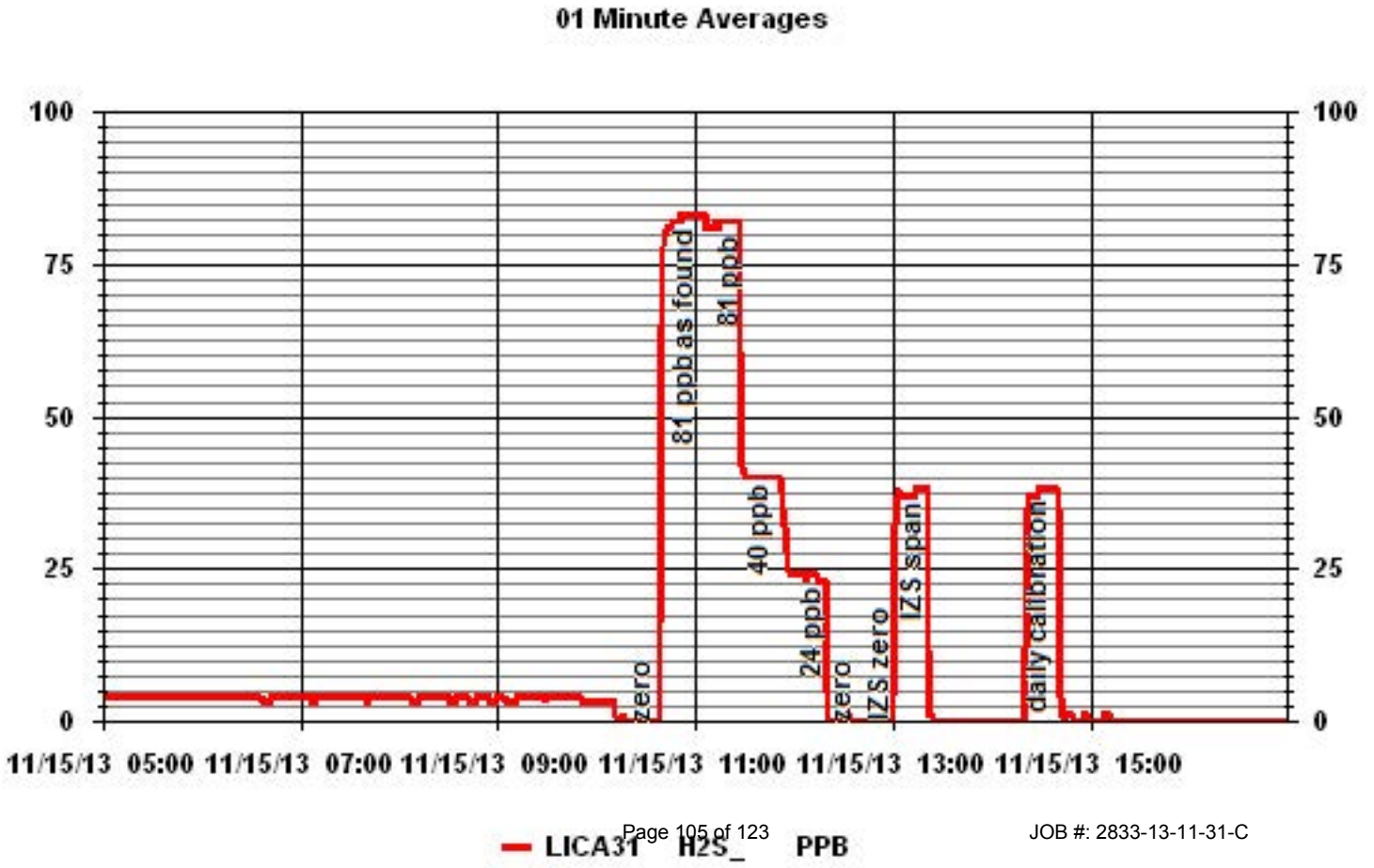
| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 15, 2013 | | | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST. LINA | | | | |
| Start Time (MST) | 9:51 | | End Time | (MST) | 12:39 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 24 | 24 | 1.0100 |
| 40 | 40 | 1.0100 |
| 81 | 82 | 0.9854 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999799 |
| Slope | (0.85 to 1.15) | 1.015786 |
| Intercept | (± 3% F.S.) | -0.433962 |




**Notes:**






JOB #: 2833-13-11-31-C

## H2S Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 21, 2013 | Previous Calibration | November 15, 2013 |
| Company | LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 8:53 | End Time (MST) | 9:49 |
| Reason: | As Found | | |
| Barometric Pressure | 27.55 mBar | Station Temperature | 22 Deg C |
| Cal Gas | 10 ppm | Gas Cyl. # | LL47542 |
| Cal Gas Expiry date | April 2, 2016 | | |
| DAS Output Voltage | 10 Volts | Chart Rec. Output | N/A Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 510 | Method: | Fluorescent |
| Converter Make / Model: | Internal | S/N : | N/A | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 5212 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 5212 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0-100 ppb | | | | | | | |
| Sample Flow / Box Temp | 554 ccm | | 35.4 Deg C | | 555 ccm | | 34.5 Deg C | |
| HVPS / Lamp Setting | 530 | | 788 | | 530 | | 611 | |
| PMT / RxCell Temp | 8.4 Deg C | | 50 Deg C | | 8.5 Deg C | | 50 Deg C | |
| Converter / IZS Temp | 314.5 Deg C | | 45 Deg C | | 314.5 Deg C | | 45.0 Deg C | |
| Offset / Slope | 122.2 | | 1.085 | | 122.2 | | 1.085 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 5000 | 0 | 0 | -4 | NA |
| | No Zero Adj | | | |
| 6939 | 55.9 | 80 | 64 | 1.2487 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | Sum of Least Squares | | |
| | | New Correction Factor | | 1.2487 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | N/A | N/A |
| Auto Span | N/A | N/A |
| Sample Lines Connected | | NO |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9854 |
| Current Correction Factor Before Span Adjust: | 1.2487 |
| Percent Change: | -21.1% |

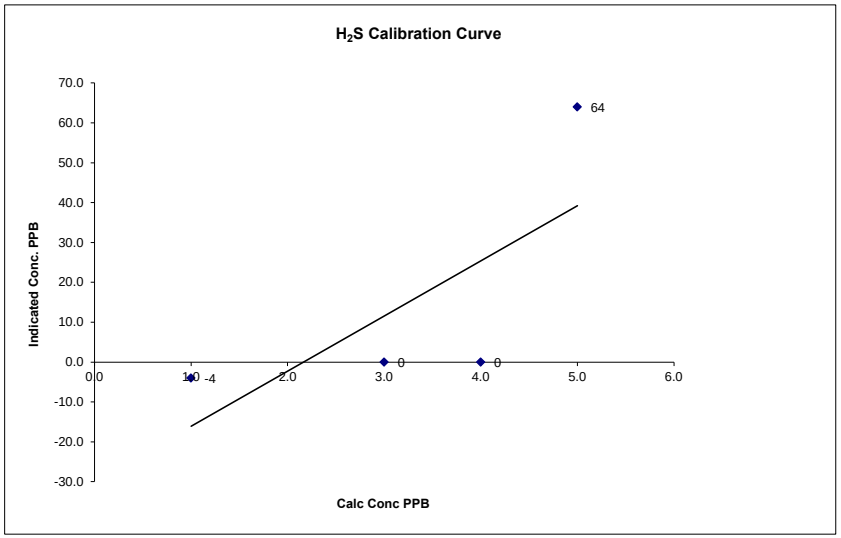
Notes: **NA : Not Applicable**

Calibration Performed by: Chris Wesson

## $H_2S$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 21, 2013 | | |
| Company | LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 8:53 | End Time (MST) | 9:49 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) |
|---|---|---|---|
| 0 | -4 | NA | Slope (0.85 to 1.15) |
| 80 | 64 | 1.2487 | Intercept (± 3% F.S.) |




**Notes:**

## H2S Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 21, 2013 | | Previous Calibration | November 21, 2013 | |
| Company | LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST. LINA | | | | |
| Start Time (MST) | 15:01 | | End Time (MST) | 18:03 | |
| Reason: | Post Repair | | | | |
| Barometric Pressure | 27.55 | mBar | Station Temperature | 22 | Deg C |
| Cal Gas | 10 | ppm | Gas Cyl. # | LL47542 | Cal Gas Expiry date: April 2, 2016 |
| DAS Output Voltage | 10 | Volts | Chart Rec. Output | N/A | Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 510 | Method: | Fluorescent |
| Converter Make / Model: | Internal | S/N : | N/A | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 5212 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 5212 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0-100 ppb | | | | | | | |
| Sample Flow / Box Temp | 557 | ccm | 34.6 | Deg C | 558 | ccm | 34.9 | Deg C |
| HVPS / Lamp Setting | 530 | | 1726 | | 530 | | 1692 | |
| PMT / RxCell Temp | 8.4 | Deg C | 50 | Deg C | 8.5 | Deg C | 50 | Deg C |
| Converter / IZS Temp | 315.2 | Deg C | 45 | Deg C | 314.5 | Deg C | 45.0 | Deg C |
| Offset / Slope | 122.2 | | 1.085 | | 109.4 | | 1.23 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 5000 | 0 | 0 | 0 | NA |
| | Zero Adj | | | |
| 6939 | 55.9 | 80 | 80 | 1.0000 |
| | Span Adj | | | |
| 6968 | 28.0 | 40 | 40 | 1.0000 |
| 6983 | 14.7 | 21 | 20 | 1.0496 |
| 5000 | 0 | 0 | -2 | NA |
| | | | | |
| | | | Sum of Least Squares | 1.0018 |
| | | | New Correction Factor | 1.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | N/A | N/A |
| Auto Span | 37.6 | * |
| Sample Lines Connected | | YES |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | N/A |
| Current Correction Factor Before Span Adjust: | 1.0000 |
| Percent Change: | #VALUE! |

Notes: **NA : Not Applicable**

* = Expected value to be set remotely

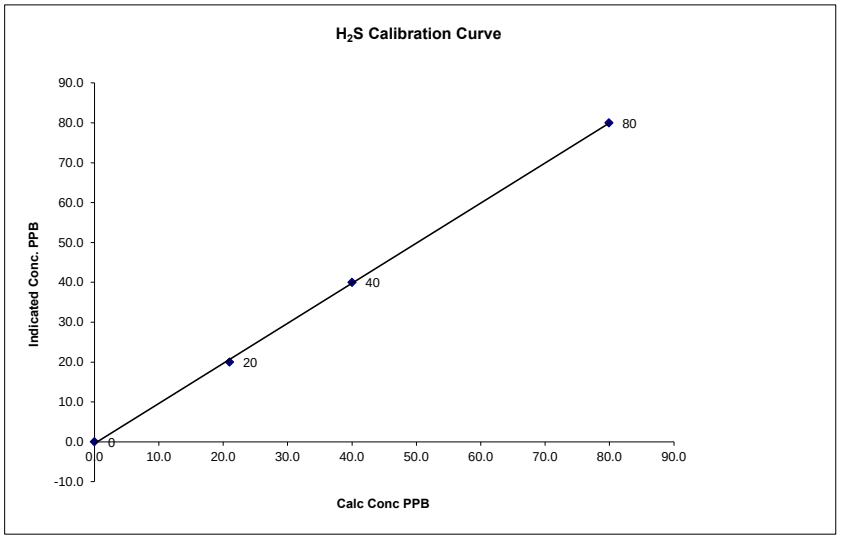
Calibration Performed by: Chris Wesson

## $H_2S$ Calibration Curve

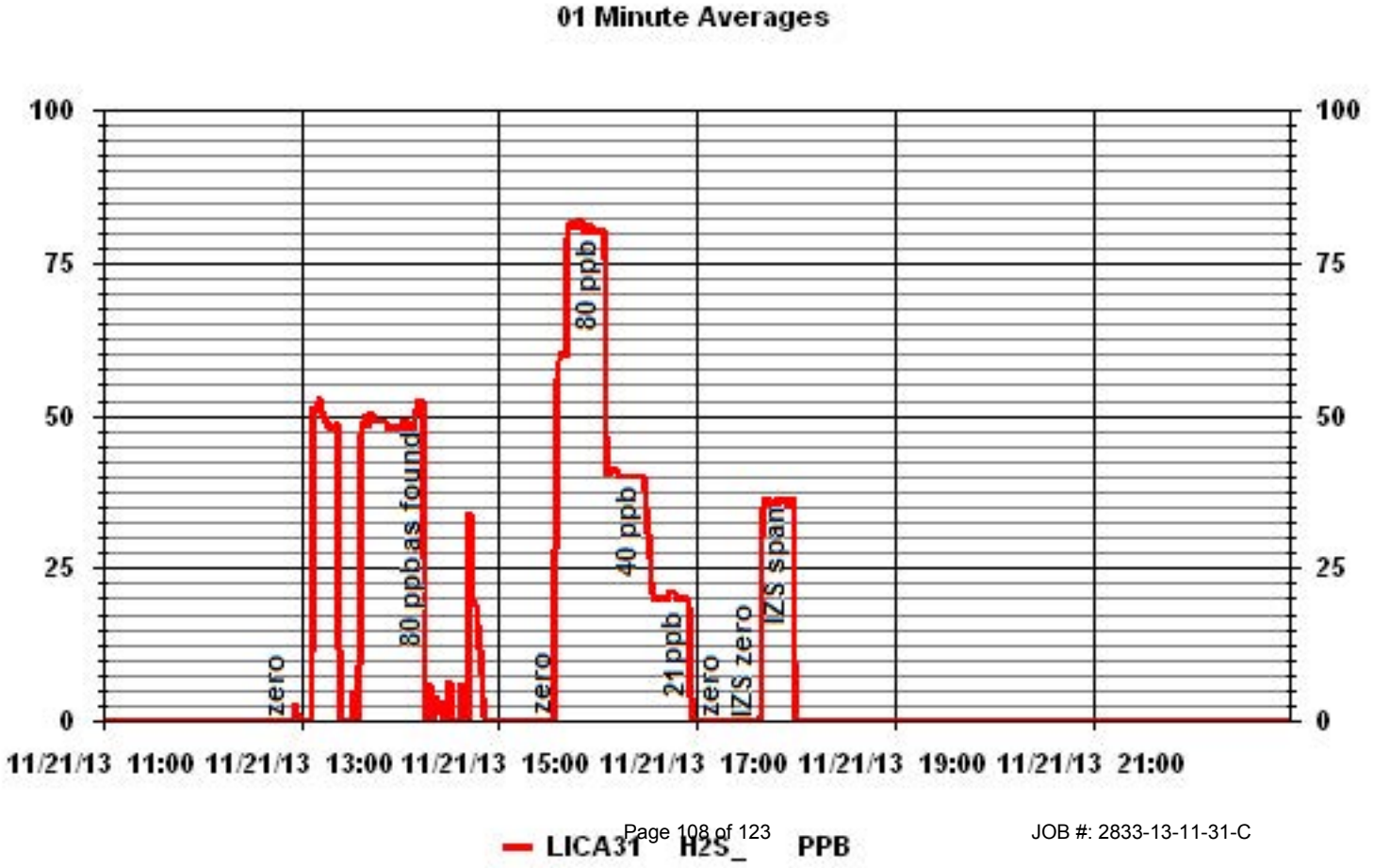
| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 21, 2013 | | | | |
| Company | LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST. LINA | | | | |
| Start Time (MST) | 15:01 | | End Time (MST) | 18:03 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 21 | 20 | 1.0496 |
| 40 | 40 | 1.0006 |
| 80 | 80 | 0.9989 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999804 |
| Slope | (0.85 to 1.15) | 1.005141 |
| Intercept | (± 3% F.S.) | -0.413861 |




**Notes:**






JOB #: 2833-13-11-31-C

# Total Hydrocarbons

## THC Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | November 11, 2013 | | Previous Calibration | October 8, 2013 | |
| Company: | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location: | ST. LINA | | | | |
| Start Time (MST) | 13:52 | | End Time (MST) | 16:25 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure: | 27.82 | in HG | Station Temperature: | 20.3 | Deg C |
| Calibrator: | API 700 | | S/N: | 690 | |
| Cal Gas Concentration: | CH4 593 PPM | | C3H8 | 205 PPM | |
| | TOTAL CH4 1156.8 PPM | | Gas Cyl. # | LL84567 | Cal Gas Expiry Date: June 7, 2014 |
| DAS make & Model: | ESC 8832 | | S/N : | AO717 | |
| Chart Recorder: | N/A | | S/N: | N/A | |
| Output Voltage Range: | 0-10 | VDC | Chart Speed: | N/A | mm/hr |

**Analyzer Information**

| Make / Model | Thermo 51C-LT | S/N : | 043669739 | Method | Flame Ionization |
|---|---|---|---|---|---|

**Analyzer Settings**

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0-50 | ppm | 0-50 | ppm |
| Sample Pressure | 6.8 | psi | 6.8 | psi |
| Hydrogen Pressure | 9 | psi | 9 | psi |
| Air Pressure | 21 | psi | 21 | psi |

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 2000 | 0.0 | 0.0 | 0.2 | N/A |
| 2000 | 0.0 | 0.0 | 0.0 | N/A |
| 2000 | 74.0 | 41.3 | 42.5 | 0.9711 |
| 2000 | 74.0 | 41.3 | 41.2 | 1.0018 |
| 2000 | 37.0 | 21.0 | 21.0 | 1.0000 |
| 2000 | 20.0 | 11.5 | 11.3 | 1.0135 |
| 2000 | 0.0 | 0.0 | 0.1 | N/A |
| | | | New Correction Factor: | 1.0018 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | 0.9921 |
| Current Correction Factor Before Span Adjust: | 0.9711 |
| Percent Change: | 2.2% |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 35.4 | 34.9 |
| Sample Lines Connected | | **Yes** |

Cylinder Pressures

Span 1300 psi Hydrogen 450 psi Zero Air 32 psi

Notes: **N/A : Not Applicable**

Change sample filter.

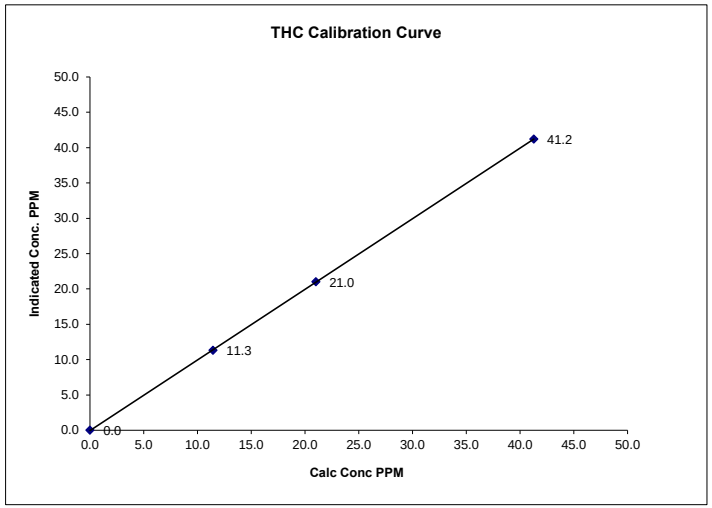
Calibration Performed by: Waseem Ahmed

## THC Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 11, 2013 | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 13:52 | End Time (MST) | 16:25 |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor |
|---|---|---|
| 0.0 | 0.0 | N/A |
| 11.5 | 11.3 | 1.0135 |
| 21.0 | 21.0 | 1.0000 |
| 41.3 | 41.2 | 1.0018 |

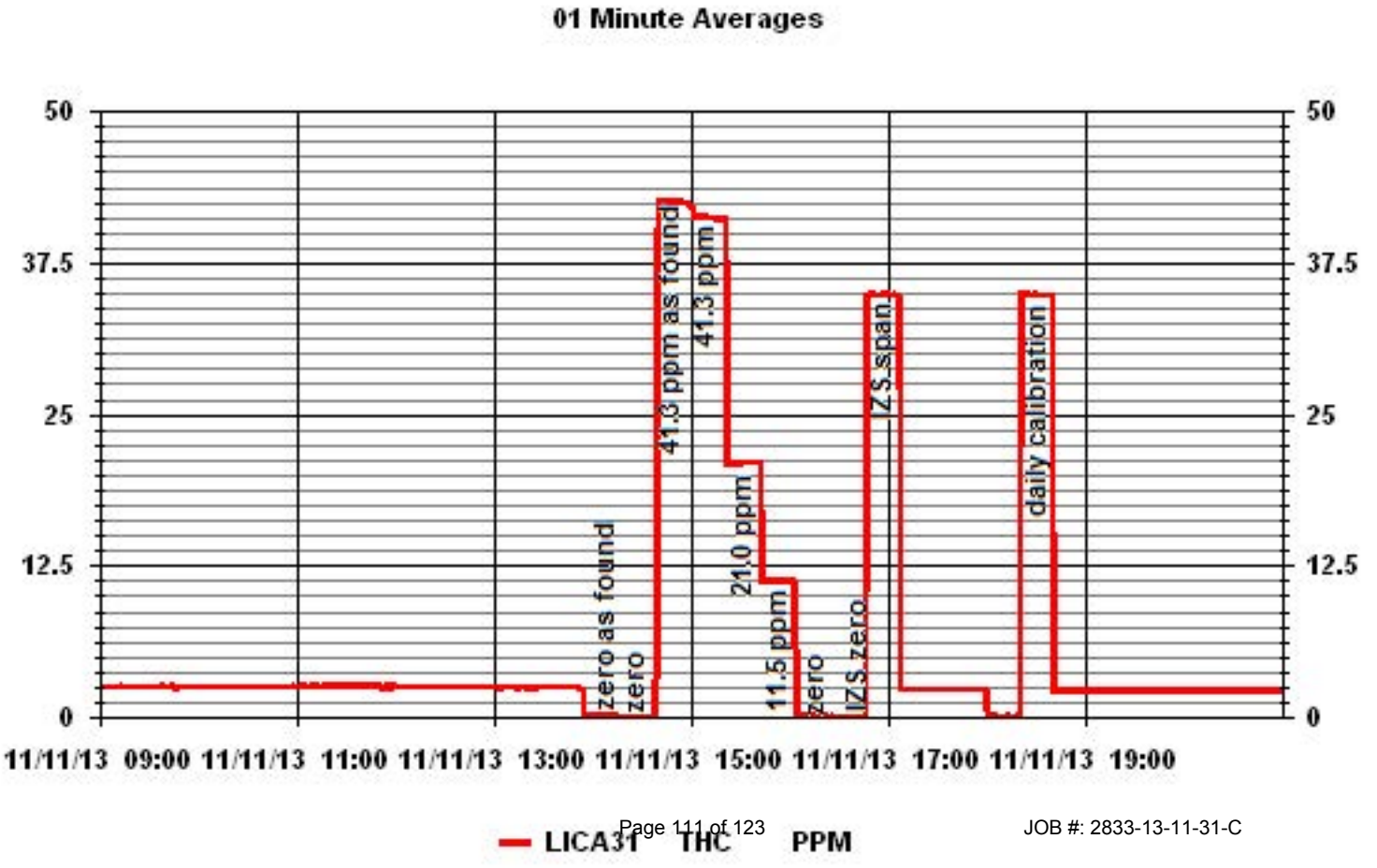
| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999984 |
| Slope | (0.85 to 1.15) | 0.999323 |
| Intercept | (± 3% F.S.) | -0.04673 |




Notes:



JOB #: 2833-13-11-31-C






JOB #: 2833-13-11-31-C

## THC Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | November 15, 2013 | | Previous Calibration | November 11, 2013 | |
| Company: | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location: | ST. LINA | | | | |
| Start Time (MST) | 10:21 | | End Time (MST) | 12:52 | |
| Reason: | 2nd Monthly calibration | | | | |
| Barometric Pressure: | 26.95 | in HG | Station Temperature: | 22 | Deg C |
| Calibrator: | API 700 | | S/N: | 690 | |
| Cal Gas Concentration: | CH4 593 PPM | | C3H8 | 205 PPM | |
| | TOTAL CH4 1156.8 PPM | | Gas Cyl. # | LL84567 | Cal Gas Expiry Date: June 7, 2014 |
| DAS make & Model: | ESC 8832 | | S/N : | AO717 | |
| Chart Recorder: | N/A | | S/N: | N/A | |
| Output Voltage Range: | 0-10 | VDC | Chart Speed: | N/A | mm/hr |

**Analyzer Information**

| Make / Model | Thermo 51C-LT | S/N : | 043669739 | Method | Flame Ionization |
|---|---|---|---|---|---|

**Analyzer Settings**

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0-50 | ppm | 0-50 | ppm |
| Sample Pressure | 6.8 | psi | 6.8 | psi |
| Hydrogen Pressure | 9 | psi | 9 | psi |
| Air Pressure | 21 | psi | 21 | psi |

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 2000 | 0.0 | 0.0 | -0.6 | N/A |
| 2000 | 0.0 | 0.0 | 0.0 | N/A |
| 2000 | 74.0 | 41.3 | 40.7 | 1.0141 |
| 2000 | 74.0 | 41.3 | 41.2 | 1.0018 |
| 2000 | 37.0 | 21.0 | 20.9 | 1.0053 |
| 2000 | 20.0 | 11.5 | 11.1 | 1.0318 |
| 2000 | 0.0 | 0.0 | 0.0 | N/A |
| | | | New Correction Factor: | 1.0018 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | 1.0018 |
| Current Correction Factor Before Span Adjust: | 1.0141 |
| Percent Change: | -1.2% |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 34.9 | 34.9 |
| Sample Lines Connected | | **Yes** |

Cylinder Pressures

Span 1250 psi Hydrogen 1950 psi Zero Air 32 psi

Notes: **N/A : Not Applicable**

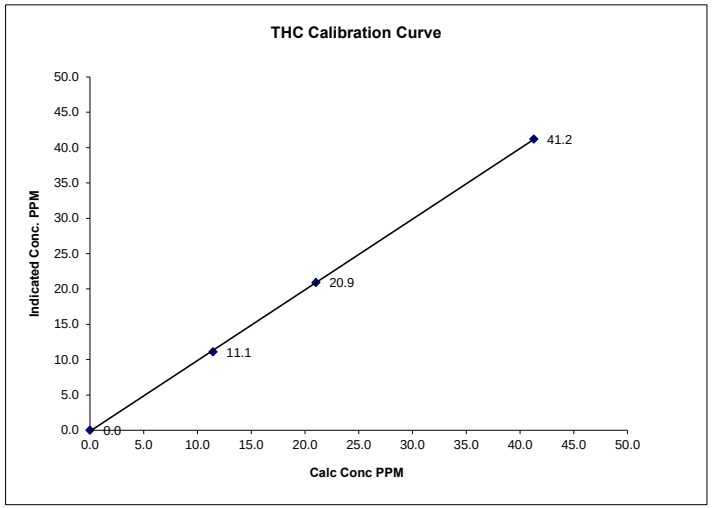
Calibration Performed by: Waseem Ahmed

## THC Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 15, 2013 | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 10:21 | End Time (MST) | 12:52 |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor |
|---|---|---|
| 0.0 | 0.0 | N/A |
| 11.5 | 11.1 | 1.0318 |
| 21.0 | 20.9 | 1.0053 |
| 41.3 | 41.2 | 1.0018 |

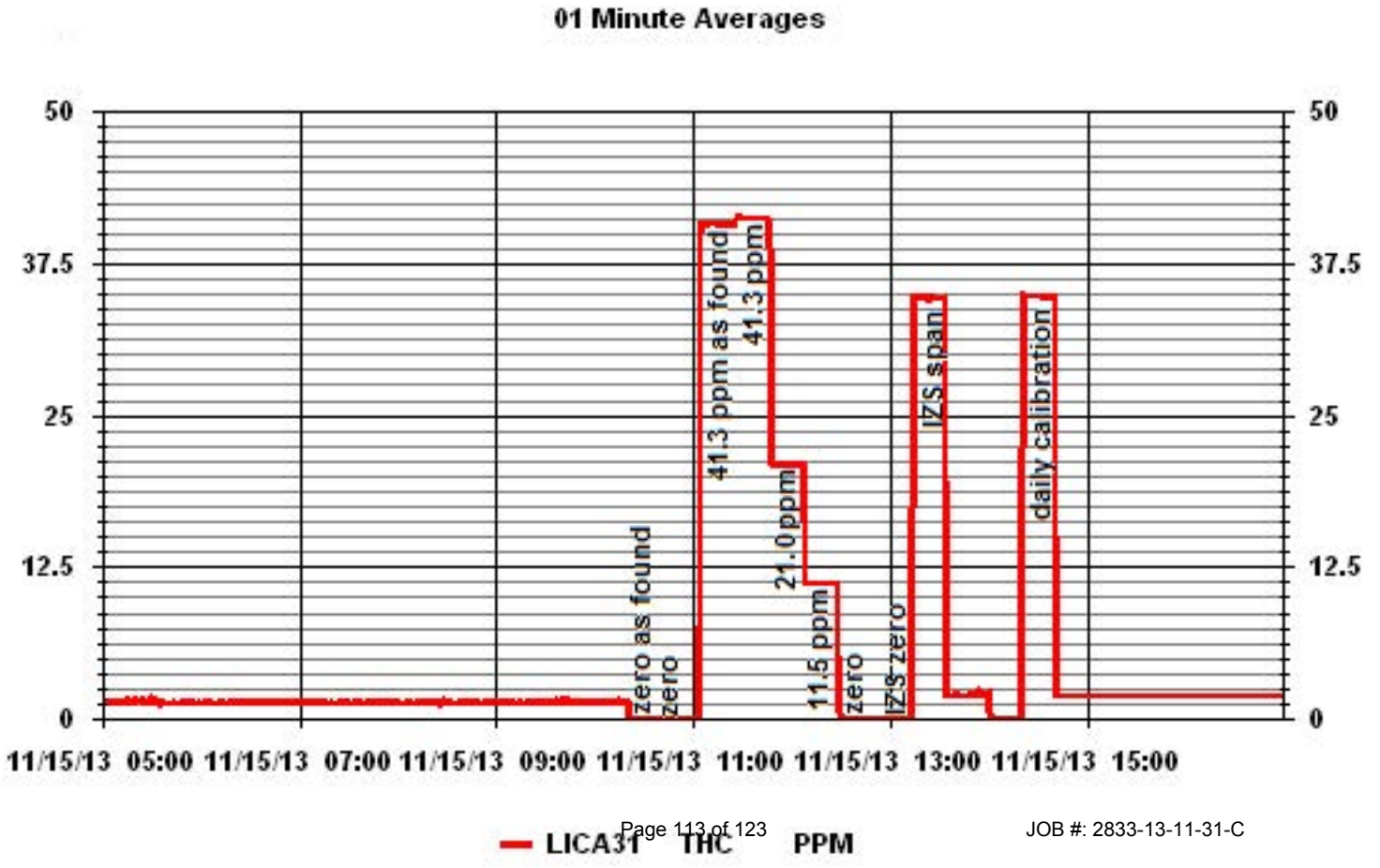
| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999924 |
| Slope | (0.85 to 1.15) | 1.000565 |
| Intercept | (± 3% F.S.) | -0.14462 |




Notes:



JOB #: 2833-13-11-31-C






JOB #: 2833-13-11-31-C

# Nitrogen Dioxide

## NOx - NO- $NO_2$ Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | November 11, 2013 | | Previous Calibration | October 8, 2013 | |
| Company | LICA | | Plant/Location | St. Lina | |
| Start Time (MST) | 11:30 | | End Time (MST) | 17:01 | |
| Reason: | Monthly calibration | | | | |
| Barometric Pressure | 27.83 in HG | Station Temperature | 18 Deg C | MFCF | N/A |
| Cal Gas Concentration | NOx 49.3 ppm | NO 49.2 ppm | Cal Gas Expiry date | December 29, 2013 | |
| Cal Gas Cylinder # | BAL3031 | | | | |
| DAS Output Voltage | 0-1 Volts | | Chart Rec. Output | N/A Volts | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 200E | S/N : | 592 | Method: | Chemiluminescent |
| Calibrator Make / Model: | Environics 6100 | S/N: | 4760 | | |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | N/A | S/N: | N/A | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

### Analyzer Settings

| | Before Calibration | | | | | After Calibration | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | 0 - 1000 | ppb | | | | | |
| Sample Flow/Conv. Temp | 479 | ccm | 314.9 | Deg C | | 479 | ccm | 316.2 | Deg C | |
| Ozone Flow / Vacuum | 74 | ccm | 7.2 | "Hg-A | | 74 | ccm | 7.1 | "Hg-A | |
| HVPS / A ZERO | 670 | Volts | 23.8 | MV | | 670 | Volts | 25.0 | MV | |
| Rx/ Temp / PMT Temp | 50.0 | Deg C | 6.8 | Deg C | | 50.0 | Deg C | 6.8 | Deg C | |
| Box Temp / IZS Temp | 28.2 | Deg C | 45.4 | Deg C | | 30.4 | Deg C | 45.2 | Deg C | |
| Offset | 0 | NOx | 0.6 | NO | | 0 | NOx | 0.6 | NO | |
| Slope | 0.936 | NOx | 0.940 | NO | | 0.864 | NOx | 0.865 | NO | |
| $NO_2$ COEF / Conv Efficency | N/A | NO2 | 0.993 | | | N/A | NO2 | 0.993 | | |

### Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 4995 | 0.0 | NA | 0 | 0 | NA | 1 | 1 | 0 | NA | NA |
| 4995 | 0.0 | NA | 0 | 0 | NA | 0 | 0 | 0 | NA | NA |
| 4920 | 80.5 | NA | 794 | 792 | NA | 859 | 861 | -2 | 0.9251 | 0.9211 |
| 4929 | 80.5 | NA | 792 | 791 | NA | 799 | 797 | 2 | 0.9930 | 0.9935 |
| 4960 | 40.4 | NA | 398 | 397 | NA | 398 | 398 | 0 | 1.0000 | 1.0008 |
| 4980 | 20.2 | NA | 200 | 199 | NA | 201 | 201 | 1 | 0.9978 | 0.9958 |
| 5000 | 0.0 | NA | 0 | 0 | NA | -1 | 0 | 0 | NA | NA |

### Gas Phase Titration Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | $NO_2$ Correction Factor | NO2 Conv Efficency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | | |
| 4920 | 80.5 | NA | 794 | 792 | NA | 794 | 794 | 0 | NA | NA |
| 4920 | 80.5 | 600 | 794 | NA | 522 | 794 | 272 | 522 | 1.0000 | 100.00% |
| | No adj. | | | | | | | | | |
| 4920 | 80.5 | 300 | 794 | NA | 263 | 794 | 531 | 263 | 1.0000 | 100.00% |
| 4920 | 80.5 | 120 | 794 | NA | 105 | 795 | 689 | 106 | 0.9906 | 100.95% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Linearity | | | Sum of Least Squares | NOx= 0.993 | NO= 0.993 | NO2= 1.000 | | |
| OK? | Yes | No | Correction Factors: | NOx= 0.9930 | NO= 0.9935 | NO2= 1.0000 | | |
| | | | | Average Converter Efficiency= 100.32% | | | | |

### IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | 0.0 | NOx | 0.0 | NO2 | | 0.0 | NOx | 0.0 | NO2 |
| Auto Span | 666 | NOx | 648 | NO2 | | 683 | NOx | 664 | NO2 |
| | | | | Sample Lines Connected | | YES | | | |

### Percent Change

| | NOx | NO | NO2 |
|---|---|---|---|
| Previous Month's Calibration Correction Factor | 1.000 | 1.000 | 0.998 |
| Current Correction Factor Before Span Adjust | 0.925 | 0.921 | 1.000 |
| Percent Change | 8.1% | 8.6% | -0.2% |

Notes

**NA : Not Applicable**

O3= 450 FLOW=4920 SOURCE FLOW 80.51

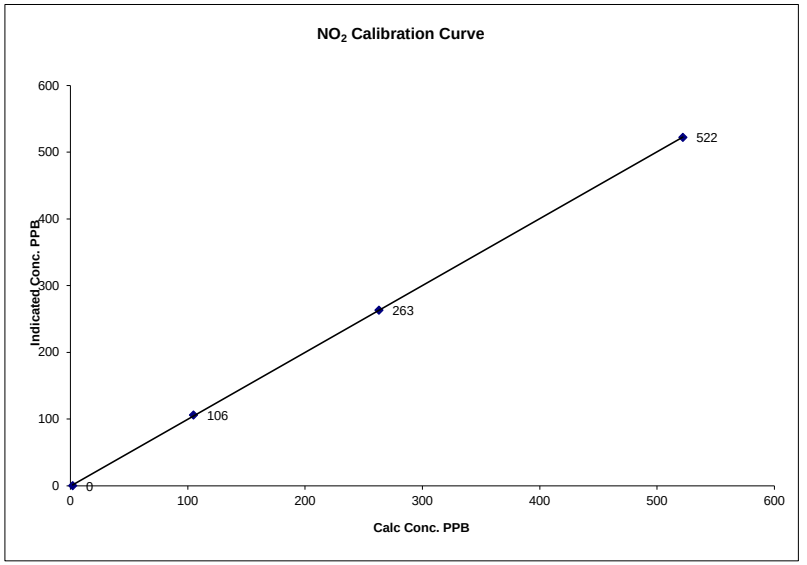
NOX 794 NO 399 NO2= 394

Calibration Performed by: Waseem Ahmed

## $NO_2$ Calibration Curve

| | | | | |
|---|---|---|---|---|
| Calibration Date | November 11, 2013 | | | |
| Company | LICA | | | |
| Plant / Location | St. Lina | | | |
| Start Time (MST) | 11:30 | End Time (MST) | 17:01 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999974 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 1.002107 |
| 2 | 0 | NA | Intercept (± 3% F.S.) | -0.71988 |
| 105 | 106 | 0.9906 | | |
| 263 | 263 | 1.0000 | | |
| 522 | 522 | 1.0000 | | |



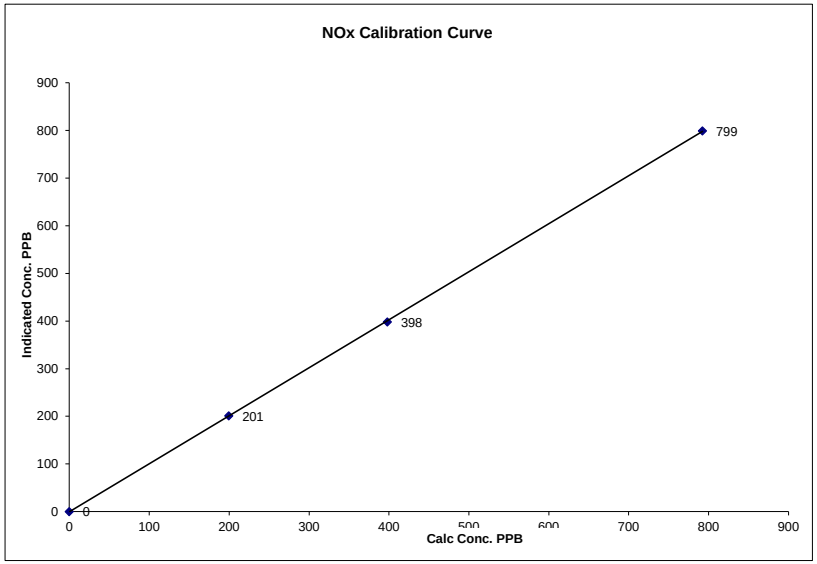

Notes:

## NOx Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | November 11, 2013 | | |
| Company | LICA | | |
| Plant / Location | St. Lina | | |
| Start Time (MST) | 11:30 | End Time (MST) | 17:01 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 200 | 201 | 0.9978 |
| 398 | 398 | 1.0000 |
| 792 | 799 | 0.9930 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999976 |
| Slope | (0.85 to 1.15) | 1.007893 |
| Intercept | (± 3% F.S.) | -0.76608 |



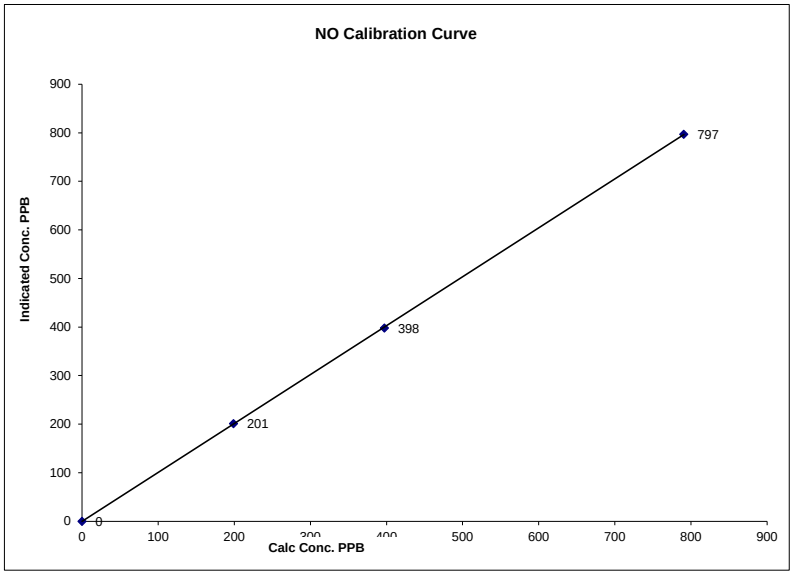

Notes:

## NO Calibration Curve

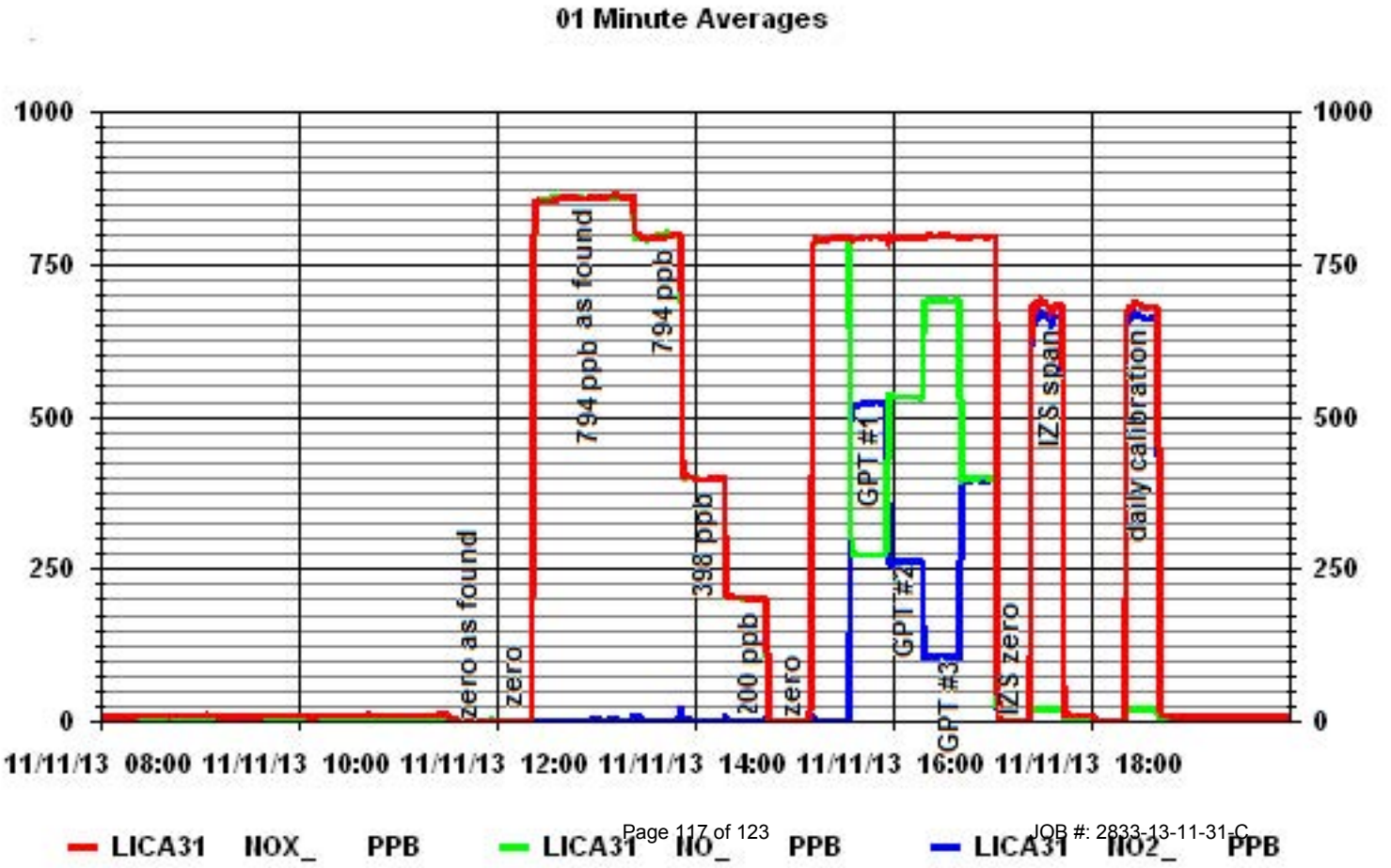
| | | | |
|---|---|---|---|
| Calibration Date | November 11, 2013 | | |
| Company | LICA | | |
| Plant / Location | St. Lina | | |
| Start Time (MST) | 11:30 | End Time (MST) | 17:01 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | NA |
| 199 | 201 | 0.9958 |
| 397 | 398 | 1.0008 |
| 791 | 797 | 0.9935 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999986 |
| Slope | (0.85 to 1.15) | 1.007344 |
| Intercept | (± 3% F.S.) | -0.36497 |




Notes:


01 Minute Averages
1000
750
500
250
0
zero as found
zero
794 ppb as found
794 ppb
398 ppb
200 ppb
zero
GPT #1
GPT #2
GPT #3
IZS zero
IZS span
daily calibration
11/11/13 08:00
11/11/13 10:00
11/11/13 12:00
11/11/13 14:00
11/11/13 16:00
11/11/13 18:00
LICA31 NOX_ PPB
LICA31 NO_ PPB
LICA31 NO2_ PPB

# Ozone

## $O_3$ Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | November 12, 2013 | Previous Calibration | October 22, 2013 |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 10:12 | End Time (MST) | 12:43 |
| Reason: | Monthly calibration | | |
| Barometric Pressure | 27.52 in HG | Station Temperature | 20 Deg C |
| DAS Output Voltage | 0-10 Volts | | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 49i | S/N : | 1002240371 | Method: | Photometric |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | GPT |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0-500 | ppb | | | | |
| Cell A Flow / Cell B Flow | 735 | LPM | 729 | LPM | 732 | LPM | 728 | LPM |
| $O_3$ Set Level | 675 | mmHg | | | 674 | mmHg | | |
| Bench Lamp | 53.6 | Deg C | | | 53.5 | Deg C | | |
| O3 Lamp / Box Temp | 67.7 | Deg | 25.8 | Deg C | 67.7 | Deg C | 24.3 | Deg C |
| Offset / Slope | -0.2 | | 1.002 | | -0.2 | | 0.98 | |

### Calibration Data

| Dilution Flow Rate | Ozone Set Point | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4995 | 0 | 0 | 0 | N/A |
| | No zero adj | | | |
| 4995 | 450 | 395 | 407 | 0.9705 |
| 4995 | 450 | 395 | 397 | 0.9950 |
| 4995 | 300 | 263 | 266 | 0.9887 |
| 4995 | 120 | 105 | 106 | 0.9906 |
| 4995 | 0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 0.9929 |
| | | | New Correction Factor | 0.9950 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0 |
| Auto Span | 321 | 321 |
| Sample Lines Connected | | Yes |
| Previous Calibration Correction Factor: | | 1.0000 |
| Current Correctio Factor Before Span Adjust: | | 0.9705 |
| Percent Change: | | 3.0% |

Note:

**N/A : Not Applicable**
Change sample filter

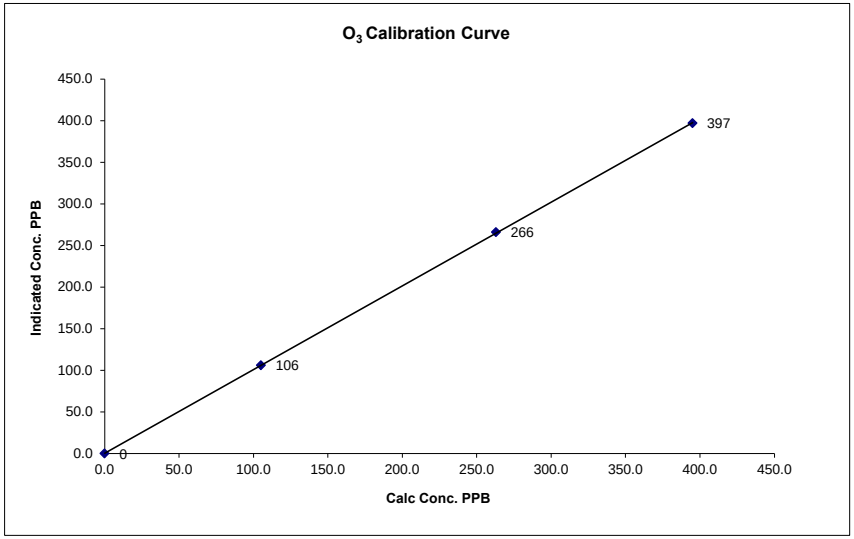
Calibration Performed by: Waseem Ahmed

## $O_3$ Calibration Curve

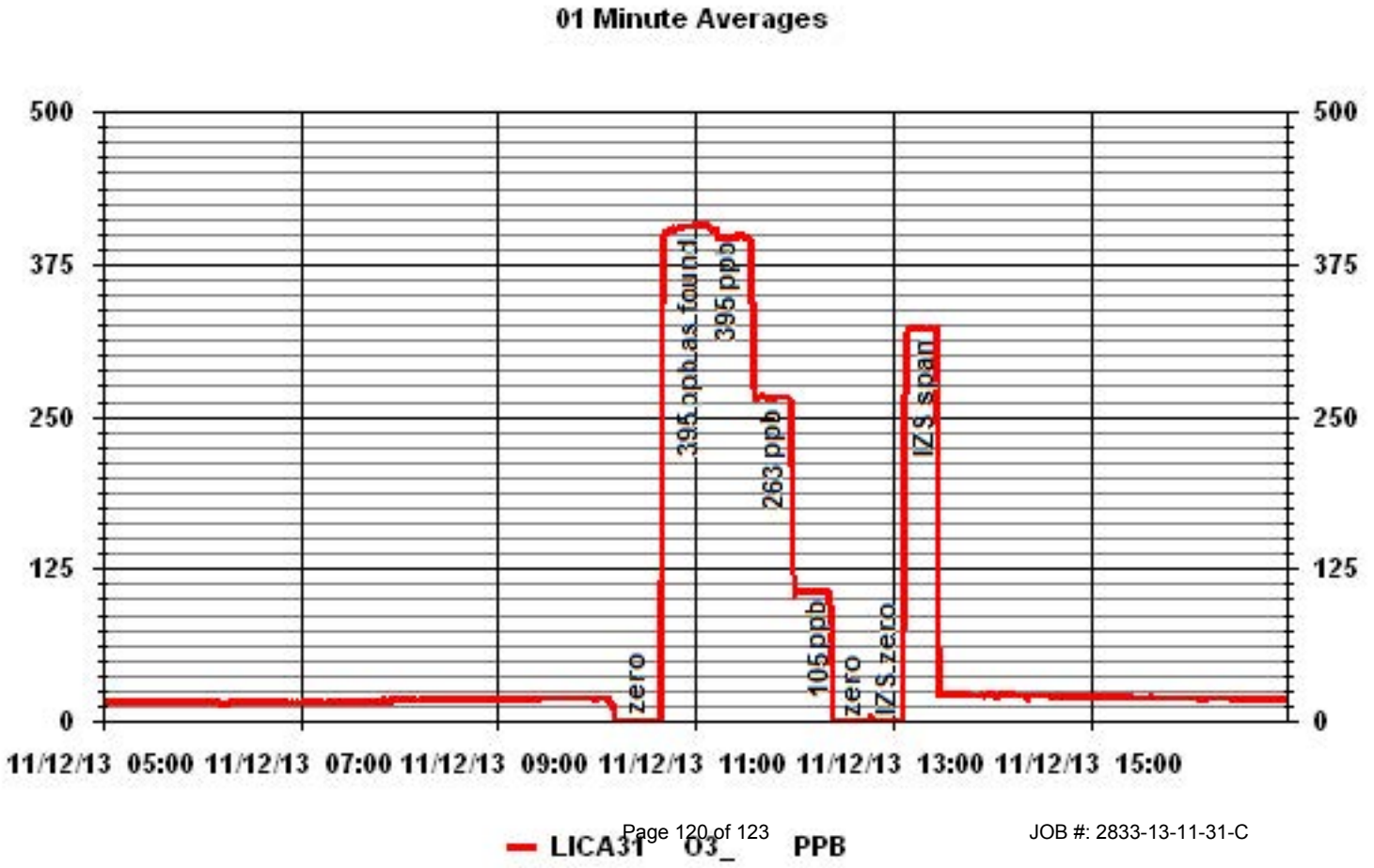
| | | | |
|---|---|---|---|
| Calibration Date | November 12, 2013 | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 10:12 | End Time (MST) | 12:43 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 105 | 106 | 0.9906 |
| 263 | 266 | 0.9887 |
| 395 | 397 | 0.9950 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999980 |
| Slope | (0.85 to 1.15) | 1.005950 |
| Intercept | (± 3% F.S.) | 0.365094 |




Notes:






JOB #: 2833-13-11-31-C

# Particulate Matter 2.5

## TEOM® Calibration

| Station | | Transfer Standard | |
|---|---|---|---|
| Date: | November 11, 2013 | Make/Model: | Streamline FTA |
| Station Name: | LICA St.Lina (CASA#31) | Serial Number: | Hi 091001, Lo 091099 |
| Location: | St. Lina Station | Cell s/n: | N/A |
| Operator: | LICA | Thermometer: | Station Temp. & pres. Sensor |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | R&P Teom 1400a | F-Main Set Pt (l/min) | 3.00 |
| Unit # | 20001 | F-Aux Set Pt (l/min) | 13.67 |
| Control unit s/n | 140AB228720001 | Filter Load (%) | 23% |
| Transducer s/n | 1200C153540001 | $K_o$ Factor | 15003 |
| Parameter | PM2.5 | Temp ($^oC$) | -5.5 |
| | | Press (ATM) | 0.929 |

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

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

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

### Calibration

**Zero flow**

| | Pump Off | | Pump On (Time to reach set points) | |
|---|---|---|---|---|
| F-Main (l/min) | 0.05 | | **(45-60 Sec)** | 35 |
| F-Aux (l/min) | 0.13 | | **(45-60 Sec)** | 55 |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 1 °C)** | -5.5 | **Δ °C** | 0.0 |
| Measured Press **(± 1.5% ATM)** | 0.932 | **Δ % ATM** | 0.3% |

**Flow Audit**

| | | | Δ % from Set-pt | |
|---|---|---|---|---|
| Indicated Main/Aux Flow (l/min) | 2.98 / 13.62 | | **(± 2%)** | 0.7% / 0.4% |
| Total Flow = Main + Aux (l/min) | 16.60 | | **(± 2%)** | 0.4% |
| Measured Total Flow (l/min) | 17.22 | | **(± 1.0 l/min. (5.65%))** | -3.6% |
| Measured Main Flow (l/min) | 3.050 | | **(± 0.2 l/min. (6.25%))** | -2.3% |

**Leak Check**

| | | Actual leakage = Pump On - Pump Off |
|---|---|---|
| Main **(< 0.15 l/min)** | 0.11 | 0.06 |
| Aux **(< 0.15 l/min)** | 0.14 | 0.01 |

**$K_o$ Factor**

| | |
|---|---|
| Measured | na |
| $K_o$ Difference **(± 2.5%)** | na |

**Start Time:** 14:55 **Finish Time:** 15:55

**Sample Inlet Cleaned:** Yes **Sample Inlet Connected:** Yes

**Comments:**

**Calibrator/s:** Waseem Ahmed

## TEOM® Calibration

| Station | | Transfer Standard | |
|---|---|---|---|
| Date: | November 18, 2013 | Make/Model: | Streamline FTA |
| Station Name: | LICA St.Lina (CASA#31) | Serial Number: | Hi 091001, Lo 091099 |
| Location: | St. Lina Station | Cell s/n: | N/A |
| Operator: | LICA | Thermometer: | Station Temp. & pres. Sensor |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | R&P Teom 1400a | F-Main Set Pt (l/min) | 3.00 |
| Unit # | 20001 | F-Aux Set Pt (l/min) | 13.67 |
| Control unit s/n | 140AB228720001 | Filter Load (%) | 28% |
| Transducer s/n | 1200C153540001 | $K_o$ Factor | 15003 |
| Parameter | PM2.5 | Temp ($^oC$) | -11.7 |
| | | Press (ATM) | 0.920 |

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

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

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

### Calibration

**Zero flow**

| | Pump Off | | Pump On (Time to reach set points) | |
|---|---|---|---|---|
| F-Main (l/min) | NA | | **(45-60 Sec)** | NA |
| F-Aux (l/min) | NA | | **(45-60 Sec)** | NA |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 1 °C)** | -11.7 | **Δ °C** | 0.0 |
| Measured Press **(± 1.5% ATM)** | 0.921 | **Δ % ATM** | 0.1% |

**Flow Audit**

| | | | Δ % from Set-pt | |
|---|---|---|---|---|
| Indicated Main/Aux Flow (l/min) | 2.98 / 13.61 | | **(± 2%)** | 0.7% / 0.4% |
| Total Flow = Main + Aux (l/min) | 16.59 | | **(± 2%)** | 0.5% |
| Measured Total Flow (l/min) | 17.18 | | **(± 1.0 l/min. (5.65%))** | -3.4% |
| Measured Main Flow (l/min) | 3.070 | | **(± 0.2 l/min. (6.25%))** | -2.9% |

**Leak Check**

| | | Actual leakage = Pump On - Pump Off |
|---|---|---|
| Main **(< 0.15 l/min)** | NA | NA |
| Aux **(< 0.15 l/min)** | NA | NA |

**$K_o$ Factor**

| | |
|---|---|
| Measured | na |
| $K_o$ Difference **(± 2.5%)** | na |

**Start Time:** 12:30 **Finish Time:** 13:30

**Sample Inlet Cleaned:** NA **Sample Inlet Connected:** Yes

**Comments:**

**Calibrator/s:** Waseem Ahmed